

TWO-COLOUR DIGITAL PANEL METERS

DIP1400/1401/1402

The DIP1400/1401/1402 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:

DIP1400:

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

DIP1401:

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

DIP1402:

- Inputs of the DIP1400 and 1401
- potentiometer: from 100 Ω to 10 K Ω
- resistances: calibers 0-400 Ω and 0-10 K Ω

• 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- μ 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 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

Technical features

Types of inputs

DC current or voltage: DIP1400 and 1402

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 Vdc ($\pm 15\%$) -25 mA protected from short-circuits

Temperature DIP1401 and 1402

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

Potentiometer and resistance DIP1402

Resistive sensors: calibers 0-400 Ω and 0-10 k Ω

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

Potentiometers: from 100 Ω to 10 k Ω

- 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 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.
- 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 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 à 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: DIP1400/1401/1402 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

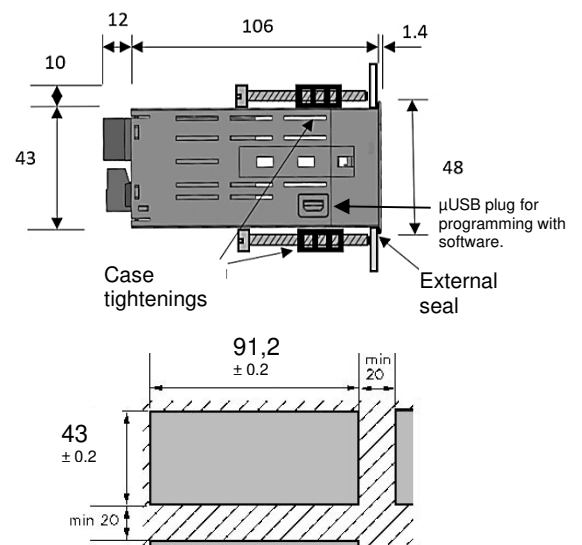
◆ Order example:

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

DIP1402 A1R RG.

Dimensions

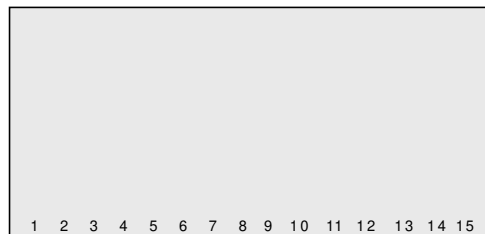
Housing: 96 x 48 x 119.4 mm (with terminals)



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



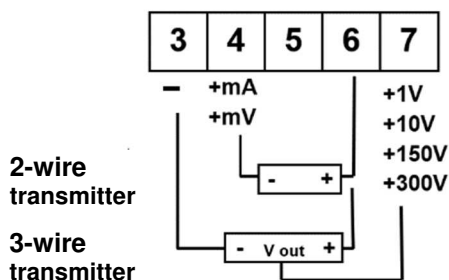
Location of the terminals

(view of case rear side)

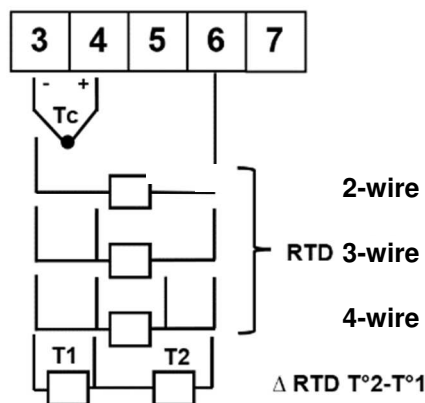
INPUTS

B

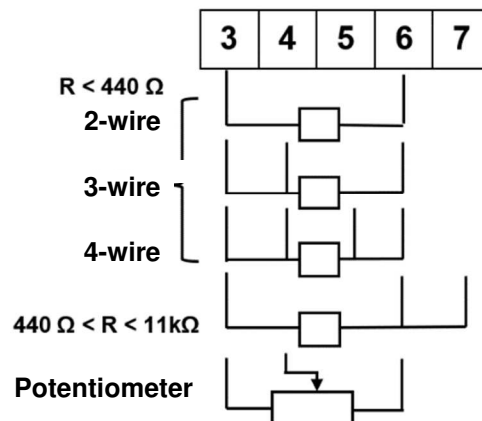
PROCESS



TEMPERATURE



RESISTANCE AND POTENTIOMETER



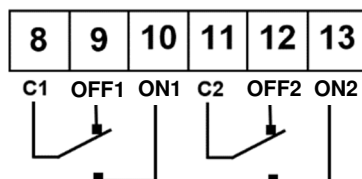
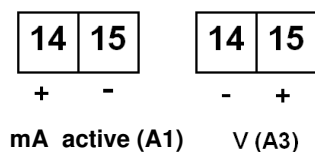
OUTPUTS (optional)

ANALOGUE OUTPUT

D

RELAYS 1 AND 1 & 2

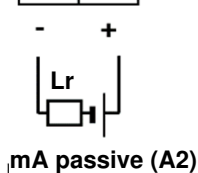
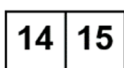
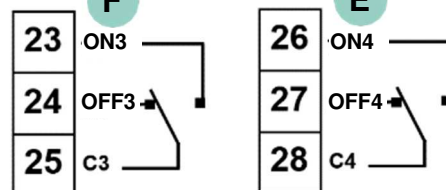
C



RELAYS 3 AND 4

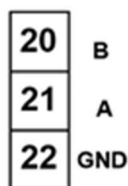
F

E



RS485

G

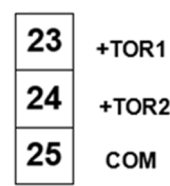
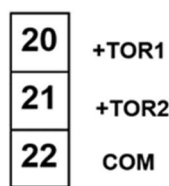


LOGIC INPUTS

G or

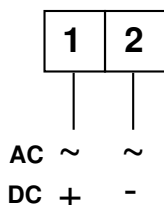
LOGIC INPUTS

F



POWER SUPPLY

A



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