NR10PLUS

SINGLE-PHASE DIRECT CONNECTED AC ENERGY METER 100A

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Overview :

NR10PLUS is a modern Single Phase Direct Connected Energy Meter designed for intended use in residential, commercial and light industrial Electrical Energy Metering. The meter is engineered using advanced microcontroller technology and is suitable for electrical parameter measurement and monitoring in 1 Phase 2 Wire Networks. The meter is available in 100 A maximum current measurement range on direct connection. It supports Tariff Counters selectable via Digital Input or MODBUS Communication. It displays parameters on bright intuitive LCD and also has Pulse Outputs and Impulse LED for energy monitoring. It has inbuilt industry standard MODBUS RTU for remote monitoring. Meter housing is standard Din Rail Mount that allows ease of installation.

Product Features :

Direct Connection Meter :

The Meter can safely measure 100A maximum current on direct connection, eliminating the use of expensive external CT for high current networks. Meter is also self-powered thus offer simplified connections.

Measured Electrical Parameters :

The Meter is primarily for bidirectional Active, Reactive and Apparent Energy measurement but it also accurately measures important electrical parameters like Voltage, Current, Frequency, Active, Reactive and Apparent Power, and Power Factor in Single Phase Networks. The measured parameters can be viewed on display and MODBUS for remote viewing.

Demand :

The Demand parameter for Active Power (Import/Export), Reactive Power (Import/Export), Apparent Power and Current are calculated as per configurable Demand Integration time.

Pulse Outputs :

The Meter has two opto-isolated Pulse Outputs (SO) that can be configured for any one of the Active (Import/Export), Reactive (Import/Export/Inductive/Capacitive) Energy parameter.The pulse width and rate of pulse out is onsite programmable.

Impulse LED :

The meter has Impulse LED which flash at rate of 1000 IMP/kWh indicating the Active Energy consumption.

Digital Input :

The meter has one Digital Input (DI) dedicated for selection of active tariff T1 and T2. The opto-isolated DI is rated for a wide range of AC/DC voltage for operation

Front Keys :

Two keys are provided for easy navigation and accessibility of different parameters and onsite programming of the meter.

Remote Communication:

The Meter provides RS485 communication based on MODBUS protocol for remote data acquisition of measurement data and configuration. MODBUS parameters baud rate, device address and parity- stop bits are programmable.

LCD :

The LCD has bold seven segment digits with bright white backlit for display of measurement parameters. Special symbols, units and bar graph are provided for effective display and easy onsite configuration. Indications for communication status, active tariff, pulse outputs are available on screen. Measurement screen can be set as automatic scrolling or manual scrolling.

Multi tariff :

The meter has Tariff Counters for energy accumulation which are selectable via Digital Input or via MODBUS Communication. Energy for tariff are Active Energy (Import/Export/Total), Reactive Energy (Import/Export/Total) and Apparent Energy.

Compliance to Standards :

National / International Standards are complied

Accuracy Standard :	EN50470-1, 3 (MID)
	IEC62053-21, 23 (IEC)
IP for water & dust:	IEC 60529
Plastic Flammability Standard:	UL 94

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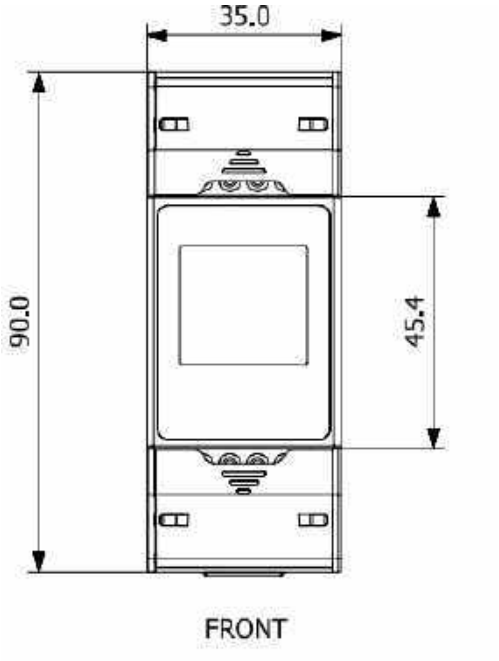
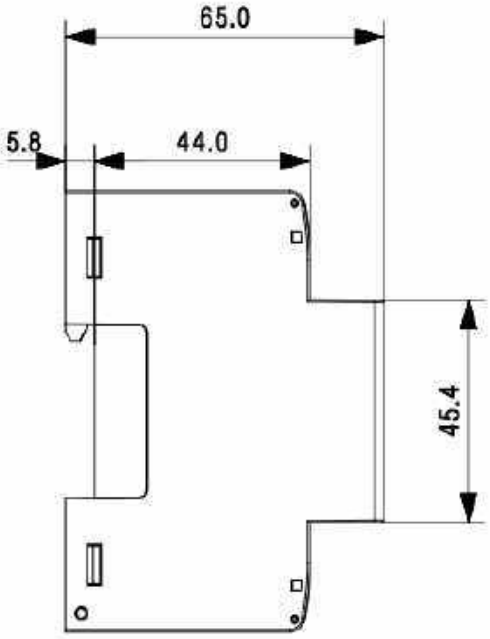
Dimensions Details:





Technical Specifications:

Input :	
Reference Voltage (U_n)	230 VLN
Operating Voltage Range	184 - 276 VLN
Power consumption in Voltage Circuit	< 2 W (7 VA)
Starting Current (I_{st}= 0.04*I)$_{tr}$	20 mA
Minimum Current (I_{min} = 0.5*I_{tr})	250 mA
Transitional Current (I_t)	0.5 A
Reference Current (I_{ref} = 10*I_t)	5 A
Maximum Current (I_{max} > 50*I_{tr})	100 A
Operating Current Range	0.25-5 A (100 A)
Short time Over-current	30*I_{max} for half-cycle at 50 Hz
Power consumption in Current Circuit	<1 VA
Frequency	50/60 Hz

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 Class 1 as per IEC 62053-21
Reactive Energy (Import/Export)	Class 2 as per IEC62053-23
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% of unity

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	1, 10, 100, 1000 pulse per kWh/kVARh

Impulse LED :	
Impulse Rate	1000 pulse per kWh

Communication Interface :	
Protocol	RS485 MODBUS
Baudrate	2.4 / 4.8 / 9.6 / 19.2 / 38.4 kbps
Data Width	8
Parity - Stop Bits	None -1 / None -2/ Even -1 / Odd -1
Response Time	< 300 millisecond (1000 millisecond for 2.4 & 4.8 kbps)

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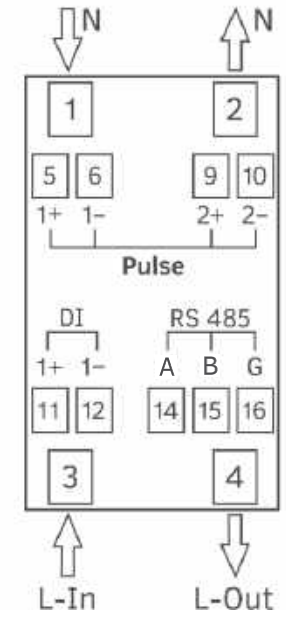
Connector Details:



Display Ranges :	
Active Energy	0.01-99999.99 kWh
Reactive Energy	0.01-99999.99 kVARh
Apparent Energy	0.01-99999.99 kVAh
Active Power	0-99999 W
Reactive Power	0-99999 VAR
Apparent Power	0-99999 VA

Digital Input :	
0 V	Low (T1 Tariff)
20... 300 VAC / 10... 60 VDC	High (T2 Tariff)

Installation :	
Installation	Indoor
Enclosure	IP51 (IEC 60529: 1989)
Housing	2 Module DIN 43880
Dimensions	35 mm X 90 mm X 65 mm
Weight	250 gm
Mounting	35 mm DIN Rail

Safety :	
Safety Standard	According to EN50470-1
Installation Category	III
Protective Class	II (EN 50470-1) / IEC61010
Pollution Degree	2
High Voltage Test	4 kV AC for 1 minute
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... 90% (Non Condensing)
Altitude	<2000 m max

Wiring Guidelines:	
Current Input Wire Size	50 mm^2
Current/Voltage Tightening Torque	3 Nm
RS485 / SO / DI Wire Size	0.1 to 2.5 mm^2 (Solid/Stranded with pin type lug)
RS485 / SO / DI Tightening Torque	0.3 to 0.4 Nm

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Measured Parameter :

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

Ordering Code:

Meter	**NR10PLUS**	X	X	XXXX
Language version:	Polish/English	M		
	other*	X		
Acceptance tests:	without extra requirements		0	
	with quality inspection certificate		1	
	with calibration certificate		2	
	acc. to customer's request*		X	
Version:	standard			
	custom - made			XXXX

*Only after agreeing with a manufacturer

Example of order:

the code: **NR10PLUS** M0 means:

NR10PLUS - meter **NR10PLUS**
M - multilanguage user manual

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