NMID32

THREE-PHASE DIN RAIL AC ENERGY METER

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Overview :

NMID32 measures important electrical parameters in 3 Phase 4 Wire, 3 Phase 3 Wire and1 Phase 2 Wire Network and is designed for intended use in residential, commercial and light industrial Electrical Energy Metering. It displays many parameters at a glance. It supports Tariff Energy Counters selectable via MODBUS or MBUS communication or Tariff Input. It has Pulse Outputs and Impulse LED for energy monitoring. It has inbuilt industry standard MODBUS RTU or MBUS for remote monitoring. Meter housing is standard Din Rail Mount that allows ease of installation.

FEATURES

In-built 1/5 A Current Transformer :
The meter is provided with in-built CT which is on-site configurable for 1/5 A Current thereby enabling the meter to used for different measuring range using same unit.

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 Three Phase and Single Phase Networks. The measured parameters can be viewed on display and MODBUS or MBUS 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 (Optional) :
The meter has two opto-isolated SO Outputs that can be configured for any one of the Active (Total/Import/Export),Reactive (Total/Import/Export) Energy parameter. The pulse width of pulse output is onsite programmable.

Impulse LED :
The meter has Impulse LED which flash at rate of 6400 IMP/kWh indicating the Active Energy consumption.

LCD :
The LCD has bold seven segment digits with bright white backlit for display of measurement parameters. Special symbols and units are provided for effective display and easy onsite configuration. Indications for active tarrif is continuously available on screen. Measurement screen can be set as automatic scrolling or manual scrolling.

Front Keys :
Four keys are provided for easy navigation and accessibility of different parameters and onsite programming of the meter.

Remote Communication(Optional) :
The meter has communication based on MODBUS or MBUS protocol for remote data acquisition of measurement data and configuration. MODBUS or MBUS parameters Baud rate, Device address and parity- stop bits are programmable.

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

Dual tariff :
The meter has Tariff Counters for energy accumulation which are selectable via Tariff Input. Energy for tariff are Total/Import/Export Active Energy, Total/Import/Export Reactive Energy.

Compliance to Standards :

Accuracy Standard :	EN50470-3 :2022 IEC62053-21
IP for water & dust:	IEC 60529
Plastic Flammability Standard:	UL 94
Safety Standard	62052-31:2015

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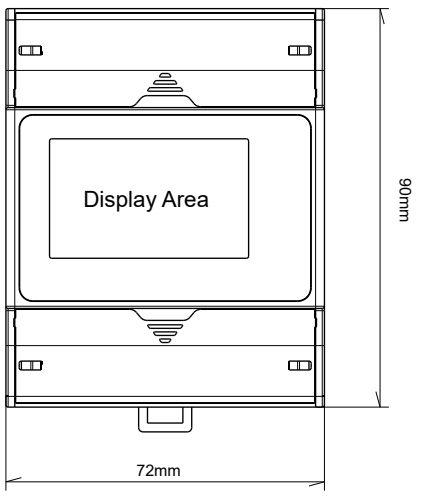
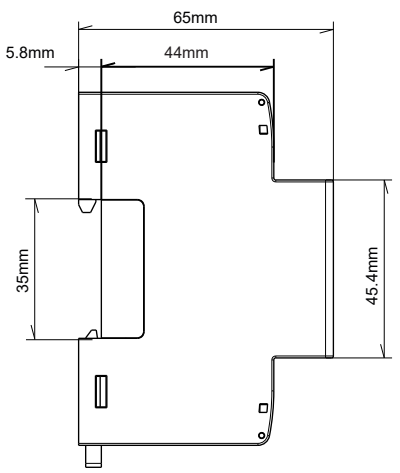
Dimensions Details:



Front View



Side View

TECHNICAL DATA

Input Voltage:	
Nominal Input Voltage (Vn)	230 VLN (400VLL)
System PT Primary Values	100VLL to 1200kVLL programmable on site.
Measuring Range	57.7VLN to 289 VLN (100VLL to 500 VLL)
Overload Withstand:	2 x rated value for 1 second, repeated 10 times at 10 second intervals
Nominal Input Voltage Burden	< 0.3VA approx. per phase(at nominal 240V)

Input Current:

Current Measurement Parameters	1A	5A
Starting Current (I_{st} = 0.04*I_{tr})	2 mA	10 mA
Minimum Current (I_{min} = 0.2*I_{tr})	10 mA	50 mA
Transitional Current (I_{tr})	50 mA	250 mA
Nominal Current (I_n = 20*I_{tr})	1 A	5 A
Maximum Current for 1A (Imax=120*Itr) for 5A(Imax=24*Itr)	6 A	6 A
Operating Current Range	10 mA - 1 A(6 A)	50 mA -5 A (6 A)
Short time Over-current	20*I_{max} for 0.5 Second	
Power consumption in Current Circuit	<1VA per phase	
System CT Primary Values	From 1A to 9999A	
Nominal Input Current Burden	< 0.05VA approx. per phase	

Auxiliary Supply:	
Voltage Range	100-550V AC/DC (230V AC/DC nominal)
Frequency	50 Hz
Burden	< 6VA approx. (at nominal value)

Reference Conditions for Accuracy:	
Reference Temperature	23°C +/- 2°C
Influence of Temperature	0.01% / °C for Voltage,0.025% / °C for Current
Input Waveform	Sinusoidal (Distortion factor 0.005)
Input Frequency	50 Hz ± 2%
Auxiliary Supply Frequency	50 Hz ± 1%
Total Harmonic Distortion	THDv <= 50% upto 31st at Vn THDi <= 60% upto 31st at In

Accuracy:	
Active Energy	Class B as per EN 50470 - 3 Class 1 as per IEC 62053 - 21
Reactive Energy	±2%
Apparent Energy	±1%
Active Power	±0.2% of nominal value
Reactive Power	±1.0% of nominal value
Apparent Power	±0.2% of nominal value
Power Factor	±1%
Voltage	±0.2% of nominal value
Current	±0.2% of nominal value
Frequency	±0.1% of nominal value
THD (V/ I) w.r.t fundamental	±5% (upto 31st Harmonics)

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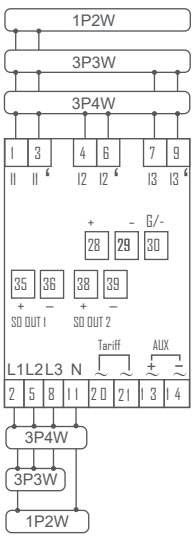
Connector Details:



2,5,8	:L1,L2,L3
11	:Neutral
1 & 3	:L1 Current In & L1 Current Out
4 & 6	:L2 Current In & L2 Current Out
7 & 9	:L3 Current In & L3 Current Out
13 & 14	:Aux Terminal
35,36 & 38,39	:Pulse Output Terminal
20,21	:Tariff input Terminal
28,29,30	:RS485 Terminal (in Modbus Model)
	:Mbus Terminal (in Mbus Model)

Wiring Guidelines

For Votage/Current Solid with insulated pin type lugs (sq. mm)	1 to 2.5
For Voltage/Current Stranded with insulated pin types lugs (sq. mm)	1 to 2.5
Torque value (Nm)	
1.Aux and Voltage terminals	0.4
2.Current Terminals	0.4
3.RS485,MBUS,Tariff Input & SO terminal	0.4
Length available for lug entry in terminal (mm)	9.5

It is recommended that the wires used for connections to the instrument should have insulated pin type lugs soldered at the end. That is, the connections should be made with Lugged wires for secure connections.

TECHNICAL DATA

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 pulse per kWh/kVARh
Impulse Rate	6400 pulse per kWh
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 millisecond at 9.6 Kbps Baudrate
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
Display Ranges :	
Active Energy	0.01-9999999.99 kWh
Reactive Energy	0.01-9999999.99 kVARh
Apparent Energy	0.01-9999999.99 kVAh
Tariff Input :	
0 V	Low
230 V	High
Installation :	
Installation	Indoor
Enclosure	IP51(Front side) and IP 20 (Terminal side) (IEC 60529 : 2001)
Housing	(4 Module DIN 43880)
Dimensions	72 mm X 90 mm X 65 mm
Weight	300 gm
Mounting	35 mm DIN Rail
Safety :	
Safety Standard	According to 62052-31:2015
Installation Category	III
Protective Class	II
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

Measured Parameter System wise:

✓ : Available × : Not Available

Sr No	Parameters	3 Phase 4Wire	3Phase 3Wire	1Phase 2Wire
1.	System Import Active Energy	✓	✓	✓
2.	System Export Active Energy	✓	✓	✓
3.	System Total Active Energy	✓	✓	✓
4.	System Import Reactive Energy	✓	✓	✓
5.	System Export Reactive Energy	✓	✓	✓
6.	System Total Reactive Energy	✓	✓	✓
7.	System Apparent Energy	✓	✓	✓
8.	Tariff 1 & 2 Import Active Energy	✓	✓	✓
9.	Tariff 1 & 2 Export Active Energy	✓	✓	✓
10.	Tariff 1 & 2 Total Active Energy	✓	✓	✓
11.	Tariff 1 & 2 Import Reactive Energy	✓	✓	✓
12.	Tariff 1 & 2 Export Reactive Energy	✓	✓	✓
13.	Tariff 1 & 2 Total Reactive Energy	✓	✓	✓
14.	L1, L2, L3 Import Active Energy	✓	×	×
15.	L1, L2, L3 Export Active Energy	✓	×	×
16.	L1, L2, L3 Total Active Energy	✓	×	×
17.	L1, L2, L3 Import Reactive Energy	✓	×	×
18.	L1, L2, L3 Export Reactive Energy	✓	×	×
19.	L1, L2, L3 Total Reactive Energy	✓	×	×
20.	L1, L2, L3 Apparent Energy	✓	×	×
21.	Current Demand	✓	✓	✓
22.	kVA Demand	✓	✓	✓
23.	Import kW Demand	✓	✓	✓
24.	Export kW Demand	✓	✓	✓
25.	Import Var Demand	✓	✓	✓
26.	Export Var Demand	✓	✓	✓
27.	Max Current Demand	✓	✓	✓
28.	Max kVA Demand	✓	✓	✓
29.	Max Import kW Demand	✓	✓	✓
30.	Max Export kW Demand	✓	✓	✓
31.	Max Import Var Demand	✓	✓	✓
32.	Max Export Var Demand	✓	✓	✓
33.	System Voltage	✓	✓	✓
34.	L1, L2, L3 Voltage	✓	×	×
35.	L12, L23, L31 Voltage	✓	✓	×
36.	System Current	✓	✓	✓
37.	L1, L2, L3 Current	✓	✓	×
38.	Neutral Current (Calculated)	✓	×	×
39.	Frequency	✓	✓	✓
40.	System Active Power (kW)	✓	✓	✓
41.	L1, L2, L3 Active Power (kW)	✓	×	×
42.	System Total Re-active Power (kVAr)	✓	✓	✓
43.	L1, L2, L3 Total Re-active Power (kVAr)	✓	×	×
44.	System Apparent Power (kVA)	✓	✓	✓
45.	L1, L2, L3 Apparent Power (kVA)	✓	×	×
46.	System Power Factor	✓	✓	✓
47.	L1, L2, L3 Power Factor	✓	×	×
48.	System Phase Angle	✓	✓	✓
49.	L1, L2, L3 Phase Angle	✓	×	×

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Measured Parameter System wise:

✓ : Available × : Not Available

Sr No	Parameters	3 Phase 4Wire	3Phase 3Wire	1Phase 2Wire
50.	System Voltage THD	✓	✓	✓
51.	L1, L2, L3 Voltage THD	✓	✓	×
52.	System Current THD	✓	✓	✓
53.	L1, L2, L3 Current THD	✓	✓	×
54.	Run Hour	✓	✓	✓
55.	On Hour	✓	✓	✓
56.	Number of Interruptions	✓	✓	✓
57.	Phase Sequence Indication	✓	✓	×
58.	Current Reversal Indication	✓	×	✓

Order Code:

NMID32
3 Phase input with input voltage 100-500VLL 1A/5A internal CT, 2 SO Output + 1 Tariff Input with CE Certification.

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