

# TWO-COLOUR DIGITAL PANEL METERS

## DGN 185 U / M

The DGN185 are highly accurate **programmable digital panel meters**, with **IP 65** front face protection. Each appliance is equipped with a two-colour 5 digits 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:

#### DGN185 U:

- DC current:  $\pm 20$  mA
- DC voltage:  $\pm 100$  mV,  $\pm 1$  V,  $\pm 10$  V,  $\pm 150$  V,  $\pm 300$  V

#### DGN185 M:

- Inputs of the DGN185 U
- thermocouple: J, K, N, S, B, W5, T, R, E, W, W3, L
- sensor: Pt 100  $\Omega$ , Ni 100  $\Omega$  (2/3/4 wire),  $\Delta$ Pt 100  $\Omega$  2 wire
- potentiometer: from 100  $\Omega$  to 10 K $\Omega$
- resistance: calibers 0-400  $\Omega$  and 0-10 K $\Omega$

### • 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- $\mu$ USB cable (optional).

#### • Display:

Electroluminescent red and green (or red and white)  
Selection of the basic colour and the condition for colour change programmable.  
-10000 / +100000 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 (2.5mm<sup>2</sup>, 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



# Technical features

## Types of inputs

### DC current or voltage DGN185 U and M

Bidirectional input:

$\pm 100\text{mV}$ ,  $\pm 1\text{V}$ ,  $\pm 10\text{V}$ ,  $\pm 150\text{V}$ ,  $\pm 300\text{V}$ ,  $\pm 20\text{mA}$ .

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

### Temperature DGN185 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:  $\pm 1^\circ\text{C} \pm 0.03^\circ\text{C}/^\circ\text{C}$  from -20°C to +60°C

#### Sensors:

|                 |             |              |
|-----------------|-------------|--------------|
| Pt 100 $\Delta$ | min -200 °C | max. +850 °C |
| Ni 100 $\Delta$ | 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  $0 < R_I < 25\Omega$
- 2-wire  $\Delta$  Pt100 measurement from -200°C to +270°C ( $0 < R_I < 10\Omega$ ) (Max. resistance. 400 $\Omega$ )
- Max. measure current: 250 µA
- Accuracy: 0.1% of the full scale at +25°C
- Thermal drift < 150ppm/°C

### Potentiometer and resistance DGN185 M

**Resistive sensors:** calibers 0-400  $\Omega$  and 0-10 k $\Omega$

- Accuracy: 0.1% of the full scale at +25°C
- Thermal drift < 150ppm/°C

**Potentiometers:** from 100  $\Omega$  to 10 k $\Omega$

- 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  $\leq 0.2\%$
- Admissible load  $0\Omega < L_r < 600\Omega$  (current)  
 $L_r > 5k\Omega$  (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 6 VA max.*

### ◆ Galvanic isolation

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

### ◆ Features

- Sampling time: 100ms
- Input impedance  $\geq 1\text{ M}\Omega$  for the voltage inputs.
- Drop 0.9 V max. for the current input.
- Taux de réjection :  
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,  $\Delta$ Pt100, resistance (0-400  $\Omega$ ) and current (4-20 mA).
- Fall back value programmable on the analogue 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 provoke 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 measure: 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 functions.

**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:** DGN185 U / 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

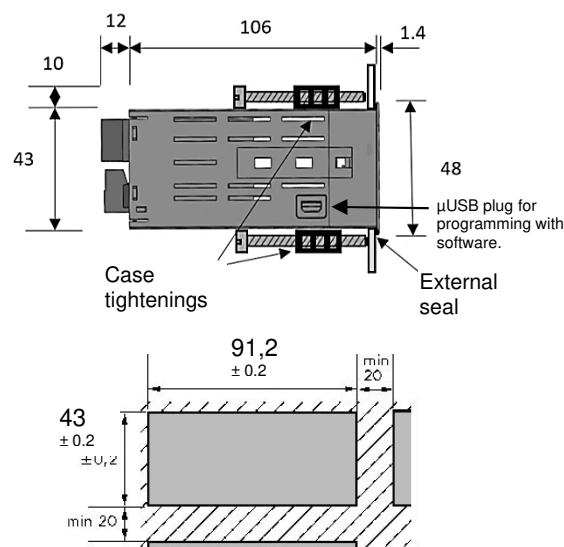
- ◆ Order example:

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

**DGN185M 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

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

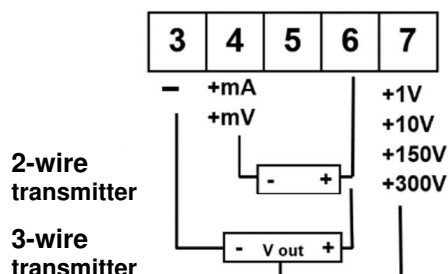
## Location of the terminals

(view of case rear side)

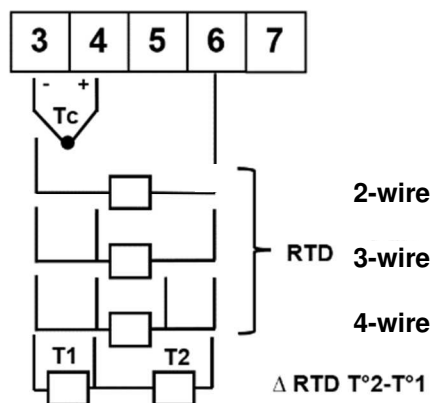
## INPUTS

**B**

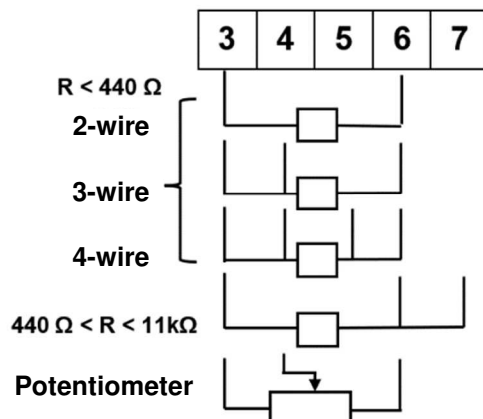
### PROCESS



### TEMPERATURE



### RESISTANCE AND POTENTIOMETER



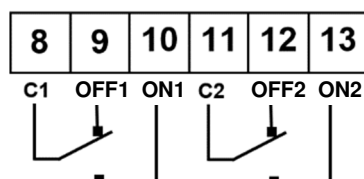
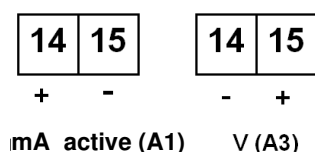
## OUTPUTS (optional)

### ANALOGUE OUTPUT

**D**

### RELAYS 1 AND 2

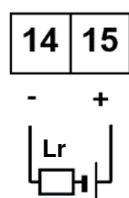
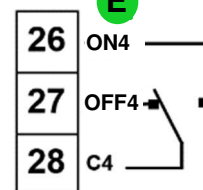
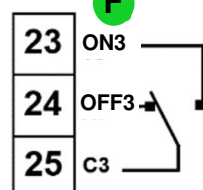
**C**



### RELAYS 3 AND 4

**F**

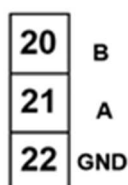
**E**



mA passive (A2)

### RS485

**G**

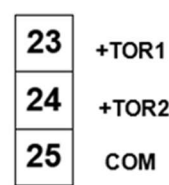
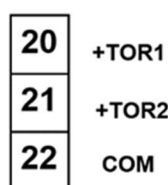


### LOGIC INPUTS

**G**

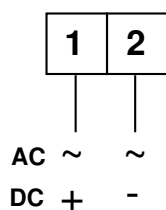
### LOGIC INPUTS

**F**



## POWER SUPPLY

**A**



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