DRR-45-1P

SINGLE PHASE DIRECT CONNECTED AC 45A ENERGY METER

APPLICATIONS

- Internal energy billing/ monitoring/auditing
- Sub-metering

RELEVANT STANDARDS AND TEST REPORTS

Accuracy Standard :
- EN50470-3: 2022
- IEC62053-21

IP for water & dust:
- IEC 60529

Plastic Flammability Standard:
- UL 94

Safety Standard:
- 62052-31: 2015

KEY FEATURES

- Direct Connection Meter
- One Button (for easy navigation)
- Dual Tariff
- Modbus
- MID Approved
- LCD & Backlit Display
- Impulse LED
- Din rail mounted

MODEL WISE FEATURES

- Pulse Output
- Remote Communication
- Tariff Input

TE Connectivity's Crompton Instruments Single Phase Direct-Connected AC Energy Meter is designed for residential, commercial, and light industrial energy metering applications.

Engineered with advanced microcontroller technology, the meter is suitable for measuring and monitoring electrical parameters in 1-phase, 2-wire networks. It supports direct connection with a maximum current measurement of 45 A, eliminating the need for costly external current transformers (CTs) in high-current networks. The meter is self-powered, simplifying installation and wiring.

Key features include a bright LCD display for real-time parameter visualization, a pulse output, and an impulse LED for energy monitoring. It supports industry-standard MODBUS RTU or MBUS communication protocols for remote monitoring and tariff selection via MODBUS, MBUS, or external tariff input.

The meter provides bidirectional measurement of Active, Reactive, and Apparent Energy. It also accurately measures essential electrical parameters such as Voltage, Current, Frequency, Active Power, Reactive Power, Apparent Power, and Power Factor in single-phase networks. All measured parameters are accessible via the display and remotely through MODBUS or MBUS.

Demand parameters for Active Power (Import/Export), Reactive Power (Import/Export), Apparent Power, and Current are calculated based on a configurable demand integration time.

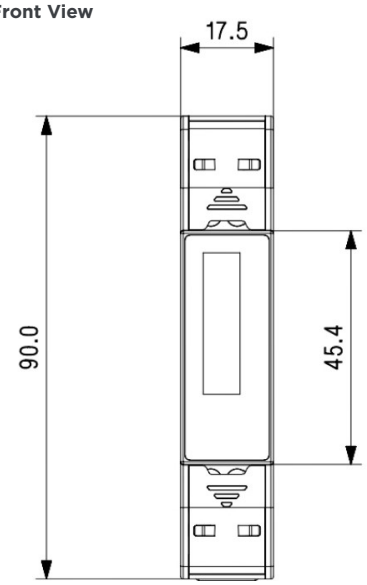
The meter is housed in a standard DIN rail mount enclosure, ensuring easy and secure installation.

PART NUMBERS

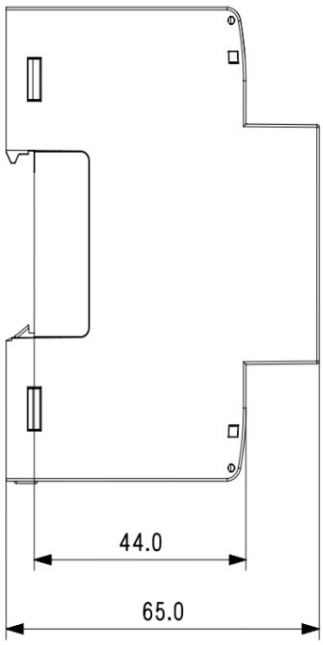
Product selection	
Product	**Description**
DRR-45-1P-PLS-01	45A, Single Phase, Direct Connect, 1xDI, 1xSO
DRR-45-1P-MOD-01	45A, Single Phase, Direct Connect, 1xSO, 1xModbus
DRR-45-1P-MBUS-01	45A, Single Phase, Direct Connect, 1xSO, 1xMBus

DIMENSIONAL INFORMATION

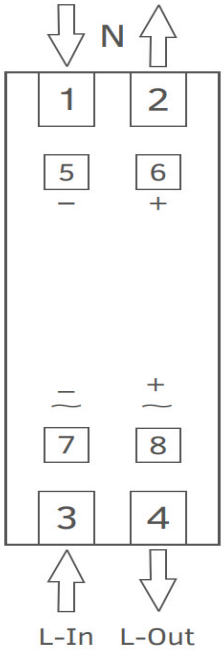
Front View



Side View



WIRING DIAGRAM



1 = **Neutral IN**
2 = **Neutral Out**
3 = **L-In**
4 = **L-Out**
5,6 = **Pulse Output Terminal**
7,8 = **Tariff input Terminal (in Tariff input Model)**
RS485 Terminal (in Modbus Model)
Mbus Terminal (in MBUS Model)

Wiring Guideines	
Current Input Wire Size	2.5 - 10 mm² (use insulated pin type lug)
Current/Voltage Tightening Torque	0.5 - 1.2 Nm
RS485,MBUS,SO,Tariff Inputs Wire Size	1 to 2.5 mm² (Solid/Stranded with pin type lug)
RS485,MBUS,SO,Tariff Inputs Tightening Torque	0.4 Nm

Technical Specifications	
Input	
Reference Voltage (U_n)	230 VLN
Operating Voltage Range	193 - 253 VLN
Power consumption in Voltage Circuit	< 2 W (10 VA)
Starting Current (Ist = 0.04*I)	20 mA
Minimum Current (I_{min} = 0.5*I_{tr})	250 mA
Transitional Current (I_{tr})	0.5 A
Reference Current (I_{ref} = 10*I_{tr})	5 A
Maximum Current (I_{max} > 90*I_{tr})	45 A
Operating Current Range	0.25-5 A (45 A)
Short time Over-current	30*I_{max} for half-cycle at 50 Hz
Power consumption in Current Circuit	<1 VA per phase
Nominal Frequency	50Hz
Auxiliary Supply	
Type	Self Powered
Reference Conditions for Accuracy	
Reference Temperature	23°C ± 2°C
Input Voltage	Un ± 1%
Input Waveform	Sinusoidal (distortion factor <2%)
Input Frequency	50 Hz ± 0.3%
Accuracy	
Active Energy (Import/Export)	Class B as per EN50470-3: 2022 Class 1 as per IEC 62053-21
Reactive Energy (Import/Export)	+/- 2%
Apparent Energy	± 1.0 %
Voltage	± 0.5% of of range max
Current	± 0.5% of Nominal value
Frequency	± 0.2% of Mid frequency
Active Power	± 1% of range max
Reactive Power	± 1% of range max
Apparent Power	± 1% of range max
Power Factor	±1%
Pulse Outputs	
So1	Passive Opto-isolated
Contact Range	5-27V DC, 27 mA DC (max)
Pulse Duration	60, 100, 200 millisecond
Pulse Rate	1, 10, 100, 1000 pulse per kWh/kVARh/kVAh
Communication Interface (MODBUS)	
Protocol	RS485 MODBUS
Baudrate	2.4 /4.8 / 9.6 /19.2/38.4 kbit
Data Width	8
Parity- Stop Bits	None -1 / None -2/ Even -1 / Odd -1
Device Address	1- 247
Response Time	<250 millisecond @9.6 Kbit Baudrate (<1000 millisecond for 2.4/4.8 Kbit Baudrates)
Communication Interface (MBUS)	
Protocol	EN13757-3 MBUS
Baudrate	0.3/ 0.6/ 1.2/ 2.4/ 4.8/ 9.6 kbps
Data Width	8
Parity - Stop Bits	Even-1
Address	1 250

Technical Specifications	
Impulse LED :	
Impulse Rate	1000 pulse per kWh
Display Ranges :	
Active Energy	0.01-99999.99
Reactive Energy	0.01-99999.99
Apparent Energy	0.01-99999.99
Active Power	0-99999 W
Reactive Power	0-99999 VAR
Apparent Power	0-99999 VA
Installation:	
Installation	Indoor
Enclosure	IP51 (Front side) & IP20 (terminal - IEC 60529: 2001)
Housing	1 Module DIN 43880
Dimensions	17.5 mm X 90 mm X 65 mm
Weight	150 gm
Mounting	35 mm DIN Rail
Safety :	
Safety Standard	According to 62052-31:2015
Installation Category	III
Protective Class	II
Pollution Degree	2
High Voltage Test	4 kV AC, 50Hz for 1 minute between all electrical circuits
Impulse Voltage Withstand	6.0 kV (1.2 microsecond waveform)
Housing flame Resistance	Flammability Class V-0 acc to UL-94, Self Extinguishing, Non-Dripping, Free of Halogen
Environmental Conditions :	
Mechanical Environment	M1
Electromagnetic Environment	E2
Operating Temperature	-25°C to +55°C
Storage/Transport Temperature	-40°C to +70°C
Relative Humidity	0... 95% (Non Condensing)
Altitude	< 2000 m
Shock	Half sine wave, peak acceleration 30gn (300 m/s2), pulse duration 18msec
Vibration	10...150Hz, f<60 Hz 0.075mm constant amplitude, f>60Hz 1gn constant acceleration 10 sweep cycles per axis
Tariff Input:	
0 V	Low
230 V	High

Measured Parameters		
Sr No.	**Parameters**	**1 Phase 2 Wire**
1	Import Active Energy	✓
2	Export Active Energy	✓
3	Total Active Energy	✓
4	Import Reactive Energy	✓
5	Export Reactive Energy	✓
6	Total Reactive Energy	✓
7	Total Apparent Energy	✓
8	Tariff 1 Import Active Energy	✓
9	Tariff 1 Export Active Energy	✓
10	Tariff 1 Total Active Energy	✓
11	Tariff 1 Import Reactive Energy	✓
12	Tariff 1 Export Reactive Energy	✓
13	Tariff 1 Total Reactive Energy	✓
14	Tariff 1 Total Apparent Energy	✓
15	Tariff 2 Import Active Energy	✓
16	Tariff 2 Export Active Energy	✓
17	Tariff 2 Total Active Energy	✓
18	Tariff 2 Import Reactive Energy	✓
19	Tariff 2 Export Reactive Energy	✓
20	Tariff 2 Total Reactive Energy	✓
21	Tariff 2 Total Apparent Energy	✓
22	Partial Import Active Energy	✓
23	Partial Export Active Energy	✓
24	Partial Total Active Energy	✓
25	Partial Import Reactive Energy	✓
26	Partial Export Reactive Energy	✓
27	Partial Total Reactive Energy	✓
28	Partial Total Apparent Energy	✓
29	Max Import kVA Demand	✓
30	Max Current Demand	✓
31	Max Export kVA Demand	✓
32	Max Import kW Demand	✓
33	Max Export kW Demand	✓
34	Max Import kVAR Demand	✓
35	Max Export kVAR Demand	✓
36	Voltage	✓
37	Current	✓
38	Frequency	✓
39	Active Power	✓
40	Reactive Power	✓
41	Apparent Power	✓
42	Power Factor	✓
43	Number of Interruptions	✓

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