DRR-100-3P

THREE PHASE DIRECT CONNECTED ENERGY METER

APPLICATIONS

- Internal Energy billing/ monitoring/auditing
- Sub-metering
- Genset, Test Benches & Laboratories

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
- Three Buttons (for easy navigation)
- Multi Tariff & Partial Energy Counters
- MID Approved
- LCD & Backlit Display
- Impulse LED
- Din rail mounted

OPTIONAL FEATURES

- Remote Communication
- Tariff Input
- Pulse Outputs

TE Connectivity's Crompton Instruments Three Phase Direct-Connected Energy Meter is designed for residential, commercial, and light industrial environments where accurate electrical energy metering is required.

Built with advanced microcontroller technology, the meter supports measurement and monitoring in 3-phase 4-wire, 3-phase 3-wire, and single-phase 2-wire networks. It allows direct connection with a maximum current measurement of up to 100 A.

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

The meter features tariff counters for energy accumulation, selectable via tariff input. It records energy data across multiple categories, including:

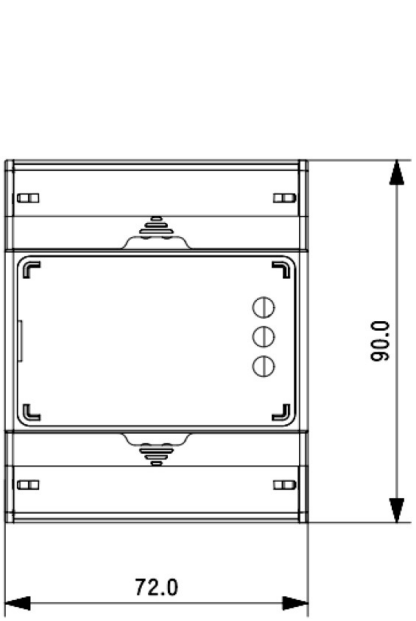
Total / Import / Export Active Energy
Total / Import / Export Reactive Energy
Total Apparent Energy

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

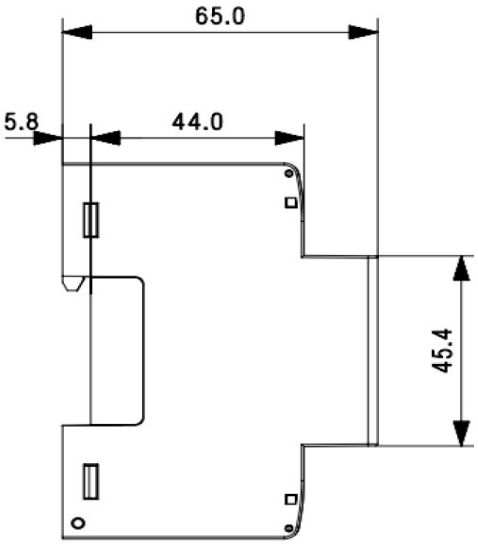
PART NUMBERS

Product selection	
Product	**Description**
DRR-100-3P-PLS-01	100A, 3 Phase, Direct Connect, 2xDI, 2xSO
DRR-100-3P-MOD-01	100A, 3 Phase, Direct Connect, 2xDI, 2xSO, 1xModbus
DRR-100-3P-MBUS-01	100A, 3 Phase, Direct Connect, 2xDI, 2xSO, 1xMBus

DIMENSIONAL INFORMATION

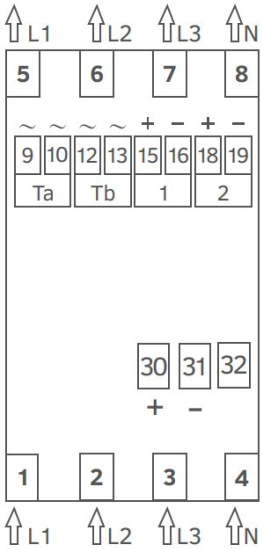


Front View



Side View

WIRING DIAGRAMS



1,2,3 :I-In
5,6,7 :I-Out
4 :Neutral-In
8 :Neutral-Out
15,16,18,19 :Pulse Output 1 & Pulse Output 2 Terminal
9,10,12,13 :Tariff input a & Tariff input b Terminal
30,31,32 :RS485 Terminal (in Modbus model)
Mbus Terminal (in Mbus model)

Wiring Guideines	
Current / Voltage Input Wire Size	6-25 mm^2 (use with insulated pin type lug)
Current/Voltage Tightening Torque	2.5-3Nm
RS485,MBUS,SO & Tariff input Wire Size	0.1 to 2.5 mm^2 (Solid/Stranded with pin type lug)
RS485,MBUS,SO & Tariff Input Tightening Torque	0.4 Nm

Technical Specifications	
Measurement Paramenters:	
Nominal input voltage (U_n)	230 VLN (400 VLL)
Operating Voltage Range	100 - 289 VLN (173 - 500 VLL)
Power consumption in Voltage Circuit	< 2 W (10 VA) per phase
Starting Current (Ist = 0.04*I_{tr})	20 mA
Minimum Current (Imin = 0.5*I_{tr})	250 mA
Transitional Current (I_{tr})	0.5 A
Nominal Current (Iref = 10*I_{tr})	5 A
Maximum Current (Imax= 200*I_{tr})	100 A
Operating Current Range	0.25-5 A (100 A)
Short time Over-current	30*Imax for half-cycle at 50 Hz
Power consumption in Current Circuit	1VA 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	50Hz ± 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 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%
VTHD and ITHD	±4% (THD >=15%)
Pulse Outputs :	
SO1 and SO2	Passive Opto-isolated
Contact Ranges	5-27V DC, 27 mA DC (max)
Pulse Duration	60, 100 and 200 millisecond
Pulse Rate	0.01, 0.1, 1, 10, 100, 500 and 1000 pulse per kWh and kVARh
Parameters	Total/Import/Export kWh and kVARh
Communication Interface (MODBUS) :	
Protocol	RS485 MODBUS
Baudrate	4.8 / 9.6 / 19.2 / 38.4 / 57.6 kbps
Data Width	8
Parity- Stop Bits	None -1 / None -2/ Even -1 / Odd -1
Response Time	<200 milliseconds @9.6Kbps Baudrate (<1000ms @ 2.4 / 4.8Kbps)

Technical Specifications	
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
Impulse LED :	
Impulse Rate	1000 pulse per kWh
Display Ranges :	
Active Energy	0-999999.99 kWh
Reactive Energy	0-999999.99 kVARh
Apparent Energy	0-999999.99 kVAh
Active Power	0-99999 W
Reactive Power	0-99999 VAR
Apparent Power	0-99999 VA
Tariff Input :	
0 V	Low
230 V	High
Installation:	
Installation	Indoor
Enclosure	IP51 (Front)
Housing	4 Module (DIN 43880)
Dimensions	72 mm X 90 mm X 65 mm
Weight	350 gm
Mounting	Snap-on 35 mm DIN Rail
Safety :	
Safety Standard	According to 62052-31:2015
Installation Category	III
Protective Class	II
Pollution Degree	2
AC Voltage Test	4kV for 1 Minute
Impulse Voltage Withstand	6 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

Technical Specifications				
Sr No.	Parameters	3 Phase 4 Wire	3 Phase 3 Wire	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	T1 Import Active Energy	✓	✓	✓
9	T1 Export Active Energy	✓	✓	✓
10	T1 Total Active Energy	✓	✓	✓
11	T1 Import Reactive Energy	✓	✓	✓
12	T1 Export Reactive Energy	✓	✓	✓
13	T1 Total Reactive Energy	✓	✓	✓
14	T1 Total Apparent Energy	✓	✓	✓
15	T1 Partial Import Active Energy	✓	✓	✓
16	T1 Partial Export Active Energy	✓	✓	✓
17	T1 Partial Import Reactive Energy	✓	✓	✓
18	T1 Partial Export Reactive Energy	✓	✓	✓
19	T2 Import Active Energy	✓	✓	✓
20	T2 Export Active Energy	✓	✓	✓
21	T2 Total Active Energy	✓	✓	✓
22	T2 Import Reactive Energy	✓	✓	✓
23	T2 Export Reactive Energy	✓	✓	✓
24	T2 Total Reactive Energy	✓	✓	✓
25	T2 Total Apparent Energy	✓	✓	✓
26	T2 Partial Import Active Energy	✓	✓	✓
27	T2 Partial Export Active Energy	✓	✓	✓
28	T2 Partial Import Reactive Energy	✓	✓	✓
29	T2 Partial Export Reactive Energy	✓	✓	✓
30	T3 Import Active Energy	✓	✓	✓
31	T3 Export Active Energy	✓	✓	✓
32	T3 Total Active Energy	✓	✓	✓
33	T3 Import Reactive Energy	✓	✓	✓
34	T3 Export Reactive Energy	✓	✓	✓
35	T3 Total Reactive Energy	✓	✓	✓
36	T3 Total Apparent Energy	✓	✓	✓
37	T3 Partial Import Active Energy	✓	✓	✓
38	T3 Partial Export Active Energy	✓	✓	✓
39	T3 Partial Import Reactive Energy	✓	✓	✓
40	T3 Partial Export Reactive Energy	✓	✓	✓
41	T4 Import Active Energy	✓	✓	✓
42	T4 Export Active Energy	✓	✓	✓
43	T4 Total Active Energy	✓	✓	✓
44	T4 Import Reactive Energy	✓	✓	✓
45	T4 Export Reactive Energy	✓	✓	✓
46	T4 Total Reactive Energy	✓	✓	✓
47	T4 Total Apparent Energy	✓	✓	✓
48	T4 Partial Import Active Energy	✓	✓	✓
49	T4 Partial Export Active Energy	✓	✓	✓
50	T4 Partial Import Reactive Energy	✓	✓	✓
51	T4 Partial Export Reactive Energy	✓	✓	✓
52	L1, L2, L3 Import Active Energy	✓	X	X

Technical Specifications				
Sr No.	**Parameters**	**3 Phase 4 Wire**	**3 Phase 3 Wire**	**1 Phase 2 Wire**
53	L1, L2, L3 Export Active Energy	✓	X	X
54	L1, L2, L3 Total Active Energy	✓	X	X
55	L1, L2, L3 Import Reactive Energy	✓	X	X
56	L1, L2, L3 Export Reactive Energy	✓	X	X
57	L1, L2, L3 Total Reactive Energy	✓	X	X
58	L1, L2, L3 Total Apparent Energy	✓	X	X
59	Partial Import Active Energy	✓	✓	✓
60	Partial Export Active Energy	✓	✓	✓
61	Partial Total Active Energy	✓	✓	✓
62	Partial Import Reactive Energy	✓	✓	✓
63	Partial Export Reactive Energy	✓	✓	✓
64	Partial Total Reactive Energy	✓	✓	✓
65	Partial Total Apparent Energy	✓	✓	✓
66	Current Max Demand	✓	✓	✓
67	kVA Max Demand	✓	✓	✓
68	kW Max Demand	✓	✓	✓
69	kVar Max Demand	✓	✓	✓
70	Import kW Max Demand	✓	✓	✓
71	Export kW Max Demand	✓	✓	✓
72	Import kVar Max Demand	✓	✓	✓
73	Export kVar Max Demand	✓	✓	✓
74	L1, L2, L3 Current Max Demand	✓	✓	X
75	System Voltage	✓	✓	✓
76	L1, L2, L3 Voltage	✓	X	X
77	L12, L23, L31 Voltage	✓	✓	X
78	System Current	✓	✓	✓
79	L1, L2, L3 Current	✓	✓	X
80	Frequency	✓	✓	✓
81	System Active Power	✓	✓	✓
82	L1, L2, L3 Active Power	✓	X	X
83	System Reactive Power	✓	✓	✓
84	L1, L2, L3 Reactive Power	✓	X	X
85	System Apparent Power	✓	✓	✓
86	L1, L2, L3 Apparent Power	✓	X	X
87	System Power Factor	✓	✓	✓
88	L1, L2, L3 Power Factor	✓	X	X
89	System Phase Angle	✓	✓	✓
90	L1, L2, L3 Phase Angle	✓	X	X
91	System Voltage THD	✓	✓	✓
92	L1, L2, L3 Voltage THD	✓	X	X
93	System Current THD	✓	✓	✓
94	L1, L2, L3 Current THD	✓	X	X

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