Digital panel meters
VNE 2 - VNE 4
process

NT 46007-100F - Ed. 19 JAN 00 Instruction manual

1. General specifications

- 2000 measurement counts.
- 14 mm-LED display.
- Automatic polarity.
- 2.5 measurements per second.
- Overrange indication:
  Last three digits blank.
- Reference conditions:
  23°C ± 1°C (45 % < RH < 75 %).
- Operating range:
  - 10°C + 50°C (20 % < RH < 90 %).
- Storage temperature:
  - 30°C + 70°C.
- Weight: 100 to 200 g depending on models.
- Protection:
  VNE 2: IP 30.
  VNE 4: IP 65.

2. Safety provisions

2.1 In accordance with safety standards

The unit is constructed and tested according to the European Norm EN 61010-1.

2.2 Following instructions supplied with the accompanying documents

The unit is constructed to operate under safety conditions if the instructions supplied in the accompanying documents are followed. Any usage, except those described, may reduce the safety of the user and then, becomes dangerous and prohibited.

2.3 Definition of the installation category

This is also called overvoltage category.

It's the classification according to standardized limits for transient overvoltages (IEC Publication 664). Level of these limits depends on the nominal line voltage, regarding the earth, which is present in the unit environment.
The Publication has 4 levels of increasing overvoltage, from CAT I to CAT IV.

2.4 Table of the symbols used

Symbol	Description
~	Alternating current.
⎓	Direct current.
⏚	Protective conductor terminal.
⧈	Double insulation.
⚠	Warning: see the accompanying documents.

2.5 Maintenance

The unit should be reassembled as explained in the instruction manual. Any incomplete or bad reassembling may be dangerous for the safety of the user.

The responsible body must check at regular time interval that all the components ensuring safety are not subject to wear and undertake all the necessary steps for preventive operations.

Before the casing is opened, make sure that all the wires have been disconnected from the unit.

The unit should not be opened up for adjustment, maintenance or repair when live, unless this is absolutely essential, in which case this work should be carried out **only by qualified personnel advised of the risk entailed**.

2.6 EMC conformity

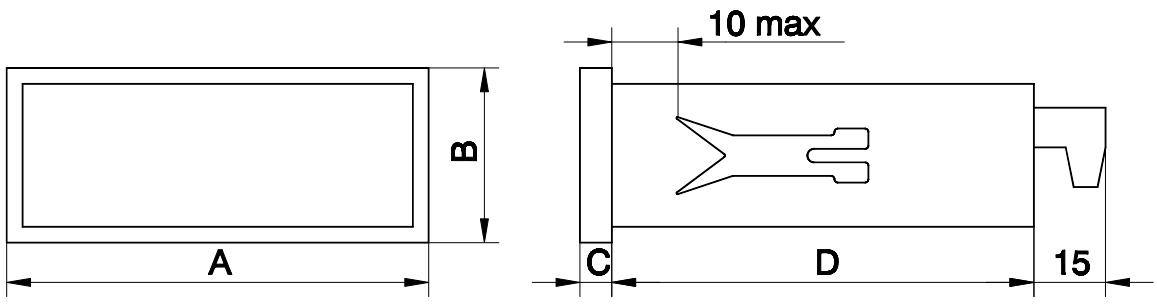
Performances of the unit meet the following standards:
Conducted and radiated disturbances:
EN 55022/1994, class B.
Immunity: EN 50082-1/1992
Radiated: IEC 801-3/1984.
Conducted: IEC 801-4/1988.
Electrostatic discharges:
IEC 801-2/1991.

3. Characteristics

- Safety according to the European Norm EN 61010-1.
  Category II, pollution 2.
  Rated voltage:
  300 V regarding the earth.
- Accuracy: ± (0,1 % max. rdg + 1 d).
- Temperature coefficient:
  < 10 % of accuracy/°C.
- Normal mode rejection:
  > 60 dB (from 49 Hz to 63 Hz).
- Common mode rejection:
  > 110 dB (from 0 Hz to 60 Hz).
- Analog output and brightness control options:
  - 1 mV/digit analog output (load > 2 kΩ) between COM. and "Anal. out".
  - To control the display brightness, wire one 1 kΩ potentiometer between the common (com.) and + 5 V, the cursor to ☼, then open the LUM link located on the board.

WARNING: Options are set to the measurement potential (see diagram 7).

4. Dimensions



	Casing	A	B	C	D	Panel cut-out
VNE 2	24x72	72	24	5	103	$22.2^{+0.3}_{0}$ x $68.0^{+0.8}_{0}$
VNE 4	48x96	104.5	57.5	7	101	$45.0^{+0.6}_{0}$ x $92.0^{+0.8}_{0}$

Reference code

	2		J	
VNE		Range code	R	Supply code
	4		V	

5. Ranges

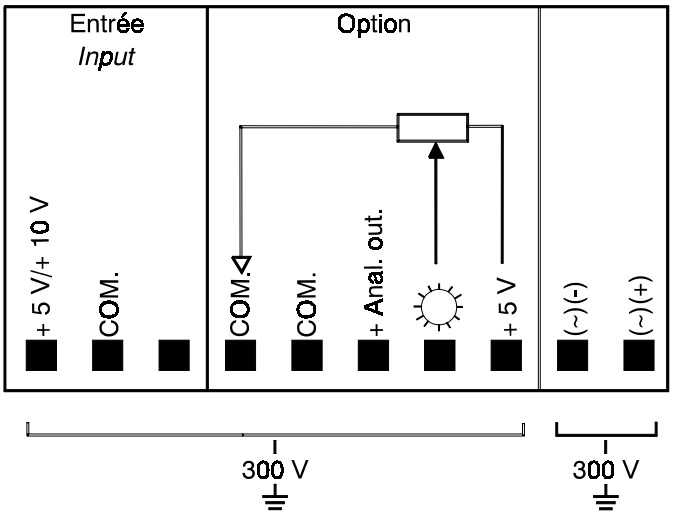
Code	Range	Display	Input impedance
D50	0-20 mA 4-20 mA 0-5 V 0-10 V	On request	50 Ω
			1 MΩ
D51	4-20 mA	0-100.0 %	50 Ω

6. Power requirements

Code	Voltage	Power	C1 ①
1	Uninsulated 6 V- ± 10 %	150 mA	0 V
	Insulated		
2	5 V- ± 10 %	4 VA	50 V
3	9 V- to 18 V-	2 VA	50 V
4	18 V- to 36 V-	2 VA	50 V
5	36 V- to 72 V-	2 VA	50 V
6	24 V~ ± 10 %	4 VA	250 V
7	115 V~ ± 10 %	4 VA	250 V
8	230 V~ ± 10 %	4 VA	250 V
9	48 V~ ± 10 %	4 VA	250 V

① C1 is the maximum voltage between the two groups of terminals.

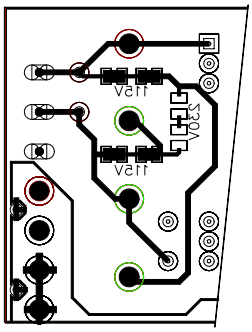
7. Wiring



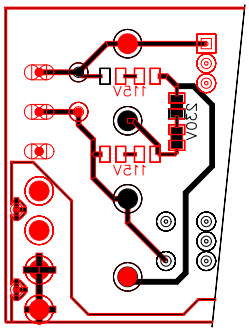
N.B.: For a negative scale range, reverse input polarity.

8. Changing supply

- Changing from 230 VAC to 115 VAC and from 48 VAC to 24 VAC



- Changing from 115 VAC to 230 VAC and from 24 VAC to 48 VAC



9. Instructions before switching on

Before using the unit with all the necessary safety, the user must read **carefully** chapter 2 which deals with safety provisions.

10. Connection to the line

The electrical installation including the unit must always be connected through a safety device (fuse, circuit breaker) to a disconnecting device which isolates the whole set of power wires.

These equipments must be in accordance with the standards. They must provide a breaking capacity compatible with currents and voltages peculiar to the equipment. They must be placed close to the unit and well-recognized using an adequate marking. For parallel connection, follow the rules concerning the circuit setting.

11. Adjusting VNE 2 D

11.1 Symbols used

V1 or I1 Voltage or current at top of scale delivered by the transducer.
N1 Number of counts to be displayed for V1 or I1.

V2 or I2 Voltage or current at end of scale.
N2 Number of counts to be displayed for V2 or I2.

V1, I1 and V2, I2 values depending on ranges

Range	True zero	Shifted zero
20 mA	0-20 mA	4-20 mA
10 V	0-10 V	2-10 V
5 V	0-5 V	1-5 V

11.2 Computations

Compute the scale range: E = N2 - N1

Compute the origin shift
- True zero: Z = N1
- Shifted zero: Z = N1 - E/4

All the values are algebraic.

11.3 Setting the switches

- **Disconnect the rear connector.**
- Remove the front panel and the unit from its casing by pushing on the connector.
- Set the switches as stated in tables below (• = ON).

Pos	Z1	Z2	Z3	Z4	Adjustment range Z S2 = +
0					+ 45 ; - 45
1				•	- 45 ; - 170
2			•		- 170 ; - 295
3			•	•	- 295 ; - 420
4		•			- 420 ; - 545
5		•		•	- 545 ; - 670
6		•	•		- 670 ; - 795
7		•	•	•	- 795 ; - 920
8	•				- 920 ; - 1 050
9	•			•	- 1 050 ; - 1 175
10	•		•		- 1 175 ; - 1 300
11	•		•	•	- 1 300 ; - 1 425
12	•	•			- 1 425 ; - 1 550
13	•	•		•	- 1 550 ; - 1 675
14	•	•	•		- 1 675 ; - 1 800
15	•	•	•	•	- 1 800 ; - 1 925

Pos	Z1	Z2	Z3	Z4	Adjustment range Z S2 = -
0					- 45 ; + 45
1				•	+ 45 ; + 100
2			•		+ 100 ; + 180
3			•	•	+ 180 ; + 260
4		•			+ 260 ; + 340
5		•		•	+ 340 ; + 420
6		•	•		+ 420 ; + 500
7		•	•	•	+ 500 ; + 580
8	•				+ 580 ; + 655
9	•			•	+ 655 ; + 730
10	•		•		+ 730 ; + 805
11	•		•	•	+ 805 ; + 880
12	•	•			+ 880 : + 955
13	•	•		•	+ 955 ; + 1 030
14	•	•	•		+ 1 030 ; + 1 105
15	•	•	•	•	+ 1 105 ; + 1 180

Pos	E1	E2	E3	E4	Adjustment range |E| True zero
0					0 ; 290
1				•	290 ; 540
2			•		540 ; 790
3			•	•	790 ; 1 040
4		•			1 040 ; 1 290
5		•		•	1 290 ; 1 540
6		•	•		1 540 ; 1 790
7		•	•	•	1 790 ; 2 040
8	•				2 040 ; 2 300
9	•			•	2 300 ; 2 550
10	•		•		2 550 ; 2 800
11	•		•	•	2 800 ; 3 050
12	•	•			3 050 ; 3 300
13	•	•		•	3 300 ; 3 550
14	•	•	•		3 550 ; 3 800
15	•	•	•	•	3 800 ; 4 000

Pos	E1	E2	E3	E4	Adjustment range |E| Shifted zero
0					0 ; 230
1				•	230 ; 430
2			•		430 ; 630
3			•	•	630 ; 830
4		•			830 ; 1 030
5		•		•	1 030 ; 1 230
6		•	•		1 230 ; 1 430
7		•	•	•	1 430 ; 1 630
8	•				1 630 ; 1 840
9	•			•	1 840 ; 2 040
10	•		•		2 040 ; 2 240
11	•		•	•	2 240 ; 2 440
12	•	•			2 440 ; 2 640
13	•	•		•	2 640 ; 2 840
14	•	•	•		2 840 ; 3 040
15	•	•	•	•	3 040 ; 3 240

11.4 Adjusting zero

- Replace the unit back to its casing (the rear connector should be clamped on the casing).
- Reconnect supply and input measurement and wait 10 minutes after power on.
- VIN or IIN = 0. Adjust P3 to display Z.

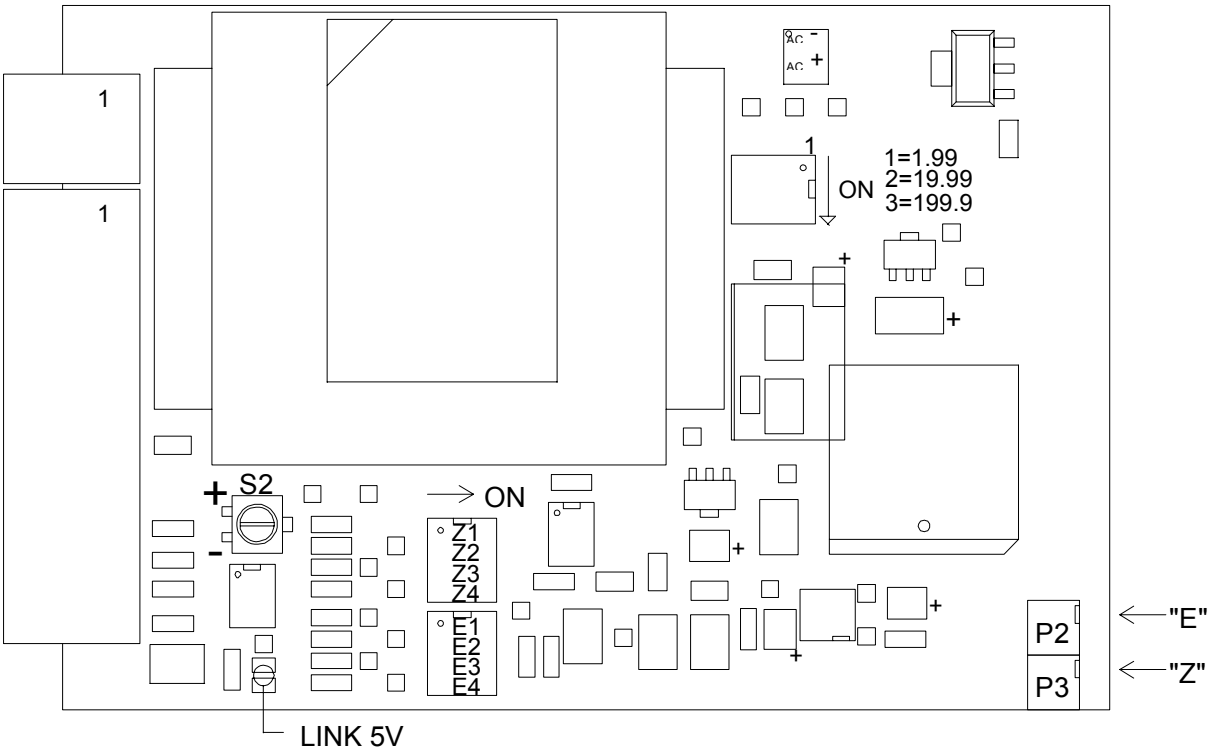
11.5 Adjusting scale range

VIN = V2 or IIN = I2. Adjust P2 to display N2.

11.6 Retaking adjustments

- Retake VIN = V1 or IIN = I1 to display N1 and VIN = V2 or IIN = I2 to display N2.
- Remantle the front panel.

11.7 Location of adjustments



NB: "Link 5 V" to be opened for the 5 V range.

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