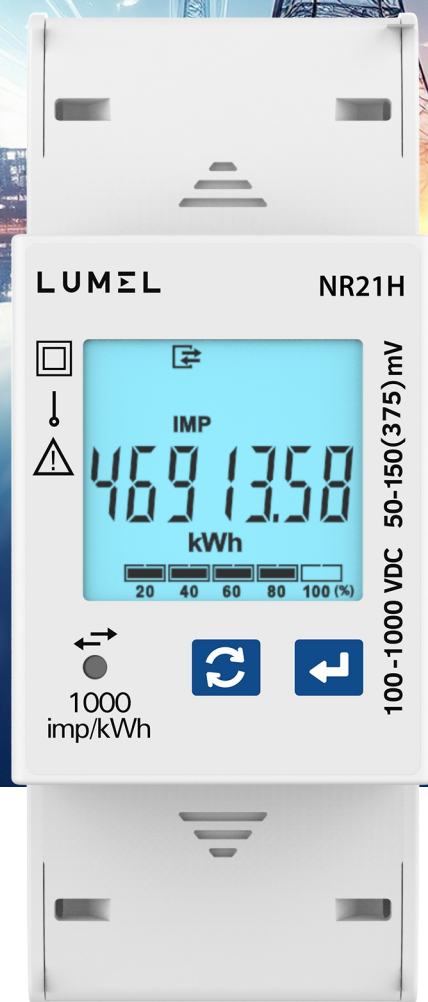


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CE

NR21H

DIN RAIL SINGLE CHANNEL DC
ENERGY METER

NR21H

DIN RAIL SINGLE CHANNEL DC ENERGY METER



Overview:

NR21H is a modern Single channel DC Energy meter with bidirectional energy measurement, designed for EV charging station, telecommunication base stations, solar photovoltaic, and other applications of DC Energy measurement. The meter is engineered using advanced micro controller technology and it is suitable for electrical parameter measurement and monitoring. 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.

FEATURES

Direct Connection Meter

The Meter can safely measure 2000A maximum current through external shunt resistor output 50-150mv.

Measured Electrical Parameters

The Meter is primarily for bidirectional Energy measurement but it also accurately measures important electrical parameters like Voltage, Current, Power, Energy, Amper hours. The measured parameters can be viewed on display and MODBUS for remote viewing.

Note: Voltage channel is isolated(4kVDC).

Demand

The Demand parameter for Power (Import/Export)and Current are calculated as per configurable demand integration time.

Pulse Outputs

The Meter has one opto-isolated Pulse Outputs (SO) that can be configured for (Import/Export) 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 Energy consumption.

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, pulse outputs are available on screen. Measurement screen can be set as automatic scrolling or manual scrolling.

Compliance to Standards

National / International Standards are complied

Accuracy Standard : EN 50470-4:2023

IEC 62053-41:2021

IP for water & dust: IEC 60529

Plastic Flammability Standard: UL 94

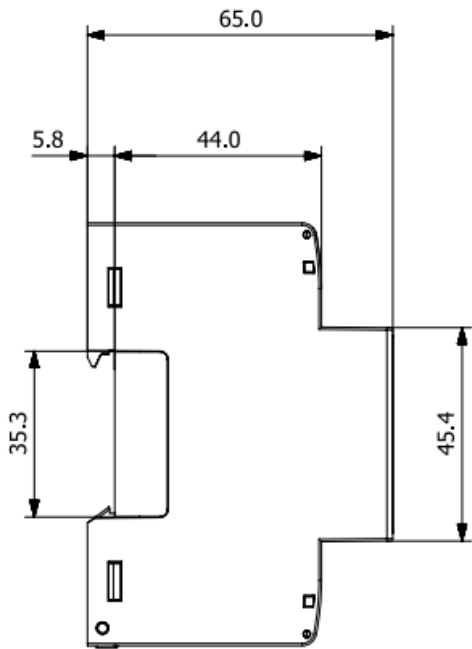
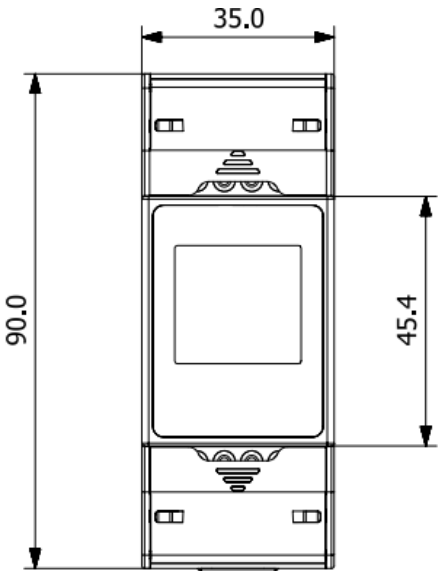
Electromagnetic Compatibility: IEC 61326 - 1, Table 2

NR21H

DIN RAIL SINGLE CHANNEL DC ENERGY METER



Dimensions Details:



TECHNICAL DATA

Input :

Operating Voltage range	± 5-1000 VDC
Nominal Input Voltage range	100-1000 V
Operating Voltage range	± 5% to 110% of Nominal
Voltage Overload Withstand	2x rated value for 1sec, repeated 10 times at the 10sec intervals
Power consumption in Voltage Circuit	< 2 W
Current Sensor	External Shunt
Shunt Setting Range	50 - 150(375) mV ^(Note 1)
Nominal Input Current range	5 to 2000A (via External Shunt) ^(Note 1)
Operating Current range	± 0.4% to 100% * I _{max} ^(Note 1) of Nominal

Auxiliary Supply:

Aux Higher	60-300V AC / DC (230V AC/DC nominal)
Aux Lower	20-60V AC / DC (24V AC/DC nominal)
Aux Supply Frequency	45 to 65 Hz range
Burden	< 3VA approx. (at nominal value)

Accuracy:

Voltage	± 0.5% of nominal value
Current	± 0.5% of Nominal value.
Power	± 1% of range max
Energy	± 1%
Energy(Import/Export)	Class 1 as per IEC 62053-41:2021 Class B as per EN 50470-4:2023

Pulse Output:

SO	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.

Impulse LED :

Impulse Rate	1000 pulse per kWh
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Note 1 :

IEC62053-41:2021 standard applicable to nominal input current range setting of 5A to 2000A and the shunt settings 50mV to 150mV

Current measurement parameters	5 to1000A	1001 to 2000A
Nominal Current (I _n)	5 to1000A	1001 to 2000A
Maximum Current I _{max}	≤2*I _n	2000A

EN50470-4:2023 standard applicable to nominal input current settings 5A to 400A and the shunt settings 50mV to 75mV.

Current measurement parameters	5A	400A
Starting Current (0,04*I _{tr})	0,02A	1,6A
Minimum Current (0,5*I _{tr})	0,25A	20A
Transitional Current (I _{tr})	0,5A	40A
Nominal Current (I _n)	5A	400A
Maximum Current I _{max} (50*I _{tr})	25A	2000A

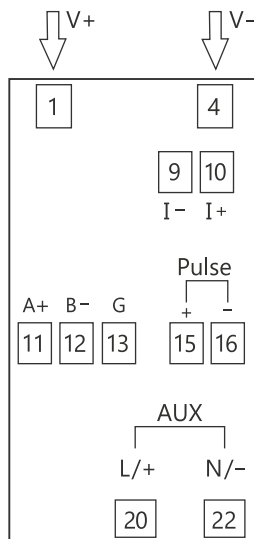
NR21H

DIN RAIL SINGLE CHANNEL DC ENERGY METER

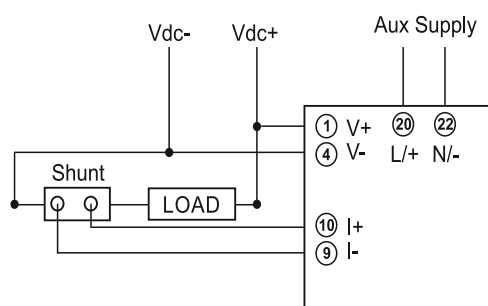
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Connector Details:

Connection Diagram For DC2111 Mod:



Shunt Connection :



Communication Interface :

Protocol	RS485 MODBUS
Baudrate	2.4 / 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 millisecond

Display Ranges :

Energy (Import / Export)	0 - 99999.99 kWh & Autoranging further
Ampere Hour	0 - 99999.99 Ah & Autoranging further
Voltage	±0 - 9999 V
Current	±0 - 9999 A
Power	±0 - 9999 VA

Installation :

Installation	Indoor
Enclosure	IP51 (Front side) & IP20 (Terminal side) (IEC 60529: 2001)
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 IEC 61010
Installation Category	II
Protective Class	II
Pollution Degree	2
High Voltage Test	6200V DC for 1 minute
Impulse Voltage Withstand	9.3 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 +70°C
Storage/Transport Temperature	-40°C to +70°C
Relative Humidity	0... 95% (Non Condensing)
Altitude	<2000 m max

Wiring Guidelines:

Aux / Voltage Input Wire Size	1 to 2.5 mm ² (use insulated pin types lugs)
Aux / Voltage Tightening Torque	0.4 Nm
RS485 / SO / Current Wire Size	0.5 to 2.5 mm ² (Solid/Stranded with pin type lug)
RS485 / SO / Current Tightening Torque	0.4 Nm

Measured Parameter System wise:

Sr No	Parameters
1.	Total Energy
2.	Import Energy
3.	Export Energy
4.	Partial Total Energy
5.	Partial Import Energy
6.	Partial Export Energy
7.	Voltage
8.	Current
9.	Power
10.	Total Amper Hour
11.	Import Amper Hour
12.	Export Amper Hour
13.	Partial Total Amper Hour
14.	Partial Import Amper Hour
15.	Partial Export Amper Hour
16.	Import kW Demand
17.	Export kW Demand
18.	Max Import kW Demand
19.	Max Export kW Demand
20.	Max Import Current Demand
21.	Max Export Current Demand
22.	Import Current Demand
23.	Export Current Demand
24.	Max Current
25.	Min Current
26.	Max Voltage
27.	Min Voltage
28.	Max Power
29.	Min Power
30.	Run Hours
31.	On Hours
32.	Number of Interruptions

Ordering Information:

DC energy meter NR21H		01	01	A	X	B	XX	X	X
Input voltage Un	5...1000 V d.c.	01							
Input current In	5...2000 A (50...150 mV)		01						
Outputs	RS 485 Modbus, 1x pulse output			A					
Power supply	20...60 V a.c./d.c. 50Hz				L				
	60...300 V a.c./d.c. 50Hz				H				
Accuracy	class B					B			
Version	standard						00		
	custom-made*						XX		
Language	Polish/English							M	
Acceptance tests	without additional quality requirements								0
	with an extra quality inspection certificate								1
	with a calibration certificate								2

*Only after agreeing with the manufacturer

Ordering example:

The code: **NR21H 0101AHB00M0** means:
NR21H - DC energy meter NR21H
01 - input voltage 5...1000 V d.c.
01 - input current 5...2000A d.c.
A - RS 485 Modbus, 1x pulse output
H - power supply 60...300 V a.c./d.c.
B - accuracy class B
00 - standard version
M - Polish/English version
0 - without additional quality requirements

Order Code:

NR21H-Z0LM00000
Mod Single Channel DC Energy Meter, lower aux 20-60V AC/DC, 50 Hz.