

Description

Digital panel instruments type MD.241 are designed to measure, display, and monitor either DC and AC currents (MDA241), DC and AC voltages (MDV241), or temperature (MDC241) in industrial applications.

The instruments are panel mounted with a front frame dimension of 96 x 24 mm and a mounting depth of 89 mm, and are available with 3 1/2 digit 7-segment LED display covering various measuring ranges. The supply voltage range of DC 12 V...26 V, physically isolated from the measuring circuit, allows a wide spread of applications.

Measuring Ranges

DC Current

Measuring range	Resolution	Input resistance	Overload protection		Pin designation Lo - Hi - +
			cont.	max. 3 sec.	
±2 mA	1 µA	100 Ω	50 mA	100 mA	3 - 1
±20 mA	10 µA	10 Ω	160 mA	300 mA	3 - 1
±200 mA	0.1 mA	1 Ω	600 mA	1.5 A	3 - 1
±2 A	1 mA	0.1 Ω	3 A	5 A	3 - 1

AC Current, frequency range 15 Hz...1 kHz

2 mA	1 µA	100 Ω	50 mA	100 mA	3 - 1
20 mA	10 µA	10 Ω	160 mA	300 mA	3 - 1
200 mA	0.1 mA	1 Ω	600 mA	1.5 A	3 - 1
2 A	1 mA	0.1 Ω	3 A	5 A	3 - 1

DC Voltage

Measuring range	Resolution	Input resistance	Overload protection continuous	Pin designation Lo - Hi - +
±2 V	1 mV	≥10 MΩ	500 V	3 - 1
±20 V	10 mV	10 MΩ	1000 V	3 - 1
±200 V	0.1 V	10 MΩ	1000 V	3 - 1
±600 V	1 V	10 MΩ	1000 V	3 - 1

AC Voltage, frequency range 15 Hz...1 kHz

200 mV	0.1 mV	≥10 MΩ	150 V	3 - 1
2 V	1 mV	≥10 MΩ	500 V	3 - 1
20 V	10 mV	10 MΩ	1000 V	3 - 1
200 V	0.1 V	10 MΩ	1000 V	3 - 1
600 V	1 V	10 MΩ	1000 V	3 - 1

Temperature

Sensor	Measuring range	Resolution in °C	Pin designation
Pt100 (IEC751)	0...+300 °C	1	1 - 2
Pt100 (IEC751)	+250...+800 °C	1	1 - 2
Pt100 (IEC751)	-200...+200 °C	1	1 - 2
Pt100 (IEC751)	-100.0...+100.0 °C	0.1	1 - 2



MDA241



MDV241



MDC241

Technical Data

Display

Red 7-segment LED display
3 1/2 digit, 13 mm high
Full scale range: 1999 digits
Over-range indication:
The last 3 digits will extinguish

Reading characteristics

Integrating dual-slope
Count rate: 2.5 readings/second
Setting time for a 100 % reading change: < 3 s

Accuracy of display (at 23 °C)

Current/Voltage DC version ≤ 0.1 % span ± 1 digit
Current/Voltage AC version ≤ 0.2 % span ± 1 digit
Temperature 0.1 K resolution ≤ 0.1 % span ± 1 digit
Temperature 1 K resolution ≤ 0.3 % span ± 1 digit
(span = full measuring range)

Input

General (MD.241): Physically isolated from mains
Common mode range: input circuit against main circuit ± 600V
Common mode rejection: ≥ 60dB
Temperature instrument MDC 241: Pt100 connected in 2-conductor circuit. Line resistance may be corrected between 0...10 Ω by means of the potentiometer accessible from the front.
Sensor current: approx. 1 mA
Overload protection: 25 V

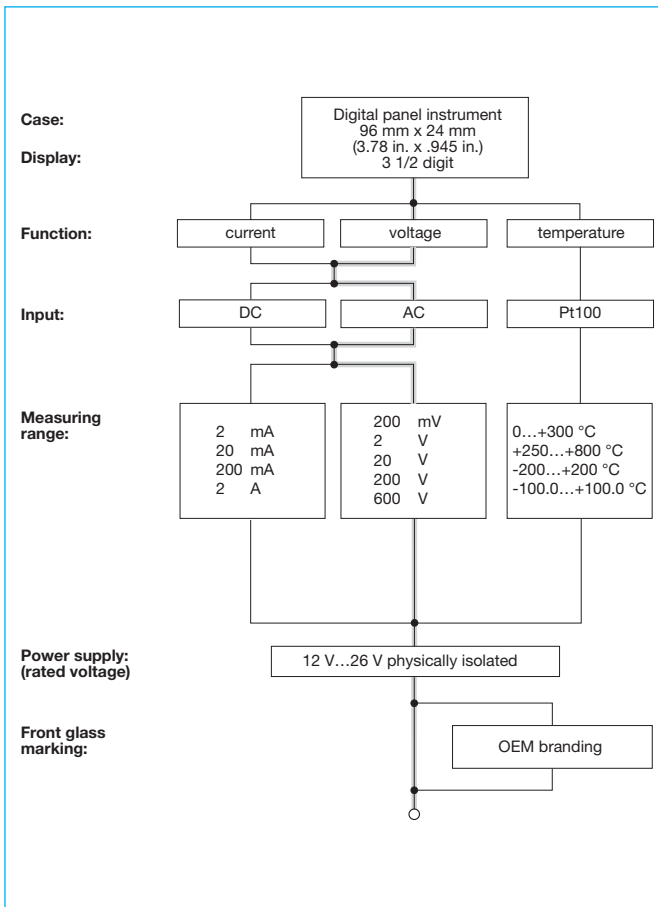
Environmental requirements

Temperature drift: ≤ 0.1 % span/10 K
Warm-up to full accuracy: 15 minutes
Operating temperature range: 0...+50 °C
Storage temperature range: -20...+70 °C
Relative humidity: 0...75 % annual average, 95 % max. (without condensation)

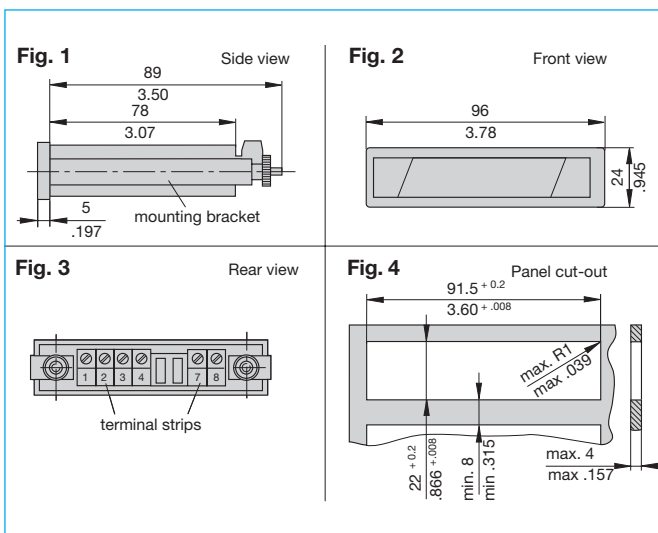
Voltage supply (voltage rating):

DC 12 V...26 V physically isolated from the measuring input.
Max. allowed residual ripple 10 %, but not less than the minimum voltage or more than the maximum voltage.
Power consumption: ≤ 3 W

Selector chart



Case



This is a metric design and millimeter dimensions take precedence ($\frac{\text{mm}}{\text{inch}}$)

Caution:
If several instruments are to be fitted, a minimum of 8 mm (5/16 in) between each cut-out must be provided for correct removal of front glass (Fig. 4).

Case material: glass-fibre reinforced black Noryl SE 1
 Degree of protection: IP50 (front), IP20 (rear)
 Applicable specification: VDE 0411 part 100
 Pollution degree: 3 to IEC 664 and 664 A
 Instrument mass: approx. 150 g

Ordering information

Type No.

Physical dimension

A Current
V Voltage
C Temperature

Case

241 96 mm x 24 mm

Version

D DC
A AC
W resistance temperature detector (RTD)

Display

3 3 1/2 digit

Measuring range

11 2mA/200 mV
12 20 mA/2 V
13 200 mA/20 V
14 2 A/200 V
15 600 V
54 IEC 751 Pt100 0...+300 °C
55 IEC 751 Pt100 +250...+800 °C
56 IEC 751 Pt100 -200...+200 °C
57 IEC 751 Pt100 -100.0...+100.0 °C

Power supply (rated voltage)

D1 DC 12 V...26 V physically isolated

K Special marking
 (see below for standard markings*)

S Special calibration**)

F OEM branding*)

MD V 241 - A 3 13 D1 ordering example

*) Clearly add desired marking.

***) Specify when ordering.

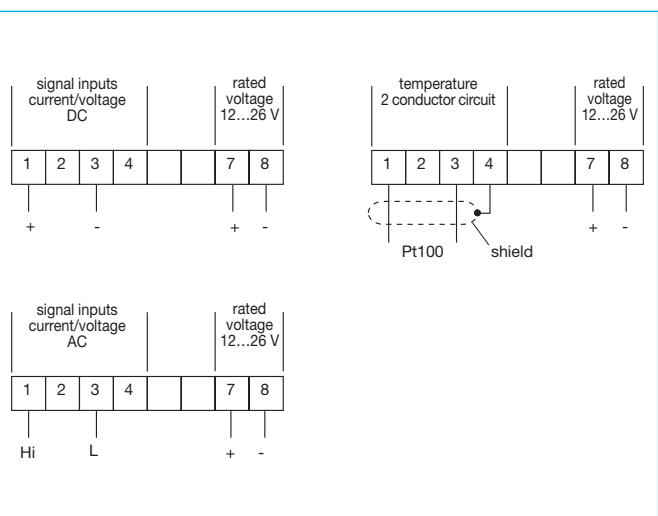
Standard markings:

V, mV, kV, MV, A, mA, kA, kW, MW, °C, %, % r.F., ms, Stück, Ohm, pH, μs , l, N, kN, kg, t, lbf, NCM, Nm, m, cm, mm, km, inch, bar, mbar, Pa, hPa, psi kg/cm², mmWs, mWs, N/m², N/mm², Hz, kHz, U/min, min⁻¹, sec⁻¹, rpm, l/h, l/min, kg/h, m³/h, m/min, m/sec, t/h.

Terminations

Plug-in screw-terminal strip for max. 1.5 mm² /AWG 16 cables.

Connector pin assignment



All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.