



#### Main applications

- Thermostats
- Humidity switches
- Mould cooling units
- Industrial refrigerators
- Air conditioning
- Food processing equipment

#### Main features

- Faceplate configurable input
- Protected by a personal code
- Configurable by a serial link
- Transmitter power supply incorporated
- Custom thermocouple linearisation available
- Internal linearisation for engineering units
- Labels provided for the more common physical units
- Sampling time and trip intervention programmable between 15 and 120msec with resolution between 4000 and 16000 steps
- Retransmission of the measured variable signal
- 3 trip points, completely configurable from the faceplate
- 4 trip points completely configurable from keyboard
- RS485 optically isolated serial line Protocol : GEF 40T CENCAL or MODBUS RTU
- Rapid configuration from PC with Winstrum package

#### GENERAL

Microprocessor based indicator in both 48x48 (1/16 DIN) formats manufactured with SMT.

The instruments have a lexan membrane faceplate (guaranteed to IP65) which has 3 keys, a 4 digit display and 3 indicating LED's for the output statuses.

The input signal can be selected from a wide range of sensors:

- Thermocouples of type: J, K, R, S, T, B, E, N, L GOST, U, G, D, C
- Resistance thermometers Pt100, Pt100J 2 / 3 wire
- PTC and NTC thermistors
- Linear inputs 0 to 60/12 to 60mV, 0 to 20/4 to 20mA, 0 to 10/2 to 10/0 to 5/1 to 5/0 to 1/0, 2 to 1V

The selection is made using the faceplate keys and correct input terminals.

No external shunt or adapter is required.

A digital input (24Vdc/5mA) is available for resetting, hold, flash, peak handling or releasing latch. The instruments have a maximum of 4 outputs that can be mechanical relays (5A/250V) or logic

outputs 24V±10% (10Vmin / 20mA).

One output of 4 to 20mA (max. 500Ω) is available for retransmitting the measured input signal.

The retransmission output, the digital input and the third output are alternatives.

The options include a triac output that can directly drive resistive loads up to a maximum of 1A at 240V.

The programming of the instrument is made easy by grouping the parameters in function blocks (**CFG** for the alarm hysteresis, **Inp** for the inputs, **Out** for the outputs...) and by a simplified data entry menu.

The configuration can be simplified even further using the PC programming kit made up of a connection cable and a menu guide program that runs under Windows (technical data WINSTRUM). A configurable personal software protection code (password protection) can be used to restrict the levels of editing and displaying the configuration parameters.

#### TECHNICAL DATA

##### INPUTS

Accuracy 0,2% f.s. ±1 digit.

Sampling time 120msec for temperature sensors, configurable for linear inputs down to a minimum of 15msec with reduction of the resolution to 4000 steps.

Configurable decimal point position for linear inputs, for TC, RTD, PTC and NTC inputs, only one decimal digit is allowed in the maximum display range of -199.9 to 999.9, with indication of open circuit thermocouple or RTD, PTC or NTC in open or short circuit, indication of over- and under-range for linear inputs.

##### TC - Thermocouple

<b>J</b>	0 to 1000°C / 32 to 1832°F
<b>K</b>	0 to 1300°C / 32 to 2372°F
<b>R</b>	0 to 1750°C / 32 to 3182°F
<b>S</b>	0 to 1750°C / 32 to 3182°F
<b>T</b>	-200 to 400°C / -328 to 752°F
<b>B</b>	44 to 1800°C / 111 to 3272°F
<b>E</b>	-100 to 750°C / -148 to 1382°F
<b>N</b>	0 to 1300°C / 32 to 2372°F
<b>L-GOST</b>	0 to 600°C / 32 to 1112°F
<b>U</b>	-200 to 400°C / -328 to 752°F
<b>G</b>	0 to 2300°C / 32 to 4172°F
<b>D</b>	0 to 2300°C / 32 to 4172°F
<b>C</b>	0 to 2300°C / 32 to 4172°F
<b>custom</b>	-1999 to 9999

### **RTD (2 or 3 wire)**

PT100 -200 to 600°C / -328 to 1112°F  
JPT100 -200 to 600°C / -328 to 1112°F

### **PTC**

990Ω, 25°C -55 to 120°C / -67 to 248°F

### **NTC**

1KΩ, 25°C -10 to 70°C / 14 to 158°F

### **DC - Linear**

With scale configurable within the limits:

-1999 to 9999

0 to 60mV / 12 to 60mV

0 to 10V / 2 to 10V

0 to 5V / 1 to 5V

0 to 1V / 0,2 to 1V

0 to 20mA / 4 to 20mA

Input impedance

Ri ≥ 1MΩ for 60mV, 1V

Ri ≥ 10KΩ for signal 5V, 10V

Ri = 50Ω for signal 20mA.

32-segment configurable linearisation can be used.

### **Potentiometer**

Supply 1,2V >100Ω

### **Digital input**

- in voltage 24V, 5mA Ri = 4,7KΩ  
isolation 1500V

- contact type

Function is configurable as alarm or memory reset, hold, flash zero, display of the peak value (max., min. or peak to peak).

### **OUTPUTS**

4 configurable outputs:

OUT1, OUT4 relay only;

OUT2 relay, logic or triac;

OUT3 relay.

A maximum of four trip points can be set as absolute, deviation or symmetrical deviation alarms.

The hysteresis of each alarm is configurable individually.

Alarm masking with exclusion on power up, with memory, delay and minimum intervention time.

The trip point may be set at any point on the scale.

### **Relay**

with NO (NC) contacts rated at 5A, 250V at cosφ = 1.

### **Logic .**

24 Vdc (10Vmin/20mA) limitation to 30mA (indicated in order code with D).

### **Triac**

24...240Vac ±10% 50/60Hz, 1A max

I<sub>t</sub> = 128A<sup>2</sup>sec leakage current

1,5mA max at 200Vac.

### **Analog retransmission**

Of variable 0... 10V, 0/4... 20mA at 500W max. Resolution 12 bit.

### **Serial Line**

Isolated 2/4 wires, RS485 interface (1200, 2400, 4800, 9600, 19200 baud)

Protocol: GEFran CENCAL or MOD-BUS

### **POWER SUPPLY**

Standard: 100 to 240Vac ± 10%  
optional: 11 to 27Vac/dc ± 10%

50/60Hz, max. 8VA

Protected by an internal fuse (not replaceable by the operator).

### **POWER SUPPLY**

#### **TRANSMITTER**

24V ±10% unstabilised, 30mA

15V for transmitter, 30mA

1,2V for potentiometer > 100Ω

## **FACEPLATE DESCRIPTION**

**A** - Indication of process variable: 10mm red display

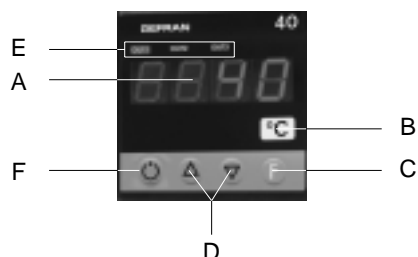
**B** - Label for engineering units

**C** - "Function" key

**D** - "Raise" and "Lower" keys

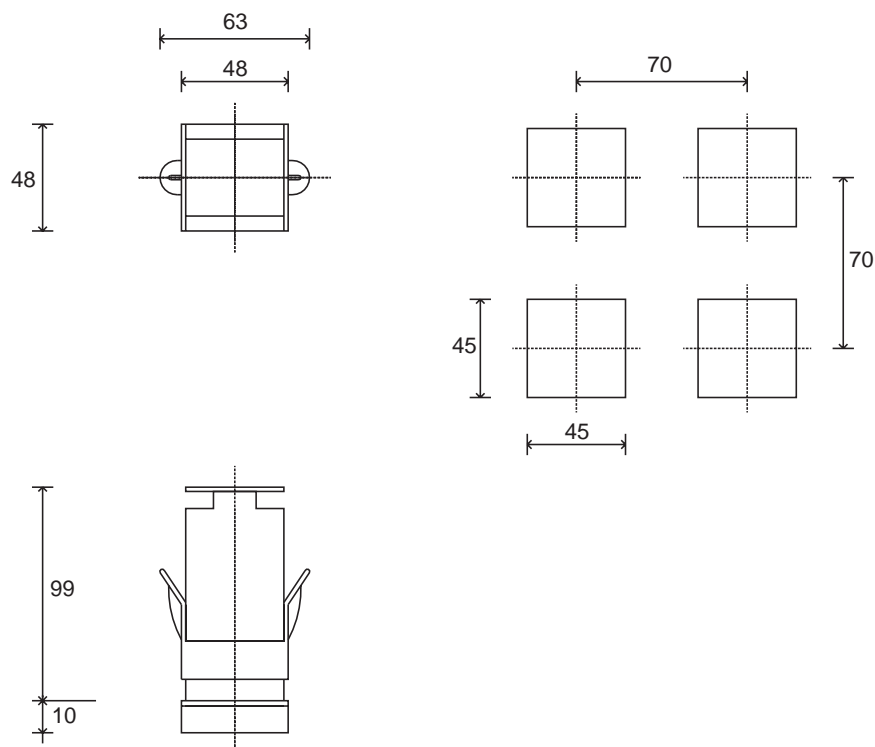
**E** - Indication of the states of the outputs: red led

**F** - key not used



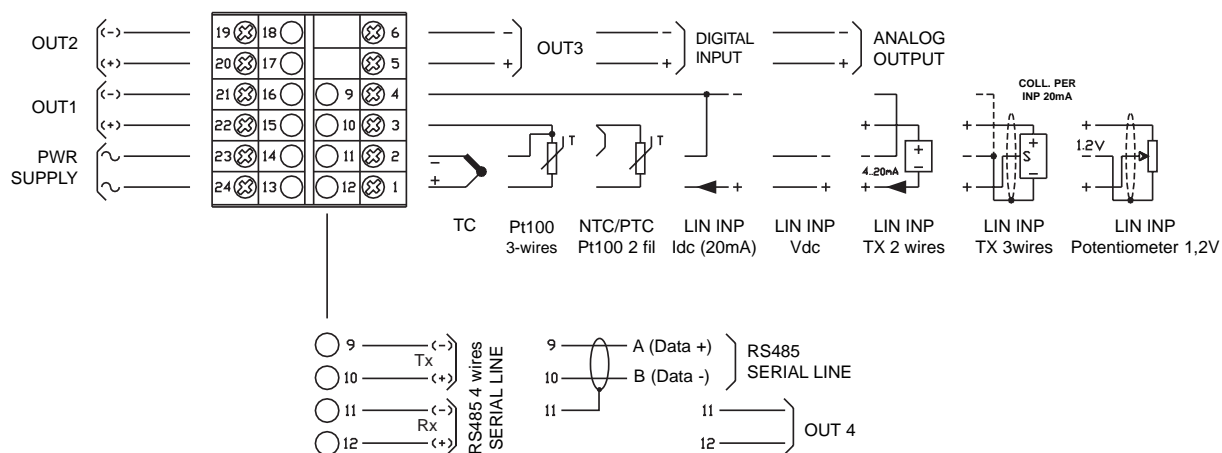
IP65 faceplate protection

## DIMENSIONS and CUT-OUT



Dimensions: 48x48mm - (1/16DIN), depth 99mm

## CONNECTION DIAGRAM



For a correct installation see the warnings in the users' manual

## ORDER CODE

40T

48 4

NR. DIGITS	
4	4

SENSOR / TRANSMITTER POWER SUPPLY	
None	0 0
For T input (alternative to RTD, PTC, NTC)	
24Vdc, 50mA	2 4

OUTPUT 1, OUTPUT 2	
Relay, Relay	R R
Relay, Static D2	R D
Relay, Triac	T 0

OUTPUT 3 (alternative to digital input / retransmission output)	
None	0
Relay	R

POWER SUPPLY	
0	11...27Vac/dc
1	100...240Vac




DIGITAL COMMUNICATION / OUTPUT 4	
0	None
2	RS485
R	Relay Output

DIGITAL INPUT / RETRANSMISSION OUTPUT (alternative to output 3)	
0	None
1	Digital input
2	Retransmission output 0/4...20mA (0...10V)

\* R77 for potentiometer input (R input >10Mohm)

Please, contact GEFRA sales people for the codes availability.

GEFRAN spa reserves the right to make any modification of the design or function, at any moment without prior notice

	Conformity C/UL/US File no. E216851
	Conformity CSA NRTL/C certificate nr. 188658 - 1261315
	The instrument conforms to the European Directives 89/336/CEE and 73/23/CEE with reference to the generic standards: - CEI-EN 61000-6-2 (immunity in industrial environments) - EN 50081-1 (emission in residential environments) - EN 61010-1 (safety)

**GEFRAN**

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