NR32

DIN RAIL MULTIFUNCTION METER

NR32 measures important electrical parameters in 3 phase 4 wire,3 phase 3 wire and1 phase 2 wire Network. It displays many parameters at a glance. It measures electrical parameters like Active / Reactive / Apparent energy and all basic parameter. The instrument has optional digital output available as potential free relay or SO interface and configurable as pulse or alarm. This instrument also has optional digital inputs for monitoring the external contact status, pulse counting and/or energy accumulation according to tariff.

Applications:

- Internal Energy billing/monitoring/auditing
- Electrical load monitoring
- Sub-metering
- Genset, TestBenches and Laboratories

Product Features:

True RMS Measurement

- True RMS measurement with Sampling rate of 128 samples per cycle.

Compliance to Performance Standards

- Compliance to performance standard EN 50470-1/3 , IEC 61557-12, IEC 62053-22 and 62053-23.

Relay Output (optional)

Potential free, very fast acting relay contact configurable for following:

- **Pulse** output which can be used to drive an external counter for energy measurement.
- **Limit** (alarm) switch. Limit output also configurable for three logical combination of parameters.
- **Timer** output which can be used to operate relay in cyclic manner.
- **Pre-Paid Cost** based energy tripping.
- Switch for **unhealthy three phase load.**
- **Remote Relay Control** using MODBUS.

Pre-Paid Cost Based Energy Tripping

- This feature provides the luxury of tripping the load whose energy has crossed the required threshold of the configured tariff amount
- The user just needs to set the energy, top-up amount and the rate per unit (kilo) of energy.

Health Monitoring of Three Phase Load

- This feature is applicable only for Three phase load (such as a Three phase motor) which can be monitored for phase failure, phase reversal, voltage & current unbalance, under frequency, under voltage, over voltage and over current.
- Further, set a relay on this mode and use it for indication / guard against such faults.

Pulse Output (SO Output)

- Opto-isolated pulse output.
- Configurable for Active, Reactive and Apparent Energy Parameters.
- The pulse rate and pulse duration is also onsite configurable.

NR32 DIN RAIL MULTIFUNCTION METER

LUMEL

Product Features:

High Max System Power Limit

- Up to 3750 MVA Nominal System Power is measurable.
- Up to 9000 MVA Max System Power is measurable.

Energy as per IEC 62053

- Active Energy accuracy 0.5s as per 62053-22, Class B as per EN 50470-3 and Reactive Energy Class 2 as per 62053-23.
- Active Energy accuracy 0.2s (optional) as per 62053-22 and Reactive Energy Class 2 as per 62053-23.
- Independent Import and Export Energy counter.
- Active energy (kWh), Reactive energy (kVArh),
- Apparent energy (kVAh) measurement of system as well as phase-wise.

Energy as per IEC 62053

- Active Energy accuracy 0.5s as per 62053-22, Class B as per EN 50470-3 and Reactive Energy Class 2 as per 62053-23.
- Active Energy accuracy 0.2s (optional) as per 62053-22 and Reactive Energy Class 2 as per 62053-23.
- Independent Import and Export Energy counter. Active energy (kWh), Reactive energy (kVArh), Apparent energy (kVAh) measurement of system as well as phase-wise.

Digital Inputs

2 Digital Inputs (Optional) can be configured as:

- Status to indicate if the input is present or not.
- Pulse Counter for counting pulses from external sources.
- Tariff Input to store separate energy counters on the basis of digital inputs present.

Dual Tariff

- 2 Tariff based on digital input available.
- 6 Energy Parameters configurable for tariff based energy.

THD and Individual Harmonics Measurement:

- The instrument measures per phase THD and individual harmonic up to 31st harmonics for voltage & current.

Direct Remote Access (Optional)

- Remote configuration of the Instrument and access of measured parameter via Modbus Rs485.

User Assignable Screens

- Instrument measures more than 85 parameters and these parameters are displayed through different screens.
- User can select minimum 1 no. and maximum 10 nos. of screens out of all the screens as per application requirement.

Min-Max and Old Values

- Min-Max Voltage, Current, Active/Reactive/Apparent power, Power factor, Phase angle, Frequency.
- Old value storage after Reset.

Compliance to International Safety Standards

- Compliance to International Safety standard IEC 61010-1- 2010.

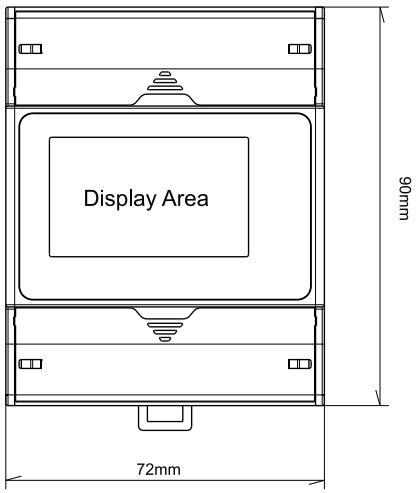
EMC Compatibility

- Compliance to International standard IEC 61326.

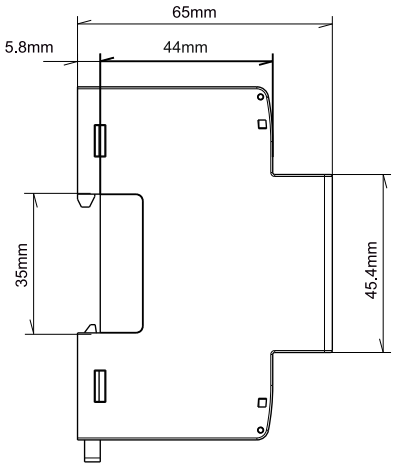
NR32 DIN RAIL MULTIFUNCTION METER

LUMEL

Dimensions Details:



Front View



Side View

Technical Specifications:

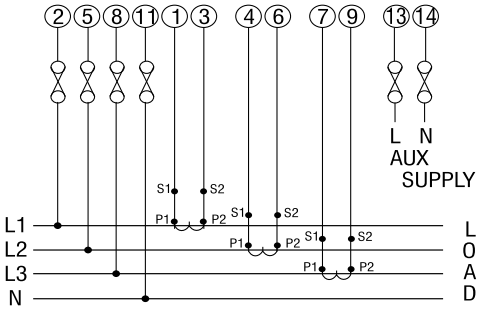
Input Voltage:	
Nominal input voltage (Vn)	100VLL to 600 VLL AC RMS
Programmable on site.	57.5VLN to 346.42 VLN AC RMS
System PT primary values	100VLL to 1200kVLL programmable on site.
Measuring Range	20%....120% of nominal value
Overload Withstand	2 x rated value for 1 second, repeated 10 times at 10 second intervals
Overload Indication	"-OL-" >121% of Nominal value
Nominal input voltage burden	< 0.3VA approx. per phase(at nominal 240V)
Input Current:	
Nominal input current(In)	1A / 5A onsite programmable
System CT primary values	From 1A to 9999A
Measuring Range	1%....200% of nominal value (1%....180% of nominal value for CF = 2)
Overload Indication	"-OL-" >205% of Nominal value
Nominal input current burden	< 0.3VA approx. per phase
Overload Withstand	20 x rated value for 1 second, repeated 5 times at 5 minute intervals
Auxiliary Supply:	
Higher Auxiliary supply range	100-550V AC/DC (230V AC/DC nominal)
As per IEC 61557-12	100-320V AC/DC (230V AC/DC nominal)
Aux Supply frequency	45 to 66 Hz range
Auxiliary Supply burden	< 6VA approx. (at nominal value)
Operating Measuring Ranges:	
Current (Energy Measurement)	1....200% of nominal value
Starting current	As per Standard IEC62053-22 (0.5s) As per Standard IEC62053-22 (0.2s Optional)
Voltage	20... 120% of nominal value
Power Factor	0.5 Lag ... 1... 0.8 Lead
Frequency	40Hz to 70Hz
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	50/60 Hz ± 2%
Auxiliary supply frequency	50/60 Hz ± 1%
Total Harmonic distortion	THDv <= 50% upto 31st at Vn THDi <= 200% upto 31st at In (THDi <= 180% upto 31st at In for CF = 2)
Voltage range	20%.....120% of nominal value
Current range	10%.....200% of nominal value
Display Specification:	
Display	3 Line 4 Digit LCD with Backlit
Response time to step input	1 sec approx.
LED Indications	Impulse (Integration of Energy)
Display scrolling	Automatic/Manual (Programmable)
Push buttons	4 Buttons

NR32 DIN RAIL MULTIFUNCTION METER

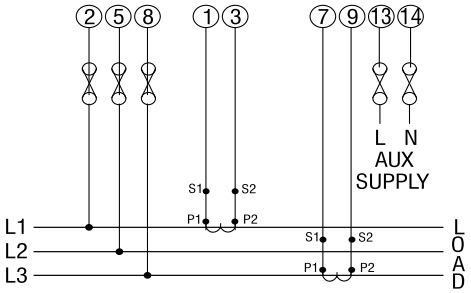
LUMEL

Electrical Connection:

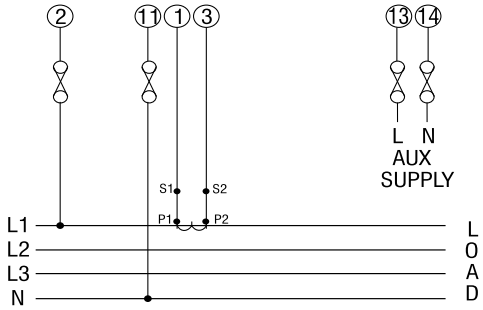
Network Types :



a) 3 Phase 4 Wire



b) 3 Phase 3 Wire



c) Single Phase Load

Wiring Guidelines

Solid with Pin type lugs (sq. mm)	1 to 2.5
Stranded with pin types lugs (sq. mm)	1 to 2.5
Torque value (Nm) 1. Aux and Voltage terminals 2. Current Terminals 3. RS485, DI and Relay terminals	 0.5 to 0.6 0.4 to 0.5 0.3 to 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 lugs soldered at the end. That is, the connections should be made with Lugged wires for secure connections.

Technical Specifications:

Accuracy:

Active Energy (Bidirectional)
EN 50470-1/3 : Standard-Class B
IEC 62053-22 : Standard-Class 0.5S (*Optional*-Class 0.2S)
IEC 61557-12 : Standard-Class 0.5 (*Optional*-Class 0.2 for 5A In (Class 0.5 for 1A In))

Apparent Energy	Class 1 as per IEC 61557-12
Reactive Energy	Class 2 as per IEC 62053 - 23 and IEC 61557 - 12

	Class 0.2s (on Request)	Class 0.5s (Standard)
Voltage	± 0.2% of Nominal value	± 0.5% of Nominal value
Current	± 0.2% of Nominal value	± 0.5% of Nominal value
Frequency	± 0.1% of Mid frequency	± 0.1% of Mid frequency
Active Power	± 0.2% of Nominal value	± 0.5% of Nominal value
Re-Active Power	± 1.0% of Nominal value	± 1.0% of Nominal value
Apparent Power	± 0.2% of Nominal value	± 0.5% of Nominal value
Power Factor/ angle	±3°	±3°
THD (V/I) w.r.t. fundamental	±5% (upto 31st Harmonics)	±5% (upto 31st Harmonics)
Individual Harmonics	±5% (upto 31st Harmonics)	±5% (upto 31st Harmonics)

Applicable Standards:

Electromagnetic Compatibility	IEC 61326 - 1
Immunity	IEC 61000-4-2,-3,-4,-5,-6,-8,-11
Emission	CISPR 11
Safety	IEC 61010-1-2010
IP for water & dust	IEC 60529
Pollution degree	2
Installation category	III
Protective Class	2
High voltage test	
Input + Aux Vs Surface	4kV RMS, 50Hz for 1min
Input / Aux Vs Others	3.3kV RMS, 50Hz for 1min
DI/Pulse out/RS485 Vs Others	3.3kV RMS, 50Hz for 1min
DI Vs DI / Pulse out Vs Pulse out	2.2kV RMS, 50Hz for 1min

Environmental:

Operating temperature	-20 to +55°C (Storage: -40 to +85°C)
Relative humidity	0... 95% (non condensing)
Warm up time	Minimum 3 minute
Shock (As per IEC 60068-2-27)	Half sine wave, Peak acceleration 30gn (300 m/s^2), duration 18ms
Vibration	10... 150...10 Hz, 0.15mm amplitude
Altitude	< 2000 m
Number of Sweep cycles	10 per axis
Enclosure	IP 20 (Terminal side) and IP54(Front side)

Installation:

Mechanical Housing	Lexan 940(polycarbonate), Class V-0 acc. to UL 94, non dripping, free of halogen
Mounting Position	DIN Rail Mounted
Connection Element	Conventional screw type terminal with indirect wire terminals
Connection Terminal	4 mm^2 solid or 2.5 mm^2 stranded cable
Weight	300 grams approx

Interfaces:

Impulse Led	For Energy testing
Digital Input (Optional)	20... 300 VAC / 10... 60 VDC, Optical couplers, Min width 10ms, Min length b/w 2 pulses 18ms
Relay(Optional)	250 VAC, 5 A AC / 30 VDC, 5A DC
SO Output (Optional)	Opto-coupler max. 30V, 20mA, at least 5V Pulse width 30ms, Impedance 100 ohm
Modbus (Optional)	RS485, max 1.2Km : 4.8,9.6,19.2,38.4,57.6kbps

Measured Parameter System wise:

✓ : Available × : Not Available

Sr No	Parameters	3 Phase 4Wire	3Phase 3Wire	1Phase 2Wire
1.	System Import Active Energy[1]	✓	✓	✓
2.	L1,L2,L3 Import Active Energy[1]	✓	×	×
3.	System Export Active Energy[1]	✓	✓	✓
4.	L1,L2,L3 Export Active Energy[1]	✓	×	×
5.	System Total Active Energy[1]	✓	✓	✓
6.	L1,L2,L3 Total Active Energy[1]	✓	×	×
7.	System Inductive Reactive Energy[1]	✓	✓	✓
8.	L1,L2,L3 Inductive Reactive Energy[1]	✓	×	×
9.	System Capacitive Reactive Energy[1]	✓	✓	✓
10.	L1,L2,L3 Capacitive Reactive Energy[1]	✓	×	×
11.	System Total Reactive Energy[1]	✓	✓	✓
12.	L1,L2,L3 Total Reactive Energy[1]	✓	×	×
13.	System Apparent Energy[1]	✓	✓	✓
14.	L1,L2,L3 Apparent Energy[1]	✓	×	×
15.	System Active Power (kW)	✓	✓	✓
16.	L1,L2,L3 Active Power (kW)	✓	×	×
17.	System Total Re-active Power (kVAr)	✓	✓	✓
18.	L1,L2,L3 Total Re-active Power (kVAr)	✓	×	×
19.	System Fundamental Re-active Power (kVAr)[2]	✓	✓	✓
20.	L1,L2,L3 Fundamental Re-active Power (kVAr)[2]	✓	×	×
21.	System Distorted Re-active Power (kVAr)[2]	✓	✓	✓
22.	L1,L2,L3 Distorted Re-active Power (kVAr)[2]	✓	×	×
23.	System Apparent Power (kVA)	✓	✓	✓
24.	L1,L2,L3 Apparent Power (kVA)	✓	×	×
25.	System Power Factor	✓	✓	✓
26.	L1,L2,L3 Power Factor	✓	×	×
27.	System Displacement Power Factor[2]	✓	✓	✓
28.	L1,L2,L3 Displacement Power Factor[2]	✓	×	×
29.	System Reactive Power Factor[2]	✓	✓	✓
30.	L1,L2,L3 Reactive Power Factor[2]	✓	×	×
31.	System LF Factor SgnQ(1-(P/S))[2]	✓	✓	✓
32.	L1,L2,L3 LF Factor SgnQ(1-(P/S))[2]	✓	×	×
33.	System Phase Angle	✓	✓	✓
34.	L1,L2,L3 Phase Angle	✓	×	×
35.	Current Demand	✓	✓	✓
36.	kVA Demand	✓	✓	✓
37.	Import kW Demand	✓	✓	✓
38.	Export kW Demand	✓	✓	✓
39.	Inductive Var Demand	✓	✓	✓
40.	Capacitive Var Demand	✓	✓	✓
41.	Max Current Demand	✓	✓	✓
42.	Max kVA Demand	✓	✓	✓
43.	Max Import kW Demand	✓	✓	✓
44.	Max Export kW Demand	✓	✓	✓
45.	Max Inductive Var Demand	✓	✓	✓
46.	Max Capacitive Var Demand	✓	✓	✓
47.	Run Hour	✓	✓	✓
48.	On Hour	✓	✓	✓
49.	Number of Interruptions	✓	✓	✓
50.	System Voltage	✓	✓	✓

Measured Parameter System wise:

✓ : Available × : Not Available

Sr No	Parameters	3 Phase 4Wire	3Phase 3Wire	1Phase 2Wire
53.	System Voltage THD	✓	✓	✓
54.	L1-L2-L3 Voltage THD	✓	✓	×
55.	System Current	✓	✓	✓
56.	L1-L2-L3 Current	✓	✓	×
57.	System Current THD	✓	✓	✓
58.	L1-L2-L3 Current THD	✓	✓	×
59.	Individual Harmonics VL1(Up to 31st Harmonics)	✓	✓	✓
60.	Individual Harmonics VL2 (Up to 31st Harmonics)	✓	✓	×
61.	Individual Harmonics VL3 (Up to 31st Harmonics)	✓	✓	×
62.	Individual Harmonics IL1(Up to 31st Harmonics)	✓	✓	✓
63.	Individual Harmonics IL2(Up to 31st Harmonic)	✓	×	×
64.	Individual Harmonics IL3(Up to 31st Harmonics)	✓	✓	×
65.	Neutral Current (Calculated)	✓	×	×
66.	Frequency	✓	✓	✓
67.	RPM	✓	✓	✓
68.	Phase Sequence Indication	✓	✓	×
69.	Current Reversal Indication	✓	×	✓
70.	Phase (V-I) Absent Indication	✓	×	×
71.	Tariff Source 1 Energy Count	✓	✓	✓
72.	Tariff Source 2 Energy Count	✓	✓	✓
73.	Tariff Source 3 Energy Count	✓	✓	✓
74.	Tariff Source 4 Energy Count	✓	✓	✓
75.	Tariff Source 5 Energy Count	✓	✓	✓
76.	Tariff Source 6 Energy Count	✓	✓	✓
77.	Old Max A Demand[2]	✓	✓	✓
78.	Old Max VA Demand[2]	✓	✓	✓
79.	Old Max kW Import Demand[2]	✓	✓	✓
80.	Old Max kW Export Demand[2]	✓	✓	✓
81.	Old Max Var Inductive Demand[2]	✓	✓	✓
82.	Old Max Var Capacitive Demand[2]	✓	✓	✓
83.	Old System Import Active Energy[2]	✓	✓	✓
84.	Old L1-L2-L3 Import Active Energy[2]	✓	×	×
85.	Old System Export Active Energy[2]	✓	✓	✓
86.	Old L1-L2-L3 Export Active Energy[2]	✓	×	×
87.	Old System Inductive Reactive Energy[2]	✓	✓	✓
88.	Old L1-L2-L3 Inductive Reactive Energy[2]	✓	×	×
89.	Old System Capacitive Reactive Energy[2]	✓	✓	✓
90.	Old L1-L2-L3 Capacitive Reactive Energy[2]	✓	×	×
91.	Old System Apparent Energy[2]	✓	✓	✓
92.	Old L1-L2-L3 Apparent Energy[2]	✓	×	×
93.	Old Run Hour[2]	✓	✓	✓
94.	Old On Hour[2]	✓	✓	✓
95.	Old Number of Interruptions[2]	✓	✓	✓
96.	Voltage VLN Unbalance	✓	×	×
97.	Voltage VLL Unbalance	✓	✓	×
98.	Current Unbalance	✓	✓	×

Note: 1. Energy on display is autoranging & unit for Energy parameters on modbus are dependent on CT PT ratio or unit selected by user.
2. Parameters are available only on modbus.

1 and 3-phase energy meter 1/5 A **NR32**		**X**	**X**	**XX**	**X**	**X**	**X**	**XX**	**X**	**X**
System type:	3-phase 3 and 4-wire	33								
Input voltage:	100 - 600 V L-L		01							
Input current:	1A / 5A			02						
Interfaces:	RS-485 + 2x binary input + 2x relay				C					
	RS-485				M					
	RS-485 + 1x binary input + 1x pulse output				S					
	RS-485 + 2x binary input + 2x pulse output				T					
	none				Z					
Supply voltage:	100...550 V a.c./d.c.					H				
Accuracy class:	0,2S						2			
	0,5S						5			
Version:	standard							00		
Language version:	Polish / English								M	
Acceptance tests:	without extra requirements									0

Example of order:

Product code:**NR32 - 330102MH200M0** means

NR32 - energy meter NR32

33 - 3-phase 3 and 4-wire system

01 - input voltage 100-600 V L-L

02 - input current 1A / 5A

M - digital interface RS-485

H - power supply100...550 V a.c./d.c.

2 - accuracy class 0,2S

00 - standard version

M - Polish / English language version

0 - without extra requirements