DIN RAIL MOUNT

Modbus RTU

RI-D240-G-C

M-Bus

RI-D240-G-MB

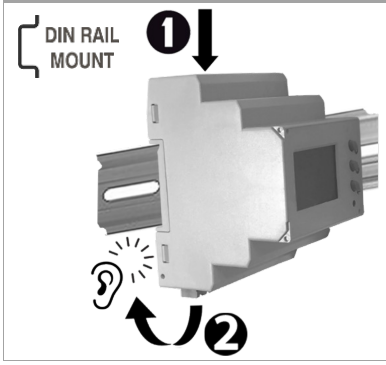
Specifications	
Wiring Input	3Ø 4 wire 3Ø 3 wire, 2Ø 3 wire, 1Ø 2 wire
Rated Input Voltage	3x 11...300V AC (L-N), 19...519V AC (L-L)
Frequency Range	45...65Hz
CT Primary	1A/5A...10,000A configurable
CT Secondary	1A or 5A (max rating x1.2)
VT Primary	100...500kV configurable
VT Secondary	100...500V AC (L-L) configurable
Auxiliary / Power consumption	100...240V AC (±15%) 45...65Hz / < 8VA
Display Update Rate	1 sec all parameters
Operating / Storage Temperature	-10...55°C / -20...75°C
Humidity	0...85% non-condensing
Protection Degree (IEC/EN60529)	IP54 (front of Housing), IP20 (terminals)
Communication	Modbus RTU over RS485 MBus (EN13757)

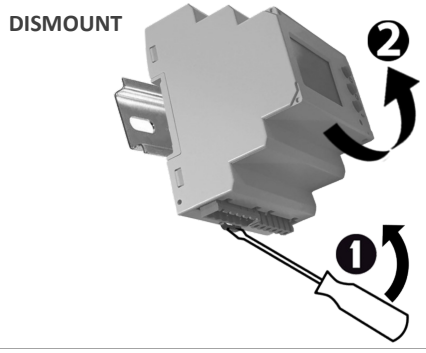
Accuracy	
Voltage V L-N and V L-L	±0.5% of full scale
Current	±0.5% of full scale
Frequency for L-N > 20V, L-L > 35V	±0.1% of full scale
Active, Reactive and Apparent Power	1%
Power Factor	±0.01 of Unity
Active Energy	Class 1 (IEC/EN 62053-21)
Reactive Energy	Class 2 (IEC/EN 62053-23)

Wh Resolution and Default Pulse Weight						
CT Ratio x VT Ratio	<15	<150	<1500	<15k	<150k	>150k
Wh / VAh / VArh	0.01k	0.1k	1k	0.01M	0.1M	1M
INT	0.001k	0.01k	0.1k	1k	0.01M	0.1M

Example
If CT = 100/5A (CT ratio = 20) & VT = 350/350V (VT Ratio = 1)
Wh resolution = 0.1kWh (20 x 1 = <150)

MECHANICAL INSTALLATION





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

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

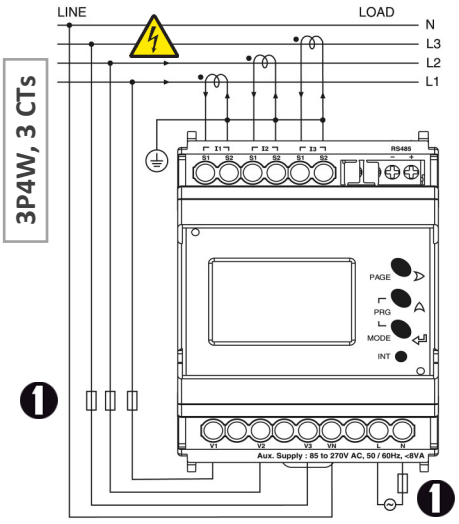
- Do not use the equipment if there are mechanical damage
- Do not exceed the stated maximum ratings of the device
- No repairs, maintenance or adjustments are possible
- Read the complete instruction manual prior to installation or operating the unit
- The equipment in its installed state must not come 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

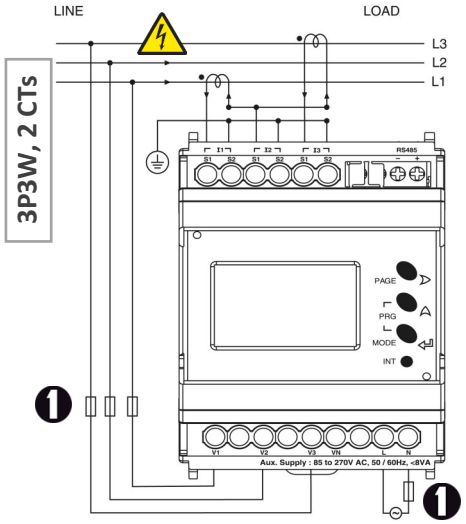
INSTALLATION PRECAUTIONS

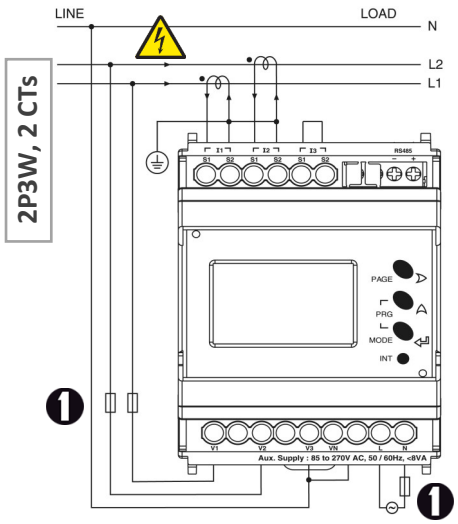
Risk of electric shock!
Only to be installed by a competent person

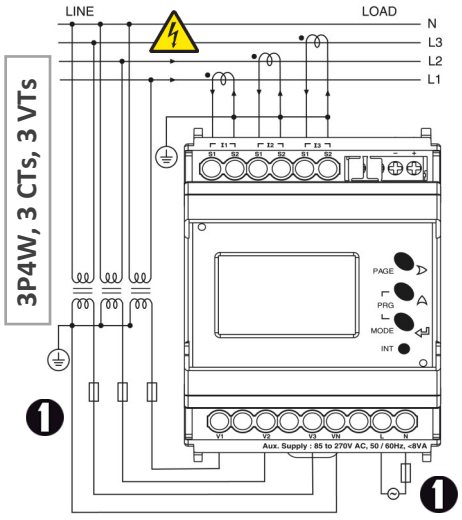
- To prevent the risk of electrocution, always isolate and lock-off the power supply to the equipment prior to undertaking any work
- Always confirm absence of electricity prior to starting work using appropriate voltage detection equipment
- Wiring shall be done strictly according to the terminal layout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

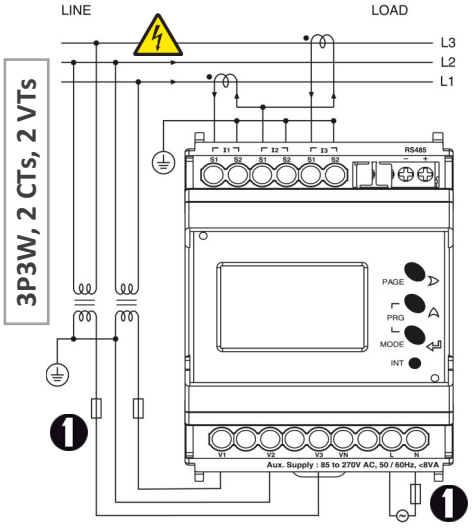
WIRING

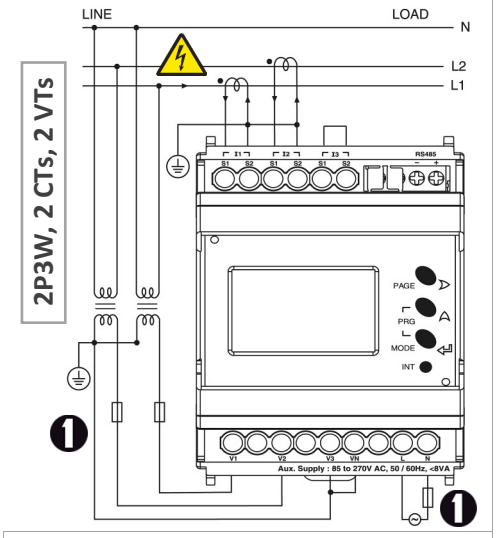




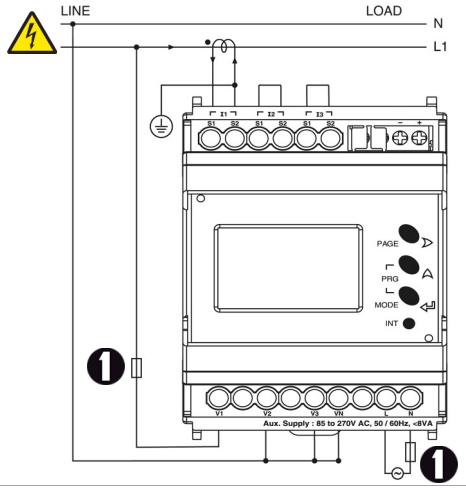








1P2W, 1 CT

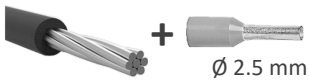


⚠ Voltage and current must be from same phase

❶ Fuse class CC UL / fast acting 600V
Rating 0.5A

Single Core
0.2 > 4mm²
Ø 2.5mm Max

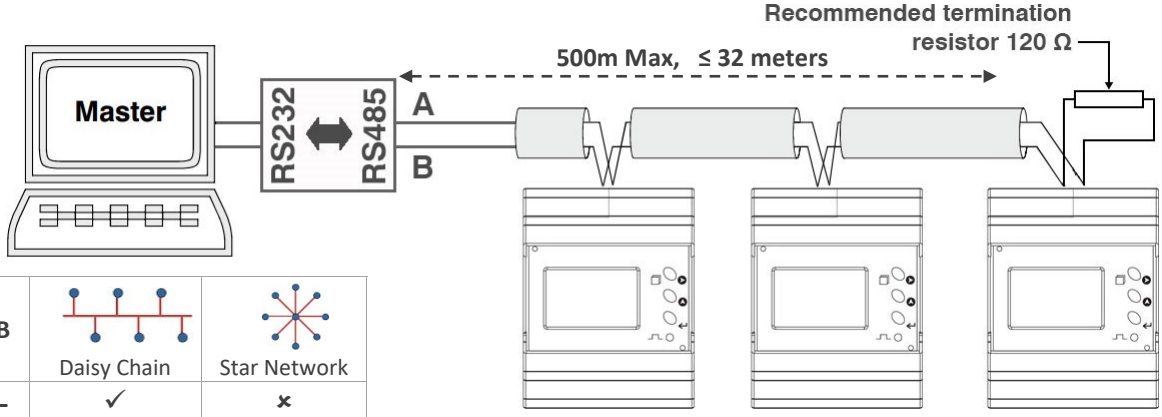
Stranded
0.25 > 2.5mm²



0.8 Nm
Max

Modbus / MBus

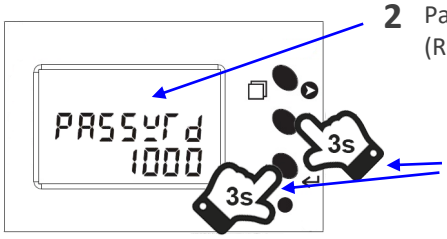
Typical Modbus configuration shown
For MBus interface follow Wiring Topology below



Wiring Topology	A | B	Daisy Chain	Star Network
Modbus	+ | -	✓	×
MBus	1 | 2	✓	✓

CONFIGURATION

Step A: Enter Configuration Menu



2 Password = 1000 (Refer to Step B)

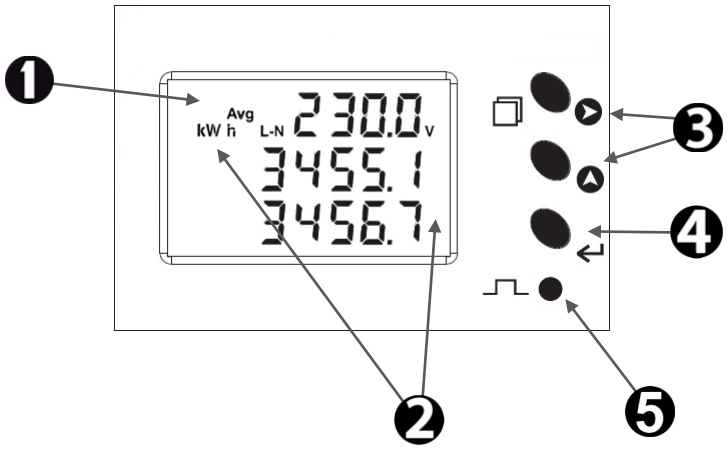
1 Hold 3 Secs to Enter Config (same to Exit)

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)

D240-G-C	D240-G-MB	Setting	Default	Adjustment Range	Network & CT Must configure	VT Adjust if Using VT	Comms Modbus / MBus		System Settings Optional
1	**1**	Change Password	1000	NO / YES (0000 > 9998)					✓
2	**2**	Phase Network Selection	3P4W	3P4W (also for 2P3W) 3P3W, 1P2W-P1	✓				
3	**3**	CT Secondary (see CT Label)	5	1A or 5A	✓				
4	**4**	CT Primary (see CT Label)	5	1A/5A > 10000A	✓				
5	**5**	PT Secondary	350	100V > 500V		✓			
6	**6**	PT Primary	350	100V > 500kV		✓			
7	**7**	Slave ID *Modbus:* *MBus (Primary ID):*	1 1	1 > 255 1 > 250			✓		
8	**8**	Baud rate *Modbus:* *MBus:*	9600 2400	300 > 19200 bps 1200 > 9600			✓		
9	**9**	Parity *Modbus:* *MBus:*	None Even	None / Odd / Even Even			✓		
10	**10**	Stop Bit *Modbus:* *MBus:*	1 1	1 / 2 1			✓		
11	**11**	Back Light Off (0000 = Never)	0000	0 > 7200 Sec					✓
12	**12**	Demand interval method	Sliding	Sliding / Fixed					✓
13	**13**	Demand interval duration	15	1 > 30 min					✓
14	**14**	Demand interval length	1	1 > 30 min					✓
15	**15**	Max Auto Display Pages	18	1 > 18					✓
16	**16**	Change Page Sequence	1 > 21	No / YES (1 > 18)					✓
X	**17**	MBus Secondary ID	Serial #	0000 0000 > 9999 9999			✓		
17	**18**	Factory Default	No	No / Yes	Does not reset energy & demand values				✓
18	**19**	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/Min Demand
- **L-N** Line to Neutral
- 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**
(hold 10 sec displays Serial #)

4 Page Scroll: HOLD 10 Secs to change (AUTO<>MANUAL)

5 Integration of Energy Indicator (blinks at rate of INT)

	Energy	x1 Voltage	x2 Current	x3 V/A/F/PF	x4 PF & Power
	Avg Voltage V L-N (L-L if 3P3W) Import Active Energy (kWh) Export Active Energy (kWh)	Phase Voltage (V L-N)	Phase Current (A)	Avg Voltage (V L-N) Total Current (A) Frequency (Hz) Avg Power Factor	Phase Power Factor Frequency (Hz)
x1	Avg Voltage V L-N (L-L if 3P3W) Import Reactive Energy (kVArh) Export Reactive Energy (kVArh)	**Phase Voltage (V L-L)**		**Avg Voltage (V L-L)** **Total Current (A)** **Frequency (Hz)** **Avg Power Factor**	Phase Active Power (kW)
x2	Avg Voltage V L-N (L-L if 3P3W) Apparent Energy (kVAh)				Phase Reactive Power (kVAr)
x3					Phase Apparent Power (kVA)
x4					tOt Active Power (kW)
x5					tOt Reactive Power (kVAr)
x6					tOt Apparrent Power (kVA)
x7					tOt Active Max MD (kW) tOt Active Min MD (kW)
x8					tOt Reactive Max MD (kVAr) tOt Reactive Min MD (kVAr)
x9					tOt Apparent Max MD (kVA)

1. **L-N parameters are not displayed For 3P3W**
2. **Parameters in BOLD not displayed for 1P2W**