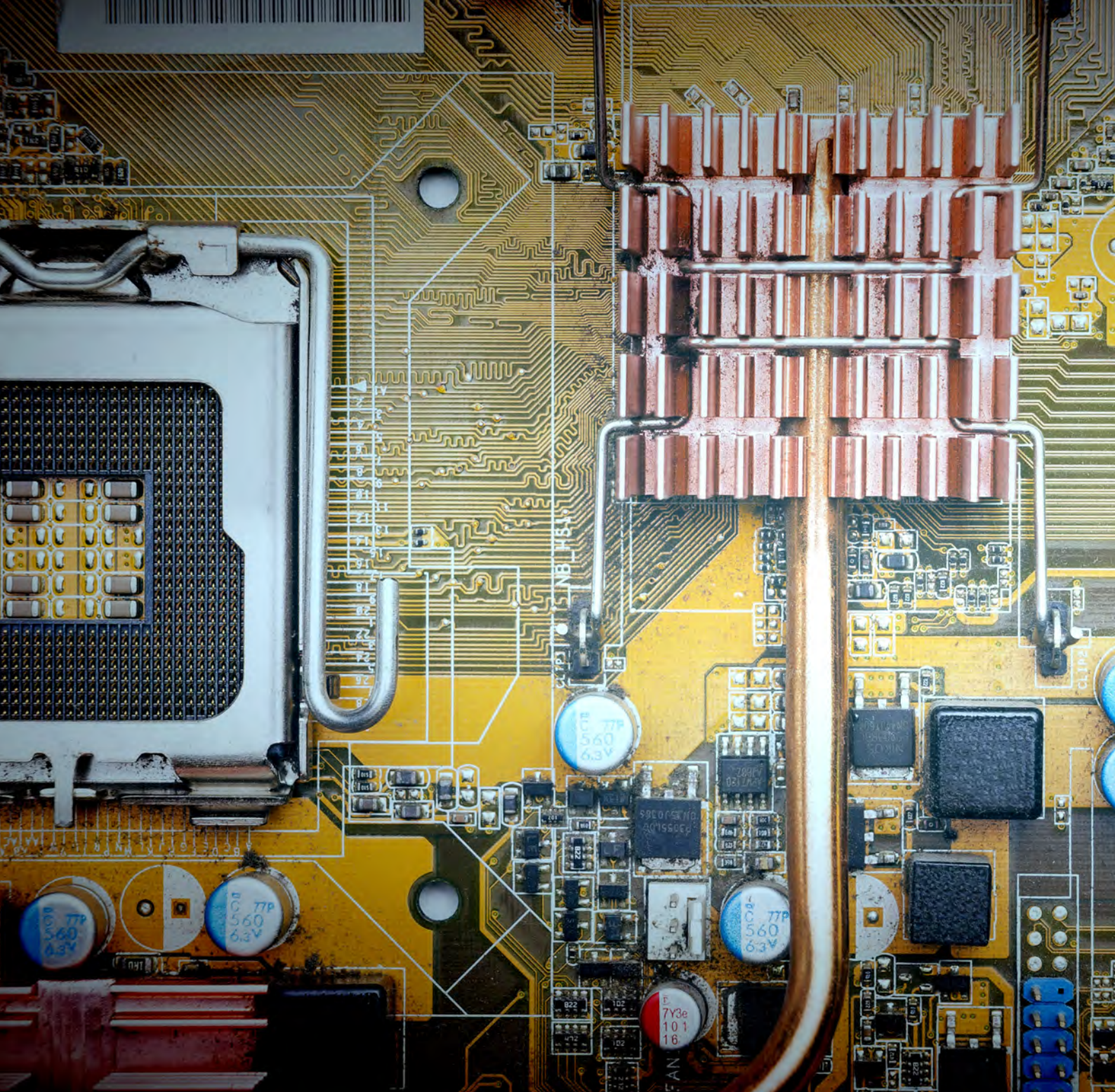




# INSTRUMENTS & TELEMETRY

11

Our Instruments and Telemetry section offers a comprehensive range of cutting-edge technologies designed to enhance data collection and analysis across various industries. From precision sensors to advanced telemetry systems, we provide solutions that empower accurate monitoring and informed decision-making.

## PANEL METERS

Mechanical Running Hour Meters for LCD hour meters see page 1.39

|        |                   |                 |                   |                   |               |                   |             |              |               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|-------------------|-------------------|---------------|-------------------|-------------|--------------|---------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SQ48R             | SQ48RD          | SQ72R/SQ96R       | 30A6B1            | LA25F1        | LFD23F1           | LA24F1      |              |               |
| Supply                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 48mm <sup>2</sup> | Economy DIN     | 72mm <sup>2</sup> | 96mm <sup>2</sup> | DIN           | 48mm <sup>2</sup> | Round Bezel | 3 Hole Bezel | Stirrup Mount |
| 24VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SQ48R 24VAC       | SQ48RD 24VAC    | SQ72R 24VAC       | SQ96R 24VAC       | —             | —                 | —           | —            | —             |
| 48VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SQ48R 48VAC       | SQ48RD 48VAC    | SQ72R 48VAC       | SQ96R 48VAC       | 30A7B1        | —                 | —           | —            | —             |
| 110VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SQ48R 110VAC      | SQ48RD 110VAC   | SQ72R 110VAC      | SQ96R 110VAC      | —             | —                 | —           | —            | —             |
| 230VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SQ48R 230VAC      | SQ48RD 230VAC   | SQ72R 230VAC      | SQ96R 230VAC      | VP7474 230VAC | *LA25F1           | *LFD23F1    | *LA24F1      | —             |
| 400VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SQ48R 400VAC      | SQ48RD 400VAC   | SQ72R 400VAC      | SQ96R 400VAC      | —             | —                 | —           | —            | —             |
| 12-36VDC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | —                 | —               | —                 | SQ96R 12-36VDC    | —             | *LC37F1           | *LC33F1     | *LC34F1      | *LC36F1       |
| 10-50/80VDC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SQ48R 10-80VDC    | SQ48RD 10-80VDC | SQ72R 10-50VDC    | SQ96R 10-50VDC    | 30D1B1        | LD15F1            | LFD13F1     | LA14F1       | —             |
| 110VDC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SQ48R 110VDC      | SQ48RD 110VDC   | SQ72R 110VDC      | SQ96R 110VDC      | 30D4B1        | —                 | —           | —            | —             |
| 90-460VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | —                 | —               | —                 | —                 | *30A6B1       | —                 | —           | —            | —             |

| Code  | Description                                             |
|-------|---------------------------------------------------------|
| BW-50 | Bezel for 50 x 50mm <sup>2</sup>                        |
| BW-72 | Bezel to change appearance from 48 to 72mm <sup>2</sup> |

\*\*\* Special Supply Voltages  
 \* 90-264VAC  
 \* 4-36VAC/DC  
 \* 90-264 / 270-460VAC

### Frequency Meters

|                                                                                                                                                                                                                                                             |                   |                   |                   |                                                                                      |                   |                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------------|--------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|
|    |                   |                   |                   |  |                   |  |
| Pointer 230VAC                                                                                                                                                                                                                                              |                   |                   |                   | Reed 230VAC                                                                          |                   | Dual Reed 230VAC                                                                      |
| 45-55Hz                                                                                                                                                                                                                                                     | SQ48-HZ 45-55     | SQ72-HZ 45-55     | SQ96-HZ 45-55     | SQ72-RDHz                                                                            | SQ96-RDHz         | SQ96-DHz 45-55                                                                        |
| 45-65Hz                                                                                                                                                                                                                                                     | SQ48-HZ 45-65     | SQ72-HZ 45-65     | SQ96-HZ 45-65     | —                                                                                    | —                 | —                                                                                     |
| Size                                                                                                                                                                                                                                                        | 48mm <sup>2</sup> | 72mm <sup>2</sup> | 96mm <sup>2</sup> | 72mm <sup>2</sup>                                                                    | 96mm <sup>2</sup> | 96mm <sup>2</sup>                                                                     |

|                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Power Factor Meter                                                                  | Synchroscope Meter                                                                  | Zero Voltmeter                                                                       | Sequence Indicator                                                                    |
|  |  |  |  |
| SQ96PF-5 400V+N                                                                     | SQ72-SY 400V (3 Phase)<br>SQ96-SY 400V (3 Phase)                                    | SQ96-ZV 230V<br>SQ96-ZV 400V                                                         | SQ72-SI 110-500V<br>SQ96-SI 110-500V                                                  |

Watt Meters (for 400V non balanced 3 Phase + neutral systems)



| Code     | Description                                                         | C/T Ratio | 96mm <sup>2</sup> Scale Plate | C/T Ratio | 96mm <sup>2</sup> Scale Plate |
|----------|---------------------------------------------------------------------|-----------|-------------------------------|-----------|-------------------------------|
| SQ96-KW5 | Meter only, 5A<br>Scale Plates to be ordered according to C/T Ratio | 15/5A     | SQ96SP-12KW                   | 200/5A    | SQ96SP-160KW                  |
|          |                                                                     | 20/5A     | SQ96SP-18KW                   | 250/5A    | SQ96SP-200KW                  |
|          |                                                                     | 25/5A     | SQ96SP-20KW                   | 300/5A    | SQ96SP-240KW                  |
|          |                                                                     | 30/5A     | SQ96SP-24KW                   | 400/5A    | SQ96SP-320KW                  |
|          |                                                                     | 40/5A     | SQ96SP-32KW                   | 500/5A    | SQ96SP-400KW                  |
|          |                                                                     | 50/5A     | SQ96SP-40KW                   | 600/5A    | SQ96SP-480KW                  |
|          |                                                                     | 60/5A     | SQ96SP-48KW                   | 800/5A    | SQ96SP-800KW                  |
|          |                                                                     | 80/5A     | SQ96SP-64KW                   | 1000/5A   | SQ96SP-1200KW                 |
|          |                                                                     | 100/5A    | SQ96SP-80KW                   | 2000/5A   | SQ96SP-1600KW                 |
|          |                                                                     | 150/5A    | SQ96SP-120KW                  | 2500/5A   | SQ96SP-2000KW                 |

## AC PANEL METERS



SQ60 Ammeter



SQ72 Ammeter



Choice of coloured bezels  
for Ammeters & Voltmeters

For 96-72 Adaptor use **VJ4458**



SQ72 Voltmeter

| Description                                                             | Range | 60 x 60    | DIN 48 x 48    | DIN 72 x 72    | DIN 96 x 96    |
|-------------------------------------------------------------------------|-------|------------|----------------|----------------|----------------|
| <b>Ammeters</b>                                                         |       |            |                |                |                |
| <b>Direct Reading</b>                                                   | 5A    | SQ60-5AAC  | SQ48-5AD       | SQ72-5AD       | SQ96-5AD       |
|                                                                         | 10A   | SQ60-10AAC | SQ48-10AD      | SQ72-10AD      | SQ96-10AD      |
|                                                                         | 15A   | SQ60-15AAC | SQ48-15AD      | SQ72-15AD      | SQ96-15AD      |
|                                                                         | 20A   | SQ60-20AAC | SQ48-20AD      | SQ72-20AD      | SQ96-20AD      |
|                                                                         | 25A   | SQ60-25AAC | SQ48-25AD      | SQ72-25AD      | SQ96-25AD      |
|                                                                         | 30A   | SQ60-30AAC | SQ48-30AD      | SQ72-30AD      | SQ96-30AD      |
|                                                                         | 40A   | —          | —              | SQ72-40AD      | SQ96-40AD      |
|                                                                         | 50A   | —          | —              | SQ72-50AD      | —              |
|                                                                         | 60A   | —          | —              | SQ72-60AD      | —              |
| <b>CT Driven:</b><br>(w/o scale plate)                                  | 5A    | —          | SQ48-5         | SQ72-5         | SQ96-5         |
|                                                                         | 1A    | —          | SQ48-1         | SQ72-1         | SQ96-1         |
| <b>Scale Plates</b><br>100% overscale                                   | 1A    | —          | —              | —              | SQ96SP 1/1A    |
|                                                                         | 5A    | —          | SQ48SP 5/*A    | SQ72SP 5/*A    | SQ96SP 5/*A    |
|                                                                         | 10A   | —          | SQ48SP 10/*A   | SQ72SP 10/*A   | SQ96SP 10/*A   |
|                                                                         | 15A   | —          | SQ48SP 15/*A   | SQ72SP 15/*A   | SQ96SP 15/*A   |
|                                                                         | 20A   | —          | SQ48SP 20/*A   | SQ72SP 20/*A   | SQ96SP 20/*A   |
|                                                                         | 25A   | —          | SQ48SP 25/*A   | SQ72SP 25/*A   | SQ96SP 25/*A   |
|                                                                         | 30A   | —          | SQ48SP 30/*A   | SQ72SP 30/*A   | SQ96SP 30/*A   |
|                                                                         | 40A   | —          | SQ48SP 40/*A   | SQ72SP 40/*A   | SQ96SP 40/*A   |
|                                                                         | 50A   | —          | SQ48SP 50/*A   | SQ72SP 50/*A   | SQ96SP 50/*A   |
|                                                                         | 60A   | —          | SQ48SP 60/*A   | SQ72SP 60/*A   | SQ96SP 60/*A   |
|                                                                         | 75A   | —          | SQ48SP 75/*A   | SQ72SP 75/*A   | SQ96SP 75/*A   |
|                                                                         | 80A   | —          | SQ48SP 80/*A   | SQ72SP 80/*A   | SQ72SP 80/*A   |
|                                                                         | 100A  | —          | SQ48SP 100/*A  | SQ72SP 100/*A  | SQ96SP 100/*A  |
|                                                                         | 125A  | —          | SQ48SP 125/*A  | SQ72SP 125/*A  | SQ96SP 125/*A  |
|                                                                         | 150A  | —          | SQ48SP 150/*A  | SQ72SP 150/*A  | SQ96SP 150/*A  |
|                                                                         | 200A  | —          | SQ48SP 200/*A  | SQ72SP 200/*A  | SQ96SP 200/*A  |
|                                                                         | 250A  | —          | SQ48SP 250/*A  | SQ72SP 250/*A  | SQ96SP 250/*A  |
|                                                                         | 300A  | —          | SQ48SP 300/*A  | SQ72SP 300/*A  | SQ96SP 300/*A  |
|                                                                         | 400A  | —          | SQ48SP 400/*A  | SQ72SP 400/*A  | SQ96SP 400/*A  |
|                                                                         | 500A  | —          | SQ48SP 500/*A  | SQ72SP 500/*A  | SQ96SP 500/*A  |
|                                                                         | 600A  | —          | SQ48SP 600/*A  | SQ72SP 600/*A  | SQ96SP 600/*A  |
|                                                                         | 750A  | —          | SQ48SP 750/*A  | SQ72SP 750/*A  | SQ96SP 750/*A  |
|                                                                         | 800A  | —          | SQ48SP 800/*A  | SQ72SP 800/*A  | SQ96SP 800/*A  |
|                                                                         | 1000A | —          | SQ48SP 1000/*A | SQ72SP 1000/*A | SQ96SP 1000/*A |
|                                                                         | 1200A | —          | —              | SQ72SP 1200/*A | SQ96SP 1200/*A |
|                                                                         | 1500A | —          | —              | SQ72SP 1500/*A | SQ96SP 1500/*A |
|                                                                         | 1600A | —          | —              | SQ72SP 1600/*A | SQ96SP 1600/*A |
|                                                                         | 2000A | —          | —              | SQ72SP 2000/*A | SQ96SP 2000/*A |
|                                                                         | 2500A | —          | —              | SQ72SP 2500/*A | SQ96SP 2500/*A |
|                                                                         | 3000A | —          | —              | SQ72SP 3000/*A | SQ96SP 3000/*A |
|                                                                         | 4000A | —          | —              | SQ72SP 4000/*A | SQ96SP 4000/*A |
| * Replace with '5' for 5A CT ratio or '1' for 1A CT ratio               |       |            |                |                |                |
| <b>Colour Bezels</b>                                                    | —     | —          | —              | SQ72B-*        | SQ96B-*        |
| *Add colour to code: ● R (Red), ○ WH (White), ● BL (Blue), ● BK (Black) |       |            |                |                |                |

### Voltmeters

| Description                                     | Range | DIN 48 x 48 | DIN 72 x 72  | DIN 96 x 96  |
|-------------------------------------------------|-------|-------------|--------------|--------------|
| For 110/120V Monitoring                         | 150V  | SQ48-150VAC | SQ72-150VAC  | SQ96-150VAC  |
| For 220/240V Monitoring                         | 300V  | SQ48-300VAC | SQ72-300VAC  | SQ96-300VAC  |
| For 380/415 Monitoring                          | 500V  | SQ48-500VAC | SQ72-500VAC  | SQ96-500VAC  |
| For 525V Monitoring                             | 600V  | —           | SQ72-600VAC  | SQ96-600VAC  |
| 500V Meter with Red Line on 230V/400VAC         |       |             | SQ72-500VACR | SQ96-500VACR |
| 1000V Excluding VT-25VA 1000/300VAC Transformer |       |             | SQ72-1000VAC |              |

## MAXIMUM DEMAND AMMETERS



SQ96-MD/5

Meter shown with optional coloured bezel

SQ96-M/5



- Time delay 15 mins
- 120% overscale

### Description

Max. demand ammeter c/w terminal shroud & black bezel, w/o scale plate:  
Combination Max. demand & instantaneous ammeter (3 Needle)  
Max. demand ammeter (w/o instantaneous - 2 Needle)  
Coloured bezel, if required red/white/blue (\*specify colour with order)

Code  
96 x 96

Code  
72 x 72

SQ96-MD/5

SQ72-MD/5

SQ96-M/5

SQ72-M/5

SQ96B-\*

SQ72B-\*

### Scale Plate

For combination MD ammeter

SQ96MDSP\*

SQ72MDSP\*

For max. demand ammeter (w/o instantaneous)

SQ96MSP\*

SQ72MSP\*

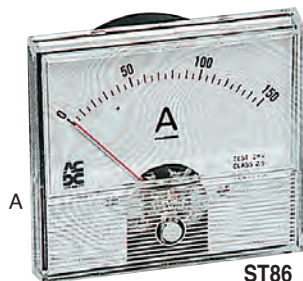
\*Add ratio from range below (e.g. SQ96MDSP 1600/5A)

|       |        |        |        |        |         |         |
|-------|--------|--------|--------|--------|---------|---------|
| 40/5A | 80/5A  | 150/5A | 300/5A | 600/5A | 1000/5A | 2000/5A |
| 50/5A | 100/5A | 200/5A | 400/5A | 750/5A | 1200/5A | 2500/5A |
| 60/5A | 125/5A | 250/5A | 500/5A | 800/5A | 1500/5A | 3000/5A |

## DC PANEL METERS & SHUNTS



SQ45



ST86



SQ72

| Description | 50 x 50<br>ø 45mm | 60 x 60<br>ø 52mm | 86 x 86<br>ø 60mm | DIN 72 x 72<br>67x67 | DIN 96 x 96<br>92x92 |
|-------------|-------------------|-------------------|-------------------|----------------------|----------------------|
|-------------|-------------------|-------------------|-------------------|----------------------|----------------------|

### Ammeters – Direct reading

|        |              |            |   |              |              |
|--------|--------------|------------|---|--------------|--------------|
| 0-50mA | SQ45-50MA DC | –          | – | –            | –            |
| 3A     | SQ45-3A      | –          | – | –            | –            |
| 5A     | SQ45-5A      | –          | – | SQ72-5ADC    | SQ96-5ADC    |
| 10A    | SQ45-10A     | ST60-10ADC | – | SQ72-10ADC   | SQ96-10ADC   |
| 15A    | SQ45-15A     | –          | – | SQ72-15ADC   | SQ96-15ADC   |
| 20A    | SQ45-20A     | ST60-20ADC | – | SQ72-20ADC   | SQ96-20ADC   |
| 25A    | SQ45-25A     | –          | – | SQ72-25ADC   | SQ96-25ADC   |
| 30A    | SQ45-30A     | ST60-30ADC | – | SQ72-30ADC   | SQ96-30ADC   |
| 40A    | –            | –          | – | SQ72-40ADC   | SQ96-40ADC   |
| 50A    | –            | –          | – | SQ72-50ADC/D | SQ96-50ADC/D |

### 50mV Shunt connected

|       |             |   |           |               |               |
|-------|-------------|---|-----------|---------------|---------------|
| 10A   | –           | – | –         | SQ72-10ADC*   | SQ96-10ADC*   |
| 15A   | –           | – | –         | SQ72-15ADC*   | SQ96-15ADC*   |
| 20A   | SQ45-20A/50 | – | –         | SQ72-20ADC*   | SQ96-20ADC*   |
| 30A   | SQ45-30A/50 | – | –         | SQ72-30ADC*   | SQ96-30ADC*   |
| 40A   | –           | – | –         | SQ72-40ADC*   | SQ96-40ADC*   |
| 50A   | –           | – | ST86-50A  | SQ72-50ADC*   | SQ96-50ADC*   |
| 75A   | –           | – | ST86-75A  | SQ72-75ADC*   | SQ96-75ADC*   |
| 100A  | –           | – | ST86-100A | SQ72-100ADC*  | SQ96-100ADC*  |
| 150A  | –           | – | ST86-150A | SQ72-150ADC*  | SQ96-150ADC*  |
| 200A  | –           | – | ST86-200A | SQ72-200ADC*  | SQ96-200ADC*  |
| 300A  | –           | – | –         | SQ72-300ADC*  | SQ96-300ADC*  |
| 400A  | –           | – | –         | SQ72-400ADC*  | SQ96-400ADC*  |
| 500A  | –           | – | –         | SQ72-500ADC*  | SQ96-500ADC*  |
| 600A  | –           | – | –         | SQ72-600ADC*  | SQ96-600ADC*  |
| 800A  | –           | – | –         | SQ72-800ADC*  | SQ96-800ADC*  |
| 1000A | –           | – | –         | SQ72-1000ADC* | SQ96-1000ADC* |

### Voltmeters

\*Add 50mV to code

|      |            |   |   |             |             |
|------|------------|---|---|-------------|-------------|
| 15V  | SQ45-15VDC | – | – | SQ72-15VDC  | SQ96-15VDC  |
| 30V  | SQ45-30VDC | – | – | SQ72-30VDC  | SQ96-30VDC  |
| 50V  | SQ45-50VDC | – | – | SQ72-50VDC  | SQ96-50VDC  |
| 60V  | –          | – | – | SQ72-60VDC  | SQ96-60VDC  |
| 150V | –          | – | – | SQ72-150VDC | SQ96-150VDC |
| 300V | –          | – | – | SQ72-300VDC | SQ96-300VDC |
| 500V | –          | – | – | SQ72-500VDC | SQ96-500VDC |
| 600V | –          | – | – | SQ72-600VDC | SQ96-600VDC |

## CURRENT TRANSFORMERS

### Current Transformers 600V Class 1

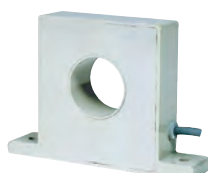
|                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |     |
|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----|
| DIN and Chassis Mount |  |  |  |  |  |  |  |  |  |     |
|                       | Ring                                                                              | Ring                                                                              | Ring                                                                              | Ring                                                                              | Ring                                                                              | Ring                                                                               | Ring                                                                                | Ring                                                                                | Primary Wound                                                                       |     |
| Hole Size             | ID20mm                                                                            | ID30mm                                                                            | ID48mm                                                                            | ID72mm                                                                            | ID32mm                                                                            | ID40mm                                                                             | ID63mm                                                                              | ID110mm                                                                             | –                                                                                   |     |
| Bar Size              | –                                                                                 | 41 x 11mm                                                                         | 61 x 21mm                                                                         | 102 x 21mm                                                                        | –                                                                                 | 40 x 15mm                                                                          | 62 x 22mm                                                                           | –                                                                                   | –                                                                                   |     |
| Primary Current       | *Code 5A                                                                          | *No of turns VA                                                                   | *Code 5A                                                                          | VA                                                                                | *Code 5A                                                                          | VA                                                                                 | *Code 5A                                                                            | VA                                                                                  | *Code 5A                                                                            | VA  |
| 5A                    | DS-55                                                                             | 10T 2.5                                                                           |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | PW55                                                                                | 2.5 |
| 10A                   | DS-105                                                                            | 10T 2.5                                                                           |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | PW105                                                                               | 2.5 |
| 15A                   | DS-155                                                                            | 4T 2.5                                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | PW155                                                                               | 2.5 |
| 20A                   | DS-205                                                                            | 3T 2.5                                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | PW205                                                                               | 2.5 |
| 25A                   | DS-255                                                                            | 2T 2.5                                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | PW255                                                                               | 2.5 |
| 30A                   | DS-305                                                                            | 1T 2.5                                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | PW305                                                                               | 2.5 |
| 40A                   | DS-405                                                                            | 1T 2.5                                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | PW405                                                                               | 2.5 |
| 50A                   | DS-505                                                                            | 1T 2.5                                                                            | DS1-505 3                                                                         |                                                                                   |                                                                                   | MR1-505 1.5                                                                        |                                                                                     |                                                                                     |                                                                                     |     |
| 60A                   | DS-605                                                                            | 2.5                                                                               | DS1-605 3                                                                         |                                                                                   |                                                                                   | MR1-605 2.0                                                                        |                                                                                     |                                                                                     |                                                                                     |     |
| 75A                   | DS-755                                                                            | 2.5                                                                               | DS1-755 3                                                                         |                                                                                   |                                                                                   | MR1-755 2.5                                                                        |                                                                                     |                                                                                     |                                                                                     |     |
| 80A                   | DS-805                                                                            | 2.5                                                                               | DS1-805 3                                                                         |                                                                                   |                                                                                   | MR1-805 2.5                                                                        |                                                                                     |                                                                                     |                                                                                     |     |
| 100A                  | DS-1005                                                                           | 2.5                                                                               | DS1-1005 2.5                                                                      |                                                                                   |                                                                                   | MR1-1005 1.5                                                                       |                                                                                     |                                                                                     |                                                                                     |     |
| 125A                  | DS-1255                                                                           | 2.5                                                                               | DS1-1255 2.5                                                                      |                                                                                   |                                                                                   | MR1-1255 3                                                                         |                                                                                     |                                                                                     |                                                                                     |     |
| 150A                  | DS-1505                                                                           | 2.5                                                                               | DS1-1505 3                                                                        |                                                                                   |                                                                                   | MR1-1505 5                                                                         |                                                                                     |                                                                                     |                                                                                     |     |
| 175A                  | DS-1755                                                                           | 2.5                                                                               | DS1-1755 3                                                                        |                                                                                   |                                                                                   | MR1-1755 5                                                                         | MR2-1755 5                                                                          |                                                                                     |                                                                                     |     |
| 200A                  | DS-2005                                                                           | 2.5                                                                               | DS1-2005 3                                                                        | DS2-2005 10                                                                       |                                                                                   | MR1-2005 7.5                                                                       | MR2-2005 7.5                                                                        |                                                                                     |                                                                                     |     |
| 250A                  | DS-2505                                                                           | 2.5                                                                               | DS1-2505 3                                                                        | DS2-2505 10                                                                       |                                                                                   | MR1-2505 10                                                                        | MR2-2505 10                                                                         |                                                                                     |                                                                                     |     |
| 300A                  |                                                                                   |                                                                                   | DS1-3005 3                                                                        | DS2-3005 10                                                                       |                                                                                   | MR1-3005 15                                                                        | MR2-3005 10                                                                         | BR1-3005 10                                                                         |                                                                                     |     |
| 400A                  |                                                                                   |                                                                                   | DS1-4005 3                                                                        | DS2-4005 10                                                                       |                                                                                   | MR1-4005 15                                                                        | MR2-4005 15                                                                         | BR1-4005 10                                                                         |                                                                                     |     |
| 500A                  |                                                                                   |                                                                                   | DS1-5005 3                                                                        | DS2-5005 10                                                                       |                                                                                   |                                                                                    | MR2-5005 15                                                                         | BR1-5005 15                                                                         | BR3-5005 10                                                                         |     |
| 600A                  |                                                                                   |                                                                                   | DS1-6005 3                                                                        | DS2-6005 10                                                                       | DS3-6005 15                                                                       |                                                                                    | MR2-6005 15                                                                         | BR1-6005 15                                                                         |                                                                                     |     |
| 750A                  |                                                                                   |                                                                                   |                                                                                   | DS2-7505 10                                                                       | DS3-7505 15                                                                       |                                                                                    |                                                                                     | BR1-7505 15                                                                         |                                                                                     |     |
| 800A                  |                                                                                   |                                                                                   |                                                                                   | DS2-8005 15                                                                       | DS3-8005 15                                                                       |                                                                                    |                                                                                     | BR1-8005 15                                                                         | BR3-8005 15                                                                         |     |
| 1000A                 |                                                                                   |                                                                                   |                                                                                   | DS2-10005 15                                                                      | DS3-10005 15                                                                      |                                                                                    |                                                                                     | BR1-10005 20                                                                        | BR3-10005 10                                                                        |     |
| 1200A                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | DS3-12005 15                                                                      |                                                                                    |                                                                                     | BR1-12005 25                                                                        | BR3-12505 15                                                                        |     |
| 1500A                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | DS3-15005 15                                                                      |                                                                                    |                                                                                     |                                                                                     | BR3-15005 15                                                                        |     |
| 1600A                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | DS3-16005 15                                                                      |                                                                                    |                                                                                     |                                                                                     | BR3-16005 15                                                                        |     |
| 2000A                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | DS3-20005 15                                                                      |                                                                                    |                                                                                     |                                                                                     | BR3-20005 30                                                                        |     |
| 2500A                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | DS3-25005 15                                                                      |                                                                                    |                                                                                     |                                                                                     | BR3-25005 30                                                                        |     |
| 3000A                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | BR3-30005 30                                                                        |     |
| 4000A                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | BR3-40005 30                                                                        |     |

\*Above CT's are available with 1Amp Secondary. Replace Suffix '5' with '1' for order Code. \*No of turns to be looped through CT Spare Feet for DS CT's: DS-FEET

## SPECIAL INSTRUMENT CT's



CT-5



MI-20 / MI-100

### Special Output Current Transformers

Voltage CT's to be used with VCT1 pg 1.5

| Code   | Input Amps | Output   |
|--------|------------|----------|
| CT-5   | 5A AC      | 0,4-4VAC |
| MI-20  | 20A AC     | 0,4-4VAC |
| MI-100 | 100A AC    | 0,4-4VAC |
| MI-500 | 500A AC    | 0,4-4VAC |



Signaling CT's - Solid Core = SD: (H)62 x (L)89 x (W)27mm Split Core = SP: (H)63 x (L)100 x (W)32mm

| Input Amps         |                | 0-5VAC Output Code | 0-10VAC Output Code | 4-20mA (Loop Powered) Code |
|--------------------|----------------|--------------------|---------------------|----------------------------|
| 0-10A, 20, 50A     | Select on Unit | FCS521-SD-5V       | FCS521-SD-10V       | FCS521-SD-420E             |
| 0-100A, 150A, 200A | Select on Unit | FCS2151-SD-5V      | FCS2151-SD-10V      | FCS2151-SD-420E            |
| 0-10A, 20, 50A     | Select on Unit | FCS521-SP-5V       | FCS521-SP-10V       | FCS521-SP-420E             |
| 0-100A, 150A, 200A | Select on Unit | FCS2151-SP-5V      | FCS2151-SP-10V      | FCS2151-SP-420E            |

Current Transducer (4-20mA Output), loop powered - 4-20mA (factory set).

| Code  | Input Amps | C/T ID | Busbar Size |
|-------|------------|--------|-------------|
| MN1-* | 50-300     | 32mm   | -           |

\*Add Current: 50A, 100A, 150A, 200A, 250A, 300A

|       |         |      |           |
|-------|---------|------|-----------|
| MN2-* | 100-750 | 40mm | 40 x 15mm |
|-------|---------|------|-----------|

\*Add Current: 100A, 150A, 200A, 250A, 300A, 350A, 400A, 500A, 600A, 750A

|       |          |      |           |
|-------|----------|------|-----------|
| LR1-* | 750-2500 | 50mm | 80 x 28mm |
|-------|----------|------|-----------|

\*Add Current: 750A, 1000A, 1500A, 2000A, 2500A

|       |           |      |   |
|-------|-----------|------|---|
| LR2-* | 1000-2000 | 60mm | - |
|-------|-----------|------|---|

\*Add Current: 1000A, 1500A, 2000A

|       |           |      |   |
|-------|-----------|------|---|
| LR3-* | 1500-2500 | 90mm | - |
|-------|-----------|------|---|

\*Add Current: 1500A, 2000A, 2500A

### Summation Current Transformers

| Code   | Description         | Burden | Class | Size              |
|--------|---------------------|--------|-------|-------------------|
| SCT-55 | 5 + 5 to 5A         | 10VA   | 0.5   | 117H x 100W x 50D |
| SCT-11 | 1 + 1 to 1A         | 10VA   | 1     | 117H x 100W x 50D |
| TARSD2 | 5 + 5 to 5A         | 6VA    | 0.5   | DIN Mount (6 mod) |
| TARSD3 | 5 + 5 + 5 to 5A     | 6VA    | 0.5   | DIN Mount (6 mod) |
| TARSD4 | 5 + 5 + 5 + 5 to 5A | 6VA    | 0.5   | DIN Mount (6 mod) |



MN1



MN2



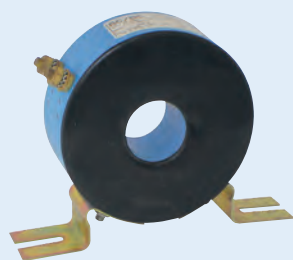
LR1



SCT-55  
SCT-11



TARSD2/3/4



Metering CT - Class 0.5, 5A Secondary

| Code             | CTR-100/5     | CTR-150/5     | CTR-200/5     | CTR-250/5     | CTR-300/5     |
|------------------|---------------|---------------|---------------|---------------|---------------|
| Primary          | 100A          | 150A          | 200A          | 250A          | 300A          |
| VA               | 5VA           | 10VA          | 10VA          | 10VA          | 10VA          |
| ID x OD x W (mm) | 36 x 110 x 65 | 36 x 110 x 60 | 36 x 110 x 55 | 36 x 110 x 50 | 36 x 110 x 50 |

| Code             | CTR-400/5     | CTR-500/5     | CTR-600/5     | CTR-800/5     | CTR-1000/5    |
|------------------|---------------|---------------|---------------|---------------|---------------|
| Primary          | 400A          | 500A          | 600A          | 800A          | 1000A         |
| VA               | 10VA          | 10VA          | 10VA          | 10VA          | 10VA          |
| ID x OD x W (mm) | 57 x 125 x 50 | 57 x 125 x 50 | 57 x 125 x 40 | 57 x 125 x 45 | 57 x 125 x 45 |

## DC SHUNTS

### DC Shunts

| Amps | Code 50mV  | Code 60mV  | Amps  | Code 50mV   | Code 60mV   |
|------|------------|------------|-------|-------------|-------------|
| 10A  | SH-10A/50  | SH-10A/60  | 150A  | SH-150A/50  | SH-150A/60  |
| 15A  | SH-15A/50  | SH-15A/60  | 200A  | SH-200A/50  | SH-200A/60  |
| 20A  | SH-20A/50  | SH-20A/60  | 250A  | SH-250A/50  | SH-250A/60  |
| 30A  | SH-30A/50  | SH-30A/60  | 300A  | SH-300A/50  | SH-300A/60  |
| 40A  | SH-40A/50  | SH-40A/60  | 400A  | SH-400A/50  | SH-400A/60  |
| 50A  | SH-50A/50  | SH-50A/60  | 500A  | SH-500A/50  | SH-500A/60  |
| 60A  | SH-60A/50  | SH-60A/60  | 600A  | SH-600A/50  | SH-600A/60  |
| 75A  | SH-75A/50  | SH-75A/60  | 800A  | SH-800A/50  | SH-800A/60  |
| 100A | SH-100A/50 | SH-100A/60 | 1000A | SH-1000A/50 | SH-1000A/60 |



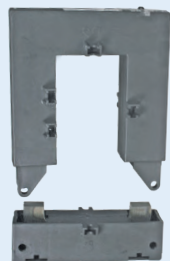
## SPLIT CORE CT's

**NEW**



**Split Core CT(5A Secondary)** - Direct clipping onto the cables | Rated voltage 660VAC

| Code              | AKH-150 | AKH-200   | AKH-250   | AKH-300 | AKH-400  |
|-------------------|---------|-----------|-----------|---------|----------|
| Primary           | 150A    | 200A      | 250A      | 300A    | 400A     |
| Class/VA          | 1/1VA   | 1/ 1VA    | 1/1.5VA   | 1/1.5VA | 1/1.5VA  |
| Window Size       | 24mm    | 24mm      | 24mm      | 24mm    | 36mm     |
| Code              | AKH-500 | AKH-600   | AKH-700   | AKH-800 | AKH-1000 |
| Primary           | 500A    | 600A      | 700A      | 800A    | 1000A    |
| Class/VA          | 1/1.5VA | 0.5/2.5VA | 0.5/2.5VA | 0.5/5VA | 0.5/10VA |
| Window Size(Ø ID) | 50mm    | 50mm      | 50mm      | 50mm    | 50mm     |



**Class 1 Split Core CT (5A Secondary)**

| Code        | T010030R   | T015030R | T020030R   | T025080R  | T030080R   | T040080R | T050080R | T060080R |
|-------------|------------|----------|------------|-----------|------------|----------|----------|----------|
| Primary     | 100A (CL3) | 150A     | 200A       | 250A      | 300A       | 400A     | 500A     | 600A     |
| VA          | 1.5VA      |          |            | 1.5VA     | 2.5VA      |          | 5.0VA    |          |
| Window Size | 30 x 22mm  |          |            | 80 x 50mm |            |          |          |          |
| Code        | T075100R   | T080100R | T100100R   | T120125R  | T150125R   | T200125R | T250125R | T300125R |
| Primary     | 750A       | 800A     | 1000A      | 1250A     | 1500A      | 2000A    | 2500A    | 3000A    |
| VA          | 5.0VA      |          | 7.5VA      | 10.0VA    | 15VA       |          | 20VA     | 15VA     |
| Window Size | 82 x 82mm  |          | 120 x 80mm |           | 165 x 80mm |          |          |          |

**WHILE STOCKS LAST**



**Compact Split Core CT (5A secondary)** - Direct clipping onto cables

| Code        | ENS-AYC-32-100 | ENS-AYC-32-125 | ENS-AYC-32-150 | ENS-AYC-32-200 | ENS-AYC-32-250 | ENS-AYC-32-300 |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Primary     | 100A           | 125A           | 150A           | 200A           | 250A           | 300A           |
| Class / VA  | 3/1.5VA        | 3/2.5VA        | 3/3VA          | 3/3VA          | 3/3VA          | 1/2.5VA        |
| Window Size | 20 x 30mm      |                |                |                |                |                |
| Code        | ENS-AYC-44-400 | ENS-AYC-44-500 | ENS-AYC-44-600 | ENS-AYC-44-800 |                |                |
| Primary     | 400A           | 500A           | 600A           | 800A           |                |                |
| Class / VA  | 1 / 5VA        |                |                |                |                |                |
| Window Size | 30 x 40mm      |                |                |                |                |                |

## VOLTMETER & AMMETER SWITCHES



AS34-A8



VS33-V2



CR0120016RT4

| Description                        | Plate Marking       | Code 16A Door Mount | Size (mm) | Code 12A Door Mount | Code 12A 22mm Hole Mount | Size (mm) |
|------------------------------------|---------------------|---------------------|-----------|---------------------|--------------------------|-----------|
| <b>Ammeter Selector Switches</b>   |                     |                     |           |                     |                          |           |
| 3 Phase                            | O-R-S-T             | AS34-A8             | 48 x 60   | CR0120022RT4        | CR0120022GT4             | 48 x 48   |
| <b>Voltmeter Selector Switches</b> |                     |                     |           |                     |                          |           |
| 3 Phase                            | O-RS-ST-TR          | VS33-V2             | 48 x 60   | CR0120016RT4        | CR0120016GT4             | 48 x 48   |
| 3 Phase + Neutral                  | TR-ST-RS-O-RN-SN-TN | VS34-V5             | 48 x 60   | CR0120018RT4        | CR0120018GT4             | 48 x 48   |

**Gewe**



A7431100



A7461100



A7671100

**TEC**

| Code     | Description                                                                          | Size (mm)      |
|----------|--------------------------------------------------------------------------------------|----------------|
| A7431100 | Voltmeter switch 3 phase 16A phase to phase measurement. O, RS, ST, TR               | 48 x 48 x 50.5 |
| A7461100 | Voltmeter switch 3 phase 16A phase to neutral measurement. RN, SN, TN, O, TR, ST, RS | 48 x 48 x 60.5 |
| A7671100 | Ammeter switch 3 phase 16A. O, R, S, T                                               | 48 x 48 x 50.5 |

## DIN AMMETER & VOLTMETERS

Size: All 2 DIN Module



RCO-1218D



RCO-1222D

### DIN AC Ammeters

| Type | Code          | Description               |
|------|---------------|---------------------------|
| 5A   | <b>SQD-5A</b> | Meter without Scale Plate |
| 1A   | <b>SQD-1A</b> | Meter without Scale Plate |

### Scale Plates

SQDSP-5/\*, 10/\*, 15/\*, 20/\*, 25/\*, 30/\*, 40/\*, 60/\*, 80/\*, 100/\*, 150/\*, 200/\*, 250/\*, 300/\*, 400/\*, 500/\*

\*Replace with '5A' for 5A CT Ratio or '1A' for 1A CT Ratio

| DIN AC Voltmeters |                   | DIN DC Voltmeters |                   |
|-------------------|-------------------|-------------------|-------------------|
| Type              | Code              | Type              | Code              |
| 150V              | <b>SQD-150VAC</b> | 15VDC             | <b>SQD-15VDC</b>  |
| 300V              | <b>SQD-300VAC</b> | 30VDC             | <b>SQD-30VDC</b>  |
| 500V              | <b>SQD-500VAC</b> | 50VDC             | <b>SQD-50VDC</b>  |
|                   |                   | 150VDC            | <b>SQD-150VDC</b> |

| DIN AC Ammeters Direct |                  | DIN DC Ammeters Direct  |                     |
|------------------------|------------------|-------------------------|---------------------|
| Type                   | Code             | Type                    | Code                |
| 1A                     | <b>SQD-1AAC</b>  | 5A                      | <b>SQD-5ADC</b>     |
| 5A                     | <b>SQD-5AAC</b>  | 10A                     | <b>SQD-10ADC</b>    |
| 10A                    | <b>SQD-10AAC</b> | 15A                     | <b>SQD-15ADC</b>    |
| 15A                    | <b>SQD-15AAC</b> | 20A                     | <b>SQD-20ADC</b>    |
| 20A                    | <b>SQD-20AAC</b> | 25A                     | <b>SQD-25ADC</b>    |
| 25A                    | <b>SQD-25AAC</b> | 30A                     | <b>SQD-30ADC</b>    |
| 30A                    | <b>SQD-30AAC</b> | 4-20mA (0 - 100% Scale) | <b>SQD-20MA/100</b> |
|                        |                  | 4-20mA (0 - 10% Scale)  | <b>SQD-20MA/10</b>  |

### Frequency Meter

| Code               | Range   | Volts |
|--------------------|---------|-------|
| <b>SQD-45/65HZ</b> | 45-65Hz | 230V  |

### DIN Mount Ammeters & Voltmeter Selector Switches

| Code             | Description                                        |
|------------------|----------------------------------------------------|
| <b>RCO-1218D</b> | Voltmeter selector switch 7 position 3 Phase + N   |
| <b>RCO-1222D</b> | Ammeter selector switch for 3CT's: Off, L1, L2, L3 |

**H**

## DIGITAL DIN METERS



|             | AC Ammeter Direct                                                                                                       | AC Voltmeter     | Frequency                                  |
|-------------|-------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------------------|
| <b>Code</b> | <b>DM-999AAC</b>                                                                                                        | <b>DM-600VAC</b> | <b>DM-HZ</b>                               |
| Range       | C/T Ratio:<br>15/5, 25/5, 40/5, 60/5, 99.9/5,<br>150/5, 250/5, 400/5,<br>600/5 & 999/5A<br>• Selectable by DIP switches | 0 - 600VAC       | 1 - 199Hz<br>Input Voltage:<br>40 - 600VAC |
| Accuracy    | 0.5%                                                                                                                    |                  |                                            |
| Supply      | 110/230VAC                                                                                                              |                  |                                            |
|             | DC Ammeter                                                                                                              | DC Voltmeter     |                                            |
| <b>Code</b> | <b>DM-999ADC</b>                                                                                                        | <b>DM-100VDC</b> | <b>DM-300VDC</b>                           |
| Range       | 15A, 25A, 40A, 60A, 99.9A,<br>150A, 250A, 400A, 600A,<br>999A/60mV<br>• Selectable by DIP switches                      | 0 - 100VDC       | 0 - 300VDC                                 |
| Supply      | 230VAC                                                                                                                  |                  |                                            |

## DIGITAL PANEL AMMETERS & VOLTMETERS

|                                           | LED Ammeter 1Ph                                                                   | LCD Ammeter 1Ph                                                                   |                                                                                    | LCD Ammeter 3Ph+N                                                                   |
|-------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Accuracy: 0.5%<br>True RMS<br>Measurement |  |  |  |  |
| <b>Code</b>                               | <b>MA12-CE-*</b>                                                                  | <b>MA201-*</b>                                                                    | <b>MA501-*</b>                                                                     | <b>MA2301-*</b>                                                                     |
| Size/Cut-Out                              | 46 x 96mm / 48 x 92mm                                                             | 72mm <sup>2</sup> / 67.5mm <sup>2</sup>                                           | 48mm <sup>2</sup> / 46.5mm <sup>2</sup>                                            | 72mm <sup>2</sup> / 67.5mm <sup>2</sup>                                             |
| Display                                   | 4 Digit, 7 Segment LED                                                            | 4 Digit, LCD, Backlit + Bargraph                                                  | 4 Digit, LCD, Backlit + Bargraph                                                   | 4 Digit, LCD, Backlit + Bargraph                                                    |
| Display Range                             | 0 - 4960A                                                                         | 0 - 6200A                                                                         | 0 - 6200A                                                                          | 0 - 6200A                                                                           |
| Resolution                                | 0.001, 0.01, 0.1, 1A (CT dependant)                                               | 0.001, 0.01, 0.1, 1A (CT dependant)                                               | 0.001, 0.01, 0.1, 1A (CT dependant)                                                | 0.001, 0.01, 0.1, 1A (CT dependant)                                                 |
| Input Range                               | 50mA to 5A AC                                                                     | 50mA to 5A AC                                                                     | 50mA to 5A AC                                                                      | 50mA to 5A AC                                                                       |

\* Add Supply Voltage to code: **115V** or **230V**

|                                                            | LED Voltmeter 1Ph                                                                 | LCD Voltmeter 1Ph                                                                  | LCD Voltmeter 3Ph+N                                                                 |
|------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Accuracy: 0.5%<br>of full scale<br>True RMS<br>Measurement |  |  |  |
| <b>Code</b>                                                | <b>MV15-CE-*</b>                                                                  | <b>MV507-*</b>                                                                     | <b>MV2307-*</b>                                                                     |
| Size/Cut-Out                                               | 48 x 96mm / 46 x 92mm                                                             | 48mm <sup>2</sup> / 46.5mm <sup>2</sup>                                            | 72mm <sup>2</sup> / 67.5mm <sup>2</sup>                                             |
| Display                                                    | 3 Digit, 7 Segment LED                                                            | 3 Digit, LCD + Bargraph                                                            | 3 Digit, LCD + Bargraph                                                             |
| Display Range                                              | 0 - 516 VAC                                                                       | 0 - 516 VAC                                                                        | 0 - 516 VAC                                                                         |
| Resolution                                                 | 1V                                                                                | 1V                                                                                 | 1V                                                                                  |
| Input Range                                                | 50 - 480 VAC                                                                      | 50 - 480 VAC                                                                       | 50 - 480 VAC                                                                        |

\* Add Supply Voltage to code: **115V** or **230V**

## Ø22mm HOLE MOUNT PANEL METERS

|                    | Voltage Display                                                                     |                                                                                     | AC Current Display                                                                   |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 22mm Hole Mounting |  |  |  |  |
| Code               | AD16-22VS-*-**                                                                      | AD16-22VM-*-**                                                                      | AD16-22AS-A-**                                                                       | AD16-22AM-A-**                                                                        |
| Face Size          | 28mm Square                                                                         | 28mm Round                                                                          | 28mm Square                                                                          | 28mm Round                                                                            |
| Measurement        | 50-450VAC / 12-60VDC                                                                |                                                                                     | 0 - 100A, (c/w CT)                                                                   |                                                                                       |
| Supply Voltage     | *Add Supply Voltage to Code: <b>A</b> (50-450VAC), <b>D</b> (5-60VDC)               |                                                                                     |                                                                                      |                                                                                       |

\*\*Add Colour to Code: ● **R**(Red), ● **G**(Green), ● **Y**(Yellow), ○ **W**(White), ● **B**(Blue)

|                | AC Frequency Display                                                                |                                                                                     | AC Voltage & Current Display                                                         |                                                                                       | AC Voltage, Current & Frequency Display                                               |
|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                |  |  |  |  |  |
| <b>Code</b>    | <b>AD16-22HZS-*</b>                                                                 | <b>AD16-22HZM-*</b>                                                                 | <b>AD16-22VAS-*</b>                                                                  | <b>AD16-22VAM-*</b>                                                                   | <b>AD16-22VAHZS-*</b>                                                                 |
| Face Size      | 28mm Square                                                                         | 28mm Round                                                                          | 28mm Square                                                                          | 28mm Round                                                                            | 32mm                                                                                  |
| Measurement    | 45 - 90 Hz                                                                          |                                                                                     | 50-500VAC / 0-100A, (c/w CT)                                                         |                                                                                       | 500-500V / 0-100A (c/w CT) / 0-80Hz                                                   |
| Supply Voltage | 50-450VAC                                                                           |                                                                                     | 50-500VAC                                                                            |                                                                                       | 50-500VCA                                                                             |

\* Add Colour to Code: ● **R**(Red), ● **G**(Green), ● **Y**(Yellow), ○ **W**(White), ● **B**(Blue)

## DIGITAL PANEL METERS

|                                            | AC Voltage Meter                                                                  | AC Ampere Meter                                                                                                                                     | DC Voltage Meter                                                                  | DC Ampere Meter                                                                                                                                                               | Frequency Meter                                                                     |
|--------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Size:<br>48 x 48mm<br>Cutout:<br>45 x 45mm |  |                                                                    |  |                                                                                            |  |
| <b>Code</b>                                | <b>DHC8P-VAC</b>                                                                  | <b>DHC8P-AAC</b>                                                                                                                                    | <b>DHC8P-VDC*</b>                                                                 | <b>DHC8P-ADC * *</b>                                                                                                                                                          | <b>DHC8P-HZ</b>                                                                     |
| Display                                    | 999 (3 digit) 0.56 inch LED                                                       | 999 (3 digit) 0.56 inch LED                                                                                                                         | 999 (3 digit) 0.56 inch LED                                                       | 999 (3 digit) 0.56 inch LED                                                                                                                                                   | 3 digit 0.56 inch LED                                                               |
| Power Supply                               | 100-240VAC/ DC                                                                    | 100-240VAC/ DC                                                                                                                                      | 100-240VAC/ DC or<br>*12 - 60VDC                                                  | 100-240VAC/ DC or<br>*12 - 60VDC (Shunt 60mV)                                                                                                                                 | 100-240VAC/ DC                                                                      |
| Input                                      | Direct: 600V, 99.9V,<br>9.99V, Selectable                                         | CT(5A), 5A, 10A, 15A, 20A,<br>30A, 40A, 50A,<br>60A, 70A, 80A, 90A, 100A,<br>200A, 300A, 400A, 500A,<br>600A, 700A, 800A, 900A,<br>999A, Selectable | Direct: 600V, 99.9V,<br>9.99V selectable                                          | *Shunt (50mV, 60mV, 150mV):<br>5A, 10A, 15A, 20A, 30A, 40A,<br>50A, 60A, 70A, 80A, 90A, 100A,<br>150A, 200A, 300A, 400A, 500A,<br>600A, 700A, 800A, 900A, 999A,<br>Selectable | 0.2-400Hz                                                                           |
| Accuracy                                   | ≤0.5% ± 1 digit (at 25°C)                                                         | ≤0.5% ± 1 digit (at 25°C)                                                                                                                           | ≤0.5% ± 1 digit (at 25°C)                                                         | ≤0.5% ± 1 digit (at 25°C)                                                                                                                                                     | ≤0.2% ± 1 digit (at 25°C)                                                           |

|                                            | AC Voltage Meter                                                                   | AC Ampere Meter                                                                                            | DC Voltage Meter                                                                    | DC Ampere Meter                                                                                                      |
|--------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Size:<br>72 x 72mm<br>Cutout:<br>68 x 60mm |  |                          |  |                                  |
| <b>Code</b>                                | <b>DHC7P-VAC</b>                                                                   | <b>DHC7P-AAC</b>                                                                                           | <b>DHC7P-VDC*</b>                                                                   | <b>DHC7P-ADC * *</b>                                                                                                 |
| Display                                    | 1999 (3½ digit) 0.8 inch LED                                                       | 1999 (3½ digit) 0.8 inch LED                                                                               | 1999 (3½ digit) 0.8 inch LED                                                        | 1999 (3½ digit) 0.8 inch LED                                                                                         |
| Power Supply                               | AC/DC: 100~240V≤4VA                                                                | AC/DC: 100~240V≤4VA                                                                                        | 100-240VAC/ DC or<br>*12 - 60VDC                                                    | 100-240VAC/ DC or<br>*12 - 60VDC (Shunt 60mV)                                                                        |
| Input                                      | Direct: 600V, 199.9V, 19.9V,<br>1.999V, Selectable<br>≤0.5% ± 1 digit (at 25°C)    | Direct: 5A<br>CT(5A), 10A, 15A, 20A, 50A,<br>100A, 150A, 200A, 500A,<br>1000A, 1500A, 1999A,<br>Selectable | Direct: 600V, 199.9V, 19.99V,<br>1.999V, Selectable                                 | *Shunt (50mV, 60mV, 150mV):<br>5A, 10A, 15A, 20A, 50A, 100A,<br>150A, 200A, 500A, 1000A,<br>1500A, 1999A, Selectable |
| Accuracy                                   | ≤0.5% ± 1 digit (at 25°C)                                                          | ≤0.5% ± 1 digit (at 25°C)                                                                                  | ≤0.5% ± 1 digit (at 25°C)                                                           | ≤0.5% ± 1 digit (at 25°C)                                                                                            |

|                                            | AC Voltage Meter                                                                    | AC Ampere Meter                                                                                                                                                                        | DC Voltage Meter                                                                     | DC Ampere Meter                                                                                         | Frequency Meter                                                                       |
|--------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Size:<br>48 x 96mm<br>Cutout:<br>45 x 92mm |  |                                                                                                                                                                                        |  |                                                                                                         |  |
| <b>Code</b>                                | <b>DHC3P-VAC</b>                                                                    | <b>DHC3P-AAC</b>                                                                                                                                                                       | <b>DHC3P-VDC</b>                                                                     | <b>DHC3P-ADC*</b>                                                                                       | <b>DHC3P-HZ</b>                                                                       |
| Display Digit                              | 1999 (3½ digit) 0.56" LED                                                           | 1999 (3½ digit) 0.56" LED                                                                                                                                                              | 1999 (3½ digit) 0.56" LED                                                            | 1999 (3½ digit) 0.56" LED                                                                               | 3 digit 0.56" LED                                                                     |
| Power Supply                               | AC/DC: 100~240V≤4VA                                                                 | AC/DC: 100~240V≤4VA                                                                                                                                                                    | 100-240VAC/ DC                                                                       | 100-240VAC/ DC                                                                                          | AC/DC: 100~240V≤4VA                                                                   |
| Input                                      | Direct: 600V, 199.9V,<br>19.99V, 1.999V,<br>Selectable                              | Direct (5A) CT(5A): 5A,<br>10A, 15A, 20A, 30A, 40A,<br>50A, 60A, 70A, 80A, 90A,<br>100A, 150A, 200A, 300A,<br>400A, 500A, 600A, 700A,<br>800A, 900A, 1000A,<br>1500A, 1999A selectable | Direct: 600V, 199.9V,<br>19.99V, 1.999V, Selectable                                  | *Shunt (50mV): 5A, 10A,<br>15A, 20A, 50A, 100A, 150A,<br>200A, 500A, 1000A, 1500A,<br>1999A, Selectable | 0.2-400Hz                                                                             |
| Accuracy                                   | ≤0.5% ± 1 digit (at 25°C)                                                           | ≤0.5% ± 1 digit (at 25°C)                                                                                                                                                              | ≤0.5% ± 1 digit (at 25°C)                                                            | ≤0.5% ± 1 digit (at 25°C)                                                                               | ≤0.1% ± 1 digit (at 25°C)                                                             |

## DIGITAL AMMETERS & VOLTMETERS



EPM-4D-48



EVM-3S-48



EPM-4C-72



EVM-3C-96



EVM-R3C

| Type                                                                  | Supply Voltage   | Code 48 x 96                     | Code 72 x 72                     | Code 96 x 96                     | Code DIN Mount 3m            |
|-----------------------------------------------------------------------|------------------|----------------------------------|----------------------------------|----------------------------------|------------------------------|
| Voltmeter 1-Phase<br>10-600VAC                                        | 230VAC<br>110VAC | EVM-3-48 230V<br>EVM-3-48 110V   | EVM-3-72 230V<br>EVM-3-72 110V   | EVM-3-96 230V<br>EVM-3-96 110V   | EVM-R3 230V<br>EVM-R3 110V   |
| Voltmeter 1-Phase with<br>contact output*                             | 230VAC<br>110VAC | EVM-3C-48 230V<br>EVM-3C-48 110V | EVM-3C-72 230V<br>EVM-3C-72 110V | EVM-3C-96 230V<br>EVM-3C-96 110V | EVM-R3C 230V<br>EVM-R3C 110V |
| 3 Phase Voltmeter (single display)<br>10-600VAC (L-L) 10-300VAC (L-N) | 230VAC<br>110VAC | EVM-3S-48 230V<br>EVM-3S-48 110V | EVM-3S-72 230V<br>EVM-3S-72 110V | EVM-3S-96 230V<br>EVM-3S-96 110V | EVM-R3S 230V<br>EVM-R3S 110V |
| Ammeter 1-Phase                                                       | 230VAC<br>110VAC | EPM-4D-48 230V<br>EPM-4D-48 110V | EPM-4D-72 230V<br>EPM-4D-72 110V | EPM-4D-96 230V<br>EPM-4D-96 110V | EPM-R4D 230V<br>EPM-R4D 110V |
| Ammeter 1-Phase with<br>contact output*                               | 230VAC<br>110VAC | EPM-4C-48 230V<br>EPM-4C-48 110V | EPM-4C-72 230V<br>EPM-4C-72 110V | EPM-4C-96 230V<br>EPM-4C-96 110V | EPM-R4C 230V<br>EPM-R4C 110V |

- True RMS measurement
- Non-flammable enclosure
- Programmable current transformer ratio (5-10,000/5A)

- Ammeters are CT-Driven with 5A ratio
- Class 1%

\* Meters have a set point and contact output (1NO, 5A). Can be programmed for over or under voltage or current



EPM-34



EVM-35

### 3 Phase Ammeters & Voltmeters - 96 x 96mm

| Code   | Description                                                                                                                                                                     |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EPM-34 | 3 Phase Programmable Ammeter. CT...../5A and ...../1A. Dual Demand Function (Time: 0-60sec or 0-60min for Max Current Demand Display). Class 0.5%. Supply Volts: 24 - 250VAC/DC |
| EVM-35 | 3 Phase Voltmeter. L-L & L-N. Class 0.5% Measurement Voltage: 0-600VAC. Supply Volts: 24 - 250VAC/DC                                                                            |

## POWER FACTOR METER



### Digital Power Factor Meter

| Code     | Size    | Operating Voltage | Accuracy                  | CT-Ratio | Range     | Display             |
|----------|---------|-------------------|---------------------------|----------|-----------|---------------------|
| ECR-3-72 | 72 x 72 | 230VAC $\pm 10\%$ | $\pm 2^\circ \pm 1$ digit | .../5A   | 0.00-0.99 | 4-digit 14.2mm high |
| ECR-3-96 | 96 x 96 | 230VAC $\pm 10\%$ | $\pm 2^\circ \pm 1$ digit | .../5A   | 0.00-0.99 | 4-digit 14.2mm high |

- Inductive or capacitive load indication
- Non-flammable enclosure
- Flush mounting with rear terminals

## DIGITAL DC PANEL METERS



DCV-10



DCA-10

### Digital DC Voltmeters - 48 x 96mm

| Code    | Input/Measurement | Supply Voltage | Accuracy           | Sampling Rate |
|---------|-------------------|----------------|--------------------|---------------|
| DCV-10* | 0 - 200VDC        | 85 - 265VAC/DC | 0.5% $\pm 1$ Digit | 1 - 600s      |
| DCV-11* | 0 - 50VDC         | 10 - 56VAC/DC  | 0.5% $\pm 1$ Digit | 1 - 600s      |

### Digital DC Ammeters - 48 x 96mm

| Code    | Input/Measurement                              | Supply Voltage | Accuracy           | Sampling Rate |
|---------|------------------------------------------------|----------------|--------------------|---------------|
| DCA-10* | 0 - 10 000A Shunt Connected*<br>(50mV - 150mV) | 85 - 265VAC/DC | 0.5% $\pm 1$ Digit | 1 - 600s      |
| DCA-11* | 0 - 10 000A Shunt Connected*<br>(50mV - 150mV) | 10 - 65VAC/DC  | 0.5% $\pm 1$ Digit | 1 - 600s      |

\*Add C to code for relay contact output.

\* For DC Shunts see page 11.5

## DIGITAL MULTIMETERS 3 PHASE



Suitable for 3-Phase  
400VAC Applications

**NEW**



EMM-3VA/U3VA



EMM-UD3VA

| Code                          | EMM-04CS      | EMM-04C | EMM-04 | EMM-3VA        | EMM-U3VA | EMM-UD3VA |
|-------------------------------|---------------|---------|--------|----------------|----------|-----------|
| Size                          | 96 x 96       |         |        | 96 x 96        | 72 x 72  | DIN (3M)  |
| 3PH Voltage (L-L / L-N)       | ✓             | ✓       | ✓      | ✓              | ✓        | ✓         |
| 3PH Current                   | ✓             | ✓       | ✓      | ✓              | ✓        | ✓         |
| Cos Ø                         | ✓             | ✓       | ✓      | -              | -        | -         |
| Hz (Frequency)                | ✓             | ✓       | ✓      | ✓              | ✓        | ✓         |
| I neutral                     | ✓             | ✓       | ✓      | -              | -        | -         |
| Max Demand                    | ✓             | ✓       | ✓      | ✓              | ✓        | ✓         |
| Max. Values Display           | ✓             | ✓       | ✓      | ✓              | ✓        | ✓         |
| Min. Values Display           | ✓             | ✓       | ✓      | ✓              | ✓        | ✓         |
| Alarm Contact (5A)            | ✓             | ✓       | -      | -              | -        | -         |
| Under/Over Voltage Protection | ✓             | ✓       | -      | -              | -        | -         |
| Under/Over Current Protection | ✓             | ✓       | -      | -              | -        | -         |
| Under/Over Frequency          | ✓             | ✓       | -      | -              | -        | -         |
| Protection                    | ✓             | ✓       | -      | -              | -        | -         |
| Phase sequence Protection     | ✓             | ✓       | -      | -              | -        | -         |
| Resettable / Total Run Hour   | ✓             | ✓       | ✓      | -              | -        | -         |
| 5A CT-Driven                  | ✓             | ✓       | ✓      | ✓              | ✓        | ✓         |
| Flush Mount                   | ✓             | ✓       | ✓      | ✓              | ✓        | -         |
| Modbus(RS485) Communication   | ✓             | -       | -      | -              | -        | -         |
| Supply Voltage                | 100-270VAC/DC |         |        | 220-240V ± 20% |          |           |

## DIGITAL PANEL METERS



Creating Best Value



### Multi-Function Meter (Size 96 x 96mm)

| Code              | VAF36A-*                                                                                                                                                                                                         |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display           | LCD with backlight. 3 Rows of 3 digits, Bar Graph                                                                                                                                                                |
| Input Type        | 3Ph 3 wire, 3Ph 4 wire                                                                                                                                                                                           |
| Input Voltage     | 11-300VAC Phase to Neutral, 19-519VAC Phase to Phase                                                                                                                                                             |
| Frequency         | 50 or 60Hz                                                                                                                                                                                                       |
| Resolution        | Current: 0.01, 0.1, 1 A/kA. Voltage: 0.1 V / kV ( Depending on CT) RPM: 0.1 Run Hour: ± 0.1 hr                                                                                                                   |
| Accuracy          | <ul style="list-style-type: none"> <li>Voltage: ± 0.5% of F.S. ± 2 Digit</li> <li>Current: ± 1% of F.S. ± 2 Digit</li> <li>Frequency: ± 0.1Hz ± 1 Digit</li> <li>Run Hour: ± 1%.</li> <li>RPM: ± 0.5%</li> </ul> |
| CT Primary        | 5A to 10 000A (Programmable for any value)                                                                                                                                                                       |
| CT Secondary      | 5A fixed (External CT must be connected for current >5A)                                                                                                                                                         |
| PT Primary        | 100V - 500kV (Programmable for any value)                                                                                                                                                                        |
| PT Secondary      | 100V - 500V (L-L)                                                                                                                                                                                                |
| Supply Voltage    | 230VAC, ± 20% (50/60Hz) / 110VAC, ± 20% (50/60Hz)                                                                                                                                                                |
| Display Scrolling | Automatic / Manual                                                                                                                                                                                               |

\* Add Supply Voltage to code: **115V, 230V**

### Functions

- 3Ph Voltage (L-N / L-L - Individual or Average)
- 3Ph Current (Individual or Average)
- Frequency
- Run Hour ( Hour - Mins)
- RPM
- Programmable CT Primary, PT Primary & PT Secondary

## DIGITAL PANEL METERS

DPM48M



DPM42RPM



DPM48TOT



### Digital Panel Meters 48 x 96 - Now with set point option

| Code      | Type                 | Digit | Input Range                                                                               | Display  |
|-----------|----------------------|-------|-------------------------------------------------------------------------------------------|----------|
| DPM48M*   | Process <sup>1</sup> | 3.5   | 4 - 20mA <sup>1</sup> Specify calibration settings required                               |          |
| DPM48M4*  | Process <sup>1</sup> | 4     | 4 - 20mA <sup>1</sup> Specify calibration settings required                               |          |
| DPM48M-1* | %                    | 3.5   | 4-20mA                                                                                    | 0 - 100% |
| DPM48RPM  | RPM                  | 4     | NAMUR auto ranging 6 to 6000 rpm (M/m)<br>2 or 3 wire proximity, contact or voltage input |          |
| DPM48TOT* | Totaliser            | 6     | 6 Digit Up/Down Totaliser                                                                 |          |

\*Specify supply voltage: AC – 24V, 110V or 230V, DC – 12V, 24V or 110V.

For 110VDC or 220VDC power supply add Code **DPM-2**

Add suffix **-S** for set point and if for alarm purposes, specify if High or Low

### Programmable DC Ammeter or Process Meter • Size 48 x 96mm

- Decimal point selectable by DIP SW 1999, 19.99, 199.9
- Display reading set by user. (Trim Pot) • Accuracy CL 0.5



| Code        | Digit | DC Input                                            | *Display                                                                                      |
|-------------|-------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 2RCTD48.4D* | 4     | <div> 1mA, 5mA,<br/>2mA, 10mA<br/>4-20mA, 5A </div> | V, A, %, KA, Hz,<br>C, RPM, kW, M/MIN, BAR,<br>m/sec, kg<br>*Labels supplied to suit function |

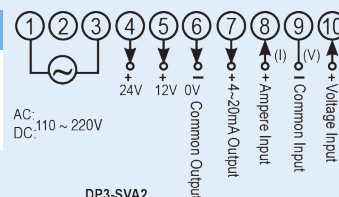
\*Add voltage to code: 230VAC, 110VAC, 24VDC, 24VAC

### Programmable DC Ammeter or Process Meter

- Size 48 x 96mm • Accuracy CL 0.5 • Decimal point & range adjustable



| Code       | Description                                                                                                  |
|------------|--------------------------------------------------------------------------------------------------------------|
| DHC3P-SVA1 | Input: 4-20mA, 0-20mA, 0-1V, 0-5V, 1-5V, 0-10V, 0-200mV<br>Supply: 110-240VAC/DC 2.5VA<br>Output: 0-12-24VDC |
| DHC3P-SVA2 | As DHC3P-SVA1 with 4-20mA<br>Re-transmission output                                                          |
| DHC3P-SVA3 | As DHC3P-SVA1 with high & low relay alarm output. N/O.                                                       |



### Universal Digital Display - 100mm



Size 400(L) x 195(H) x 80(D)mm  
Supply 230VAC

| Code     | Input                                                 | 4-Digit Display |
|----------|-------------------------------------------------------|-----------------|
| DPM100-A | 4 - 20mA                                              | 0 - 100%        |
| DPM100-V | 0 - 600VAC                                            | 0 - 600VAC      |
| DPM100-C | 24hr clock (c/w optional ambient temperature display) | -               |

Standard units supplied powder coated white. Various finishes and input / display options are available (e.g. 304 stainless steel 6-Digit display). Please contact our sales team with your requirements.  
Input Options: 4-20mA, 0-10VDC, 0-600VAC, 0-600VDC, J/K/PT100 Probe, NAMUR/NPN/PNP Proximity.

### Programmable AC Ammeters or AC Voltmeters

| Size (mm)           | 48 x 48             | 72 x 72             |
|---------------------|---------------------|---------------------|
|                     |                     |                     |
| <b>Code</b>         | <b>ID48EA-G</b>     | <b>ID72EA-G</b>     |
| Input Range Amps AC | 0-5A <sup>(1)</sup> | 0-5A <sup>(1)</sup> |
| Volts AC            | 0-600V              | 0-600V              |
| Display Digits      | 3 + Zero            | 3 + Zero            |
| LED Height          | 10mm                | 14mm                |
| Supply              | 115/230V            | 115/230V            |

### Features

- Accuracy: CL 0.5
- Continuous O/L: 2In, 1.2Vn
- Instant O/L: 10In, 2Vn
- Refresh: 2 per second
- Over Range: Flashing LED
- Power Supply: 3VA galvanic Isolation
- Fast on Terminals

<sup>(1)</sup>Programmable Set Point & CT Ratios

|      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|
| 15.0 | 20.0 | 25.0 | 40.0 | 50.0 | 60.0 | 80.0 | 99.9 |
| 150  | 200  | 250  | 400  | 500  | 600  | 800  | 999  |
| 1500 | 2000 | 2500 | 4000 | 5000 | 6000 | 8000 | 9990 |

## EARTH FAULT / LEAKAGE RELAYS

**NEWLEC**  
MOTOR PROTECTION & CONTROL TECHNOLOGY



Standard



ELX

**GA Plus / ELX Earth Leakage/Fault Protection Relays** - A unique feature of the GA Plus is the integrated ability to distinguish between Earth leakage and Earth fault routing trips to incoming circuit breaker rather than the fault level limited main circuit contactor. Pioneers of the harmonic suppression circuit, the GA Plus Earth Leakage protection relay enables more sensitive earth leakage protection of high kilowatt motors started direct-on-line as well as variable speed drive applications without nuisance tripping. The GA Plus comes fitted with an integrated earth leakage test pushbutton connected to the test winding on the CBCT allowing one to test functionality of GA Plus and trip circuits. A latched 'contactor trip' change-over contact and only be reset by pressing the control panel mounted pushbutton.

| Code          | Type     | Failsafe | Main Trip Contact | Supply Voltage | Panel Cut-Out (mm) |
|---------------|----------|----------|-------------------|----------------|--------------------|
| GA0-PLUS*-000 | Standard | No       | Non-Latching      | 110/220VAC     | 134 x 74           |
| GA0-PLUS*-00D | Standard | No       | Non-Latching      | 380/525VAC     | 134 x 74           |
| GAA-PLUS*-000 | ELX      | No       | Non-Latching      | 110/220VAC     | 71 x 94            |
| GAA-PLUS*-00D | ELX      | No       | Non-Latching      | 380/525VAC     | 71 x 94            |

\*Add Leakage Current to Code: **0030**(30mA), **0250**(250mA), **0375**(375mA), **0500**(500mA), **1000**(1000mA)

### Features

- Non fail-safe (Fail safe - Available on request)
- Earth Leakage Protection
- Earth Fault Protection
- Non-latching trip contact (Latching trip contact - Available on request)

- Instantaneous or IDMT curve selection
- Harmonic Suppression
- Earth Leakage Test Pushbutton
- ELX - Same features as standard made to fit 71 x 94mm cutout

### Contact Rating

Main Trip Contact: 6A@230VAC  
3A@525VAC

\* **Note: See below for Core Balance CT's**

### Earth Fault Relays

|                                                                                                                                                                                       |                                                                                     |                                                                                     |                                                                                                                                             |                                                                                       |                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------|
|                                                                                                                                                                                       |  |  |                                                         |  |                                                |
| Type                                                                                                                                                                                  | DIN Mount 70mm                                                                      | Base Mount Internal CT                                                              | Panel Mount 96 x 96                                                                                                                         |                                                                                       | Panel Mount 96 x 96 4 Digit Display            |
| Code                                                                                                                                                                                  | ELR-3C†                                                                             | Ø 35 mm ELRC-1/35<br>Ø 60 mm ELRC-1/60<br>Ø 80 mm ELRC-1/80<br>Ø 110 mm ELRC-1/110  | ELR-1†                                                                                                                                      | *ELR-M2S†                                                                             | ELR-8V†                                        |
|                                                                                                                                                                                       |                                                                                     |                                                                                     | *With mechanical trip indicator and alarm relay                                                                                             |                                                                                       | With mechanical trip indicator and alarm relay |
| Output Relay                                                                                                                                                                          | Trip only                                                                           | Trip only                                                                           | Trip only                                                                                                                                   | Trip & Alarm                                                                          | Trip Alarm                                     |
| Supply Volts                                                                                                                                                                          | 110VAC/DC, 230/400VAC                                                               |                                                                                     |                                                                                                                                             |                                                                                       | 110/230/400VAC or 110VDC or 24-48VAC/DC        |
| <ul style="list-style-type: none"><li>• Selectable current threshold adjustable 0.025mA to 25A</li><li>• Trip delay adjustable 0.025 to 5 seconds</li><li>• Test pushbutton</li></ul> |                                                                                     |                                                                                     | <ul style="list-style-type: none"><li>• Reset pushbutton</li><li>• Relay output 5A @ 250VAC</li><li>• Standards IEC 255, IEC947.7</li></ul> |                                                                                       |                                                |
|                                                                                                                                                                                       |                                                                                     |                                                                                     | For motor protection, 75kW and above, time delay is always required.<br>† Select one CT below for use with one relay.                       |                                                                                       |                                                |

### Toroidal Transformers

- supplied separate



| Closed   | Ø     | Split-Type |
|----------|-------|------------|
| CT-1/35  | 35mm  | -          |
| CT-1/60  | 60mm  | CTA-1/60   |
| CT-1/80  | 80mm  | -          |
| CT-1/110 | 110mm | CTA-1/110  |
| CT-1/160 | 160mm | CTA-1/160  |
| CT-1/210 | 210mm | CTA-1/210  |



The toroidal current transformer to be coupled to any of the above (†) marked relays. Has two separate windings: Test and monitor.

### Earth Leakage Test Unit



Simulates earth leakage current. Suitable for use with any earth leakage device.

| Code                        | FPR10*            |
|-----------------------------|-------------------|
| * Add Test Current to Code: |                   |
| 01 (30mA/110VAC)            | 06 (30mA/230VAC)  |
| 02 (250mA/110VAC)           | 07 (250mA/230VAC) |
| 03 (375mA/110VAC)           | 08 (375mA/230VAC) |

# ELECTRICAL MULTIFUNCTION ANALYSERS



EMA-96



EMA-90



EMA-90H

## Multifunction Meters



Input Range: 500V max

|                                                                                                             | Size | 96 x 96                     |        |        | 96 x 96 |              |        |         |            | 72 x 72     |         |          | DIN (3m)   |                 |
|-------------------------------------------------------------------------------------------------------------|------|-----------------------------|--------|--------|---------|--------------|--------|---------|------------|-------------|---------|----------|------------|-----------------|
|                                                                                                             |      | Code                        | EMA-96 | EMA-90 | EMA-90H | EMM-4        | EMM-4H | EMM-4HP | EMM-4HP485 | EMM-4HP485A | EMM-U4H | EMM-U4HP | EMM-U4H485 | EMM-UD3H        |
| Voltage Inputs                                                                                              |      | Direct up to 750 Vmax or VT |        |        |         |              |        |         |            |             |         |          |            |                 |
| Voltage $V$ ( $\Sigma$ , L1, L2, L3, L12, L23, L31)                                                         |      | ✓                           | ✓      | ✓      | ✓       | ✓            | ✓      | ✓       | ✓          | ✓           | ✓       | ✓        | ✓          | ✓               |
| Current / ( $\Sigma$ , L1, L2, L3)                                                                          |      | ✓                           | ✓      | ✓      | ✓       | ✓            | ✓      | ✓       | ✓          | ✓           | ✓       | ✓        | ✓          | ✓               |
| Neutral Current ( $I_n$ )                                                                                   |      | ✓                           | ✓      | ✓      |         |              |        |         |            |             |         |          |            |                 |
| Isolated Current Inputs (3 x 5A CT)                                                                         |      | ✓                           | ✓      | ✓      |         |              |        |         |            |             |         |          |            |                 |
| Power Factor $P.F.$ ( $\Sigma$ , L1, L2, L3)                                                                |      | ✓                           | ✓      | ✓      | ✓       | ✓            | ✓      | ✓       | ✓          | ✓           | ✓       | ✓        | ✓          | ✓               |
| Active Power $P$ ( $\Sigma$ , L1, L2, L3-average-max)                                                       |      | ✓                           | ✓      | ✓      | ✓       | ✓            | ✓      | ✓       | ✓          | ✓           | ✓       | ✓        | ✓          | ✓               |
| Reactive Power $Q$ ( $\Sigma$ , L1, L2, L3-average-max)                                                     |      | ✓                           | ✓      | ✓      | ✓       | ✓            | ✓      | ✓       | ✓          | ✓           | ✓       | ✓        | ✓          | ✓               |
| Apparent Power $S$ ( $\Sigma$ , L1, L2, L3-average-max)                                                     |      | ✓                           | ✓      | ✓      | ✓       | ✓            | ✓      | ✓       | ✓          | ✓           | ✓       | ✓        | ✓          | ✓               |
| Active & Reactive Energy Positive +Wh, +Varh ( $\Sigma$ , L1, L2, L3)                                       |      | ✓                           | ✓      | ✓      |         | ✓            | ✓      | ✓       | ✓          | ✓           | ✓       | ✓        | ✓          | ✓               |
| Active & Reactive Energy Negative +Wh, +Varh ( $\Sigma$ , L1, L2, L3)                                       |      | ✓                           | ✓      | ✓      |         | ✓            | ✓      | ✓       | ✓          | ✓           | ✓       | ✓        | ✓          | ✓               |
| Active & Reactive Energy subdivided in 4 time bands of 10 periods program (max 8 daily/hourly)              |      |                             |        | ✓      |         |              |        |         |            |             |         |          |            |                 |
| Frequency                                                                                                   |      | ✓                           | ✓      | ✓      | ✓       | ✓            | ✓      | ✓       | ✓          | ✓           | ✓       | ✓        | ✓          | ✓               |
| Total Harmonic Distortion THD In Volts (L1, L2, L3)                                                         |      | ✓                           | ✓      | ✓      |         |              |        |         |            |             |         |          |            |                 |
| % THD in current (L1, L2, L3)                                                                               |      | ✓                           | ✓      | ✓      |         |              |        |         |            |             |         |          |            |                 |
| Numerical Harmonic Analysis                                                                                 |      |                             |        | ✓      |         |              |        |         |            |             |         |          |            |                 |
| Graphic Harmonic Analysis visible directly on display                                                       |      |                             |        | ✓      |         |              |        |         |            |             |         |          |            |                 |
| Temperature & phase sequence                                                                                |      | ✓                           | ✓      | ✓      |         |              |        |         |            |             |         |          |            |                 |
| Additional Inputs Parameters                                                                                |      | ✓                           | ✓      | ✓      |         |              |        |         |            |             |         |          |            |                 |
| Internal Clock Calendar                                                                                     |      | ✓                           | ✓      | ✓      |         |              |        |         |            |             |         |          |            |                 |
| Graphic Visualisation                                                                                       |      |                             | ✓      | ✓      |         |              |        |         |            |             |         |          |            |                 |
| Maximum instantaneous values (I, $\Sigma P$ , $\Sigma S$ )                                                  |      | ✓                           | ✓      | ✓      | ✓       | ✓            | ✓      | ✓       | ✓          | ✓           | ✓       | ✓        | ✓          | ✓               |
| Average Values (avg) I1, I2, I3, $\Sigma P$ , $\Sigma Q$ , $\Sigma S$ , $\Sigma P.F$                        |      | ✓                           | ✓      | ✓      |         |              |        |         | ✓          |             |         |          |            |                 |
| Maximum Average Values (max. demand) I1avg, I2avg, I3avg                                                    |      | ✓                           | ✓      | ✓      | ✓       | ✓            | ✓      | ✓       | ✓          | ✓           | ✓       | ✓        | ✓          | ✓               |
| Maximum Average Values (max. demand) I1avg, I2avg, I3avg, $\Sigma P$ avg, $\Sigma S$ avg                    |      |                             |        |        | ✓       | ✓            | ✓      | ✓       | ✓          | ✓           | ✓       | ✓        | ✓          | ✓               |
| Maximum Average Values Forecast (max. demand forecast) ( $\Sigma P$ avg, $\Sigma Q$ avg, $\Sigma P.F$ .avg) |      |                             |        |        |         |              |        |         | ✓          |             |         |          |            |                 |
| Analogue Output 0/4-20mA                                                                                    |      |                             |        |        |         |              |        |         | ✓          |             |         |          |            |                 |
| Serial Outputs RS485/RS232                                                                                  |      | ✓                           | ✓      | ✓      |         |              |        | ✓       | ✓          |             |         | ✓        |            |                 |
| Communication Protocol ASCII                                                                                |      | ✓                           | ✓      | ✓      |         |              |        |         |            |             |         |          |            |                 |
| Communication Protocol MODBUS/RTU                                                                           |      | ✓                           | ✓      | ✓      |         |              |        | ✓       | ✓          |             |         | ✓        |            |                 |
| Communication Protocol PROFIBUS/DP (with external module)                                                   |      | ◆                           | ◆      | ◆      |         |              |        |         |            |             |         |          |            |                 |
| Digital outputs (for alarm max & min, re-emission energy pulse)                                             |      | 2                           | 2      | 2      |         |              | ✓      | ✓       | ✓          |             | ✓       |          | ✓          | ✓<br>Only Pulse |
| Digital inputs (per energy pulse counter or synchronisation)                                                |      | 2                           | 2      | 2      |         |              |        | ✓       | ✓          |             |         |          |            |                 |
| Internal Memory 128kb                                                                                       |      | ✓                           | ✓      | ✓      |         |              |        |         |            |             |         |          |            |                 |
| Max Demand P,Q,S                                                                                            |      | ✓ (P, Q)                    | ✓      | ✓      |         |              |        |         |            |             |         |          |            |                 |
| Optional Software                                                                                           |      | NRG-*                       |        |        |         |              |        |         |            |             |         |          |            |                 |
| Auxiliary Supply                                                                                            |      | 90-250VAC/DC                |        |        |         | 110/230/400V |        |         |            |             | 400V    |          | 400V       |                 |

✓ = Standard  
♦ = Optional

\* Supervision and control software type **NRG** for managing, from a PC, the data generated from **EMA** series analysers, **EMM** series multifunction meters or **EMC** series energy meters. The software is very intuitive and simple to use. \*Specify number of users with order: 2, 4, 8, 16, 32, 64, 128

## NETWORK ANALYSER - LED DISPLAY



Active Power  
Accuracy : Class 1  
CT-Driven : 1A/5A

**EMR-07**

**EMR-53**

**MPR-3**


| Measured Parameters                      | NEW | EMR-07        | NEW | EMR-07S | NEW | EMR-53 | NEW | EMR-53CS | MPR-32         | MPR-34S-11 |
|------------------------------------------|-----|---------------|-----|---------|-----|--------|-----|----------|----------------|------------|
| Voltages (L-N)(L-L)                      |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| Avg. Voltage Phase-Neutral (L-N)         |     | ✓             |     | ✓       |     | ✓      |     | ✓        | -              | -          |
| Avg. Voltage Phase-Phase (L-L)           |     | ✓             |     | ✓       |     | ✓      |     | ✓        | -              | -          |
| Phase Currents (IL)                      |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| Neutral Current (IN)                     |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| Total Current (ΣI)                       |     | ✓             |     | ✓       |     | ✓      |     | ✓        |                |            |
| Cosφ                                     |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| Frequency (Hz)                           |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| Power (P)(Q)(S)(ΣP)(ΣQ)(ΣS)              |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| Power Factor (PF)                        |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| Active Energy-Import (kWh/MWh)           |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| Active Energy-Export (kWh/MWh)           |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| Reactive Energy Inductive (kVarh/MVarh)  |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| Reactive Energy Capacitive (kVarh/MVarh) |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| Apparent Energy (kVAh/MVAh)              |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| Max / Min Values / Max Demand            |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| <b>Features</b>                          |     |               |     |         |     |        |     |          |                |            |
| %THD-I, THD-V                            |     | -             |     | -       |     | ✓      |     | ✓        | -              | ✓          |
| Individual Harmonics                     |     | -             |     | -       |     | 2-15   |     | 2-31     | -              | -          |
| Alarm Contact                            |     | -             |     | -       |     | -      |     | -        | -              | ✓          |
| Digital Input                            |     | 2             |     | 2       |     | 2      |     | 2        | -              | 1          |
| Digital Output                           |     | 2             |     | 2       |     | 2      |     | 2        | -              | 1          |
| Relay Output                             |     | -             |     | -       |     | -      |     | 2        | -              | -          |
| RS-485 Comm                              |     | -             |     | ✓       |     | -      |     | ✓        | -              | ✓          |
| Ethernet Modbus TCP                      |     | -             |     | -       |     | -      |     | -        | -              | -          |
| Analogue Output                          |     | -             |     | -       |     | -      |     | -        | -              | -          |
| Memory                                   |     | -             |     | 2MB     |     | -      |     | 2MB      | -              | -          |
| Real Time Clock                          |     | ✓             |     | ✓       |     | ✓      |     | ✓        | ✓              | ✓          |
| Current / Voltage Imbalance              |     | -             |     | -       |     | -      |     | -        | -              | -          |
| Digital Hour Counter                     |     | -             |     | ✓       |     | -      |     | ✓        | ✓              | ✓          |
| Pulse Counter                            |     | -             |     | -       |     | -      |     | -        | -              | ✓          |
| Supply Voltage                           |     | 100-270VAC/DC |     |         |     |        |     |          | 85-300VAC/DC   |            |
| Size                                     |     | 96mm x 96mm   |     |         |     |        |     |          | 72 x 72 x 50mm |            |



### Enermedic Web Based Monitoring Platform

| Code               | Description                |
|--------------------|----------------------------|
| <b>ENERMEDIC-1</b> | Single Device Subscription |

- Energy Efficiency: It provides energy consumption statistics by converting current, voltage and energy consumption measured by ENTES analyzer into meaningful data
- Energy Quality: With indication it can prevent electronic devices from malfunctioning
- Monitor reactive penalty risk (be notified with warnings and alarms when at risk)
- The capacities of the capacitors on the PFC panel can be monitored only with "Step Maintenance" feature offered in Enermedic (Preventative maintenance of capacitors by sending warnings and alarms notifications of their critical level)

## NETWORK ANALYSER - LCD DISPLAY

### Advantages

- MPR-4 Series panel type network analyzers are compact solutions, designed for detailed measurement and analysis of electrical parameters
- Devices with internal memory up to 16 MB offer a wide range of I/O solutions with their replaceable modular structure
- Current & voltage unbalanced measurement
- Detailed measurement up to 51 harmonics
- Sag / Swell measurement



MPR-4

### I/O Modules for MPR-4



| MPR-45S                   | MPR-46S | MPR-47S | NEW MPR-47SE | MM-120                                                         |
|---------------------------|---------|---------|--------------|----------------------------------------------------------------|
| ✓                         | ✓       | ✓       | ✓            | 2 x Digital Inputs<br>5-24VDC                                  |
| ✓                         | ✓       | ✓       | ✓            | <b>MM-102</b>                                                  |
| ✓                         | ✓       | ✓       | ✓            | 2 x Digital Outputs<br>5-24VDC                                 |
| ✓                         | ✓       | ✓       | ✓            | <b>MM-002</b>                                                  |
| ✓                         | ✓       | ✓       | ✓            | 2 x NO Relay Contacts<br>250VAC/5Amp                           |
| ✓                         | ✓       | ✓       | ✓            | <b>MM-122</b>                                                  |
| ✓                         | ✓       | ✓       | ✓            | 2 x Digital Inputs<br>2 x Digital Outputs<br>5-24VDC           |
| ✓                         | ✓       | ✓       | ✓            | <b>MM-202</b>                                                  |
| ✓                         | ✓       | ✓       | ✓            | 2 x Analogue Outputs<br>0-5/0-10/±5/±10VDC<br>0-20/0-24/4-20mA |
| ✓                         | ✓       | ✓       | ✓            | <b>MM-144</b>                                                  |
| ✓                         | ✓       | ✓       | ✓            | 4 x Digital Input<br>4 x Digital Outputs<br>5-24VDC            |
| -                         | ✓       | ✓       | ✓            |                                                                |
| -                         | -       | 1-51    | 1-51         |                                                                |
| ✓                         | ✓       | ✓       | ✓            |                                                                |
| Optional. See I/O Modules |         |         |              |                                                                |
| Optional. See I/O Modules |         |         |              |                                                                |
| Optional. See I/O Modules |         |         |              |                                                                |
| ✓                         | ✓       | ✓       | ✓            |                                                                |
| -                         | -       | -       | ✓            |                                                                |
| Optional. See I/O Modules |         |         |              |                                                                |
| 16MB                      | 16MB    | 16MB    | 16MB         |                                                                |
| ✓                         | ✓       | ✓       | ✓            |                                                                |
| -                         | -       | ✓       | ✓            |                                                                |
| ✓                         | ✓       | ✓       | ✓            |                                                                |
| Optional. See I/O Modules |         |         |              |                                                                |
| 45-300VAC/DC              |         |         |              |                                                                |
| 96 x 96 x 45mm            |         |         |              |                                                                |



I/O Module for MPR-4

### RS-485 to USB Converter



| Code | RS-USB2                                                                                                                                                                                                                                                             |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | <ul style="list-style-type: none"> <li>• RS-485 to USB converter for communication between PC &amp; Modbus compatible devices.</li> <li>• USB 1.1 and USB 2.0 support</li> <li>• 300-115200 bps baud rate (auto-detect)</li> <li>• Powered from USB port</li> </ul> |



### Ethernet to Serial Gateway

| Code    | Description                                                                                                                                                     |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ETMO-02 | Serial to Ethernet communication gateway for up to 2 devices<br>Interfaces : Ethernet, USB, RS-485, RS-232, Modbus TCP/RTU, c/w 1 x DI + 1 x DO                 |
| EMTO-10 | Serial to Ethernet communication gateway for up to 32 devices<br>Interfaces : Ethernet, USB, RS-485, RS-232, Modbus TCP/RTU, Meter Reading, c/w 1 x DI + 1 x DO |
| EMG-12  | Serial to Ethernet communication gateway for up to 32 devices<br>Interfaces : Ethernet, USB, RS-485, Modbus TCP/RTU and Modbus Tunnel                           |



### GEM 10 GPRS Gateway

| Code   | Description                                                                                                                                                                       |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GEM-10 | <ul style="list-style-type: none"> <li>• GPRS/Ethernet/RS-485 Modbus Gateway</li> <li>• Ports : Modbus (Terminal), Mini USB, Ethernet (RJ-45)</li> <li>• GPRS Quadband</li> </ul> |

**GEM-10** GPRS/Modbus Gateway (modem) enables access to devices that communicate with Modbus protocol over GPRS or Ethernet networks. With **GEM-10**, users can perform Modbus TCP communication over GPRS or Ethernet as well as use these two connection options as backups for each other.

## NETWORK ANALYSER



Size:  
96 x 96mm  
5A CT-Driven


**MPR-63**

**EPM-07S**

**MPR-53**

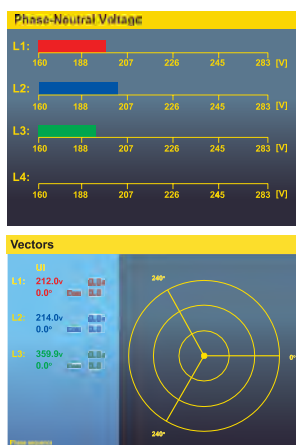
**MPR-53S**

**MPR-53CS-96**

| Measured Parameters                            | MPR-63                | MPR-63-42 | EMR-07-96            | EMR-07S-96 | EMR-53-96 | EMR-53S-96 | EMR-53CS-96 |
|------------------------------------------------|-----------------------|-----------|----------------------|------------|-----------|------------|-------------|
| Voltage (L-L)(L-N)                             | ✓                     | ✓         | ✓                    | ✓          | ✓         | ✓          | ✓           |
| Avg. Voltage (L-L)(L-N)                        | ✓                     | ✓         | ✓                    | ✓          | ✓         | ✓          | ✓           |
| Currents (IL) (IN)(ΣI)                         | ✓                     | ✓         | ✓                    | ✓          | ✓         | ✓          | ✓           |
| Cosφ                                           | ✓                     | ✓         | ✓                    | ✓          | ✓         | ✓          | ✓           |
| Frequency (Hz)                                 | ✓                     | ✓         | ✓                    | ✓          | ✓         | ✓          | ✓           |
| Powers (P)(Q)(S)(ΣP)(ΣQ)(ΣS)                   | ✓                     | ✓         | ✓                    | ✓          | ✓         | ✓          | ✓           |
| Power Factor (PF)                              | ✓                     | ✓         |                      |            |           |            |             |
| Active/Reactive Energy-Import/Export (Wh/VarH) | ✓                     | ✓         | ✓                    | ✓          | ✓         | ✓          | ✓           |
| Max / Min Values                               | ✓                     | ✓         | ✓                    | ✓          | ✓         | ✓          | ✓           |
| <b>Features</b>                                |                       |           |                      |            |           |            |             |
| % THD-I, THD-V                                 | ✓                     | ✓         |                      |            | ✓         | ✓          | ✓           |
| 2nd-31st Harmonics                             | ✓                     | ✓         |                      |            |           |            |             |
| Alarm Contact                                  | ✓                     | ✓         |                      |            |           |            | ✓           |
| Digital Input                                  |                       | ✓         | ✓                    | ✓          | ✓         | ✓          | ✓           |
| Energy Pulse Output                            | ✓                     |           | ✓                    | ✓          | ✓         | ✓          | ✓           |
| RS-485 Comm                                    | ✓                     | ✓         |                      | ✓          |           | ✓          | ✓           |
| 0(4)-20mA Output                               |                       | ✓ (x2)    |                      |            |           |            |             |
| Memory                                         | ✓                     | ✓         |                      |            |           |            |             |
| Real Time Clock                                | ✓                     | ✓         |                      |            |           |            |             |
| Type Display                                   | LCD                   | LCD       | LED                  | LED        | LED       | LED        | LED         |
| Dual Energy Meter                              |                       |           | ✓                    | ✓          | ✓         | ✓          | ✓           |
| 6 Diff. Calc. Methods                          |                       |           | ✓                    | ✓          | ✓         | ✓          | ✓           |
| /5A Ct-Driven                                  | ✓                     | ✓         | ✓                    | ✓          | ✓         | ✓          | ✓           |
| Pulse Counter                                  |                       |           |                      |            |           |            | ✓           |
| Supply Voltage                                 | 85-265VAC/DC, 50/60Hz |           | 230VAC ±10%, 45-65Hz |            |           |            |             |
| Size                                           |                       |           | 96mm x 96mm          |            |           |            |             |

**NEW**

## POWER QUALITY NETWORK ANALYSER



**Class A Power Quality Analyser** - Provides measurement of electrical parameters according to EN 61000-4-30 Class A standard and monitoring of energy quality according to EN 50160 standard in LV and MV systems. It monitors and analyzes the quality of energies on the distribution and consumption side of the network according to EN 50160 in order to detect the problems in the system.

| Code                     | EMK-01                                                      |
|--------------------------|-------------------------------------------------------------|
| Power Measurement        | 3xV/I, Hz, W, VAR, VA, ΣP/Q/S, kWh, kVarh, Max., Min., cosφ |
| Voltage Measurement      | 2-600VAC(L-N), 4-1000 VAC(L-L)                              |
| Current Measurement      | Inputs : 5A/1A                                              |
| Active Energy Class      | 0.2S                                                        |
| Sampling Frequency       | 40kHz                                                       |
| THD                      | 65th harmonics                                              |
| Display                  | TFT graphical display                                       |
| Internal Memory          | 1GB flash                                                   |
| Communication            | RS485/Ethernet/USB                                          |
| Protocols                | Modbus RTU, Modbus TCP, SNTP, HTTP, FTP, E-mail             |
| I/O ports                | 2 adjustable input/outputs                                  |
| Grid types               | TN, TT, IT                                                  |
| Temperature Sensor Input | NTC sensor (included)                                       |
| Power Supply             | 230VAC                                                      |
| Dimensions               | 144 x 144 x 75mm                                            |

### Features

- Measurement of short term and long term flicker according to EN61000-4-15 standard.
- Detection and record of transients (>25μS)
- Detection and record of interruption and Sag & Swell events(10μS)
- Measurement of harmonics and inter-harmonics (VLN, VLL, I) according to EN 61000-4-7 standard

## LOAD MANAGERS

**ORBITIS**

- Din Rail Mount
- LCD Display with backlight
- **IP20**



| Code                | ENERGEST                                                                                                                                                                                                                                                                                                                                                                                                                                                            | GESTCON 1                                                                                                                                                                                                                                                                        | GESTCON 3                                                                                                                                                                                                                                                                      |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | Smart Load Control: Consumption level of loads is memorised before disconnection. Non priority loads are shed first, priority load is shed if current still exceeds set level.<br><b>ENERGEST</b> will try to reconnect the non priority load if it will not exceed the set level <ul style="list-style-type: none"> <li>• Adjustable disconnect delay.</li> <li>• Adjustable min. time between switching</li> <li>• Adjustable connection attempt time.</li> </ul> | Equipped with a relay output for the control of a load. <ul style="list-style-type: none"> <li>• Adjustable disconnect delay.</li> <li>• Adjustable reconnect delay</li> <li>• Audible Alarm to indicate set level has been exceeded and disconnect delay has started</li> </ul> | Equipped with 3 relay outputs for the control of loads according to their priority. The device also calculates which loads can be connected to take advantage of the maximum power limit. <ul style="list-style-type: none"> <li>• Adjustable load connection delay</li> </ul> |
| Voltage             | 230VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 230VAC                                                                                                                                                                                                                                                                           | 230VAC                                                                                                                                                                                                                                                                         |
| Current (I max)     | 60A                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 32A                                                                                                                                                                                                                                                                              | 60A                                                                                                                                                                                                                                                                            |
| Displayed parameter | V, A, W, VAr, VA, WH, COSφ                                                                                                                                                                                                                                                                                                                                                                                                                                          | Active Power                                                                                                                                                                                                                                                                     | Active Power                                                                                                                                                                                                                                                                   |
| Setpoint Range      | 0 - 60A                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.8 - 7kW                                                                                                                                                                                                                                                                        | 1-15kW (0-1kW Hysteresis)                                                                                                                                                                                                                                                      |
| Control Outputs     | 2 NO or NC 2A@250VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 C/O 16A@250VAC                                                                                                                                                                                                                                                                 | 3 C/O 16A@250VAC                                                                                                                                                                                                                                                               |
| No of DIN Module    | 4M                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2M                                                                                                                                                                                                                                                                               | 4M                                                                                                                                                                                                                                                                             |

## ENERGY METERS



**control**



EMC-3B

EMC-D3

| Code           | 1C15WP                                                                                                                                                                                                                                                                                                                                                                | 1C15WP2     | 1C15WRP       | Input Range<br>500V max                                                                                                                  | Code                                            | 96 x 96         | EMC-3B       | EMC-3B485  |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------|--------------|------------|
| Type           | Single Tarrif                                                                                                                                                                                                                                                                                                                                                         | Dual Tarrif | kWh and kVARh | DIN Width<br>1m = 17.5mm                                                                                                                 | Code                                            | DIN Width<br>6m | EMC-D3B      | EMC-D3B485 |
| Specifications | 3 Phase 400V + N<br>kWh Meter<br>C/T Ratio selectable by DIP Switch<br><b>Selectable Primary CT Current:</b><br>5, 10, 15, 20, 25, 30, 40, 50, 60, 75, 80, 100, 120, 150,<br>200, 250, 300, 400, 500, 600, 750, 800, 1000, 1200, 1250,<br>1500, 1600, 2000, 2500, 3000, 4000, 5000, 6000<br>• 7 Digit Electro-mechanical display<br>• Accuracy: 2%<br>• Pulsed Output |             |               | 3 Phase 400V + N<br>Indication (Active and Reactive Power)<br>• 7 Digit Electro-mechanical display<br>• Accuracy: 2% (kWh)<br>3% (kVARh) | Active Energy + kWh                             |                 | ✓            | ✓          |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | Reactive Energy + kVARh                         |                 | ✓            | ✓          |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | Apparent Energy + kVAh                          |                 | ✓            | ✓          |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | Active Energy + kWh                             |                 | ✓            | ✓          |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | 2 Time Bands                                    |                 |              | ✓          |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | Reactive Energy + kVARh                         |                 |              | ✓          |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | 2 Time Bands                                    |                 | ✓            | ✓          |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | Average Values (avg)                            |                 |              |            |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | I1, I2, I3, ΣP, ΣQ, ΣS, ΣP.F                    |                 | ✓            | ✓          |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | Maximum Average Values                          |                 |              |            |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | (max. demand) I1avg, I2avg, I3avg, Σpavg, Σsavg |                 | ✓            | ✓          |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | Digital Input                                   |                 | ✓            | ✓          |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | Digital Outputs (Alarm or Pulse re/emission)    |                 | ✓            | ✓          |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | Serial Output RS485 (Modbus RTU)                |                 | ✗            | ✓          |
|                |                                                                                                                                                                                                                                                                                                                                                                       |             |               |                                                                                                                                          | Auxiliary Supply                                |                 | 110/230/400V |            |

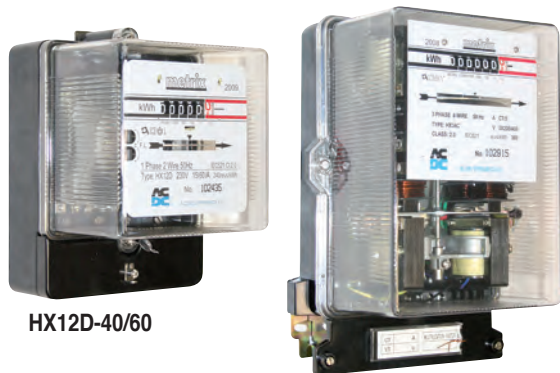


Multi-Functional Energy Meters

| Code      | Displayed Parameters                      |
|-----------|-------------------------------------------|
| ELF3234   | W, Wh or VA, VAh or VAR, VARh or PF       |
| ELF3234-3 | W, Wh, PF or VA, VAh, PF or VAR, VARh, PF |
| ELF3259   | V, A, F                                   |

- Inputs (V), 110 or 400VAC (L-L) Range: 80-500V
- 3 Phase 4 Wire
- Input (I) 1A or 5A programmable
- Supply Volts: 80-270VAC @ 3VA
- Accuracy: 2% for VARh All others: 1%
- Phase wise & total RMS for power, total for Energy Meters
- 10 year back-up of integrated data
- VA function selectable 3D or Arithmetic
- V shows all Line-Line, Line-Neutral, Individual & Average Voltages
- Amps shows all line current & average current
- Size: 96 x 48 x 40(D)mm

## ENERGY METERS



HX12D-40/60

HX34

### Rotating Disc kWh Meters

| 1-Phase 230V | Range  | 3-Phase 380V+N | Range   |
|--------------|--------|----------------|---------|
| HX12D-40     | 10-40A | HX34D-80       | 20-80A  |
| HX12D-60     | 15-60A | HX34D-100      | 30-100A |
| HX12D-80     | 20-80A | HX34C          | CT-5A   |

Size (mm): 160H x 122W x 126D

Size (mm): 260H x 170W x 135D

- 6 Digit register
- Metal Base and Polycarbonate cover
- Lower bearing is magnetic suspension type

### Mechanical Counter kWh Meters



DDS223-30 DDS223-63

DDS722-100

DTS722-60/100

| 1-Phase 230V   | Range  | Size | Pulse/kW |
|----------------|--------|------|----------|
| DDS223-30      | 5-30A  | 1m   | 2000     |
| DDS223-63      | 5-63A  | 2m   | 2000     |
| DDS722-100     | 5-100A | 3m   | 800      |
| 3-Phase 400V+N | Range  | Size | Pulse/kW |
| DTS722-60      | 5-60A  | 6m   | 320      |
| DTS722-100     | 5-100A | 6m   | 160      |

• 1m=17.5mm Wide • Pulsed output 3200 Imp/kWh • Class 1

### Digital kWh Meters



DDSF223-30

DDSF223-63

DDSF722-60

DSS722-5/ 60/ 100

| 1-Phase 230V   | Range       | Size | Pulse/kW |
|----------------|-------------|------|----------|
| DDSF223-30     | 5-30A       | 1m   | 2000     |
| DDSF223-63     | 5-63A       | 2m   | 2000     |
| DDSF722-60     | 5-60A       | 3m   | 1600     |
| 3-Phase 400V+N | Range       | Size | Pulse/kW |
| DSS722-5       | 1.5-5A (CT) | 6m   | 1600     |
| DSS722-60      | 5-60A       | 6m   | 320      |
| DSS722-100     | 5-100A      | 6m   | 160      |

## MODULAR ENERGY METER (kWh)

### Digital

- DIN Rail Mount
- Operating Temp: -20 to 50°C
- RS485 Models are MID Billing Certified
- c/w Tamper-proof terminal seal



c/w 80A CT

### Mechanical



energia intelligente



### Digital Dual Display



energia intelligente



| Code                     | ES-32L*     | ES-80L      | CONTAX 2511 | CONTAX 3221 | CONTAX 6521 | CONTAX D-6331                  |
|--------------------------|-------------|-------------|-------------|-------------|-------------|--------------------------------|
| Supply Voltage Un        | 230VAC      | 230VAC      | 230VAC      | 230VAC      | 230VAC      | 230VAC                         |
| Current, (I max)         | 5 (32)A     | 40 (80)A    | 5(25)A      | 5(32)A      | 10(63)AØ    | 10(63)A                        |
| Operating Current        | 0.02-32A    | 0.08-80A    | 0.02 to 25A | 0.02 to 32A | 0.04 to 65A | 0.5 to 63A                     |
| Frequency                | 50/60Hz     | 50/60Hz     | 50/60Hz     | 50/60Hz     | 50/60Hz     | 50/60Hz                        |
| Operating Voltage        | 230VAC      | 230VAC      | 195 to 253V | 195 to 253V | 195 to 253V | 195 to 253VAC                  |
| Power Consumption        | <2VA        | <2VA        | 0.5VA       | 0.5VA       | 0.5VA       | 2.5VA                          |
| Precision accuracy class | Class1      | Class1      | Class 1     | Class 1     | Class 1     | Class 1                        |
| Pulse transmission       | 1000Imp/kWh | 1000Imp/kWh | Type SO     | Type SO     | Type SO     | Type SO                        |
| Recorded harmonics       | -           | -           | Until 7kHz  | Until 7kHz  | Until 7kHz  | -                              |
| Size: 1M = (17.5mm)      | 1M          | 1M          | 1M          | 2M          | 2M          | 3M                             |
| Digits                   | 6+1         | 6+1         | 5+1         | 5+1         | 5+1         | 4+1 (Resettable) / 6+1 (Total) |

\*Add S to part number for RS485 Comms

## ADVANCED ENERGY REVENUE METERS

### 3 Phase Smart Meters

- AMI Ready



| Code                          | MK6E-RS485                           | MK10E-RS232-*                          | MK10A*                                |
|-------------------------------|--------------------------------------|----------------------------------------|---------------------------------------|
| <b>General Specifications</b> |                                      |                                        |                                       |
| Input Type                    | CT Input                             | CT or Direct Input                     | CT or Direct Input                    |
| Accuracy Class                | 0.2                                  | 0.5                                    | 1                                     |
| Nominal Voltage/Frequency     | 57-240VAC (L-N) / 45-65Hz            | 154-288VAC (L-N) / 45-65Hz             | 220-240VAC (L-N) / 45-65Hz            |
| Current                       | 5/20A                                | 5/20A (CT), 10/100A (Direct)           | 5/20A (CT), 10/100A (Direct)          |
| Battery                       | External 3.6V 700mAh<br>±2 yr backup | Internal 3.6V 1200mAh<br>±10 yr backup | Internal 3.6V 950mAh<br>±10 yr backup |
| Memory (EEPROM)               | 900KB Flash                          | 16KB+ 2.1MB Flash                      | 16KB+ 2.1MB Flash                     |
| Size L x W x D (mm)           | 260 x 173 x 93mm                     | 262 x 175 x 95mm                       | 210 x 166 x 74mm                      |
| <b>I/O's</b>                  |                                      |                                        |                                       |
| Inputs                        | 2 x 110V                             | 2 x 110V                               | —                                     |
| Outputs                       | 2 x 240V Bosfet                      | 2 x 240V Bosfet                        | 1 x Relay (2A)                        |
| <b>Communications</b>         |                                      |                                        |                                       |
| Optical Port                  | Flag Port                            | Flag Port                              | Flag Port                             |
| Extended Comms                | RS232(DB25) RS485(2xRJ45)            | —                                      | —                                     |
| Modem Port (3.6W PSU)         | RS232 (1xRJ45)                       | RS232 (1xRJ45)                         | RS232 (1xRJ45)                        |

\* Add **-CT** to code for Current Transformer input, or add **-DIR** for Direct current input

| 1 Phase Smart Meter            | Single Phase with RF Interface       |                                           |                                           | Technical Information                           |
|--------------------------------|--------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------------|
| - STS Compliant<br>- AMI Ready |                                      |                                           |                                           | <b>Customer Interface Unit (CIU) - IP55</b><br> |
| <b>Code</b>                    | <b>MK7M-401*</b>                     | <b>MK32-211</b>                           | <b>MK32H-211</b>                          | <b>HD18</b>                                     |
| <b>General Specifications</b>  |                                      |                                           |                                           |                                                 |
| Input Type                     | Direct Input                         | Direct Input                              | Direct Input                              | RF Range 100m                                   |
| Accuracy Class                 | 1                                    | 1                                         | 1                                         | Backlit 8 Digit display                         |
| Nominal Voltage                | 220 - 240VAC (L-N)                   | 220-240VAC (L-N)                          | 220-240VAC (L-N)                          | Silicon Keypad                                  |
| Frequency                      | 50-60Hz                              | 50-60Hz                                   | 45-65Hz                                   | Supply: 3.3VDC                                  |
| Current                        | 5/100A                               | 10/100A                                   | 5/100A                                    | (2 x AA batteries)                              |
| Loads Contacts                 | 2 x L&N(100A)                        | 1 x L Only (100A)                         | 1 x L Only (100A)                         | Displays:                                       |
| Battery                        | Internal 3.6V 1200mAh<br>±5yr backup | Internal 3.6V 1200mAh<br>±5yr backup      | Internal 3.6V 1200mAh<br>±5yr backup      | • kWh                                           |
| Memory (EEPROM)                | 2MB Non-Volatile                     | 2.1MB (Non Volatile)                      | 2MB (Non Volatile)                        | • Signal Strength                               |
| Dimensions LxWxD               | 200 x 129 x 61mm                     | 196 x 135 x 66mm                          | 159 x 59 x 73mm                           | • Relay state,                                  |
| <b>I/O's</b>                   |                                      |                                           |                                           | • Low Battery                                   |
| Inputs                         | 1 X 18V                              | —                                         | —                                         | • Tampering                                     |
| Outputs                        | 2 x SO                               | 1 x Energy Pulse                          | 1 x Energy Pulse                          | • Overload                                      |
| <b>Communications</b>          |                                      |                                           |                                           | • Unbalanced load                               |
| Optical Port                   | Flag Port                            | Flag Port                                 | Flag Port                                 | • Reverse Power                                 |
| Communications                 | RS485<br>(Screw Terminal)            | RF (433Mhz) to<br>Customer Interface Unit | RF (433Mhz) to<br>Customer Interface Unit | Frequency:<br>433MHz                            |
|                                |                                      |                                           |                                           | Size: 97 x 150 x 38mm                           |

\* Add **-2G** to code for Built-in GPRS Modem (Excludes SIM Card)

### Accessories & Remote Monitoring

| Code               | Description                                                                          |
|--------------------|--------------------------------------------------------------------------------------|
| <b>EWM100</b>      | GSM/GPRS Modem                                                                       |
| <b>EDMI-OPTO</b>   | Opto Coupler (Optical to use USB)                                                    |
| <b>EDMI-RMM-3P</b> | Monthly Remote Monitoring Subscription Charge for 3 Phase Meters (Includes SIM Card) |
| <b>EDMI-RMM-1P</b> | Monthly Remote Monitoring Subscription Charge for 1 Phase Meters (Includes SIM Card) |

**NEW**

## PREPAID METERS FOR SUBMETERING

### Prepaid Electricity Submeters

|             |                                                                                                                                          |                                                                                                                                          |                                                                                                                                                                         |                                                                                                     |                                                                                                                                                                      |                                                                                           |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|             |                                                                                                                                          |                                                                                                                                          |                                                                                                                                                                         |                                                                                                     |                                                                                                                                                                      |                                                                                           |
| <b>Code</b> | <b>CP-C018</b>                                                                                                                           | <b>CP-H007</b>                                                                                                                           | <b>CP-H0010</b>                                                                                                                                                         | <b>CP-H015</b>                                                                                      | <b>CP-H001</b>                                                                                                                                                       | <b>CP-H006</b>                                                                            |
| Voltage     | 230VAC                                                                                                                                   | 230VAC                                                                                                                                   | 230VAC                                                                                                                                                                  | -                                                                                                   | 230VAC                                                                                                                                                               | -                                                                                         |
| Current     | 80A                                                                                                                                      | 80A                                                                                                                                      | 80A Direct                                                                                                                                                              | -                                                                                                   | 100A                                                                                                                                                                 | -                                                                                         |
| Features    | <ul style="list-style-type: none"> <li>Single Phase</li> <li>Direct Reading</li> <li>Integrated keypad</li> <li>BS foot print</li> </ul> | <ul style="list-style-type: none"> <li>Single Phase</li> <li>Direct Reading</li> <li>Integrated keypad</li> <li>BS foot print</li> </ul> | <ul style="list-style-type: none"> <li>Single Phase</li> <li>Direct Reading</li> <li>Split Wired Meter</li> <li>Wired keypad sold separately - <b>CPH015</b></li> </ul> | <ul style="list-style-type: none"> <li>Wired keypad unit to be used with <b>CP-H0010</b></li> </ul> | <ul style="list-style-type: none"> <li>Single phase</li> <li>Direct reading</li> <li>Split PLC meter</li> <li>PLC Keypad sold separately - <b>CP-H006</b></li> </ul> | <ul style="list-style-type: none"> <li>PLC Keypad for <b>CP-H001 / CP-H003</b></li> </ul> |

### Three Phase Prepaid Electricity Submeters

|             |                                                                                                                                                                             |                                                                                                                                         |                                                                                                                                            |                                                                                                                                                                                              |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                                                                                                                                                                             |                                                                                                                                         |                                                                                                                                            |                                                                                                                                                                                              |
| <b>Code</b> | <b>CP-H003</b>                                                                                                                                                              | <b>CP-H011</b>                                                                                                                          | <b>CP-W005</b>                                                                                                                             | <b>CP-H012</b>                                                                                                                                                                               |
| Voltage     | 400VAC                                                                                                                                                                      | 400VAC                                                                                                                                  |                                                                                                                                            |                                                                                                                                                                                              |
| Current     | 100A                                                                                                                                                                        | 100A                                                                                                                                    |                                                                                                                                            |                                                                                                                                                                                              |
| Features    | <ul style="list-style-type: none"> <li>Three phase</li> <li>Direct reading</li> <li>BS foot print</li> <li>PLC key pad to be ordered separately - <b>CP-H006</b></li> </ul> | <ul style="list-style-type: none"> <li>Three phase</li> <li>Direct reading</li> <li>BS foot print</li> <li>Integrated keypad</li> </ul> | <ul style="list-style-type: none"> <li>Utility Water Systems Water Meter</li> <li>c/w RF UIU</li> <li>Leak and Tamper Detection</li> </ul> | <ul style="list-style-type: none"> <li>Hexing Ultra Sonic Water Meter</li> <li>c/w RF UIU</li> <li>No Moving Parts - Long Life</li> <li>Ultra low Starting Flow for High Accuracy</li> </ul> |

### Chain Store Vending

Citiq streamlines rental payment collection for landlords, ensuring convenience and efficiency. Service fees are recovered through transaction tokens during the process, and funds are deposited into the landlord's account at the end of each month.

They offer 24/7 access to vending services via retail outlets, online platforms, banking channels, and mobile apps. Additionally, Citiq handles all tenant inquiries through a dedicated call center for reliable support.



## METRO PREPAID METERS FOR SUBMETERING

|  |                                                                                                                                                                                                                                                                                                               |                     |  |  |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--|--|
|  | <b>Water Sub-Meter</b>                                                                                                                                                                                                                                                                                        |                     |  |  |
|  | <b>Code</b>                                                                                                                                                                                                                                                                                                   | <b>MP-PWMS</b>      |  |  |
|  | <b>Pressure</b>                                                                                                                                                                                                                                                                                               | <b>0.2 - 16 Bar</b> |  |  |
|  | <b>Features</b> <ul style="list-style-type: none"> <li>Monitors and controls water consumption</li> <li>STS approved, SANS certified</li> <li>Tamper resistance</li> <li>Prepayment top up with Remote user interface</li> <li>For Land Lords of Apartment Blocks, Hostels, Light Industrial Parks</li> </ul> |                     |  |  |

## RECHARGER PREPAID METERS FOR SUBMETERING

|               | Single Phase                                                                      | Single Phase                                                                      | Single Phase<br>Din Rail Mount                                                                   | Spare Wired<br>Remote Keypad                                                        | PLC Single Phase<br>Din Rail Mount                                                                |
|---------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
|               |  |  | <br>c/w Keypad |  | <br>c/w Keypad |
| <b>Code</b>   | <b>RP-GO-METER</b>                                                                | <b>RP-GEM-LITE</b>                                                                | <b>10-PR300</b>                                                                                  | <b>20-00561</b>                                                                     | <b>10-G008</b>                                                                                    |
| Voltage       | 230VAC                                                                            | 120-230VAC                                                                        | 230VAC                                                                                           | 12V                                                                                 | 230VAC                                                                                            |
| Pulses/KWh    | 1000                                                                              | 1000                                                                              | 1000                                                                                             | -                                                                                   | 1000                                                                                              |
| Current       | 80A                                                                               | 80A                                                                               | 80A                                                                                              | -                                                                                   | 80A                                                                                               |
| Communication | -                                                                                 | -                                                                                 | 2 Wire for<br>Remote Keypad<br>20-00561                                                          | 2 Wire connection<br>from meter: 10-P358<br>or 10-PR300                             | Power Line Carrier                                                                                |

|             | Single Phase                                                                       |                                                                                    |                                                                                     | 3 Phase                                                                              |                                                                                      |
|-------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|             |  |  |  |  |  |
| <b>Code</b> | <b>BEC23PE*</b>                                                                    | <b>BEC44PL(T)</b>                                                                  | <b>WBEC44PL(T)</b>                                                                  | <b>BEC32PL(T)</b>                                                                    | <b>BEC62PL(T)</b>                                                                    |
| Voltage     | 220-240V                                                                           | 220-240V                                                                           | 220-240V                                                                            | 380-420V                                                                             | 380-420V                                                                             |
| Current     | 20A                                                                                | 80A                                                                                | 80A                                                                                 | 100A                                                                                 | 100A                                                                                 |
| Protection  | 5kA surge arrestor                                                                 | -                                                                                  | -                                                                                   | 5kA surge arrestor                                                                   | 5kA surge arrestor                                                                   |
| Features    | On board keypad<br>c/w 20A DP<br>circuit breaker                                   | Split unit with<br>wired keypad c/w<br>tamper detection                            | Split unit with wire-<br>less keypad c/w<br>tamper detection                        | on board keypad<br>c/w tamper<br>detection                                           | Split unit with<br>wired keypad c/w<br>tamper detection                              |

\* For meter with built-in tamper detection add (T) to code

|             | Single Phase Split Wired                                                            | Single Phase Split Wireless                                                         | 3 Phase                                                                              | 3 - Phase Split Wired                                                                 |
|-------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|             |  |  |  |  |
| <b>Code</b> | <b>RP-HXP100D-MBUS</b>                                                              | <b>RP-HXP100D-PLC</b>                                                               | <b>RP-HXE312-KP</b>                                                                  | <b>RP-HXE310P-MBUS</b>                                                                |
| Voltage     | 230VAC                                                                              | 230VAC                                                                              | 230/400V                                                                             | 230/400V                                                                              |
| Current     | 80A                                                                                 | 80A                                                                                 | 100A                                                                                 | 100A                                                                                  |
| Features    | DIN Rail Mount<br>MBUS coms.<br>CIU & DCU                                           | DIN Rail Mount<br>PLC coms.<br>CIU & DCU                                            | Integrated<br>Keypad STS<br>Prepaid meters                                           | BS Footprint MBUS<br>Split meter<br>CIU & DCU                                         |

### Self Managed Software

Property managers/landlords with large portfolios have the option of making use of our unique, in-house vending software which they can access on site, manage, generate and print tokens.



### Chain Store Vending

Recharger collects cash on landlord's behalf & service fee recovered in the transaction tokens are purchased. Funds collected during the month are deposited into the landlord's account after month-end. Offer 24/7/365 access to vending through preferred retail, online, banking and mobile apps. Recharger handles all tenants vending enquiries at our call centre.



**NEW**

## CONLOG DIRECT PREPAID METERS

|                                                                                  | Single Phase                                                                                             | Single Phase Din-Rail                                                                                                                                                                                   | Three Phase                                                                                                                                                                                          | Water Meter                                                                                                                                                                                            |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                         |                                                                                                                        |                                                                                                                   |                                                                                                                     |
| <b>Code</b>                                                                      | <b>CD-BEC21</b>                                                                                          | <b>CD-WBECNANO</b>                                                                                                                                                                                      | <b>CD-WBEC62</b>                                                                                                                                                                                     | <b>CD-HYDRA15M1-WU</b>                                                                                                                                                                                 |
| <b>Voltage</b>                                                                   | 230VAC                                                                                                   | 110/127VAC/230VAC                                                                                                                                                                                       | 110/120/127VAC/230VAC                                                                                                                                                                                | -                                                                                                                                                                                                      |
| <b>Current</b>                                                                   | 60A                                                                                                      | 60A                                                                                                                                                                                                     | 100A                                                                                                                                                                                                 | -                                                                                                                                                                                                      |
| <b>Pressure</b>                                                                  | -                                                                                                        | -                                                                                                                                                                                                       | -                                                                                                                                                                                                    | 1600KPa                                                                                                                                                                                                |
| <b>Features</b>                                                                  | <ul style="list-style-type: none"> <li>Integrated keyboard</li> <li>Advanced tamper detection</li> </ul> | <ul style="list-style-type: none"> <li>Active power measurement (import &amp; export)</li> <li>Configurable tamper detection</li> <li>Reverse line/load protection</li> <li>c/w Wireless CIU</li> </ul> | <ul style="list-style-type: none"> <li>Split design, separate device and user interface connected wirelessly</li> <li>Configurable tamper detection</li> <li>Reverse line/load protection</li> </ul> | <ul style="list-style-type: none"> <li>Split design, separate device and user interface connected wirelessly</li> <li>Leak, tamper and low battery detection</li> <li>Wireless CIU included</li> </ul> |

## HOW YOU CAN PURCHASE PREPAID TOKENS?

Purchase tokens from Conlog Direct (CoDi)

VIA THE  APP

OR

VIA WHATSAPP  
076 849 0676



Purchase tokens from Banking Apps & ATMs



Purchase tokens from Garages & Retail Outlets



Scan to download the app

The Conlog Direct App provides an easy to use, convenient and secure way to purchase your prepaid tokens. Purchasing via Whatsapp is a quick, hassle free and secure way of purchasing your tokens, without physically going to store or having to download another App. Follow the simple instructions via chat and your tokens will be available to you in a matter of seconds.

## NETVENDOR PREPAID METERS FOR SUBMETERING

- STS Compliant
- Complies with: EC62055-41, IEC62055-31, IEC61107
- High Surge Protection for areas prone to line surges or lightning.
- IP Rating: IP54
- Frequency: 50Hz



**netVendor**

Single Phase Integrated Keypad Meter

|                 |                                                                                                                      |
|-----------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Code</b>     | <b>NV102</b>                                                                                                         |
| <b>Voltage</b>  | 230VAC                                                                                                               |
| <b>Current</b>  | 80A                                                                                                                  |
| <b>Features</b> | Easy to install, perfect for new reticulation or retrofitting credit meters. Optional user interface unit available. |



## PREPAID KWH METERS

Pre-Payment kWh Meters - Owner Managed

| Code               | Description           | Amps   | Output Pulses |
|--------------------|-----------------------|--------|---------------|
| <b>DDSY238-60</b>  | Single Phase          | 15-60A | 1600/kW       |
| <b>DTSY238-60</b>  | 3-Phase;4-Wire 400V+N | 15-60A | 200/kW        |
| <b>DTSY238-80</b>  | 3-Phase;4-Wire 400V+N | 20-80A | 100/kW        |
| <b>DTSY238-500</b> | 3-Phase;4-Wire 400V+N | 5A/CT  | 800/kW        |

- Power failure memory
- Direction of power indication
- Anti-theft function
- Coded card for fraud protection
- Software requires Windows XP® or Windows 7®

Accessories

| Code          | Description                       |
|---------------|-----------------------------------|
| <b>DDSY-C</b> | Pre-payment Card                  |
| <b>DDSY-P</b> | Card readers c/w program software |



## AUTOMATION PLC RANGE

|                                                                                                   | Micro PLC                                                                         | Mid Range PLC                                                                                     |
|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Programming Languages:<br>Ladder, IL & SFC.<br>Compatible with Mitsubishi<br>programming software |  |                 |
| Series                                                                                            | AX1S                                                                              | AX2N                                                                                              |
| Application Notes                                                                                 | Compatible with Mitsubishi FX1S                                                   | Compatible with Mitsubishi FX2N                                                                   |
| Power Specification                                                                               | 100-240VAC or 24VDC                                                               | 100-240VAC or 24VDC                                                                               |
| Power Consumption                                                                                 | 21W AC, 8W DC                                                                     | 100W AC, 40W DC                                                                                   |
| Ext Power supply (min)                                                                            | 400mA @ 24VDC                                                                     | 460mA @ 24VDC                                                                                     |
| Program Memory                                                                                    | 2000 steps EEPROM                                                                 | 8000 steps RAM                                                                                    |
| Instructions                                                                                      | 27 x Basic, 2 x Step ladder diagram, 85 x Applied                                 | 27 x Basic, 2 x Step ladder diagram, 132 x Applied                                                |
| Operating / Processing speed                                                                      | Basic Instructions, 0.55-0.7 $\mu$ S<br>Applied Instructions 0-0.037 $\mu$ S      | Basic Instructions, 0.08 $\mu$ S, Applied Instructions 0-0.015 $\mu$ S                            |
| Clock                                                                                             | Real time Internal                                                                | Real time Internal                                                                                |
| Counter                                                                                           | 16 bit increment counter: 32 Points                                               | 16 digits increment counter: 200 Points                                                           |
| Input Specification                                                                               | 24VDC, 7mA / 5mA, No Voltage contact<br>or NPN open Collector Transistor input    | Same as <b>AX1S</b> - but also with AC input 100-120VAC                                           |
| Output Specification                                                                              | Relay: 2A@250VAC, <30VDC<br>Transistor: 0.5A, 5VDC-30VDC                          | Same as <b>AX1S</b>                                                                               |
| Aux Relay, Timer Point                                                                            | 512, 64                                                                           | 3072, 256                                                                                         |
| Communication                                                                                     | RS232C, RS485 x RS422, N:N Network,<br>Parallel Link, Computer Link               | RS232C, RS485 x RS422, N:N Network, Parallel Link, Computer Link,<br>CC-Link(LT), Melsec-I/O Link |

### Base Module Choices for AX1S Series

| Code                 | Input | Output | Dimensions      |
|----------------------|-------|--------|-----------------|
| <b>AX1S-14M*..**</b> | 8     | 6      | 60 x 90 x 75mm  |
| <b>AX1S-30M*..**</b> | 16    | 14     | 100 x 90 x 75mm |

\* Add to Code: **R** for Relay Output or **T** for Transistor Output

\*\*Add to Code: **ESS** for AC Power source or **D** for DC power source

### Expansion Boards for AX1S Series

Can accommodate one expansion board below the face plate, inside the enclosure



AX1N-1DA-BD



AX1N-422/485-BD

| Code                 | Description                                    |
|----------------------|------------------------------------------------|
| <b>AX1N-2EYT-BD2</b> | 2 x Transistor outputs                         |
| <b>AX1N-2AD-BD</b>   | 2 x 0-10VDC 2.5mV res or 4-20mA 8uA res Inputs |
| <b>AX1N-1DA-BD</b>   | 1 x 0-10VDC 2.5mV res or 4-20mA 8uA res Output |
| <b>USB-SC-09-3M</b>  | 5M USB Programming cable for <b>AX</b> series  |
| <b>AX1N-232-BD</b>   | RS232 Half Duplex bi-directional, 15m max      |
| <b>AX1N-422-BD</b>   | RS422 to connect peripheral devices            |
| <b>AX1N-485-BD</b>   | RS485 Half Duplex, single direction, 50m max   |

### HMI Devices



| Code                | USPX-121-6       | USPT-080-4        | USPK-043-10      |
|---------------------|------------------|-------------------|------------------|
| Touch panel         | 5 Wire resistive | 4 Wire resistive  | 4 Wire resistive |
| Size (mm)           | 351.3x245.8      | 231.5x174.5       | 130x106          |
| Resolution          | 1024x768         | 800x600           | 480x272          |
| Working Memory      | 256MB            | 64MB              | 32MB             |
| Total Mem. Capacity | 1GB              | 8MB NOR Flash ROM |                  |
| Battery Backed Ram  | 1MB              | 128KB (1MB opt.)  | 128KB            |
| Comms               | RS232/485/422    | RS232/485/422     | RS232/485/422    |
| CPU                 | 800MHz           | 200MHz            | ARM926/EJ        |
| USB                 | 1                | 1                 | 1                |
| Ethernet            | Yes              | Yes               | No               |
| Voltage             | 24VDC            | 24VDC             | 24VDC            |
| IP Rating           | <b>IP66</b>      | <b>IP66</b>       | <b>IP65</b>      |

### Base Module Choices for AX2N Series

| Code                  | Input | Output | Dimensions      |
|-----------------------|-------|--------|-----------------|
| <b>AX2N-32M*..**</b>  | 16    | 16     | 150 x 90 x 87mm |
| <b>AX2N-64M*..**</b>  | 32    | 32     | 220 x 90 x 87mm |
| <b>AX2N-128M*..**</b> | 64    | 64     | 350 x 90 x 87mm |

\* Add to Code: **R** for Relay Output or **T** for Transistor Output

\*\*Add to Code: **ESS** for AC Power source or **D** for DC power source

### Expansion Boards for AX2N Series

| Code               | Description                                               |
|--------------------|-----------------------------------------------------------|
| <b>AX2N-CNV-BC</b> | AX2N Expansion module converter cable (connect AX0N 65EC) |
| <b>AX2N-65EC0</b>  | AX2N Expansion cable 0.65M                                |
| <b>AX2N-485-BD</b> | RS 485 Interface board for <b>AX2N</b>                    |
| <b>AX2N-422-BD</b> | RS 422 Interface board for <b>AX2N</b>                    |
| <b>AX2N-232-BD</b> | RS 232 Interface board for <b>AX2N</b>                    |

### AX2N-Series I/O Extension Unit

| Code              | Description                                 |
|-------------------|---------------------------------------------|
| <b>AX2N-8EX</b>   | Ext. Unit, 8 Inputs                         |
| <b>AX2N-8ER</b>   | Ext. Unit, 4 Inputs, 4 Relay Outputs        |
| <b>AX2N-8EYR</b>  | Ext. Unit, 8 Relay Outputs                  |
| <b>AX2N-8EYT</b>  | Ext. Unit, 8 Transistor Outputs             |
| <b>AX2N-16EX</b>  | Ext. Unit, 16 Inputs                        |
| <b>AX2N-16ER</b>  | Ext. Unit, 8 Inputs, 8 Relay Outputs        |
| <b>AX2N-16EYR</b> | Ext. Unit, 16 Relay Outputs                 |
| <b>AX2N-16EYT</b> | Ext. Unit, 16 Transistor Outputs            |
| <b>AX2N-32ER</b>  | Ext. Unit, 16 Inputs, 16 Relay Outputs      |
| <b>AX2N-32ET</b>  | Ext. Unit, 16 Inputs, 16 Transistor Outputs |
| <b>AX2N-48ER</b>  | Ext. Unit, 24 Inputs, 24 Relay Outputs      |
| <b>AX2N-48ET</b>  | Ext. Unit, 24 Inputs, 24 Transistor Outputs |



### AX2N-Series Analogue Extension Unit

| Code               | Description                                  |
|--------------------|----------------------------------------------|
| <b>AX2N-2AD</b>    | Extension Unit, 2 x Inputs: 0-10V, 4-20mA    |
| <b>AX2N-2DA</b>    | Extension Unit, 2 x Outputs: 0-10V, 4-20mA   |
| <b>AX2N-4AD</b>    | Extension Unit, 4 x Inputs: 0-10V, 4-20mA    |
| <b>AX2N-4DA</b>    | Extension Unit, 4 x Outputs: 0-10V, 4-20mA   |
| <b>AX2N-4AD-PT</b> | Extension Unit, 2 Temperature (PT100)        |
| <b>AX2N-4AD-TC</b> | Extension Unit, 2 Temperature (THERMOCOUPLE) |



## SMART RELAY GENIE™ -NX

|                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                              |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                                                                                                                                                                                |                                                         |
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| <div><div><div><div><div><div></div><div></div></div><div><div><div></div></div></div><div><div><div></div></div><div><div></div></div></div><div><div><div></div></div><div><div></div></div></div><div><div><div></div></div><div><div></div></div></div></div><div><div>CE</div><div>UL</div><div>RoHS</div></div><div><div>LISTED</div><div>Compliant</div></div></div><div>48 I/O Max</div></div></div> | <div>Genie-NX Base Module</div> <div></div> |                                   | <div>Comms Module</div> <div></div>                                                                                                                                                                                                                                                                                                                                  |                                   | <div>Expansion Module</div> <div></div>                                                     |                                                         |
| Code                                                                                                                                                                                                                                                                                                                                                                                                         | G7DDT9                                                                                                                       | G8DDT9                            | G7XDTR4                                                                                                                                                                                                                                                                                                                                                                                                                                               | G8XDTR4                           | G7DDT6E                                                                                                                                                                        | G8DDT6E                                                 |
| General                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                              |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                                                                                                                                                                                |                                                         |
| Supply Voltage                                                                                                                                                                                                                                                                                                                                                                                               | 110-240VAC                                                                                                                   | 12-24VDC                          | 110-240VAC                                                                                                                                                                                                                                                                                                                                                                                                                                            | 12-24VDC                          | 110-240VAC                                                                                                                                                                     | 12-24VDC                                                |
| Size W x H x D                                                                                                                                                                                                                                                                                                                                                                                               | 72 x 90 x 65 mm                                                                                                              |                                   | 36 x 90 x 60 mm                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   | 72 x 90 x 65 mm                                                                                                                                                                |                                                         |
| Mounting                                                                                                                                                                                                                                                                                                                                                                                                     | Base/DIN Mount                                                                                                               |                                   | Base/DIN Mount                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                   | Base/DIN Mount                                                                                                                                                                 |                                                         |
| Reserve (Clock)                                                                                                                                                                                                                                                                                                                                                                                              | 150h at -10°C to 55°C                                                                                                        |                                   | -                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                   | -                                                                                                                                                                              |                                                         |
| I/O's                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                              |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                                                                                                                                                                                |                                                         |
| Max Exp. Modules                                                                                                                                                                                                                                                                                                                                                                                             | 3 x Expansion Modules                                                                                                        |                                   | -                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                   | -                                                                                                                                                                              |                                                         |
| Digital Input                                                                                                                                                                                                                                                                                                                                                                                                | 8 (0-50VAC) Off,<br>(80-265VAC) On                                                                                           | 6 (0-4VDC) Off,<br>(8-26.4VDC) On | TTL Level 1                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   | 8 (0-50VAC) Off,<br>(80-265VAC) On                                                                                                                                             | 8 (0-4VDC) Off,<br>(8-26.4VDC) On                       |
| Analogue Input                                                                                                                                                                                                                                                                                                                                                                                               | N/A                                                                                                                          | 2 (can be used for Analogue)      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                   | -                                                                                                                                                                              |                                                         |
| Output                                                                                                                                                                                                                                                                                                                                                                                                       | -                                                                                                                            |                                   | RS485 Protocol (2 Wires, D+, D-)                                                                                                                                                                                                                                                                                                                                                                                                                      |                                   | -                                                                                                                                                                              |                                                         |
| Relay Output                                                                                                                                                                                                                                                                                                                                                                                                 | 4 x NO 8A                                                                                                                    | 4 x NO 8A                         | -                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                   | 4 x NO 8A                                                                                                                                                                      | 4 x NO 5A                                               |
| Communication                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                              |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                                                                                                                                                                                |                                                         |
| RS 485 PROTOCOL                                                                                                                                                                                                                                                                                                                                                                                              | -                                                                                                                            |                                   | RS485 (2 Wires, D+, D-)                                                                                                                                                                                                                                                                                                                                                                                                                               |                                   | <div>Accessories</div> <div></div> <div>GFDNN1</div> <div>GFDNN2S</div> <div>GFDNN3M</div> |                                                         |
| Modbus Comms                                                                                                                                                                                                                                                                                                                                                                                                 | -                                                                                                                            |                                   | YES (RTU)(SLAVE)                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                   |                                                                                                                                                                                |                                                         |
| DST                                                                                                                                                                                                                                                                                                                                                                                                          | -                                                                                                                            |                                   | -                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                   |                                                                                                                                                                                |                                                         |
| LED Indication                                                                                                                                                                                                                                                                                                                                                                                               | -                                                                                                                            |                                   | Red LED's for Tx & Rx. Green LED for Power                                                                                                                                                                                                                                                                                                                                                                                                            |                                   |                                                                                                                                                                                |                                                         |
| Number of Nodes                                                                                                                                                                                                                                                                                                                                                                                              | -                                                                                                                            |                                   | 32 std Unit Loads                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                   |                                                                                                                                                                                |                                                         |
| Baud Rate                                                                                                                                                                                                                                                                                                                                                                                                    | -                                                                                                                            |                                   | 300, 600, 1200, 2400, 4800, 9600                                                                                                                                                                                                                                                                                                                                                                                                                      |                                   |                                                                                                                                                                                |                                                         |
| Programming                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                              |                                   | Code                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Description                       | Code                                                                                                                                                                           | Description                                             |
| Ladder Programming                                                                                                                                                                                                                                                                                                                                                                                           | 250 Lines                                                                                                                    |                                   | GFDNN3M                                                                                                                                                                                                                                                                                                                                                                                                                                               | Memory Card                       | GFDNN1                                                                                                                                                                         | USB Cable                                               |
| Function Blocks                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                              |                                   | GFDNN2S                                                                                                                                                                                                                                                                                                                                                                                                                                               | RS 232 Serial Communication Cable | GNXNN1                                                                                                                                                                         | GENIE NX Software Windows 98, 2000, XP, Vista & Windows |
| Timers                                                                                                                                                                                                                                                                                                                                                                                                       | 16 (on delay, interval, cyclic, on-off, off delay)                                                                           |                                   | <div>Features</div> <div><ul style="list-style-type: none"><li>• Supports up to 32 Digital Inputs &amp; 16 Digital Outputs</li><li>• 250 lines of ladder programming</li><li>• 16 Messages, Time Switches, Compare Counters, Timers, Counters &amp; (12 analogue functions - <b>G8DDT9</b> only)</li><li>• DST Feature available</li><li>• PC software for programming, online &amp; offline simulation, documentation &amp; printing</li></ul></div> |                                   |                                                                                                                                                                                |                                                         |
| Counters                                                                                                                                                                                                                                                                                                                                                                                                     | 16 (Up/Down, Retentive selectable)                                                                                           |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                                                                                                                                                                                |                                                         |
| Time Switches                                                                                                                                                                                                                                                                                                                                                                                                | 16 (Weekly/Daily)                                                                                                            |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                                                                                                                                                                                |                                                         |
| Compare Counters                                                                                                                                                                                                                                                                                                                                                                                             | 16                                                                                                                           |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                                                                                                                                                                                |                                                         |
| Analogue Functions                                                                                                                                                                                                                                                                                                                                                                                           | N/A                                                                                                                          | 12                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                                                                                                                                                                                |                                                         |
| Soft Text Mesages                                                                                                                                                                                                                                                                                                                                                                                            | 16 (Priority Driven)                                                                                                         |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                                                                                                                                                                                |                                                         |
| AUX Relays                                                                                                                                                                                                                                                                                                                                                                                                   | 64                                                                                                                           |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                                                                                                                                                                                |                                                         |

## SWITCHED MODE POWER SUPPLIES

| Code                   | 24AS244D6D       | 24AS126D6D       | 24BS24AD4E          | 24BS241D2F          | 24BS051D1F          |
|------------------------|------------------|------------------|---------------------|---------------------|---------------------|
| Supply Voltage         | 230V, 50Hz       | 230V, 50Hz       | 100-240V, 50/60Hz   | 100-240V, 50/60Hz   | 100-240V, 50/60Hz   |
| Output Voltage         | 24VDC            | 12VDC            | 24VDC               | 24VDC               | 5VDC                |
| Rated Current          | 5A               | 6A               | 2.5A                | 1A                  | 1A                  |
| Accuracy               | ±1%              | ±1%              | ±1%                 | ±1%                 | ±1%                 |
| Line/Load Regulation   | 1%               | 1%               | 1%                  | 1%                  | 1%                  |
| Ripple, Noise          | 150mV (P-P)      | 100mV (P-P)      | 150mV (P-P)         | 150mV (P-P)         | 100mV (P-P)         |
| Overvoltage Protection | 26-33V           | 13-16V           | 160% of Full Load   | 160% of Full Load   | 180% of Full Load   |
| Overload Capacity      | 168% for 10s Max | 130% for 10s Max | 150-250% for 5s Max | 120-175% for 5s Max | 120-140% for 5s Max |
| Dimensions             | 108 x 90 x 58mm  | 108 x 90 x 58mm  | 72 x 90 x 58mm      | 36 x 90 x 60mm      | 48 x 90 x 58mm      |

## PL-100 MINI PROGRAMMABLE LOGIC CONTROLLER

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                            |  |                                                                                                                           |  |                                                                                                                                                                                                                                                                                                                                       |                                            |           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------|
| <div><div></div></div>                                                                                                                                                                                                                                                                                                                                                                                             |  | <div>PL-100 Base Module</div> <div></div> |  | <div>Expansion Module</div> <div></div> |  |                                                                                                                                                                                                                                                                                                                                       |                                            |           |
| Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | PC10161D1                                                                                                                  |  | PC10142D1                                                                                                                 |  | Code                                                                                                                                                                                                                                                                                                                                  | Description                                | DIN Width |
| General Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                                                                                                            |  |                                                                                                                           |  |                                                                                                                                                                                                                                                                                                                                       |                                            |           |
| Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | 24VDC                                                                                                                      |  |                                                                                                                           |  | EDCI8                                                                                                                                                                                                                                                                                                                                 | 8 Digital Inputs                           | 2MOD.     |
| Internal Current Consumption                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | 65mA @ 24VDC                                                                                                               |  | 60mA @ 24VDC                                                                                                              |  | EDCRO8                                                                                                                                                                                                                                                                                                                                | 8 Relay Outputs                            | 2MOD.     |
| Inrush Current                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  | 2.5A @VDC                                                                                                                  |  |                                                                                                                           |  | EDCI8RO8                                                                                                                                                                                                                                                                                                                              | 8 Digital Inputs and 8 Relay Outputs       | 4MOD.     |
| Battery Backup                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  | 30 Days                                                                                                                    |  |                                                                                                                           |  | EDCTLO8                                                                                                                                                                                                                                                                                                                               | 8 Transistor Low Side Outputs              | 2MOD.     |
| Separate Power Supply for Outputs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | Not Required                                                                                                               |  | 19.2 - 26.4VDC                                                                                                            |  | EDCTHO8                                                                                                                                                                                                                                                                                                                               | 8 Transistor High Side Outputs             | 2MOD.     |
| DIN Width                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | 4MOD.                                                                                                                      |  | 4MOD.                                                                                                                     |  | EANIV4C4                                                                                                                                                                                                                                                                                                                              | 4 Analog Inputs (0-10v / 4-20mA)           | 2MOD.     |
| Max No of I/O's                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | 100                                                                                                                        |  |                                                                                                                           |  | EANOV2C2                                                                                                                                                                                                                                                                                                                              | 2 Analog Outputs (0-10V / 4-20mA)          | 2MOD.     |
| Max No of Expansion Modules                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | 6                                                                                                                          |  |                                                                                                                           |  | <div><div></div><div></div><div></div></div> <div>PC10AC228D33B0PC10AC3</div> |                                            |           |
| I/O's - Onboard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                            |  |                                                                                                                           |  |                                                                                                                                                                                                                                                                                                                                       |                                            |           |
| Digital Inputs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  | 8 (Sinking / Sourcing)                                                                                                     |  | 6 + 2 High Speed                                                                                                          |  | Accessories                                                                                                                                                                                                                                                                                                                           |                                            |           |
| Input voltage Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  | 0 - 26.4VDC                                                                                                                |  |                                                                                                                           |  |                                                                                                                                                                                                                                                                                                                                       |                                            |           |
| Level (Logic 0)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | Max 7VDC                                                                                                                   |  |                                                                                                                           |  |                                                                                                                                                                                                                                                                                                                                       |                                            |           |
| Level (Logic 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | Min 16VDC                                                                                                                  |  |                                                                                                                           |  |                                                                                                                                                                                                                                                                                                                                       |                                            |           |
| Input Current                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | 1.2mA Max Per Unit                                                                                                         |  |                                                                                                                           |  |                                                                                                                                                                                                                                                                                                                                       |                                            |           |
| Input Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | 10Hz Max                                                                                                                   |  |                                                                                                                           |  | Code                                                                                                                                                                                                                                                                                                                                  | Description                                |           |
| Digital Outputs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | 8Relay (NO)                                                                                                                |  | 4 + 2 High Speed MOSFET Low Side Driver                                                                                   |  | 28D33B0                                                                                                                                                                                                                                                                                                                               | USB Cable                                  |           |
| Rated Load                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | 5A @ 230VAC / 30VDC                                                                                                        |  | 24VDC 500mA                                                                                                               |  | PC10AC2                                                                                                                                                                                                                                                                                                                               | RS232 Communication Cable PLC- HMI / SCADA |           |
| Max Load Per Common                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  | 10A                                                                                                                        |  | -                                                                                                                         |  | PC10AC3                                                                                                                                                                                                                                                                                                                               | RS485 Communication Cable PLC- HMI / SCADA |           |
| Communications, Features & Benefits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |                                                                                                                            |  |                                                                                                                           |  | PL-SOFT                                                                                                                                                                                                                                                                                                                               |                                            |           |
| <div><div>• PC Port - USB (Type B)</div><div>• HMI Port (RS232 / RS485) - RJ11 (for HMI or any MODbus Device)</div><div>• Communication Parameters - Software Selectable</div><div>• HMI Port Comm. Protocol - MODbus Master/Slave</div><div>• Supports up to 100 I/O's</div><div>• Relay Base &amp; MOSFET Low Side Base Modules</div><div>• Stacking using FRC cable. Max 6 Expansion Modules</div><div>• Isolated Digital Inputs with Sourcing &amp; Sinking</div><div>• Isolated Digital Transistorized Outputs</div><div>• High Speed Inputs - Single / Quadrature</div></div> |  |                                                                                                                            |  |                                                                                                                           |  | Programming Software Windows 98, 2000, XP, 7, 8, Vista                                                                                                                                                                                                                                                                                |                                            |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                            |  |                                                                                                                           |  | • Programming Language: Ladder                                                                                                                                                                                                                                                                                                        |                                            |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                            |  |                                                                                                                           |  | • High Speed Outputs (PTO / PWM / S-Profile)                                                                                                                                                                                                                                                                                          |                                            |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                            |  |                                                                                                                           |  | • Analogue Inputs & Outputs 0-10v / 4-20mA                                                                                                                                                                                                                                                                                            |                                            |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                            |  |                                                                                                                           |  | • Online & Offline Simulation                                                                                                                                                                                                                                                                                                         |                                            |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                            |  |                                                                                                                           |  | • Standard RS232/RS485 Port with RJ11 for HMI / SCADA Interface                                                                                                                                                                                                                                                                       |                                            |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                            |  |                                                                                                                           |  | • MODbus RTU Support                                                                                                                                                                                                                                                                                                                  |                                            |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                            |  |                                                                                                                           |  | • 128 Weekly, Monthly & Yearly Time Switches                                                                                                                                                                                                                                                                                          |                                            |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                            |  |                                                                                                                           |  | • Multiple Timers, Counters. Hour meters and many more function blocks                                                                                                                                                                                                                                                                |                                            |           |

## COMMUNICATION ACCESSORIES AND PROTOCOL CONVERTERS



40B2BAVAA



28A11A0



26A11AV



25A11A0

GSM Alarm Modem

| Code      | Description                                                                                                                                                                                          |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 40B2BAVAA | 24VDC GSM Modem for Mini PLC PL-100. Includes wire type antenna. Remote Control, monitoring and diagnostics for digital and analog inputs and outputs through SMS messages to and from the GSM modem |

USB to Serial Converter

|         |                                                                                                                   |
|---------|-------------------------------------------------------------------------------------------------------------------|
| 28A11A0 | This converter converts RS232/RS485/RS422 to USB. Includes 1.5kV Galvanic isolation between USB and Serial ports. |
| 28NNN10 | Software CD for Win XP, Vista, Win7, Win8                                                                         |

GSM Controller - Control by Missed call, SMS, IVRS call

|         |                                                                                                                   |
|---------|-------------------------------------------------------------------------------------------------------------------|
| 26A11AV | 180 - 500VAC 3 Phase for remote monitoring and ON/OFF switching of various electrical loads using mobile handsets |
| 26A21AV | 85 - 265VAC 1 Phase for remote monitoring and ON/OFF switching of various electrical loads using mobile handsets  |
| 26100V0 | Wire type antenna                                                                                                 |

Lynx Gateway

| Code                       | 25A11A0                                                         | 25B11A0            |
|----------------------------|-----------------------------------------------------------------|--------------------|
| General Specifications     |                                                                 |                    |
| Supply Voltage             | 12-24VDC                                                        |                    |
| Protocol Conversion        | Modbus RTU/ASCII to Modbus TCP                                  | Serial to Ethernet |
| Operation Mode             | Modbus RTU / ASCII (Master Slave), Modbus TCP (Server / Client) | Raw Telnet         |
| Config Management          | HTTP Web Server & Appl. Software                                |                    |
| Serial Interface           |                                                                 |                    |
| # of serial Ports          | 1                                                               | 2                  |
| Serial Interface: Port 1   | Screw Term for RS232, RS422, RS485                              |                    |
| Port 2                     | -                                                               | RJ11 for RS232     |
| Serial Interface           |                                                                 |                    |
| Port                       | RJ45, Ethernet 10/100 Mbps                                      |                    |
| Network Protocols for coms | TCP/IP, Modbus                                                  | Raw, Telnet        |

**NEW**

## PROGRAMMABLE LOGIC CONTROLLERS



LOGO-24-CE



LOGO-24-RCE

### LOGO! 8 Base Module PLC

| Code c/w LCD   | Code             | Power Supply     | Digital Inputs | Outputs | Configurable Inputs  |
|----------------|------------------|------------------|----------------|---------|----------------------|
| LOGO-24-CE     | LOGO!-24-CEO     | 24VDC            | 4DI            | 4DO     | 4 Digital / Analogue |
| LOGO-12/24-RCE | LOGO!-12/24-RCEO | 12 to 24VDC      | 4DI            | 4NO     | 4 Digital / Analogue |
| LOGO-24-RCE    | LOGO!-24-RCEO    | 24VAC/DC         | 8DI            | 4NO     | -                    |
| LOGO-230-RCE   | LOGO!-230-RCEO   | 115 to 230VAC/DC | 8DI            | 4NO     | -                    |

#### Features

- Memory 400 Blocks
- Modular expandable
- Integrated web server
- Data log
- User-defined web pages
- Standard micro-SD card for LOGO! Soft Comfort V8.4 software
- Cloud Connectivity

### LOGO! 8 Digital Expansion Modules



LOGO-DM8-24



LOGO-DM8-24-R

| Code             | Power Supply     | Digital Inputs | Digital Outputs | Contact Outputs | DIN Modules |
|------------------|------------------|----------------|-----------------|-----------------|-------------|
| LOGO-DM8-24      | 24VDC            | 4DI            | 4DO             | -               | 2           |
| LOGO-DM8-12/24-R | 12 to 24VDC      | 4DI            | -               | 4NO             | 2           |
| LOGO-DM8-24-R    | 24VAC/DC         | 4DI            | -               | 4NO             | 2           |
| LOGO-DM8-230-R   | 115 to 230VAC/DC | 4DI            | -               | 4NO             | 2           |
| LOGO-DM16-24     | 24VDC            | 8DI            | 8DO             | -               | 4           |
| LOGO-DM16-24-R   | 24VDC            | 8DI            | -               | 8NO             | 4           |
| LOGO-DM16-230R   | 115 to 230VAC/DC | 8DI            | -               | 8NO             | 4           |

### LOGO! 8 Analog Expansion Modules



LOGO-AM2

| Code         | Power Supply | Inputs                        | Outputs               | DIN Modules |
|--------------|--------------|-------------------------------|-----------------------|-------------|
| LOGO-AM2     | 12 to 24VDC  | 2 x (0-10V / 4-20mA)          | -                     | 2           |
| LOGO-AM2-RTD | 12 to 24VDC  | 2 X (PT100/1000) -50... 200°C | -                     | 2           |
| LOGO-AM2-AQ  | 24VDC        | -                             | 2 x (0-10V / 0/420mA) | 2           |

### LOGO! Communication Modules



LOGO-CSM-12-24



LOGO-CMR2040

| Code           | Power Supply | Description                                                    |
|----------------|--------------|----------------------------------------------------------------|
| LOGO-CSM-12/24 | 12 to 24VDC  | Ethernet 10/100 MB/s unmanaged switch, 4 x RJ45 Ports          |
| LOGO-CMR2040   | 12 to 24VDC  | Communication module for connecting to GSM / GPRS / UMTS / LTE |

### LOGO! Soft Comfort Software V8.3



| Code      | Description                                                                                                                                                                                                        |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LOGO-SOFT | <ul style="list-style-type: none"> <li>• Single license for 1 installation software and document on DVD</li> <li>• Executable on Windows XP, 7, 8, 10 (32 to 64 bit) , Mac OS X, Linux LOGO! Web Editor</li> </ul> |

**NEW**

## LOGO! POWER SUPPLIES

### LOGO! 8 Power Supplies - Supply Voltage 110-240VAC



18.8W-54W



14.4W-96W

| Code              | Output Voltage | Watts | Amps | Output Adjustment | Size           |
|-------------------|----------------|-------|------|-------------------|----------------|
| LOGO-PSU-12V/0.9A | 12VDC          | 10.8W | 0.9A | No                | 18 x 90 x 53mm |
| LOGO-PSU-12V/1.9A |                | 22.8W | 1.9A | 10.5 - 16.1V      | 36 x 90 x 53mm |
| LOGO-PSU-12V/4.5A |                | 54W   | 4.5A | 10.5 - 16.1V      | 54 x 90 x 53mm |
| LOGO-PSU-24V/0.6A | 24VDC          | 14.4W | 0.6A | No                | 18 x 90 x 53mm |
| LOGO-PSU-24V/1.3A |                | 31.2W | 1.3A | 22.2 - 26.4V      | 36 x 90 x 53mm |
| LOGO-PSU-24V/2.5A |                | 60W   | 2.5A | 22.2 - 26.4V      | 54 x 90 x 53mm |
| LOGO-PSU-24V/4A   |                | 96W   | 4A   | 22.2 - 26.4V      | 72 x 90 x 53mm |

- Load Regulation :  $\pm 2\%$
- Overload Protection
- Short Circuit Protection
- Derating from 55-70°C derate by 2%

## PROFESSIONAL OPERATION PANEL WITH I/O

- User Friendly Script Language
- High memory and storage capacity
- Project download and upload via USB
- Industry Standard communication networks
- Font support for FreeType and Windows

- **Communication Protocols:** Modbus, ASCII, RTU, TCP/IP, MODBUS TCP, UDP, SNMP
- **Siemens S7:** 300/400/1200/1500 PLC Protocol Support
- **USB:** 1xUSB 2.0 (Client), 1xUSB 2.0 (Host)
- **Serial Ports:** 1 x RS485 (Terminal), 1 x RS232 (Terminal), 1 x RS232 (DB-9)
- **Ethernet:** 1 x 10/100 Mbps
- **Power supply:** 18-30VDC
- **MCU:** ARM Cortex-A7, 528Mhz. ARM Cortex-A9, 800Mhz
- **Flash Memory:** 4 GB
- **Ram:** 512 MB DDR3 SDRAM
- **Battery:** CR2032 button cell lithium 3V (removable) with 5 years life

### 7" Series

Free Proop Builder Software



### 10" Series

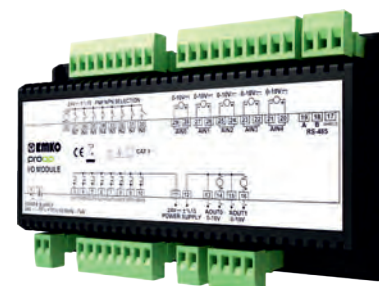
Free Proop Builder Software



| Code                   | Light     | Control    | Light      | Control    | Process     |
|------------------------|-----------|------------|------------|------------|-------------|
|                        | PROOP-7LE | PROOP-7CE* | PROOP-10LE | PROOP-10CE | PROOP-10PE* |
| <b>Specifications:</b> |           |            |            |            |             |
| Digital Inputs         | -         | 4          | -          | 5          | 5           |
| Digital Outputs        | -         | 4          | -          | 4          | 4           |
| Analog In 4-20mA       | -         | -          | -          | -          | 2           |
| Analog Out 4-20mA      | -         | -          | -          | -          | 2           |

### Din Rail I/O Expansion Modules

| Code       | Description                                                              |
|------------|--------------------------------------------------------------------------|
| IO-P2213   | 8 Digital In/ 8 Digital Out                                              |
| IO-P221311 | 8 Digital In/ 5 PT100/ 8 Digital Out/ 2 Analog Out 0/4-20mA              |
| IO-P221312 | 8 Digital In/ 5 PT100/ 8 Digital Out/ 2 Analog Out 0-10Vdc               |
| IO-P221321 | 8 Digital In/ 5 Analog In 0/4-20mA/ 8 Digital Out/ 2 Analog Out 0/4-20mA |
| IO-P221332 | 8 Digital In/ 5 Analog In 0-10Vdc/ 8 Digital Out/ 2 Analog Out 0-10Vdc   |
| IO-P221341 | 8 Digital In/ 5 Analog In 0-50mV/ 8 Digital Out/ 2 Analog Out 0/4-20mA   |
| IO-P221342 | 8 Digital In/ 5 Analog In 0-50mV/ 8 Digital Out/ 2 Analog Out 0-10Vdc    |
| 28D33BO    | USB Programming Cable                                                    |



I/O Expansion Card

\* For units with Wi-Fi add **WI** to part number

- All the above I/O cards use RS485 Communication and require 24VAC/DC Power Supply • GSM Units available on request
- PT100 range: -200 to 650°C. • Analog inputs: 14-Bit. • Analog Outputs = 12-Bit • Connect up to 32 I/O Expansion Modules

## POULTRY AUTOMATION AND CONTROL SYSTEMS

- Emko Cloud Web Management
- Multiple Poultry Visualisations
- Remote Monitoring and Control for Android and IOS
- Alarm SMS's

- **Power Supply:** 24VDC
- **CPU:** ARM Cortex-A9, 800Mhz
- **RAM:** 512MB
- **Flash Memory:** 4GB
- **Ethernet:** 1 x 10/100 Mbps
- **Battery:** CR2032 button cell lithium 3V (removable) with 5 years life

### 10" HMI Touch Panel



### I/O Expansion Modules



### GSM SMS Module



### RS485 Humidity and Temp. Sensor



| Code                   | EPC-T10                                                                                | EPC-N-IO                                                                                                                        | EPC-N-GSM                                       | PMD-W-O/O-110                                                                                                      |
|------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>Specifications:</b> | 2 x USB<br>1 x Ethernet<br>1 x RS232 (For GSM Module)<br>1 x RS485 (I/O card) Com Port | 8 Digital Inputs<br>18 Relay Outputs<br>11 Analogue Inputs<br>2 Analogue Outputs<br>2 x RS485 Com Ports (For I/O communication) | GSM SMS Module Antenna + 3m Communication Cable | Wall Mounting Humidity and Temperature Sensor<br>RS485 Communication<br>Temp: -20 to 80°C<br>Humidity: 0 - 100% RH |

**NEW**

## GSM / TELEMETRY CONTROLLERS

Supply Voltage: 10-24VDC.

A product range used for PLC-Type Telemetry applications. Allows users to be notified of remote events and enables the user to control remote equipment - all from a cell phone. No PLC required, complete standalone unit. Easy to configure and install.

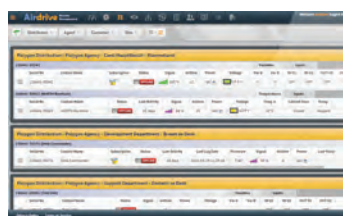


### GSM Commander - Base Unit

| Code                   | GC0108-4G-*   | GC0328-4G-*   | GC0648-4G-*   | GC1288-4G-*   |
|------------------------|---------------|---------------|---------------|---------------|
| Type                   | Micro         | LITE          | STANDARD      | PROFESSIONAL  |
| Onboard Inputs         | 2             | 2             | 2             | 2             |
| Onboard Outputs        | 2             | 2             | 2             | 2             |
| Max. Extendable I/O    | None          | 12/12         | 22/22         | 32/32         |
| GPRS Functionality     | Lite          | Lite          | Full          | Full          |
| No. of Statements      | 10            | 32            | 64            | 128           |
| Setup Memory           | 2kB           | 2kB           | 4kB           | 8kB           |
| Temp Probes Supported  | 0             | 2             | 2(16)         | 2(16)         |
| Analogue Inputs        | 0             | 1             | 1(16)         | 1(16)         |
| Battery/Power Monitors | Yes           | Yes           | Yes           | Yes           |
| USB Configuration      | Yes           | Yes           | Yes           | Yes           |
| DTMF Decoder           | No            | No            | Yes           | Yes           |
| SIM Card Slots         | 1             | 1             | 1             | 1             |
| Size (mm)              | 148 x 86 x 28 | 148 x 86 x 28 | 148 x 86 x 28 | 148 x 86 x 28 |

Specify if you would like to order a kit or only a base unit.

\* Add to code: **OEM** (base unit only) or **BOX** (kit including basic antenna, power supply, USB cable and software CD).



### Airdrive Subscriptions Cloud Platform - Interface using LTE data

| Code  | Description | Subscription Terms | Subscription Features |                              |                                   |                           |
|-------|-------------|--------------------|-----------------------|------------------------------|-----------------------------------|---------------------------|
|       |             |                    | Device Realtime View  | Device History View / Export | Events Viewing Realtime / History | Remote * Setups / Control |
| AD011 | Viewer      | Free               | ✓                     | x                            | x                                 | x                         |
| AD012 | Historian   | 1 Year / 1 Device  | ✓                     | ✓                            | ✓                                 | x                         |
| AD013 | Editor      | 1 Year / 1 Device  | ✓                     | ✓                            | ✓                                 | ✓                         |

\* Functions only available for **GC0648 / GC1288**

### Expansion Units



| Code   | Description                                                                                           |
|--------|-------------------------------------------------------------------------------------------------------|
| GM0505 | 5 x Input and 5 x relay Output Expansion Module   Dimensions: 147 x 103 x 28mm                        |
| GM1000 | Expansion unit with interface cable: 10 x Opto-isolated Inputs                                        |
| GMA04  | 4 x Input analogue expansion 4-20mA 10-30V<br>(Serial Interface only for <b>GC0648 &amp; GC1288</b> ) |
| GMT04  | 4 (4 groups of 2 each) Temperature Probe Expansion (only <b>GC0648 &amp; GC1288</b> )                 |

### Cable Theft Prevention



|        |                                                             |
|--------|-------------------------------------------------------------|
| CTM001 | Cable theft monitor for 3 phase & Single phase cable.       |
| IVS002 | Intelligent Vibration Sensor - Adjustable (normally closed) |
| DCR-03 | DC Reflector for use with <b>CTM001</b>                     |

### Accessories - Temperature



|        |                                                                                 |
|--------|---------------------------------------------------------------------------------|
| GT008  | Temperature interface to connect 2x temp. probes to units (Probes not included) |
| GT003A | Primary Sensor for <b>GMT04</b> -50 to 120°C 1m Cable                           |
| GT003B | Secondary Sensor for <b>GMT04</b> -50 to 120°C 1m Cable                         |

### Cables



|        |                                           |
|--------|-------------------------------------------|
| GS020  | Expansion Ribbon Cable 20cm               |
| GS030  | Serial (RS232) Communication Cable        |
| GS040  | Serial (RS232) to USB Converter / Adaptor |
| CON-01 | Cable & Connector set GSM Commander       |

### Power Supply



|          |                                            |
|----------|--------------------------------------------|
| DRA18-12 | 1.25A 12V Regulated DIN Mount Power Supply |
| PSU1417  | 1700mA 14V Metal Switching Power Supply    |
| SY1212   | 12V 1.2AH Sealed Lead Acid Battery         |

## GSM CONTROLLER ACCESSORIES



## Antennas

|       |                                                               |
|-------|---------------------------------------------------------------|
| GA002 | 3dBi Magnetic base Antenna with 1m Cable                      |
| GA004 | 5dBi Outdoor Antenna - Screw Mount. 3.5m Cable                |
| GA007 | 2dBi Knobby Antenna - Screw Mount                             |
| GA008 | 12dBi Outdoor Yagi Antenna                                    |
| GA009 | 5dBi Magbase Antenna with 1m cable                            |
| GA200 | Stealth Outdoor 2dBi Pentaband Antenna (ultra-rugged) Stealth |
| GA210 | Outdoor 2dBi Pentaband Antenna with vibration sensor          |

WHILE STOCKS LAST

## GSM / TELEMETRY KITS

## Makulu Ready to Mount

The Makulu is a complete panel, ready to mount. Designed with lazer-cut and electroplated brackets. It is setup with all the components and accessories you normally need for an installation.

## RTM Kits includes:

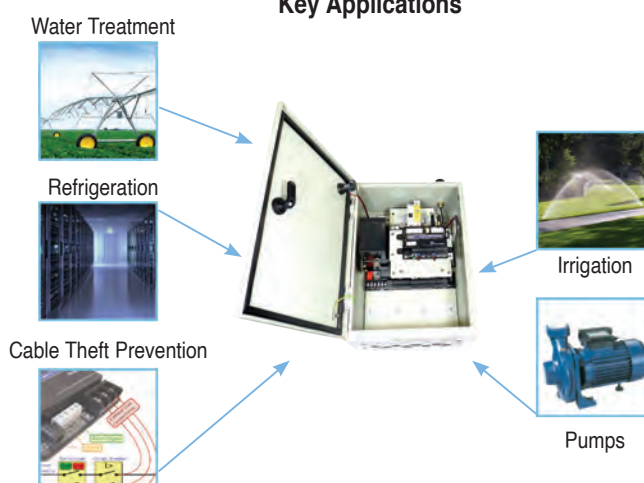
- 2 dBi Knobby Antenna
- Micro door switch
- Ultra-rugged expansion unit with 5 input and 5 relay outputs
- Additional 250mm DinRail space
- 8 x Gland fittings for pre-drilled bottom plate
- 2 x Pulse stretchers(Input 6&7)
- **Protection:** Surge protector, Circuit breaker, AC/DC filter
- **Power Supply:** Enclosed 230VAC/15W PSU, Built in 7AH battery with battery protector

## Optionals:

- Analog expansion(**GMA04**) OR digital temp expansion (**GMT04**)
  - Cable theft Monitor (**CTM001**)
  - Expansion Units (**GM0505** or **GM1000**)
  - **Note:** There is only space for 1 x I/O expansion unit inside the Makulu.
- Additional are to be installed in a separate enclosure.



## Key Applications



**Note:** Please note that these orders are made on request and will carry a lead time from date of payment.

| Kit Code  | GSM Commander | Inputs         | Outputs | I/O Expandable up to | Analog Input (expandable) | Temp Input | Dimensions      |
|-----------|---------------|----------------|---------|----------------------|---------------------------|------------|-----------------|
| RTM-M0328 | GC0328        | 6(8A) + 1(30A) | 7       | 12                   | 1(10)                     | 2(10)      | 300 X 400 X 250 |
| RTM-M0648 | GC0648        | 6(8A) + 1(30A) | 7       | 22                   | 1(10)                     | 2(10)      | 300 X 400 X 250 |
| RTM-M1288 | GC1288        | 6(8A) + 1(30A) | 7       | 32                   | 1(10)                     | 2(10)      | 300 X 400 X 250 |

## PICO Ready to Mount

The Pico is small, complete panel, ready to mount. Designed with lazer-cut and electroplated brackets. It is set-up with the essential components & accessories you normally need for a simple installation.

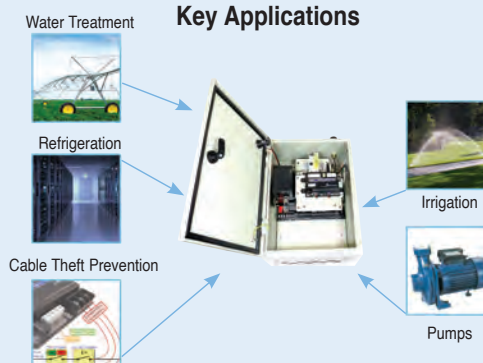
## RTM Kit includes:

- 2 dBi Knobby Antenna
- Micro door switch
- 3 x Gland fittings for pre-drilled bottom plate
- **Protection:** MOV, Fuse
- **Power Supply:** Enclosed 230VAC/15W PSU, Built in 1.2AH battery with battery protector, AC/DC filter
- **Note:** No additional space inside the Pico for expanded I/O. Any expansion units must be located in a separate enclosure.

**Note:** Please note that these orders are made on request and will carry a lead time from date of payment.



## Key Applications



| Kit Code  | GSM Commander | Inputs | Outputs | I/O Expandable up to | Analog Input (expandable) | Temp Input | Dimensions      |
|-----------|---------------|--------|---------|----------------------|---------------------------|------------|-----------------|
| RTM-P0328 | GC0328        | 2(8A)  | 7       | 12                   | 1(10)                     | 2(10)      | 200 x 250 x 150 |
| RTM-P0648 | GC0648        | 2(8A)  | 7       | 22                   | 1(10)                     | 2(10)      | 200 x 250 x 150 |
| RTM-P1288 | GC1288        | 2(8A)  | 7       | 32                   | 1(10)                     | 2(10)      | 200 x 250 x 150 |

## TELEMETRY SYSTEMS

### Input/Output Tranceiver - IP55

Supplied in weatherproof enclosure with power supply.  
Order Antenna and Battery separately. A typical system would require  
2 x **TXR44** + 2 x **ANTTRX** + 2 x **SY1270** (For Battery Backups if required.)

| Code         | Description                               |
|--------------|-------------------------------------------|
| <b>TXR44</b> | 4 Input / 4 Output Transmitter / Receiver |

#### Specifications

- 6km in line of sight
- License free wireless band
- Positively triggered inputs
- Backup battery optional extra
- Supply Volts: 230VAC



**FUHFMINIREPT**



### One Way Transmitter / Receiver System

A simple system would require: 1 x **FRKUR4** + 1 x **SUPERHOG** + Enclosures & Power Supplies

| Code            | Description                 |
|-----------------|-----------------------------|
| <b>FRKUR4</b>   | 4 Channel Receiver 1-6km    |
| <b>SUPERHOG</b> | 4 Channel Transmitter 1-6km |

#### Possible Applications

- Automatic Pump Control
- Electric Fence Monitoring
- Fire Panel Monitoring

#### Complete Solutions

Contact the Panel Workshop for complete solutions tailored to your application

### Accessories

| Code                | Description                                           |
|---------------------|-------------------------------------------------------|
| <b>ANT10M</b>       | 10m Antenna Extension Cable SMA Connector             |
| <b>ANTTRX</b>       | 6km Antenna, 2.5m Lead, SMA Connector                 |
| <b>TG-1</b>         | Hand Held Remote 1CH 1-3km                            |
| <b>TG-2</b>         | Hand Held Remote 2CH 1-3km                            |
| <b>FUHFMINIREPT</b> | Repeater for use with <b>SUPERHOG</b> / <b>FRKUR4</b> |

### Power Supplies

| Code             | Description                        |
|------------------|------------------------------------|
| <b>DPSU/3/12</b> | 3A 12V regulated power supply*     |
| <b>SY1270</b>    | Battery 7Ah 12VDC sealed lead acid |

\*If used with a battery set at 13.6VDC

**NEW**

## VOLTAGE/ CURRENT PROTECTOR



| Code                           | GPS8-02/63A (1PH)                 | GPS8-03/63A (3PH)                 |
|--------------------------------|-----------------------------------|-----------------------------------|
| Function                       | Over/Under Voltage & Over Current | Over/Under Voltage & Over Current |
| Rated Supply Voltage           | 230VAC                            | 230VAC (L1,L2,L3-N)               |
| Rated Supply Frequency         | 50/60Hz                           | 45-65Hz                           |
| Rated Current                  | 63A (AC1)                         | 63A (AC1)                         |
| Voltage Display                | ✓                                 | ✓                                 |
| Current Display                | ✓                                 | ✓                                 |
| Over Voltage Adjustable Range  | 230V-300V (Factory default 275)   | 230V-300V                         |
| Over/Under Voltage Delay       | 0.5s                              | 0.1~10s                           |
| Under Voltage Adjustable Range | 145~210V (Factory default 175V)   | 140~210V                          |
| Over Current Adjustable Rating | 1A~63A (default 63A)              | 1~63A                             |
| Over Current Delay             | 5s                                | 10s                               |
| Power On Delay Time            | 2s                                | 2~600s                            |
| Reset Delay Time               | 2~900s (Factory default 30s)      | 2~900s                            |

## MEASURING TRANSDUCERS



- Din rail mounting
- Programmable models can be setup on site via dip switches or PC programming
- Class 0,2
- Isolated Outputs



RISH-CON-I/V



RISH-CON-HZ



RISH-CON-CA/CV



RISH-CON-P



MXX



TV808

| Code               | Description                                                                                                                                                             | Input                                                 | Output Analogue                                                | Power Supply                                       |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------|
| RISH-CON-V-D-R     | 1PH TRMS AC Voltage Transducer - c/w display & RS485 Communication.                                                                                                     | Programmable: 57-550VAC                               | Programmable:                                                  | 60-300VAC/DC                                       |
| RISH-CON-I-D-R     | 1PH TRMS AC Current Transducer - c/w display & RS485 Communication.                                                                                                     | Programmable: 1A/5A                                   | Programmable: 0/4-20mA<br>0-10V                                | 60-300VAC/DC                                       |
| RISH-CON-HZ-D-R    | 1PH AC Frequency Transducer - c/w display & RS485 Communication.                                                                                                        | Programmable: 45Hz-65Hz<br>57-500VAC                  | Programmable: 0/4-20mA<br>0-10V<br>0/4-20mA<br>0-10V           | 60-300VAC/DC                                       |
| RISH-CON-CA        | 1PH Average AC Current Transducer.                                                                                                                                      | 5A                                                    | 4-20mA                                                         | 40-300VAC/DC                                       |
| RISH-CON-CV        | 1PH Average AC Current Transducer.                                                                                                                                      | 63-500VAC                                             | 4-20mA                                                         | 40-300VAC/DC                                       |
| RISH-CON-P-D-R     | 1P/3PH True RMS Power Transducer - Active. Power (W) / Reactive Power (KVAR) / Apparent. Power (VA) / Power Factor / Phase Angle. c/w Display & RS485 Communication.    | Programmable: 100-500VAC<br>1A/5A                     | Programmable: 0/4-20mA<br>0-10V<br>-20 to +20mA<br>-10 to +10V | 60-300VAC/DC                                       |
| RISH-DUCER-M01     | Programmable AC Power Multi-Transducer - with Multiple outputs. Measured values: Current, Voltage (RMS), Power-active / Reactive / Apparent, Power factor, Phase angle. | Programmable: 57-400V (L-N)<br>100-693V (L-L)<br>1-6A | RS485 (MODBUS)                                                 | 85-230VAC/DC                                       |
| RISH-DUCER-M24     |                                                                                                                                                                         |                                                       | 2 x Analogue (4-20mA)                                          |                                                    |
| RISH-DUCER-M42     |                                                                                                                                                                         |                                                       | 4 x Digital                                                    |                                                    |
| RISH-DUCER-M40     |                                                                                                                                                                         |                                                       | 4 x Analogue (4-20mA)<br>2 x Digital                           |                                                    |
| RISH-DUCER-TV808-* | DC Voltage and Current Transducer - c/w Trim pots. For DC Currents Higher than 20mA use 60mV Shunt.                                                                     | Jumper Selectable: 0-20mA<br>0-40VDC                  | Jumper Selected: 0/4-20mA -20 to +20mA<br>0-10V -10 to +10V    | * Add to code: L (24-60VAC/DC)<br>H (85-230VAC/DC) |

### Accessories



| Code     | Description                          |
|----------|--------------------------------------|
| PRKAB601 | Programming Cable for RISH-CON range |



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### Dedicated Function Transducers - Supply Voltage 230VAC, Accuracy class 0.5, DIN Rail Mounting

| Code     | Input              | Description               | Power Supply | Output         | Galvanic Isolation |
|----------|--------------------|---------------------------|--------------|----------------|--------------------|
| MI413-1B | 50-500VAC/0.5-5 AC | 1PH Active Power (Watts)  | 230V         | Programmable   | Current Only       |
| MI414-1B | 50-500VAC/0.5-5 AC | 1PH Reactive Power (Vars) | 230V         | Programmable   | Current Only       |
| MI421-1B | 50-500VAC/0.5-5 AC | 1PH Power Factor          | 230V         | Programmable   | Current Only       |
| MI436    | 50-500VAC          | 3PH AC Voltage            | 40-276VAC    | 3xProgrammable | ✗                  |
| MI438    | 0.5-5A AC          | 3PH AC Current            | 40-276VAC    | 3xProgrammable | ✗                  |
| MI413-4U | 50-500VAC/0.5-5 AC | 3PH Active Power (Watts)  | 230V         | Programmable   | Current Only       |
| MI414-4U | 50-500VAC/0.5-5 AC | 3PH Reactive Power (Vars) | 230V         | Programmable   | Current Only       |
| MI421-4U | 50-500VAC/0.5-5 AC | 3PH Power Factor          | 230V         | Programmable   | Current Only       |
| MI456    | 50mV-500VDC        | DC Voltage                | 230V         | Programmable   | ✓                  |
| MI458    | 0-5ADC             | DC Current                | 230V         | Programmable   | ✓                  |

- Programmable analogue output
- Programmable input range

Programmable analogue outputs can be configured with MISET software as:  
-1mA...1mA, -5mA...5mA, -10mA...10mA, -20mA...20mA, -1V...1V, -10V...10V  
• All programmable units complete with serial port RS485

### Accessories for MI Series

| Code   | Description                                     |
|--------|-------------------------------------------------|
| MI-PRO | Programming charge for MI Transducers           |
| MI485  | RS485/RS232 Converter with 230V AC Power Supply |

## MEASURING TRANSDUCERS



### DIN Rail Mount Current / Voltage Transducers

| Code   | Input    | Description            | Power Supply | Output | Galvanic Isolation |
|--------|----------|------------------------|--------------|--------|--------------------|
| TA-111 | 0-1A AC  | 1A Current Transducer  | Self Powered | 0-20mA | ✓                  |
| TA-112 | 0-5A AC  | 5A Current Transducer  | Self Powered | 0-20mA | ✓                  |
| TV-111 | 0-230VAC | 1PH Voltage Transducer | Self Powered | 0-20mA | ✓                  |

## SIGNAL TRANSDUCERS/ISOLATORS

- IP40 Housing
- IP20 Terminals



RHE

| Code          | 2SC3D11CC3                                                                                                                                                                                                                                                                   | 2SC3D11DC3                                                                                                                                                                                                                                                                   | DCSI-1*                                                                                                                                                                                                                       |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Supply  | 24VDC                                                                                                                                                                                                                                                                        | 24VDC                                                                                                                                                                                                                                                                        | * Add to code: AC (85-265VAC), DC (20-60VDC)                                                                                                                                                                                  |
| Input Signal  | 0-10VDC, 2-10VDC, 0-20mA, 4-20mA                                                                                                                                                                                                                                             | 0-5VDC, 1-5VDC, 0-20mA, 4-20mA                                                                                                                                                                                                                                               | 0-5V, 1-5V, 0-10V, 2-10V, 0-20mA, 0-10mA, 4-20mA, 2-10mA                                                                                                                                                                      |
| Output Signal | 0-10VDC, 2-10VDC, 0-20mA, 4-20mA                                                                                                                                                                                                                                             | 0-10VDC, 2-10VDC, 0-20mA, 4-20mA                                                                                                                                                                                                                                             | 0-5V, 1-5V, 0-10V, 2-10V, 2-10mA, 4-20mA, 0-10mA, 0-20mA                                                                                                                                                                      |
| Features:     | <ul style="list-style-type: none"> <li>• Dip Switch Configuration</li> <li>• 3-Way Galvanic Isolation</li> <li>• Offset Trimming Potentiometer</li> <li>• Gain Trimming Potentiometer</li> <li>• Reverse Polarity Protection</li> <li>• Size: 22.5 x 83 x 100.5mm</li> </ul> | <ul style="list-style-type: none"> <li>• Dip Switch Configuration</li> <li>• 3-Way Galvanic Isolation</li> <li>• Offset Trimming Potentiometer</li> <li>• Gain Trimming Potentiometer</li> <li>• Reverse Polarity Protection</li> <li>• Size: 22.5 x 83 x 100.5mm</li> </ul> | <ul style="list-style-type: none"> <li>• Input to output to power isolation</li> <li>• Dip Switch Configuration</li> <li>• Accuracy <math>\pm 0.5\%</math></li> <li>• Response Time <math>\leq 400\text{ms}</math></li> </ul> |

## SIGNAL, TEMPERATURE & SPEED TRANSMITTERS

### Signal Isolator / Transmitter / Transducer

| Code                                                                           | S4X-DT* | DC Input Range          | DC Output Range |
|--------------------------------------------------------------------------------|---------|-------------------------|-----------------|
| *Add Supply Voltage: A = 85 - 265VAC/100 to 330 VDC or B = 20 - 60VDC          |         | 0-50mV: 0-5V; 1-5V;     | 0-5V; 1-5V;     |
| Multi-range Input / Output selectable by solder jumper wire on inside of unit. |         | 0-50mV: 0-10V; 0-1mA;   | 0-10V; 0-10mA;  |
| (AC/DC Workshop will set Input/Output configuration if requested on ordering)  |         | 0-50mV: 0-20mA; 4 -20mA | 0-20mA; 4 -20mA |

### Potentiometer Transmitter

| Code                                       | S4X-PT-A | Input - 3 Wire                 | DC Output |
|--------------------------------------------|----------|--------------------------------|-----------|
| Supply Voltage: AC 85 - 265V/DC 100 - 330V |          | Total Resistance - 100Ω - 10kΩ | 4-20mA    |

### RTD (PT100) Transmitter (Isolator)

| Code                                                                   | S4X-RR-P*-A4* | DC Output |
|------------------------------------------------------------------------|---------------|-----------|
| * Add °C to code: F (0 - 100°C), D (-50 - 200°C), G (0 - 200°C)        |               | 4 -20mA   |
| * Add Supply Voltage: A = 85 - 265VAC/100 to 330 VDC or B = 20 - 60VDC |               |           |

### Speed (Frequency Transmitter)

| Code           | Description   | Code           | Description   |
|----------------|---------------|----------------|---------------|
| S4X-RT-B-2-M-A | 0-100Hz Input | S4X-RT-F-2-M-A | 0-2Hz Input   |
| S4X-RT-E-2-M-A | 0-1KHz Input  | S4X-RT-H-2-M-A | 0-10KHz Input |

Supply Volts: 85-265VAC Output: 4-20mA

### Specifications

Accuracy:  $\pm 0.1\%$  RO.  
Isolation: Input/Output/Power  
Insulation Resistance:  $\geq 100\text{M}\Omega$ , DC 500V  
Impulse Withstand Test: IEC 61000-4-5, class 4



## GENSET CONTROLLERS 8-32 VDC



| Model                                                                 | EAOM-19 | TRANS-MINIATS | TRANS-MINI*    | TRANS-AMF       | EAOM-210FDS    | MESSENGER      |
|-----------------------------------------------------------------------|---------|---------------|----------------|-----------------|----------------|----------------|
| Size (mm)                                                             | 72 x 72 | 111 x 81      | 111 x 81 x 61  | 152 x 224 x 41  | 144 x 204 x 37 | 144 x 204 x 37 |
| Automatic engine start/stop and load transfer                         | Y       | Y             | Y              | Y               | Y              | Y              |
| Manual, Automatic and Test Mode control                               | Y       | Y             | Y              | Y               | Y              | Y              |
| User configurable inputs                                              | 2       | 5             | 3              | 6               | 6              | 6              |
| User configurable outputs                                             | N       | 6             | 6              | 6               | 4              | 4              |
| Optional expansion board with user configurable 8 I/O <b>Trans-IO</b> | N       | N             | N              | Y               | N              | N              |
| Speed sensing from alternator voltage                                 | Y       | Y             | Y              | Y               | Y              | Y              |
| Speed sensing from magnetic pickup                                    | N       | N             | Y              | Y               | Y              | Y              |
| 3 resistive sender inputs (oil, fuel, temp.)                          | N       | N             | Y              | Y (4)           | Y              | Y              |
| Load current measurement                                              | N       | Y             | Y              | Y               | Y              | Y              |
| Generator Volts measurement                                           | L1/N    | L1/N          | L1/N           | L-L-L-N         | L-L-N          | L-L-N          |
| Mains Volts measurement                                               | L-L-N   | L-L-L-N       | L-L-L-N        | L-L-L-N         | L-L-N          | L-L-N          |
| Earth current measurement                                             | N       | N             | N              | Y               | Y              | Y              |
| Exercise at programmed time intervals                                 | N       | Y             | Y              | Y               | Y              | Y              |
| RS-232, Modbus ASCII Serial communication                             | N       | Y             | Y              | N               | Y              | Y              |
| Available for Remote using by PC software                             | N       | Y             | Y              | Y               | Y              | Y              |
| Standard modem communication                                          | N       | N             | N              | Y               | Y              | Y              |
| Generator Power measuring by kVA, kW, kVAh, kWh, kVAr, kWrh           | N       | Y             | Y              | Y               | Y              | Y              |
| Event logs                                                            | N       | Y             | Last 50 events | Last 500 events | Last 32 events | Last 32 events |
| Display                                                               | LED     | LCD           | LCD            | LCD             | LED            | LCD            |
| Mains contactor outputs                                               | Y       | Y             | Y              | Y               | Y              | Y              |
| Generator contactor outputs                                           | Y       | Y             | Y              | Y               | Y              | Y              |
| Programmable weekly working permit calendar                           | N       | Y             | Y              | Y               | Y              | Y              |
| Maintenance warning (working hour or elapsed month)                   | N       | Y             | Y              | Y               | Y              | Y              |
| Fully Programmable                                                    | Y       | Y             | Y              | Y               | Y              | Y              |
| Simple push button controlled operation                               | Y       | Y             | Y              | Y               | Y              | Y              |

\*Add to Code: **CAN** (Canbus), **MPU** (Magnetic Pick Up)

## TRANS-AMF ACCESSORIES

| Code | TRANS-IO                                                                                                                                                                                                                 | TRANS-MESS                                                                                                                                                                                           | TRANS-MESS485                                                                                                                                                                                                                             | TRANS-WEB                                                                                                                                                                                                                            |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | <p>8 x additional configurable IO's<br/>Inputs can be configured as +POS or -Neg and NO or NC.<br/>Outputs can be set as NO or NC.<br/>Adjustable input time delays.<br/>Can be used with remote monitoring modules.</p> | <p>2 way SMS communications (genset/Mobile).<br/>Control Genset and monitor status information.<br/>Send alarm information to predetermined GSM numbers.<br/>Supplied with software and antenna.</p> | <p>RS 485 ModBUS communication.<br/>Maintenance management of multiple GenSets from a central computer.<br/>247 devices can be added to network with 500 volt galvanic isolation.<br/>Supplied with visualisation and SCADA software.</p> | <p>Ethernet communication.<br/>Built in http web pages.<br/>Remote GenSet control by Smartphone and PC.<br/>Email sending of alarm conditions<br/>4GB SD memory.<br/>DHCP supported 2G, 3G, and EDGE.<br/>Supplied with antenna.</p> |

## GENSET CONTROLLERS

**DSE**

All controllers are suitable for 12/24VDC systems.



| Code                  | DSE331         | DSE4520           | DSE6120           | DSE7320           |
|-----------------------|----------------|-------------------|-------------------|-------------------|
| Application           | ATS            | AMF               | AMF               | AMF               |
| Config DC Output      | 4              | 4                 | 4                 | 4                 |
| Config Input          | 4              | 4                 | 6                 | 8                 |
| Oil Pressure          | N              | Can be Configured | Can be Configured | Can be Configured |
| Coolant Temp          | N              | Can be Configured | Can be Configured | Can be Configured |
| Remote Start          | Y              | Can be Configured | Can be Configured | Can be Configured |
| Config Relay Output   | 4              | N                 | N                 | 2                 |
| Fuel & Crank Output   | N              | Y                 | Y                 | Y                 |
| Pre Heat relay Output | N              | N                 | N                 | N                 |
| Analogue Input        | N              | 3                 | 4                 | 4                 |
| E-stop Input          | N              | Y                 | Y                 | Y                 |
| Current Input         | N              | Y                 | Y                 | Y                 |
| MPU Pick-Up           | N              | N                 | Y                 | Y                 |
| CANbus                | N              | Y                 | Y                 | Y                 |
| USB Port              | Y              | Y                 | Y                 | Y                 |
| RS232 Port            | N              | N                 | N                 | Y                 |
| RS485 Port            | N              | N                 | N                 | Y                 |
| Event Logging         | N              | 50 Events         | 100 Events        | 250 Events        |
| PC Config             | Y              | Y                 | Y                 | Y                 |
| Front Config          | Full           | Full              | Partial           | Partial           |
| Dimensions (mm)       | 180 x 116 x 42 | 140 x 113 x 43    | 216 x 158 x 42    | 240 x 181 x 42    |
| Panel Cut Out (mm)    | 154 x 98       | 118 x 92          | 182 x 137         | 220 x 160         |
| Supply                | 8- 35VDC       | 8 - 35VDC         | 8 - 35VDC         | 8 - 35VDC         |



DSE890

### Accessories

| Code       | Description                                                                                                                                                                         |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DSE890     | Gateway for remote monitoring & control connects to DSE data server by Ethernet, GPRS, RS232 or RS485. Includes GPS functionality. Suitable for use with controllers with USB Port. |
| DSE-GSMANT | GSM Antenna                                                                                                                                                                         |
| DSE-GPSANT | GPS Antenna                                                                                                                                                                         |

|                                                                                     | Standalone Genset Controllers                                                       |                                                                                     | Automatic Transfer Switch                                                                                                                                                                | Manual Key Start & Engine Protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  |                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                     | <b>Model</b>                                                                        | <b>EAOM-36</b>                                                                      | <b>EAOM-71</b>                                                                                                                                                                           | <b>ATS-10</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Automatic engine Start/Stop                                                         | N                                                                                   | Y                                                                                   | <b>Controls</b><br>Generator remote start, Load transfer to mains, mains and generator contactor<br><b>Monitors</b><br>3 Phase mains voltage<br>Alternator voltage<br>Program parameters | <b>Controls</b><br>Engine fuel or stop solenoid, Starter motor, Alarm output, Configurable output<br><b>Monitors</b><br>Engine running hour<br>Oil pressure, Engine temperature<br>Over / Under voltage (generator application)<br>Under / Over speed (all applications)<br>Under / Over frequency (generator application)<br>Low Battery Voltage, Charging alternator, Config.input - 1 & 2<br><b>Outputs</b><br>Start output, Fuel / Stop relay output, Alarm relay output, configurable transistor output |
| Automatic Shutdown on fault condition                                               | Y                                                                                   | Y                                                                                   |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Alternator voltage and frequency measurement                                        | Frequency Measurement                                                               | Generator Voltage/Power Measurement                                                 |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Load current measurement                                                            | N                                                                                   | 3 x 1 Phase                                                                         |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Remote Start/Stop input                                                             | Y                                                                                   | Y                                                                                   |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 3 resistive sender units                                                            | N                                                                                   | Y                                                                                   |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| User configurable inputs                                                            | 2                                                                                   | 3                                                                                   |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| User configurable outputs                                                           | 1                                                                                   | 2                                                                                   |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Speed sensing off Alternator                                                        | Y                                                                                   | Y                                                                                   |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Speed sensing off magnetic Pickup                                                   | N                                                                                   | Y                                                                                   |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| RS-232 Serial Comms                                                                 | Y                                                                                   | Y                                                                                   |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Remote use from PC                                                                  | Y                                                                                   | Y                                                                                   |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Standard Modem Comms                                                                | N                                                                                   | Y                                                                                   |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Display                                                                             | LED                                                                                 | LED                                                                                 |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Size (mm)                                                                           | 72 x 72                                                                             | 96 x 96                                                                             | 72 x 72                                                                                                                                                                                  | 72 x 72                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |