RISH DPM 48x96 ACA / DCA

Data Sheet

Applications:

The digital panel meters ***RISH*** DPM 48 x 96 have been designed for industrial applications, which frequently require precise, on-site adjustment of the display range.

It can be used in industrial automation and for laboratory uses.

It provides cost-effective solution for virtually all switchboard instruments.

Features:

- ***RISH*** **DPM 48x96 ACA is used for AC Current measurements.**
- ***RISH*** **DPM 48x96 DCA is used for DC Current measurements.**
- **Scaling adjustable over a wide range (5 - 100 %) of full scale**

Highly adaptable DPM's suitable for a wide range of measuring applications.

Available in two different models for measurement of AC & DC current.

The chosen input range is user adjustable, on 100% of the full-scale value, for simple adaptation of the digital readout to the input value.

For example, ***RISH*** DPM 48x96 ACA can be scaled for standard 20 A secondary current transformers.

96 mm x 48 mm DIN-standard housings.

Description

RISH **DPM 48x96 ACA**	AC Current measurement
RISH **DPM 48x96 DCA**	DC Current measurement

3 ranges for power supply are available.

Applicable Regulations and Standards

Protection class front	IP 20 to IEC EN 60 529 IP 50
Climatic class	Class 2 to VDE/DIN 3540
Safety class	II to IEC 348 / VDE 0411
Device safety	IEC EN 61 010
EMC immunity	DIN EN 61 000-4-1 to 4
EMC radiated interference	DIN EN 50 081 Class B

Specifications:

Display:

Display range	:	1999
Decimal point position	:	Selectable by short links at the front side of Display.
Negative display indication	:	"-"
Digit height	:	14 mm / 7- segment digits.
Overload indication	:	Last 3 digits blank.

Measuring ranges :

RISH DPM 48x96 ACA	0…20 A AC [45...65 Hz]
RISH DPM 48x96 DCA	0…20 A DC
Voltage drop	< 100 mV
Decimal Point selection by	Short links on the rear side

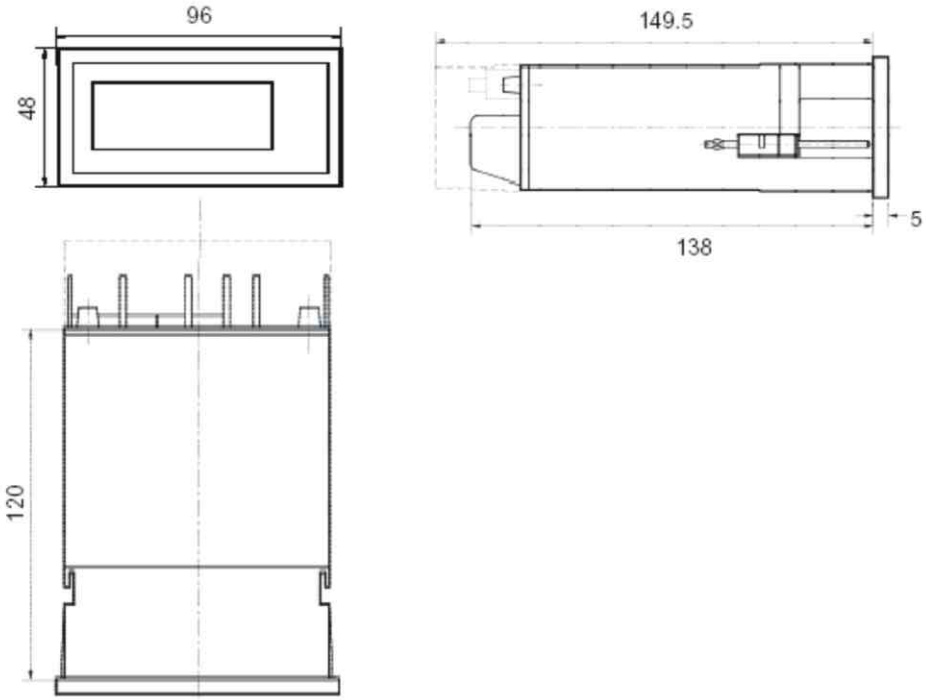
Accuracy :

RISH DPM 48x96 ACA / DCA	Measuring Accuracy current (Voltage drop < 100 mV)	< 0.5% + 1 digit
	Temperature coefficient	100 ppm/°C, plus
	zero point drift	200 ppm/°C
	Range adjustment span	from 5 to 100% of range
Power supply	Alternating Voltage (AC)	230V + 10% -15% 5.5W approx (isolated)
	(47 - 60 Hz)	110V + 10% -15% 5.5W approx (isolated)
	Direct Voltage (DC)	24V (21V...30V) 5.5W apporx (isolated)
Ambient conditions	Operating temperature	0 ... 50 °C
	Storage temperature	- 40 ... 80 °C
Dimensions & Weight	Bezel size	96 mm x 48 mm DIN 43 718
	Panel cut-out	92 + 0.8 mm x 43.5 + 0.6 mm
	Overall depth	138 mm
	Weight	500 g. approx
Sundry	Connections	Plug-in screw terminal blocks

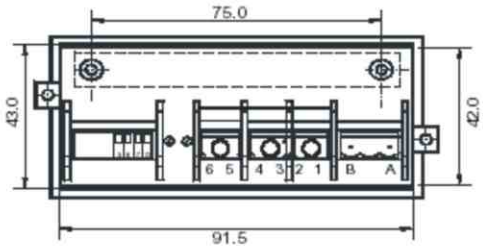
Order Details :

		Example	Example
Type	.....	RISH DPM 48x96 ACA	RISH DPM 48x96 DCA
Measuring input	.....	0…20 A AC	0…20 A DC
Input frequency	.....	50Hz	---
Display	.....	0…19.99 A	0…19.99 A
Display caption	.....	A	A
Supply voltage	.....	230 V AC	230 V AC

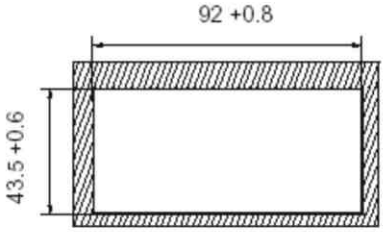
Design and installation



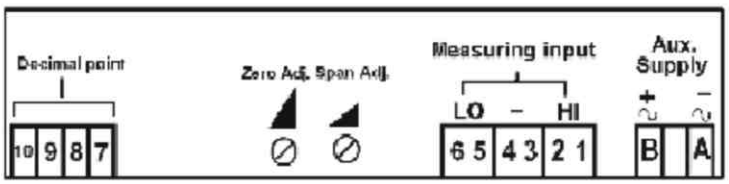
Mounting position



Installation cut-out



Connections



RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

RISH DPM 48x96 A, B, C, F, AC, T

Data Sheet

Applications:

The digital panel meter ***RISH*** *DPM* 48 x 96 have been designed for industrial applications, which frequently require precise, on-site adjustment of the display range.

It can be used in industrial automation and for laboratory uses.

It provides cost-effective solution for virtually all switchboard instruments.

Features:

- **Multi-range versions**
- **DC or AC, Voltage or Current ranges**
- **Pt 100 temperature version**
- **Scaling adjustable over a wide range**

Highly adaptable DPMs suitable for a wide range of measuring applications.

Versions available for current or voltage inputs (DC and AC), or Pt 100 temperature sensors.

The chosen input range is user adjustable, from 10% to 100% of the full-scale value, for simple adaptation of the digital readout to the input value.

For example, the AC version can be scaled for standard 5A secondary current transformers.

96mm x 48mm DIN-standard housings.

Description

RISH *DPM* **48 x 96**

A	Current measurement, 3 ranges
B	Current measurement, 2 ranges
C	Voltage measurement, 2 ranges
AC	Voltage and Current measurement (AC), 3 ranges
F	Voltage measurement, 4 ranges
T	Temperature measurement with Pt100, 2 ranges

4 ranges for power supply are available

Applicable Regulations and Standards

Protection class	IP 20 to IEC EN 60 529
front	IP 50 (IP 54 on request)
Climatic class	Class 2 VDE/DIN 3540
Safety class	II to IEC 348 / VDE 0411
Device safety	to IEC EN 61 010
EMC immunity	DIN EN 61 000-4-1 to 4
EMC radiated interference	DIN EN 50 081 class B

Specifications:

Display

Display range	:	1999
Decimal point position	:	selectable by rear jumper position
Negative display indication	:	"-"
Digit height	:	14 mm / 7-segment digits
Overload indication	:	Last 3 digits blank

Measuring ranges

[Max. Overload 120% of full-scale range value]

Version	A	B	C	F	AC	T
					[50...60 Hz]	^{0}C or ^{0}F
Voltage				0...2 V	0...500 V	
Input current < 300 µA			0...75 mV	0...20 V		
			0...150 mV	0...200 V		
				0...500 V		
Current	0...20 mA	0...20 mA			0...1 A	
Voltage drop< 600 mV	0...2 mA	4...20 mA			0...5 A	
	0...200 mA					
Pt 100 sensors						-100...850^{0}C
						-199.9...199.9^{0}C
						2-, 3- or 4- wire
Range selection by	Input choice	Input choice	Input choice	Input choice	DIP switch/ Input choice	DIP switch

Accuracy :

Versions A, B, C:	Measuring Accuracy DC	< 0.1% + 1 digit
	Temperature coefficient	100 ppm/°C, plus
	Zero point drift	100 ppm/°C
	Range adjustment span	from 10% to 100% of range
Versions F :	Measuring Accuracy DC	< 0.2% + 1 digit
	Temperature coefficient	100 ppm/°C, plus
	Zero point drift	100 ppm/°C
	Range adjustment span	from 10% to 100% of range
Versions AC :	Measuring Accuracy Voltage (Input current<500mA)	< 0.5% + 1 digit
	Measuring Accuracy Current (Voltage drop<600mV)	< 0.5% + 1 digit
	Temperature coefficient	100 ppm/°C, plus
	Zero point drift	200 ppm/°C
	Range adjustment span	from 10% to 100% of range

Versions T :	Measuring Accuracy DC	< 0.2% + 1 digit
	Temperature coefficient	100 ppm/°C, plus
	Zero point drift	100 ppm/°C
	Range adjustment span	± 5%
	Max. Allowable line resistance	
	2L	10 W
	3L	< 50 W
	4L	< 50 W

Digital input HOLD [optional] "0" (not available for Versions AC, or T)

Power supply

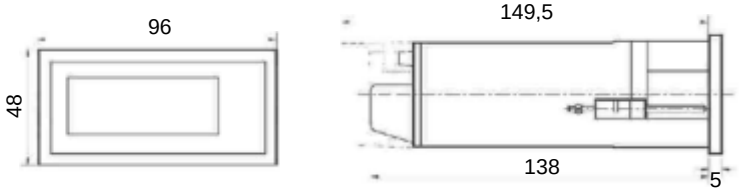
***RISH** DPM* **48x96 A, B, C, F, AC**

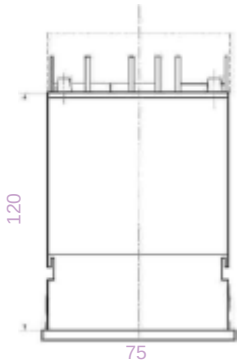
Universal	1) 45 - 450 V AC/DC (± 5%)	
	2) 45 - 300 V AC/DC (± 5%)	
Direct voltage DC	24V + 15%	4W approx.
	24V + 10% -15%	4W approx.
Alternating voltage AC	110V + 10% - 15%	4W approx.
	230V + 10% - 15%	4W approx.

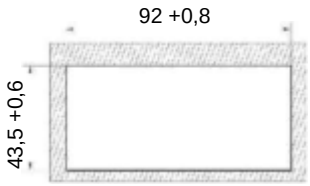
***RISH** DPM* **48x96 T**

Direct voltage DC	24V + 15%	4W approx.
	24V + 10% -15%	4W approx.
Alternating voltage AC	110V + 10% - 15%	4W approx.
	230V + 10% - 15%	4W approx.

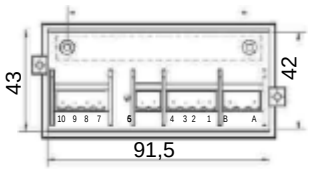
Design and installation



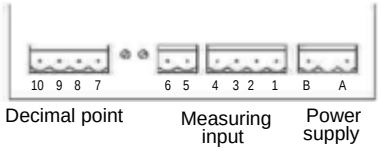




Installation cut-out



Mounting position



Connections

Ambient conditions	Operating temperature	0 ... 50°C
	Storage temperature	-40 ... 80°C
Dimensions and Weights	Bezel size	96 mm x 48 mm DIN 43 718
	Panel cut-out	92 $^{+0.8}$ mm x 43.5 $^{+0.6}$ mm
	Overall depth	138 mm
	Weight	500 g. approx.
Sundry	Connections	plug-in screw terminal block

Order Details:

		Example
Type	.....	RISH DPM 48x96 AC
Measuring input	.....	0... 1 A
Display	.....	0... 1000
Display caption	.....	
Options	.....	A
Supply Voltage	.....	24 V DC

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

Data Sheet

Applications:

The digital panel meter ***RISH*** DPM 24 x 96 S has been designed for industrial applications, which frequently require precise, on-site adjustment of the display range.

It can be used in industrial automation and for laboratory uses.

It provides cost-effective solution for virtually all switchboard instruments.

Features:

- **Factory pre-set with many measuring ranges**
- **Measuring ranges selectable using jumpers**
- **Zero point and final value adjustable (inc. 4... 20 mA)**
- **230 V AC power supply option**
- **Overall depth only 72 mm**

Low-profile digital display units in a 96mm x 24mm DINstandard housing with small overall depth.

The choice of many factory pre-set measuring ranges is included, with user adjustments available for the zero and full-scale values.

This enables these DPMs to be stocked by the customer for simple configuration and rapid installation when required.

Although the housing is only 24mm high, the choice of power supplies includes 230 V AC mains.

Description

The ***RISH*** DPM 24 x 96 S are digital panel instruments for measurement of DC current and DC voltage with 9 measuring ranges.

3 ranges for power supply are available.

The measuring ranges and zero point, selectable using jumpers at the back. The choice of many factory pre-set measuring ranges is included, with user adjustments available for the zero and full-scale values.

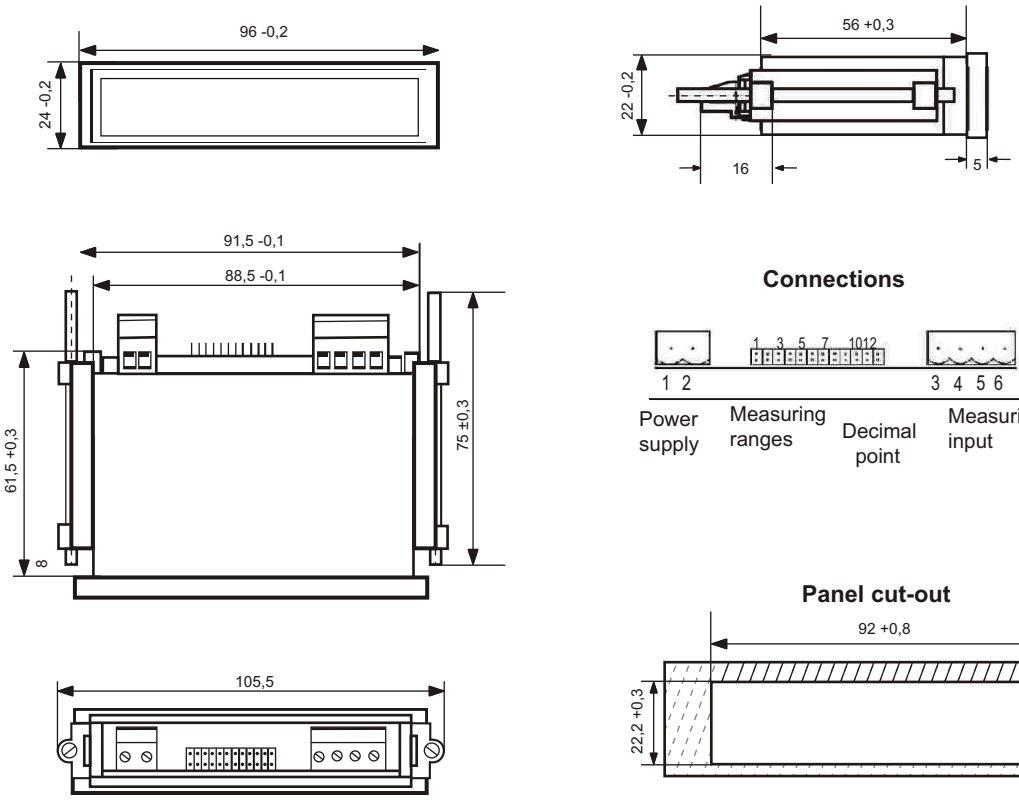
Applicable Regulations and Standards

Protection class	IP 20 to IEC EN 60 529
front	IP 54 (IP 65 on request)
Climatic class	Class 2 VDE/DIN 3540
Safety class	II to IEC 348 / VDE 0411
Device safety	to IEC EN 61 010
EMC immunity	DIN EN 61 000-4-1 to 4
EMC radiated interference	DIN EN 50 081 class B

Specifications:

Display	Display range	1999
	Decimal point position	selectable by rear jumper position
	Negative display indication	"-"
	Digit height	14 mm / 7-segment digits
	Overload indication	Last 3 digits blank
	Setting time	< 1s (0...99%)
Measuring ranges	Direct voltage (Input current < 300 mA)	0 ... 0.2 V 0 ... 1 V 0 ... 5 V 0 ... 25 V 0 ... 100 V 0 ... 300 V
	Direct current	0 ... 1 mA
	(Voltage drop < 600 mV)	0 ... 20 mA 0 ... 200 mA
	Range adjustment span	from 20% to 100% of
	Zero offset [suppression]	range up to -1000
	Accuracy	< 0.2 % + 1 digit
	Temperature coefficient	100 ppm/^{0}C, plus
	Zero point drift	100 ppm/^{0}C
Options	Brightness adjustment Zero point adjustment HOLD input	
Digital input	HOLD [option]	"0"
Power supply	Direct voltage DC	21 ... 30 V + 15% 4 W approx.
	Alternating voltage AC	230V + 10 % -15 % 1.3 W approx.
Ambient conditions	Operating temperature	0 ... 50^{0}C
	Storage temperature	-40 ... 80^{0}C
Dimensions & Weights	Bezel size	96mm x 24 mm DIN 43 718
	Panel cut-out	92 +0.8 mm x 22.2 + 0.3 mm
	Overall depth	72 mm
	Weight	210 g. Approx. [5V DC version 90 g]
Sundry	Connections	plug-in screw terminal block

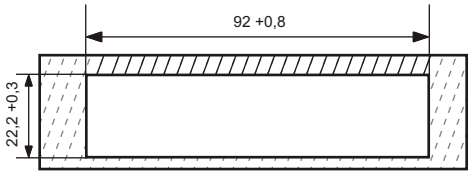
Design and installation



Connections

Power supply | Measuring ranges | Decimal point | Measuring input

Panel cut-out



Order Details:

		Example
Type	.....	***RISH*** *DPM* 24x96S
Measuring input	.....	0... 20 mA
Display	.....	0... 0230
Display caption	.....	V
Options	.....	
Supply Voltage	.....	24 V DC

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

RISH DPM 96 A / V DC

Data Sheet

Applications:

The digital panel meters ***RISH*** DPM 96 A / V DC have been designed for industrial applications, which frequently require precise and on-site adjustment of the display range.

It can be used in industrial automation and for laboratory uses.

Features:

- **Available in Size 96mm x 96mm.**
- **DC Current ranges and DC Voltage ranges.**
- **3 ½ digit ultra bright Display.**
- **User defined caption**
- **Auxillary Power Supply :**
  AC – 230V (+10% / -15%).
  AC – 110V (+10% / -15%).
  DC – 24V (21...30 V)

Highly adaptable DPMs suitable for a wide range of measuring applications.

Versions available for DC Current (mA) and DC voltage (mV & Volts) inputs.

The chosen input range is user adjustable, from 10% to 100% of the full-scale value for DC Current, DC mV & DC Voltage, for simple adaptation of the digital readout to the input value.

Description

RISH DPM **96 A / V DC :**

96A DC	DC Current measurement , 2 ranges
96V DC	DC Voltage measurement 1) mV input, 2 ranges 2) Voltage input, 1 range

Applicable Regulations and Standards

Protection Class	IP 20 to IEC EN 60 529
Front	IP 50
Device safety	IEC EN 61 010
EMC immunity	IEC/ EN 61 000-4-1 to 4
EMC radiated interference	IEC/ EN 61326 Class B

Specifications:

Display:

Display range	:	1999
Decimal point position	:	Selectable by short links at the front side of Display.
Negative display indication	:	"-"
Digit height	:	14 mm / 7- segment digits. (Optional : 20 mm)
Overload indication	:	Last 3 digits blank.

Measuring ranges :

Model	***RISH*** DPM **96A DC**
DC Current Ranges Available (Voltage drop < 600 mV)	**0…20 mA** and **4…20 mA** (Range selection by input choice)
Model	***RISH*** DPM **96V DC**
1) DC mV Ranges Available (Input current < 300uA)	**0…75 mV** and **0…150 mV** (Range selection by input choice)
2) DC Voltage Ranges Available	**0…2V** or **0…20V** or **0…200V** or **0…500V** or **0…1000V** or Please specify any non-standard input Voltage range, available on request.

Accuracy :

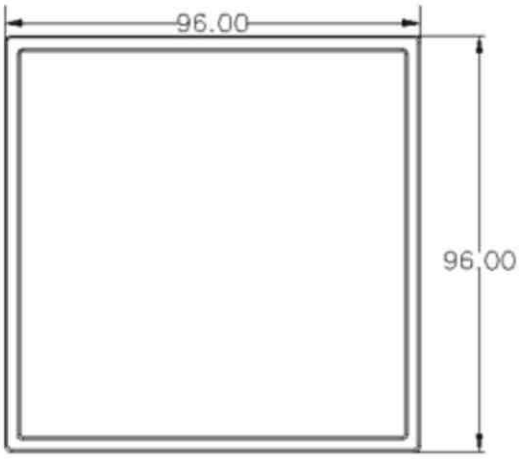
RISH DPM **96A DC :**

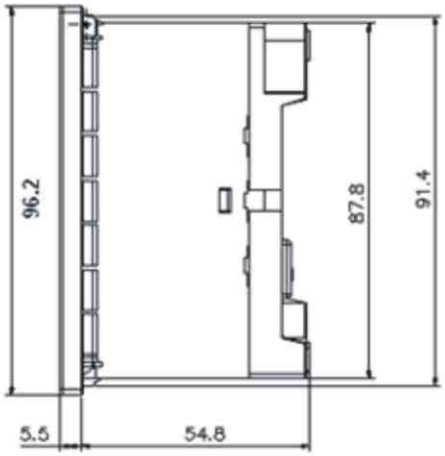
Measuring Accuracy Current (Voltage drop < 600 mV)	: < 0.1% of range + 1 digit.
Temperature coefficient.	: 300 ppm / °C.
Zero point drift	: 200 ppm / °C.
Range adjustment span	: from 10% to 100% of range.

RISH ***DPM*** **96V DC :**

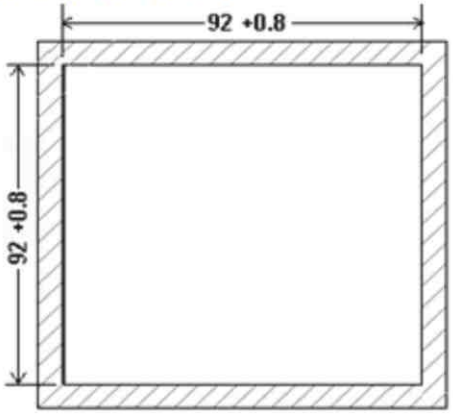
1) milli Volt ranges :	Measuring Accuracy milli volts (Input current < 300uA)	: < 0.1% of range + 1 digit.	
	Temperature coefficient	: 300 ppm / °C.	
	Zero point drift	: 200 ppm / °C.	
	Range adjustment span	: from 10% to 100% of range.	
2) Volt ranges :	Measuring Accuracy Volts (Input current < 300uA)	: < 0.2% of range + 1 digit.	
	Temperature coefficient	: 300 ppm / °C.	
	Zero point drift	: 200 ppm / °C.	
	Range adjustment span	: from 10% to 100% of range.	
Power supply	3 ranges for power supply are available.		
	Direct voltage DC	: 24 V DC (21...30V)	5.5W approx. (isolated).
	Alternating voltage AC	: 110 V AC (+ 10% / -15%)	5.5W approx. (isolated).
		: 230 V AC (+ 10% / -15%)	5.5W approx. (isolated).
	Frequency	: 47 ... 60 Hz.	
Ambient conditions	Operating temperature	: 0 ... 55 °C.	
	Storage temperature	: - 25 ... 70 °C.	
Dimensions and Weights	Bezel size	: 96 mm x 96 mm DIN 43 700	
	Panel cut-out	: 92 + 0.8 mm x 92 + 0.8 mm	
	Overall depth	: 55 mm.	
	Weight	: 500 gm. Approx.	
Sundry	Connections	: Plug-in screw terminal blocks.	

Design and installation

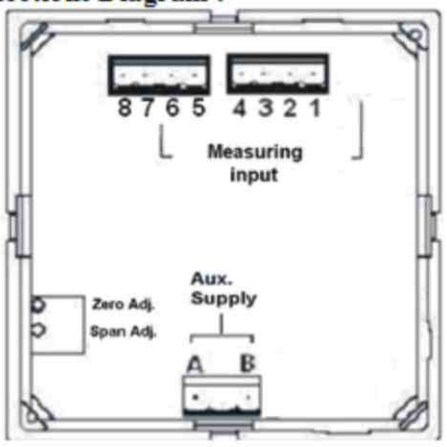




Installation Cut-out :



Connections Diagram :



Connections :

CONNECTION FOR *RISH* DPM 96A DC

Current DC
0… 20 mA : Terminals 1 and 2 with terminals 5 and 6 open.

4… 20 mA : Terminals 1 and 3 plus jumper between terminals 5 and 6.

CONNECTION FOR *RISH* DPM 96V DC – milli Volts

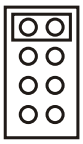
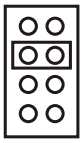
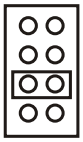
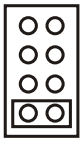
milli Volts DC :
0… 60 mV : Terminals 1 and 2.
0…150 mV : Terminals 1 and 3.

CONNECTION FOR *RISH* DPM 96V DC –Volts

Volts DC :
0…2 V
0…20 V
0…200 V : Terminals 1 and 3.
0…500 V
0…1000 V

Decimal point Adjustment :

Decimal point position is selectable by short links at the front side of Display.

Short Link Position	Decimal point position on Display
	XXXX
	X.XXX
	XX.XX
	XXX.X

Order Details :

		Example1	Example2
Type	.....	RISH DPM 96 A DC	RISH DPM 96 V DC
Measuring Input	.....	0 … 20 mA	0…1000 V
Display Full-Scale	.....	0 … 1999	0...1000
Display caption	.....	mA	V
Aux. Supply	.....	110V AC, 50 Hz.	230V AC, 50 Hz

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

RISH DPM 24x48 D / *RISH* DPM 24x48 F

Data Sheet

Applications:

The digital panel meter ***RISH*** DPM 24 x 48 D/F has been designed for industrial applications, which frequently require precise, onsite adjustment of the display range.

It can be used in industrial automation and for laboratory uses.

It provides cost-effective solution for virtually all switchboard instruments.

Applicable Regulations and Standards

Protection class	IP 20 to IEC EN 60 529
front	IP 54 (IP 54 on request)
Climatic class	Class 2 VDE/DIN 3540
Safety class	II to IEC 348 / VDE 0411
Device safety	to IEC EN 61 010
EMC immunity	DIN EN 61 000-4-1 to 4
EMC radiated interference	DIN EN 50 081 class B

Features:

- **Available in size 48 x 24 mm**
- **Low power LED display**
- **Standard measuring ranges, Inc. 4 ... 20 mA**
- **'Snap-in' panel mounting**

Compact digital display units in a 48 mm x 24 mm DIN standard snap-in housing. The units are suitable for connecting standard current and voltage signals, including 4... 20 mA.

The low power consumption and small overall size of these DPMs suits high-density panel applications.

Description

The ***RISH*** DPM 24 x 48 F is a digital panel meter for connection of measurement for voltage (0 ... 0.2 V, 0 ... 2 V or 0 ... 20 V) with 3 ranges.

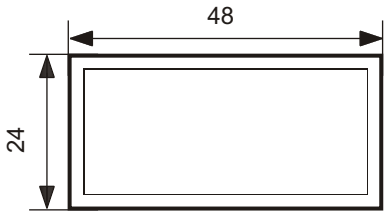
The ***RISH*** DPM 24 x 48 D is a digital panel meter for connection of measurement for voltage (10 V) and current (1mA, 20 mA or 4 ... 20 mA) with 4 ranges.

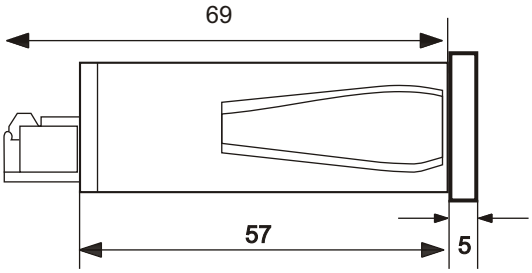
The setting of measuring range and display range is made by positioning DIP switches. The chosen input range is user adjustable from 10 % to 100 % of the full scale value by potentiometer on the rear of the meter.

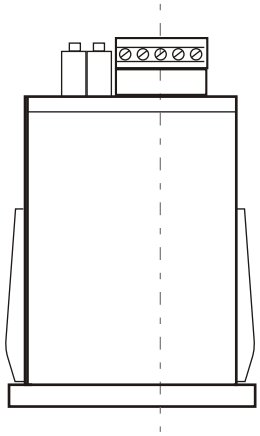
Specifications:

Display	Display range	1999	
	Decimal point position	programmable, settable by DIP switch	
	Negative display indication	"-"	
	Digit height	8 mm / 7-segment digits	
	Overload indication	Last 3 digits blank	
	Setting time	< 1s (0...99%)	
		Version D	**Version F**
Measuring ranges	Direct voltage	0 ... 10 V	0 ... 0.2 V
	(Input current < 100 mA)		0 ... 2 V
			0 ... 20 V
	Direct current	0 ... 1 mA	
	(Voltage drop < 200 mV)	0 ... 20 mA	
		4 ... 20 mA	
	Measuring accuracy	< 0.2 % + 1 digit	
	0 Temperature coefficient	100 ppm/ C, plus	
	0 Zero point drift	200 ppm/ C	
	Interference voltage suppression	> 40 dB	
	Range adjustment span	from 10% to 100% of range	
Power supply	24 V DC	21 ... 30 V DC, 50 mA approx.	
Ambient conditions	Operating temperature	0 ... 50°C	
	Storage temperature	-40 ... 80°C	
Dimensions	Bezel size	48 mm x 24 mm DIN 43 718	
& Weights	Panel cut-out	45 +0.6 mm x 22.2 + 0.3mm	
	Overall depth	69 mm	
	Weight	< 50 g.	
Sundry	Connections	plug-in screw terminal block	

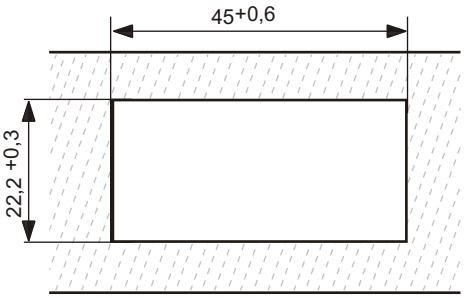
Design and installation

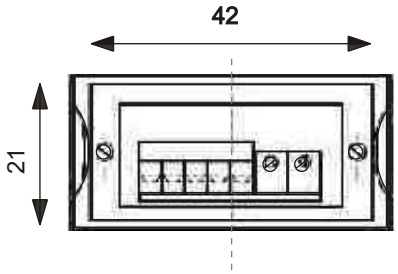




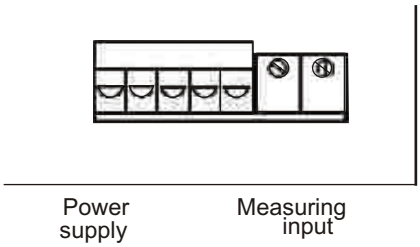


Panel cut-out





Connections



Order Details

	Example
Type :	..... RISH DPM 24/48 D
Measuring input:	..... 0... 20 mA
Display :	..... 0... 12.00
Display caption :	..... pH
Options :	.....
Supply Voltage :	..... 24 V DC

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

RISH DPM 196 Hz & F48x96 AK

Data Sheet

Applications:

The digital panel meter ***RISH*** *DPM* 196 Hz & F48x96 AK has been designed for frequency measurement in industrial applications.

Frequency measurement ranges available are 12…199.9 Hz and 12…500 Hz.

Features:

- **Display range : 0…+1999**
- **Simple configuration**
- **Supply voltage : 230V (50 / 60Hz)**
- **Also available with 24V DC and 110 VAC (50 / 60Hz) Supply Voltage**
- ***Universal Power Supply :** 1) 45 - 450 V AC/DC (± 5%)
  2) 45 - 300 V AC/DC (± 5%)

***Only for Model : *RISH* DPM F48x96 AK**

Specifications :

Display

Type	7 segment LED
Colour	Red
Character Height	14 mm
Display Range	max. 1999
Decimal Point	Selectable by jumpers at front side
Overflow Display	"1" , if display > 1999

Input

Input voltage	80…500V (for 196 HZ) 80...700V (for F48x96Ak)
Measuring range	12…199.9 Hz 12…500 Hz

Calibration
Instruments are calibrated at the factory.
Range adjustment span : Fine adjustment is possible

Error Limits
Intrinsic Error ± (0.25% of max. display + 5 digits)

Additional Error

Temperature Coefficient	<190 ppm / ^{0}C
Zero Point Drift	< 0.2 digits / ^{0}C

Environment Conditions

Climatic class	Class 2 to VDE / DIN 3540
Safety class	II to IEC 348 / VDE 0411
Protection class	IP 20 to IEC EN 60 529
front	IP 50
Overvoltage category	II
Device safety	According to IEC EN 61 010
EMC immunity	According to DIN EN 61 000-4-1 to 4
EMC radiated interference	According to IEC EN 61326 class B

Test voltages: (Test duration 2 Sec.)

UH (Aux. voltage)	**230 / 110V AC**	**24V DC**
Supply – input signal	2 kV	0.5 kV
Supply – housing	2 kV	0.5 kV
Input signal – housing	2 kV	2 kV

A-D Conversion

Conversion Method	Dual slope
Integration Time	Approx. 100 ms
Measurements per Second	Typically 3 per sec.

RISH DPM **196 Hz**

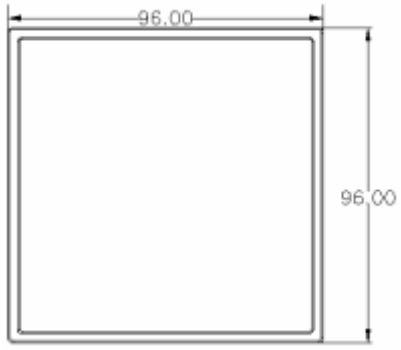
Power supply	3 ranges for power supply are available.		
	Direct voltage DC	: 24 V DC (21...30V)	5.5W approx. (isolated).
	Alternating voltage AC	: 110 V AC (+ 10% / -15%)	5.5W approx. (isolated).
		: 230 V AC (+ 10% / -15%)	5.5W approx. (isolated).
	Frequency	: 47 – 60 Hz.	
Ambient conditions	Operating temperature	: 0 ... 55 °C.	
	Storage temperature	: - 25 ... 70 °C.	
	Relative Humidity	: max. 85%	
Dimensions and Weights	Bezel size	: 96 mm x 96 mm DIN 43 700	
	Panel cut-out	: 92 + 0.8 mm x 92 + 0.8 mm	
	Overall depth	: 55 mm.	
	Weight	: 500 gm. Approx.	
Sundry	Connections	: Plug-in screw terminal blocks.	

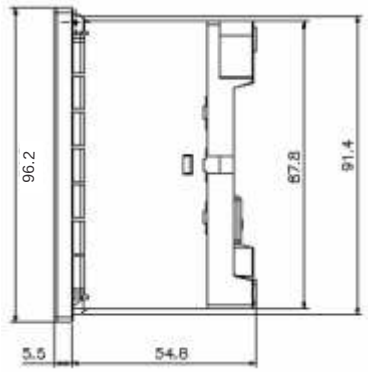
RISH DPM **F48x96 AK**

Power supply	3 ranges for power supply are available.	
	Direct voltage DC	: 24 V DC (21...30V) 5.5W approx. (isolated).
	Alternating voltage AC	: 110 V AC (+ 10% / -15%) 5.5W approx. (isolated). : 230 V AC (+ 10% / -15%) 5.5W approx. (isolated).
	Universal	: 1) 45 - 450 V AC/DC (± 5%) 2) 45 - 300 V AC/DC (± 5%)
	Frequency	: 47 – 60 Hz.
Ambient conditions	Operating temperature	: 0 ... +50 °C.
	Storage temperature	: - 20 ... +70 °C.
	Relative Humidity	: max. 85%
Dimensions and Weights	Bezel size	: 96 mm x 48 mm
	Panel cut-out	: 92 F 0.8 mm x 43.5 + 0.6 mm
	Overall depth	: 138 mm.
	Weight	: 500 gm. Approx.
Sundry	Connections	: Plug-in.

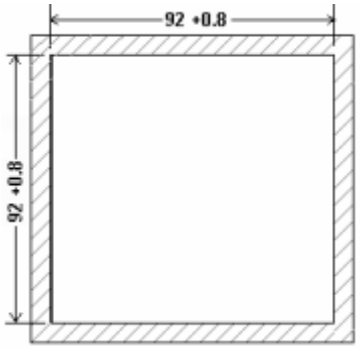
Design & Installation :

RISH DPM **196 Hz**

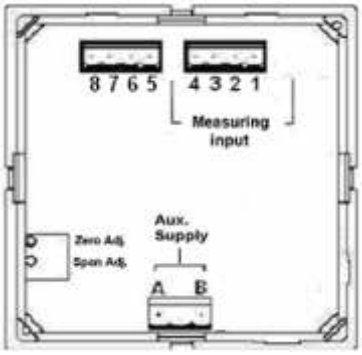




Installation cut-out

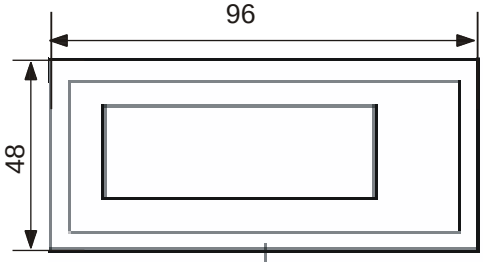


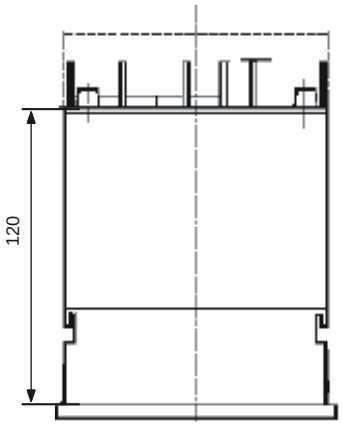
Connections



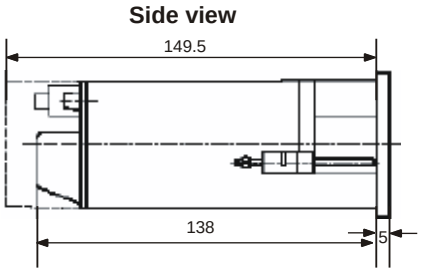
RISH DPM **F48x96 AK**

Front view

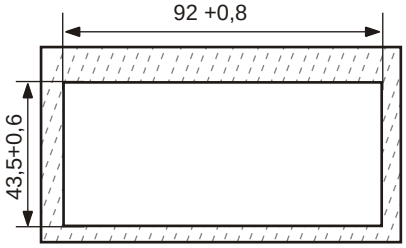




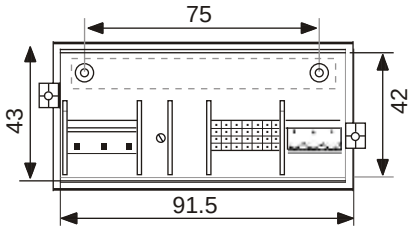
Side view

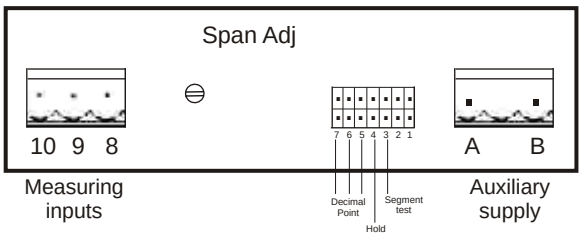


Installation Cut-out



Connections





Order Details :

RISH DPM **196 Hz**

	Example1	**Example2**
Type	RISH DPM 196 Hz	RISH DPM 196 Hz
Measuring input	12...199.9 Hz	12 ... 500 Hz
Input Voltage	(80…500V)	(80…500V)
Display	0…+1999	0…+500
Display caption	Hz	Hz
Supply voltage	230VAC, 50HZ	110VAC, 50HZ

RISH DPM **F48x96 AK**

	Example1	**Example2**
Type	RISH DPM F48x96 AK	RISH DPM F48x96 AK
Measuring input	12...199.9 Hz	12 ... 500 Hz
Input Voltage	(80…700V)	(80…700V)
Display	0…+1999	0…+500
Display caption	Ak	Ak
Supply voltage	45 - 300 V AC/DC (± 5%)	45 - 450 V AC/DC (± 5%)

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F-31, MIDC, Satpur, Nashik-422 007,India.
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International :- exp.marketing@rishabh.co.in
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RISH R312 DIGITAL PANEL METERS

Data Sheet

LCD

LED

Application

The digital panel meters ***RISH*** DPM have been designed for industrial applications, which frequently require precise and on- site adjustment of the display range.
It can be used in industrial automation and for laboratory uses.

Salient Features

- 3/64 DIN Indicator
- Screw terminal connectors for easy installation
- LCD: 3-1/2 digit 0.5" high LCD display with optional negative image, bright red backlighting
- LED: 3-1/2 digit, 0.56" high display
- Limited range display scaling
- User selectable decimal point
- Span adjustment and offset adjustment through potentiometer

Technical Specifications

Measuring Ranges

1. DC Voltage

Range	Resolution	Input Impedance	Max Overload Allowed	Display Type			Display Span
200mV	100µV	10MΩ	100VDC	Non Backlight (LCD)	-	-	1999
20V	10mV	10MΩ	250VDC	Non Backlight (LCD)	Negative Image Red (LCD)	Red LED	1999
200V	100mV	9.9MΩ	250VDC	Non Backlight (LCD)	-	Red LED	1999

2. AC/DC TRMS Current

Range	Resolution	Voltage Drop	Max Overload Allowed	Display Type		Display Span
5A AC	10mA	50mVAC	6A AC	Non Backlight (LCD)	Negative Image Red (LCD)	0 to 10/100/1000
5A AC	10mA	50mVAC	6A AC	Non Backlight (LCD)	Negative Image Red (LCD)	0 to 20/200
5A AC	10mA	50mVAC	6A AC	Non Backlight (LCD)	Negative Image Red (LCD)	0 to 30/300
5A AC	10mA	50mVAC	6A AC	Non Backlight (LCD)	Negative Image Red (LCD)	0 to 50/500
5A DC	10mA	50mVDC	6A DC	Non Backlight (LCD)	Negative Image Red (LCD)	0 to 100

3. AC TRMS Voltage

Range	Resolution	Input Impedance	Max Overload Allowed	Display Type		Display Span
200V	100mV	1MΩ	200VAC	Non Backlight (LCD)	Negative Image Red (LCD)	1999

4. Frequency

Range	Resolution	Display Type		Display Span
20-200Hz	0.1Hz	Non Backlight (LCD)	Negative Image Red (LCD)	20 to 199.9

5. DC Process

Range	Resolution	Voltage Drop	Max Overload Allowed	Display Type		Display Span
4 to 20mA	0.10%	200mVdc	60mA	Non Backlight (LCD)	Negative Image Red (LCD)	0 to 100%
0 to 10Vdc	0.10%	Input Impedance 10MΩ	250VDC	Non Backlight (LCD)	Negative Image Red (LCD)	0 to 100%
0 to 100Vdc	0.10%	10MΩ	250VDC	-	Negative Image Red (LCD)	1999

Technical Specifications

Specifications	3-1/2 Digit Display	
	LCD	LED
Display Type	7 Segment	
Height	0.5" (12.7mm)	0.56" (14.2mm)
Decimal point (Selectable)	3 position	3 position
Overrange Indication	Most significant digit = "1"	Most significant digit = "1"
Backlighting	Optional negative image, Red Backlight	NA
Polarity	Auto with "-" indication; "+" implied	
Power Requirements AC Volt	85-250VAC @ 40-440Hz	
Power Consumption	4.0VA (2.4W) Max	3.6VA (2.16W) Max
Isolation	250Vrms Max	
Accuracy @ 25ºC 200Hz	±0.2% of input ± 0.2Hz	Not Available
DC V	±(0.1% of reading ±1count)	±(0.1% of reading ±1count)
AC TRMS V & A	±(0.5% of reading + 5 count) (50Hz - 2KHz)	±(0.5% of reading + 2 count) (50Hz - 5KHz)
DC Process	±(0.2% of reading ± 1 count)	
Excitation Current	25mA (Maximum)	
Environmental Operating Temperature	0 to 55ºC	
Storage Temperature	-10 to 60ºC	
Relative Humidity	0 to 85% non condensing @ 40ºC	
Temperature Coefficient	0.2% of input ± 0.5 digits/ºC	
Warm-up Time	Less than 20 minutes	
Input Level (Frequency Meter)	500mV to 270VRMS @ 1.0M Ω or 5V to 24V Square Wave (DC Offset = 2Vmax)	Not Available
Mechanical Bezel	0.95" * 2.84" (24mm * 72mm)	
Depth	2.36" (60mm)	
Panel Cutout	0.88" * 2.68" (22.2mm * 68mm)	
Case Material	94-0, UL-rated, glass-filled thermoplastic	

Display Scaling

1.Span Adjustment

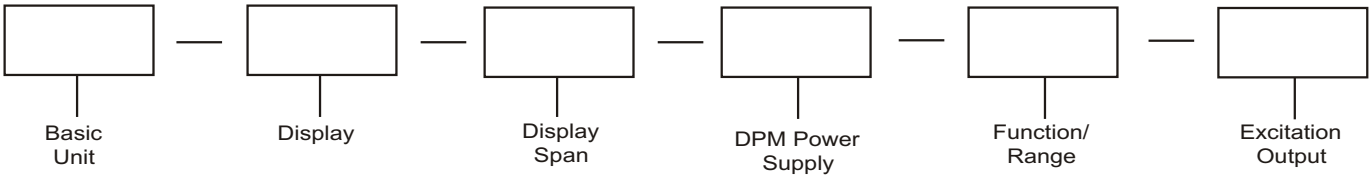
RISH R312 indicators have limited range coarse and fine adjustments for display scaling. There are no optional connections required for these to function. The meter can be scaled up to 2 times, or down to ½ the value of the input or a maximum reading of 1.999 which ever is lower. Example: a 2 volt input has a maximum reading of 1.999 counts, so you can't double the 2 volts, but you can make 1 volt read 1.999.The fine calibration allows for an approximate range of 1% of the "coarse" calibration.

2.Offset Adjustment

Use coarse adjustment for offset. The offset can be scaled up or down approximately 250 counts.

Ordering Information

RISH DPMs can be configured by making an entry in each section.
Example: R312-0-12-0-71-0



Ordering information

Ordering information	Ordering Code
Basic Unit	
3-1/2 Digit	R312
Display	
Non Backlight (LCD)	0
Negative Image Red (LCD)	1
Red LED	2
Display Span	
10	0
20	1
30	2
50	3
100	4
200	5
300	6
500	7
1000	8
1999	9
19999	10
20 to 199.9	11
0 to 100%	12
DPM Power Supply	
85-250VAC	0
Function/Range	
200DCmV	11
20DCV	13
200DCV	14
5ACA TRMS	43
5DCA TRMS	47
200VAC TRMS	34
4-20DCmA (DC Process)	71
0-10DCV (DC Process)	73
0-100DCV (DC Process)	74
20-199.9Hz RMS	81
20-199.9Hz Sq. Wave	83
Excitation Output (N/A w/Frequency)	
None	0
12 DCV @ 25mA	1
24 DCV @ 25mA	2

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
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RISH DPM *196*
RISH LD DPM *48X96 1PH.*

Data Sheet

Digital Panel Meter for
measurement of AC voltage/current

Size: 96 x 96

RISH DPM **196A**
1PH. current measurement (AC)

RISH DPM ***196V***
1PH. voltage measurement (AC)

Size: 48 x 96 LD

RISH **LD** DPM **48 x 96 1PH. ACI**
1PH. current measurement (AC)

RISH **LD** DPM **48 x 96 1PH. ACV**
1PH. voltage measurement (AC)

Applications:

The digital panel meter ***RISH*** DPM has been designed for industrial applications, where precise and on-site adjustment of the display range is frequently required.

It can be used in industrial automation, laboratory uses and all kind of electrical panels for accurate measurement of current and voltages.

Features:

- Available in size 96mm x 96mm and 96mm x 48mm.
- Accuracy - 0.5%.
- Available with standard current and voltage ranges.
- On site programmable CT/PT ratio.
- 3 ½ digit ultra bright display.
- User defined caption
- Auxillary power supply :

AC – 230V (+10% / -15%).
110V (+10% / -15%).
DC – 24V (21... 30V)
110V (only for Rish LD DPM 48 x 96)

Highly adaptable DPMs suitable for a wide range of measuring applications.

The chosen input range is user adjustable, from 5% to 100% of the full-scale value, for simple adaptation of the digital readout corresponding to the input value.

Specifications:

Display:

Display range	1999
Decimal point position	Selectable by short links at the front side of Display.
Negative display indication	"-"
Digit height	14 mm / 7- segment digits. (Optional : 20 mm)
Overload indication	"1", Last 3 digits blank if display >1999.

Measuring ranges :

Model	**196A / 396A / 48X96 1PH. ACI**
System	**1PH.**
Current ranges available (Voltage drop < 600 mV)	0…1A [45...65 Hz] or 0…1A [400 Hz] or 0…5A [45...65 Hz] or 0…5A [400 Hz]
Model	**196V / 48X96 1PH. ACV**
Voltage ranges available (Input current < 600 µA)	0…110 V [45 ... 65 Hz] or 0…110 V [400 Hz] or 0…240 V [45 ... 65 Hz] or 0…240 V [400 Hz] or 0…500 V L_L [45...65 Hz] or 0…500 V L_L [400 Hz].

Maximum continuous input	120% of rated value
Overload withstand :	
:Voltage	2 x rated value for 0.5 sec. max.
Current	10 x rated value for 0.5 sec. max.

Accuracy :

Measuring accuracy : Current	< 0.5% + 1 digit.
Voltage	< 0.5% + 1 digit.
Model : 196 A / V	
Temperature coefficient	300 ppm / °C, plus.
Zero point drift	200 ppm / °C.
Model : 48x96 1PH. ACI / ACV	
Temperature coefficient	100 ppm / °C, plus.
Zero point drift	200 ppm / °C.
Range adjustment span	from 5% to 100% of range.

Power supply :

Direct voltage DC	24V DC (21...30V) isolated. 110V DC isolated. (only for Rish LD DPM 48 x 96)
Burden	≤ 5.5W.
Alternating voltage AC	110V AC (+10% / -15%) isolated. 230V (+ 10% / -15%) isolated.
Burden	≤ 5.5VA
Frequency	47...60 Hz.

Ambient conditions

Operating temperature	0 ... 55 °C.
Storage temperature	- 25 ... 70 °C.

Sundry

Connections	Plug-in screw terminal blocks.

Dimensions and Weight

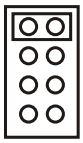
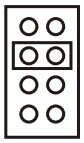
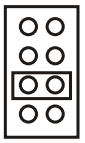
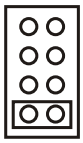
Model : 196 A / V	
Bezel size	96 mm x 96 mm DIN 43700
Panel cut-out	92 + 0.8 mm x 92 + 0.8 mm
Overall depth	55 mm.
Weight	500 gm. Approx.
Model : 48x96 1PH., ACI / ACV	
Bezel size	96 mm x 48 mm DIN 43718
Panel cut-out	92 + 0.8 mm x 43.5 + 0.6 mm
Overall depth	68 mm.
Weight	300 gm. Approx.

Applicable Regulations and Standards

Protection Class	IP 20 to IEC EN 60 529
Front	IP 50
Device safety	IEC EN 61 010
EMC immunity	IEC/ EN 61 000-4-1 to 4
EMC radiated interference	IEC/ EN 61326 Class B

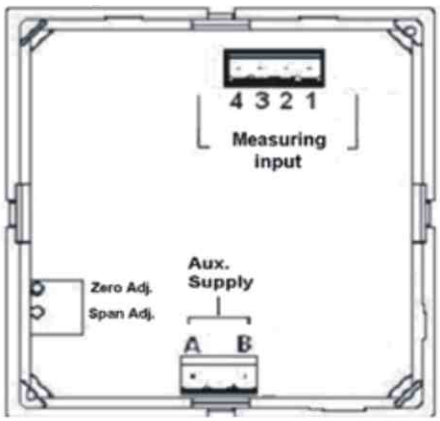
Decimal point adjustment:

Decimal point position is selectable by short links at the front side of display

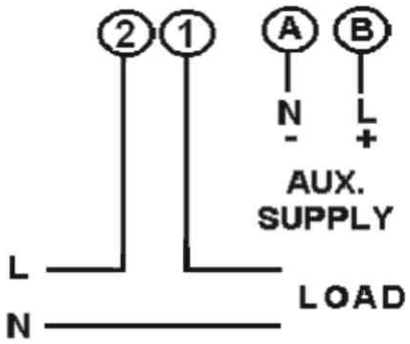
Short link position				
Decimal point position on display	XXXX	X.XXX	XX.XX	XXX.X

Connection Diagram :

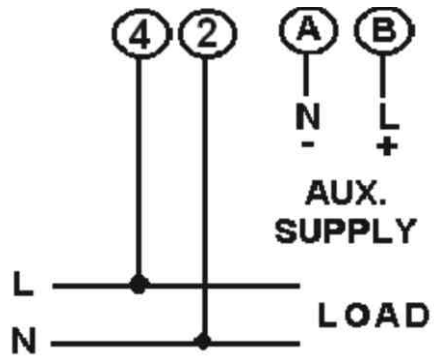
RISH** DPM **196A / V



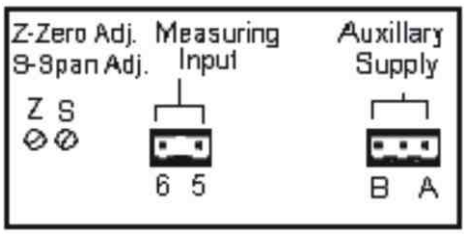
RISH** DPM **196A



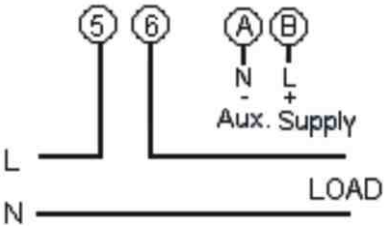
RISH** DPM **196V



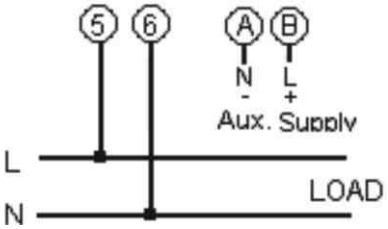
RISH LD** DPM **48x96 1PH.ACI / ACV



RISH LD** DPM **48x96 1PH.ACI



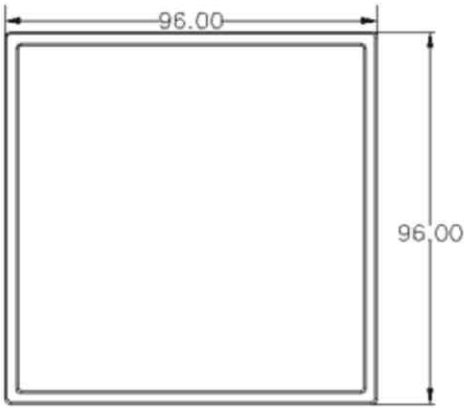
RISH LD** DPM **48x96 1PH.ACV

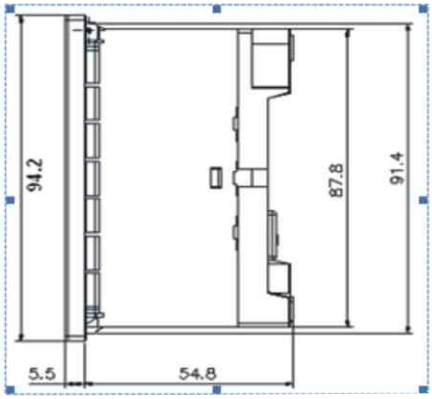


Dimensions:

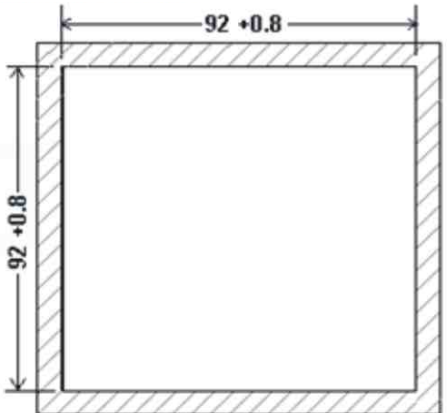
Note: All dimensions are in mm

***RISH* DPM *196* A / V**

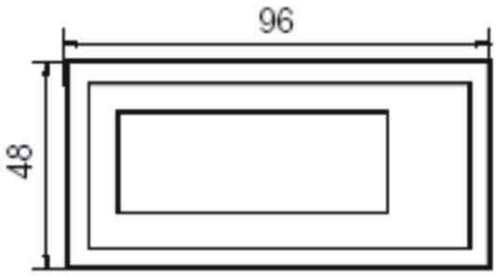


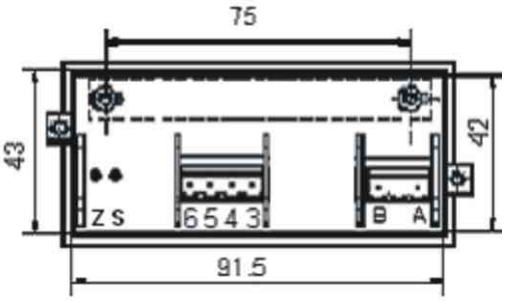


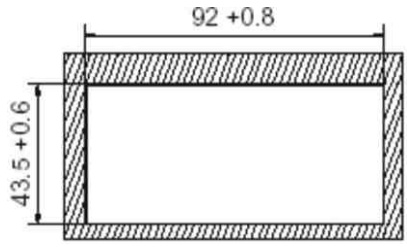
Panel Cut-out:

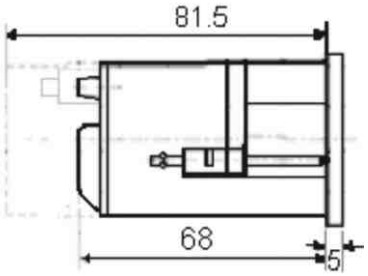


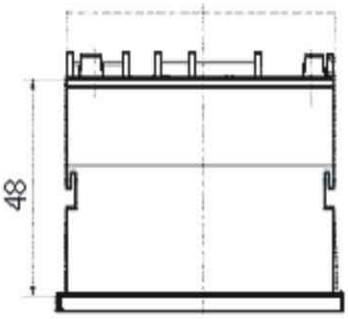
***RISH LD* DPM 48x96 1PH. ACI / ACV**











Panel Cutout **Mounting Position**

Order Details:

***RISH* DPM 196 A / V**

	Example1	Example2
Type	***RISH* DPM 196A**	***RISH* DPM 196V**
Measuring Input	0...1 A	0...500 V L-L
Input Frequency	50Hz	50 Hz
Display Full-Scale	0...1000	0...500
Display caption	A	V
Aux. Supply	230V AC, 50 Hz.	110V AC, 50 Hz

***RISH LD* DPM 48x96 1PH. ACI / ACV**

	Example1	Example2
Type	***RISH* LD DPM *48x96* 1PH. ACI**	***RISH* LD DPM *48x96* 1PH.ACV**
Measuring Input	0...1 A	0...500 V L-L
Input Frequency	50Hz	50 Hz
Display Full-Scale	0...1000	0...500
Display caption	A	V
Aux. Supply	110V DC, 50 Hz.	230V AC, 50 Hz

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

1 / 3 PHASE PROGRAMMABLE
RISH DPM PGDA / PGDV / PGD3A / PGD3V

Data Sheet

Applications:

The digital panel meter ***RISH*** DPM have been designed for industrial applications, which frequently require precise and on site adjustment of the display range. It can be used in industrial automation and for laboratory uses.

RISH DPM measures important electrical parameters in 3 phase 4 Wire, 3 phase 3 Wire and single phase Network & replaces the multiple analog panel meters.

Salient Features

- Fast & Easy Installation on panel without any need of external swivel screws (clip-in mounting for 96x96 size only)
- True RMS measurement.
- 4 Digits ultra bright LED Display (up to 9999).
- On site Programmable CT/PT Ratios.
- User selectable CT Secondary 1A/5A.
- User selectable PT Secondary from 100 V_{LL} to 500 V_{LL}.
- User selectable 3ph3wire / 3ph4wire / single phase Network.
- Wide auxillary Power Supply which can accept any input between 40V– 300V AC/DC.
- Storage of MIN / MAX values.

Product Features:

True RMS measurement

The instrument measures distorted waveform up to 15th Harmonic.

On site programmable PT/CT ratios:

It is possible to program primary of external potential Transformer (PT) for Voltage DPM & primary of external Current Transformer (CT) for Current DPM on site via front panel keys by entering into Programming mode.

User selectable CT Secondary 5A/1A

The secondary of external Current Transformer (CT) can be programmed on site to either **5A or 1A** for Current DPM using front panel keys.

User selectable PT Secondary

The secondary of external Potential Transformer (PT) can be programmed on site from **100 VLL to 500 VLL** for Voltage DPM using front panel keys.

Higher Security

Provides Security with user programmable password protection.

User selectable CT Primary

The Primary of current transformer can be programmed on site from **1A to 999kA** for Current DPM using front panel keys.

User selectable PT Primary

The Primary of Potential transformer can be programmed on site from **60 VLN to 999 kVLN** for single Phase Voltage DPM & **100VLN to 999 kVLL** for three Phase Voltage DPM using front panel keys.

User selectable 3 phase 3Wire or 4Wire or Single phase Network

User can program on site the network connection as either 3 Phase 3 Wire or 4 Wire or single phase network using front panel keys.

Onsite selection of Auto scroll / Fixed Screen

User can set the display in auto scrolling mode or fixed screen mode using front panel keys.

4 digits LED display (up to 9999):

14mm or 20mm ultra bright 4 digits LED display.

Function keys:

Using two function keys it is possible to Display various parameters in Current and Voltage DPM. These function keys are also used for programming Password, Network selection, CT/PT Primary & Secondary values, Reset min/max values, Auto ON/OFF mode selection.

Screen No. storage

In case of power failure, the instrument memorizes the last screen stored. For every 1 min. the instrument stores the screen no. in the non-volatile memory.

Min Max storage of parameters possible

The instrument stores minimum and maximum values for System Voltage(in case of PGDV / PGD3V) and System Current (in case of PGDA / PGD3A). Every 60 sec stored values are updated.

Low back depth

The instrument has very low back depth (behind the panel) of less than 54mm for 96x96 and 68mm for 48x96 type DPM.

Available in two different Sizes:

DPM is available in two different sizes 96x96 and 48x96.

Enclosure Protection for dust and water:

Conforms to IP 50 (for front face) & IP 20 (for back) as per IEC60529.

EMC Compatibility

Compliance to International standard IEC 61326.

- Interference Emission : IEC 61326-1 : 2005, Class A
- Interference Immunity : IEC 61326-1 : 2005

- Electrostatic discharge (ESD) : IEC 61000-4-2 -- 4kV/8kV contact/air.
- EM Field : IEC 61000 -4-3 -- 10 V/m (80 MHz to 1 GHz)
  -- 3 V/m (1.4 GHz to 2 GHz)
  -- 1 V/m (2 GHz to 2.7 GHz)
- Burst : IEC 61000 -4-4 -- 2 kV (5/50 ns, 5 kHz)
- Surge : IEC 61000 -4-5 -- 1 kV_{LL} / 2 kV_{LN}.
- Conducted RF : IEC 61000 -4-5 -- 3 V (150 kHz to 80 MHZ)

- Rated Power Frequency magnetic Field : IEC 61000 -4-8 -- 30 A/m
- Voltage dip : IEC 61000 -4-11 -- 0% during 1 cycle.
  -- 40% during 10/12 cycles.
  -- 70% during 25/30 cycles.
- Short interruptions : IEC 61000-4-11 -- 0% during 25/30 cycles.
  25 cycles for 50 Hz test
  30 cycles for 60 Hz test.

Technical Specifications

Input Voltage (PGDV / PGD3V):

Nominal input voltage (AC RMS)	Phase –Neutral 290VL-N Line-Line 500V L-L
Max continuous input voltage	120% of rated value
Nominal input voltage burden	< 0.3 VA approx.per phase.
System PT secondary values	For Single Phase DPM- 60V_{LN} to 290V_{LN} programmable on site & for Three Phase DPM- 100V_{LL} to 500V_{LL} programmable on site.
System PT primary values	For Single Phase DPM- 60V_{LN} to 999kV_{LN} programmable on site & for Three Phase DPM- 100V_{LL} to 900kV_{LL} programmable on site.

Input Current (PGDA / PGD3A):

Nominal input current	5A AC RMS
System CT secondary values	1A & 5A programmable on site.
System CT primary values	From 1A up to 999kA (for 1 or 5 Amp)
Max continuous input current	120% of rated value
Nominal input current burden	< 0.2 VA approx. per phase

Auxiliary Supply:

External Aux	40 V – 300V AC/DC (± 5 %)
Frequency range	45 to 65 Hz
VA burden	3 VA Approx.

Overload Withstand:

Voltage	2 x rated value for 1 second, repeated 10 times at 10 second intervals
Current	20x rated value for 1 second, repeated 5 times at 5 min intervals

Operating Measuring Ranges:

Voltage Range	10… 120% of rated value
Current Range	10 … 120% of rated value
Frequency	45…65 Hz

Reference conditions for Accuracy:

Reference temperature	23°C +/- 2°C
Input waveform	Sinusoidal (distortion factor 0.005)
Input frequency	50 or 60 Hz ±2%
Auxiliary supply voltage	Rated Value ±1%
Auxiliary supply frequency	Rated Value ±1%

Accuracy:

Voltage	±0.5% of range + 1 Digit (10... 100% of Nominal value)
Current	±0.5% of range + 1 Digit (10... 100% of Nominal value)

Influence of Variations:

Temperature coefficient : (for rated value range of use (0…50°C))	0.025% /°C for Voltage 0.05%/°C for Current

Display update rate:

Response time to step input	1 sec approx.

Applicable Standards:

EMC	IEC 61326-1: 2005
Safety	IEC 61010-1-2001 , Permanently connected use
IP for water & dust	IEC60529

Safety :

Pollution degree:	2
Installation category:	III
High Voltage Test	3.3 kV AC, 50Hz for 1 minute between Aux. and measuring inputs

Environmental:

Operating temperature	0 to +50°C
Storage temperature	-25°C to +70°C
Relative humidity	0... 90% non condensing
Warm up time	Minimum 3 minute
Shock	15g in 3 planes
Vibration	10... 55 Hz, 0.15mm amplitude

Enclosure:

Front :	IP 50
Back :	IP 20

Dimensions and Weights :

a) 96x96 DPM

Bezel size	96 mm x 96 mm DIN 43 718.
Panel cut-out	$92^{+0.8}$ mm x $92^{+0.8}$mm.
Overall depth	55 mm.
Weight	310 gm. Approx.

b) 48x96 DPM

Bezel size	96 mm x 48 mm DIN 43 718
Panel cut-out	92 + 0.8 mm x 43.5 + 0.6 mm.
Overall depth	68 mm.
Weight	250 gm. Approx.

Parameters measured and displayed:

A) PGD3V

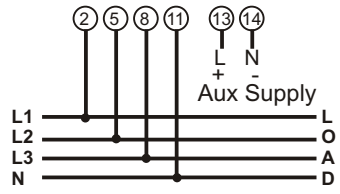
Network type	Displayed Parameter
1) 3 Phase 4 wire	a. Phase –Neutral Voltage **VR** b. Phase –Neutral Voltage **VY** c. Phase –Neutral Voltage **VB** d. Line-Line Voltage **VRY** e. Line-Line Voltage **VYB** f. Line-Line Voltage **VBR** g. System Voltage **V** h. Max. system voltage **V** i. Min. system voltage **V**
2) 3 Phase 3 wire	a. Line-Line Voltage **VRY** b. Line-Line Voltage **VYB** c. Line-Line Voltage **VBR** d. System Voltage **V** e. Max. system voltage **V** f. Min. system voltage **V**
3) 1 Phase 2 wire	a. Phase –Neutral Voltage **V** b. Max voltage **V** c. Min voltage **V**

B) PGD3A

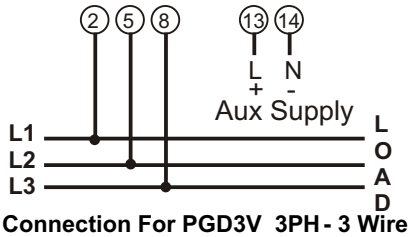
Network type	Displayed Parameter
1) 3 Phase 4 wire and 3 Phase 3 Wire	a. Phase Current **AR** b. Phase Current **AY** c. Phase Current **AB** d. System Current **A** e. Max. system Current **A** f. Min. system Current **A**
2) 1 Phase 2 wire	a. Phase Current **A** e. Max. Phase Current **A** f. Min. Phase Current **A**

Connection Diagram:

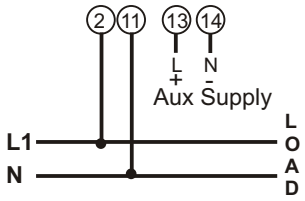
A) For 96x96 DPM (PGD3V / PGD3A)



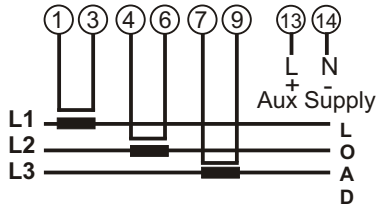
Connection For PGD3V 3PH - 4 Wire Network



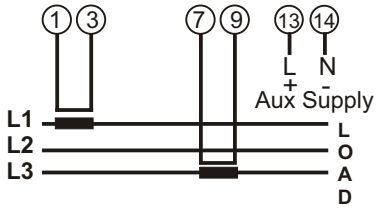
Connection For PGD3V 3PH - 3 Wire Network



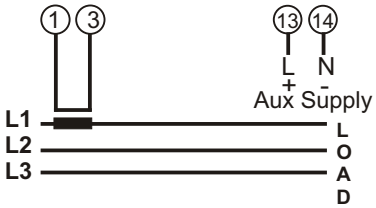
Connection For PGD3V 1PH Network



Connection For PGD3A 3PH – 4 Wire Network

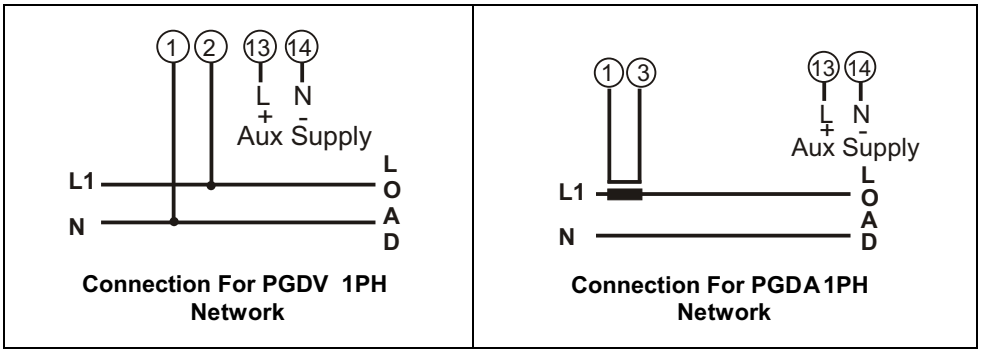


Connection For PGD3A 3PH – 3 Wire Network



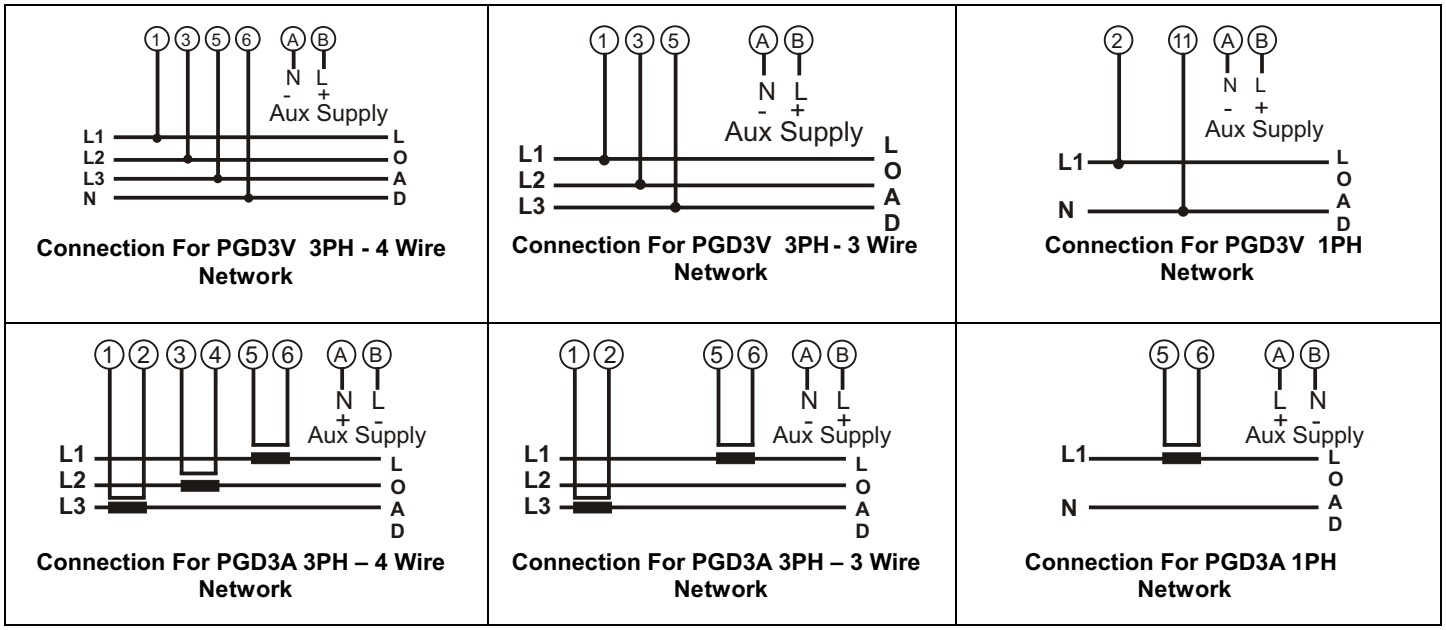
Connection For PGD3A 1PH Network

For 96x96 DPM (PGDV / PGDA)

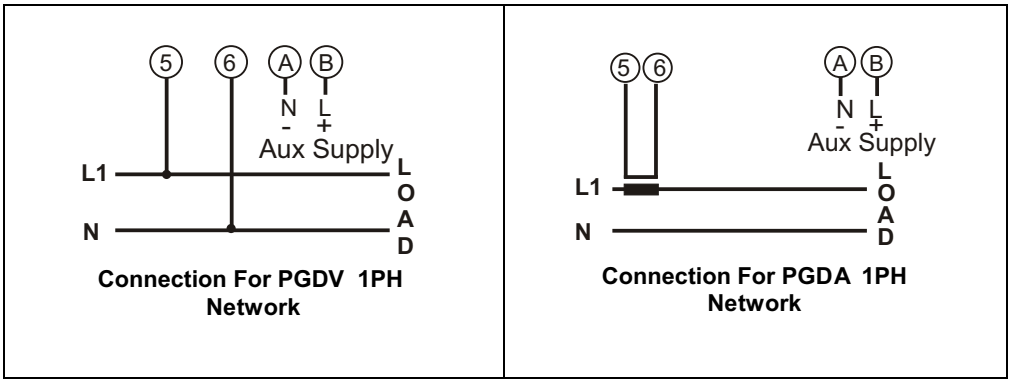


*Note: For Measurement of parameters in PGD3V DPM Voltage must be present between terminal 2 & 11 for single phase or 3 phase 4 wire network and between terminal 2 & 5 or 2 & 8 for 3 phase 3 wire network. And for PGD3A DPM current must be present between terminal 1 & 3 for 3 phase 4 wire or 3 phase 3 wire or single phase network.

B) For 48x96 DPM (PGD3V / PGD3A)



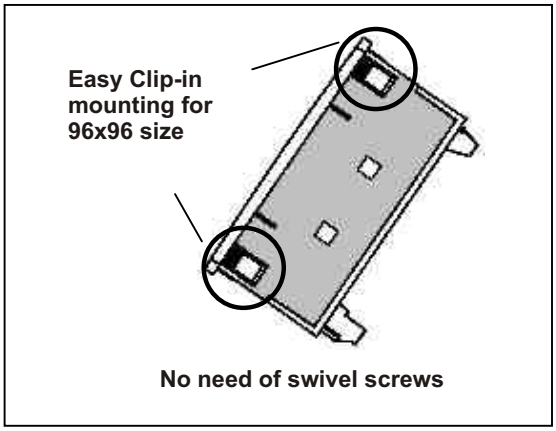
For 48x96 DPM (PGDV / PGDA)



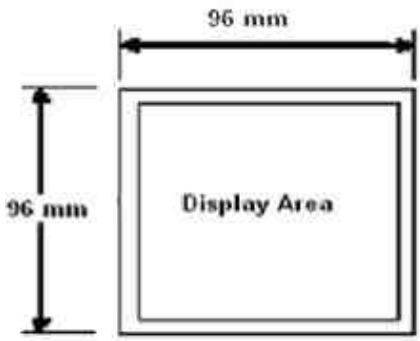
*Note: For Measurement of parameters in PGD3V LD DPM Voltage must be present between terminal 1 & 6 for single phase or 3 phase 4 wire network and between terminal 1 & 3 or 1 & 5 for 3 phase 3 wire network. And for PGD3I LD DPM current must be present between terminal 5 & 6 for 3 phase 4 wire or 3 phase 3 wire or single phase network.

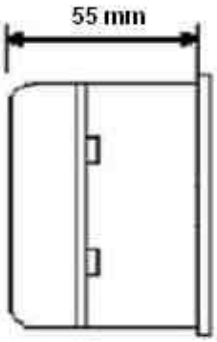
Installation

Easy Clip in Installation on Panel for 96 x 96 size:

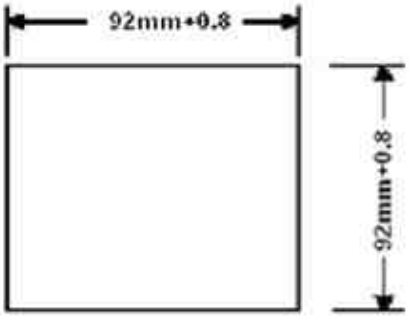


A) For 96x96 DPM



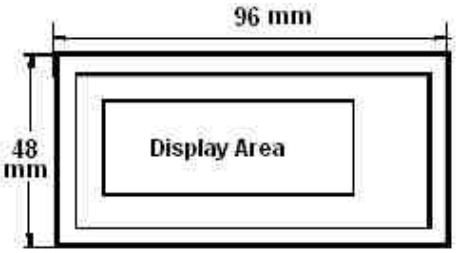


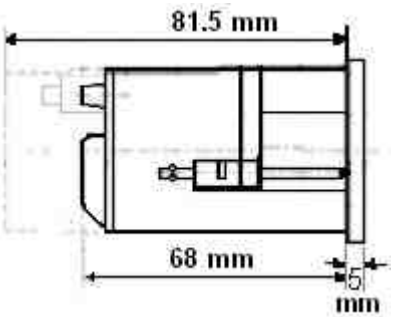
Mounting Position



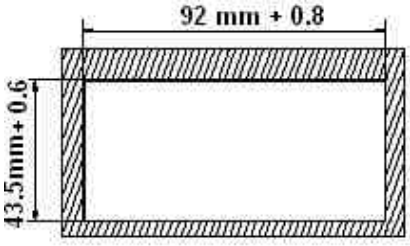
Installation Cutout

B) For 48x 96 DPM





Mounting Position



Installation Cutout

Ordering information	Ordering Code
	PROGRAMMABLE RISH DPM
DPM Panel Cutout	
96x96 DPM	96x96
48x96 Low Depth DPM	48x96
Parameter Type	
3 Phase Current	PGD3A
3 Phase Voltage	PGD3V
Single Phase Current	PGDA
Single Phase Voltage	PGDV
Display Type	
14mm Display digit height	14mm
20mm Display digit height (available in 96x96 size only)	20mm

Order Code Example:

PROGRAMMABLE RISH DPM– 48x96 - PGD3A – 14mm

PROGRAMMABLE RISH DPM, 48x96 Low Depth, 3 Phase Current, 14mm display digit height, Aux. – 40-300V AC/DC

Standard Product :

Ordering Information	Product Code
DPM 96x96 (14mm) : 3PH 3/4W, I/P – 100 to 500 V_{LL}, Aux. 40V – 300V AC/DC	P6530010RIS
DPM 96x96 (20mm) : 3PH 3/4W, I/P – 100 to 500 V_{LL}, Aux. 40V – 300V AC/DC	P6531010RIS
DPM 96x96 (14mm) : 3PH 3/4W, I/P – 5A/1A, Aux. 40V – 300V AC/DC	P6532010RIS
DPM 96x96 (20mm) : 3PH 3/4W, I/P – 5A/1A, Aux. 40V – 300V AC/DC	P6533010RIS
DPM 48x96 (14mm) : 3PH 3/4W, I/P – 100 to 500 V_{LL}, Aux. 40V – 300V AC/DC	P6535010RIS
DPM 48x96 (14mm) : 3PH 3/4W, I/P – 5A/1A, Aux. 40V – 300V AC/DC	P6536010RIS

Ordering Information	Product Code
DPM 96 x96 (14mm) : 1 PH, I/P – 60 to 290 V_{LN}, Aux. 40V – 3 00V AC/DC	P6530510 RIS
DPM 96 x96 (20mm) : 1 PH, I/P – 60 to 290 V_{LN}, Aux. 40V – 3 00V AC/DC	P6531510 RIS
DPM 96 x96 (14mm) : 1 PH, I/P – 5A/ 1A, Aux. 40 V – 300V AC/DC	P6532510 RIS
DPM 96 x96 (20mm) : 1 PH, I/P – 5A/ 1A, Aux. 40 V – 300V AC/DC	P6533510 RIS
DPM 48 x96 (14mm) : 1 PH, I/P – 60 to 290 V_{LN}, Aux. 40V – 3 00V AC/DC	P6535510 RIS
DPM 48 x96 (14mm) : 1 PH, I/P – 5A/ 1A, Aux. 40 V – 300V AC/D C	P6536510 RIS

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

RISH DPM - Power / Power Factor (size: 96/96)

Data Sheet

Application :

RISH DPM Power 96x96 series measures system active Power (Import / Export),Reactive Power (Import / Export), Apparent Power & Power Factor of Three phase and Single phase Network. It has 4 digit single line auto ranging LED display with polarity indication.

Product Range :

- **Active Power (kW) DPM.**
- **Reactive Power (kVAr) DPM.**
- **Apparent Power (kVA) DPM.**
- **Power Factor (PF) meter.**

Product Features :

*** On Site Programmable PT/CT Ratios :**
It is possible to program primary of external Potential Transformer (PT) & primary of external Current Transformer (CT) on site via front panel keys by entering into programming mode.

*** User Selectable CT Secondary 5A/1A :**
The secondary of external Current Transformer (CT) can be programmed on site to either 5A or 1A using front panel keys.

*** User Selectable 3 Phase 3W or 4W :**
User can program on site the network connection as either 3 Phase 3 Wire or 4 Wire using front panel keys.

* Note: For Power Factor DPM, customer need to specify CT ratio, PT ratio & network type 3 phase (3 or 4 wire) / single phase (1P2W) requirement while ordering.

User Selectable Power Parameter :
User can select any one of the power parameter (Active / Reactive / Apparent) on site as per its requirement, reducing inventory cost.

True RMS Measurement :
The instrument measures distorted waveform up to 15th harmonic.

High Brightness LED Display :
Single line four digit. Digit heights 11 mm or 20 mm.

Enclosure Protection for Dust and Water :
Conforms to IP 54 (front face) as per IEC60529

Compliance to International Safety Standards :
Compliance to International Safety standard IEC 61010-1 - 2001

EMC Compatibility :
Compliance to International standard IEC 61326

Low Back Depth :
The instrument has very low back depth (behind the panel) of less than 80 mm.

Technical Specifications :

Input Voltage :

Nominal Input Voltage (AC RMS)	Phase-Neutral 57.7 - 277V L-N (Line-Line 100 - 480V L-L)
Max Continuous Input Voltage	120% of rated value

Input Current :

Nominal Input Current	1 or 5A AC RMS (programmable on site)
System CT Primary Values	Std. values up to 9999A
Max Continuous Input Current	120% of rated value

Auxiliary Supply :

AC Auxiliary Supply	110V AC -15%/+20% / 230V AC -15%/+20% / 380V AC-15%/+20
AC / DC Auxiliary Supply	100 to 250V AC/DC ± 10%
AC Auxiliary Supply Frequency Range	45 to 66 Hz
DC Auxiliary Supply	12 to 48V DC ± 10%

VA Burden :

Nominal Input Voltage Burden	< 0.2 VA approx. per phase
Nominal Input Current Burden	< 0.6 VA approx. per phase
AC Supply Burden	Approx. 4 VA

Overload Withstand :

Voltage	2 x rated value for 1 sec, repeated 10 times at 10 sec intervals
Current	20 x rated value for 1 sec, repeated 5 times at 5 min intervals

Operating Measuring Ranges :

Voltage	5…120% of rated value
Current	5…120% of rated value
Frequency	40…70 Hz
Power Factor	0.5 Lag...1...0.5 lead for kW,kVAr DPM / 0.1 Lag...1...0.1 lead for PF DPM

Reference Condition For Accuracy:

Reference Temperature	23°C +/- 2°C
Input Waveform	Sinusoidal (distortion factor 0.005)
Input Frequency	50 or 60 Hz ±2%
Auxiliary Supply Voltage	Rated Value ±1%
Auxiliary Supply Frequency	Rated Value ±1%

Accuracy :

Active Power, Apparent Power	±0.5% of range(50...100% of rated value) (0.5 Lag...1...0.5 Lead)
Reactive Power	±1% of range(50...100% of rated value) (0.5 Lag...1...0.5 Lead)
Power Factor	±2° (0.1 Lag...1...0.1 Lead)

Influence of Variations :

Temperature Coefficient : (for rated value range of use (0...50°C))	0.025% / °C for Voltage (50... 20% of rated value) and 0.05% / °C for Current (10... 120% of rated value)

Display

Response time to step input	min 1 sec approx.
Resolution	0.001 (4 digit)

Applicable Standards :

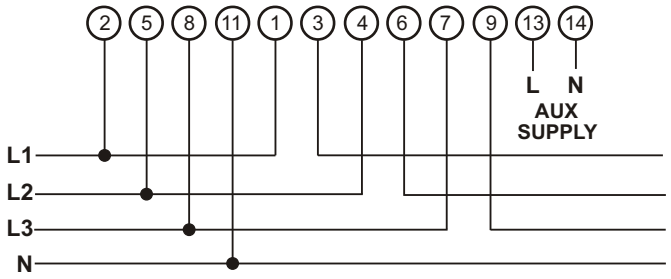
EMC	IEC 61326
Immunity	IEC 61000-4-3. 10V/m min - Level 3 industrial low level

Safety :	IEC 61010-1- 2001 , Permanently connected use
IP for Water and Dust	IEC60529
Pollution Degree	2
Installation Category	III
High Voltage Test	2.2 kV AC, 50Hz for 1 minute between all electrical circuits

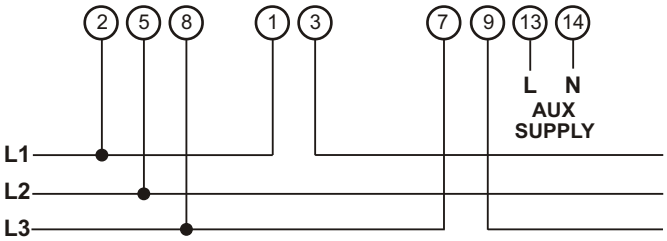
Environmental	
Operating temperature	-10 to + 55°C
Storage temperature	-20 to + 65°C
Relative humidity	0...90% non condensing
Warm up time	Minimum 3 minute
Shock	15g in 3 planes
Vibration	10...55 Hz, 0.15mm amplitude
Enclosure	IP54 (front face only)

Electrical Connection :

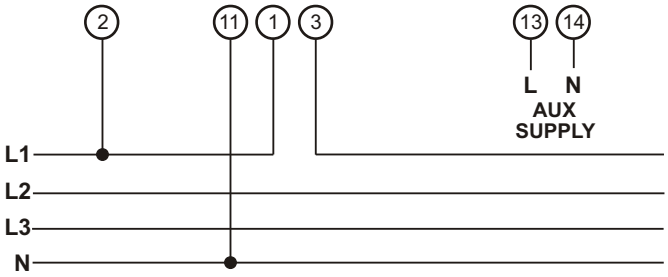
For 3 Phase 4 Wire Unbalanced Load



For 3 Phase 3 Wire Unbalanced Load



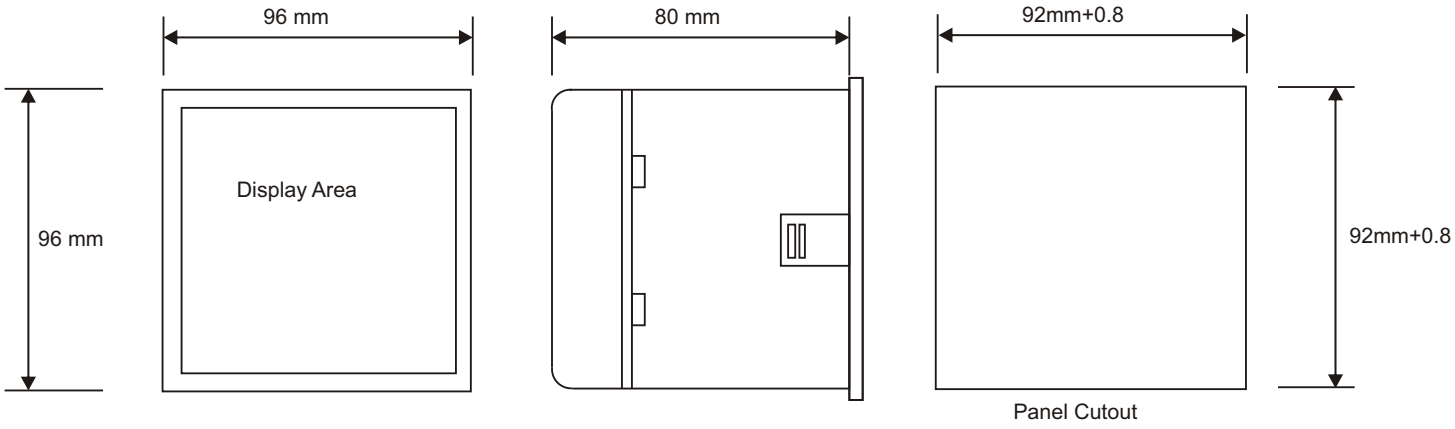
For Single Phase



It is recommended that the wires used for connection to the instrument should have lugs soldered at the end. That is, the connection should be with lugged wires for secure connections. The maximum diameter of the made lug should be 7.0mm and maximum thickness 3.5mm. Permissible cross section of the connection wires : <= 4.0 mm^2 single wire or 2 x 2.5 mm^2 fine wire

.

Dimensions



Ordering information	Ordering Code
	DPM
Parameter	
Power Factor	**PF**
Power (Active / Reactive / Apparent)*	**PW**
System Type (Connection network)**	
3 Phase 3 Wire	3
3 Phase 4 Wire	4
1 Phase	1
Input Voltage	
110V L- L (63.5V L - N)	110
230V L- L (133V L - N)	230
415V L- L (239.6V L - N)	415
440V L- L (254V L - N)	440
Input Current	
1 Amps	1
5 Amps	5
AC Auxiliary Supply	
110 V AC -15% / +20%	L
230 V AC -15% / +20%	M
380 V AC - 15% / +20 %	H
100 to 250 V AC/DC ±10%	AD
12 to 48 V DC ±10%	D
Digital Height	Rated Value ±1%
11 mm	11
20 mm	20

* Any one of the parameter can be selected to be displayed on site.
** CT ratio / PT ratio / Network type (3 wire / 4 wire) programmable on site only for power DPM (S / P / Q).

Order Code Example :

DPM – PF – 3 – 415 – 5 – M – 11

DPM, Power factor, 3 phase 3 wire, 415 V AC L-L nominal voltages, 5 Amp, 230 V AC auxiliary supply, 11mm digit height.

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

RISH DPM 96 X 96 & 48 X 96 4½ Digit (DC Input)

Data Sheet

Applications

The digital panel meters ***RISH*** DPM 96 x 96 & 48 x 96 4½ Digit have been designed for industrial applications, which frequently require precise and on-site adjustment of the display range.

It can be used in industrial automation and for laboratory uses.

Features:

- **Available in Size 96mm x 96mm & 48mm x 96mm.**
- **DC Current ranges and DC Voltage ranges.**
- **4 ½ Digit ultra bright Display.**
- **User defined caption**
- **Auxillary Power Supply :**
  AC – 230V (+10% / -15%).
  AC – 110V (+10% / -15%).
  DC – 110V (+10% / -15%).
  DC – 24V (+/- 15%).

Highly adaptable DPMs suitable for a wide range of measuring applications.

Versions available for DC Current (mA) and DC voltage (mV & Volts) inputs.

The chosen input range is user adjustable, from 10% to 100% of the full-scale value for DC Current, mV DC and Voltage DC, for simple adaptation of the digital readout to the input value.

Description:

RISH DPM **96 x 96 A/V DC :**

96 x96 A DC	DC Current measurement , 2 ranges
96 x 96 V DC	DC Voltage measurement 1) mV input, 4 ranges 2) Voltage input, 5 ranges

Applicable Regulations and Standards

Protection Class Front	IP 20 to IEC EN 60 529 IP 50
Device safety	IEC EN 61 010
EMC immunity	IEC/ EN 61 000-4-1 to 4
EMC radiated interference	IEC/ EN 61326 Class B

Specifications :

Display:

Display range	: 19999
Decimal point position	: Selectable by short links at the rear side of Display.
Negative display indication	: "- "
Digit height	: 14 mm / 7- segment digits.
Overload indication	: Last 4 digits blank. (1)

Measuring ranges:

[Max. Overload 120% of full-scale range value]

Model	**RISH DPM 96 x 96 & 48 x 96 4½ DIGIT A DC**
DC Current Ranges Available (Voltage drop < 600 mV)	**0…20 mA** and **4…20 mA** (Range selection by input choice)
Model	**RISH DPM 96 x 96 & 48 x 96 4½ DIGIT V DC**
1) DC mV Ranges Available (Input current < 300uA)	**0…60 mV**, **0…75 mV, 0…150 mV** and **0…200 mV** (Range selection by input choice)
2) DC Voltage Ranges Available	**0…2V** or **0…20V** or **0…200V** or **0…500V** or **0…1000V** or Please specify any non - standard input Voltage range, available on request.

Accuracy :

RISH DPM 96 x 96 & 48x 96 4½ DIGIT A DC	Measuring Accuracy Current (Voltage drop < 600 mV)	: < 0.1% of range + 1 digit.
	Temperature coefficient	: 300 ppm / °C.
	Zero point drift	: 200 ppm / °C.
	Range adjustment span	: from 10% to 100% of range.
RISH DPM 96 x 96 & 48x 96 4½ DIGIT V DC :		
1) milli Volt ranges	Measuring Accuracy milli volts (Input current < 300uA)	: < 0.1% of range + 1 digit.
	Temperature coefficient	: 300 ppm / °C.
	Zero point drift	: 200 ppm / °C.
	Range adjustment span	: from 10% to 100% of range.
2) Volt ranges	Measuring Accuracy Volts (Input current < 300uA)	: < 0.1% of range + 1 digit.
	Temperature coefficient	: 300 ppm / °C.
	Zero point drift	: 200 ppm / °C.
	Range adjustment span	: from 10% to 100% of range
Measuring input	DC Current input	: Terminal 1 (LO -) and 2, 3 (HI +).
	Display adjust (with external calibrator)	: With zero and span pots.
	Decimal point programming	: With short links at front side..
Power supply	4 ranges for power supply are available.	
	Direct voltage DC	: 24 V DC (+/- 15%) 5.5W approx. (isolated).
		: 110 V DC (+ 10% / -15%) 5.5W approx. (isolated).
	Alternating voltage AC	: 110 V AC (+ 10% / -15%) 5.5W approx. (isolated).
		: 230 V AC (+10 % / -15%) 5.5W approx. (isolated).
	Frequency	: 47 – 60 Hz.
Environmental conditions	Climatic class	**:** Class 2 to VDE / DIN 3540.
	Operating temperature	: 0 ... 55 °C.
	Storage temperature	: -25 °C ... +65 °C.
	Safety class	: II to IEC 348 / VDE 0411.
	IP Protection	: IEC EN 60 529. For Back : IP 20. Front : IP 50 (IP 54 on request)
	Device safety	: According to IEC EN 61 010.
	High Voltage Test	: For AC Aux.: 2 kV AC, 50 Hz for 1 minute. For DC Aux. : 1 kV AC, 50 Hz for 1 minute.
	EMC immunity	: According to IEC / EN 61 000-4-1 up to 4.
	EMC radiated interference	: According to IEC / EN 61326 class B.

RISH DPM 96 x 96 4½ DIGIT V DC / A DC :

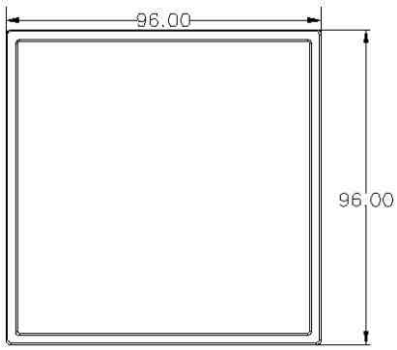
Dimensions and Weights	Bezel size	: 96 mm x 96 mm DIN 43 718
	Panel cut-out	: 92 + 0.8 mm x 92 + 0.8 mm
	Overall depth	: 55 mm.
	Weight	: 500 gm. Approx.

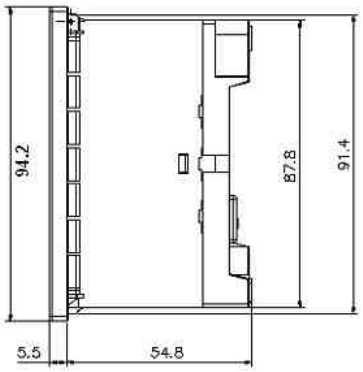
RISH DPM 48x 96 4½ DIGIT V DC / A DC :

Dimensions and Weights	Bezel size	: 96 mm x 48 mm DIN 43 718
	Panel cut-out	: 92 + 0.8 mm x 43.5 + 0.6 mm
	Overall depth	: 138 mm.
	Weight	: 500 gm. Approx.
Sundry:	Connections	: Plug-in screw terminal blocks.

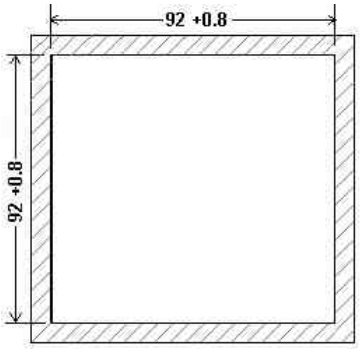
Design & Installation

RISH DPM **96 x 96 4½ Digit**

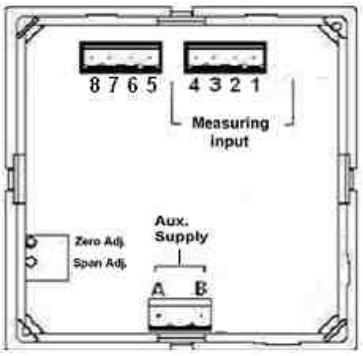




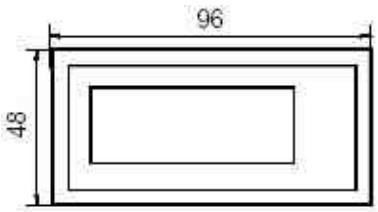
Installation cut-out

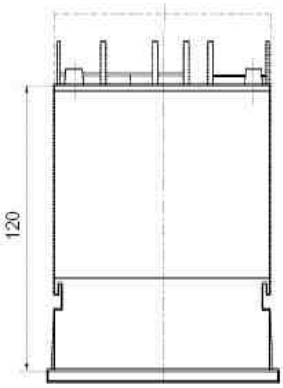


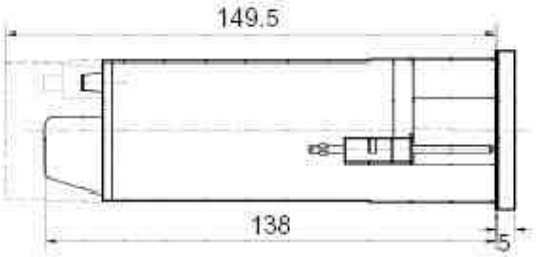
Connections



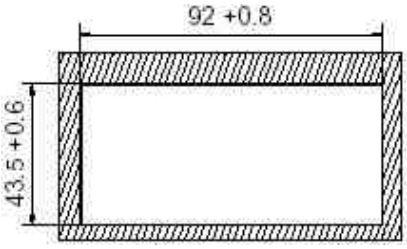
RISH DPM **48 x 96 4½ Digit**



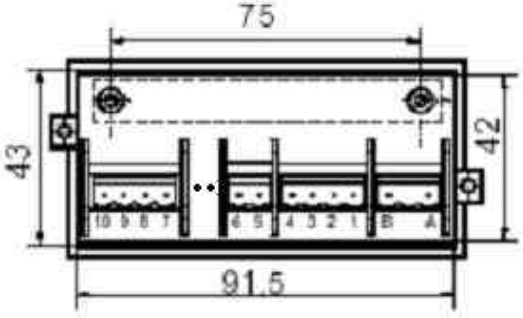




Installation Cutout



Connections



Connections

RISH DPM **96 x 96 4½ Digit**

CONNECTION FOR RISH DPM 96 x 96 A DC

Current DC : 0… 20 mA : Terminals 1 and 2 with terminals 5 and 6 open.

4… 20 mA : Terminals 1 and 3 plus jumper between terminals 5 and 6.

CONNECTION FOR RISH DPM 96 x 96 V DC – milli Volts

Milli Volts DC :0… 60 mV , 0… 75 mV : Terminals 1 and 2.
0…150 mV,0… 200 mV : Terminals 1 and 3.

CONNECTION FOR RISH DPM 96 x 96 V DC –Volts

Volt s DC : 0…2 V or 0…20 V or 0…200 V or 0…500 V or 0…1000 V : Terminals 1 and 3.

RISH DPM **48 x 96 4½ Digit**

CONNECTION FOR RISH DPM 48 x 96 A DC

Current DC : 0… 20 mA : Terminals 1 and 2 with terminals 5 and 6 open.

4… 20 mA : Terminals 1 and 3 plus jumper between terminals 5 and 6.

CONNECTION FOR RISH DPM 48 x 96 V DC – milli Volts

Milli Volts DC : 0… 60 mV / 0… 75 mV : Terminals 1 and 2.
0…150 mV : Terminals 1 and 3.
0… 200 mV : Terminals 1 and 4.

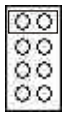
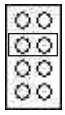
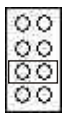
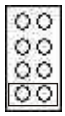
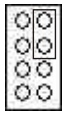
CONNECTION FOR RISH DPM 48 x 96 V DC –Volts

Volt s DC : 0…2 V or 0…20 V or 0…200 V or 0…500 V or 0…1000 V : Terminals 1 and 4.

Decimal point Adjustment :

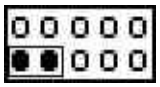
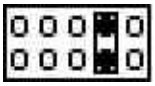
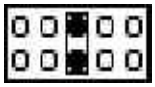
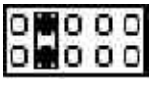
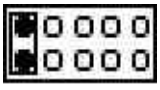
RISH DPM **96 x 96 4½ Digit**

Decimal point position is selectable by short links at the Front side

Short Link Position	Decimal point position on Display
	**X.XXXX**
	**XX.XXX**
	**XXX.XX**
	**XXXX.X**
	**XXXXX**

RISH DPM **48 x 96 4½ Digit**

Decimal point position is selectable by short links at the rear side

Short Link Position	Decimal point position on Display
	**XXXXX**
	**X.XXXX**
	**XX.XXX**
	**XXX.XX**
	**XXXX.X**

Ordering Information :

RISH DPM 96 x 96 4½ Digit V DC / A DC

Order Details	Example 1	Example 2
Type	RISH DPM 96 x 96 A DC	RISH DPM 96 x 96 V DC
Measuring Input	0 … 20 mA	0…1000 V
Display Full-Scale	0 … 19999	0…19999
Display caption	mA	mV
Aux. Supply	110V AC, 50HZ	230V AC, 50 Hz

RISH DPM 48 x 96 4½ Digit V DC / A DC

Order Details	Example 1	Example 2
Type	RISH DPM 48 x 96 A DC	RISH DPM 48 x 96 V DC
Measuring Input	0 … 20 mA	0…500 V
Display Full-Scale	0 … 19999	0…19999
Display caption	mA	V
Aux. Supply	110V DC.	230V AC, 50 Hz

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

RISH R412 DIGITAL PANEL METERS

Data Sheet

LCD

Application

The digital panel meters ***RISH*** DPM have been designed for industrial applications, which frequently require precise and on-site adjustment of the display range.It can be used in industrial automation and for laboratory uses.

Salient Features

- 3/64 DIN Indicator
- Screw terminal connectors for easy installation
- LCD: 4-1/2 digit 0.5" high LCD display with optional negative image, bright red backlighting
- Limited range display scaling
- User selectable decimal point
- Span adjustment and offset adjustment through potentiometer

Technical Specifications

Specifications		4-1/2 Digit LCD Display
Display	Type	7 Segment
	Height	0.5" (12.7mm)
Decimal point (Selectable)		4 position
Overrange Indication		Most significant digit = "1"
Backlighting		Optional negative image, Red Backlight
Polarity		Auto with "-" indication; "+" implied
Power Requirements AC Volt		85-250VAC @ 40-440Hz
Power Consumption		4.0VA (2.4W) Max
Isolation		250Vrms Max
Accuracy @ 25ºC AC TRMS V		±(0.5% of reading + 5 count) (50Hz - 2KHz)
Excitation Current		25mA (Maximum)
Environmental Operating Temperature		0 to 55ºC
Storage Temperature		-10 to 60ºC
Relative Humidity		0 to 85% non condensing @ 40ºC
Temperature Coefficient		0.2% of input ± 0.5 digits/ºC
Warm-up Time		Less than 20 minutes
Mechanical	Bezel	0.95" * 2.84" (24mm * 72mm)
	Depth	2.36" (60mm)
	Panel Cutout	0.88" * 2.68" (22.2mm * 68mm)
	Case Material	94-0, UL-rated, glass-filled thermoplastic

Measuring Range

AC TRMS Voltage

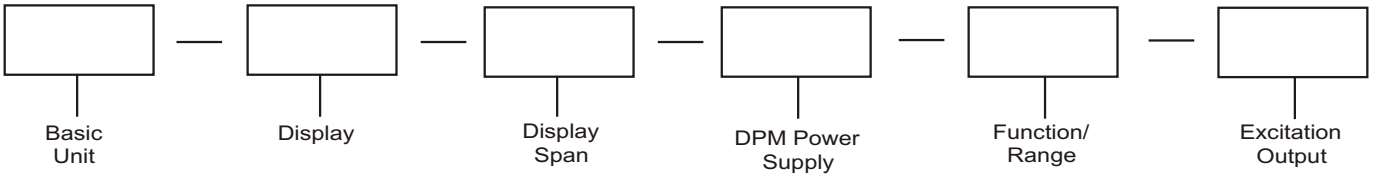
Range	Resolution	Input Impedance	Max Overload Allowed	Display Type		Display Span
270V	100mV	1MΩ	270VAC	Non Backlight (LCD)	Negative Image Red (LCD)	19999

Display Scaling

RISH R412 indicators have limited range coarse and fine adjustments for display scaling. There are no optional connections required for these to function. The "COARSE" calibration will allow a limited range of scaling values. The meter can be scaled down to ½ the value of the input, but not scaled up. Maximum scaling is maximum input or a maximum reading of
1.9999, which ever is lower. The "FINE" calibration allows for an approximate range of 1% of the "coarse" calibration.

Ordering Information

RISH DPMs can be configured by making an entry in each section.
Example: R412-0-11-0-36-0



Ordering information

Ordering information	Ordering Code
Basic Unit	
4-1/2 Digit	R412
Display	
Non Backlight (LCD)	0
Negative Image Red (LCD)	1
Display Span	
19999	11
DPM Power Supply	
85-250VAC	0
Function/Range	
270 VAC TRMS	36
Excitation Output (N/A w/Frequency)	
None	0
12 DCV @ 25mA	1
24 DCV @ 25mA	2

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

RISH DPM 72 X 144 - 1 Phase 4½ Digit (ACI/ACV)

Data Sheet

Application:

The digital panel meters RISH DPM 72 X 144 1 PH. 4½ ACI/ACV have been designed for industrial applications, which frequently require precise and on-site adjustment of the display range.

It can be used in industrial automation and for laboratory uses.

Features:

- AC Current ranges and AC Voltage ranges available.
- 4 ½ Digit ultra bright Display with 26mm digit height.
- User defined caption.
- Various auxillary power supply ranges are available.
- Maximum Display Count : 19999.
- Resolution : 0.0001 to 1 count depending on the range.
- Highly adaptable DPMs suitable for a wide range of measuring applications.
- Instrument for DC Voltage measurement available in 4 ½ Digit Digit DPM.
- The chosen input range is user adjustable, from 10% to 100% of the full-scale value for AC Current and AC Voltage, for simple Voltage, for simple adaptation of the digital readout to the input value.

Description:

RISH DPM 72 X 144 1PH. 4½ ACI/ACV :

DPM 72X144 4½ ACI	1 PH. AC current measurement
DPM 72X144 4½ ACV	1 PH. AC voltage measurement

Applicable Regulations and Standards

Protection Class	IP 20 to IEC EN 60 529
Front	IP 50
Device safety	IEC EN 61 010
EMC immunity	IEC/ EN 61 000-4-1 to 4
EMC radiated interference	IEC/ EN 61326 Class B

Technical Specifications:

Display:

Display range	: 19999
Decimal point position	: Selectable by short links at the rear side of display.
Digit height	: 26mm / 7 - segment digits.
Overload indication	: Last 4 digits blank. (1)

Measuring ranges:

[Max. Overload 20% of full-scale range value]

Model	**RISH DPM 72 X 144 1 PH. 4½ ACI**
AC Current Ranges Available (Voltage drop < 600 mV/phase)	0…1A [45...65 Hz] or 0…1A [400 Hz] or 0…5A [45...65 Hz] or 0…5A [400 Hz]

Model	**RISH DPM 72 X 144 1 PH. 4½ ACV**
Voltage Ranges Available (Input current < 600 µA / Phase)	0…110 V [45...65 Hz] or 0…110 V [400 Hz] or 0…240 V [45...65 Hz] or 0…240 V [400 Hz] or 0…500 V [45...65 Hz] or 0…500 V [400 Hz]

Accuracy

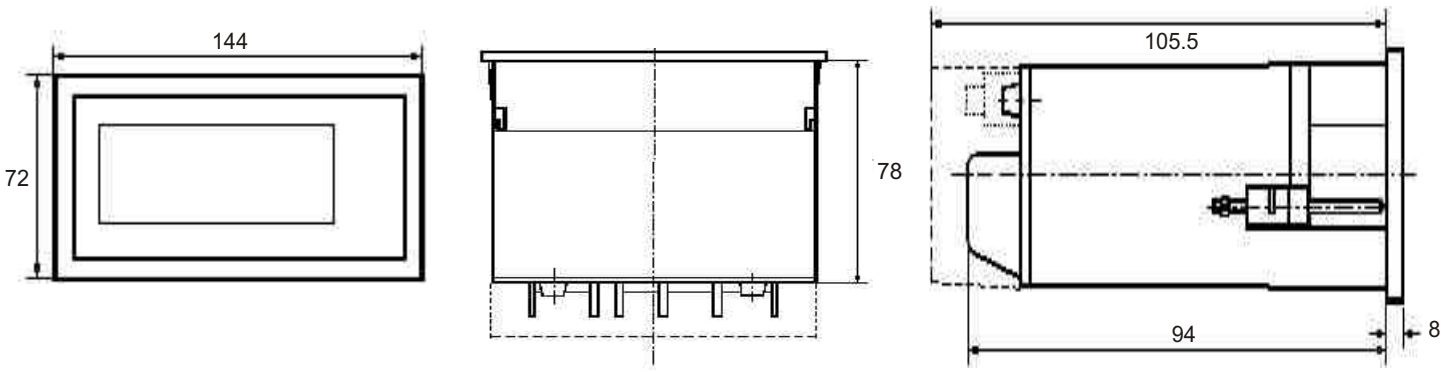
RISH DPM 72 x 144 1 PH. 4½ ACI :

Measuring Accuracy Current (Voltage drop < 600 mV)	: < 1% of range ±1 digit (Optional: 0.5% of range ±1 digit)
Temperature coefficient	: 300 ppm / °C.
Zero point drift	: 200 ppm / °C.
Range adjustment span	: from 10% to 100% of range.

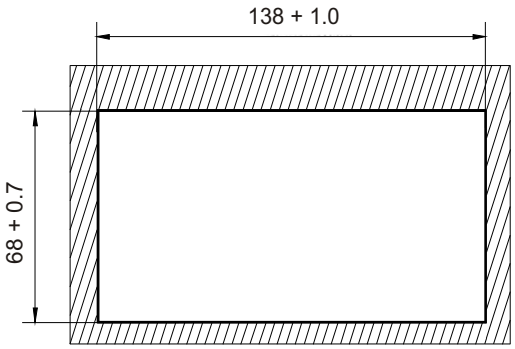
RISH DPM 72 X 144 1 PH. 4½ ACV :

	Measuring Accuracy Volts (Input current < 600uA)	: < 1% of range ±1 digit(Optional: 0.5% of range ±1 digit)
	Temperature coefficient	: 300 ppm / °C.
	Zero point drift	: 200 ppm / °C.
	Range adjustment span	: from 10% to 100% of range.
Power supply	5 ranges for power supply are available.	
	Direct voltage DC	: 24 V DC (+/- 15%) / 110 V DC (+ 10% / -15%) / 220 V DC (+10 % / -15%)
	VA Burden	: 5.5W approx. (Isolated)
	Alternating voltage AC	: 110 V AC (+ 10% / -15%) / 230 V AC (+10 % / -15%)
	VA Burden	: 5.5VA approx. (Isolated)
	Frequency	: 47- 60 Hz.
Environmental conditions	Climatic class	: Class 2 to VDE / DIN 3540.
	Operating temperature	: 0 ... 55 °C.
	Storage temperature	: -25 °C ... +65 °C.
	Safety class	: II to IEC 348 / VDE 0411.
	IP Protection	: IEC EN 60 529. For Back : IP 20. Front : IP 50 (IP 54 on request)
	Device safety	: According to IEC EN 61 010.
	High Voltage Test	: For AC Aux. : 2 kV AC, 50 Hz for 1 minute. For DC Aux. : 1 kV AC, 50 Hz for 1 minute.
	EMC immunity	: According to IEC / EN 61 000-4-1 up to 4.
	EMC radiated interference	: According to IEC / EN 61326 class B.
Dimensions and Weights	Bezel size	: 72 mm x 144 mm DIN 43 700
	Panel cut-out	: 68 +0.7 mm x 138 + 1.0 mm
	Overall depth	: 94 mm.
	Weight	: 500 gm. Approx.
Sundry	Connections	: Plug-in screw terminal blocks.

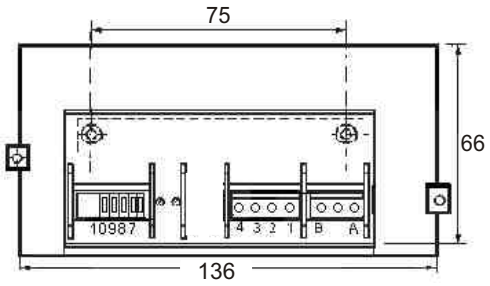
Design & Installation

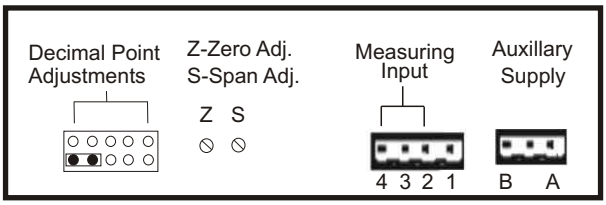


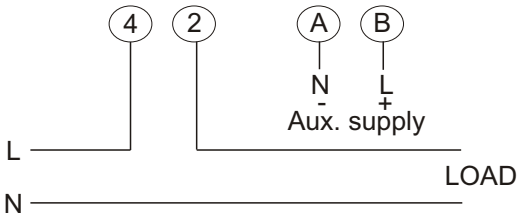
Installation cut-out



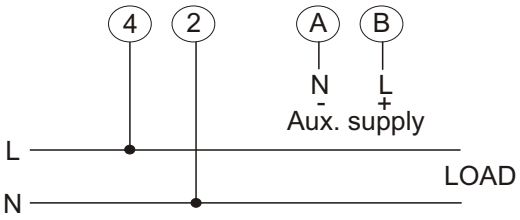
Connections







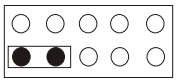
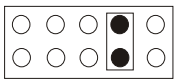
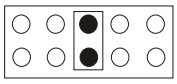
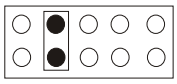
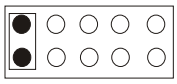
Connection for ACI



Connection for ACV

Decimal Point Adjustment :

Decimal point position is selectable by short links at the rear side.

Short Link Position					
Decimal point position on display	XXXXX	X.XXXX	XX.XXX	XXX.XX	XXXX.X

Order Details :

	Example 1	Example 2
Type	RISH DPM 72 X 144 1 PH. 4½ ACI	RISH DPM 72 X 144 1 PH. 4½ ACV
Measuring Input	0 … 1 A[45-65 Hz]	0…110 V[45-65 Hz]
Display Full-Scale	0 … 19999	0… 19999
Display caption	A	V
Aux. Supply	24V DC.	230V AC, 50 Hz

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

RISH DPM 72 X 144 4½ Digit (DC input)

Data Sheet

Applications

The digital panel meters ***RISH*** DPM 72 x 144 4½ Digit have been designed for industrial applications, which frequently require precise and on-site adjustment of the display range.

It can be used in industrial automation and for laboratory uses.

Features:

- **Available in Size 72mm x 144mm.**
- **DC Current ranges and DC Voltage ranges.**
- **4 ½ Digit ultra bright Display.**
- **User defined caption**
- **Auxillary Power Supply :**
  AC – 230V (+10% / -15%).
  AC – 110V (+10% / -15%).
  DC – 110V (+10% / -15%).
  DC – 24V (+/- 15%).

Highly adaptable DPMs suitable for a wide range of measuring applications.

Versions available for DC Current (mA) and DC voltage (mV & Volts) inputs.

The chosen input range is user adjustable, from 10% to 100% of the full-scale value for DC Current, mV DC and Voltage DC, for simple adaptation of the digital readout to the input value.

Description:

RISH DPM **72 x144 A/V DC :**

72 x 144 A DC	DC Current measurement, 2 ranges
72 x 144 V DC	DC Voltage measurement 1) mV input, 4 ranges 2) Voltage input, 5 range

Applicable Regulations and Standards

Protection Class Front	IP 20 to IEC EN 60 529 IP 50
Device safety	IEC EN 61 010
EMC immunity	IEC/ EN 61 000-4-1 to 4
EMC radiated interference	IEC/ EN 61326 Class B

Specifications :

Display:

Display range	: 19999
Decimal point position	: Selectable by short links at the rear side of Display.
Negative display indication	: "- "
Digit height	: 26 mm / 7- segment digits.
Overload indication	: Last 4 digits blank. (1)

Measuring ranges:

[Max. Overload 120% of full-scale range value]

Model	**RISH DPM 72 x 144 4½ DIGIT A DC**
DC Current Ranges Available (Voltage drop < 600 mV)	**0…20 mA** and **4…20 mA** (Range selectlon by input choice)
Model	**RISH DPM 72 x 144 4½ DIGIT V DC**
1) DC mV Ranges Available (Input current < 300uA)	**0…60 mV**, **0…75 mV,** **0…150 mV and** **0…200 mV** (Range selection by input choice)
2) DC Voltage Ranges Available	**0…2V** or **0…20V** or **0…200V** or **0…500V** or **0…1000V** or Please specify any non-standard input Voltage range, available on request.

Accuracy :

RISH DPM 72 x144 4½ DIGIT A DC:	Measuring Accuracy Current (Voltage drop < 600 mV)	: < 0.1% of range + 1 digit.
	Temperature coefficient	: 300 ppm / °C.
	Zero point drift	: 200 ppm / °C.
	Range adjustment span	: from 10% to 100% of range.

RISH DPM 72 x 144 4½ DIGIT V DC:

1) milli Volt ranges:	Measuring Accuracy milli volts (Input current < 300uA)	: < 0.1% of range + 1 digit.
	Temperature coefficient	: 300 ppm / °C.
	Zero point drift	: 200 ppm / °C.
	Range adjustment span	: from 10% to 100% of range.
2) Volt ranges:	Measuring Accuracy Volts (Input current < 300uA)	: < 0.1% of range + 1 digit.
	Temperature coefficient	: 300 ppm / °C.
	Zero point drift	: 200 ppm / °C.
	Range adjustment span	: from 10% to 100% of range.

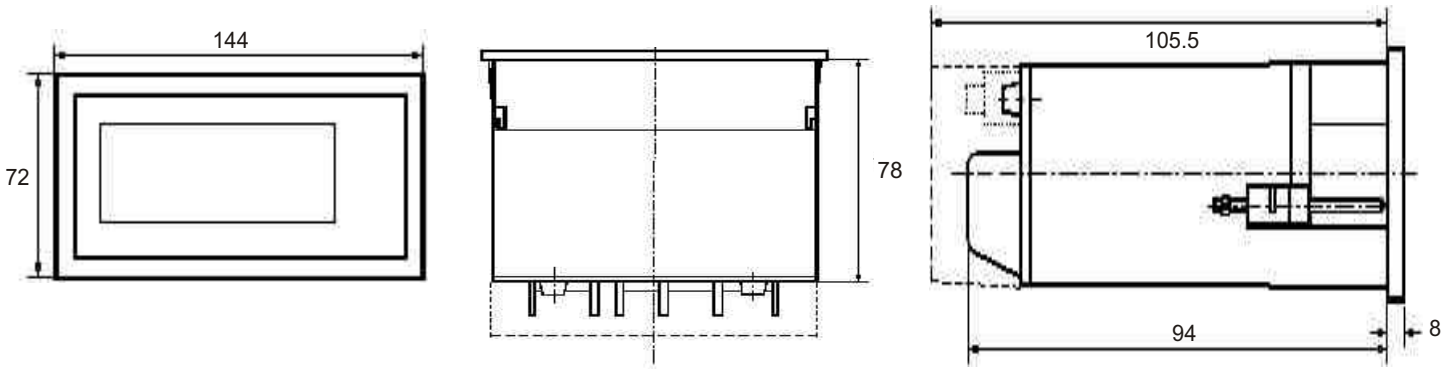
Power supply:	4 ranges for power supply are available.		
	Direct voltage DC	: 24 V DC (+/- 15%)	5.5W approx. (isolated).
		: 110 V DC (+ 10% / -15%)	5.5W approx. (isolated).
	Alternating voltage AC	: 110 V AC (+ 10% / -15%)	5.5W approx. (isolated).
		: 230 V AC (+10 % / -15%)	5.5W approx. (isolated).
	Frequency	: 47 – 60 Hz.	

Environmental conditions:	Climatic class	**:** Class 2 to VDE / DIN 3540.
	Operating temperature	: 0 ... 55 °C.
	Storage temperature	: -25 °C ... +65 °C.
	Safety class	: II to IEC 348 / VDE 0411.
	IP Protection	: IEC EN 60 529. For Back : IP 20. Front : IP 50 (IP 54 on request)
	Device safety	: According to IEC EN 61 010.
	High Voltage Test	: For AC Aux.: 2 kV AC, 50 Hz for 1 minute. For DC Aux. : 1 kV AC, 50 Hz for 1 minute.
	EMC immunity	: According to IEC / EN 61 000-4-1 up to 4.
	EMC radiated interference	: According to IEC / EN 61326 class B.

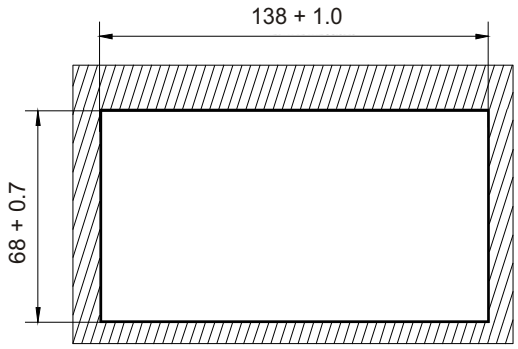
Dimensions and Weights:	Bezel size	: 72 mm x 144 mm DIN 43 700
	Panel cut-out	: 68 + 0.7 mm x 138 + 1.0 mm
	Overall depth	: 94 mm.
	Weight	: 500 gm. Approx.

Sundry:	Connections	: Plug-in screw terminal blocks.

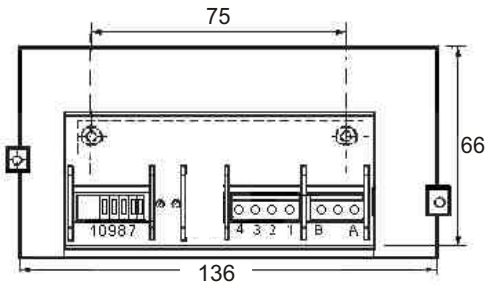
Design & Installation



Installation cut-out



Connections



Connections for RISH DPM **72 x 144 4½ Digit**

CONNECTION FOR RISH DPM 72 x 144 A DC

Current DC : 0… 20 mA : Terminals 1 and 2 with terminals 5 and 6 open.

4… 20 mA : Terminals 1 and 3 plus jumper between terminals 5 and 6.

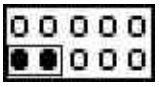
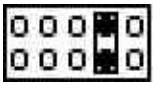
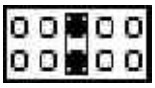
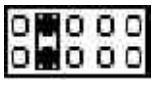
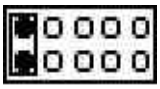
CONNECTION FOR RISH DPM 72 x 144 V DC – milli Volts

Milli Volts DC : 0… 60 mV / 0… 75 mV : Terminals 1 and 2.
0…150 mV : Terminals 1 and 3.
0… 200 mV : Terminals 1 and 4.

CONNECTION FOR RISH DPM 72 x144 V DC –Volts

Volt s DC : 0…2 V or
0…20 V or
0…200 V or
0…500 V or
0…1000 V
: Terminals 1 and 4.

Decimal point Adjustment :
Decimal point position is selectable by short links at the rear side

Short Link Position	Decimal point position on Display
	**XXXXX**
	**X.XXXX**
	**XX.XXX**
	**XXX.XX**
	**XXXX.X**

Order Details

	Example 1	Example 2
Type	RISH DPM 72 x 144 A DC	RISH DPM 72 x 144 V DC
Measuring Input	0 … 20 mA	0…1000 V
Display Full-Scale	0 … 19999	0…19999
Display caption	mA	V
Aux. Supply	24V DC.	230V AC, 50 Hz

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
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www.rishabh.co.in

NA2 DIGITAL METERS WITH BARGRAPH

Features:

MOD BUS · Password protection · Linear char. · IP50

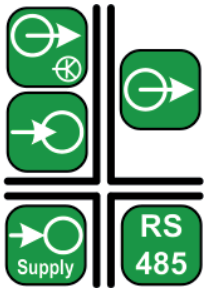
Inputs:

DC · 0...20 mA · 60 mV · Password protection · 0..10 V

Outputs:

0..20 mA · 0..10 V · 2x · RS 485

Galvanic isolation:

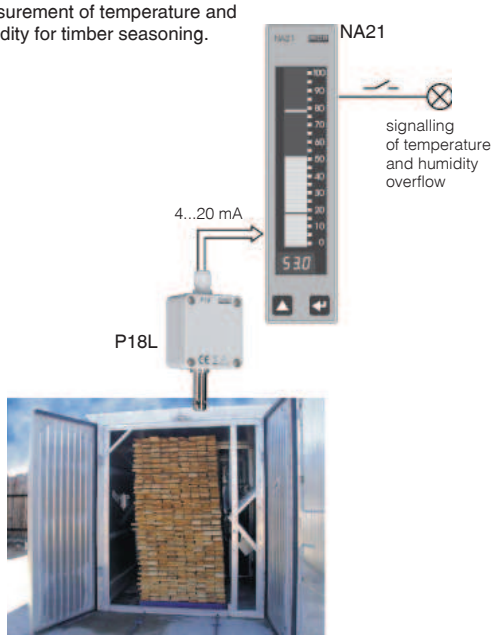


Lack of galvanic isolation between channels

- Universal input with range of temperature sensors.
- Measurement of d.c. voltage or d.c. current.
- High resolution of bargraphs: 100 segments (NA21), 64 segments (NA22).
- Conversion of measured values into a standard current or voltage signal.
- Communication in SCADA systems (interfejs RS485/ Modbus),
- Signalling of set alarm quantity overflow.

Example of application

Measurement of temperature and humidity for timber seasoning.



Inputs

Kind of input/measuring range	Basic error in % of range ± 1 digit	Code
0...60 mV	0.2%	**01**
0...150 mV		**02**
0...200 mV		**03**
0...300 mV		**04**
0...1 V		**05**
0...2 V		**06**
0...10 V		**07**
0...20 V		**08**
0...200 V		**09**
0...20 mA		**10**
0...200 mA		**11**
0...2 A		**12**
Pt100 (-200...850)°C	0.1%	Programmed ranges by means of meter push-buttons. Write code **00** in order.
Ni100 (-60...180)°C	0.2%	
Ni100 (-50...180)°C	0.2%	
J (Fe-CuNi) -20...999°C	0.1%	
K (NiCr-NiAl) -50...999°C	0.1%	
N (NiCrSi-NiSi) -50...999°C	0.1%	
E (NiCr-CuNi) -20...800°C	0.1%	
R (PtRh13-Pt) -50...999°C	0.5%	
S (PtRh10-Pt) -50...999°C	0.5%	
-5...60 mV, measuring of voltage	0.1%	
0...400 Ω, pot. transmitter	0.1%	

Outputs

Kind of output	Features
Relay output	• electromagnetic relay; NOC voltageless contacts, maximal load-carrying capacity: - voltage: 250 V a.c. or 220 V d.c. - current: 1 A d.c., a.c. - resistance load: 125 VA, 60 W
Programmable analog output	• galvanic isolation with resolution 0.025% of range; current programmable 0/4...20 mA, load resistance ≤ 500 Ω or voltage programmable 0...10 V, load resistance ≥ 500 Ω, output response time: 100 ms.
Digital	• **interface type**: RS-485; **transmission protocol:** MODBUS; **baud rate:** 2400, 4800, 9600 bit/s.
Additional supply output	• 24 V d.c., maximal load 30 mA

External features

Readout field	**NA21**	**fluorescent display;** digits of 5 mm high, indication range -199...999 **bargraph** of 84 mm long (100 segments) green-blue, bargraph accuracy: ± 1 segment
	NA22	**2 displays with 3 LED digit each;** digits of 7.6 mm high, indication range -199...999 **2 bargraphs** of 92 mm long (64 segments), red, green or red-green; bargraph accuracy: ± 1 segment
Weight	< 0.7 kg	
Overall dimensions	36 × 144 × 130 mm	panel cut-out: $34^{+0,6} \times 137^{+1}$ mm
Protection grade (acc. to EN 60529)	IP50 from frontal side	IP20 from terminal side

Contact Details:

Rishabh Instruments Pvt Ltd
F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

NA2 DIGITAL METERS WITH BARGRAPH

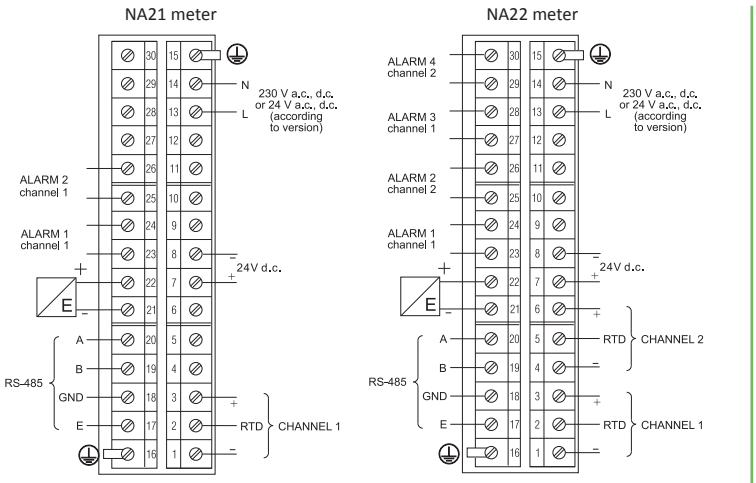
Rated operating conditions

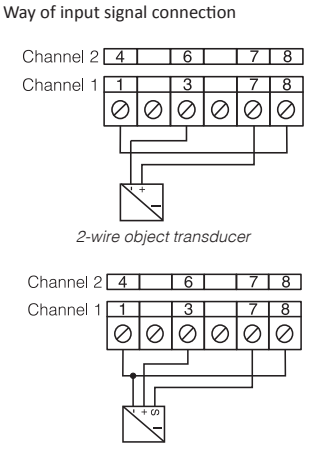
Supply voltage	95...253 V a.c./d.c., 20...40 V a.c./d.c.	Power consumption < 10 VA
Temperature	ambient: -10...23...55°C	Storage: -20...70°C
Relative humidity	< 75%	Condensation inadmissible

Safety and compatibility requirements

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Pollution grade	2	acc. to EN 61010-1
Installation category	III	
Maximal phase-to-earth operating voltage	300 V	

Connection diagrams





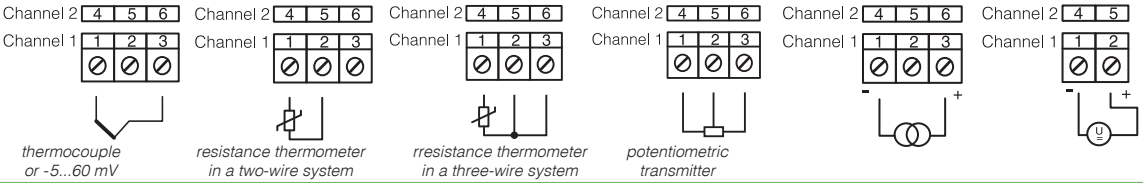


Table 1. Execution code:

NA2 -	XX	X	XX	X	X	X	X
Number of channels and display colour:							
one channel [1] - blue-green	1B						
two channels [1] - green	2G						
two channels [1] - red	2R						
two channels [1] - red+ green	2D						
Input:							
d.c. current		I					
d.c. voltage		U					
temperature		T					
Measuring range:							
write the range code from the „**INPUTS**" table on order [2]			XX				
			99				
Alarm output:							
1 relay per channel				1			
2 relays per channel				2			
Output:							
without output					0		
current analog output (0/4...20 mA)					1		
voltage analog output (0...10 V)					2		
RS-485 interface (LUMBUS transmission protocol)					3		
RS-485 interface (MODBUS transmission protocol)					4		
Supply:							
95...253 V a.c./d.c.						1	
20...40 V a.c./d.c.						2	
Acceptance tests:							
without an extra quality inspection certificate							8
with an extra quality inspection certificate							7
acc. to customer's request [2]							X

1) - One channel - fluorescent display, two-channel-LED displays

2) - after agreeing with the manufacturer

Ordering Example:

The code: **NA2 - 1B U 01 1 2 1 8** means:

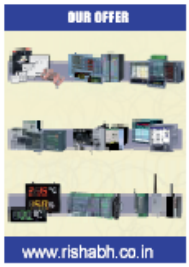
NA2 - digital meter with bargraph of NA2 type,
1B - one-channel meter with a blue-green display,
U - input: d.c. voltage,
01 - measuring range: 0...60 mV,
1 - alarm output: 1 relay per channel,
2 - output: voltage analog output (0...10 V),
1 - supply voltage: 95...253 V a.c./d.c.,
8 - without an extra quality inspection certificate.

See also:

Temperature and humidity transducers P18 i P18L types.

Programmable transducer of temperature, resistance, voltage from shunt and standard signals - P20

N30 digital meters with a 3-colour display and free LPConfig program.



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Contact Details:

Rishabh Instruments Pvt Ltd
F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

NA3 DIGITAL METERS WITH BARGRAPH

Features:

MOD BUS · RTC · Linear char. · Password protection · IP40

Input:

DC · 0...20 mA · 60 mV · Password protection · 0..10 V

Outputs:

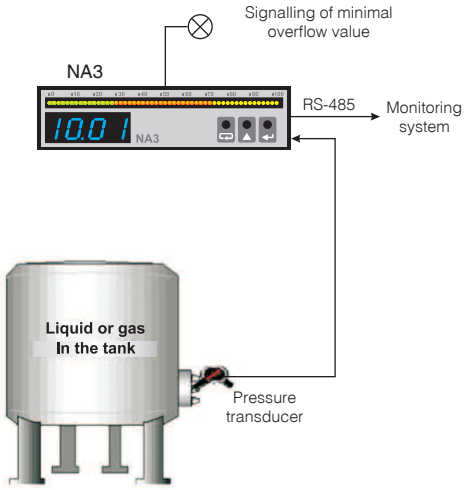
0..20 mA · 0..10 V · RS 485

Galvanic isolation:

Supply · RS 485

- Universal input for the measurement of d.c. current, d.c. voltage and temperature,
- 3 or 7-colour bargraph,
- Programming of bargraph colour depending on the measured quantity value,
- Signalling of set alarm value overflow,
- Storage of measured signal in programmed time segments (750 samples),
- Current or voltage analog output,
- Communication in SCADA systems (RS485/Modbus interface RTU and ASCII).

Example of application



Inputs

Kind of input	Measuring range
Pt100	-200...850°C
Pt500	-200...850°C
Pt1000	-200...850°C
J (Fe-CuNi)	-30...1100°C
K (NiCr-NiAl)	-50...1370°C
N (NiCrSi-NiSi)	-100...1300°C
E (NiCr-CuNi)	-20...850°C
R (PtRh13-Pt)	0...1760°C
S (PtRh10-Pt)	0...1760°C
T (Cu-CuNi)	-50...400°C
Resistance	0...400 Ω, 0...4000 Ω
Voltage	0...60 mV, Rinp. > 9 MΩ 0...3 V, Rinp. > 4 MΩ 0...10 V, Rinp. > 4 MΩ 0...200 V, Rinp. > 4 MΩ 0...600 V, Rinp. > 4 MΩ
Current	0...5 mA, Rinp. = 4 Ω 0...20 mA, Rinp. = 4 Ω 0...2 A, Rinp. = 10 mΩ ± 10% 0...5 A, Rinp. = 10 mΩ ± 10%

Outputs

Kind of output	Features
Analog output	• galvanic isolation with resolution 0.025% of range; current programmable 0/4...20 mA, load resistance ≤ 500 Ω or voltage programmable 0...10 V, load resistance ≥ 500 Ω, output response time: 100 ms.
Relay output	• 1 or 2 relays; NOC voltageless contacts, maximal load-carrying capacity: - voltage: 250 V a.c., 150 V d.c. - current: 5 A 30 V d.c., 250 V a.c. - resistance load: 1250 VA, 150 W
Open collector (OC) type	• voltageless of OC type with npn transistor, maximal load: 25 mA, range of appended voltages: 5...24 V d.c.
Digital	• **interface type**: RS-485; **transmission protocol:** MODBUS ASCII (8N1, 7E1, 7O1), RTU (8N2, 8E1, 8O1, 8N1); **baud rate:** 2400, 4800, 9600 bit/s.

External features

Readout field	**NA3-F**	**4 LED displays** with 7 segments, digits of 7 mm high, indication range -1999...9999 **multicoloured bargraph** of 82 mm long, 45 segments in a 3-colour version or with 25 segments in 7-colour version
	NA3-B	**multicoloured bargraph as above**
	NA3-D	**4 LED displays** with 7 segments, digits of 14 mm high, 3 alarm diodes, indication range as above.
Weight	< 0.3 kg	
Overall dimensions	96 × 24 × 125 mm	panel cut-out: $92^{+0,5} \times 22.2^{+0,5}$ mm
Protection grade (acc. to EN 60529)	IP40 from frontal side	IP20 from terminal side

Contact Details:

Rishabh Instruments Pvt Ltd
F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

NA3 DIGITAL METERS WITH BARGRAPH

Rated operating conditions

Supply voltage	95...253 V a.c./d.c., 20...40 V a.c./d.c.	Power consumption < 8 VA
Temperature	ambient: -10...23...55°C	Storage: -25...85°C
Relative humidity	< 95%	Condensation inadmissible

Safety and compatibility requirements

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Safety requirements		acc. to EN 61010-1

Table 1. Execution code:

	NA3 -	X	X	X	X	X	X	X	X	XX	X
Meter version:											
with a bargraph and digital display		F									
with a bargraph*		B									
with a digital display		D									
Bargraph colour:											
without bargraph (NA3D)			0								
3-colour bargraph (R, G, R+G)			T								
7-colour bargraph (R, G, B, R+G, R+B, G+B, R+G+B)			M								
Display colour:											
without display				0							
red				R							
green				G							
blue				B							
Input signal:											
universal input					U						
Analog output signal:											
lack						0					
current programmable 0/4...20 mA						1					
voltage programmable 0...10 V						2					
Additional output:											
lack*							0				
RS-485 digital output + 1 relay							1				
RS-485 digital output + 1 output of OC type							2				
2 relays*							3				
2 outputs of OC type*							4				
Supply:											
95...253 V a.c./d.c.								1			
20...40 V a.c./d.c.								2			
on order**								X			
Kind of terminals:											
socket-screw plug									0		
Version:											
standard										00	
custom-made**										XX	
Acceptance tests:											
without an extra quality inspection certificate											8
with an extra quality inspection certificate											7
acc. to customers's request**											X

* - in case of a NA3-B X X X X (0, 3 or 4), one must fill the table 2
** - after agreeing with the manufacturer

Connection diagrams

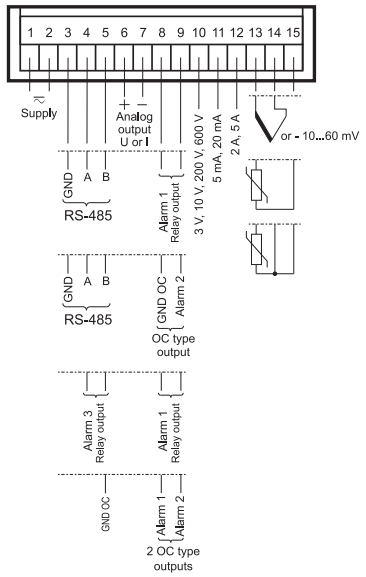


Fig. 1 External connections of the NA3 meter.

Programmable parameters of the NA3 meter Table 2.

Input	Input type	tYP	
	Mathematical functions	Func	
	Kind of compensation	Con	
	Measuring averaging time	Cnt	
	Displayed characteristic	Indi	
	Measured value	I_H1	
	Displayed value	d_Y1	
	Measured value	I_H2	
	Displayed value	d_Y2	
Bargraph	Bargraph type	tYPb	
	Bargraph colour	coLr	
	Lower bargraph threshold	brL	
	Upper bargraph threshold	brH	
Alarm 1	Lower alarm threshold	PrL	
	Upper alarm threshold	PrH	
	Alarm type	tYPA	
	Delay of alarm operation	dLY	
	Support of alarm signalling	HOLd	
	Colour of the lower threshold alarm index	CurL	
	Colour of the upper threshold alarm index	CurH	
Alarm 2	Lower alarm threshold	PrL	
	Upper alarm threshold	PrH	
	Alarm type	tYPA	
	Delay of alarm operation	dLY	
	Support of alarm signalling	HOLd	
	Colour of the lower threshold alarm index	CurL	
	Colour of the upper threshold alarm index	CurH	
Alarm 3	Lower alarm threshold	PrL	
	Upper alarm threshold	PrH	
	Alarm type	tYPA	
	Delay of alarm operation	dLY	
	Support of alarm signalling	HOLd	
	Colour of the lower threshold alarm index	CurL	
	Colour of the upper threshold alarm index	CurH	
Output	Output characteristic	IndO	
	Displayed value	d_H1	
	Value on the analog output	O_Y1	
	Displayed value	d_H2	
	Value on the analog output	O_Y2	
	RS-485 baud rate	bAud	
	Kind of RS-485 transmission	trYb	
	Device address	Adr	

Ordering Example:

The code: **NA3 - F T R U 0 1 1 0 00 8** means:

- **NA3** - digital meter with bargraph of NA3 type,
- **F** - with a bargraph and digital display,
- **T** - with a 3-colour display,
- **R** - red display colour,
- **U** - universal input,
- **0** - lack of analog output signal,
- **1** - additional output: RS-485 digital output + 1 relay,
- **1** - supply voltage: 95...253 V a.c./d.c.,
- **0** - socket-screw plug,
- **00** - standard version,
- **8** - without extra quality requirements.

See also:

Temperature and humidity transducers P18 i P18L types.

Programmable transducer of temperature, resistance, voltage from shunt and standard signals - P20.

N30 digital meters with a 3-colour display and free LPConfig program.

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F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

NA5 DIGITAL METER WITH BARGRAPH

Features:

MOD BUS · RTC · Linear char. · Password protection · IP50

Input:

DC · 0...20 mA · 60 mV · Password protection · 0..10 V

Outputs:

0..20 mA · 0..10 V · U · RS 485

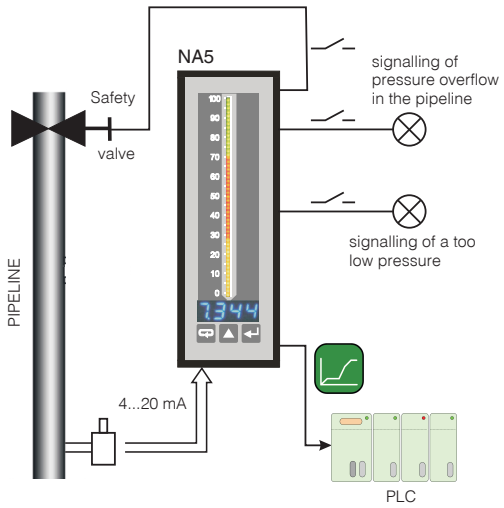
Galvanic isolation:

Supply · RS 485

- 3 or 7-colour bargraph with programmable colour switching over,
- Recording of 750 measuring segments, released temporary,
- Universal input,
- Programmable indication characteristic and bargraph magnifier,
- Up to 8 programmable alarm outputs,
- Communication in SCADA systems (RS485/Modbus interface),
- Conversion of measured quantity into an analog standard signal for automation systems.

Example of application

Measurement of pressure in a pipeline



Inputs

Kind of input	Measuring range	Measurement sub-range
Pt100	-200...850°C	320°C
Pt500	-200...850°C	230°C
Pt1000	-200...850°C	290°C
J (Fe-CuNi)	-100...1100°C	350°C, 700°C
K (NiCr-NiAl)	-100...1370°C	450°C, 950°C
N (NiCrSi-NiSi)	-100...1300°C	550°C, 1000°C
E (NiCr-CuNi)	-100...850°C	250°C, 520°C
R (PtRh13-Pt)	0...1760°C	
S (PtRh10-Pt)	0...1760°C	
T (Cu-CuNi)	-50...400°C	
Resistance	0...10 kΩ	110 Ω, 220 Ω, 460 Ω, 950 Ω, 2100 Ω, 5000 Ω,
Voltage	± 300 mV, Rinp. > 9 MΩ ± 0...600 V, Rinp. > 4.2 MΩ	19 mV, 35 mV, 75 mV, 155 mV, 5 V, 11 V, 22 V, 45 V, 90 V, 180 V, 360 V
Current	± 40 mA, Rinp. < 4 Ω ± 5 A, Rinp. = 10 mΩ ± 10%	5 mA, 11 mA, 23 mA, 1.8 A, 3.8 A

Intensity of current flowing through the resistance thermometer: < 400 µA
Resistance of wires connecting the resistance thermometer with the meter: < 20 Ω/1 wire

Outputs

Kind of output	Features
Analog output	• galvanically isolated with resolution 0.025% of range; current programmable 0/4...20 mA, load resistance ≤ 500 Ω or voltage programmable 0...10 V, load resistance ≥ 500 Ω, output response time: 100 ms.
Relay output	• 4 electromagnetic relays; NOC voltageless contacts, maximal load-carrying capacity: - voltage: 250 V a.c., 150 V d.c. - current: 5 A 30 V d.c., 250 V a.c. - resistance load: 1250 VA, 150 W
Open collector (OC) type	• voltageless of OC type with npn transistor, maximal load: 25 mA, range of appended voltages: 5...30 V d.c.
Digital	• **interface type**: RS-485; **transmission protocol:** MODBUS ASCII (8N1, 7E1, 7O1), RTU (8N2, 8E1, 8O1, 8N1); **baud rate:** 2400, 4800, 9600 bit/s
Additional supply output	• 24 V d.c., maximal load 30 mA

External features

Readout field	**4 LED displays**	7-segment digits of 7 mm high, measuring range -1999...9999
	bargraph	bargraph of 88 mm length: - 55 segments in three-colour version - 29 segments in seven-colour version
		Bargraph resolution: programmable
		Bargraph accuracy: ± 0.5 segment
Weight	< 0.4 kg	
Overall dimensions	48 × 144 × 100 mm	panel cut-out: $44^{+0,5} \times 137,5^{+0,5}$ mm
Protection grade (acc. to EN 60529)	IP50 from frontal side	IP20 from terminal side

Contact Details:

Rishabh Instruments Pvt Ltd
F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

NA5 DIGITAL METER WITH BARGRAPH

RATED OPERATING CONDITIONS

Supply voltage	95...253 V a.c./d.c., 20...40 V a.c./d.c.	Power consumption < 12 VA
Temperature	ambient: -10...23...55°C	Storage: -25...85°C
Relative humidity	< 95%	Condensation inadmissible

SAFETY AND COMPATIBILITY REQUIREMENTS

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Pollution grade	2	acc. to EN 61010-1
Installation category	III	
Maximal phase-to-earth operating voltage	input: 600 V	
	supply: 300 V	
	relays: 300 V	
	analog output: 50 V	
	RS-485: 50 V	

TABLE 1. EXECUTION CODE:

NA5 -	X	X	X	X	X	X	X	X	XX	X
Bargraph colour:										
three-color (R, G, R+G)	T									
seven-color (R, G, B, R+G, R+B, G+B, R+G+B)	M									
Display colour:										
lack of display*		0								
red		R								
green		G								
blue		B								
Input signal:										
universal input			U							
Analog output signal:										
lack				0						
current programmable 0/4...20 mA				1						
voltage programmable 0...10 V				2						
Digital output signal:										
lack					0					
RS-485 digital output					1					
Additional output:										
lack*						0				
4 relays						4				
8 outputs of OC type						8				
Supply:										
95...253 V a.c./d.c.							1			
20...40 V a.c./d.c.							2			
Kind of terminals:										
screwed plug-in sockets								0		
Version:										
standard									00	
custom-made**									XX	
Acceptance tests:										
without an extra quality inspection certificate										8
with an extra quality inspection certificate										7
acc. to customer's request**										X

* - in case of meters without displays, one must order an RS-485 digital output
** - after agreeing with the manufacturer

CONNECTION DIAGRAMS

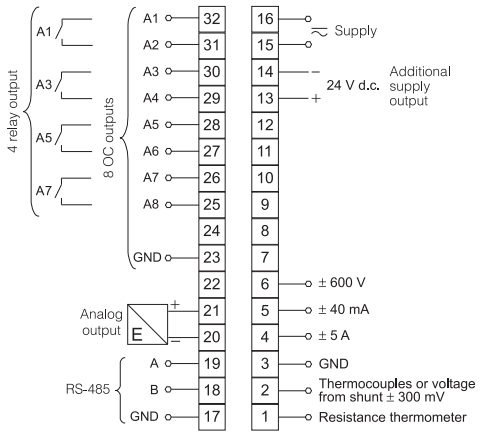


Fig. 1 Description of the terminal strip.

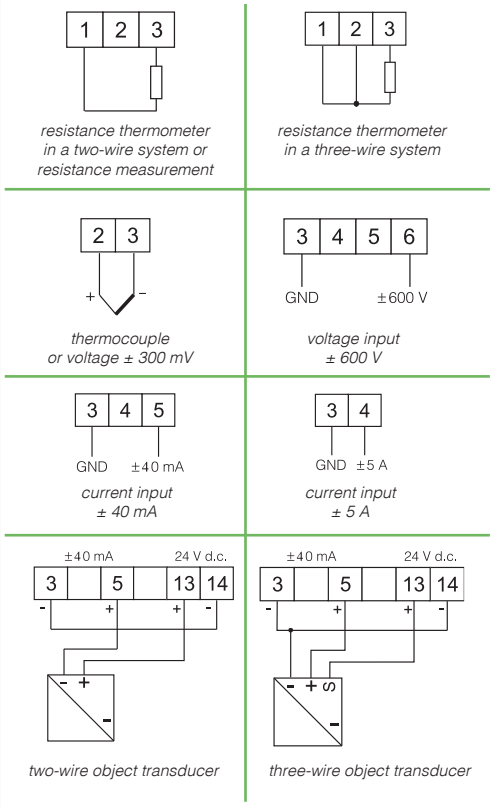


Fig. 2 Connection way of input signals.

Ordering Example:

The code: **NA5 - M G U 1 1 4 1 0 00 8** means:

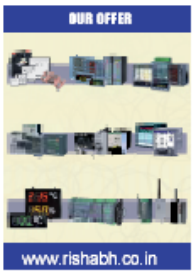
NA5 - digital meter with bargraph of NA5 type,
M - with a seven-colour bargraph,
G - green display colour,
U - with an universal input signal,
1 - analog programmable output signal,
1 - RS-485 output current signal,
4 - additional digital output signal: 4 relays,
1 - supply voltage: 95...253 V a.c./d.c.,
0 - terminals of plug-in socket type,
00 - standard version,
8 - without extra quality requirements.

SEE ALSO:

Temperature and humidity transducers P18 i P18L types.

Programmable transducer of temperature, resistance, voltage from shunt and standard signals - P20

N30 digital meters with a 3-colour display and free LPConfig program.



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Contact Details:

Rishabh Instruments Pvt Ltd
F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

NA6 DIGITAL METER WITH BARGRAPH

Features:

MODBUS · RTC · Linear charac. · Password protection · RS 485 · IP50

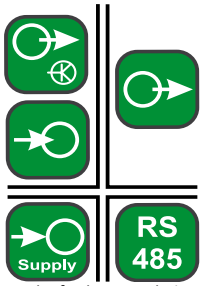
Inputs:

DC · 0 .. 20 mA · 60 mV · 0..10 V

Outputs:

0 .. 20 mA · 0..10 V · U

Galvanic isolation:

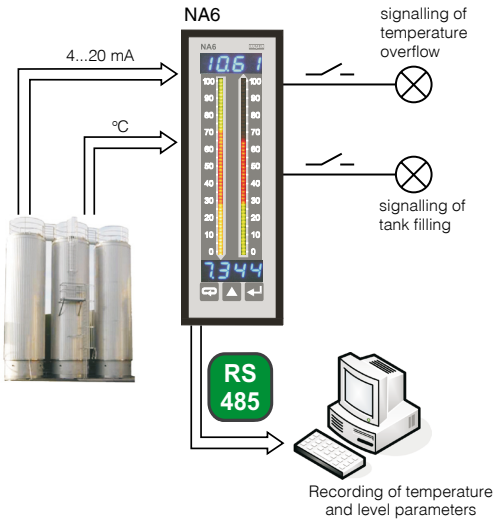


Lack of galvanic isolation between channels

- 2 independend measuring channels with an universal input,
- 3 or 7-colour bargraph with programmable colour switching over,
- Recording of 750 measuring segments, released temporary,
- Programmable indication characteristic and bargraph magnifier,
- Up to 8 programmable alarm outputs,
- Mathematical operations on channels,
- Communication in SCADA systems (RS485/Modbus interface),
- Conversion of measured quantity into an analog standard signal for automation systems.

Example of application

Measurement of level and temperature in a tank



Inputs

Kind of input	Measuring range	Measurement subrange
Pt100	-200...850°C	320°C
Pt500	-200...850°C	230°C
Pt1000	-200...850°C	290°C
J (Fe-CuNi)	-100...1100°C	350°C, 700°C
K (NiCr-NiAl)	-100...1370°C	450°C, 950°C
N (NiCrSi-NiSi)	-100...1300°C	550°C, 1000°C
E (NiCr-CuNi)	-100...850°C	250°C, 520°C
R (PtRh13-Pt)	0...1760°C	
S (PtRh10-Pt)	0...1760°C	
T (Cu-CuNi)	-50...400°C	
Resistance	0...10 kΩ	110 Ω, 220 Ω, 460 Ω, 950 Ω, 2100 Ω, 5000 Ω,
Voltage	± 300 mV, Rinp. > 9 MΩ ± 0...600 V, Rinp. > 4.2 MΩ	19 mV, 35 mV, 75 mV, 155 mV, 5 V, 11 V, 22 V, 45 V, 90 V, 180 V, 360 V
Current	± 40 mA, Rinp. < 4 Ω ± 5 A, Rinp. = 10 mΩ ± 10%	5 mA, 11 mA, 23 mA, 1.8 A, 3.8 A
Intensity of current flowing through the resistance thermometer: < 400 µA Resistance of wires connecting the resistance thermometer with the meter: < 20 Ω/1 wire		

Outputs

Kind of output	Features
Analog output	• galvanically isolated with resolution 0.025% of range; current programmable 0/4...20 mA, load resistance ≤ 500 Ω or voltage programmable 0...10 V, load resistance ≥ 500 Ω, output response time: 100 ms.
Relay output	• 4 electromagnetic relays; NOC voltageless contacts, maximal load-carrying capacity: - voltage: 250 V a.c., 150 V d.c. - current: 5 A 30 V d.c., 250 V a.c. - resistance load: 1250 VA, 150 W
Open collector (OC) type	• voltageless of OC type with npn transistor, maximal load: 25 mA, range of appended voltages: 5...30 V d.c.
Digital	• **interface type**: RS-485; **transmission protocol:** MODBUS ASCII (8N1, 7E1, 7O1), RTU (8N2, 8E1, 8O1, 8N1); **baud rate:** 2400, 4800, 9600 bit/s
Additional supply output	• 24 V d.c., maximal load 20 mA

EXTERNAL FEATURES

Readout field	**2 × 4 LED displays**	7-segment digits of 7 mm high, measuring range -1999...9999
	bargraph	bargraph of 88 mm length: - 48 segments in three-colour version - 27 segments in seven-colour version
		Bargraph resolution: programmable
		Bargraph accuracy: ± 0.5 segment
Weight	< 0.4 kg	
Overall dimensions	48 × 144 × 100 mm	panel cut-out: $44^{+0,5} \times 137.5^{+0,5}$ mm
Protection grade (acc. to EN 60529)	IP50 from frontal side	IP20 from terminal side

Contact Details:

Rishabh Instruments Pvt Ltd
F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

NA6 DIGITAL METER WITH BARGRAPH

Rated operating conditions

Supply voltage	95...253 V a.c./d.c., 20...40 V a.c./d.c.	Power consumption < 13 VA
Temperature	ambient: -10...23...55°C	Storage: -25...85°C
Relative humidity	< 95%	Condensation inadmissible

Safety and compatibility requirements

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Pollution grade	2	acc. to EN 61010-1
Installation category	III	
Maximal phase-to-earth operating voltage	input: 600 V	
	supply: 300 V	
	relays: 300 V	
	analog output: 50 V	
	RS-485: 50 V	

Table 1. Execution code:

NA6 -	X	XX	X	X	X	X	X	X	XX	X
Bargraph colour:										
three-colour (R, G, R+G)	T									
seven-colour (R, G, B, R+G, R+B, G+B, R+G+B)	M									
Display colour on channels 1 and 2:										
without display*		00								
red-red		RR								
red-green		RG								
red-blue		RB								
green-red		GR								
green-green		GG								
green-blue		GB								
blue-red		BR								
blue-green		BG								
blue-blue		BB								
Input signal:										
universal input			U							
Analog output signal:										
lack				0						
current programmable 0/4...20 mA				1						
voltage programmable 0...10 V				2						
Digital output signal:										
lack					0					
RS-485 output signal					1					
Additional output:										
lack*						0				
4 relays						4				
8 outputs of OC type						8				
Supply:										
95...253 V a.c./d.c.							1			
20...40 V a.c./d.c.							2			
Kind of terminals:										
screwed plug-in sockets								0		
Version:										
standard									00	
custom-made**									XX	
Acceptance tests:										
without an extra quality inspection certificate										8
with an extra quality inspection certificate										7
acc. to customer's request**										X

* - in case of meters without displays, one must order an RS-485 digital output
** - after agreeing with the manufacturer

Connection diagrams

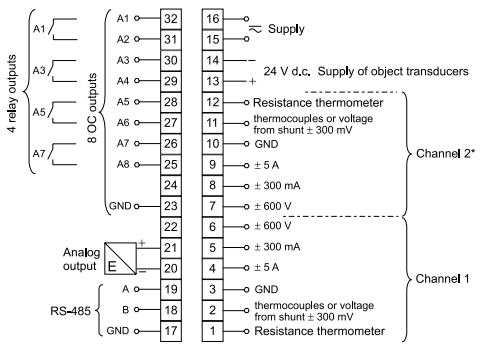


Fig. 1 Description of the terminal strip.

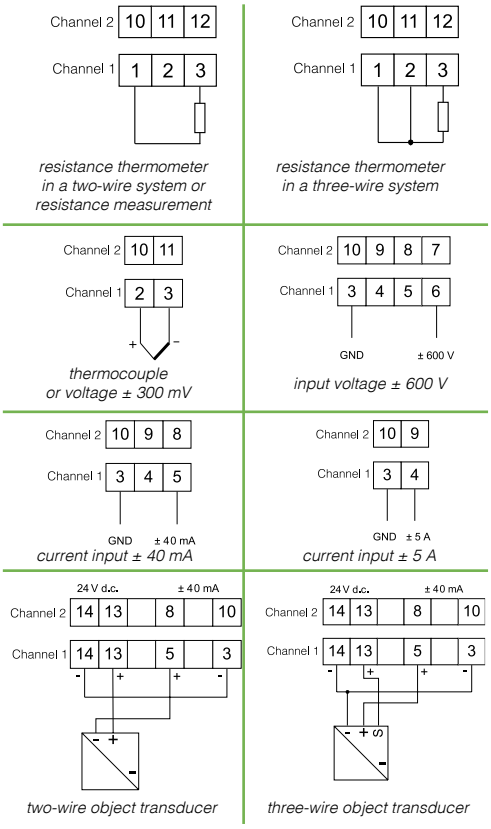


Fig. 2 Connection way of input signals.

Ordering Example:

The code: **NA6 - M GB U 1 1 4 1 0 00 8** means:

- **NA6** - digital meter with bargraph of NA6 type,
- **M** - with a seven-color bargraph,
- **GB** - green-blue display color on channel 1 and 2,
- **U** - with an universal input signal,
- **1** - analog programmable output signal: 0/4...20 mA,
- **1** - RS-485 output signal,
- **4** - with additional 4 relays digital output signal,
- **1** - supply voltage: 95...253 V a.c./d.c.,
- **0** - terminals of plug-in socket type,
- **00** - standard version,
- **8** - without extra quality requirements.

See also:

Temperature and humidity transducers P18 i P18L types.

N30 digital meters with a 3-colour display and free LPConfig program.

Visualization programs enabling to build distributed control and measuring systems like: RISHABH-CONTROLS, RISHABH-PROCES RISHABH-3000.

For more information about RISHABH products please visit our website: www.rishabh.co.in

Contact Details:

Rishabh Instruments Pvt Ltd
F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

N20 DIGITAL PANEL METER

Features:

PD14 Programmer
Program LPConfig
IP65
Linear char.
3-color display

Inputs:

-20...20 mA
-10...10 V
60 mV

Outputs:

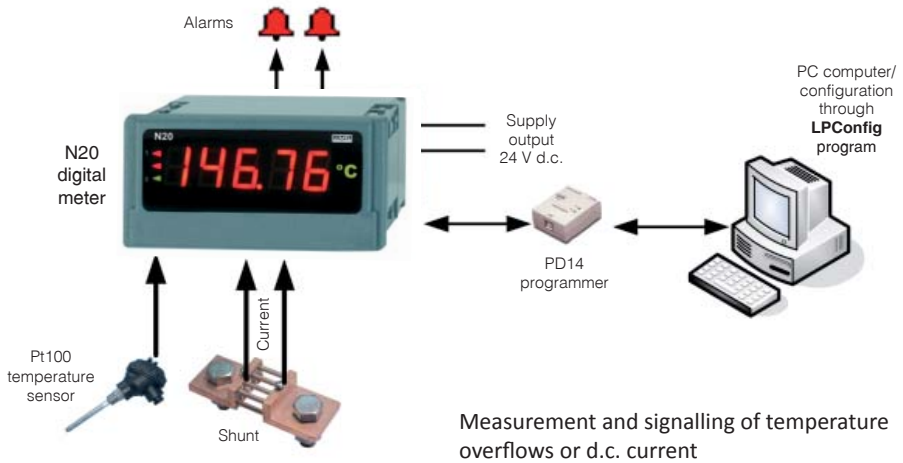
U
2 x

Galvanic isolation:

Supply
PD14 Programmer

- Measurement of voltage or d.c. current and temperature (Pt100, J, K):
- Three-colour LED display (5 digits, 14 mm high).
- 2 alarm outputs of OC type.
- Galvanic separation between the supply, measuring inputs and the programmer input.
- Programmable parameters through the PD14 programmer:
  - recounting of indications (individual characteristic),
  - two alarms of OC type operating in 6 working modes,
  - display colour programmable in three intervals,
  - thresholds of displayed overflows,
  - highlight of the unit,
  - automatic or manual compensation: temperature of cold ends (for J, K) or wire resistance (for Pt100),
  - measurement averaging time.
- Supply of object transducers.

Example of application



Measurement and signalling of temperature overflows or d.c. current

Inputs

Kind of inputs	Measuring range	Parameters	Basic error
Voltage input	-11...-10...60...66 mV -1...0...10...11 V -11...10...10...11 V	Input resistance: >1 MΩ	± (0.2% of range + 1 digit)
Current input	-1...0...20...22 mA 3,6...4...20...22 mA -22...-20...20...22 mA	Input resistance: 10 Ω ± 1% Input resistance: 10 Ω ± 1% Input resistance: 5 Ω ± 1%	
Temperature measurement Pt100	- 50...400°C		
Temperature measurement through J thermocouple	- 50...1200°C		
Temperature measurement through K thermocouple	- 50...1370°C		

Outputs

Kind of inputs	Features
Alarm outputs	• 2 alarm outputs of OC type
Outputs for external supply of transducers	• 24 V ± 5%, 30 mA

External features

Readout field	5 digital LED displays. Indication range -19999...99999 Digit height: 14 mm	Three-colour display (changes of colour depend on the displayed value): red, green, orange.
Weight	< 0.25 kg	
Overall dimensions	96 × 48 × 64 mm	Panel cut-out: $92^{+0,6} \times 45^{+0,6}$ mm
Protection grade (acc. to EN 60529)	From frontal side: IP65	From terminal side: IP10

Contact Details :
Rishabh Instruments Pvt. Ltd
F-31, MIDC, Satpur
Nashik - 422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.CO.in

N20 DIGITAL PANEL METER

Rated operating conditions

Supply voltage	85...253 V a.c. (45...65 Hz) or d.c., 20...40 V a.c. (45...65 Hz) or d.c.	Power consumption < 6 VA
Temperature	Ambient: -10...23...55°C	Storage: -25...85°C
Relative humidity	< 95%	Condensation inadmissible
Operating position	any	

Safety and compatibility requirements

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Safety requirements		acc. to EN 61010-1
Galvanic isolation between supply and measuring input	3.2 kV d.c.	

Connection diagrams

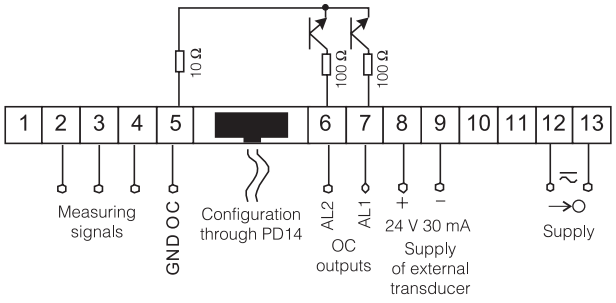


Fig. 1 Electrical connections of N20 meter.

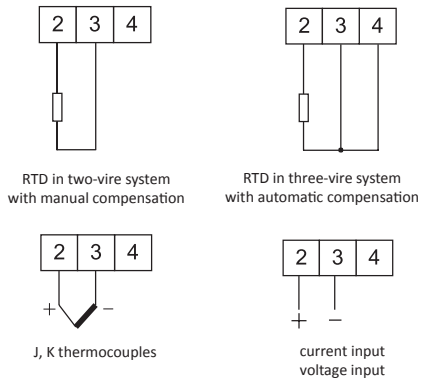


Fig. 2 Connections of measuring inputs.

Ordering

Table 1. Ordering codes:

N20 -	X	X	XX	XX	X
Input:					
Pt100: -50...400°C	1				
Thermocouple J: -50...1200°C	2				
Thermocouple K: -50...1370°C	3				
0...20 mA	4				
4...20 mA	5				
± 20 mA	6				
0...60 mV	7				
0...10 V	8				
± 10 V	9				
Supply:					
85...253 V a.c./d.c.		1			
20...40 V a.c./d.c		2			
Unit:					
unit code number acc. to table 2			XX		
Version:					
standard				00	
custom-made*				XX	
non-standard settings				99	
Acceptance tests:					
without extra requirements					8
with an extra quality inspection certificate					7
acc. to customer's request*					X

* - after agreeing with the manufacturer

Table 2. Codes of highlighted unit:

Code	Unit	Code	Unit	Code	Unit
00	without unit	17	µm	34	bar
01	V	18	mm	35	rad
02	A	19	cm	36	Ω
03	mV	20	m	37	kΩ
04	kV	21	km	38	%
05	MV	22	l	39	°
06	mA	23	l/s	40	turns
07	kA	24	l/h	41	rps
08	MA	25	ms	42	rpm
09	°C	26	s	43	rph
10	°F	27	h	44	m/h
11	K	28	N	45	km/h
12	Hz	29	kN	46	imp
13	kHz	30	Pa		
14	Ah	31	hPa	XX	on order[1]
15	kAh	32	kPa		
16	m/s	33	MPa		

1) - after agreeing with the manufacturer

ORDER EXAMPLES

Example 1

The code **N20 - 9 1 01 00 8** - means: N20 meter with voltage input on ± 10 V, supply: 85... 253 V a.c., without extra quality requirements, „V" unit

Example 2

The code **N20 - 5 2 38 99 8 + description of non-standard settings**

Parameter	Range/Value
Displayed colour of the upper measured value	red
Displayed colour of the median measured value	green
Displayed colour of the lower measured value	orange
Upper threshold - KpH	44.00
Lower threshold - KpL	40.00
Decimal point	000.00

Highlight of the measured value	ON
Automatic compensation of terminal temperature	OFF
Manual compensation of terminal temperature	0
Averaging time	1 s
Upper overflow of measurement	99999
Lower overflow of measurement	-19999
Individual characteristic	ON
Parameter ***a*** of the individual characteristic	10.0
Parameter ***b*** of the individual characteristic	0
Kind of the alarm output 1 operation	ON
Upper value to switch the alarm 1 - Aon	40.00
Lower value to switch the alarm 1 - Aoff	0.00
Delay of the alarm 1 switching time	0 second
Kind of the alarm output 2 operation	n-on
Upper value to switch the alarm 2 - Aon	44.00
Lower value to switch the alarm 2 - Aoff	40.00
Delay of the alarm 2 switching time	0 second

- means: N20 meter with current input on 4...20 mA, supply: 20...40 V a.c./d.c., executed acc. to given detailed parameter description by the user, without extra quality requirements

Caution! When ordering a meter with parameters different than standard, one must give values of **ALL** parameters.

See also:

LPConfig

Free LPConfig program for programming LUMEL's products. Available on our website.

Programmable transducer of temperature, resistance, voltage from shunt and standard signals - P20

N30 digital meters with a 3-colour display and free LPConfig program.

For more information about Rishabh Products please visit our website: www.rishabh.co.in

Contact Details :
Rishabh Instruments Pvt. Ltd
F-31, MIDC, Satpur
Nashik - 422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.CO.in

N25 DIGITAL PANEL METERS

Features:

IP65 | Program LPConfig | PD14 Programmer | Linear char.

Inputs:

AC | DC | V | -20...20 mA | -10...10 V | 60 mV

Outputs:

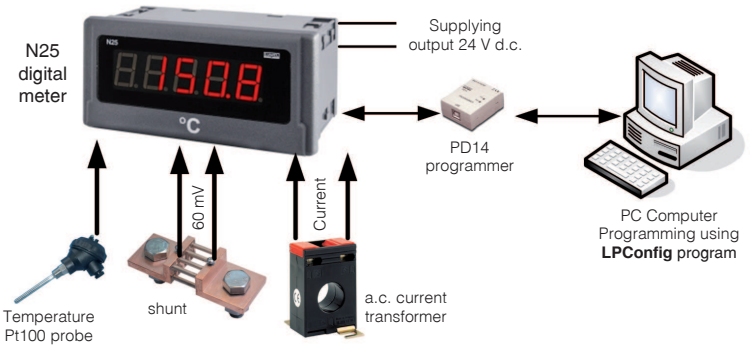
U

Galvanic isolation:

PD14 Programmer | Sup.

- Destined for measurement of d.c. voltage or d.c. current, temperature through Pt100 resistance thermometers, J, K thermocouples, a.c. voltage and a.c. current.
- 5 LED digit displays with 14 mm digit high.
- Parameters programmable by PD14 programmer:
  - precision of displayed results (decimal point),
  - measurement averaging time,
  - recounting of indications (individual characteristic),
  - automatic or manual compensation: cold junction temperature for measurement with thermocouples or wire resistance for measurement with Pt100 (N25T).

Example of application



Measurement and display:
- temperature
- analog signals
- d.c. current and voltage
- rms current and voltage.

Inputs

Type	Measuring ranges		Parameters	Overloads	Errors
N25S	-11 mV...-10 mV...60 mV...66 mV		Input resistance >1 MΩ	Short duration overload (1s): - voltage input: 10 Un - current input: 5 In Sustained overload: 110% Un, 110% In	**Basic error**: **± (0.2% of range + 1 digit)** **Additional error** from ambient temperature changes: **± (50% of basic error/10K)**
	-66 mV...-60 mV...60 mV...66 mV				
	-0.5 V...0 V...10 V...11 V				
	-11 V...-10 V...10 V...11 V				
	-1 mA...0 mA...20 mA...22 mA		Input resistance 10 Ω ±1%		
	3.6 mA...4 mA...20 mA...22 mA		Input resistance 10 Ω ±1%		
N25T	Pt100	-50°C...150°C	Current flowing through the sensor: < 300 µA. Resistance of wires connecting RTD with the meter: - max 5 Ω (per wire) for automatic compensation - max 10 Ω (per wire) for manual compensation	Short duration overload (1s) Input of sensors: 30 V	**Basic error**: **± (0.2% of range + 1 digit)** **Additional errors:** • compensation of cold junction temperature changes: **± 0.2% of range,** • from ambient temperature changes: **± (50% of basic error/10K).**
		-50°C...400°C			
	Thermo-couple J	-50°C...1200°C			
	Thermo-couple K	-50°C...1370°C			
N25Z	1...100...120 V a.c.		Input resistance > 2 MΩ	Short term overload (1s): voltage input: 2 Un (< 1000V), current input: 10 In Sustained overload: 150% Un (for 400 V input), 120% (for remaining inputs), 120% In	**Basic error**: • voltage and current: **± (0.5% of range + 1 digit)** in frequency range 20...500 Hz • frequency: **± (0.02% of range + 1 digit)** **Additional error** from ambient temperature changes: **± (50% of basic error/10K)**
	2.5...250...300 V a.c.				
	4...400..600 V a.c.				
	20...500 Hz (in voltage range: 24...480 V)				
	0.01...1...1,2 A a.c.		Input resistance 10 mΩ ±10%		
	0.05...5...6 A a.c.		Input resistance 2 mΩ ±10%		
N25H	0...100...110 V d.c.		Input resistance > 2MΩ	Short term overload (1s): voltage input: 2 Un (< 1000V), current input: 10 In Sustained overload: 150% Un (for ± 400 V input), 120% (for remaining inputs), 120% In	**Basic error**: **± (0.2% of range + 1 digit)** **Additional error** from ambient temperature changes: **± (50% of basic error/10K)**
	0...250...275 V d.c.				
	-120...-100...100...120 V d.c.				
	-300...-250...250...300 V d.c.				
	-600...-400...400...600 V d.c.				
	-1.2...-1...1...1.2 A d.c.		Input resistance 10 mΩ ±10%		
	-6...-5...5...6 A d.c.		Input resistance 2 mΩ ±10%		

Outputs

For N25S and N25T	Output for supply external transducers	24 V ± 5%, 30 mA

Contact Details:

Rishabh Instruments Pvt Ltd
F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

N25 DIGITAL PANEL METERS

External features

Weight	< 0.25 kg	
Overall dimensions	96 x 48 x 64 mm with terminals	
Protection grade (acc. to EN 60529)	ensured by the housing: IP65	from the terminal side: IP 20
Display	5-digit LED display, 14 mm high, red colour	indication range: -19999...99999

Rated operating conditions

Supply voltage	230 V ± 10% a.c. (45...65 Hz); 110 V ± 10% a.c. (45...65 Hz) 24 V ± 10% a.c. (45...65 Hz); 85...253 V a.c. (40...400 Hz) or d.c.;20...40 V a.c. (40...400 Hz) or d.c.	input power consumption: 6 VA
Temperature	ambient: -10...23...55˚C	storage: -25...85 ˚C
Relative humidity	≤ 95%	condensation inadmissible
Operating position	any	
Preheating time	30 min	
Averaging time	≥ 0.5 s	1 second default set

Safety and compatibility requirements

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Isolation between circuits	basic	acc. to EN 61010-1
Pollution grade	2	
Installation category	III (for the 400 V option - category II)	
Maximal phase-to-earth operating voltage	for supply circuits: 300 V, for measuring circuits: 600 V - cat. II	
	for other circuits: 50 V	
Altitude above sea level	< 2000 m	

Connection diagrams

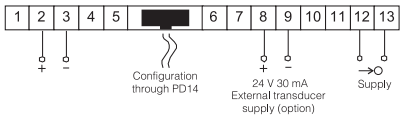


Fig. 1. Electrical connections of the N25S meter

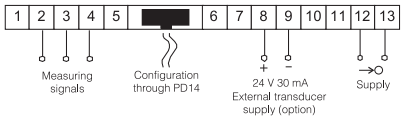


Fig. 2. Electrical connections of the N25T meter

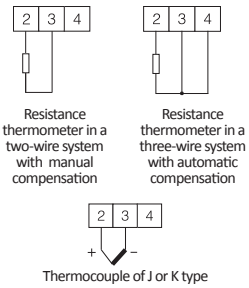


Fig. 3. Connections of N25T measuring inputs

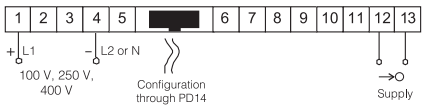


Fig. 4. Electrical connections of N25Z and N25H meters for the measurement of voltage (and frequency only in N25Z)

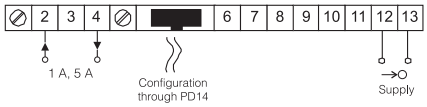


Fig. 5. Electrical connections of N25Z i N25H meters for the current measurement

Ordering

Table 1. Ordering codes:

N25 -	X	X	X	XX	XX	X	X
Input kind:							
standard: voltage, current	S						
temperature: thermocouples, resistance thermometers	T						
a.c. signals	Z						
d.c. signals: high voltage and high current	H						
Input:							
see table 2		X					
Supply:							
230 V a.c.			1				
110 V a.c.			2				
24 V a.c.			3				
85...253 V a.c./d.c. with supply output 24 V/30 mA*			4				
20...40 V a.c./d.c. with supply output 24 V/30 mA*			5				
Unit:							
see table 3				XX			
Version:							
standard					00		
non-standard settings					NS		
custom-made**					XX		
Language:							
Polish						P	
English						E	
other**						X	
Acceptance tests:							
without extra requirements							0
with an extra quality inspection certificate							1
acc. to customer's request**							X

* - the output is only in N25S and N25T meters
** - after agreeing with the manufacturer

Table 2. Input signals

Nr	N25S	N25T	N25Z	N25H
1	0...20 mA	Pt100: -50...150°C	100 V a.c.	±100 V d.c.
2	4...20 mA	Pt100: -50...400°C	250 V a.c.	±250 V d.c.
3	0...60 mV	Thermocouple J	400 V a.c.	±400 V d.c.
4	0...10 V	Thermocouple K	1 A a.c.	±1 A d.c.
5	± 60 mV		5 A a.c.	±5 A d.c.
6	± 10 V		20...500 Hz	0...100 V d.c.
7				0...250 V d.c.

Table 3. Codes of printed units:

Code	Unit	Code	Unit	Code	Unit
00	without unit	06	mA	12	bar
01	˚C	07	kA	13	kPa
02	%	08	kV	14	MPa
03	A	09	Hz	XX	on order
04	V	10	turns		
05	mV	11	rpm		

Table 4. Example of non-standard settings:

Parameter	Range/Value
Decimal point	000,0 for I, U
Averaging time	1 s
Upper measurement overflow	99999
Lower measurement overflow	-19999
Individual characteristic	enabled
Parameter **a** of the individual characteristic	5
Parameter **b** of the individual characteristic	0

Order example 1 :
The code **N25Z-2 1 04 00 E 0** means:
N25Z - digital meter for a.c. signals
2 - input: 250 V a.c.
1 - supply: 230 V a.c.
04 - unit: V
00 - standard version
E- English language
0 - without extra requirements

Order example 2 :
The code **N25S-1 4 02 E 1** means:
N25S - digital meter for d.c. signal
1 - input: 0...20mA
4 - supply: 85...253 V a.c.
02 - unit: %
NS - non-standard settings, display range: 0...100.0
E - English languge
1 - with an extra quality inspection certificate

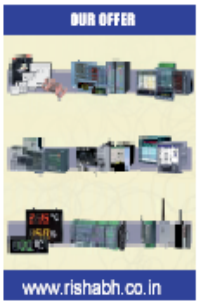
See Also:

LPConfig

Free LPConfig software for easy programming of RISHABH - products Available on our website

PD14 programmer - unit for programming RISHABH - products with USB connection, LPCon compatible.

N30 digital panel meters with three-colour display.



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Contact Details:

Rishabh Instruments Pvt Ltd
F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

N30U DIGITAL PANEL METER

FEATURES:

- trój-kolorowy wyświetlacz
- LPConfig Program
- MODBUS
- RTC
- 21 points charact.
- Password protection
- IP65

INPUTS:

- -10..10 V
- -20..20 mA
- 60 mV

OUTPUTS:

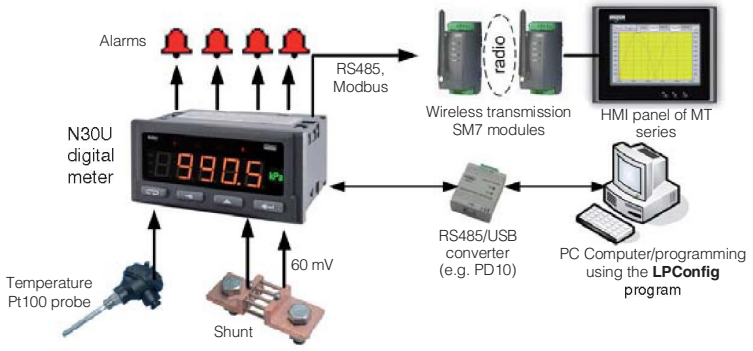
- 0 .. 20 mA
- 0..10 V
- 2x
- 2x
- RS 485

GALVANIC ISOLATION:

- Supply
- RS 485

- Measurement: temperature, resistance, standard signals.
- 3-colour display (14 mm high), programmable in 3 ranges of the measured value.
- Meter programming from keyboard or through the RS-485 interface by means of the free LPConfig program.
- 4 alarm outputs with signalling on LED diodes, working in 6 different modes.
- Conversion of any measured value into an analog signal 0/4...20 mA or 0...10 V.
- Storage of minimal and maximal values for all measured quantities.
- Supply of object transducers (option).
- 21-point individual characteristic for the measured value.

EXAMPLE OF APPLICATION



Measurement and visualization of analog standard signals: Pt100, TC, 20 mA, 60 mV, 10 V. Measured parameters are transmitted to the HMI operator panel through radio modules.

INPUT

Input kind	Maximal measuring range	Class	Additional error
Pt100	-205...855°C (-200...850°C)	0.1	Additional error of: • thermocouple cold junction temperature compensation: **0.1% of measuring range** • wire resistance compensation: **0.1% of the 400 Ω range**
Pt500			
Pt1000			
400 Ω	0...410 Ω (0...400 Ω)		
4000 Ω	0...4100 Ω (0...4000 Ω)		
Thermocouple of J type	-220...1210°C (-200...1200°C)		
Thermocouple of K type	-280...1382°C (-270...1300°C)		
Thermocouple of N type	-250...1310°C (-240...1200°C)		
Thermocouple of E type	-280...1010°C (-270...1000°C)		
Thermocouple of R type	-55...1775°C (-50...1770°C)		
Thermocouple of S type	-55...1775°C (-50...1770°C)		
Voltage input 0...10 V	-13...13 V (-10...10 V)		
Current input	-24...24 mA (-20...20 mA)		
Voltage input	-10...63 mV (0...60 mV)		
Current time	00.00...23.59	0.5 sek./ 24h	

OUTPUTS

Output kind	Properties	Remarks
Relay output	• 2 x relays, voltageless NOC contacts load-carrying capacity 250 V a.c./ 0.5 A a.c. • 2 x relays, voltageless switched contacts load-carrying capacity 250 V a.c./ 0.5 A a.c.	
Analog output	• current programmable 0/4..20mA, load resistance ≤ 500 Ω • voltage programmable 0...10 V load resistance ≥ 500 Ω	Error of analog output: **0.2% of the set range** Additional error from temperature changes: **50% of the class/10K**
OC output	• typu OC, passive npn, 30 V d.c./30 mA	Voltageless output
Auxiliary supply	• 24 V d.c./ 30mA	

DIGITAL INTERFACE

Interface type	transmission protocol	modes	baud rates
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	4.8, 9.6, 19.2, 38.4, 57.6, 115.2 kbit/s

Contact Details:

Rishabh Instruments Pvt Ltd
F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

N30U DIGITAL PANEL METER

EXTERNAL FEATURES

Readout field	5 digit LED display - indication range -19999..99999 digit height: 14 mm	three-color display (colour changes depending on displayed value): red, green, orange
Weight	< 0.2 kg	
Dimensions	96 × 48 × 93 mm	Panel cut-out: $92^{+0,6} \times 45^{+0,6}$ mm
Protection grade (acc. to EN 60529)	from frontal side: IP65	from rear side: IP 10

RATED OPERATING CONDITIONS

Supply voltage	85...253 V a.c. (40...400 Hz) or d.c., 20...40 V a.c. (40...400 Hz) or d.c.	power consumption < 6 VA
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	condensation inadmissible
Operating position	any	
External magnetic field	0...400 A/m	

SAFETY AND COMPATIBILITY REQUIREMENTS

Electromagnetic compatibility	Noise immunity	acc. to EN 61000-6-2
	Noise emissions	acc. to EN 61000-6-4
Isolation between circuits	basic	acc. to EN 61010-1
Pollution grade	2	
Installation category	III	
Maximal phase-to-earth operating voltage	for the supply circuit: 300 V	
	for remaining circuits: 50 V	
Altitude above sea level	< 2000 m	

CONNECTION DIAGRAMS

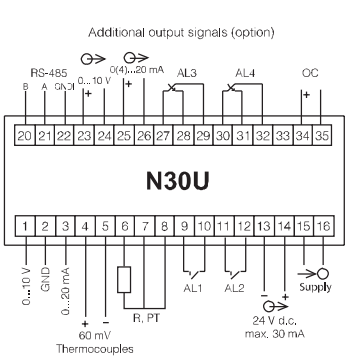


Fig. 1 Description of signals on connection strips.

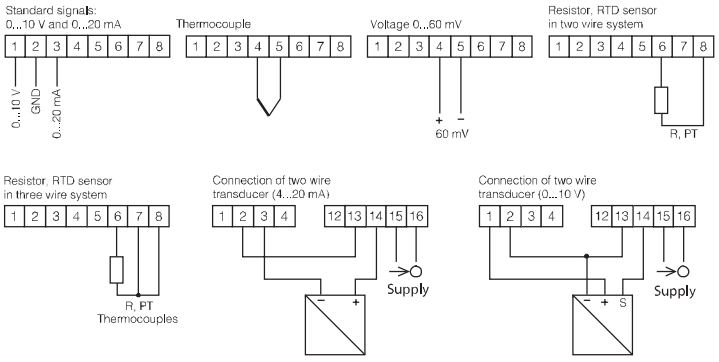


Fig. 2 Ways of the meter connection.

ORDERING

TABLE 1. ORDERING CODES:

N30U -	X	X	XX	XX	X	X
Supply:						
85...253 V a.c./d.c.	1					
20...40 V a.c./d.c.	2					
Additional outputs:						
lack		0				
OC output, RS-485, analog outputs		1				
OC output, RS-485, analog outputs switched-over relay outputs		2				
Unit:						
unit code acc. to the table 2			XX			
Version:						
standard				00		
custom-made*				XX		
Language:						
Polish					P	
English					E	
other*					X	
Acceptance tests:						
without extra requirements						0
with an extra quality inspection certificate						1
acc. to customer's request*						X

Order example: The code **N30U - 1 0 26 00 E 0** means

N30U - programmable N30U digital panel meter
1 - supply: 85...253 V a.c./d.c.
0 - lack of additional outputs
26 - unit "°C" acc. to tabel 2
00 - standard option
E - English language
0 - without extra requirements

TABLE 2. CODES OF HIGHLIGHTED UNIT:

Code	Unit	Code	Unit	Code	Unit
00	lack of unit	20	kVAh	40	pcs
01	V	21	MVAh	41	imp
02	A	22	Hz	42	rps
03	mV	23	kHz	43	m/s
04	kV	24	Ω	44	l/s
05	mA	25	kΩ	45	turns/min
06	kA	26	°C	46	rpm
07	W	27	°F	47	mm/min
08	kW	28	K	48	m/min
09	MW	29	%	49	l/min
10	var	30	%RH	50	m^3/min
11	kvar	31	pH	51	pcs/h
12	Mvar	32	kg	52	m/h
13	VA	33	bar	53	km/h
14	kVA	34	m	54	m^3/h
15	MVA	35	l	55	kg/h
16	kWh	36	s	56	l/h
17	MWh	37	h	XX	on order*
18	kvarh	38	m^3		
19	Mvarh	39	turns		

* - after agreeing with the manufacturer

SEE ALSO:

LPConfig

Free LPConfig software for easy programming of RISHABH - products Available on our website

KD7 recorder with MODBUS master protocol for recording data measured by N30U.

Shunts for measurement DC current from 5A up to 15 kA. For more details see our ANALOG METERS catalogue.

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marketing@rishabh.co.in

www.rishabh.co.in

N30O DIGITAL PANEL METER

FEATURES:

three-colour display
LPConfig Program
MOD BUS
RTC
21 points charact.
Password protection
IP65

INPUTS:

Hz

OUTPUTS:

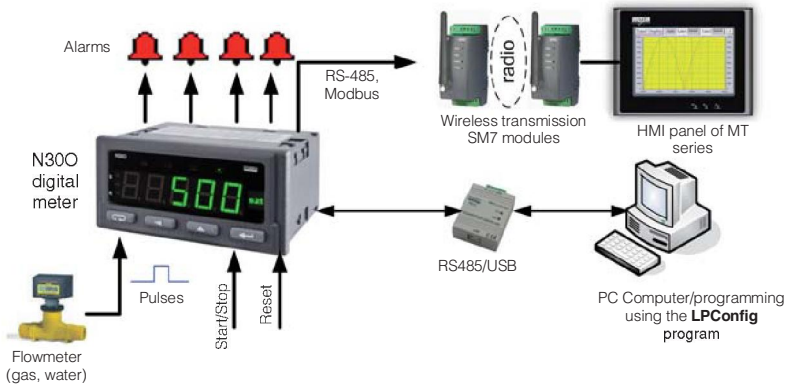
0 .. 20 mA
0..10 V
U
2x
2x
RS 485

GALVANIC ISOLATION:

Supply
RS 485

- Measurement: number of pulses, frequency, rotational speed, period, worktime counter.
- Two impulse counters, co-operation with encoders.
- Counter of actual and total values.
- 3-colour display (14 mm high), programmable in 3 ranges of the measured value.
- Meter programming from keyboard or through the RS-485 interface by means of the free LPConfig program.
- 4 alarm outputs with signalling on LED diodes, working in 6 different modes.
- Conversion of any measured value into an analog signal 0/4...20 mA or 0...10 V.
- Storage of minimal and maximal values for all measured quantities.
- Supply of object transducers (option).
- 21-point individual characteristic for the measured value.
- Mathematical function.
- Firmware updating (option).

EXAMPLE OF APPLICATION



Measurement and visualization of the water/gas flow. The measured value is transmitted to the operating panel via radio modules

INPUTS

Input signal:	Input kind	Indication range	Maximal frequency of input	Class	Remarks
Voltage 5...36 V d.c.	Number of pulses IN1/IN2	-19 999..99 999	10 kHz/ 8 kHz	-	with signal filtering 2 kHz
	Frequency < 10 kHz	0.05..99 999 Hz	100 kHz	0,1	with signal filtering 100 Hz
	Frequency > 10 kHz	1...99 999 Hz (measuring range up to 1 MHz)	1 MHz	0,1	
	Rotational speed	0.05...99 999 [rpm]	100 kHz	0,1	
	Period t < 10 s	0.0001...11 [s]		0,1	
	Period t < 10 s	0.0001...3600 [s]		0,1	
	Worktime counter	0...99 999 [h]		0,5 sek./ 24 h	
	Encoder	-19 999...99 999	10 kHz		with signal filtering 2 kHz
	Current time	00.00...23.59		0,5 sek./ 24 h	

OUTPUTS

Output kind	Properties	Remarks
Relay output	• 2 x relays, voltageless NOC contacts load-carrying capacity 250 V a.c./ 0.5 A a.c. • 2 x relays, voltageless switched contacts load-carrying capacity 250 V a.c./ 0.5 A a.c.	
Analog output	• current programmable 0/4..20mA, load resistance ≤ 500 Ω • voltage programmable 0...10 V load resistance ≥ 500 Ω	Error of analog output: **0.2% of the set range** Additional error from temperature changes: **50% of the class/10K**
OC output	• typu OC, passive npn, 30 V d.c./30 mA	
Auxiliary supply	• 24 V d.c./ 30mA	

DIGITAL INTERFACE

Interface type	transmission protocol	modes	baud rates
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	4.8, 9.6, 19.2, 38.4, 57.6, 115.2 kbit/s

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N30O DIGITAL PANEL METER

External Features

Readout field	5-digit LED display - indication range -19999..99999 digit height: 14 mm	three-colour display (color changes depending on displayed value): red, green, orange
Weight	< 0.2 kg	
Overall dimensions	96 × 48 × 93 mm	Panel cut-out: $92^{+0,6} \times 45^{+0,6}$ mm
Protection grade (acc. to EN 60529)	from frontal side: IP65	from rear side: IP 10

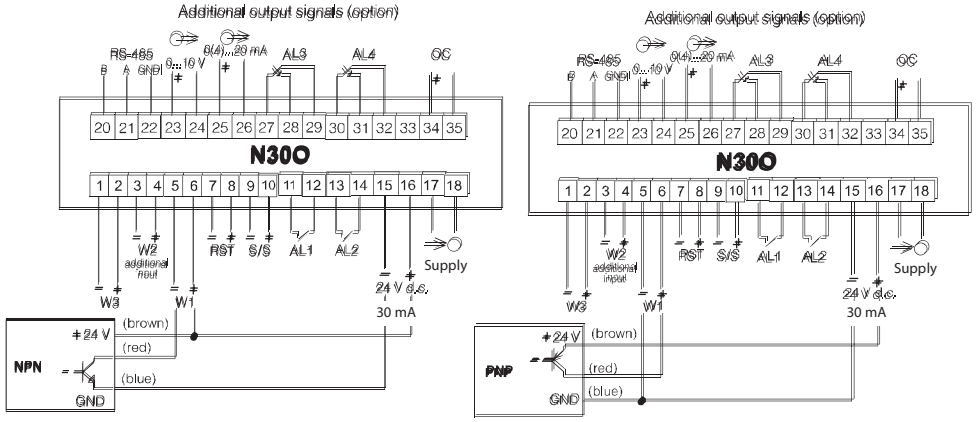
Rated Operating Conditions

Supply voltage	85...253 V a.c. (40...400 Hz) or d.c., 20...40 V a.c. (40...400 Hz) or d.c.	power input < 6 VA
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	condensation inadmissible
Operating position	any	
External magnetic field	0...400 A/m	

Safety And Compatibility Requirements

Electromagnetic compatibility	Noise immunity	acc. to EN 61000-6-2
	Noise emissions	acc. to EN 61000-6-4
Isolation between circuits	basic	acc. to EN 61010-1
Pollution grade	2	
Installation category	III	
Maximal phase-to-earth operating voltage	for the supply circuit: 300 V	
	for remaining circuits: 50 V	
Altitude above sea level	< 2000 m	

Connection Diagrams



Connections of the transducer with the OC output of NPN and PNP type.

Ordering

Table 1. Ordering codes:

N30O -	X	X	XX	XX	X	X
Supply:						
85...253 V a.c.(40...400 Hz) or d.c.	1					
20...40 V a.c. (40...400 Hz) or d.c.d.c.	2					
Additional outputs:						
lack		0				
OC output, RS-485, analog outputs		1				
OC output, RS-485, analog outputs switched-over relay outputs		2				
Unit:						
unit code acc. to the table 2			XX			
Version:						
standard				00		
custom-made*				XX		
Language:						
Polish					P	
English					E	
other*					X	
Acceptance tests:						
without extra requirements						0
with an extra quality inspection certificate						1

Order example: The code **N30O - 1 0 01 00 E 0** means:
N30O - programmable N30O digital panel meter
1 - supply: 85...253 V a.c./d.c.
0 - lack of additional outputs
01 - unit "V" acc. to tabel 2
00 - standard option
E - English language
0 - without extra requirements

Table 2. Codes of highlighted unit:

Code	Unit	Code	Unit	Code	Unit
00	lack of unit	20	kVAh	40	szt.
01	V	21	MVAh	41	imp
02	A	22	Hz	42	rps
03	mV	23	kHz	43	m/s
04	kV	24	Ω	44	l/s
05	mA	25	kΩ	45	obr/min
06	kA	26	°C	46	rpm
07	W	27	°F	47	mm/min
08	kW	28	K	48	m/min
09	MW	29	%	49	l/min
10	var	30	%RH	50	m^3/min
11	kvar	31	pH	51	szt./h
12	Mvar	32	kg	52	m/h
13	VA	33	bar	53	km/h
14	kVA	34	m	54	m^3/h
15	MVA	35	l	55	kg/h
16	kWh	36	s	56	l/h
17	MWh	37	h	XX	on order*
18	kvarh	38	m^3		
19	Mvarh	39	obr		

* - after agreeing with the manufacturer

See Also:

LPConfig

Free LPConfig software for easy programming of RISHABH - process Available on our website

KD7 recorder with MODBUS master protocol for recording data measured by N30O meter.

SM3 binary inputs module. For readout of binary states and pulses through RS-485 protocol.

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Contact Details:

Rishabh Instruments Pvt Ltd
F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

N30P DIGITAL PANEL METER

Features:

- 3-colour display
- LPConfig compatible
- MOD BUS
- RTC
- Password protection
- IP65

Inputs:

- AC

Outputs:

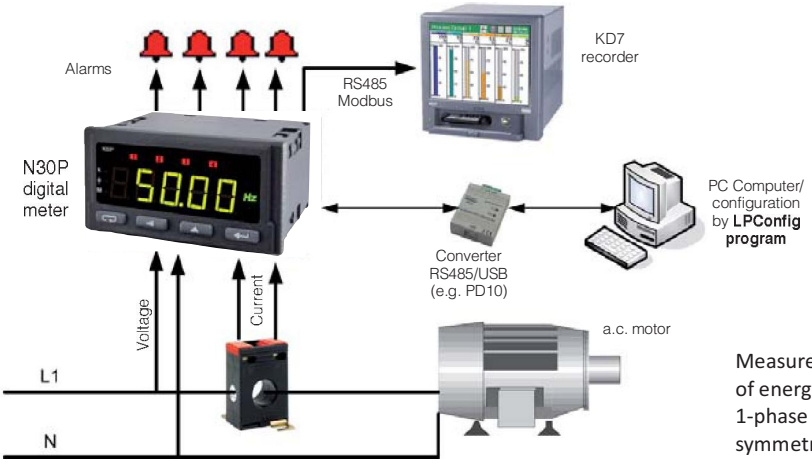
- 0...20 mA
- 0...10 V
- 2x
- 2x
- RS 485

Galvanic isolation:

- Sup.
- RS 485

- Measurement of single-phase network parameters: voltage, current, active, reactive and apparent power, cosφ, tgφ, φ, frequency, active, reactive and apparent energy, 15 minutes' active power, 10 minutes' voltage, 10 seconds' frequency.
- Three-colour display (14 mm high), in three intervals of the measured value.
- Meter programming from the keyboard or through the RS-485 interface by means of the free delivered LPConfig program.
- Four alarm outputs with signalling by LED diodes, operating in 6 different modes.
- Storage of minimal and maximal values for all measured quantities.
- Conversion of any measured value into a 0/4...20 mA or 0...10 V analog signal.
- Storage of minimal and maximal values for all measured quantities.

Example of Application



Measurement and recording of energy consumption in 1-phase or three-phase symmetrically loaded network

Inputs

Input kind	Measuring range	Rated operating conditions	Ratio values
Voltage input	0...100 V or 0...400 V	0.05...1.2 Un	0.1...4000.0
Current input	0...1 A or 0...5 A	0.005...1.2 In	1...10000

Measuring Ranges

Input kind	Indication range	Measuring range	Basic error
Current 1 A/5 A	0.000...60 kA	0.02...6 A a.c.	± 0.2%
Voltage 100 V/400 V	0.0...192 MV	1...480 V a.c.	± 0.2%
Frequency	45.00...100.00 Hz	45.00...66.00...100.00 Hz	± 0.2%
Active power	-19999...99999 MW	-2.88 kW...1.40 W...2.88 kW	± 0.5%
Reactive power	-19999...99999 Mvar	-2.88 kvar...1.40 var...2.88 kvar	± 0.5%
Apparent power	0.00...99999 MVA	1.40 VA...2.88 kVA	± 0.5%
Cos φ	-1...1	-1...0...1	± 0.5%
Tangens φ	-1.2...1.2	-1.2...0...1.2	± 1%
φ	0...359	0...359	± 1%
Active energy	0...9 999 999.9 kWh	0...9 999 999.9 kWh	± 0.5%
Reactive energy	0...9 999 999.9 kVarh	0...9 999 999.9 kVarh	± 0.5%
Apparent energy	0...9 999 999.9 kVA	0...9 999 999.9 kVA	± 0.5%
Current time	0.00...23.59	0.00..23.59	1 sec/ 24 h

Outputs

Output kind	Properties
Relay output	• 2 x relays, voltageless NO contacts, load-carrying capacity 250 V a.c./ 0.5 A a.c. • 2 x relays, voltageless change-over contacts, load-carrying capacity 250 V a.c./ 0.5 A a.c.
Analog output	• current programmable 0/4...20 mA, load resistance ≤ 500 Ω • voltage programmable 0...10 V, load resistance ≥ 500 Ω • resolution 0.01% of the range
Energy pulse output	• OC type output, passive of class A, acc. to EN 62053-31, supply voltage 18...27 V, current 10...27 mA. • Output pulse constant: 5000 imp./kWh, independently of Ku and Ki settings.

Contact Details:

Rishabh Instruments Pvt Ltd
F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

N30P DIGITAL PANEL METER

DIGITAL INTERFACES

Interface type	Transmission protocol	Mode	Baud rates
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	4.8; 9.6; 19.2; 38.4 kbit/s

EXTERNAL FEATURES

Readout field	5 digit LED display - indication range -19999..99999 digit height: 14 mm	three-colour display (colour changes depending on displayed value): red, green, orange
Weight	< 0.2 kg	
Overall dimensions	96 × 48 × 93 mm	Panel cut-out: $92^{+0,6} \times 45^{+0,6}$ mm
Protection grade (acc. to EN 60529)	from frontal side: IP65	from rear side: IP 10

RATED OPERATING CONDITIONS

Supply voltage	85...253 V a.c. (40...400 Hz) or d.c., 20...40 V a.c. (40...400 Hz) or d.c.	Power consumption < 6 VA
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	condensation inadmissible
Operating position	any	
External magnetic field	0...400 A/m	
Short duration overload (5 s)	voltage input: 2Un (max. 1000 V)	current input: 10 In

SAFETY AND COMPATIBILITY REQUIREMENTS

Electromagnetic compatibility	Noise immunity	acc. to EN 61000-6-2
	Noise emissions	acc. to EN 61000-6-4
Safety requirements		acc. to EN 61010-1

CONNECTION DIAGRAMS

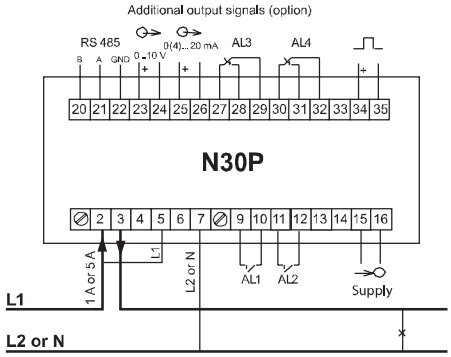


Fig. 1 Electrical connections of the N30P meter for direct measurements.

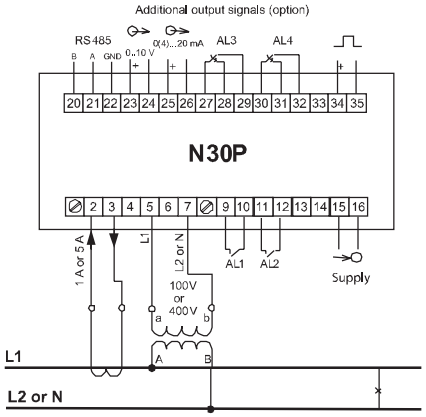


Fig. 2 Electrical connections of the N30P meter for indirect measurements.

ORDERING

TABLE 1. ORDERING CODES:

N30P -	X	X	XX	XX	X	X
Supply:						
85...253 V a.c./d.c.	1					
20...40 V a.c./d.c.	2					
Additional outputs:						
lack		0				
pulse output, RS-485, analog outputs		1				
pulse output, RS-485, analog outputs switched-over relay outputs		2				
Unit:						
unit code acc. to the table 2			XX			
Version:						
standard				00		
custom-made*				XX		
Language:						
Polish					P	
English					E	
other*					X	
Acceptance tests:						
without extra requirements						0
with an extra quality inspection certificate						1
acc. to customer's request*						X

Order example: The code **N30P - 1 0 01 00 E 0** means:
N30P - programmable N30P panel digital meter
1 - supply: 85...253 V AC/DC
0 - lack of additional outputs
01 - unit "V" acc. to codes tabel 2
00 - standard execution
E - English language
0 - without extra requirements

TABLE 2. CODES OF HIGHLIGHTED UNIT:

Code	Unit	Code	Unit	Code	Unit
00	lack of unit	20	kVAh	40	szt.
01	V	21	MVAh	41	imp
02	A	22	Hz	42	rps
03	mV	23	kHz	43	m/s
04	kV	24	Ω	44	l/s
05	mA	25	kΩ	45	obr/min
06	kA	26	°C	46	rpm
07	W	27	°F	47	mm/min
08	kW	28	K	48	m/min
09	MW	29	%	49	l/min
10	var	30	%RH	50	m^3/min
11	kvar	31	pH	51	obr/h
12	Mvar	32	kg	52	m/h
13	VA	33	bar	53	km/h
14	kVA	34	m	54	m^3/h
15	MVA	35	l	55	kg/h
16	kWh	36	s	56	l/h
17	MWh	37	h	XX	on order*
18	kvarh	38	m^3		
19	Mvarh	39	obr		

* - after agreeing with the manufacturer

SEE ALSO:

LPConfig

Free LPConfig software for easy programming. Available on our website

Current transformers with inputs from 5 A up to 6 kA.

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N30H DIGITAL PANEL METER

Features:

- 3-colour display
- LPConfig compatible
- MOD BUS
- RTC
- Multipoint Individual characteristic
- Password protection
- IP65

Inputs:

- DC

Outputs:

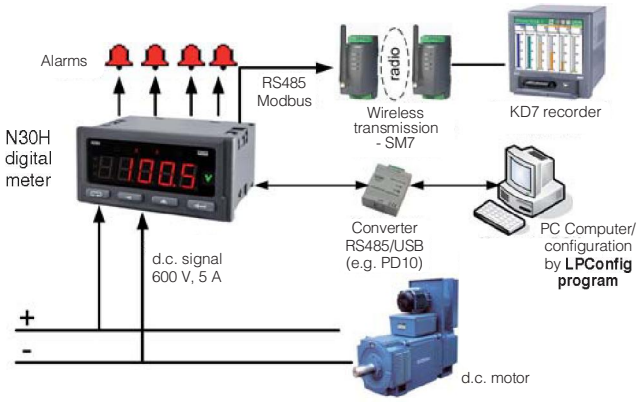
- 0...20 mA
- 0...10 V
- 2x
- 2x
- RS 485

Galvanic isolation:

- Sup.
- RS 485

- Measurement: current and d.c. voltage up to 5 A and 600 V.
- Three-colour display (14 mm high), programmed in three intervals of the measured value.
- Meter programming from the keyboard or through the RS-485 interface by means of the free delivered LPConfig program.
- Four alarm outputs with signalling by LED diodes, operating in 6 different modes.
- Conversion of any measured value into a 0/4...20 mA, or 0...10 V analog signal.
- Storage of minimal and maximal values for all measured quantities.
- 21-point individual characteristic for the measured value.

Example of Application



Measurement and recording of d.c. motor voltage and current.
Measured data are transmitted to the recorder via radio modules.

Inputs

Input kind	Maximal measuring range	Class
+/- 500 V d.c.	-600...600 V d.c.	0.1
+/- 100 V d.c.	-200...200 V d.c.	0.1
+/- 5 A d.c.	-6...6 A d.c.	0.1
+/- 1 A d.c.	-1.2...+1.2 A d.c.	0.1
Current time	00.00..23.59	0.5 second/h

Outputs

Output kind	Properties	Remarks
Relay output	• 2 x relays, voltageless NO contacts, load-carrying capacity 250 V a.c./ 0.5 A a.c. • 2 x relays, voltageless switched contacts, load-carrying capacity 250 V a.c./ 0.5 A a.c.	
Analog output	• current programmable 0/4...20 mA, load resistance ≤ 500 Ω • voltage programmable 0...10 V, load resistance ≥ 500 Ω • Error of output: 0.2% of the set range	Additional error from temperature changes: **50% of class/10K**
OC output	• OC type, passive npn, 30 V d.c./30 mA	voltage output
Auxiliary supply	• 24 V d.c./ 30mA	

Digital Interfaces

Interface type	Transmission protocol	Modes	Baud rates
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	4.8; 9.6; 19.2; 38.4, 57.6, 115.2 kbit/s

External Features

Readout field	5-digit LED display - indication range -19999...99999 digit height: 14 mm	three-colour display (colour changes depending on displayed value): red, green, orange
Weight	< 0.2 kg	
Overall dimensions	96 × 48 × 93 mm	Panel cut-out: $92^{+0,6} \times 45^{+0,6}$ mm
Protection grade (acc. to EN 60529)	from frontal side: IP65	from terminal side: IP 10

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www.rishabh.co.in

N30H DIGITAL PANEL METER

Rated Operating Conditions

Supply voltage	85...253 V a.c. (40...400 Hz) or d.c., 20...40 V a.c. (40...400 Hz) or d.c.	
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	condensation inadmissible
Operating position	any	
External magnetic field	0...400 A/m	

Safety And Compatibility Requirements

Electromagnetic compatibility	Noise immunity	acc. to EN 61000-6-2
	Noise emissions	acc. to EN 61000-6-4
Isolation between circuits	basic	acc. to EN 61010-1
Pollution grade	2	
Installation category	III	
Maximal phase-to-earth working voltage	for the supply circuit: 300 V	
	for remaining circuit: 50 V	
Altitude above sea level	< 2000 m	

Connection Diagrams

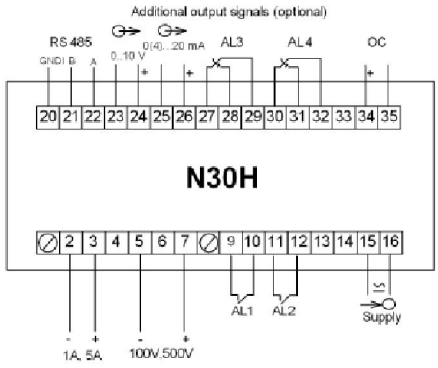


Fig. 1. Description of signals on connection strips

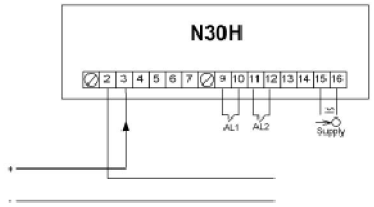


Fig. 2. Meter connection in the configuration for current measurement

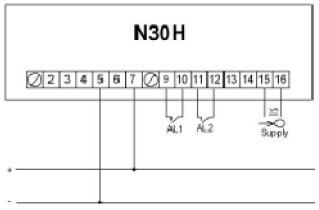


Fig. 3. Meter connection in the configuration for voltage measurement

Ordering

Table 1. Ordering codes:

N30H -	X	X	XX	XX	X	X
Supply:						
85...253 V a.c./d.c.	1					
20...40 V a.c./d.c.	2					
Additional outputs:						
lack		0				
OC output, RS-485, analog outputs		1				
OC output, RS-485, analog outputs switched-over relay outputs		2				
Unit:						
unit code acc. to the table 2			XX			
Version:						
standard				00		
custom-made*				XX		
Language:						
Polish					P	
English					E	
other*					X	
Acceptance tests:						
without extra requirements						0
with an extra quality inspection certificate						1
acc. to customer's request*						X

Table 2. Codes of highlighted unit:

Code	Unit	Code	Unit	Code	Unit
00	lack of unit	20	kVAh	40	szt.
01	V	21	MVAh	41	imp
02	A	22	Hz	42	rps
03	mV	23	kHz	43	m/s
04	kV	24	Ω	44	l/s
05	mA	25	kΩ	45	obr/min
06	kA	26	°C	46	rpm
07	W	27	°F	47	mm/min
08	kW	28	K	48	m/min
09	MW	29	%	49	l/min
10	var	30	%RH	50	m^3/min
11	kvar	31	pH	51	szt./h
12	Mvar	32	kg	52	m/h
13	VA	33	bar	53	km/h
14	kVA	34	m	54	m^3/h
15	MVA	35	l	55	kg/h
16	kWh	36	s	56	l/h
17	MWh	37	h	XX	on order*
18	kvarh	38	m^3		
19	Mvarh	39	obr		

Order example:

The code **N30H - 1 0 01 00 E 0** means

N30H - programmable N30H panel digital meter
1 - supply: 85...253 V a.c./d.c.
0 - lack of additional outputs
01 - unit "V" acc. to the table 2
00 - standard option
E -English language
0 - without extra requirements

* - after agreeing with the manufacturer

See Also:

LPConfig

Free LPConfig software for easy programming of RISHABH - PRODUCTS Available on our website

KD7 recorder with MODBUS master protocol for recording data measured by N30H meter.

SM7 communication module for RS485 interface. Enables wireless connection on distance up to 300 meters.

For more information about RISHABH products please visit our website: www.rishabh.co.in

Contact Details:

Rishabh Instruments Pvt Ltd
F-31, MIDC, Satpur
Nashik-422007
INDIA

Phone: +91 253 2202028

exp.marketing@rishabh.co.in
marketing@rishabh.co.in

www.rishabh.co.in

Programmable DPM *RISH* EINE

Data Sheet

Application :

The digital panel meters RISH Eine DPM have been designed for industrial applications, which frequently require precise and on-site adjustment of the display range. It can be used in industrial automation and for laboratory uses.

RISH Eine DPM measures important electrical parameters in 3 phase 4 Wire, 3 phase 3 Wire and single phase Network & replaces the multiple analog panel meters

Silent Features:

* Fast & Easy Installation on panel with the help of external swivel screws.
* True RMS measurement.
* 4 Digits ultra bright LED Display.
* User selectable CT/PT Primary.
* User selectable 3ph3wire or 3ph4wire Network(for 3A/3V).
* Two auxillary Power Supply available 40V - 300V AC DC or 80 - 300V AC

Product Features:

True RMS measurement
The instrument measures distorted waveform up to 15th Harmonic.

User selectable CT Primary
The Primary of current transformer can be programmed on site from 1A to 999kA for Current DPM using front panel keys.

User selectable PT Primary
The Primary of Potential transformer can be programmed from on site 100 VLL to 999 kVLL for Voltage DPM (3V) and 60 VLN to 999 kVLN for Voltage DPM (V) using front panel keys.

4 digits LED display
14mm ultra bright 4 digits LED display.

User selectable 3 phase 3Wire or 4Wire Network(for 3A/3V)
User can program on site the network connection as either 3 Phase 3 Wire or 4 Wire network using front panel keys.

Onsite selection of Auto scroll / Fixed Screen(for 3A/3V)
User can set the display in auto scrolling mode or fixed screen mode using front panel keys.

Function keys
Using two function keys it is possible to Display various parameters in Current and Voltage DPM. These function keys are also used for Network selection, CT/PT Primary values, Auto Scroll mode selection.

Screen No. storage
In case of power failure, the instrument memorizes the last screen stored. For every 1 min. the instrument stores the screen no. in the non-volatile memory

Low back depth
The instrument has very low back depth (behind the panel) of less than 40mm.

Enclosure Protection for dust and water
Conforms to IP 50 (for front face) or IP 65 option (for front with seal) & IP 20 (for back) & as per IEC60529.

EMC Compatibility
Compliance to International standard IEC 61326.

EMC Compatibility

Interference Emission	IEC 61326-1 : 2005, Class A
Interference Immunity	IEC 61326-1 : 2005
Electrostatic discharge	IEC 61000-4-2 -- 4kV/8kV contact/air. EM
Field	IEC 61000-4-3 -- 10 V/m (80 MHz to 1 Ghz) - 3 V/m (1.4 Ghz to 2 Ghz) -- 1 V/m (2 GHz to 2.7 Ghz)
Burst	IEC 61000-4-4 -- 2 kV (5/50 ns, 5 kHz)
Surge	IEC 61000-4-5 -- 1 kVLL / 2 kVLN
Conducted RF	IEC 61000-4-5 -- 3 V (150 kHz to 80 MHZ)
Rated Power Frequency magnetic Field	IEC 61000-4-8 -- 30 A/m
Voltage dip	IEC 61000-4-11 -- 0% during 1 cycle. -- 40% during 10/12 cycles. -- 70% during 25/30 cycles.
Short interruptions	IEC 61000-4-11 - 0% during 25/30 cycles. 25 cycles for 50 Hz test. 30 cycles for 60 Hz test.

Technical Specifications:

Input Voltage:
Nominal input voltage Ranges (AC RMS)
(to be specified while ordering)

Phase -Neutral	57 - 70V L-N, 71 - 139V L-N, 140 - 277V L-N
Line-Line	100-120V L-L, 121-240V L-L, 241-480V L-L

Max continuous input voltage	120% of rated value
Nominal input voltage burden	< 0.3 VA approx. per phase.

System PT primary values
100VLL to 999kVLL programmable on site for 3 - Phase Voltage (3V).
60VLN to 999kVLN programmable on site for 1 - Phase Volatge (V).

Input Current:

Nominal input current Ranges	1A or 5A AC RMS (to be specified while ordering)
System CT primary values	From 1A up to 999kA (for 1 or 5 Amp)
Max continuous input current	120% of rated value
Nominal input current burden	< 0.2 VA approx. per phase

Overload Indication: **"-oL-"**
(If input is greater than 125% of secondary value)

Auxiliary Supply:

AC DC Auxiliary Supply	40-300 V AC-DC(±5%)
AC Auxiliary Supply	80 - 300V AC
Frequency range	45 to 65 Hz
VA burden	3 VA Approx at 240VLN, 50Hz.

Overload Withstand:

Voltage	2 x rated value for 1 second, repeated 10 times at 10 second intervals
Current	4x rated value for 1 second, repeated 5 times at 5 min intervals

Operating Measuring Ranges:

Voltage Range	10… 120% of rated value
Current Range	10 … 120% of rated value
Frequency	45…65 Hz

Reference conditions for Accuracy:

Reference temperature	23°C +/- 2°C
Input waveform	Sinusoidal (distortion factor 0.005)
Auxiliary supply voltage	Rated Value ±1%
Auxiliary supply frequency	Rated Value ±1%
Voltage Range	20...100% of Nominal Value
Current Range	10...100% of Nominal Value
Input Frequency	50 Hz / 60 Hz

Technical Specifications:

Accuracy:

Voltage	±1.0% of Nominal value (Optional ±0.5% Available)
Current	±1.0% of Nominal value (Optional ±0.5% Available)

Influence of Variations:

Temperature coefficient :	0.025%/°C for Voltage 0.05%/°C for Current

(for rated value range of use (0…50°C))

Applicable Standards:

EMC	IEC 61326-1: 2005
Safety	IEC 61010-1-2001 , Permanently connected use
IP for water & dust	IEC60529

Safety :

Pollution degree:	2
Installation category:	III
High Voltage Test	2.2 kV AC, 50Hz for 1 minute.

Environmental:

Operating temperature	0 to +50°C
Storage temperature	-25°C to +70°C
Relative humidity	0... 90% non condensing
Warm up time	Minimum 3 minute
Shock	15g in 3 planes
Vibration	10... 55 Hz, 0.15mm amplitude

Enclosure:

Front	IP 50.
Front with seal (Option)	IP 65.
Back	IP 20.

Dimensions and Weights:

Bezel size	96 mm x 96 mm DIN 43 718.
Panel cut-out	92 +0.8 mm x 92 + 0.8 mm.
Overall depth	40 mm.
Weight	310 gm. Approx.
Panel Thickness	Max. 0.18”, 5mm for click fitting.

Various Input Voltage Ranges:

Input Voltage (3V)
110 V L-L
230 V L-L
415 V L-L

Input Voltage (V)
64 V L-N
110 V L-N
240 V L-N
600 V L-N

Various Input Current Ranges:

Input Current
1A
5A

Parameters measured and displayed:

A) Rish Eine 3V

Network type	Displayed Parameter
1) 3 Phase 4 wire	a. Phase -Neutral Voltage Vl1 b. Phase -Neutral Voltage Vl2 c. Phase -Neutral Voltage Vl3 d. Line-Line Voltage VL1L2 e. Line-Line Voltage VL2L3 f. Line-Line Voltage VL3L1 g. System Voltage
2) 3 Phase 3 wire	a. Line-Line Voltage VL1L2 b. Line-Line Voltage VL2L3 c. Line-Line Voltage VL3L1 d. System Voltage

B) Rish Eine 3A

Network type	Displayed Parameter
1)3 Phase 4 wireand 3 Phase 3 Wire	a. Phase Current IL1 b. Phase Current IL2 c. Phase Current IL3 d. System Current

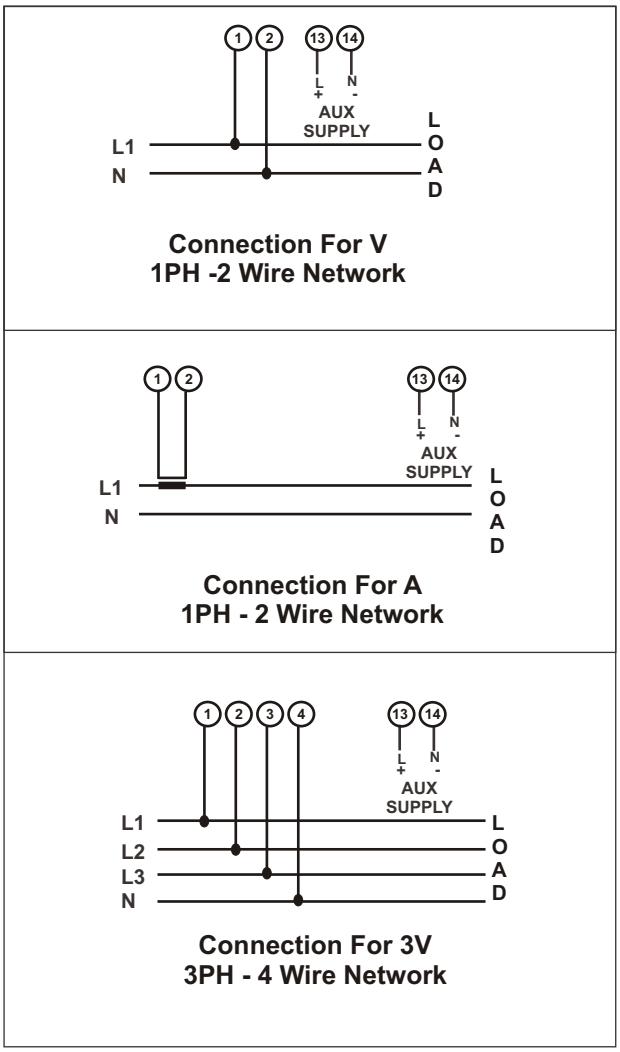
C) Rish Eine V

Network type	Displayed Parameter
1 Phase 2 wire	Phase -Neutral Voltage VL

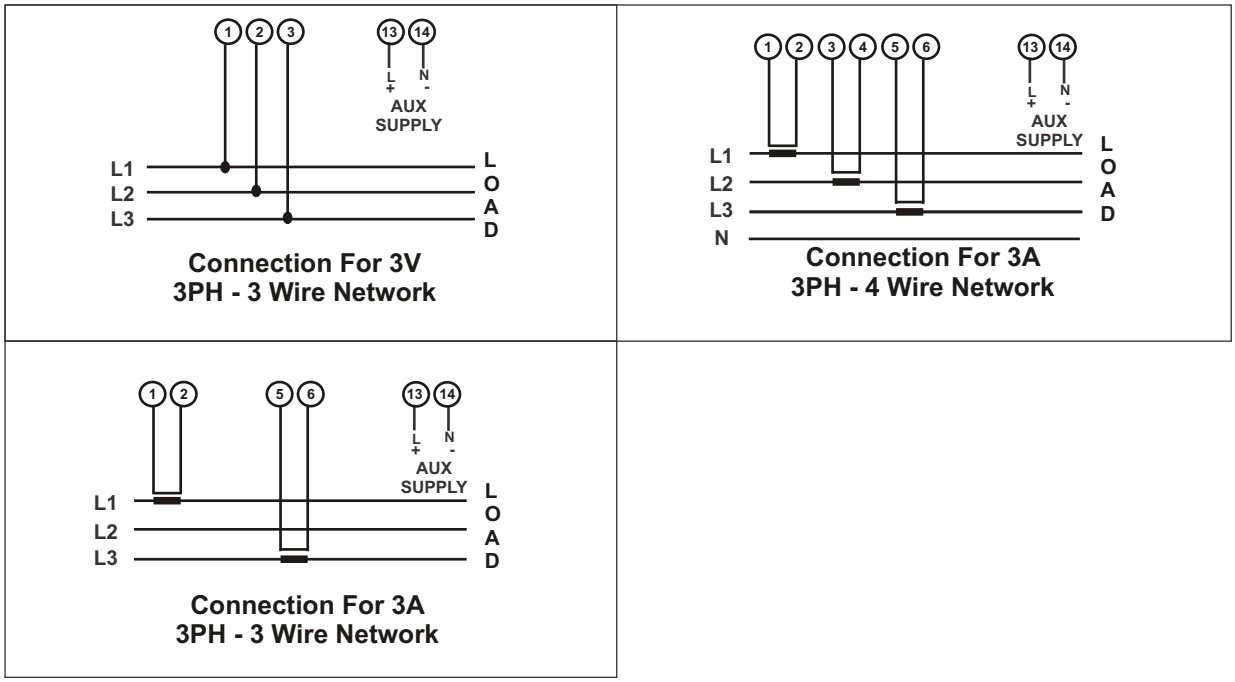
D) Rish Eine A

Network type	Displayed Parameter
1 Phase 2 wire	Phase Current IL

Connection Diagram:

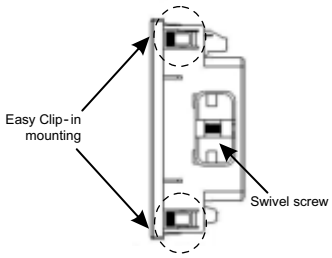


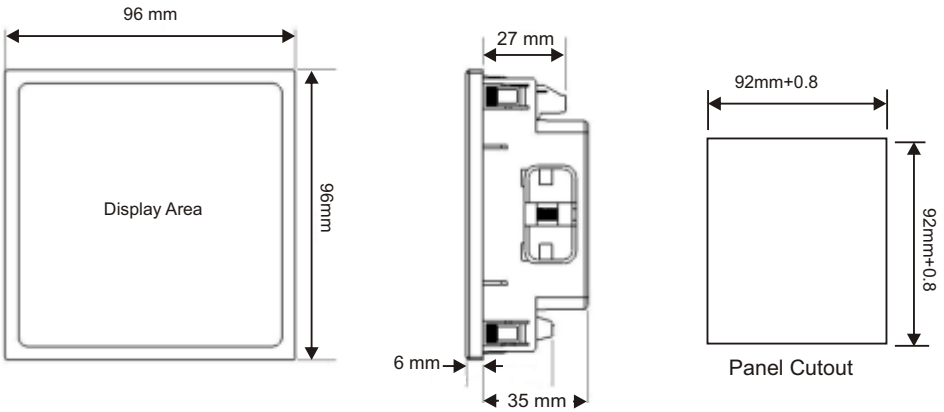
Connection Diagram:



Installation:

Easy Clip in Installation on Panel:





Order Code Example:

Rish Eine Voltage DPM: A) 3 - Phase Voltage (3V)

Ordering information	Ordering Code
System Type 3 Phase (Programmable as 4 wire or 3 wire on site)	3V
Accuracy Class	1.0 0.5
Input Voltage : 3 Phase 110V L-L 230V L-L 415V L-L	 110 230 415
Auxiliary Voltage 40-300 V AC-DC(±5%) 80-300V AC	 AD L

B) Single - Phase Voltage (V)

Ordering information	Ordering Code
System Type 1 Phase	V
Accuracy Class	1.0 0.5
Input Voltage : Single Phase 64 V L-N 110 V L-N 240 V L-N 600V L-N	 64 110 240 600
Auxiliary Voltage 40-300 V AC-DC(±5%) 80-300V AC	 AD L

Order Code Example: For 3 Phase Voltage DPM
RISH Eine Voltage 3V-1.0-110-AD
i.e Rish Eine Voltage DPM, 3 Phase, Accuracy class ±1.0%,, 110 VLL input voltage, 40-300 V AC-DC Auxiliary Supply.

For 1 Phase Voltage DPM:
RISH Eine Voltage V-1.0-240-L
i.e Rish Eine Voltage DPM, Single Phase,Accuracy class ±1.0%, 240 VLN input voltage, 80-300 V AC Auxiliary Supply.

C) Rish Eine Current DPM

Ordering information	Ordering Code
System Type 3 Phase (Programmable as 4 wire or 3 wire on site)	3A
1 Phase	A
Accuracy Class	1.0 0.5
Input Current 1A 5A	 1 5
Auxiliary Voltage 40-300 V AC-DC(±5%) 80-300V AC	 AD L

For Current DPM:
RISH Eine Current 3A-1.0-1-L
i.e Rish Eine Current DPM, 3 Phase, Accuracy class ±1.0%, 1 Ampere input current, 110-300 V AC Auxiliary Supply.

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

RISH Power / PF DPM

Size : 72x144

DPM 72 x 144 series measures system active Power (Import / Export), Reactive Power (Import / Export), Apparent Power & Power Factor of Three phase and single phase Network. It has 4 digit single line auto ranging LED display with polarity indication.

Product Range :

- Active Power (kW) DPM.
- Reactive Power (kVAr) DPM.
- Apparent Power (kVA) DPM.
- Power Factor (PF) meter.

Product Features:

***On site programmable PT/CT ratios**

It is possible to program primary of external potential Transformer (PT), primary of external Current Transformer (CT) on site via front panel keys by entering into Programming mode.

***User selectable CT Secondary 5A/1A**

The secondary of external Current Transformer (CT) can be programmed on site to either 5A or 1A using front panel keys.

***User selectable 3 phase 3W or 4W**

User can program on site the network connection as either 3 Phase 3 Wire or 4 Wire using front panel keys.
*Note: For Power Factor DPM Customer need to specify CT ratio, PT ratio & network type 3phase (3 or 4 wire) / single phase (1P2W) requirement while ordering.

User selectable Power Parameter

User can select any one of the power parameter (Active / Reactive / Apparent) on site as per its requirement, reducing inventory cost.

True RMS measurement

The instrument measures distorted waveform up to 15th Harmonic.

High brightness LED display

Single line four digit. Digit heights 26mm.

Enclosure Protection for dust and water

conforms to IP 54 (front face) as per IEC60529

Compliance to International Safety standards

Compliance to International Safety standard IEC 61010-1- 2001

EMC Compatibility

Compliance to International standard IEC 61326

Low back depth

The instrument has very low back depth (behind the panel) of less than 80 mm .

Input Voltage

Nominal input voltage(AC RMS)	Phase –Neutral 63.5 / 133 / 239.6 / 254 V_{L-N} Line-Line 110 / 230 / 415 / 440 V_{L-L}
Max continuous input voltage	120% of Nominal value

Input Current

Nominal input current	5A AC RMS
CT Secondary current	5A or 1A (programmable on site)
System CT primary values	Std. values up to 9999A (1 or 5 Amp)
Max continuous input current	120% of rated value

Auxiliary Supply

AC /DC Auxiliary Supply	45 – 300 VAC /DC +/- 10% or 20-40VAC/20-60VDC
AC Auxiliary supply frequency range	45 to 66 Hz

VA Burden

Nominal input voltage burden	< 0.2 VA approx. per phase
Nominal input current burden	< 0.6 VA approx. per phase
Auxillary Supply burden	< 4 VA approx

Overload Withstand

Voltage	2 x rated value for 1 second, repeated 10 times at 10 second intervals
Current	20x rated value for 1 second, repeated 5 times at 5 min intervals

Operating Ranges

Active / Reactive / Apparent Power	5... 120% of Nominal Current & Nominal Voltage.
Frequency	40…70 Hz
Power Factor	0.5 Lag ... 1... 0.5 Lead for kW, kVAr DPM 0.1 Lag ... 1 ... 0.1 Lead for PF DPM

Reference conditions for Accuracy

Reference temperature	23°C +/- 2°C
Input waveform	Sinusoidal (distortion factor 0.005)
Input frequency	50 or 60 Hz ±2%
Auxiliary supply voltage	Rated Value ±1%
Auxiliary supply frequency	Rated Value ±1%
Power(Power DPM)	Cos phi / Sin phi= 1 for Active / Reactive Power (50... 100% of Nominal Voltage) & (10... 100% of Nominal Current)
Power Factor(PF DPM)	0.5 Lag....1....0.5 Lead (50... 100% of Nominal Voltage) & (10... 100% of Nominal Current)

Accuracy

Active/Apparent Power(POWER DPM)	±0.5% of Nominal Value
Reactive Power (POWER DPM)	±1.0% of Nominal Value
Power Factor(PF DPM)	± 2°

Influence of Variations

Temperature coefficient (for rated value range of use (0…50°C))	0.025%/°C for Voltage (50... 120% of Nominal value) and 0.05%/°C for Current (10... 120% of Nomianal value)

Measurement error is normally much less than the error specified above. Variation due to influence quantity is less than twice the Error allowed for reference condition.

Display update rate

Response time to step input	1 sec approx.
Resolution	0.001 (4 digit).

Applicable Standards

EMC	IEC 61326
Immunity	IEC 61000-4-3. 10V/m min – Level 3 industrial low level

Safety

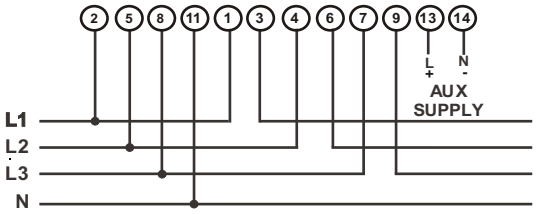
IP for water & dust	IEC 61010-1-2001 , Permanently connected use IEC60529
Pollution degree	2
Installation category	III
High Voltage Test	2.2 kV AC, 50Hz for 1 minute between all electrical circuits

Environmental

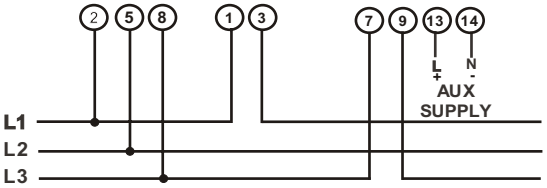
Operating temperature	-10 to +55°C
Storage temperature	-20 to +65°C
Relative humidity	0... 90% non condensing
Warm up time	Minimum 3 minute
Shock	15g in 3 planes
Vibration	10... 55 Hz, 0.15mm amplitude
Enclosure	IP54 (front face only)

Electrical Connections:

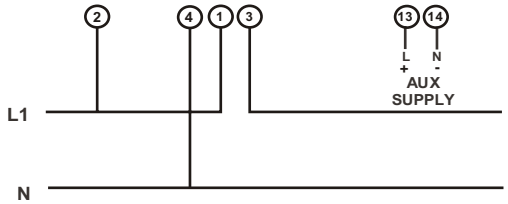
For 3 Phase 4 Wire Unbalanced Load



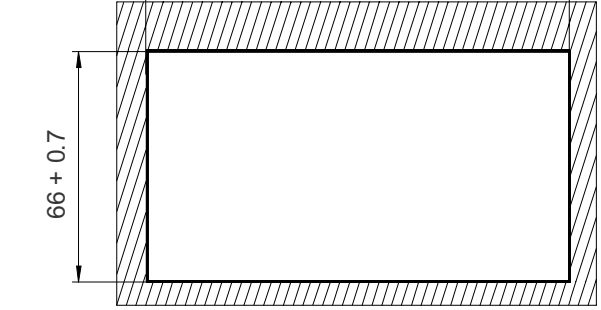
For 3 Phase 3 Wire Unbalanced Load

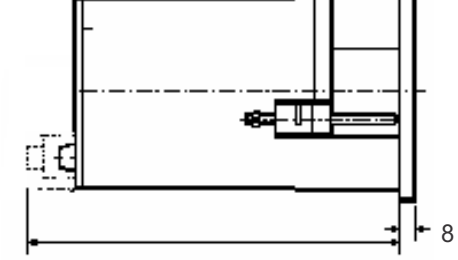


For Single Phase



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.





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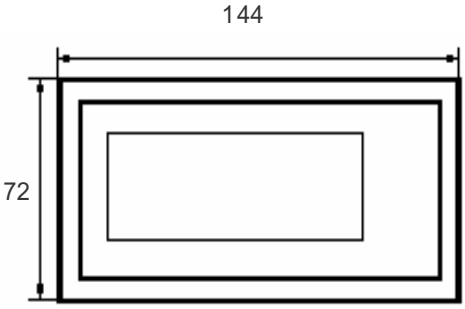
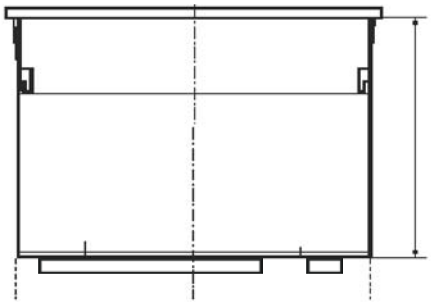
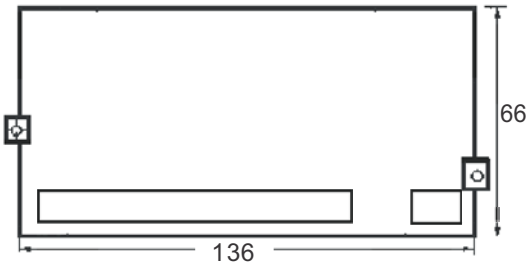
Mounting Position



Installation cut-out





Ordering information:

	Ordering Code
	RISH DPM PF/PW
Parameter	
Power Factor	PF
Power (Active / Reactive / Apparent)	PW
System Type (Connection network)	
3 Phase 3 Wire	3
3 Phase 4 Wire	4
1 Phase	1
Input Voltage	
110V L-L (63.5V L-N)	110
230V L-L (133V L-N)	230
415V L-L (239.6V L-N)	415
440V L-L (254V L-N)	440
Input Current	
1 Amps	1
5 Amps	5
Auxiliary Supply Voltage	
45V... 300 V AC/ DC -10% / +10 %	ADH
20V... 40 V AC/20-60VDC	ADL

* Any one of the parameter can be selected to be displayed on site .
**CT ratio / PT ratio / Network type (3wire / 4wire) programmable on site only for power DPM (S / P / Q).

Order Code Example:

DPM PF 3 415 5 ADH

DPM, Power factor , 3 phase 3wire, 415VAC L-L nominal voltages, 5Amp, 45-300 V AC/DC auxiliary supply

RISHABH INSTRUMENTS
Measure, Control & Record with a Difference

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202028, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

N17Z RAIL-MOUNTED DIGITAL METER

LUMEL

FEATURES:

PD15 | Linear char.

INPUTS:

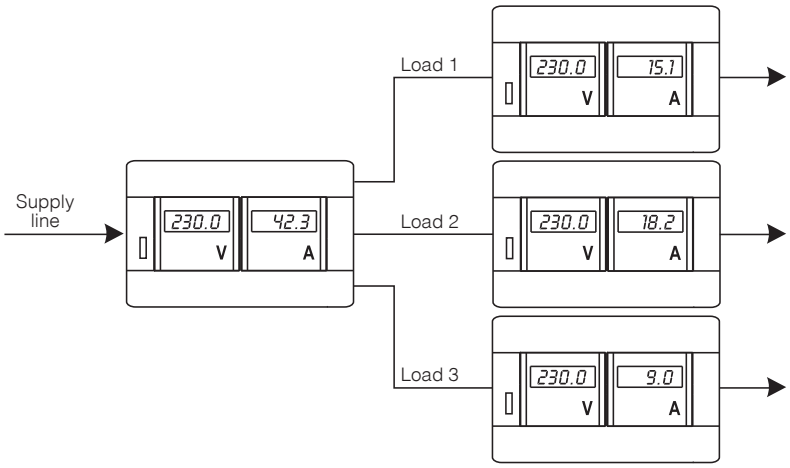
AC | Hz

GALVANIC ISOLATION:

Supply | PD14 Programmer

- Measurement of true RMS current and voltage.
- Measurement of frequency.
- Direct or indirect measurement.
  Current and voltage ratio programming by means of PD15.
- Assembling of meters on a 35 mm rail,
- Meter overall dimensions enable the assembly together with typical connection elements used in power engineering.
- 3 or 4-digit display in red or green colour.

EXAMPLE OF APPLICATION



INPUTS

Kind of input	Measuring range	Parameters	Basic error	
Voltage input	1...100 V 3...300 V 5...500 V	Input resistance: ≥ 600 kΩ Input resistance: ≥ 1.8 MΩ Input resistance: ≥ 3 MΩ	0.5% of range + 1 digit	Frequency of measuring signal: 30...500 Hz
Current input	0.01...1 A 0.05...5 A 0.1...10 A 0.4...40 A	Input resistance: 20 mΩ ± 10% Input resistance: 4 mΩ ± 10% Input resistance: 2 mΩ ± 10% Input resistance: 0.5 mΩ ± 10%	0.5% of range + 1 digit	Frequency of measuring signal: 30...500 Hz
Frequency	30...500 Hz	Input resistance: ≥ 3 MΩ	0.1% of range + 1 digit	Amplitude of measuring signal: 5...600 V

EXTERNAL FEATURES

Readout field	3 LED displays - digit height: 14 mm - red or green, indication range: -199...999 4 LED displays - digit height: 10 mm - red or green, indication range: -1999...9999	
Weight	< 0.25 kg	
Overall dimensions	52.5 × 90 × 64.5 mm	Bezel: 52.5 × 45 mm
Protection grade (acc. to EN 60529)	IP20	
Fixing	on a 35 mm rail	acc. to EN 60715

RATED OPERATIONS CONDITIONS

Supply voltage	230 V 50/60 Hz ± 10%, 110 V 50/60 Hz ± 10%, 24 V 50/60 Hz ± 10%, 24 V d.c. ± 10%,	Power consumption < 6 VA
Temperature	ambient: -10...23...50°C	Storage: -25...85°C
Relative humidity	< 95%	Condensation inadmissible
Operating position	any	

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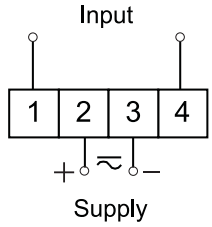
LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N17Z RAIL-MOUNTED DIGITAL METER

SAFETY AND COMPATIBILITY REQUIREMENTS

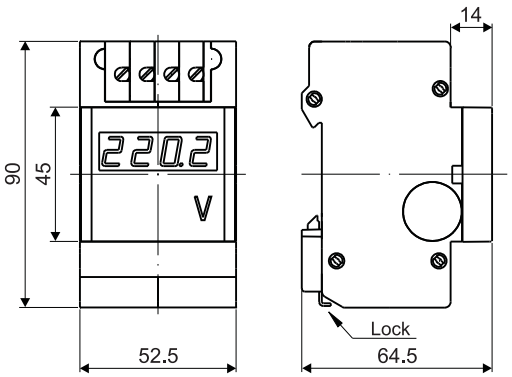
Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Installation category	III	acc. to EN 61010-1
Pollution grade	2	
Phase-to-earth operating voltage	600 V a.c.	

CONNECTION DIAGRAM



Electrical connections of N17Z meter.

EXTERNAL DIMENSIONS



ORDERING

TABLE 1. ORDERING CODES:

N17Z -	XX	X	X	X	X	XX	...
Input:							
100 V	00						
300 V	01						
500 V	02						
1 A	03						
5 A	04						
10 A	05						
40 A	06						
frequency 30...500 Hz	07						
on order *	XX						
Number of digits:							
3 digits, 14 mm high		3					
4 digits, 10 mm high		4					
Display colour:							
red			R				
green			G				
on order *			X				
Supply:							
230 V 50/60 Hz				1			
110 V 50/60 Hz				2			
24 V 50/60 Hz				3			
24 V d.c.				4			
on order *				X			
Acceptance tests:							
without extra quality requirements					8		
with an extra quality inspection certificate					7		
acc. to customer's request*					X		
Unit:							
unit code number acc to the table 2						XX	

Description 1 (introduce in case of another indication than the meter input range) e.g. if for 5 we want the indication 300, write: 5/300.

Description 2 (as standard, the meter measures the a.c.+d.c. signal, write if it is to be different) ...
a.c. - only a.c. measurement
or d.c. - only d.c. measurement

* - after agreeing with the manufacturer

TABLE 2. CODES OF HIGHLIGHTED UNITS:

Code	Unit	Code	Unit	Code	Unit
00	V	17	mm	34	rad
01	A	18	cm	35	Ω
02	mV	19	m	36	kΩ
03	kV	20	km	37	%
04	MV	21	l	38	°
05	mA	22	l/s	39	rev
06	kA	23	l/h	40	rps
07	MA	24	ms	41	rpm
08	°C	25	s	42	rph
09	°F	26	h	43	m/h
10	K	27	N	44	km/h
11	Hz	28	kN	45	imp
12	kHz	29	Pa	46	without unit
13	Ah	30	hPa		
14	kAh	31	kPa		
15	m/s	32	MPa	XX	on order[1]
16	µm	33	bar		

1) - after agreeing with the manufacturer

ORDERING EXAMPLES:

Example 1:

Code: N17Z - 01 4 G 1 8 00 means:

N17Z - rail mounted digital meter
01 - voltage input: 3...300 V
4 - 4-digit display (10 mm high)
G - green display colour
1 - supply voltage: 230 V, 50/60 Hz
8 - without extra quality inspection requirements
00 - unit code acc. to the table 2: V

Meter for direct measurement with indications acc. to the input range. The meter measures True RMS signal (a.c.+d.c.)

Example 2:

Code: N17Z - 04 3 R 3 8 01 5/150 A a.c.:

N17Z - rail mounted digital meter
04 - current input: 0.05... 5 A range
3 - 3-digit display (14 mm high)
R - red display colour
3 - supply voltage: 24 V, 50/60 Hz
8 - without extra quality inspection requirements
01 - unit code acc. to the table 2: A
5/150 A a.c. - the meter recounts the measuring range 0...5 A into 0...150 A. Programmed indication range: 0... 150 A. The meter measures only the a.c. signal (without the constant component)

SEE ALSO:

Current transformers from 5 A to 6 kA.

Analog meters of EA series fulfilling IP65 requirements from the frontal side.

N24 and N25 meters (indicators) for measurements of temperature, d.c. or a.c. voltage and current, and frequency.

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LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N20Z DIGITAL PANEL METER

LUMEL

Features:

PD14 Programmer

Program LPConfig

IP65

Linear char.

3-color display

Inputs:

AC

Hz

Outputs:

2 x

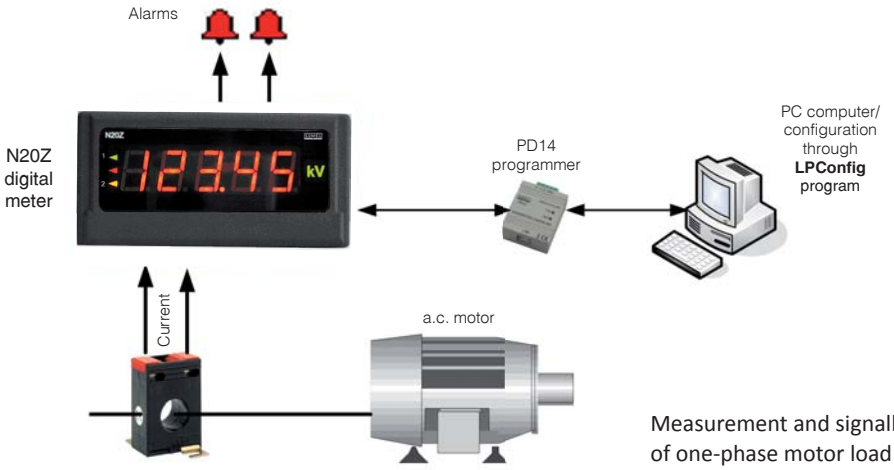
Galvanic isolation:

Supply

PD14 Programmer

- Measurement of voltage, a.c. current or frequency,
- Three-colour LED display (5 digits, 14 mm high).
- Two alarm outputs of OC type.
- Programmable parameters through the PD14 programmer:
  - recounting of indications (individual characteristic),
  - two alarms of OC type operating in 6 working modes,
  - kind of measured signal: a.c. or a.c. + d.c. (True RMS),
  - display colour programmable in three intervals,
  - precision of displayed results (decimal point),
  - thresholds of displayed overflows,
  - highlight of the unit,
  - measurement averaging time.

Example of application



Measurement and signalling of one-phase motor load current overflows.

Inputs

Kind of input	Measuring range	Parameters	Basic error
Voltage input	1...100...120 V 2.5...250...300 V 4...400...480 V	Input resistance: > 2 MΩ	± (0.5% of range + 1 digit)
Current input	0.01...1...1.2 A 0.05...5...6 A	Input resistance: 50 mΩ ± 10% Input resistance: 10 mΩ ± 10%	± (0.5% of range + 1 digit)
Frequency (in the range of voltages: 24...480 V)	20...500 Hz	Input resistance: > 2 MΩ	± (0.2% of range + 1 digit)

Outputs

Kind of input	Features
Alarm outputs	• 2 alarm outputs of OC type

External features

Readout field	5 digital LED displays. Indication range -19999...99999 Digit height: 14 mm	Three-colour display (changes of colour depend on the displayed value): red, green, orange.
Weight	< 0.25 kg	
Overall dimensions	96 × 48 × 64 mm	Panel cut-out: $92^{+0,6} \times 45^{+0,6}$ mm
Protection grade (acc. to EN 60529)	From frontal side: IP65	From terminal side: IP10

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LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

Rated operating conditions

Supply	85...253 V a.c. (45...65 Hz) or d.c., 20...40 V a.c. (45...65 Hz) or d.c.	Power consumption < 6 VA
Temperature	Ambient: -10...23...55°C	Storage: -25...85°C
Relative humidity	< 95%	Condensation inadmissible
Operating position	any	

Safety and compatibility requirements

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Safety requirements		acc. to EN 61010-1

Connection diagrams

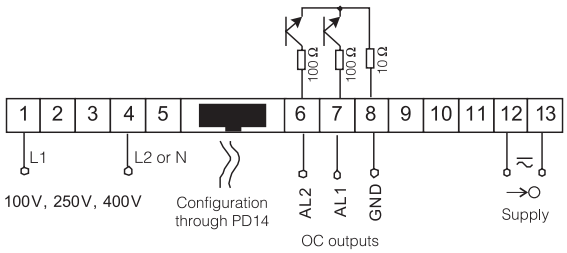


Fig. 1 Electrical connections of the N20Z meter with the measurement of voltage and frequency.

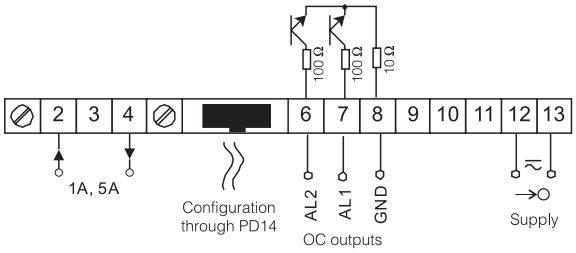


Fig. 2 Electrical connections of the N20Z meter with the measurement of current.

Ordering

Table 1. Ordering codes:

N20Z -	X	X	XX	XX	X
Input:					
100 V	1				
250 V	2				
400 V	3				
1 A	4				
5 A	5				
Frequency: 20...500 Hz	6				
Supply:					
85...253 V a.c./d.c.		1			
20...40 V a.c./d.c		2			
Unit:					
unit code number acc. to table 2			XX		
Version:					
standard				00	
custom-made*				XX	
non standard settings				99	
Aceptance tests:					
without extra requirements					8
with an extra quality inspection certificate					7
acc. to customer's request*					X

* - after agreeing with the manufacturer

Table 2. Codes of highlighted unit:

Code	Unit	Code	Unit	Code	Unit
00	without unit	17	µm	34	bar
01	V	18	mm	35	rad
02	A	19	cm	36	Ω
03	mV	20	m	37	kΩ
04	kV	21	km	38	%
05	MV	22	l	39	°
06	mA	23	l/s	40	turns
07	kA	24	l/h	41	rps
08	MA	25	ms	42	rpm
09	°C	26	s	43	rph
10	°F	27	h	44	m/h
11	K	28	N	45	km/h
12	Hz	29	kN	46	imp
13	kHz	30	Pa		
14	Ah	31	hPa		
15	kAh	32	kPa	XX	on order[1)]
16	m/s	33	MPa		

1) - after agreeing with the manufacturer

ORDER EXAMPLES

Example 1

The code **N20Z - 3 1 01 00 8** - means: N20 meter with voltage input on 400 V, supply: 85... 253 V a.c., without extra quality requirements, „V" unit

Example 2

The code **N20Z - 3 1 03 99 8 + description**

Parameter	Range/Value
Displayed colour of the upper measured value	red
Displayed colour of the median measured value	green
Displayed colour of the lower measured value	orange
Upper threshold - KpH	44.00
Lower threshold - KpL	40.00
Decimal point	000.00

Highlight of the measured unit	ON
Kind of input	AC
Averaging time	5 s
Upper overflow of measurement	99999
Lower overflow of measurement	-19999
Individual characteristic	ON
Parameter ***a*** of the individual characteristic	0.1
Parameter ***b*** of the individual characteristic	0
Kind of the alarm output 1 operation	on
Upper value to switch the alarm 1 - Aon	40.00
Lower value to switch the alarm 1 - Aoff	0.00
Kind of the alarm output 2 operation	n-on
Upper value to switch the alarm 2 - Aon	44.00
Lower value to switch the alarm 2 - Aoff	40.00

- means: N20Z meter with voltage input on 400 V, supply: 85...253 V a.c., executed acc. to given detailed parameter description by the user, without extra quality requirements („mV" unit - acc. to table 2).

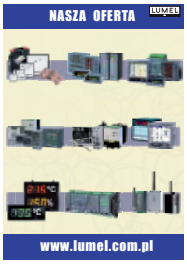
See also:

LPConfig

Free LPConfig program for programming LUMEL'S products. Available on our website.

Current transformers from 5 A to 6 kA.

N14 meter for measurement of three-phase network parameters.



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65-022 Zielona Góra
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N27D RAIL-MOUNTED NETWORK METER

LUMEL

FEATURES:

63 A

INPUTS:

V A W Hz AC

GALVANIC ISOLATION:

Supply

- Direct measurement up to 63A.
- Measurement of: RMS current (a.c.) and voltage (a.c.), active power and frequency.
- Switched measured value.
- 4-digit display in yellow colour.
- Backlighted indicator of displayed value.
- Modern design allows for installation of the meter in modular switchgear in accordance with EN 62208 (meter has a width of 3 modules) on 35 mm rail.

INPUTS

Kind of input	Measuring range	Parameters	Basic error
Voltage input U	0...0.01...1.2 Un	input resistance: > 3 MΩ	± (0.5% of the range) in frequency range 40...500 Hz
Current input I	0...0.01...1.2 In		± (0.5% of the range) in frequency range 45...65 Hz
Voltage frequency	0...2.00...500.0 Hz		± (0.02% of the range)
Current frequency	0...45.00...500.00 Hz		
Active power	-45.4 ...-31.5 ... 31.50 ... 45,36 kW at frequency 45... 65 Hz		± (1% of the range) at frequency 45...65 Hz

EXTERNAL FEATURES

Readout field	4-digit LED displays - digit height: 8,5 mm - yellow, indication range: -1999...9999	
Weight	< 0.25 kg	
Overall dimensions	53 x 110 x 60 mm	Bezel: 45 × 53 mm
Protection grade	IP00	acc. to EN 60529
Fixing	on a 35 mm rail	acc. to EN 60715

RATED OPERATIONS CONDITIONS

Supply voltage	230 V ± 10% a.c. (45...65 Hz)	Power consumption < 6 VA
Input voltage Un	500 V a.c. 0...2...40.0...500.0 Hz	
Input current In	63 A a.c. 0...45.0...500.0 Hz	
Temperature	ambient: -10...23...55°C	Storage: -25...85°C
Relative humidity	< 95%	Condensation inadmissible
Operating position	any	

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Fax: +48 68 32 54 091
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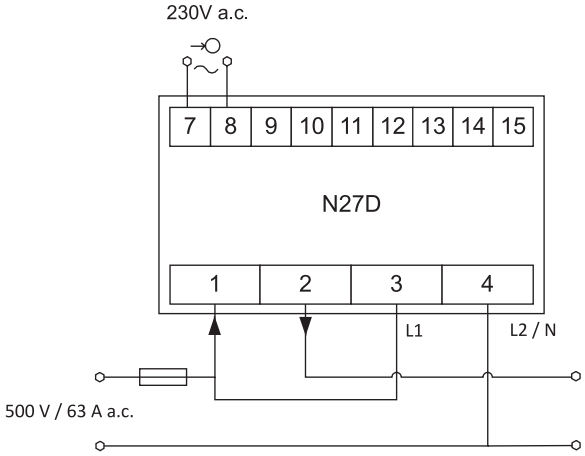
„LUMEL" S.A.
ul. Słubicka 1
65-127 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N27D RAIL-MOUNTED NETWORK METER

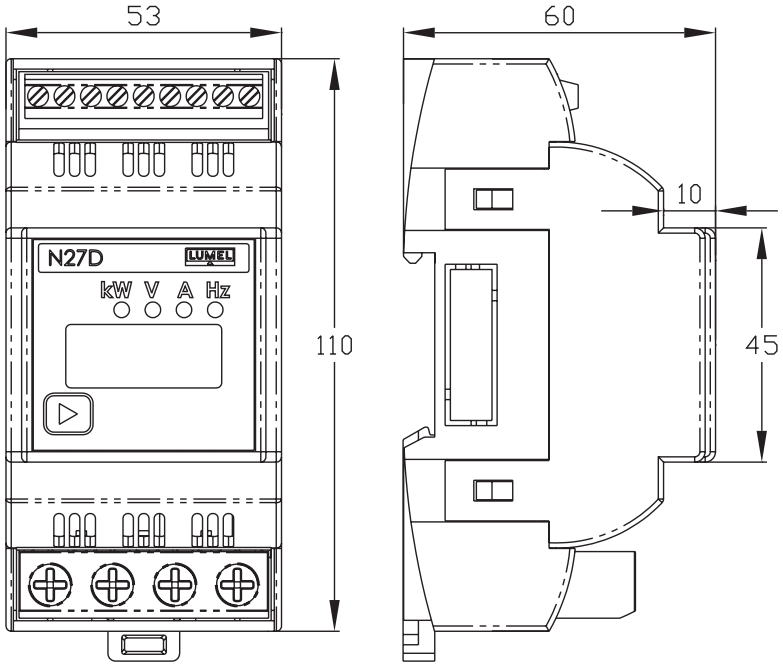
SAFETY AND COMPATIBILITY REQUIREMENTS

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Installation category	III up to 300 V (II for 300 ... 600 V)	acc. to EN 61010-1
Pollution grade	2	
Phase-to-earth operating voltage	- for the supply circuit: 300 V, - for the measuring input 600 V – category II (300 V – category III)	

CONNECTION DIAGRAM



EXTERNAL DIMENSIONS



ORDERING

	N27D -	XX	X	X
Version:				
standard		00		
custom-made*		XX		
Language:				
Polish			P	
English			E	
other*			X	
Acceptance tests:				
without extra quality requirements				0
with an extra quality inspection certificate				1
acc. to customer's request*				X

* - after agreeing with the manufacturer

ORDERING EXAMPLES:

Code: N27D - 00 E 0 means:

N27D - rail mounted digital meter
00 - standard version
E - English language,
0 - without extra quality inspection requirements.

SEE ALSO:

Miernik parametrów sieci na szynę - N43.

Analog meters of EA series fulfilling IP65 requirements from the frontal side.

N24 and N25 meters (indicators) for measurements of temperature, d.c. or a.c. voltage and current, and frequency.

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N27P METER OF NETWORK PARAMETERS

LUMEL

FEATURES:

Ep- Ep+ EqL EqC

eCon Program

RTC

MOD BUS

INPUT:

AC

1/5 A 32/63 A

OUTPUTS:

0/4...20 mA

RS 485

USB

ALARM

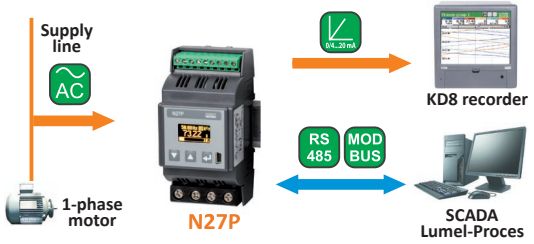
GALVANIC ISOLATION:

Supply

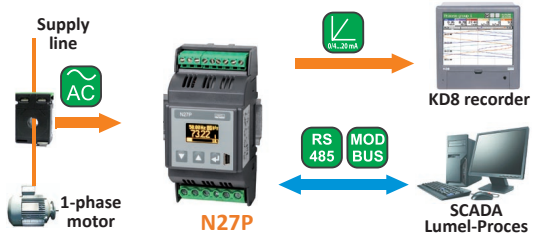
RS 485

- Measurement of 1-phase network parameters: U, I, f, P, Q, S, PF, tg φ , φ , Ep, Eq.
- Universal measuring input:
  - 1 /5 A, 100/ 400 V or
  - 32/63 A, 100/400 V.
- Programmable analog output 0/4...20 mA.
- RS485 Modbus RTU Slave interface.
- Programmable current and voltage transformer ratios.
- Meter configuration using button or eCon software (through USB).
- Modern graphical display in OLED technology.

EXAMPLE OF APPLICATION



direct measurement



indirect measurement

Conversion and recording of current engine load and energy consumption.
Monitoring of single-phase network parameters.

MEASURED VALUES AND RANGES

Measured value	Range	Basic error
Current In 1 A 5 A 32 A* 63 A*	0.005 ... 1.200 A~ 0.025 ... 6.000 A~ 0.160 ... 38.40 A~ 0.315 ... 75.60 A~	±0.2%
Voltage L-N 100 V 400 V	 5 ... 120 V 20 ... 480 V	±0.2%
Frequency (f)	45.0...66.0...100 Hz	±0.2%
Active power (P) version 1/5 A version 32/63 A	 -2.88 kW ...1.00 W ... 2.88 kW -32.29 kW ...1.00 W ... 32.29 kW	±0.5%
Reactive power (Q) version 1/5 A version 32/63 A	 -2.88 kvar ...1.00 var ... 2.88 kvar -32.29 kvar ...1.00 var ... 32.29 kvar	±0.5%
Apparent power (S) version 1/5 A version 32/63 A	 1.40 VA ... 2.88 kVA 1.40 VA ... 32.29 kVA	±0.5%
PF	-1...0...1	±0.5%
Tangens φ	-1.2...0...1.2	±1%
φ	0...359	±1%
Active energy (Ep)	0 ... 999 999.9 kWh or 9 999.999 MWh	±0.5%
Reactive energy (Eq)	0 ... 999 999.9 kvarh or 9 999.999 Mvarh	±0.5%

* - concerns the version for direct measurement

OUTPUTS

Output type	Properties
Relay	1-2 x (depending on the meter version) programmable relay output, NOC, load capacity 250 V~/0.5 A~, number of cycles 1 x 10^5
Analog	lack or 1 x (depending on the meter version) programmable analog output 0/4..20 mA, R_{load} = 0...250 Ω

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ul. Słubicka 1
65-127 Zielona Góra
WWW.LUMEL.COM.PL

N27P METER OF NETWORK PARAMETERS

DIGITAL INTERFACE

Interface type	Transmission protocol	Mode	Baud rate
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	4.8; 9.6; 19.2; 38.4; 57.6; 115.2 kbit/s
USB 1.1/ 2.0 (for meter configuration)	MODBUS RTU	8N2	9.6 kbit/s

EXTERNAL FEATURES

Readout field	OLED display	
Overall dimensions	53 × 110 × 60 mm	mounting on a 35mm DIN rail
Weight	0.2 kg	
Protection grade	for housing: IP40	for terminals: IP00

RATED OPERATING CONDITIONS

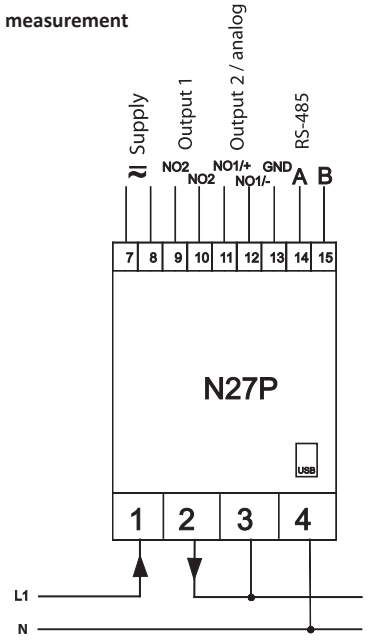
Power supply	85...253 V a.c. 40...400 Hz; / 90...300 V d.c.	Power consumption: in supply circuit ≤ 5 VA in voltage circuit ≤ 0.2 VA in current circuit: for undirect meas. ≤ 0.05 VA, for direct meas. ≤ 2.5 VA
Temperature	ambient: -10...23...55°C	storage: -30...70°C
Relative humidity	25 ... 95%	inadmissible condensation
Working position	vertical	
Standard conversion time	1.2 s	
Maximal conversion time	2.2 s	
Preheating time	15 min	
External magnetic field	0...40... 400 A/m	
Short duration overload (1 s)	voltage input: 2 U_N (max. 1000 V)	current input: 10 I_N
Sustained overload	voltage: 1,2 U_N	current: 1,2 I_N

SAFETY AND COMPATIBILITY REQUIREMENTS

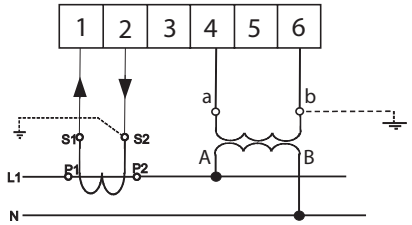
Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Isolation between circuits	basic	acc. to EN 61010-1
Pollution level	2	
Installation category	III (for voltages above 300 V – category II)	
Maximal phase-to-earth working voltage	- for supply circuits 300 V - for measuring input 600 V – cat. II (300 V – cat. III) - for other circuits 50 V	
Altitude above sea level	< 2000 m	

CONNECTION DIAGRAM

Direct measurement



Indirect measurement



ORDERING

N27P -	X	X	XX	X	X
Current measuring range:					
1 A / 5 A a.c	1				
32 A /63 A a.c.	2				
Outputs:					
2 relays		1			
1 relay and 1 analog 0/4...20mA		2			
Version:					
standard			00		
custom-made*			XX		
Language:					
Polish				P	
English				E	
other*				X	
Acceptance tests:					
without extra quality requirements					0
with an extra quality inspection certificate					1
acc. to customer's requirements*					X

* after agreeing with the manufacturer

Example of order:
The code: **N27P - 1 1 00 E 0** means:

N27P - meter of network parameters N27P type
1 - version for indirect measureent for the range 1A/5A
1 - with 2 relay outputs
00 - standard version
E - user's manual in English
0 - without extra quality requirements.

SEE ALSO:

Current transformers LCT.

Digital meter mounted on a DIN rail N27D.

Meter of network parameters N43.

LUMEL - PROCESS software.

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e-mail: export@lumel.com.pl

LUMEL S.A.
ul. Słubicka 1
65-127 Zielona Góra
WWW.LUMEL.COM.PL

N30H DIGITAL PANEL METER

LUMEL

Features:

- 3-colour display
- LPConfig compatible
- MODBUS
- RTC
- Multipoint Individual characteristic
- Password protection
- IP65

Inputs:

- DC

Outputs:

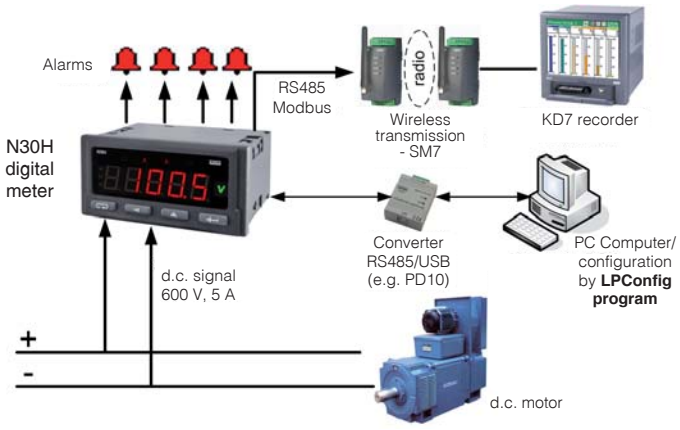
- 0...20 mA
- 0...10 V
- 2x
- 2x
- RS 485

Galvanic isolation:

- Sup.
- RS 485

- Measurement: current and d.c. voltage up to 5 A and 600 V.
- Three-colour display (14 mm high), programmed in three intervals of the measured value.
- Meter programming from the keyboard or through the RS-485 interface by means of the free delivered LPConfig program.
- Four alarm outputs with signalling by LED diodes, operating in 6 different modes.
- Conversion of any measured value into a 0/4...20 mA, or 0...10 V analog signal.
- Storage of minimal and maximal values for all measured quantities.
- 21-point individual characteristic for the measured value.

Example of Application



Measurement and recording of d.c. motor voltage and current.
Measured data are transmitted to the recorder via radio modules.

Inputs

Input kind	Maximal measuring range	Class
+/- 500 V d.c.	-600...600 V d.c.	0.1
+/- 100 V d.c.	-200...200 V d.c.	0.1
+/- 5 A d.c.	-6...6 A d.c.	0.1
+/- 1 A d.c.	-1.2...+1.2 A d.c.	0.1
Current time	00.00..23.59	0.5 second/h

Outputs

Output kind	Properties	Remarks
Relay output	• 2 x relays, voltageless NO contacts, load-carrying capacity 250 V a.c./ 0.5 A a.c. • 2 x relays, voltageless switched contacts, load-carrying capacity 250 V a.c./ 0.5 A a.c.	
Analog output	• current programmable 0/4...20 mA, load resistance ≤ 500 Ω • voltage programmable 0...10 V, load resistance ≥ 500 Ω • Error of output: 0.2% of the set range	Additional error from temperature changes: **50% of class/10K**
OC output	• OC type, passive npn, 30 V d.c./30 mA	voltage output
Auxiliary supply	• 24 V d.c./ 30mA	

Digital Interfaces

Interface type	Transmission protocol	Modes	Baud rates
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	4.8; 9.6; 19.2; 38.4, 57.6, 115.2 kbit/s

External Features

Readout field	5-digit LED display - indication range -19999...99999 digit height: 14 mm	three-colour display (colour changes depending on displayed value): red, green, orange
Weight	< 0.2 kg	
Overall dimensions	96 × 48 × 93 mm	Panel cut-out: $92^{+0,6} \times 45^{+0,6}$ mm
Protection grade (acc. to EN 60529)	from frontal side: IP65	from terminal side: IP 10

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English: +48 68 32 95 302 / 321 / 276 / 386 / 233
German: +48 68 32 95 305
French: +48 68 32 95 304
Russian: +48 68 32 95 321
Fax: +48 68 32 54 091
e-mail: export@lumel.com.pl

LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

Rated Operating Conditions

Supply voltage	85...253 V a.c. (40...400 Hz) or d.c., 20...40 V a.c. (40...400 Hz) or d.c.	
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	condensation inadmissible
Operating position	any	
External magnetic field	0...400 A/m	

Safety And Compatibility Requirements

Electromagnetic compatibility	Noise immunity	acc. to EN 61000-6-2
	Noise emissions	acc. to EN 61000-6-4
Isolation between circuits	basic	acc. to EN 61010-1
Pollution grade	2	
Installation category	III	
Maximal phase-to-earth working voltage	for the supply circuit: 300 V	
	for remaining circuit: 50 V	
Altitude above sea level	< 2000 m	

Connection diagrams

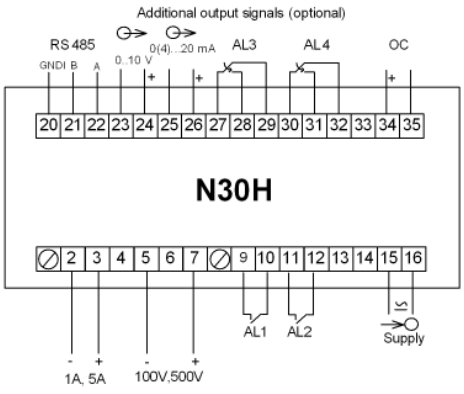

Fig. 1. Description of signals on connection strips

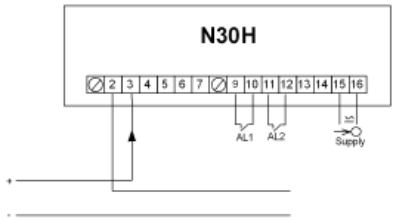

Fig. 2. Meter connection in the configuration for current measurement

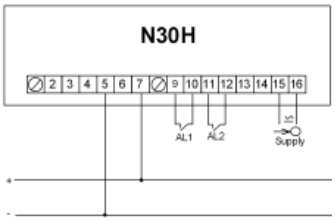

Fig. 3. Meter connection in the configuration for voltage measurement

Ordering

Table 1. Ordering codes:

N30H -	X	X	XX	XX	X	X
Supply:						
85...253 V a.c./d.c.	1					
20...40 V a.c./d.c.	2					
Additional outputs:						
lack		0				
OC output, RS-485, analog outputs		1				
OC output, RS-485, analog outputs switched-over relay outputs		2				
Unit:						
unit code acc. to the table 2			XX			
Version:						
standard				00		
custom-made*				XX		
Language:						
Polish					P	
English					E	
other*					X	
Acceptance tests:						
without extra requirements						0
with an extra quality inspection certificate						1
acc. to customer's request*						X

Table 2. Codes of highlighted unit:

Code	Unit	Code	Unit	Code	Unit
00	lack of unit	20	kVAh	40	szt.
01	V	21	MVAh	41	imp
02	A	22	Hz	42	rps
03	mV	23	kHz	43	m/s
04	kV	24	Ω	44	l/s
05	mA	25	kΩ	45	obr/min
06	kA	26	°C	46	rpm
07	W	27	°F	47	mm/min
08	kW	28	K	48	m/min
09	MW	29	%	49	l/min
10	var	30	%RH	50	m^3/min
11	kvar	31	pH	51	szt./h
12	Mvar	32	kg	52	m/h
13	VA	33	bar	53	km/h
14	kVA	34	m	54	m^3/h
15	MVA	35	l	55	kg/h
16	kWh	36	s	56	l/h
17	MWh	37	h	XX	on order*
18	kvarh	38	m^3		
19	Mvarh	39	obr		

Order example:

The code **N30H - 1 0 01 00 E 0** means

N30H - programmable N30H panel digital meter
1 - supply: 85...253 V a.c./d.c.
0 - lack of additional outputs
01 - unit "V" acc. to the table 2
00 - standard option
E -English language
0 - without extra requirements

* - after agreeing with the manufacturer

See Also:

LPConfig

Free LPConfig software for easy programming of LUMEL's products. Available on our website

KD7 recorder with MODBUS master protocol for recording data measured by N30H meter.

SM7 communication module for RS485 interface. Enables wireless connection on distance up to 300 meters.

For more information about LUMEL's products please visit our website: www.lumel.com.pl

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e-mail: export@lumel.com.pl

LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N30O DIGITAL PANEL METER

LUMEL

FEATURES:

three-colour display
LPConfig Program
MODBUS
RTC
21 points charact.
Password protection
IP65

INPUTS:

Hz

OUTPUTS:

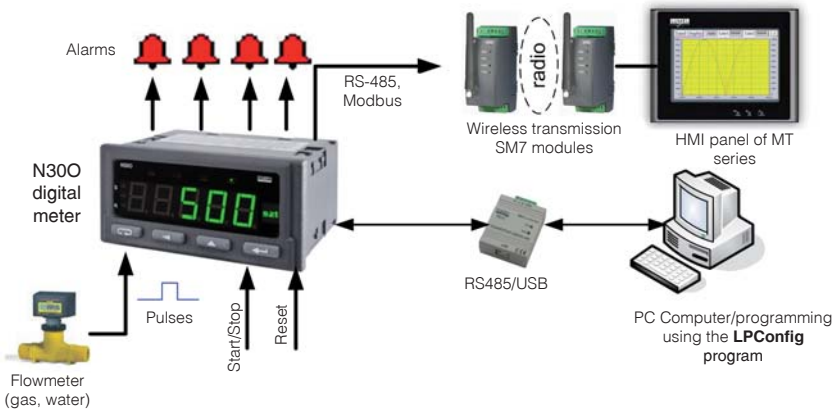
0 .. 20 mA
0..10 V
2x
2x
RS 485

GALVANIC ISOLATION:

Supply
RS 485

- Measurement: number of pulses, frequency, rotational speed, period, worktime counter.
- Two impulse counters, co-operation with encoders.
- Counter of actual and total values.
- 3-colour display (14 mm high), programmable in 3 ranges of the measured value.
- Meter programming from keyboard or through the RS-485 interface by means of the free LPConfig program.
- 4 alarm outputs with signalling on LED diodes, working in 6 different modes.
- Conversion of any measured value into an analog signal 0/4...20 mA or 0...10 V.
- Storage of minimal and maximal values for all measured quantities.
- Supply of object transducers (option).
- 21-point individual characteristic for the measured value.
- Mathematical function.
- Firmware updating (option).

EXAMPLE OF APPLICATION



Measurement and visualization of the water/gas flow. The measured value is transmitted to the operating panel via radio modules

INPUTS

Input signal:	Input kind	Indication range	Maximal frequency of input	Class	Remarks
Voltage 5...36 V d.c.	Number of pulses IN1/IN2	-19 999..99 999	10 kHz/ 8 kHz	-	with signal filtering 2 kHz
	Frequency < 10 kHz	0.05..99 999 Hz	100 kHz	0,1	with signal filtering 100 Hz
	Frequency > 10 kHz	1...99 999 Hz (measuring range up to 1 MHz)	1 MHz	0,1	
	Rotational speed	0.05...99 999 [rpm]	100 kHz	0,1	
	Period t < 10 s	0.0001...11 [s]		0,1	
	Period t < 10 s	0.0001...3600 [s]		0,1	
	Worktime counter	0...99 999 [h]		0,5 sek./ 24 h	
	Encoder	-19 999...99 999	10 kHz		with signal filtering 2 kHz
	Current time	00.00...23.59		0,5 sek./ 24 h	

OUTPUTS

Output kind	Properties	Remarks
Relay output	• 2 x relays, voltageless NOC contacts load-carrying capacity 250 V a.c./ 0.5 A a.c. • 2 x relays, voltageless switched contacts load-carrying capacity 250 V a.c./ 0.5 A a.c.	
Analog output	• current programmable 0/4..20mA, load resistance ≤ 500 Ω • voltage programmable 0...10 V load resistance ≥ 500 Ω	Error of analog output: **0.2% of the set range** Additional error from temperature changes: **50% of the class/10K**
OC output	• typu OC, passive npn, 30 V d.c./30 mA	
Auxiliary supply	• 24 V d.c./ 30mA	

DIGITAL INTERFACE

Interface type	transmission protocol	modes	baud rates
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	4.8, 9.6, 19.2, 38.4, 57.6, 115.2 kbit/s

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German: +48 68 32 95 305
French: +48 68 32 95 304
Russian: +48 68 32 95 321
Fax: +48 68 32 54 091
e-mail: export@lumel.com.pl

LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N30O DIGITAL PANEL METER

External Features

Readout field	5-digit LED display - indication range -19999..99999 digit height: 14 mm	three-colour display (color changes depending on displayed value): red, green, orange
Weight	< 0.2 kg	
Overall dimensions	96 × 48 × 93 mm	Panel cut-out: $92^{+0,6} \times 45^{+0,6}$ mm
Protection grade (acc. to EN 60529)	from frontal side: IP65	from rear side: IP 10

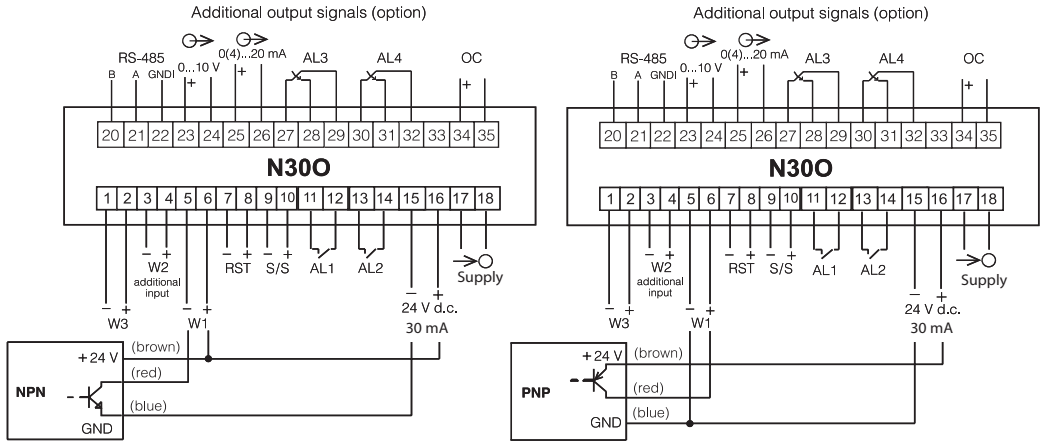
Rated Operating Conditions

Supply voltage	85...253 V a.c. (40...400 Hz) or d.c., 20...40 V a.c. (40...400 Hz) or d.c.	power input < 6 VA
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	condensation inadmissible
Operating position	any	
External magnetic field	0...400 A/m	

Safety And Compatibility Requirements

Electromagnetic compatibility	Noise immunity	acc. to EN 61000-6-2
	Noise emissions	acc. to EN 61000-6-4
Isolation between circuits	basic	acc. to EN 61010-1
Pollution grade	2	
Installation category	III	
Maximal phase-to-earth operating voltage	for the supply circuit: 300 V	
	for remaining circuits: 50 V	
Altitude above sea level	< 2000 m	

Connection Diagrams



Connections of the transducer with the OC output of NPN and PNP type.

Ordering

Table 1. Ordering codes:

N30O -	X	X	XX	XX	X	X
Supply:						
85...253 V a.c.(40...400 Hz) or d.c.	1					
20...40 V a.c. (40...400 Hz) or d.c.d.c.	2					
Additional outputs:						
lack		0				
OC output, RS-485, analog outputs		1				
OC output, RS-485, analog outputs switched-over relay outputs		2				
Unit:						
unit code acc. to the table 2			XX			
Version:						
standard				00		
custom-made*				XX		
Language:						
Polish					P	
English					E	
other*					X	
Acceptance tests:						
without extra requirements						0
with an extra quality inspection certificate						1

Order example: The code **N30O - 1 0 01 00 E 0** means:
N30O - programmable N30O digital panel meter
1 - supply: 85...253 V a.c./d.c.
0 - lack of additional outputs
01 - unit "V" acc. to tabel 2
00 - standard option
E - English language
0 - without extra requirements

Table 2. Codes of highlighted unit:

Code	Unit	Code	Unit	Code	Unit
00	lack of unit	20	kVAh	40	szt.
01	V	21	MVAh	41	imp
02	A	22	Hz	42	rps
03	mV	23	kHz	43	m/s
04	kV	24	Ω	44	l/s
05	mA	25	kΩ	45	obr/min
06	kA	26	°C	46	rpm
07	W	27	°F	47	mm/min
08	kW	28	K	48	m/min
09	MW	29	%	49	l/min
10	var	30	%RH	50	m^3/min
11	kvar	31	pH	51	szt./h
12	Mvar	32	kg	52	m/h
13	VA	33	bar	53	km/h
14	kVA	34	m	54	m^3/h
15	MVA	35	l	55	kg/h
16	kWh	36	s	56	l/h
17	MWh	37	h	XX	on order*
18	kvarh	38	m^3		
19	Mvarh	39	obr		

* - after agreeing with the manufacturer

See Also:

LPConfig

Free LPConfig software for easy programming of LUMEL's products. Available on our website

KD7 recorder with MODBUS master protocol for recording data measured by N30O meter.

SM3 binary inputs module. For readout of binary states and pulses through RS-485 protocol.

For more information about LUMEL's products please visit our website: www.lumel.com.pl

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Fax: +48 68 32 54 091
e-mail: export@lumel.com.pl

LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N30P DIGITAL PANEL METER

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Features:

3-colour display
LPConfig compatible
MOD BUS
RTC
Password protection
IP65

Inputs:

AC

Outputs:

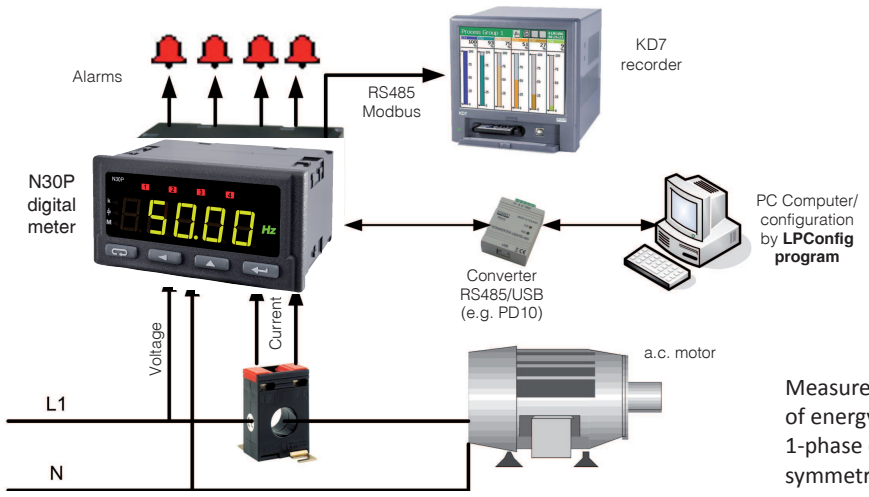
0...20 mA
0...10 V
2x
2x
RS 485

Galvanic isolation:

Sup.
RS 485

- Measurement of single-phase network parameters: voltage, current, active, reactive and apparent power, cosφ, tgφ, φ, frequency, active, reactive and apparent energy, 15 minutes' active power, 10 minutes' voltage, 10 seconds' frequency.
- Three-colour display (14 mm high), in three intervals of the measured value.
- Meter programming from the keyboard or through the RS-485 interface by means of the free delivered LPConfig program.
- Four alarm outputs with signalling by LED diodes, operating in 6 different modes.
- Storage of minimal and maximal values for all measured quantities.
- Conversion of any measured value into a 0/4...20 mA or 0...10 V analog signal.
- Storage of minimal and maximal values for all measured quantities.
- Firmware updating (option).

Example of Application



Measurement and recording of energy consumption in 1-phase or three-phase symmetrically loaded network

Inputs

Input kind	Measuring range	Rated operating conditions	Ratio values
Voltage input	0...100 V or 0...400 V	0.05...1.2 Un	0.1...4000.0
Current input	0...1 A or 0...5 A	0.005...1.2 In	1...10000

Measuring Ranges

Input kind	Indication range	Measuring range	Basic error
Current 1 A/5 A	0.000...60 kA	0.02...6 A a.c.	± 0.2%
Voltage 100 V/400 V	0.0...192 MV	1...480 V a.c.	± 0.2%
Frequency	45.00...100.00 Hz	45.00...66.00...100.00 Hz	± 0.2%
Active power	-19999...99999 MW	-2.88 kW...1.40 W...2.88 kW	± 0.5%
Reactive power	-19999...99999 Mvar	-2.88 kvar...1.40 var...2.88 kvar	± 0.5%
Apparent power	0.00...99999 MVA	1.40 VA...2.88 kVA	± 0.5%
Cos φ	-1...1	-1...0...1	± 0.5%
Tangens φ	-1.2...1.2	-1.2...0...1.2	± 1%
φ	0...359	0...359	± 1%
Active energy	0...9 999 999.9 kWh	0...9 999 999.9 kWh	± 0.5%
Reactive energy	0...9 999 999.9 kVarh	0...9 999 999.9 kVarh	± 0.5%
Apparent energy	0...9 999 999.9 kVA	0...9 999 999.9 kVA	± 0.5%
Current time	0.00...23.59	0.00..23.59	1 sec/ 24 h

Outputs

Output kind	Properties
Relay output	• 2 x relays, voltageless NO contacts, load-carrying capacity 250 V a.c./ 0.5 A a.c. • 2 x relays, voltageless change-over contacts, load-carrying capacity 250 V a.c./ 0.5 A a.c.
Analog output	• current programmable 0/4...20 mA, load resistance ≤ 500 Ω • voltage programmable 0...10 V, load resistance ≥ 500 Ω • resolution 0.01% of the range
Energy pulse output	• OC type output, passive of class A, acc. to EN 62053-31, supply voltage 18...27 V, current 10...27 mA. • Output pulse constant: 5000 imp./kWh, independently of Ku and Ki settings.

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German: +48 68 32 95 305
Russian: +48 68 32 95 321
Fax: +48 68 32 54 091
e-mail: export@lumel.com.pl

LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N30P DIGITAL PANEL METER

Digital Interfaces

Interface type	Transmission protocol	Mode	Baud rates
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	4.8; 9.6; 19.2; 38.4 kbit/s

External Features

Readout field	5 digit LED display - indication range -19999..99999 digit height: 14 mm	three-colour display (colour changes depending on displayed value): red, green, orange
Weight	< 0.2 kg	
Overall dimensions	96 × 48 × 93 mm	Panel cut-out: $92^{+0,6} \times 45^{+0,6}$ mm
Protection grade (acc. to EN 60529)	from frontal side: IP65	from rear side: IP 10

Rated Operating Conditions

Supply voltage	85...253 V a.c. (40...400 Hz) or d.c., 20...40 V a.c. (40...400 Hz) or d.c.	Power consumption: - in supply circuit < 6 VA - in voltage/current circuit < 0.05 VA
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	condensation inadmissible
Operating position	any	
External magnetic field	0...400 A/m	
Short duration overload (5 s)	voltage input: 2Un (max. 1000 V)	current input: 10 In

Safety And Compatibility Requirements

Electromagnetic compatibility	Noise immunity	acc. to EN 61000-6-2
	Noise emissions	acc. to EN 61000-6-4
Safety requirements		acc. to EN 61010-1

Connection Diagrams

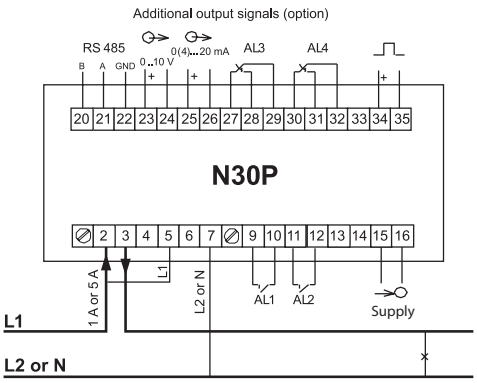

Fig. 1 Electrical connections of the N30P meter for direct measurements.

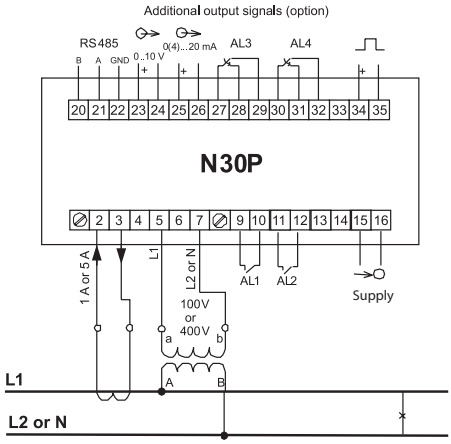

Fig. 2 Electrical connections of the N30P meter for indirect measurements.

Ordering

Table 1. Ordering codes:

N30P -	X	X	XX	XX	X	X
Supply:						
85...253 V a.c./d.c.	1					
20...40 V a.c./d.c.	2					
Additional outputs:						
lack		0				
pulse output, RS-485, analog outputs		1				
pulse output, RS-485, analog outputs switched-over relay outputs		2				
Unit:						
unit code acc. to the table 2			XX			
Version:						
standard				00		
custom-made*				XX		
Language:						
Polish					P	
English					E	
other*					X	
Acceptance tests:						
without extra requirements						0
with an extra quality inspection certificate						1
acc. to customer's request*						X

Order example: The code **N30P - 1 0 01 00 E 0** means:
N30P - programmable N30P panel digital meter
1 - supply: 85...253 V AC/DC
0 - lack of additional outputs
01 - unit "V" acc. to codes tabel 2
00 - standard execution
E - English language
0 - without extra requirements

Table 2. Codes of highlighted unit:

Code	Unit	Code	Unit	Code	Unit
00	lack of unit	20	kVAh	40	szt.
01	V	21	MVAh	41	imp
02	A	22	Hz	42	rps
03	mV	23	kHz	43	m/s
04	kV	24	Ω	44	l/s
05	mA	25	kΩ	45	obr/min
06	kA	26	°C	46	rpm
07	W	27	°F	47	mm/min
08	kW	28	K	48	m/min
09	MW	29	%	49	l/min
10	var	30	%RH	50	m^3/min
11	kvar	31	pH	51	obr/h
12	Mvar	32	kg	52	m/h
13	VA	33	bar	53	km/h
14	kVA	34	m	54	m^3/h
15	MVA	35	l	55	kg/h
16	kWh	36	s	56	l/h
17	MWh	37	h	XX	on order*
18	kvarh	38	m^3		
19	Mvarh	39	obr		

* - after agreeing with the manufacturer

See Also:

LPConfig

Free LPConfig software for easy programming. Available on our website

Current transformers with inputs from 5 A up to 6 kA.

N14 meter for measurement of three-phase network parameters.

For more information about LUMEL's products please visit our website: www.lumel.com.pl

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LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N30U DIGITAL PANEL METER

LUMEL

FEATURES:

three-colour display
LPConfig Program
MOD BUS
RTC
21 points charact.
Password protection
IP65

INPUTS:

-10..10 V
-20..20 mA
60 mV

OUTPUTS:

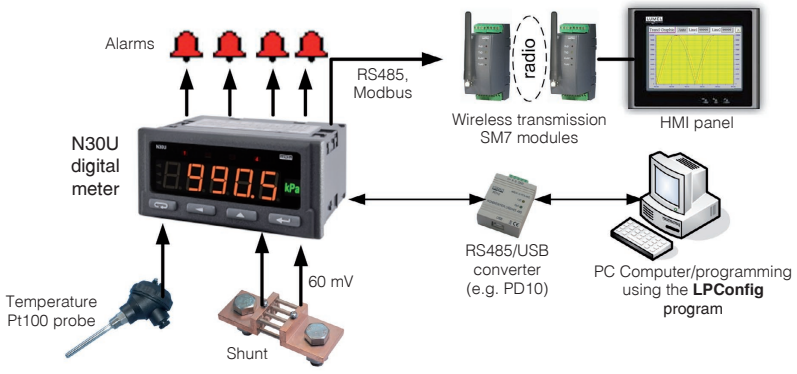
0 .. 20 mA
0..10 V
2x
2x
RS 485

GALVANIC ISOLATION:

Supply
RS 485

- Measurement: temperature, resistance, standard signals.
- 3-colour display (14 mm high), programmable in 3 ranges of the measured value.
- Meter programming from keyboard or through the RS-485 interface by means of the free LPConfig program.
- 4 alarm outputs with signalling on LED diodes, working in 6 different modes.
- Conversion of any measured value into an analog signal 0/4...20 mA or 0...10 V.
- Storage of minimal and maximal values for all measured quantities.
- Supply of object transducers (ver. N30U-1XXXXXXX).
- 21-point individual characteristic for the measured value.

EXAMPLE OF APPLICATION



Measurement and visualization of analog standard signals: Pt100, TC, 20 mA, 60 mV, 10 V. Measured parameters are transmitted to the HMI operator panel through radio modules.

INPUT

Input kind	Maximal measuring range	Class	Additional error
Pt100	-205...855°C (-200...850°C)	0.1	- due to automatic compensation of the reference junction temperature ≤ 1°C - due to automatic compensation of the cable resistance for thermoresistors ≤ 0,5°C - due to automatic compensation of the cables for resistance measurement ≤ 0,2Ω - from temperature changes 100 % of the class / 10 K
Pt500			
Pt1000			
400 Ω	0...410 Ω (0...400 Ω)		
4000 Ω	0...4010 Ω (0...4000 Ω)		
Thermocouple of J type	-200..1200 °C (-100..1200 °C)		
Thermocouple of K type	-200..1370 °C (-100..1370 °C)		
Thermocouple of N type	-200..1300 °C (-100..1300 °C)		
Thermocouple of E type	-200..1000 °C (-100..1000 °C)		
Thermocouple of R type	-50..1768 °C (-50..1760 °C)		
Thermocouple of S type	-50..1768 °C (-50..1760 °C)		
Voltage input 0...10 V	-13...13 V (-10...10 V)		
Current input	-24...24 mA (-20...20 mA)		
Voltage input	-10...63 mV (0...60 mV)		
Current time	00.00...23.59	0.5 sec./ 24h	

OUTPUTS

Output kind	Properties	Remarks
Relay output	• 2 x relays, voltageless NOC contacts load-carrying capacity 250 V a.c./ 0.5 A a.c. • 2 x relays, voltageless switched contacts load-carrying capacity 250 V a.c./ 0.5 A a.c.	
Analog output	• current programmable 0/4..20mA, load resistance ≤ 500 Ω • voltage programmable 0...10 V load resistance ≥ 500 Ω	Error of analog output: **0.2% of the set range** Additional error from temperature changes: **50% of the class/10K**
OC output	• typu OC, passive npn, 30 V d.c./30 mA	Voltageless output
Auxiliary supply	• 24 V d.c./ 30mA	only for meter version: N30U-1XXXXXXX

DIGITAL INTERFACE

Interface type	transmission protocol	modes	baud rates
RS-485	MODBUS RTU	8N2, 8E1, 8O1, 8N1	4.8, 9.6, 19.2, 38.4, 57.6, 115.2 kbit/s

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LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N30U DIGITAL PANEL METER

External Features

Readout field	5 digit LED display - indication range -19999..99999 digit height: 14 mm	three-color display (colour changes depending on displayed value): red, green, orange
Weight	< 0.2 kg	
Dimensions	96 × 48 × 93 mm	Panel cut-out: $92^{+0,6} \times 45^{+0,6}$ mm
Protection grade (acc. to EN 60529)	from frontal side: IP65	from rear side: IP 10

Rated Operating Conditions

Supply voltage	85...253 V a.c. (40...400 Hz) or d.c., 20...40 V a.c. (40...400 Hz), 20...60 V d.c.	power consumption < 6 VA
Temperature	ambient: -25...23...55°C	storage: -30...70°C
Relative humidity	25...95%	condensation inadmissible
Operating position	any	
External magnetic field	0...400 A/m	

Safety And Compatibility Requirements

Electromagnetic compatibility	Noise immunity	acc. to EN 61000-6-2
	Noise emissions	acc. to EN 61000-6-4
Isolation between circuits	basic	acc. to EN 61010-1
Pollution grade	2	
Installation category	III	
Maximal phase-to-earth operating voltage	for the supply circuit: 300 V	
	for remaining circuits: 50 V	
Altitude above sea level	< 2000 m	

Connection Diagrams

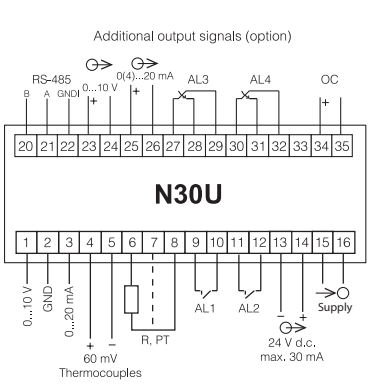

Fig. 1 Description of signals on connection strips.

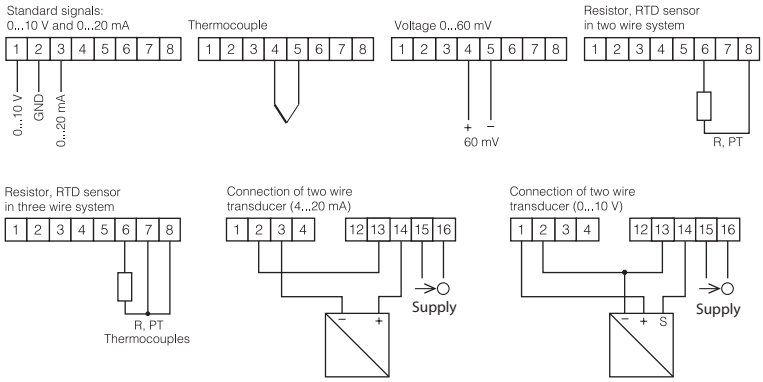

Fig. 2 Ways of the meter connection.

Ordering

Table 1. Ordering codes:

N30U -	X	X	XX	XX	X	X
Supply:						
85...253 V a.c./d.c.	1					
20...40 V a.c., 20...60 V d.c.	2					
Additional outputs:						
lack		0				
OC output, RS-485, analog outputs		1				
OC output, RS-485, analog outputs switched-over relay outputs		2				
Unit:						
unit code acc. to the table 2			XX			
Version:						
standard				00		
custom-made*				XX		
Language:						
Polish					P	
English					E	
other*					X	
Acceptance tests:						
without extra requirements						0
with an extra quality inspection certificate						1
acc. to customer's request*						X

Order example: The code **N30U - 1 0 26 00 E 0** means

N30U - programmable N30U digital panel meter
1 - supply: 85...253 V a.c./d.c.
0 - lack of additional outputs
26 - unit "°C" acc. to tabel 2
00 - standard option
E - English language
0 - without extra requirements

Table 2. Codes of highlighted unit:

Code	Unit	Code	Unit	Code	Unit
00	lack of unit	20	kVAh	40	szt.
01	V	21	MVAh	41	imp
02	A	22	Hz	42	rps
03	mV	23	kHz	43	m/s
04	kV	24	Ω	44	l/s
05	mA	25	kΩ	45	obroty/min
06	kA	26	°C	46	rpm
07	W	27	°F	47	mm/min
08	kW	28	K	48	m/min
09	MW	29	%	49	l/min
10	var	30	%RH	50	m^3/min
11	kvar	31	pH	51	pcs/h
12	Mvar	32	kg	52	m/h
13	VA	33	bar	53	km/h
14	kVA	34	m	54	m^3/h
15	MVA	35	l	55	kg/h
16	kWh	36	s	56	l/h
17	MWh	37	h	XX	on order*
18	kvarh	38	m^3		
19	Mvarh	39	obroty		

* - after agreeing with the manufacturer

See Also:

LPConfig

Free LPConfig software for easy programming of LUMEL's products. Available on our website

KD7 recorder with MODBUS master protocol for recording data measured by N30U.

Shunts for measurement DC current from 5A up to 15 kA. For more details see our ANALOG METERS catalogue.

For more information about LUMEL's products please visit our website: www.lumel.com.pl

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e-mail: export@lumel.com.pl

LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N20 DIGITAL PANEL METER

LUMEL

FEATURES:

PD14 Programmer
Program LPConfig
IP65
Linear char.
3-color display

INPUTS:

-20...20 mA
-10...10 V
60 mV

OUTPUTS:

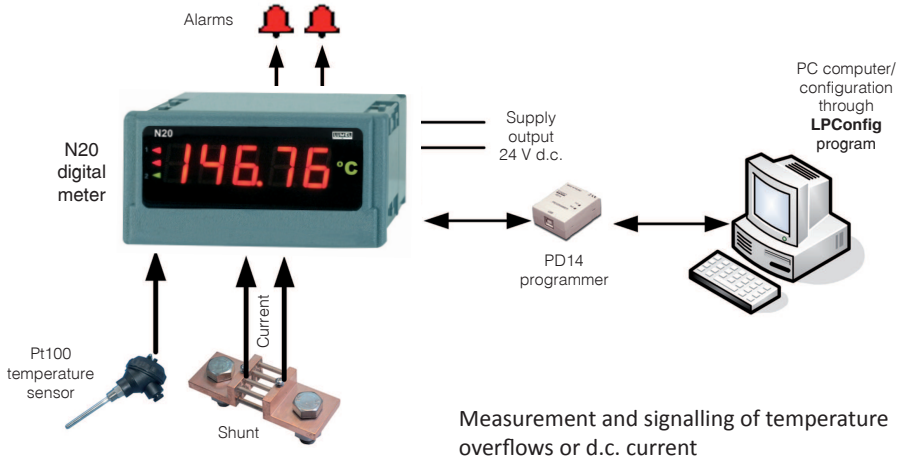
U
2 x

GALVANIC ISOLATION:

Supply
PD14 Programmer
U

- Measurement of voltage or d.c. current and temperature (Pt100, J, K):
- Three-colour LED display (5 digits, 14 mm high).
- 2 alarm outputs of OC type.
- Galvanic separation between the supply, measuring inputs and the programmer input.
- Programmable parameters through the PD14 programmer:
  - recounting of indications (individual characteristic),
  - two alarms of OC type operating in 6 working modes,
  - display colour programmable in three intervals,
  - thresholds of displayed overflows,
  - highlight of the unit,
  - automatic or manual compensation: temperature of cold ends (for J, K) or wire resistance (for Pt100),
  - measurement averaging time.
- Supply of object transducers.

EXAMPLE OF APPLICATION



Measurement and signalling of temperature overflows or d.c. current

INPUTS

Kind of inputs	Measuring range	Parameters	Basic error
Voltage input	-11...-10...60...66 mV -1...0...10...11 V -11...10...10...11 V	Input resistance: >1 MΩ	± (0.2% of range + 1 digit)
Current input	-1...0...20...22 mA 3,6...4...20...22 mA -22...-20...20...22 mA	Input resistance: 10 Ω ± 1% Input resistance: 10 Ω ± 1% Input resistance: 5 Ω ± 1%	
Temperature measurement Pt100	- 50...400°C		
Temperature measurement through J thermocouple	- 50...1200°C		
Temperature measurement through K thermocouple	- 50...1370°C		

OUTPUTS

Kind of inputs	Features
Alarm outputs	• 2 alarm outputs of OC type
Outputs for external supply of transducers	• 24 V ± 5%, 30 mA

EXTERNAL FEATURES

Readout field	5 digital LED displays. Indication range -19999...99999 Digit height: 14 mm	Three-colour display (changes of colour depend on the displayed value): red, green, orange.
Weight	< 0.25 kg	
Overall dimensions	96 × 48 × 64 mm	Panel cut-out: $92^{+0,6} \times 45^{+0,6}$ mm
Protection grade (acc. to EN 60529)	From frontal side: IP65	From terminal side: IP10

Export department:
+48 68 45 75 139/
276/305/ 386
Fax: +48 68 32 54 091
e-mail: export@lumel.com.pl

„LUMEL" S.A.
ul. Słubicka 1
65-127 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N20 DIGITAL PANEL METER

RATED OPERATING CONDITIONS

Supply voltage	85...253 V a.c. (45...65 Hz) or d.c., 20...40 V a.c. (45...65 Hz) or d.c.	Power consumption < 6 VA
Temperature	Ambient: -10...23...55°C	Storage: -25...85°C
Relative humidity	< 95%	Condensation inadmissible
Operating position	any	

SAFETY AND COMPATIBILITY REQUIREMENTS

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Safety requirements		acc. to EN 61010-1
Galvanic isolation between supply and measuring input	3.2 kV d.c.	

CONNECTION DIAGRAMS

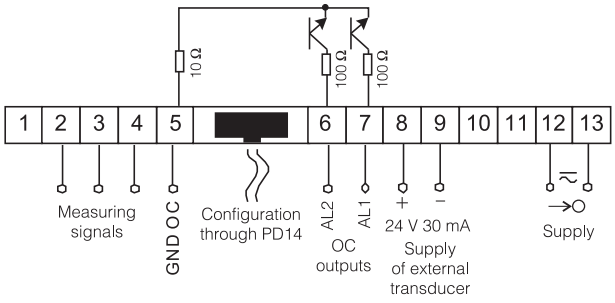


Fig. 1 Electrical connections of N20 meter.

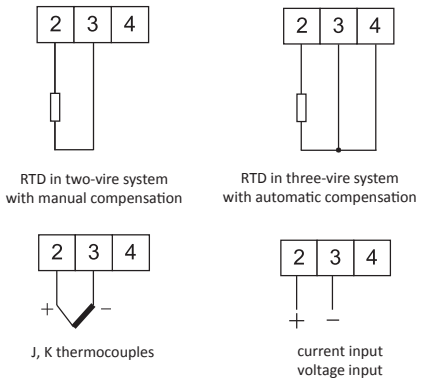


Fig. 2 Connections of measuring inputs.

ORDERING

TABLE 1. ORDERING CODES:

N20 -	X	X	XX	XX	X
Input:					
Pt100: -50...400°C	1				
Thermocouple J: -50...1200°C	2				
Thermocouple K: -50...1370°C	3				
0...20 mA	4				
4...20 mA	5				
± 20 mA	6				
0...60 mV	7				
0...10 V	8				
± 10 V	9				
Supply:					
85...253 V a.c./d.c.		1			
20...40 V a.c./d.c		2			
Unit:					
unit code number acc. to table 2			XX		
Version:					
standard				00	
custom-made*				XX	
non-standard settings				99	
Acceptance tests:					
without extra requirements					8
with an extra quality inspection certificate					7
acc. to customer's request*					X

* - after agreeing with the manufacturer

TABLE 2. CODES OF HIGHLIGHTED UNIT:

Code	Unit	Code	Unit	Code	Unit
00	without unit	17	µm	34	bar
01	V	18	mm	35	rad
02	A	19	cm	36	Ω
03	mV	20	m	37	kΩ
04	kV	21	km	38	%
05	MV	22	l	39	°
06	mA	23	l/s	40	turns
07	kA	24	l/h	41	rps
08	MA	25	ms	42	rpm
09	°C	26	s	43	rph
10	°F	27	h	44	m/h
11	K	28	N	45	km/h
12	Hz	29	kN	46	imp
13	kHz	30	Pa		
14	Ah	31	hPa		
15	kAh	32	kPa	XX	on order[1]
16	m/s	33	MPa		

1) - after agreeing with the manufacturer

ORDER EXAMPLES

Example 1

The code **N20 - 9 1 01 00 8** - means: N20 meter with voltage input on ± 10 V, supply: 85... 253 V a.c., without extra quality requirements, „V" unit

Example 2

The code **N20 - 5 2 38 99 8 + description of non-standard settings**

Parameter	Range/Value
Displayed colour of the upper measured value	red
Displayed colour of the median measured value	green
Displayed colour of the lower measured value	orange
Upper threshold - KpH	44.00
Lower threshold - KpL	40.00
Decimal point	000.00

Highlight of the measured value	ON
Automatic compensation of terminal temperature	OFF
Manual compensation of terminal temperature	0
Averaging time	1 s
Upper overflow of measurement	99999
Lower overflow of measurement	-19999
Individual characteristic	ON
Parameter ***a*** of the individual characteristic	10.0
Parameter ***b*** of the individual characteristic	0
Kind of the alarm output 1 operation	ON
Upper value to switch the alarm 1 - Aon	40.00
Lower value to switch the alarm 1 - Aoff	0.00
Delay of the alarm 1 switching time	0 second
Kind of the alarm output 2 operation	n-on
Upper value to switch the alarm 2 - Aon	44.00
Lower value to switch the alarm 2 - Aoff	40.00
Delay of the alarm 2 switching time	0 second

- means: N20 meter with current input on 4...20 mA, supply: 20...40 V a.c./d.c., executed acc. to given detailed parameter description by the user, without extra quality requirements

Caution! When ordering a meter with parameters different than standard, one must give values of **ALL** parameters.

SEE ALSO:

LPConfig

Free LPConfig program for programming LUMEL's products. Available on our website.

Programmable transducer of temperature, resistance, voltage from shunt and standard signals - P20

N30 digital meters with a 3-colour display and free LPConfig program.

For more information about LUMEL's products please visit our website: www.lumel.com.pl.

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ul. Słubicka 1
65-127 Zielona Góra
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N24 DIGITAL PANEL METERS

LUMEL

Features:

IP65 | Program LPConfig | PD14 Programmer | Linear char.

Inputs:

AC | DC | V | -20...20 mA | -10...10 V | 60 mV

Outputs:

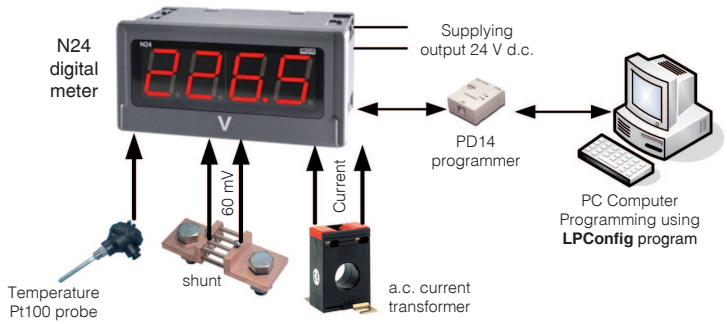
U

Galvanic isolation:

PD14 Programmer | Sup.

- Destined for measurement of d.c. voltage or d.c. current, temperature through Pt100 resistance thermometers, J, K thermocouples, a.c. voltage and a.c. current.
- 4 LED digit displays with 20 mm digit high.
- Parameters programmable by PD14 programmer:
  - precision of displayed results (decimal point),
  - measurement averaging time,
  - recounting of indications (individual characteristic),
  - automatic or manual compensation: cold junction temperature for measurement with thermocouples or wire resistance for measurement with Pt100 (N24T).

Example of application



Measurement and display:
- temperature
- analog signals
- d.c. current and voltage
- rms current and voltage.

Inputs

Type	Measuring ranges		Parameters	Overloads	Errors
N24S	-11 mV...-10 mV...60 mV...66 mV		Input resistance >1 MΩ	Short duration overload (1s): - voltage input: 10 Un - current input: 5 In Sustained overload: 110% Un, 110% In	**Basic error:** **± (0.2% of range + 1 digit)** **Additional error** from ambient temperature changes: **± (50% of basic error/10K)**
	-66 mV...-60 mV...60 mV...66 mV				
	-0.5 V...0 V...10 V...11 V				
	-11 V...-10 V...10 V...11 V				
	-1 mA...0 mA...20 mA...22 mA		Input resistance 10 Ω ±1%		
	3.6 mA...4 mA...20 mA...22 mA		Input resistance 10 Ω ±1%		
N24T	Pt100	-50°C...150°C	Current flowing through the sensor: < 300 µA. Resistance of wires connecting RTD with the meter: - max 5 Ω (per wire) for automatic compensation - max 10 Ω (per wire) for manual compensation	Short duration overload (1s) Input of sensors: 30 V	**Basic error:** **± (0.2% of range + 1 digit)** **Additional errors:** • compensation of cold junction temperature changes: **± 0.2% of range,** • from ambient temperature changes: **± (50% of basic error/10K).**
		-50°C...400°C			
	Thermo-couple J	-50°C...1200°C			
	Thermo-couple K	-50°C...1370°C			
N24Z	1...100...120 V a.c.		Input resistance > 2 MΩ	Short term overload (1s): voltage input: 2 Un (< 1000V), current input: 10 In Sustained overload: 150% Un (for 400 V input), 120% (for remaining inputs), 120% In	**Basic error:** • voltage and current: **± (0.5% of range + 1 digit)** in frequency range 20...500 Hz • frequency: **± (0.02% of range + 1 digit)** **Additional error** from ambient temperature changes: **± (50% of basic error/10K)**
	2.5...250...300 V a.c.				
	4...400..600 V a.c.				
	20...500 Hz (in voltage range: 24...480 V)				
	0.01...1...1.2 A a.c.		Input resistance 10 mΩ ±10%		
	0.05...5...6 A a.c.		Input resistance 2 mΩ ±10%		
N24H	0...100...110 V d.c.		Input resistance > 2 MΩ	Short term overload (1s): voltage input: 2 Un (< 1000V), current input: 10 In Sustained overload: 150% Un (for ± 400 V input), 120% (for remaining inputs), 120% In	**Basic error:** **± (0.2% of range + 1 digit)** **Additional error** from ambient temperature changes: **± (50% of basic error/10K)**
	0...250...275 V d.c.				
	-120...-100...100...120 V d.c.				
	-300...-250...250...300 V d.c.				
	-600...-400...400...600 V d.c.				
	-1.2...-1...1...1.2 A d.c.		Input resistance 10 mΩ ±10%		
	-6...-5...5...6 A d.c.		Input resistance 2 mΩ ±10%		

Outputs

For N24S and N24T	Output for supply external transducers	24 V ± 5%, 30 mA

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LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
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N24 DIGITAL PANEL METERS

External features

Weight	< 0.25 kg	
Overall dimensions	96 x 48 x 64 mm (with terminals)	
Protection grade (acc. to EN 60529)	ensured by the housing: IP65	from the terminal side: IP 20
Display	4-digit LED display, 20 mm high, red colour	indication range: -1999...9999

Rated operating conditions

Supply voltage	230 V ± 10% a.c. (45...65 Hz); 110 V ± 10% a.c. (45...65 Hz) 24 V ± 10% a.c. (45...65 Hz); 85...253 V a.c. (40...400 Hz) or d.c.; 20...40 V a.c. (40...400 Hz) or d.c.	input power consumption: 6 VA
Temperature	ambient: -10...23...55˚C	storage: -25..85 ˚C
Relative humidity	≤ 95%	condensation inadmissible
Operating position	any	
Preheating time	30 min	
Averaging time	≥ 0.5 s	1 second default set

Safety and compatibility requirements

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Isolation between circuits	basic	acc. to EN 61010-1
Pollution grade	2	
Installation category	III (for the 400 V option - category II)	
Maximal phase-to-earth operating voltage	for supply circuits: 300 V, for measuring circuits: 600 V - cat. II	
	for other circuits: 50 V	
Altitude above sea level	< 2000 m	

Connection diagrams

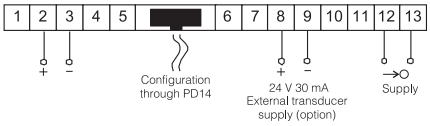

Fig. 1. Electrical connections of the N24S meter

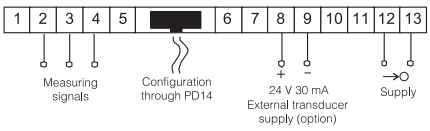

Fig. 2. Electrical connections of the N24T meter.

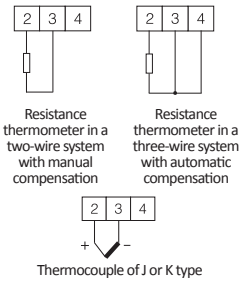

Fig. 3. Connections of N24T measuring inputs

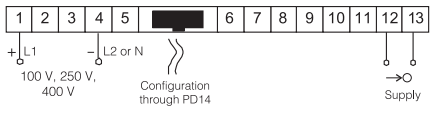

Fig. 4. Electrical connections of N24Z and N24H meters for the measurement of voltage (and frequency only in N24Z)

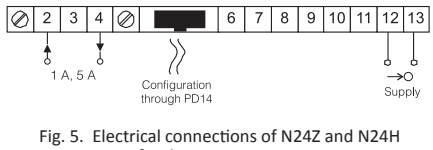

Fig. 5. Electrical connections of N24Z and N24H meters for the current measurement

Ordering

Table 1. Ordering codes:

N24 -	X	X	XX	XX	X	X
Input kind:						
standard: voltage, current	S					
temperature: thermocouples, resistance thermometers	T					
a.c. signals	Z					
d.c. signals: high voltage and high current	H					
Input:						
see table 2		X				
Supply:						
230 V a.c.			1			
110 V a.c.			2			
24 V a.c.			3			
85...253 V a.c./d.c. with supply output 24 V/30 mA*			4			
20...40 V a.c./d.c. with supply output 24 V/30 mA*			5			
Unit:						
see table 3				XX		
Version:						
standard				00		
non-standard settings				NS		
custom-made**				XX		
Language:						
Polish					P	
English					E	
other**					X	
Acceptance tests:						
without extra requirements						0
with an extra quality inspection certificate						1
acc. to customer's request**						X

* -The output is only in N24S and N24T meters
** - After agreeing with the manufacturer

Table 2. Input signals

Nr	N24S	N24T	N24Z	N24H
1	0...20 mA	Pt100: -50...150°C	100 V a.c.	±100 V d.c.
2	4...20 mA	Pt100: -50...400°C	250 V a.c.	±250 V d.c.
3	0...60 mV	Thermocouple J	400 V a.c.	±400 V d.c.
4	0...10 V	Thermocouple K	1 A a.c.	±1 A d.c.
5	± 60 mV		5 A a.c.	±5 A d.c.
6	± 10 V		20...500 Hz	0...100 V d.c.
7				0...250 V d.c.

Table 3. Codes of printed units:

Code	Unit	Code	Unit	Code	Unit
00	without unit	06	mA	12	bar
01	˚C	07	kA	13	kPa
02	%	08	kV	14	MPa
03	A	09	Hz	XX	on order
04	V	10	turns		
05	mV	11	rpm		

Table 4. Example of non-standard settings:

Parameter	Range/Value
Decimal point	000,0 for I, U
Averaging time	1 s
Upper measurement overflow	9999
Lower measurement overflow	-1999
Individual characteristic	enabled
Parameter **a** of the individual characteristic	5
Parameter **b** of the individual characteristic	0

Order example 1 :
The code **N24Z-2 1 04 00 E 0** means
N24Z - digital meter for a.c. signals
2 - input: 250 V a.c.
1 - supply: 230 V a.c.
04 - unit: V
00 - standard version
E - English language
0 - without extra requirements

Order example 2 :
The code **N24S-1 4 02 NS E 1** means:
N24S - digital meter for d.c. signals
1 - input: 0...20mA
4 - supply: 85...253 V a.c. wiht supply output: 24V/30mA
02 - unit: %
NS - non-standard settings, display range: 0...100.0
E - English language
1 - with an extra quality inspection certificate

See Also:

LPConfig
Free LPConfig software for easy programming of LUMEL's products. Available on our website

PD14 programmer - unit for programming LUMEL's products, with USB connection, LPCon compatible.

N30 digital panel meters with three-colour display.

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Russian: +48 68 32 95 321
Fax: +48 68 32 54 091
e-mail: export@lumel.com.pl
LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N25 DIGITAL PANEL METERS

LUMEL

Features:

IP65 | Program LPConfig | PD14 Programmer | Linear char.

Inputs:

AC | DC | V | -20...20 mA | -10...10 V | 60 mV

Outputs:

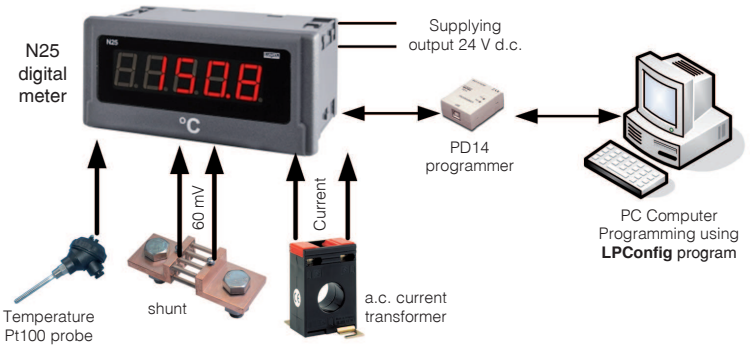
U

Galvanic isolation:

PD14 Programmer | Sup.

- Destined for measurement of d.c. voltage or d.c. current, temperature through Pt100 resistance thermometers, J, K thermocouples, a.c. voltage and a.c. current.
- 5 LED digit displays with 14 mm digit high.
- Parameters programmable by PD14 programmer:
  - precision of displayed results (decimal point),
  - measurement averaging time,
  - recounting of indications (individual characteristic),
  - automatic or manual compensation: cold junction temperature for measurement with thermocouples or wire resistance for measurement with Pt100 (N25T).

Example of application



Measurement and display:
- temperature
- analog signals
- d.c. current and voltage
- rms current and voltage.

Inputs

Type	Measuring ranges		Parameters	Overloads	Errors
N25S	-11 mV...-10 mV...60 mV...66 mV		Input resistance >1 MΩ	Short duration overload (1s): - voltage input: 10 Un - current input: 5 In Sustained overload: 110% Un, 110% In	**Basic error**: **± (0.2% of range + 1 digit)** **Additional error** from ambient temperature changes: **± (50% of basic error/10K)**
	-66 mV...-60 mV...60 mV...66 mV				
	-0.5 V...0 V...10 V...11 V				
	-11 V...-10 V...10 V...11 V				
	-1 mA...0 mA...20 mA...22 mA		Input resistance 10 Ω ±1%		
	3.6 mA...4 mA...20 mA...22 mA		Input resistance 10 Ω ±1%		
N25T	Pt100	-50°C...150°C	Current flowing through the sensor: < 300 µA. Resistance of wires connecting RTD with the meter: - max 5 Ω (per wire) for automatic compensation - max 10 Ω (per wire) for manual compensation	Short duration overload (1s) Input of sensors: 30 V	**Basic error**: **± (0.2% of range + 1 digit)** **Additional errors:** • compensation of cold junction temperature changes: **± 0.2% of range,** • from ambient temperature changes: **± (50% of basic error/10K).**
		-50°C...400°C			
	Thermo-couple J	-50°C...1200°C			
	Thermo-couple K	-50°C...1370°C			
N25Z	1...100...120 V a.c.		Input resistance > 2 MΩ	Short term overload (1s): voltage input: 2 Un (< 1000V), current input: 10 In Sustained overload: 150% Un (for 400 V input), 120% (for remaining inputs), 120% In	**Basic error**: • voltage and current: **± (0.5% of range + 1 digit)** in frequency range 20...500 Hz • frequency: **± (0.02% of range + 1 digit)** **Additional error** from ambient temperature changes: **± (50% of basic error/10K)**
	2.5...250...300 V a.c.				
	4...400..600 V a.c.				
	20...500 Hz (in voltage range: 24...480 V)				
	0.01...1...1,2 A a.c.		Input resistance 10 mΩ ±10%		
	0.05...5...6 A a.c.		Input resistance 2 mΩ ±10%		
N25H	0...100...110 V d.c.		Input resistance > 2MΩ	Short term overload (1s): voltage input: 2 Un (< 1000V), current input: 10 In Sustained overload: 150% Un (for ± 400 V input), 120% (for remaining inputs), 120% In	**Basic error**: **± (0.2% of range + 1 digit)** **Additional error** from ambient temperature changes: **± (50% of basic error/10K)**
	0...250...275 V d.c.				
	-120...-100...100...120 V d.c.				
	-300...-250...250...300 V d.c.				
	-600...-400...400...600 V d.c.				
	-1.2...-1...1...1.2 A d.c.		Input resistance 10 mΩ ±10%		
	-6...-5...5...6 A d.c.		Input resistance 2 mΩ ±10%		

Outputs

For N25S and N25T	Output for supply external transducers	24 V ± 5%, 30 mA

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LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

N25 DIGITAL PANEL METERS

External features

Weight	< 0.25 kg	
Overall dimensions	96 x 48 x 64 mm with terminals	
Protection grade (acc. to EN 60529)	ensured by the housing: IP65	from the terminal side: IP 20
Display	5-digit LED display, 14 mm high, red colour	indication range: -19999...99999

Rated operating conditions

Supply voltage	230 V ± 10% a.c. (45...65 Hz); 110 V ± 10% a.c. (45...65 Hz) 24 V ± 10% a.c. (45...65 Hz); 85...253 V a.c. (40...400 Hz) or d.c.;20...40 V a.c. (40...400 Hz) or d.c.	input power consumption: 6 VA
Temperature	ambient: -10...23...55˚C	storage: -25...85 ˚C
Relative humidity	≤ 95%	condensation inadmissible
Operating position	any	
Preheating time	30 min	
Averaging time	≥ 0.5 s	1 second default set

Safety and compatibility requirements

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Isolation between circuits	basic	acc. to EN 61010-1
Pollution grade	2	
Installation category	III (for the 400 V option - category II)	
Maximal phase-to-earth operating voltage	for supply circuits: 300 V, for measuring circuits: 600 V - cat. II	
	for other circuits: 50 V	
Altitude above sea level	< 2000 m	

Connection diagrams

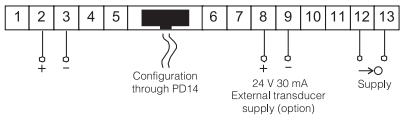

Fig. 1. Electrical connections of the N25S meter

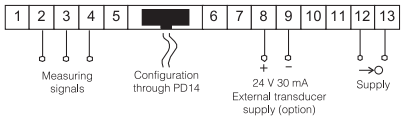

Fig. 2. Electrical connections of the N25T meter

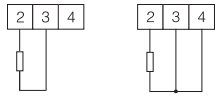

Fig. 3. Connections of N25T measuring inputs

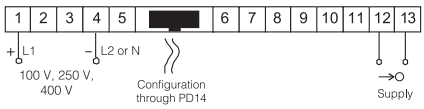

Fig. 4. Electrical connections of N25Z and N25H meters for the measurement of voltage (and frequency only in N25Z)

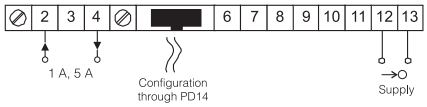

Fig. 5. Electrical connections of N25Z i N25H meters for the current measurement

Ordering

Table 1. Ordering codes:

N25 -	X	X	X	XX	XX	X	X
Input kind:							
standard: voltage, current	S						
temperature: thermocouples, resistance thermometers	T						
a.c. signals	Z						
d.c. signals: high voltage and high current	H						
Input:							
see table 2		X					
Supply:							
230 V a.c.			1				
110 V a.c.			2				
24 V a.c.			3				
85...253 V a.c./d.c. with supply output 24 V/30 mA*			4				
20...40 V a.c./d.c. with supply output 24 V/30 mA*			5				
Unit:							
see table 3				XX			
Version:							
standard					00		
non-standard settings					NS		
custom-made**					XX		
Language:							
Polish						P	
English						E	
other**						X	
Acceptance tests:							
without extra requirements							0
with an extra quality inspection certificate							1
acc. to customer's request**							X

* - the output is only in N25S and N25T meters
** - after agreeing with the manufacturer

Table 2. Input signals

Nr	N25S	N25T	N25Z	N25H
1	0...20 mA	Pt100: -50...150°C	100 V a.c.	±100 V d.c.
2	4...20 mA	Pt100: -50...400°C	250 V a.c.	±250 V d.c.
3	0...60 mV	Thermocouple J	400 V a.c.	±400 V d.c.
4	0...10 V	Thermocouple K	1 A a.c.	±1 A d.c.
5	± 60 mV		5 A a.c.	±5 A d.c.
6	± 10 V		20...500 Hz	0...100 V d.c.
7				0...250 V d.c.

Table 3. Codes of printed units:

Code	Unit	Code	Unit	Code	Unit
00	without unit	06	mA	12	bar
01	˚C	07	kA	13	kPa
02	%	08	kV	14	MPa
03	A	09	Hz	XX	on order
04	V	10	turns		
05	mV	11	rpm		

Table 4. Example of non-standard settings:

Parameter	Range/Value
Decimal point	000,0 for I, U
Averaging time	1 s
Upper measurement overflow	99999
Lower measurement overflow	-19999
Individual characteristic	enabled
Parameter **a** of the individual characteristic	5
Parameter **b** of the individual characteristic	0

Order example 1 :
The code **N25Z-2 1 04 00 E 0** means:
N25Z - digital meter for a.c. signals
2 - input: 250 V a.c.
1 - supply: 230 V a.c.
04 - unit: V
00 - standard version
E- English language
0 - without extra requirements

Order example 2 :
The code **N25S-1 4 02 E 1** means:
N25S - digital meter for d.c. signal
1 - input: 0...20mA
4 - supply: 85...253 V a.c.
02 - unit: %
NS - non-standard settings, display range: 0...100.0
E - English languge
1 - with an extra quality inspection certificate

See Also:

LPConfig

Free LPConfig software for easy programming of LUMEL's products. Available on our website

PD14 programmer - unit for programming LUMEL's products, with USB connection, LPCon compatible.

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e-mail: export@lumel.com.pl

LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
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WWW.LUMEL.COM.PL

NA3 DIGITAL METERS WITH BARGRAPH

LUMEL

Features:

MOD BUS · RTC · Linear char. · Password protection · IP40

Input:

DC · 0...20 mA · 60 mV · Password protection · 0..10 V

Outputs:

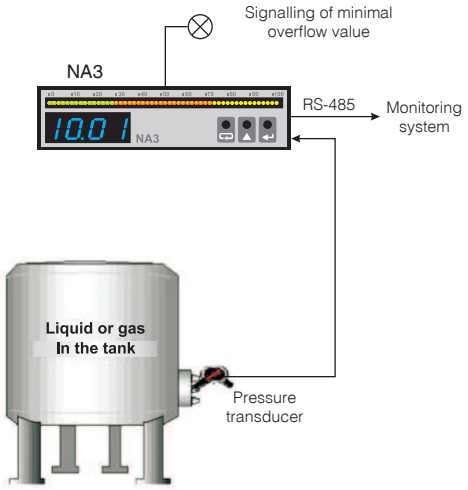
0..20 mA · 0..10 V · RS 485

Galvanic isolation:

Supply · RS 485

- Universal input for the measurement of d.c. current, d.c. voltage and temperature,
- 3 or 7-colour bargraph,
- Programming of bargraph colour depending on the measured quantity value,
- Signalling of set alarm value overflow,
- Storage of measured signal in programmed time segments (750 samples),
- Current or voltage analog output,
- Communication in SCADA systems (RS485/Modbus interface RTU and ASCII).

Example of application



Inputs

Kind of input	Measuring range
Pt100	-200...850°C
Pt500	-200...850°C
Pt1000	-200...850°C
J (Fe-CuNi)	-30...1100°C
K (NiCr-NiAl)	-50...1370°C
N (NiCrSi-NiSi)	-100...1300°C
E (NiCr-CuNi)	-20...850°C
R (PtRh13-Pt)	0...1760°C
S (PtRh10-Pt)	0...1760°C
T (Cu-CuNi)	-50...400°C
Resistance	0...400 Ω, 0...4000 Ω
Voltage	0...60 mV, Rinp. > 9 MΩ 0...3 V, Rinp. > 4 MΩ 0...10 V, Rinp. > 4 MΩ 0...200 V, Rinp. > 4 MΩ 0...600 V, Rinp. > 4 MΩ
Current	0...5 mA, Rinp. = 4 Ω 0...20 mA, Rinp. = 4 Ω 0...2 A, Rinp. = 10 mΩ ± 10% 0...5 A, Rinp. = 10 mΩ ± 10%

Outputs

Kind of output	Features
Analog output	• galvanic isolation with resolution 0.025% of range; current programmable 0/4...20 mA, load resistance ≤ 500 Ω or voltage programmable 0...10 V, load resistance ≥ 500 Ω, output response time: 100 ms.
Relay output	• 1 or 2 relays; NOC voltageless contacts, maximal load-carrying capacity: - voltage: 250 V a.c., 150 V d.c. - current: 5 A 30 V d.c., 250 V a.c. - resistance load: 1250 VA, 150 W
Open collector (OC) type	• voltageless of OC type with npn transistor, maximal load: 25 mA, range of appended voltages: 5...24 V d.c.
Digital	• **interface type**: RS-485; **transmission protocol:** MODBUS ASCII (8N1, 7E1, 7O1), RTU (8N2, 8E1, 8O1, 8N1); **baud rate:** 2400, 4800, 9600 bit/s.

External features

Readout field	**NA3-F**	**4 LED displays** with 7 segments, digits of 7 mm high, indication range -1999...9999 **multicoloured bargraph** of 82 mm long, 45 segments in a 3-colour version or with 25 segments in 7-colour version
	NA3-B	**multicoloured bargraph as above**
	NA3-D	**4 LED displays** with 7 segments, digits of 14 mm high, 3 alarm diodes, indication range as above.
Weight	< 0.3 kg	
Overall dimensions	96 × 24 × 125 mm	panel cut-out: $92^{+0,5} \times 22.2^{+0,5}$ mm
Protection grade (acc. to EN 60529)	IP40 from frontal side	IP20 from terminal side

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German: +48 68 32 95 305
French: +48 68 32 95 304
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Fax: +48 68 32 54 091
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LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
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NA3 DIGITAL METERS WITH BARGRAPH

Rated operating conditions

Supply voltage	95...253 V a.c./d.c., 20...40 V a.c./d.c.	Power consumption < 8 VA
Temperature	ambient: -10...23...55°C	Storage: -25...85°C
Relative humidity	< 95%	Condensation inadmissible

Safety and compatibility requirements

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Safety requirements		acc. to EN 61010-1

Table 1. Execution code:

NA3 -	X	X	X	X	X	X	X	X	XX	X
Meter version:										
with a bargraph and digital display	F									
with a bargraph*	B									
with a digital display	D									
Bargraph colour:										
without bargraph (NA3D)		0								
3-colour bargraph (R, G, R+G)		T								
7-colour bargraph (R, G, B, R+G, R+B, G+B, R+G+B)		M								
Display colour:										
without display			0							
red			R							
green			G							
blue			B							
Input signal:										
universal input				U						
Analog output signal:										
lack					0					
current programmable 0/4...20 mA					1					
voltage programmable 0...10 V					2					
Additional output:										
lack*						0				
RS-485 digital output + 1 relay						1				
RS-485 digital output + 1 output of OC type						2				
2 relays*						3				
2 outputs of OC type*						4				
Supply:										
95...253 V a.c./d.c.							1			
20...40 V a.c./d.c.							2			
on order**							X			
Kind of terminals:										
socket-screw plug								0		
Version:										
standard									00	
custom-made**									XX	
Acceptance tests:										
without an extra quality inspection certificate										8
with an extra quality inspection certificate										7
acc. to customers's request**										X

* - in case of a NA3-B X X X X (0, 3 or 4), one must fill the table 2
** - after agreeing with the manufacturer

Connection diagrams

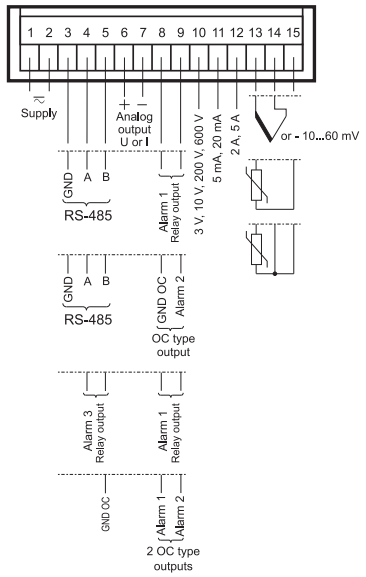

Fig. 1 External connections of the NA3 meter.

Programmable parameters of the NA3 meter Table 2.

Input	Input type	tYP	
	Mathematical functions	Func	
	Kind of compensation	Con	
	Measuring averaging time	Cnt	
	Displayed characteristic	Indi	
	Measured value	I_H1	
	Displayed value	d_Y1	
	Measured value	I_H2	
	Displayed value	d_Y2	
Bargraph	Bargraph type	tYPb	
	Bargraph colour	coLr	
	Lower bargraph threshold	brL	
	Upper bargraph threshold	brH	
Alarm 1	Lower alarm threshold	PrL	
	Upper alarm threshold	PrH	
	Alarm type	tYPA	
	Delay of alarm operation	dLY	
	Support of alarm signalling	HOLd	
	Colour of the lower threshold alarm index	CurL	
	Colour of the upper threshold alarm index	CurH	
Alarm 2	Lower alarm threshold	PrL	
	Upper alarm threshold	PrH	
	Alarm type	tYPA	
	Delay of alarm operation	dLY	
	Support of alarm signalling	HOLd	
	Colour of the lower threshold alarm index	CurL	
	Colour of the upper threshold alarm index	CurH	
Alarm 3	Lower alarm threshold	PrL	
	Upper alarm threshold	PrH	
	Alarm type	tYPA	
	Delay of alarm operation	dLY	
	Support of alarm signalling	HOLd	
	Colour of the lower threshold alarm index	CurL	
	Colour of the upper threshold alarm index	CurH	
Output	Output characteristic	IndO	
	Displayed value	d_H1	
	Value on the analog output	O_Y1	
	Displayed value	d_H2	
	Value on the analog output	O_Y2	
	RS-485 baud rate	bAud	
	Kind of RS-485 transmission	trYb	
	Device address	Adr	

Ordering Example:

The code: **NA3 - F T R U 0 1 1 0 00 8** means:

NA3 - digital meter with bargraph of NA3 type,
F - with a bargraph and digital display,
T - with a 3-colour display,
R - red display colour,
U - universal input,
0 - lack of analog output signal,
1 - additional output: RS-485 digital output + 1 relay,
1 - supply voltage: 95...253 V a.c./d.c.,
0 - socket-screw plug,
00 - standard version,
8 - without extra quality requirements.

See also:

Temperature and humidity transducers P18 i P18L types.

Programmable transducer of temperature, resistance, voltage from shunt and standard signals - P20.

N30 digital meters with a 3-colour display and free LPConfig program.

For more information about LUMEL's products visit our website: www.lumel.com.pl

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e-mail: export@lumel.com.pl
LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

NA5 DIGITAL METER WITH BARGRAPH

LUMEL

Features:

MOD BUS · RTC · Linear char. · Password protection · IP50

Input:

DC · 0...20 mA · 60 mV · Password protection · 0..10 V

Outputs:

0..20 mA · 0..10 V · RS 485

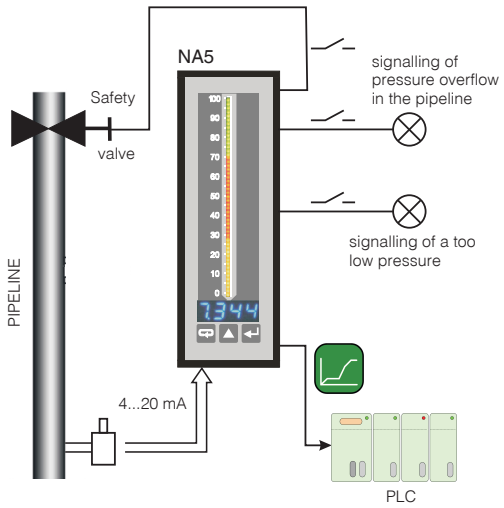
Galvanic isolation:

Supply · RS 485

- 3 or 7-colour bargraph with programmable colour switching over,
- Recording of 750 measuring segments, released temporary,
- Universal input,
- Programmable indication characteristic and bargraph magnifier,
- Up to 8 programmable alarm outputs,
- Communication in SCADA systems (RS485/Modbus interface),
- Conversion of measured quantity into an analog standard signal for automation systems.

Example of application

Measurement of pressure in a pipeline



Inputs

Kind of input	Measuring range	Measurement sub-range
Pt100	-200...850°C	320°C
Pt500	-200...850°C	230°C
Pt1000	-200...850°C	290°C
J (Fe-CuNi)	-100...1100°C	350°C, 700°C
K (NiCr-NiAl)	-100...1370°C	450°C, 950°C
N (NiCrSi-NiSi)	-100...1300°C	550°C, 1000°C
E (NiCr-CuNi)	-100...850°C	250°C, 520°C
R (PtRh13-Pt)	0...1760°C	
S (PtRh10-Pt)	0...1760°C	
T (Cu-CuNi)	-50...400°C	
Resistance	0...10 kΩ	110 Ω, 220 Ω, 460 Ω, 950 Ω, 2100 Ω, 5000 Ω,
Voltage	± 300 mV, Rinp. > 9 MΩ ± 0...600 V, Rinp. > 4.2 MΩ	19 mV, 35 mV, 75 mV, 155 mV, 5 V, 11 V, 22 V, 45 V, 90 V, 180 V, 360 V
Current	± 40 mA, Rinp. < 4 Ω ± 5 A, Rinp. = 10 mΩ ± 10%	5 mA, 11 mA, 23 mA, 1.8 A, 3.8 A

Intensity of current flowing through the resistance thermometer: < 400 µA
Resistance of wires connecting the resistance thermometer with the meter: < 20 Ω/1 wire

Outputs

Kind of output	Features
Analog output	• galvanically isolated with resolution 0.025% of range; current programmable 0/4...20 mA, load resistance ≤ 500 Ω or voltage programmable 0...10 V, load resistance ≥ 500 Ω, output response time: 100 ms.
Relay output	• 4 electromagnetic relays; NOC voltageless contacts, maximal load-carrying capacity: - voltage: 250 V a.c., 150 V d.c. - current: 5 A 30 V d.c., 250 V a.c. - resistance load: 1250 VA, 150 W
Open collector (OC) type	• voltageless of OC type with npn transistor, maximal load: 25 mA, range of appended voltages: 5...30 V d.c.
Digital	• **interface type**: RS-485; **transmission protocol:** MODBUS ASCII (8N1, 7E1, 7O1), RTU (8N2, 8E1, 8O1, 8N1); **baud rate:** 2400, 4800, 9600 bit/s
Additional supply output	• 24 V d.c., maximal load 30 mA

External features

Readout field	**4 LED displays**	7-segment digits of 7 mm high, measuring range -1999...9999
	bargraph	bargraph of 88 mm length: - 55 segments in three-colour version - 29 segments in seven-colour version
		Bargraph resolution: programmable
		Bargraph accuracy: ± 0.5 segment
Weight	< 0.4 kg	
Overall dimensions	48 × 144 × 100 mm	panel cut-out: $44^{+0,5} \times 137,5^{+0,5}$ mm
Protection grade (acc. to EN 60529)	IP50 from frontal side	IP20 from terminal side

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German: +48 68 32 95 305
French: +48 68 32 95 304
Russian: +48 68 32 95 321
Fax: +48 68 32 54 091
e-mail: export@lumel.com.pl

LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

NA5 DIGITAL METER WITH BARGRAPH

RATED OPERATING CONDITIONS

Supply voltage	95...253 V a.c./d.c., 20...40 V a.c./d.c.	Power consumption < 12 VA
Temperature	ambient: -10...23...55°C	Storage: -25...85°C
Relative humidity	< 95%	Condensation inadmissible

SAFETY AND COMPATIBILITY REQUIREMENTS

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Pollution grade	2	acc. to EN 61010-1
Installation category	III	
Maximal phase-to-earth operating voltage	input: 600 V	
	supply: 300 V	
	relays: 300 V	
	analog output: 50 V	
	RS-485: 50 V	

TABLE 1. EXECUTION CODE:

NA5 -	X	X	X	X	X	X	X	X	XX	X
Bargraph colour:										
three-color (R, G, R+G)	T									
seven-color (R, G, B, R+G, R+B, G+B, R+G+B)	M									
Display colour:										
lack of display*		0								
red		R								
green		G								
blue		B								
Input signal:										
universal input			U							
Analog output signal:										
lack				0						
current programmable 0/4...20 mA				1						
voltage programmable 0...10 V				2						
Digital output signal:										
lack					0					
RS-485 digital output					1					
Additional output:										
lack*						0				
4 relays						4				
8 outputs of OC type						8				
Supply:										
95...253 V a.c./d.c.							1			
20...40 V a.c./d.c.							2			
Kind of terminals:										
screwed plug-in sockets								0		
Version:										
standard									00	
custom-made**									XX	
Acceptance tests:										
without an extra quality inspection certificate										8
with an extra quality inspection certificate										7
acc. to customer's request**										X

* - in case of meters without displays, one must order an RS-485 digital output
** - after agreeing with the manufacturer

CONNECTION DIAGRAMS

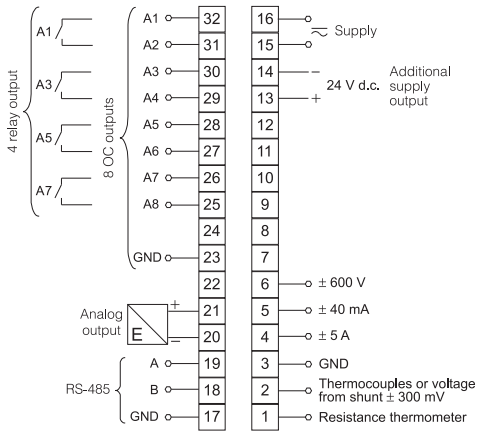

Fig. 1 Description of the terminal strip.

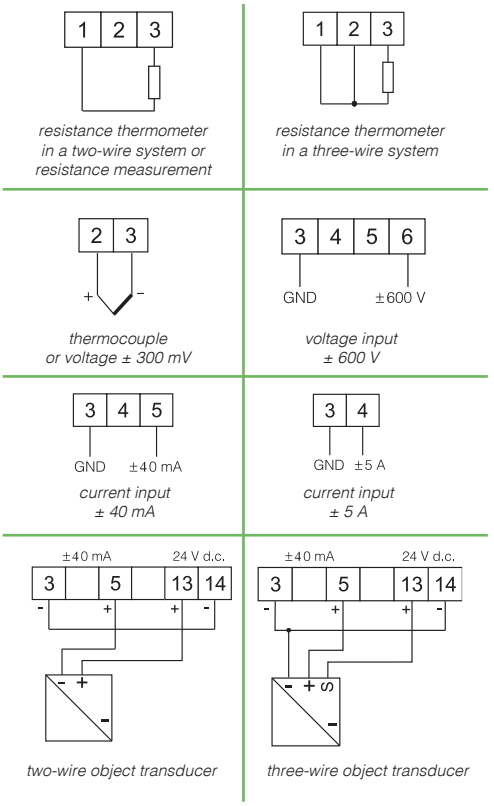

Fig. 2 Connection way of input signals.

Ordering Example:

The code: **NA5 - M G U 1 1 4 1 0 00 8** means:

NA5 - digital meter with bargraph of NA5 type,
M - with a seven-colour bargraph,
G - green display colour,
U - with an universal input signal,
1 - analog programmable output signal,
1 - RS-485 output current signal,
4 - additional digital output signal: 4 relays,
1 - supply voltage: 95...253 V a.c./d.c.,
0 - terminals of plug-in socket type,
00 - standard version,
8 - without extra quality requirements.

SEE ALSO:

Temperature and humidity transducers P18 i P18L types.

Programmable transducer of temperature, resistance, voltage from shunt and standard signals - P20

N30 digital meters with a 3-colour display and free LPConfig program.

For more information about LUMEL's products please visit our website:
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LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

NA6 DIGITAL METER WITH BARGRAPH

LUMEL

Features:

MOD BUS · RTC · Linear charac. · Password protection · RS 485 · IP50

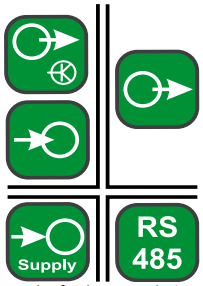
Inputs:

DC · 0 .. 20 mA · 60 mV · 0..10 V

Outputs:

0 .. 20 mA · 0..10 V · U · K

Galvanic isolation:

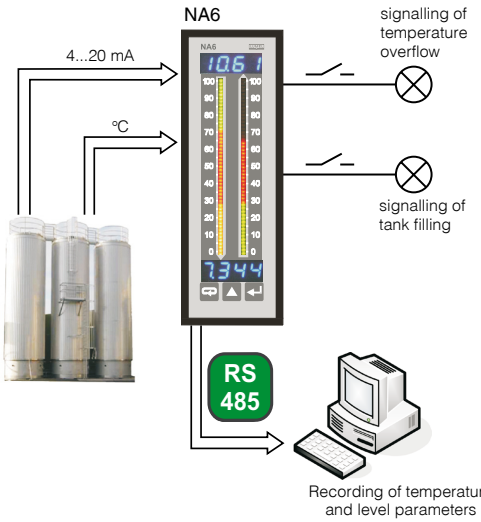


Lack of galvanic isolation between channels

- 2 independend measuring channels with an universal input,
- 3 or 7-colour bargraph with programmable colour switching over,
- Recording of 750 measuring segments, released temporary,
- Programmable indication characteristic and bargraph magnifier,
- Up to 8 programmable alarm outputs,
- Mathematical operations on channels,
- Communication in SCADA systems (RS485/Modbus interface),
- Conversion of measured quantity into an analog standard signal for automation systems.

Example of application

Measurement of level and temperature in a tank



Inputs

Kind of input	Measuring range	Measurement subrange
Pt100	-200...850°C	320°C
Pt500	-200...850°C	230°C
Pt1000	-200...850°C	290°C
J (Fe-CuNi)	-100...1100°C	350°C, 700°C
K (NiCr-NiAl)	-100...1370°C	450°C, 950°C
N (NiCrSi-NiSi)	-100...1300°C	550°C, 1000°C
E (NiCr-CuNi)	-100...850°C	250°C, 520°C
R (PtRh13-Pt)	0...1760°C	
S (PtRh10-Pt)	0...1760°C	
T (Cu-CuNi)	-50...400°C	
Resistance	0...10 kΩ	110 Ω, 220 Ω, 460 Ω, 950 Ω, 2100 Ω, 5000 Ω,
Voltage	± 300 mV, Rinp. > 9 MΩ ± 0...600 V, Rinp. > 4.2 MΩ	19 mV, 35 mV, 75 mV, 155 mV, 5 V, 11 V, 22 V, 45 V, 90 V, 180 V, 360 V
Current	± 40 mA, Rinp. < 4 Ω ± 5 A, Rinp. = 10 mΩ ± 10%	5 mA, 11 mA, 23 mA, 1.8 A, 3.8 A
Intensity of current flowing through the resistance thermometer: < 400 µA Resistance of wires connecting the resistance thermometer with the meter: < 20 Ω/1 wire		

Outputs

Kind of output	Features
Analog output	• galvanically isolated with resolution 0.025% of range; current programmable 0/4...20 mA, load resistance ≤ 500 Ω or voltage programmable 0...10 V, load resistance ≥ 500 Ω, output response time: 100 ms.
Relay output	• 4 electromagnetic relays; NOC voltageless contacts, maximal load-carrying capacity: - voltage: 250 V a.c., 150 V d.c. - current: 5 A 30 V d.c., 250 V a.c. - resistance load: 1250 VA, 150 W
Open collector (OC) type	• voltageless of OC type with npn transistor, maximal load: 25 mA, range of appended voltages: 5...30 V d.c.
Digital	• **interface type**: RS-485; **transmission protocol:** MODBUS ASCII (8N1, 7E1, 7O1), RTU (8N2, 8E1, 8O1, 8N1); **baud rate:** 2400, 4800, 9600 bit/s
Additional supply output	• 24 V d.c., maximal load 20 mA

External features

Readout field	**2 × 4 LED displays**	7-segment digits of 7 mm high, measuring range -1999...9999
	bargraph	bargraph of 88 mm length: - 48 segments in three-colour version - 27 segments in seven-colour version
		Bargraph resolution: programmable
		Bargraph accuracy: ± 0.5 segment
Weight	< 0.4 kg	
Overall dimensions	48 × 144 × 100 mm	panel cut-out: $44^{+0,5} \times 137.5^{+0,5}$ mm
Protection grade (acc. to EN 60529)	IP50 from frontal side	IP20 from terminal side

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LUMEL S.A.
ul. Sulechowska 1
65-022 Zielona Góra
POLAND
WWW.LUMEL.COM.PL

NA6 DIGITAL METER WITH BARGRAPH

Rated operating conditions

Supply voltage	95...253 V a.c./d.c., 20...40 V a.c./d.c.	Power consumption < 13 VA
Temperature	ambient: -10...23...55°C	Storage: -25...85°C
Relative humidity	< 95%	Condensation inadmissible

Safety and compatibility requirements

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Pollution grade	2	acc. to EN 61010-1
Installation category	III	
Maximal phase-to-earth operating voltage	input: 600 V	
	supply: 300 V	
	relays: 300 V	
	analog output: 50 V	
	RS-485: 50 V	

Table 1. Execution code:

NA6 -	X	XX	X	X	X	X	X	X	XX	X
Bargraph colour:										
three-colour (R, G, R+G)	T									
seven-colour (R, G, B, R+G, R+B, G+B, R+G+B)	M									
Display colour on channels 1 and 2:										
without display*		00								
red-red		RR								
red-green		RG								
red-blue		RB								
green-red		GR								
green-green		GG								
green-blue		GB								
blue-red		BR								
blue-green		BG								
blue-blue		BB								
Input signal:										
universal input			U							
Analog output signal:										
lack				0						
current programmable 0/4...20 mA				1						
voltage programmable 0...10 V				2						
Digital output signal:										
lack					0					
RS-485 output signal					1					
Additional output:										
lack*						0				
4 relays						4				
8 outputs of OC type						8				
Supply:										
95...253 V a.c./d.c.							1			
20...40 V a.c./d.c.							2			
Kind of terminals:										
screwed plug-in sockets								0		
Version:										
standard									00	
custom-made**									XX	
Acceptance tests:										
without an extra quality inspection certificate										8
with an extra quality inspection certificate										7
acc. to customer's request**										X

* - in case of meters without displays, one must order an RS-485 digital output
** - after agreeing with the manufacturer

Connection diagrams

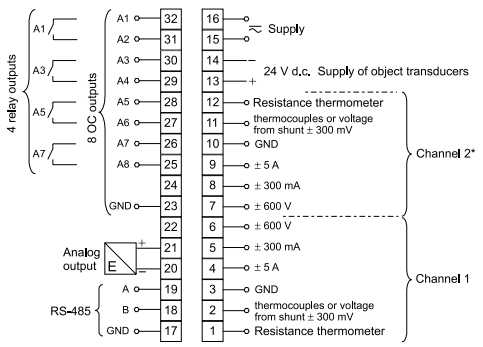

Fig. 1 Description of the terminal strip.

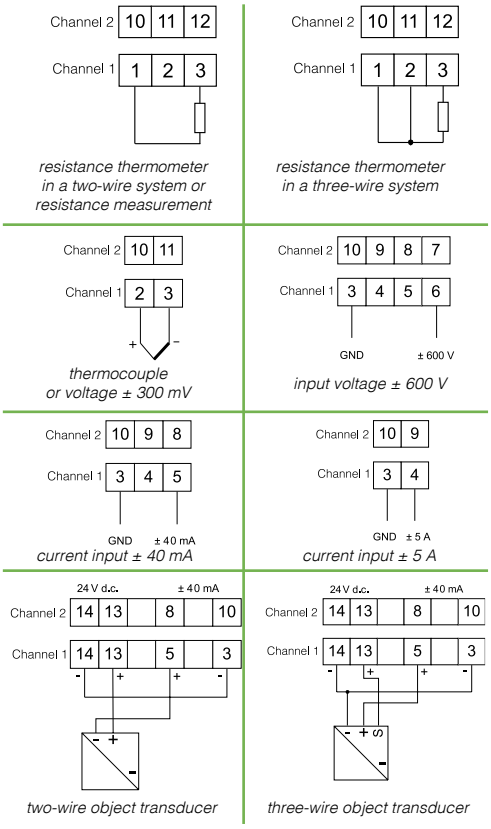

Fig. 2 Connection way of input signals.

Ordering Example:

The code: **NA6 - M GB U 1 1 4 1 0 00 8** means:

NA6 - digital meter with bargraph of NA6 type,
M - with a seven-color bargraph,
GB - green-blue display color on channel 1 and 2,
U - with an universal input signal,
1 - analog programmable output signal: 0/4...20 mA,
1 - RS-485 output signal,
4 - with additional 4 relays digital output signal,
1 - supply voltage: 95...253 V a.c./d.c.,
0 - terminals of plug-in socket type,
00 - standard version,
8 - without extra quality requirements.

See also:

Temperature and humidity transducers P18 i P18L types.

N30 digital meters with a 3-colour display and free LPConfig program.

Visualization programs enabling to build distributed control and measuring systems like: LUMEL-CONTROL, LUMEL-PROCES, LUMEL3000.

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65-022 Zielona Góra
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