TWO-COLOUR DIGITAL PANEL METERS

DGN 175 U / T / M

The DGN175 are highly accurate **programmable digital panel meters**, with **IP 65** front face protection.
Each appliance is equipped with a two-colour 4 digits de 14 mm high display with a brightness which
Integrates perfectly in applications in industrial control rooms.
The extra-thin front face allows a better integration in cabinet fronts.
They allow the display, the control and the transmission of data from any measurable magnitudes.

Two display versions are available:

Two-colour display,
red and green

Two-colour display,
red and white

Introduction

- **Inputs:**

DGN175 U:
- DC current: ±20 mA
- DC voltage: ±100mV, ±1V, ±10V, ±150V, ±300V

DGN175 T:
- thermocouple: J, K, N, S, B, W5, T, R, E, W, W3, L
- sensor: Pt 100 Ω, Ni 100 Ω (2/3/4 wire), ΔPt 100 Ω 2 wire

DGN175 M:
- Inputs of the DGN175 U and T
- potentiometer: from 100 Ω to 10 KΩ
- resistances: calibers 0-400 Ω and 0-10 KΩ

- **Universal power supply**

  20 to 250 VAC and 20 to 250 VDC

- **Options:**
  (Specify on order)

  - **Isolated analogue output**
    Active current output, or voltage output.
  - **Output 2 or 4 relays**
    Mode setpoint or window.
  - **Isolated digital communications**
    RS485 2-wire, protocol MODBUS-JBUS
  - **2 isolated logic inputs (24VDC signal)**
  - **16-leds bar graph display**

Easy programming on front face with a 5-key tactile keyboard, or via the software SlimSET with a standard USB-µUSB cable (optional).

- **Display**:
  Electroluminescent red and green (or red and white)
  Selection of the basic colour and the condition for colour change programmable.
  ±10000 points
  4 alarm leds + 2 configurable leds

- **Housing**: Self-extinguishing case of black UL 94 V0 ABS.
                 Extra-thin 1.4 mm front face

- **Connectors**: Removable terminal blocks on rear face for screwed connectings (2.5mm², flexible or rigid)

- **Protection**: Front face: IP 65 Housing/terminals: IP20

- **Compliance with standards**:
          Directive LV 2014/35/UE………EN 61010-1
          Directive EMC 2014/30/UE……EN 61326-1
          Directive ROHS 2011/65/UE

  CE   Marking

sfere

Technical features

Types of inputs

DC current or voltage DGN175 U and M

Bidirectional input:

±100mV, ±1V, ±10V, ±150V, ±300V, ±20mA.

- Accuracy: 0.1 % of the full scale at +25 °C
- Thermal drift < 150 ppm/°C
- Measurable scale overrange from -10% to +10%
- Permanent overload: ±100 mA for caliber 20 mA
  ±1V for caliber 100 mV
  ±50V for calibers 1V, 10V
  ±300V for calibers 150V, 300V
- Scale factor programmable
- Enlarging effect – Square root extraction
- Special linearisation on 20 points
- Supply for 2 or 3-wire sensor
  24 V_{DC} (±15%) -25 mA protected from short-circuits

Temperature DGN175 T and M

Thermocouples:

Type J	min. -160	°C	max. +1200	°C
Type K	min. -270	°C	max. +1370	°C
Type N	min. +0	°C	max. +1300	°C
Type S	min. -50	°C	max. +1770	°C
Type B	min.+200	°C	max. +1820	°C
Type W5/C	min. +0	°C	max. +2300	°C
Type T	min. -270	°C	max. +410	°C
Type R	min. -50	°C	max. +1770	°C
Type E	min. -120	°C	max. +1000	°C
Type W/G	min.1000	°C	max. +2300	°C
Type W3/D	min. 0	°C	max. +2480	°C
Type L	min. -150	°C	max. +910	°C

- Accuracy: 0.1% of the full scale at +25°C, or 30µV typical (60µV max.)
- Thermal drift < 150ppm/°C (except CJC)
  Efficiency of the CJC: ±1°C ± 0.03°C/°C from -20°C to +60°C

Sensors:

Pt 100 Λ	min -200	°C	max. +850	°C
Ni 100 Λ	min -60	°C	max. +260	°C

- Wiring in 2,3 and 4 wire possible.
- Influence of the line resistance in 3 or 4-wire wiring within the class for 0<RI<25Ω
- 2-wire Δ Pt100 measurement from -200°C to +270°C (0<RI<10Ω)(Max. resistance. 400Ω)
- Max. measure current: 250 µA
- Accuracy: 0.1% of the full scale at +25°C
- Thermal drift < 150ppm/°C

Potentiometer and resistance DGN175 M

Resistive sensors: calibers 0-400 Ω and 0-10 kΩ
- Accuracy: 0.1% of the full scale at +25°C
- Thermal drift < 150ppm/°C

Potentiometers: from 100 Ω to 10 kΩ
- Accuracy: 0.1% of the full scale at +25°C
- Thermal drift < 150ppm/°C

Types of options

option A1,A2,A3

Analogue output: 3 types on choice

A1: Active current output 0/4-20mA
A2: Passive current output 0/4-20mA
A3: Voltage output 0-10V

- Accuracy: 0.1 % in relation to the display (at +25°C)
- Residual ripple ≤ 0.2%
- Admissible load 0Ω < Lr < 600 Ω (current)
  Lr > 5kΩ (voltage)
- Scale ratio programmable with enlarging effect.
- Response time: 40 ms.

option R, R4

Relay outputs:

2 or 4 independently programmable setpoint relays

- Hysteresis programmable independently in display points.
- Time delay programmable independently from 0 to 999.9 s in 0,1s. increments.
- Break-make contact 8 A - 250 V on resistive load.

option N

Digital output:
- RS485 2-wire, protocol MODBUS-JBUS
- Slave number programmable from 1 to 255.
- Baud rate from 1200 to 19200 bauds.

option T

2 logic inputs: 24 VDC signal
- Display hold, 0 reset of the min. and max., moving of the decimal point or tare function.

option B

16-leds bargraph display:
- Quick evaluation of the variations of the measured value.
- Scale factor programmable.

♦ **Power supply**

20 to 250 VAC 50/60Hz, and 20 to 250 VAC
Power consumption: 3 W max. 6 VA max.

♦ **Galvanic isolation**

3 kVeff 50HZ 1mn, between supply, input, analogue output, relay outputs.

♦ **Features**

- Sampling time: 100ms
- Input impedance ≥ 1 MΩ for the voltage inputs.
- Drop 0.9 V max. for the current input.
- Rejection rate:
  Common mode: 130 dB
  Serial mode: 50 dB 50/60 Hz
- Zero drift compensation and self-calibration

♦ Integration indice (programmable)

Allows stabilizing the display in case of unsteady input.

♦ Detection of the line or sensor break

- Can be detected on inputs mV, TC, Pt 100, Ni 100, ΔPt100, resistance (0-400 Ω) and current (4-20 mA).
- Fall back value programmable on the analog output in case of sensor break.
- Detection of the sensor break programmable on the 2 relays.
- Possibility to disable the sensor break detection.

♦ Self-diagnosis

- Permanently watches any drifts of the components. Serves to warn the user before they may provoque false measures.
- Self-diagnosis detection of the errors programmable on the 2 relays.
- Fall back value programmable on the analogue output in case of self-diagnosis error.

♦ Input scale overrange

Shown on the display by a blinking measure.

♦ Linearisations

- Linear input
- Extraction of the square root (current or voltage inputs)
- Special linearisation in 20 points (in X and in Y) (inputs: voltage or current or potentiometer or resistance)

♦ Process calibration (slope and offset)

Programmable on all inputs.

♦ Brightness setting

Setting of the digits brightness programmable on 4 levels, depending on the location of the device (outside, control room...)

♦ Quick reading on the display

- Of the value of the setpoints.
- Of the input signal electrical value.
- Of the min. and max. values

♦ Function simulation

- Possibility to simulate the analogue output (generator mode).
- Possibility to simulate the input or the displayed mesure: allows validating the configuration of the analogue output and the relay outputs in the installation.

♦ Changing of the display colour

- Programming of the main display colour.
- Programming of the display colour change on alarm or self-diagnosis.

♦ Access code

An access code adjustable from 0000 to 9999 serves to protect the digital panel meter from unauthorized programming and to lock the access to some funcions.

On factory exit the code is 0000.

♦ Environment

- IP65 front face protection.
- Operating temperature: -20 to +60°C.
- Storage temperature: -20 to +70°C.
- Relative dampness: 80% annual average.
- Use in pollution degree 2 and voltage surge category II or better.
- Max. altitude: 2000m
- Weight: 150g (with terminals)

Coding

♦ Type: DGN175 U/T/M depending on input

♦ Output options:
- **A** : Analogue (A1, A2 or A3: specify)
- **R** : 2 relays
- **R4** : 4 relays
- **N** : Digital communications RS485
- **T** : 2 logic inputs
- **B** : Bar graph display

♦ Colour code:
RG: Two-colour display, Red/Green
**RW:** Two-colour display, Red/White
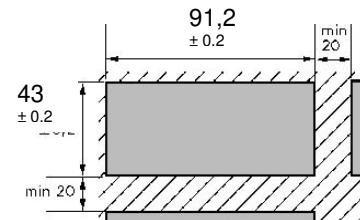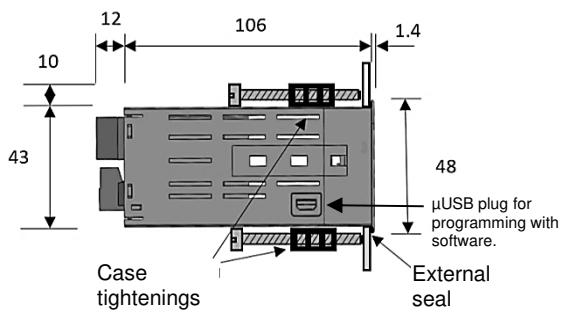
Order example:

For a two-colour digital panel meter in Red/Green with universal input, active current analogue output and 2 relays, request the reference:

DGN175M A1R RG.

Dimensions

Housing: 96 x 48 x 119.4 mm (with terminals)
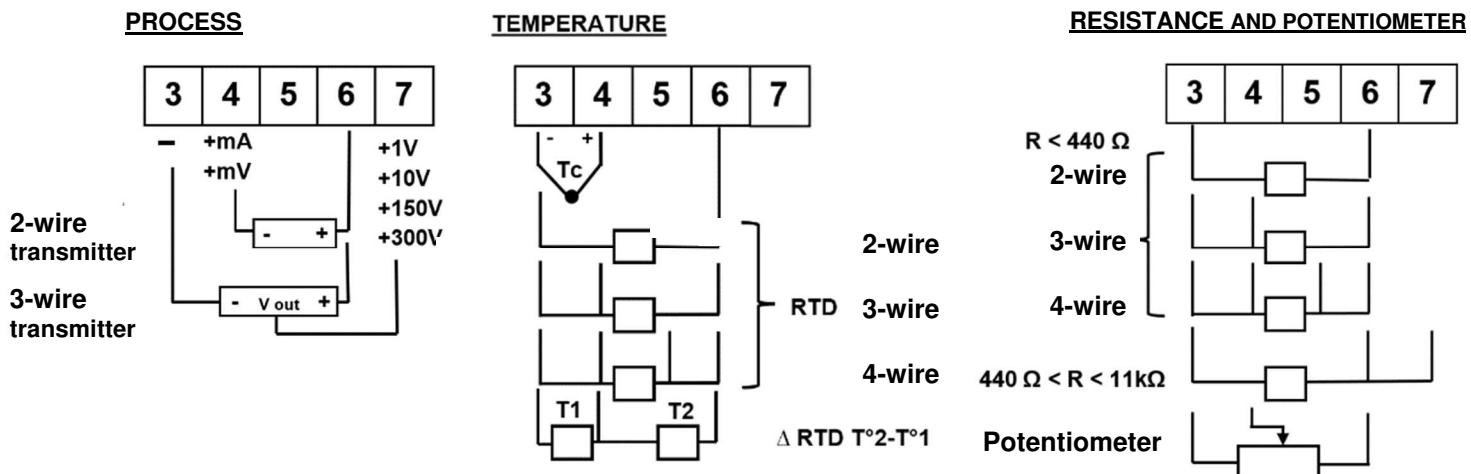
Mounting: on panel, cut out 43 x 91.2 mm

This appliance is dedicated to industrial applications. It has to be installed in an electrical cabinet, or equivalent.

Connectings

INPUTS (B)

PROCESS

3	4	5	6	7

− +mA +1V
+mV +10V
+150V
+300V

2-wire transmitter

3-wire transmitter

− +
− V out +

TEMPERATURE

3	4	5	6	7

− + Tc

2-wire

RTD **3-wire**

4-wire

T1 T2

Δ RTD T°2-T°1

RESISTANCE AND POTENTIOMETER

3	4	5	6	7

R < 440 Ω
2-wire

3-wire

4-wire

440 Ω < R < 11kΩ

Potentiometer
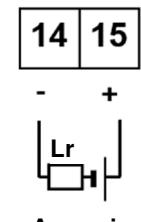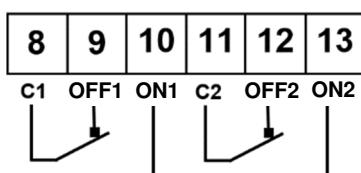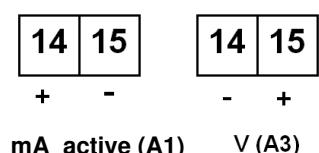
OUTPUTS (optional)

ANALOGUE OUTPUT (D)
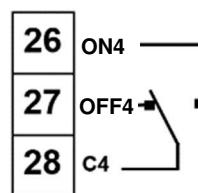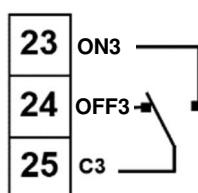
14	15
+	−

mA active (A1)

14	15
−	+

V (A3)

14	15
−	+

Lr

mA passive (A2)

RELAYS 1 AND 1 & 2 (C)

8	9	10	11	12	13
C1	OFF1	ON1	C2	OFF2	ON2

RS485 (G)

20	B
21	A
22	GND

RELAYS 3 AND 4

23	ON3
24	OFF3
25	C3

26	ON4
27	OFF4
28	C4

LOGIC INPUTS (G)

20	+TOR1
21	+TOR2
22	COM

or

LOGIC INPUTS (F)

23	+TOR1
24	+TOR2
25	COM

POWER SUPPLY (A)

1	2

AC ~ ~
DC + −
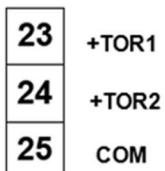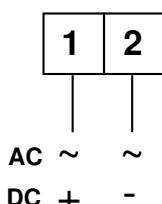
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