multitek

MultiPower

Multifunction power meter

M850-LCD

MultiPower

The M850-LCD (MultiPower LCD) is a complete 3 phase digital universal metering system in a standard 96 x 96 mm DIN case. It can be used on any voltage system with a wide range of inputs. It incorporates a universal AC or DC auxiliary power supply.
The one unit covers the majority of applications without any modification required, making the M850-LCD ideal for stocking.
The M850-LCD has a unique LCD display with user selectable options of Blue, Green or White back-lighting.

Parameters Measured

* Phase Voltage (V)
* Phase to Neutral (V)
* Phase Current (I)
* Frequency (Hz)
* Active Power (W)
* Reactive Power (Var)
* Apparent Power (VA)
* Active Energy (W.h)
* Reactive Energy (Var.h)
* Power Factor (P.F.)
* Instantaneous Demand Amp
* Instantaneous Demand Active Power
* Instantaneous Demand Apparent Power
* Maximum Demand Amps
* Maximum Demand Active Power
* Maximum Demand Apparent Power
* Neutral Current
* THD Voltage Option
* THD Current Option

Accuracy

Volts & Amps	0.5% of reading ± 2 digits
Frequency	0.1Hz ± 1 digit
Active Power	1% of reading ± 2 digits
Reactive Power	1% of reading ± 2 digits
Apparent Power	1 % of reading ± 2 digits
Power Factor	1% of range
Energy	IEC 1036 class 1

System Types

The M850-LCD can be used on the following measuring systems without any changes apart from wiring configuration.
Single Phase,
Single Phase 3 wire
3 Phase 3 Wire Balanced Load
3 Phase 4 Wire Balanced Load
3 Phase 3 Wire Unbalanced Load
3 Phase 4 Wire Unbalanced Load

Controls & Programming

The four front control buttons are used for scrolling up or down through the parameters being measured and displayed. These buttons also allow programming of different Current and Voltage transformer ratios, Demand times, Baud rates etc.

Display

The unique 3 colour option LCD FSTN display is designed to be read in a variety of conditions over wide viewing angles and distances. There are 3 colour options of the back lighting available Blue, Green or White which are user selectable through the front control buttons.

Plug in options

Both the RS485 option and pulsed output options are versatile plug in units that can be purchased with the MultiPower meter or can be retrofitted when required

Communications

The optional RS485 plug-in module enables the MultiPower to communicate with up to 31 other meters or controllers.
Two protocols are offered: the popular Modbus RTU and BACnet MS/TP.
The protocols allow the MultiPower to be used with PC, PLC, RTU, Data loggers and Scada programs

Pulsed Output

An option of a plug in pulsed output via a relay is offered. The pulsed output can be assigned to W.h, and VAr.h

Memory

Current ratios, demand time periods and calibration data is stored in non volatile eeprom. In power down (power loss) conditions this data is retained.

General Specification

INPUT

Rated Un	*28V to 330V L.N. 48V to 570V L.L. (280V L.N. nominal)*
Overload	*800V continuous*
Burden	*0.5VA*
Cut Off Point	*2% Un nominal*
Rated In	*0.5A to 6A (5A nominal) via C.T.*
Overload	*10In for 1 sec*
Burden	*0.5VA per phase*
Cut Off Point	*2% In nominal*

Auxiliary Voltage

100 to 440V AC 100 to 420V DC
45 to 65Hz, burden < 10VA

Insulation

Installation category	*III (480 VAC ph/ph)*
Degree of pollution	*2*
Rated impulse withstand voltage	*IEC 60947-1-V imp: 4kV*
Meters Front	*Class II*
Electrical security	*IEC 61010-1*
Inputs + Aux to case:	*4 kV rms 50 Hz for 1 min*
Inputs + Aux to RS485 port:	*3kV rms 50 Hz for 1 min*
Inputs + Aux to relay output:	*1k5V rms 50 Hz for 1 min*
Low voltage dc Aux to Inputs:	*1k5V rms 50 Hz for 1 min*

Electromagnetic compatibility

Immunity to :

electrostatic discharges:	*IEC 61000-4-2-Level III*
radiated radio-Hz fields:	*IEC 61000-4-3-Level III*
electrical fast transient/brusts:	*IEC 61000-4-4-Level III*
impulse waves:	*IEC 61000-4-5-Level III*
conducted disturbances:	*IEC 61000-4-6-Level III*

voltage dips & short interruptions: IEC 61000-4-11

Emissions to:

Conducted and radiated	*CISPR11-Class A*

Approvals

UL File No . 337752-1

Display

Custom	*LCD*
Backlight	*Blue, Green or White*
Update time	*1 second*

Response Time

RS 485 Modbus *Less than 10mS*

Options

1. *Plug in RS485 module (Modbus or BACnet)*
   Baud Rates:76800,57600,38400,19200,9600,4800
   Parity :Odd, Even, No Parity
2. *Plug in pulsed-output relay module*
   W.h or VAr.h
3. *Low voltage dc auxiliary (19V-69V)*
4. *1 Amp input*
5. *Plug in double pulsed-output relay module*
   W.h and VAr.h
6. *THD option*

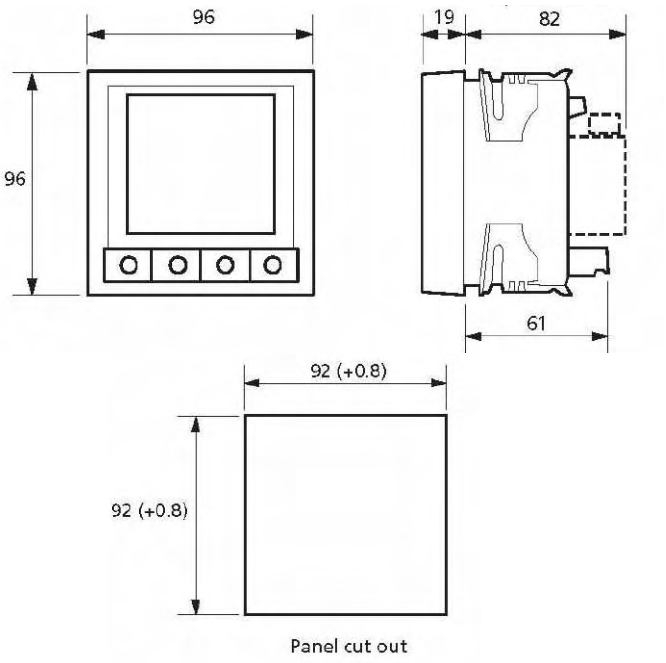
Environmental

Working Temperature	*-20 to +70 deg C*
Storage Temperature	*-30 to +80 deg C*
Relative Humidity	*0-95% non condensing*
Shock	*30G in 2 planes*

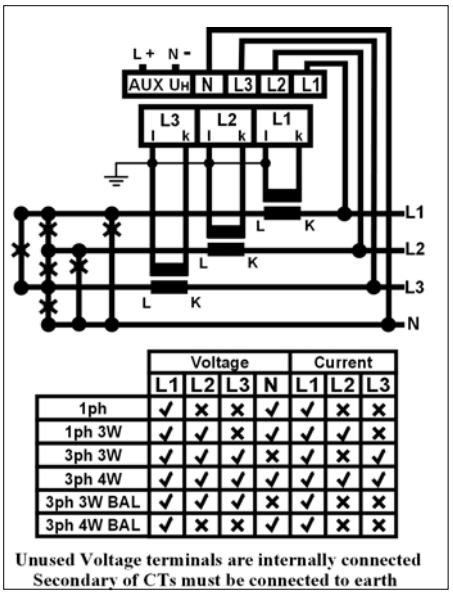
Enclosure

Standard DIN case	*DIN 96x96x*
Panel mount	*Via 4 retaining brackets*
Panel cutout	*92 + 0.8 mm x 92 + 0.8 mm*
Material	*Black Polycarbonate*
Terminals	*Current 6mm²*
	All others 2.5mm²
IP rating front	*IP52 / Nema*
IP rating case	*IP30 / Nema*
Weight	*0.25kg / 0.66lb*

Case Dimensions



Connection Diagram



	Voltage				Current		
	L1	L2	L3	N	L1	L2	L3
1ph	✓	✗	✗	✓	✓	✗	✗
1ph 3W	✓	✓	✗	✓	✓	✓	✗
3ph 3W	✓	✓	✓	✗	✓	✗	✓
3ph 4W	✓	✓	✓	✓	✓	✓	✓
3ph 3W BAL	✓	✓	✓	✗	✓	✗	✗
3ph 4W BAL	✓	✗	✗	✓	✓	✗	✗

Unused Voltage terminals are internally connected
Secondary of CTs must be connected to earth

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Display

The unique 3 colour option LCD FSTN display is designed to be read in a variety of conditions over wide viewing angles and distances. There are 3 colour options of the back lighting available Blue, Green or White which are user selectable through the front control buttons.

Communications

An integrated RS485 port enables the MultiPower to communicate with up to 31 other meters or controllers using the popular Modbus RTU protocol.
The protocol allows the MultiPower to be used with PC, PLC, RTU, Data loggers and Scada programs

Pulsed Output

An integrated solid-state relay can be assigned to W.h, or VAr.h

Memory

Current ratios, demand time periods and calibration data is stored in non volatile eeprom. In power down (power loss) conditions this data is retained.

Ordering Codes

M850-LCDN	Standard Meter
M850-LCDN-RS	+RS485
M850-LCDN-PO	+Pulsed Output
M850-LCDN-RS-PO	+RS485 and Pulsed Output

General Specification

INPUT	
Rated Un	*28V to 330V L.N. 48V to 570V L.L. (280V L.N. nominal)*
Overload	*800V continuous*
Burden	*0.5VA*
Cut Off Point	*2% Un nominal*
Rated In	*0.5A to 6A (5A nominal) via C.T.*
Overload	*10In for 1 sec*
Burden	*0.5VA per phase*
Cut Off Point	*2% In nominal*

Auxiliary Voltage

100 to 440V AC 100 to 420V DC
45 to 65Hz, burden < 10VA

Insulation

Installation category	*III (480 VAC ph/ph)*
Degree of pollution	*2*
Rated impulse withstand voltage	*IEC 60947-1-V imp: 4kV*
Meters Front	*Class II*
Electrical security	*IEC 61010-1*
Inputs + Aux to case:	*4 kV rms 50 Hz for 1 min*
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Low voltage dc Aux to Inputs:	*1k5V rms 50 Hz for 1 min*

Electromagnetic compatibility

Immunity to :	
electrostatic discharges:	*IEC 61000-4-2-Level III*
radiated radio-Hz fields:	*IEC 61000-4-3-Level III*
electrical fast transient/brusts:	*IEC 61000-4-4-Level III*
impulse waves:	*IEC 61000-4-5-Level III*
conducted disturbances:	*IEC 61000-4-6-Level III*
voltage dips & short interruptions:	*IEC 61000-4-11*
Emissions to:	
Conducted and radiated	*CISPR11-Class A*

Approvals

UL File No . 337752-1

Display

Custom	*LCD*
Backlight	*Blue, Green or White*
Update time	*1 second*

Response Time

RS 485 Modbus *Less than 10mS*

Options

1. *Integrated RS485 module (Modbus or BACnet)*
   Baud Rates:76800,57600,38400,19200,9600,4800
   Parity :Odd, Even, No Parity
2. *Integrated pulsed-output solid-state relay module*
   W.h or VAr.h
3. *19V-69V dc auxiliary (see 'Insulation' above)*
4. *1 Amp input*
5. *THD option*

Environmental

Working Temperature	*-20 to +70 deg C*
Storage Temperature	*-30 to +80 deg C*
Relative Humidity	*0-95% non condensing*
Shock	*30G in 2 planes*

Enclosure

Standard DIN case	*DIN 96x96x*
Panel mount	*Via 4 retaining brackets*
Panel cutout	*92 + 0.8 mm x 92 + 0.8 mm*
Material	*Black Polycarbonate*
Terminals	*Current 6mm²*
	All others 2.5mm²
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Weight	*0.25kg / 0.66lb*

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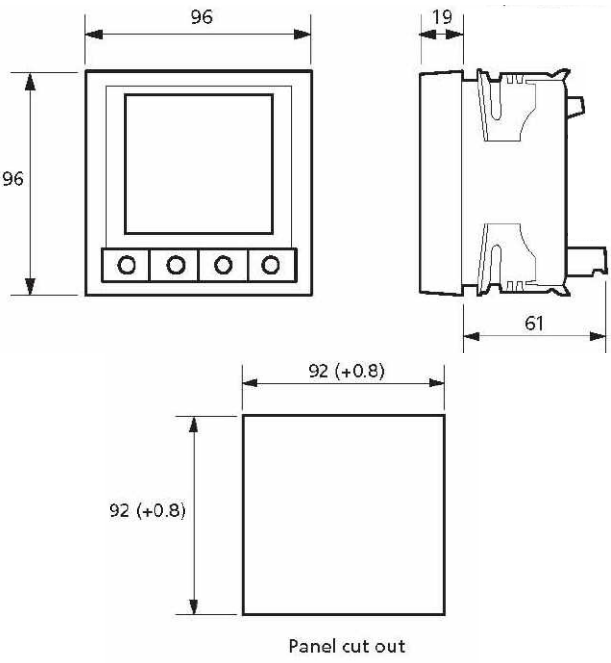
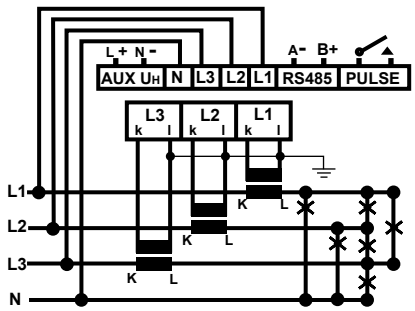


Connection Diagram



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	L1	L2	L3	N	L1	L2	L3
1ph	✓	×	×	✓	✓	×	×
1ph 3W	✓	✓	×	✓	✓	✓	×
3ph 3W	✓	✓	✓	×	✓	×	✓
3ph 4W	✓	✓	✓	✓	✓	✓	✓
3ph 3W BAL	✓	✓	✓	×	✓	×	×
3ph 4W BAL	✓	×	×	✓	✓	×	×

Unused Voltage terminals are internally connected
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