

2400

FAST DISPLAY / ALARM UNIT



Main applications

- Extrusion lines and injection presses for plastics
- Filling machines
- Food processing plants
- Pressure measurement and trip points (direct/differential)
- Position measurement and trip points
- Variable setpoints in fast processes and automations in general, with signal retransmission

Main characteristics

- Double configurable input for strain gauge / potentiometer / linear signal / TC / RTD
- Two auxiliary analog inputs
- Differential measurement
- High precision: 0.1 % f.s. ± 1 digit
- High tripping speed
- Automatic calibration for 6-wire strain gauge
- Transmitter power supply and strain gauge probe power supply
- Memory: min. peak, max. peak, max. peak – min. peak
- 3 configurable alarms, failsafe function
- 2 digital inputs
- up to 4 relay/logic outputs
- 5-digit display
- Serial communication interface:
 - RS485/RS232 MODBUS RTU protocol (optional)
 - Profibus DP slave (optional)
- Isolated analog retransmission output (optional)

PROFILE

Fast microprocessor display / alarm unit, 96 x 48 (1/8 DIN) format.

Built with SMT technology for an extremely complete operator interface with IP54 protection level (IP65 with protective cover).

The front panel has a 6-key soft-touch keyboard and 5-digit LED display of process variable and parameters.

The instrument is appropriate for acquisition of signals with high variation speed. It has two main analog inputs for many applications, including differential measurements.

The inputs are configurable from the keyboard and accept standard linear signals (and custom linearized signals), as well as signals from pressure probes, load cells, potentiometers, TC, RTD.

There are two additional analog inputs for linear signals and two digital inputs for functions such as alarm latch reset, peak latch reset, calibration check, hold, alarm setpoint selection.

The outputs (up to 4) are relay or logic, and are configurable.

The instrument manages functions such as storage of maximum peak, minimum peak, peak-peak values.

An optional, optically isolated analog output is available for retransmission of input value or peak values.

Alarms

4 (10) completely configurable setpoints. Selectable "failsafe" function.

MD8 expansion to replace outputs 3 and 4, with 8 additional setpoints.

Digital communication

The instrument offers an optional RS485 2/4 wire / RS232 serial interface with MODBUS RTU protocol for access to instrument parameters, or the option Profibus DP (slave).

Configuration

The programming procedure is facilitated by the menu structure, with various configuration levels for quick and simple data search.

TECHNICAL DATA

OPERATOR INTERFACE

Display

Configurable from -19999 to 99999 with settable decimal point

5 digits bicolors (R/V) 13mm

2 digits (V) 7mm

LED signals: n.14 red

Keys: n.6

ANALOG INPUTS

Accuracy: 0,1% f.s. ± 1 digit (0,2% for TC)

Min. sampling time:

2 msec for main inputs

10msec for auxiliary inputs

Resolution:

• without filter: 100000 steps@2msec

• with digital filter (selectable):

100000 steps@20msec

100000 steps@100msec (50Hz)

Custom linearization:

• fixed intervals: 64 sections

• variable intervals: 32 sections max.

• self-learning

INPUT 1, INPUT 2 main inputs

Strain-gauge: 350 Ω

Sensitivity 1,5...4mV/V

Jumper power supply: 5/10Vdc 200mA

Potentiometer:

$\geq 100\Omega$, $R_i > 10M\Omega$ @ 2,5Vdc

Linear DC:

$\pm 50mV$... $\pm 10V$, $R_i > 1M\Omega$

0/4...20mA, $R_i = 50\Omega$

TC - thermocouple:

J 0...1000°C / 32...1832°F
K 0...1300°C / 32...2372°F
R 0...1750°C / 32...3182°F
S 0...1750°C / 32...3182°F
T -200...400°C / -328...752°F
 custom -1999...9999

RTD: 2-3 wires**PT100** -200...850°C / -328...1562°F
int./ext. cold junction compensation**INPUT 3** (auxiliary)**Linear DC:**

0...10V, 0/4...20mA, Ri = 50Ω

INPUT 4 (auxiliary)**Linear DC:**

0...10V, 0/4...20mA, Ri = 50Ω

ALLARMI

Relay: 5A/250Vac cosφ=1

Logic: 24Vdc source/sink

OUTPUT 1**Relay (NO/NC)* or Logic**
(according to model)**OUTPUT 2****Relay (NO/NC)* or Logic**
(according to model)**OUTPUT 3******Relay (NO/NC)* or Logic**
(according to model)**OUTPUT 4******Relay (NO/NC)* or Logic**
(according to model)

* terminal "C" in common

** alternate: version only with OUTPUT3
(switching contact) and interface for MD8
expansion unit

- The relay can be energized or de-energized in alarm state (selection via keyboard).

- The outputs can be assigned to alarm setpoints directly or via logic functions (AND, OR).
 - The outputs can be delayed or assigned to a hysteresis value (selectable in engineering units).
 - 4 (10) alarm setpoints settable in absolute value, with functions configurable via keyboard (direct, reverse, deviation, symmetrical deviation).
 - Setpoint can be set over the entire selected scale.
 - Minimum or maximum setpoint with latch.
 - Setpoint can be excluded in power-up phase until the input variable has exceeded the set limit.
- A subsequent drop below such limit causes the relay to trip

ANALOG OUTPUT (optional)*Not available with option of Profibus communication*

Isolated 1500V
 0/4...20mA, max 500Ω
 ± 10V, min 500Ω
 resolution higher than 0,03%
 Configurable via software

COMMUNICATION (optional)**SERIAL INTERFACE:****RS485** 2/4 wires optically isolated

Protocol: MODBUS RTU

Profibus DP slave

Protocol: Profibus DP VO (slave)

CONFIGURATION VIA PC:TTL service interface, connectable to PC
via "Winstrum" kit**CONNECTIONS**

Screw connections

POWER SUPPLY

100...240Vac/dc ±10%,
 20...27Vac/dc ±10%,
 50...60Hz; max 20VA
 Protection via internal fuse, not replaceable
 by operator

PROBE POWER SUPPLY

5/10Vdc - 200mA, 2,5Vdc for potentiometers

TRANSMITTER POWER SUPPLY

24Vdc, ±5% - 100mA

AMBIENT CONDITIONS**Work temperature:** 0...50°C**Storage temperature:** -20...70°C**Humidity:** 20...85% Ur non-condensing**WEIGHT**

450g

DIMENSION

96 X 48 X 167 mm

ACCESSORIES**MD8 - EXPANSION UNIT**

replaces outputs 3 and 4 with an additional 8 outputs (relay or logic, according to model)

FRONT COVERS

standard Gefran (see catalog)

WINSTRUM KIT

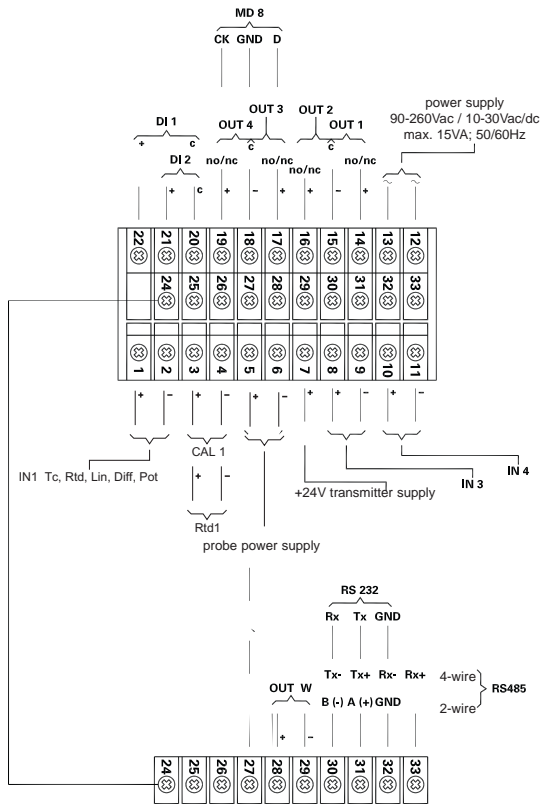
TTL/RS232 interface wires + CD

DESCRIPTION FACEPLATE**A** - Process variable display, digit height 14mm, red**B** - Index value for displayed process variable**C** - "FUNCTION" button**D** - "LOWER" button**E** - "RAISE" button**F** - special functions**G** - "CAL-RST" button**H** - "PEAK" button**I** - Alarm setpoint signals, red LEDs**L** - Function indicators

IP54 front panel protection (IP65 available)

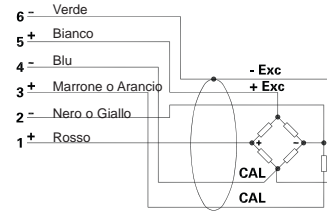
CONNECTION DIAGRAMS

Model with single main input Model: 2400 - 0 - X - X - X - X



IN1

Strain-gauge



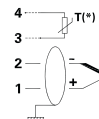
Input in current



Input in voltage

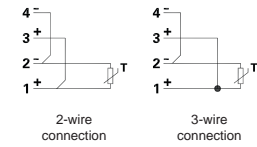


Thermocouple

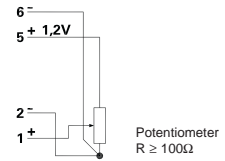


(*) PT100 for possible external cold junction compensation

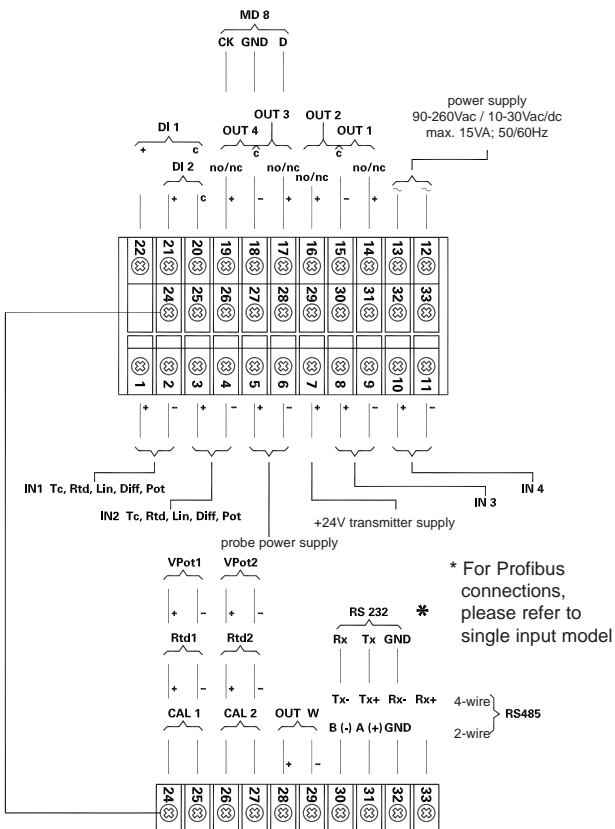
Resistance Thermometer



Potentiometer

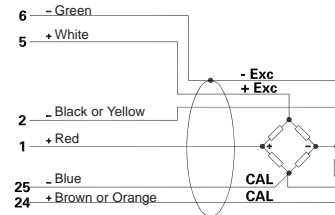


Model with double main input Model: 2400 - 1 - X - X - X - X



IN1

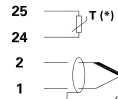
Strain-gauge



Input in current / voltage

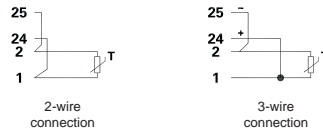


Thermocouple

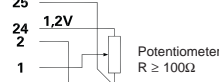


(*) PT100 for possible external cold junction compensation

Resistance Thermometer

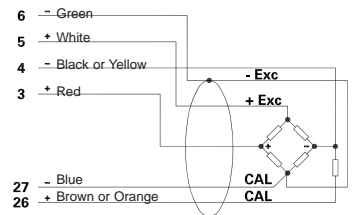


Potentiometer



IN2

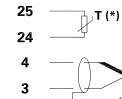
Strain-gauge



Input in current / voltage

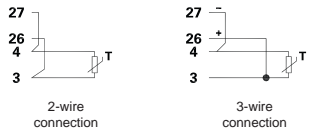


Thermocouple

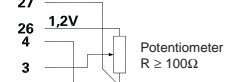


(*) PT100 for possible external cold junction compensation

Resistance Thermometer

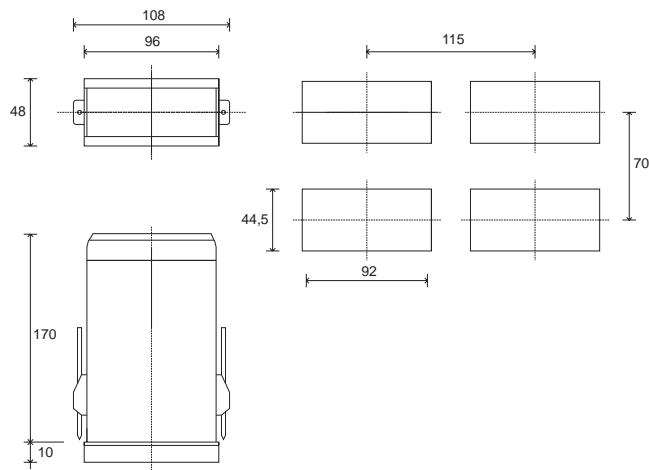


Potentiometer



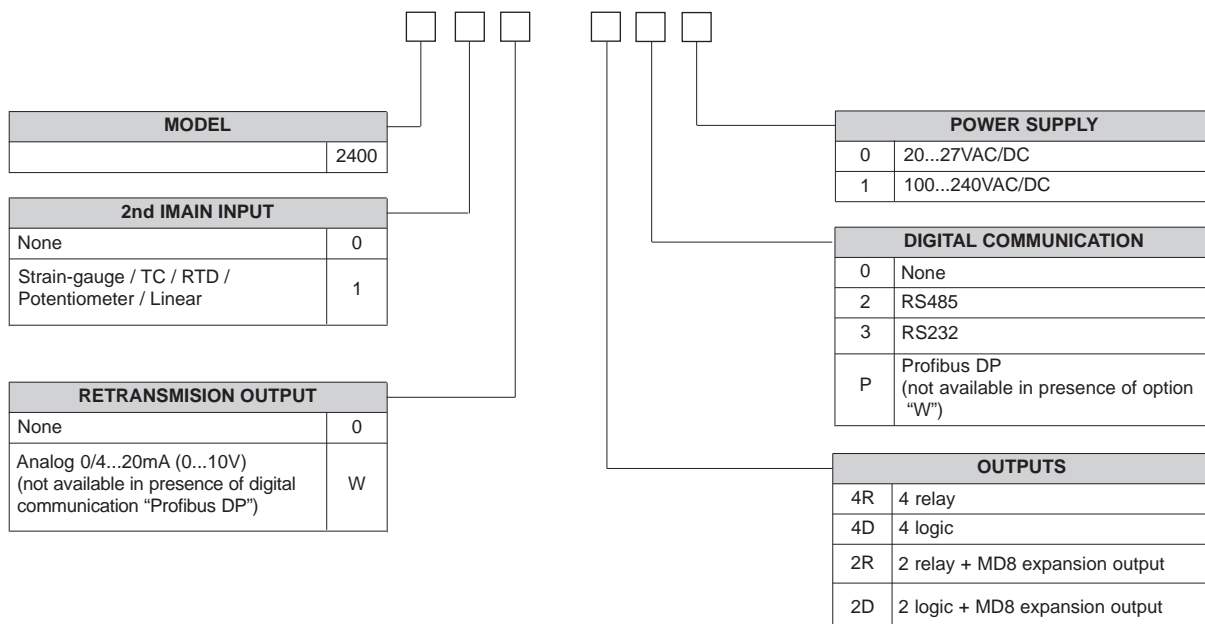
Apply user's manual warnings for a correct installation

DIMENSIONS AND CUT OUT



Dimensions: 96x48mm (1/8 DIN), depth 167mm

ORDER CODE



reserves the right to make any kind of design or functional modification at any moment without prior notice.



Conformity C/UL/US File no. E216851



The instrument conforms to the European Directives 2004/108/CE and 2006/95/CE with reference to the generic standards: **EN 61000-6-2** (immunity in industrial environment) **EN 61000-6-3** (emission in residential environment) **EN 61010-1** (safety)

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