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

DGN185 M:

- Inputs of the DGN185 U
- 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
- potentiometer: from 100 Ω to 10 KΩ
- resistance: 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**
  - **Option Wifi** (not compatible with digital communications)
    Reading of the measures and configuration

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 / +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 (2.5mm², 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
69510 SOUCIEU EN JARREST - Tél. : 33 (0)4 72 31 31 30 Fax. : 33 (0)4 72 31 31 31

Technical features

Types of inputs

DC current or voltage DGN185 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 VDC (±15%) -25 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: ± 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 DGN185 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.

option W

Wifi:

Reading of the measures and configuration

Not compatible with the option N: Digital comms

♦ Power supply

20 to 250 VAC 50/60Hz, and 20 to 250 VDC

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 ≥ 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 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 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 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

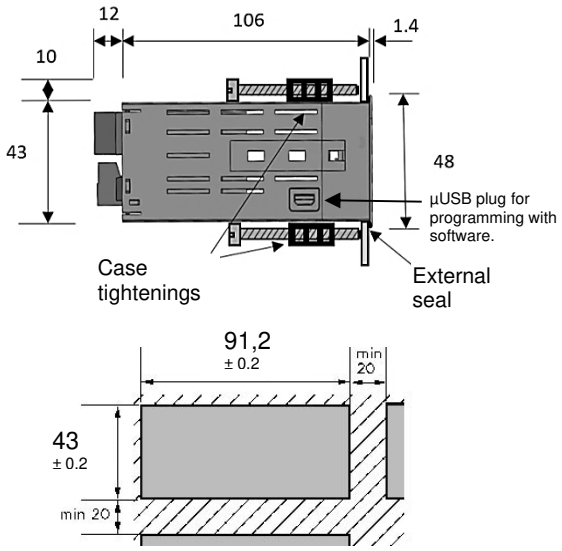
Output options:
A : Analogue (A1, A2 or A3: specify)
R : 2 relays
R4: 4 relays
N : Digital communications RS485
T : 2 logic inputs
B : Bar graph display
W : Wifi (not compatible with option N: digital comms)

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

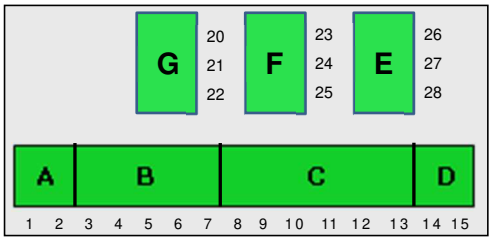
Housing: 96 x 48 x 119.4 mm (with terminals)



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.

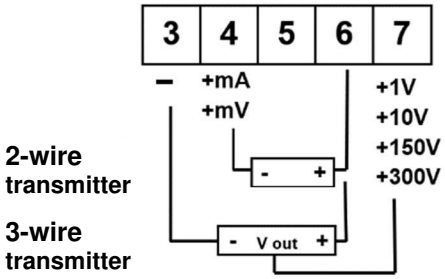
Connectings



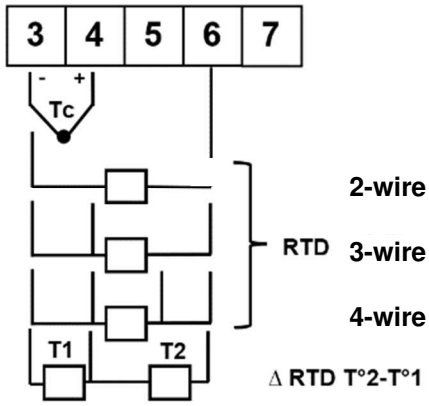
Location of the terminals
(view of case rear side)

INPUTS B

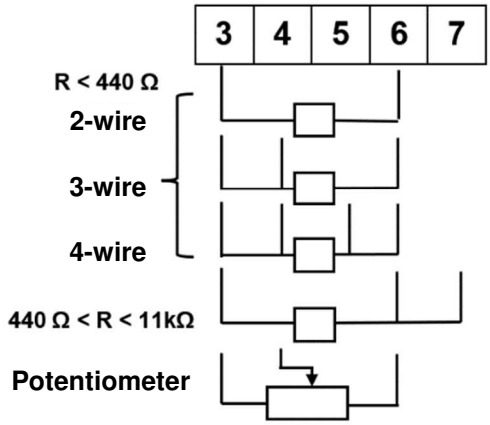
PROCESS



TEMPERATURE

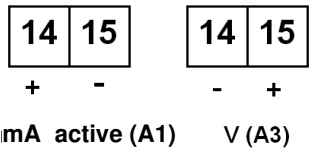


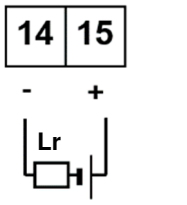
RESISTANCE AND POTENTIOMETER



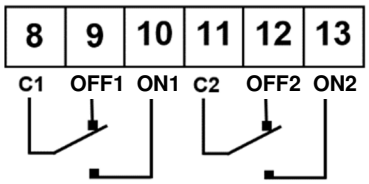
OUTPUTS (optional)

ANALOGUE OUTPUT D



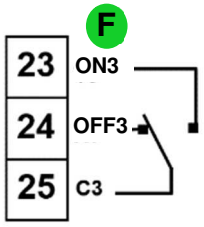


RELAYS 1 AND 2 C

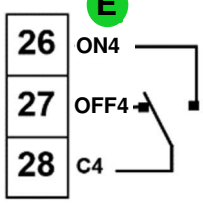


RELAYS 3 AND 4

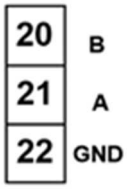
F



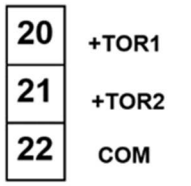
E

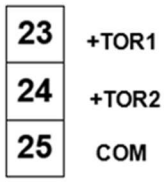


RS485 G

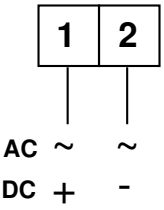


LOGIC INPUTS G or LOGIC INPUTS F





POWER SUPPLY A



sfere
e-mail : info@sfere-net.com
www.ardetem-sfere.com

Route de Brindas
Parc d'activité d'Arbora N°2
69510 SOUCIEU EN JARREST
FRANCE

Tél. : 33 (0)4 72 31 31 30
Fax. : 33 (0)4 72 31 31 31

your representative

SFERE – CA IN/63 - C 11/25 – Any data in this documentation may be modified without prior notice.