






Direct Connection

SUPPLY > LOAD direction

- ↑ Default
- ↓ Configurable

Suitable for:

- 3Ø4W
- 3Ø3W DELTA
- 3Ø3W STAR
- 1Ø2W

Specifications		Accuracy	
Wiring Input	3Ø 3 wire STAR, 3Ø 3 wire DELTA 3Ø 4 wire, 2Ø 3 wire, 1Ø 2 wire Bi-directional (configurable)	Voltage V L-N and V L-L	±0.5% of full scale
Rated Input Voltage	3x 85...240V AC (L-N), 147...415V AC (L-L)	Current	±0.5% of full scale
Frequency Range	45...65Hz	Frequency for L-N > 20V, L-L > 35V	±0.1% of full scale
Rated Input Current	I _b = 10A, I _{min} = 0.5A, I _{max} = 100A	Active, Reactive and Apparent Power	1% of full scale
Power Consumption	< 8VA	Power Factor	±0.01 of Unity
Display Update Rate	1 sec all parameters	Active Energy	Class 1 (IEC/EN 62053-21)
Operating / Storage Temperature	-10...55°C / -20...75°C	Reactive Energy	Class 2 (IEC/EN 62053-23)
Humidity	0...85% non-condensing		
Protection Degree (IEC/EN60529)	IP54 (front of Housing), IP20 (terminals)		
Pulse Output voltage range / Max Current	Volt-free - require external 5...24V DC 100mA max		
Pulse Resolution	□ 1: 1000 pulses/kWh (FIXED) □ 2: 1/10/100/1000 pulses/kWh or Pulses/kVAh (configurable)		
Pulse Duration	0.05...2 sec (configurable)		
Communication	Modbus RTU over RS485		



PRODUCT SAFETY

Safety related notification, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of personnel as well as the instrument. If the equipment is not used in a manner specified by the manufacturer it may impair the protection provided by the equipment

- Do not use the equipment if there are mechanical damage
- Do not exceed the stated maximum ratings of the device
- No repairs, maintenance or adjustments are possible
- Read the complete instruction manual prior to installation or operating the unit
- The equipment in its installed state must not come into close proximity to any heating sources, oils, steam, caustic vapours or other unwanted process by-products
- Do not use in hazardous or classified location where explosion or other dangers can be triggered by the device

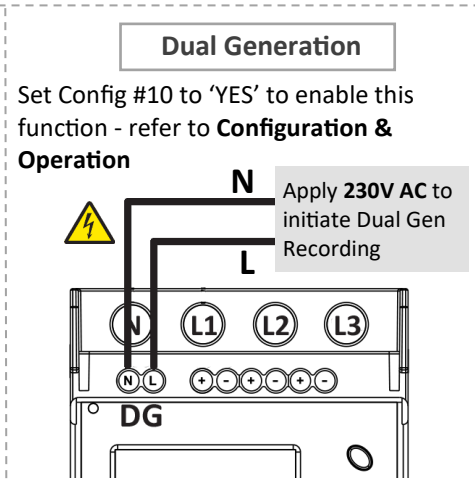
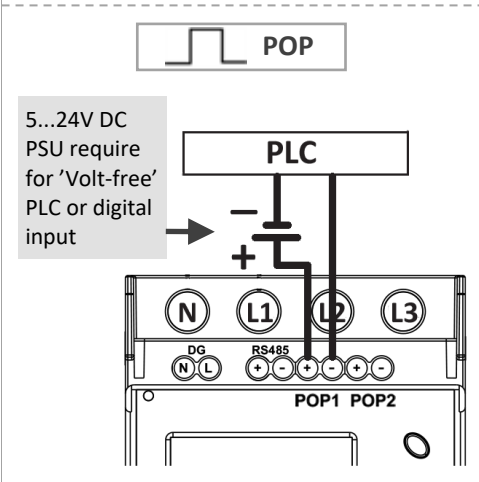
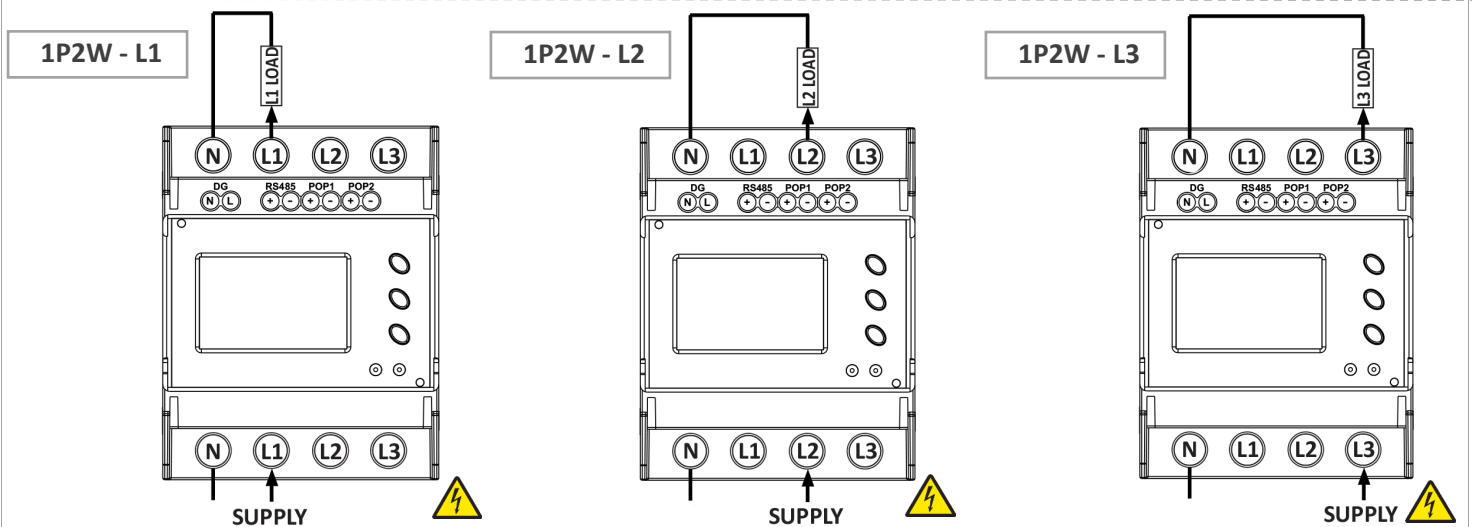
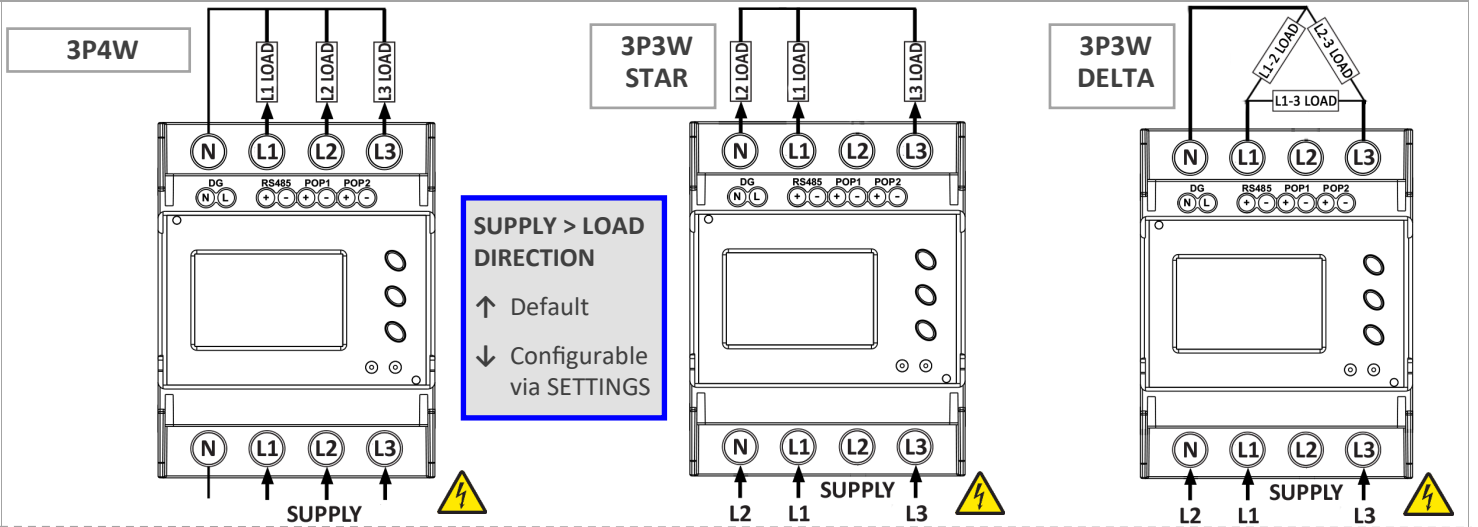
INSTALLATION PRECAUTIONS



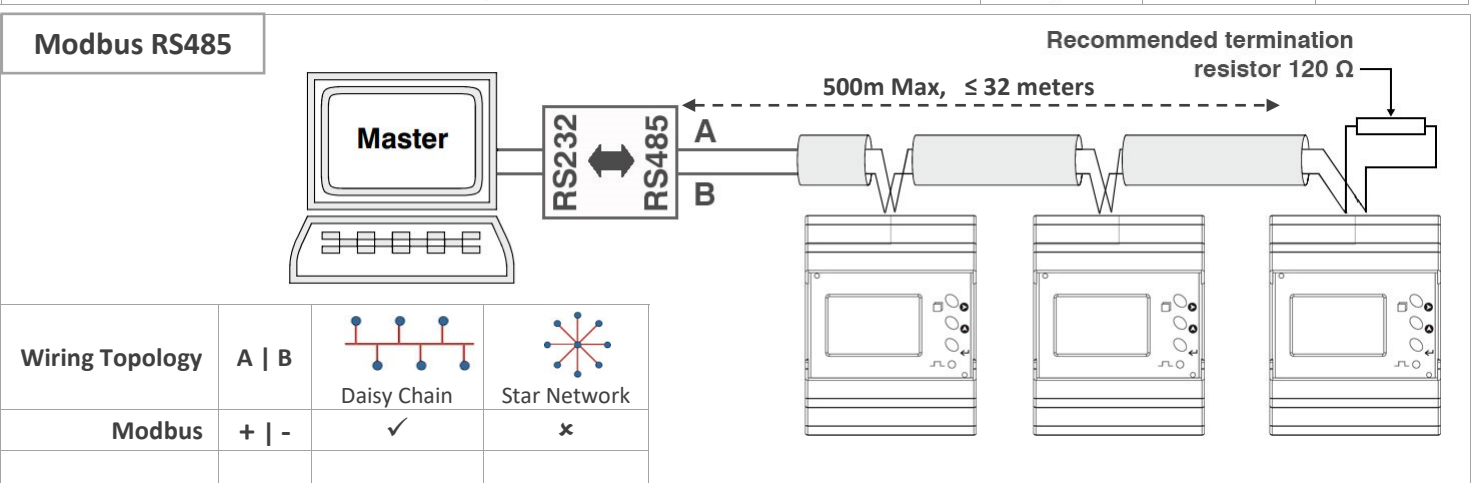
Risk of electric shock!
Only to be installed by a competent person

- To prevent the risk of electrocution, always isolate and lock-off the power supply to the equipment prior to undertaking any work
- Always confirm absence of electricity prior to starting work using appropriate voltage detection equipment
- Wiring shall be done strictly according to the terminal layout
- Confirm that all connections are correct before energizing the equipment
- Routing of cables shall be away from any internal EMI source
- Copper cable should be used
- All wiring to be in accordance with applicable local standards

WIRING (DEFAULT SUPPLY > LOAD DIRECTION SHOWN)



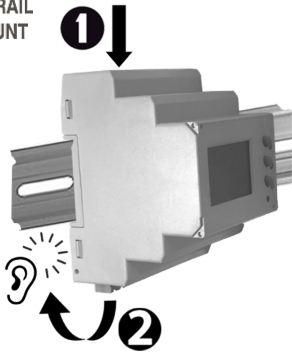
	L1/L2/L3/N	1 > 8
Max Wire Size	2 AWG 35mm ² Ø 6.5mm	13 AWG 2.5mm ² Ø 1.8mm
	12mm	7mm
Use with Stranded Cable	Ø 6.5mm max	Not required
	1 Nm max	0.4 Nm max



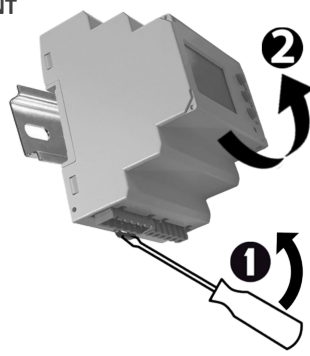
Wiring Topology	A B		
Modbus	+ -	✓	✗

MECHANICAL INSTALLATION

DIN RAIL MOUNT



DISMOUNT



DIN rail mounted, this device must be installed within a suitable IP rated enclosure. Indoor use only.

Installation category: III (300V L-N)

Protection Class: II

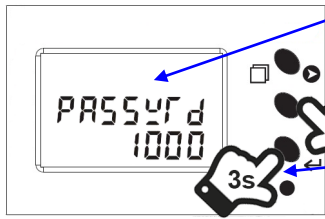
Pollution degree: II

Altitude: up to 2000 m

All terminal covers must be fitted after wiring

CONFIGURATION

Step A: Enter Configuration Menu



2 Password = 1000
(Refer to Step B)

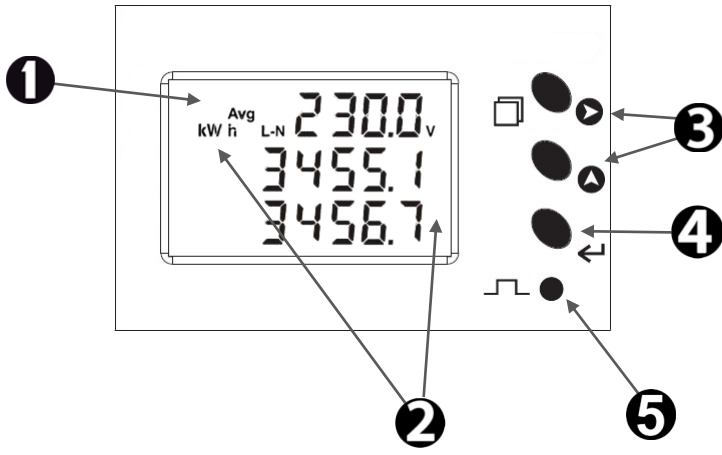
1 Hold 3 Secs to Enter Config
(same to Exit)

Step B: Configure each setting, as required, referring to Config Table below, using the buttons as follow:

- | | | |
|---|--|--|
| 1 | | Press once to make digit or option flash, press again to move flashing cursor |
| 2 | | Press to change digit or option, press to move cursor position as required |
| 3 | | Press to save and move to next setting option, Exit menu once all settings are configured (see Step A) |

	Settings	Default 	Adjustment Range 	Network Must configure	Comms Modbus	Pulse O/P Adjust if used	Dual Gen (DG) Adjust if used	System Settings Optional
1	Change Password	1000	NO / YES (0000 > 9998)					✓
2	Wiring Direction (feed from)	Bottom	Bottom / Top	✓				
3	Phase Network Selection	3P4W	3P4W, 3P3W 1P2W-P1/P2/P3	✓				
4	Demand interval method	Sliding	Sliding / Fixed					✓
5	Demand interval duration	15	1 > 30 min					✓
6	Demand interval length	1	1 > 30 min					✓
7	Pulse Output 2 Type	VARh	Total VARh IMP Wh EXP Wh IMP VARh EXP VARh Total Wh			✓		
8	Pulse Weight (pulses/kWh)	1000	1 / 10 / 100 / 1000			✓		
9	Pulse Duration	0.05	0.1 - 2.0 sec			✓		
10	Dual Generation	NO	NO / YES				✓	
11	Slave ID	1	1 > 255		✓			
12	Baud rate	9600	2400 > 38400 bps		✓			
13	Parity	None	None / Odd / Even		✓			
14	Stop Bit	1	1 / 2		✓			
15	Back Light Off (0000 = never)	0000	0 - 7200 Sec					✓
16	Factory Default	No	No / Yes	Does not reset energy & demand values				✓
17	Reset Energy & Demand	No	No / Yes (Password +1)	Once entered, reset each value individually				✓

OPERATION



1 Display Symbols:

- Avg** Average of 3-phase
- tOt** Total of 3-phase
- MD** Max Demand
- L-N** Line to Neutral
- L-L** Line to Line
- RS485 communication in progress

2 Measurement Units (refer to Functions Table below)

V, kWh, kVArh, kVAh, A, Hz, kW, kVAr, kVA

3 Navigation Buttons:

- Change **PARAMETER**
- Change **PAGE**

4 Press once for CRC Code

Press twice for serial #

Page Scroll: HOLD 10 Secs to change:

DEFAULT <> AUTO <> MANUAL

MANUAL = returns to screen after 1 min

5 Integration of Energy Indicator: blinks at rate of

Active Energy	x1 Reactive Energy	x2 Apparent Energy	x3 V/A/F/PF	x4 PF & Phase Power	x5 Total Power & Max Demand
tOt Imp Active Energy kWh	tOt Import Reactive Energy kVArh	tOt Apparent Energy kVAh	Phase Voltage (L-N) V 3P3W 1P2W	Phase Power Factor Frequency Hz 1P2W	tOt Active Power kW
x1 tOt Export Active Energy kWh	tOt Export Reactive Energy kVArh	tOt Dual Gen Energy kVAh Displays only when Config 10 = 'YES'	Phase Voltage L-L V 3P3W 1P2W	Phase Active Power kW 1P2W	tOt Reactive Power kVAr
x2 tOt Dual Gen Energy kWh Displays only when Config 10 = 'YES'	tOt Dual Gen Energy kVArh Displays only when Config 10 = 'YES'	Phase 1 Apparent Energy kVAh 3P3W 1P2W	Phase Current A 3P3W 1P2W	Phase Reactive Power kVAr 1P2W	tOt Apparent Power kVA
x3 Phase 1 Import Active Energy Export Active Energy 3P3W 1P2W kWh	Phase 1 Import Reactive Energy Export Reactive Energy 3P3W 1P2W kVArh	Phase 2 Apparent Energy kVAh 3P3W 1P2W	Avg Voltage V tOt Current A Frequency Hz Avg Power Factor 1P2W	Phase Apparent Power kVA 1P2W	tOt MD Active Max Demand kW
x4 Phase 2 Import Active Energy Export Active Energy 3P3W 1P2W kWh	Phase 2 Import Reactive Energy Export Reactive Energy 3P3W 1P2W VArh	Phase 3 Apparent Energy kVAh 3P3W 1P2W			tOt MD Reactive Max Demand kVAr
x5 Phase 3 Import Active Energy Export Active Energy 3P3W 1P2W kWh	Phase 3 Import Reactive Energy Export Reactive Energy 3P3W 1P2W VArh				tOt MD Apparent Max Demand kVA

3P3W = not displayed for 3P3W
1P2W = not displayed for 1P2W