GEFRAN

40T 96

CONFIGURABLE INDICATORS - ALARM UNITS

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*
- *4 trip points completely configurable from keyboard*
- *RS485 optically isolated serial line Protocol : GEFRAN CENCAL or MODBUS RTU*
- *Rapid configuration from PC with Winstrum package*

Main applications

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

GENERAL

Microprocessor based indicator in both 96x48 (1/8 DIN) format manufactured with SMT. The instrument have a lexan membrane faceplate (guaranteed to IP65) which has 3 keys, a 3 / 4 digit display format, and 4 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 themistors*
- *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 to1V*
The selection is made using the faceplate keys .
The instrument is available in version base, with two outputs to relé (2R), and expandible version.
The instruments have a maximum of 4 outputs that can be mechanical relays (5A,250Vac/30Vdc cosφ=1) or logic outputs (0 to 11Vdc). A digital input (24Vdc/5mA) is available (for resetting, hold, flash, peak handling or releasing latch) and one output of 0...10V, 0/4 to

20mA (max. 500Ω) is available for retranmitting the measured input signal. The retransmission output, the digital input and the third output are available contemporaneously.
The serial communication option (available in RS485 standard) allows connection to supervision systems and PLCs with two protocols: GEFRAN CENCAL and MODBUS RTU.
Finally, a triac can be fitted (as an alternative to the output 1) to 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 (see 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. ±1digit.
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 (4 digit display), -99.9 to 99.9 (3 digit display with sign), 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
(4 digit)

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
B	44...1800°C / 111...3272°F
E	-100...750°C / -148...1382°F
N	0...1300°C / 32...2372°F
L-GOST	0...600°C / 32...1112°F
U	-200...400°C / -328...752°F
G	0...2300°C / 32...4172°F

D	0...2300°C / 32...4172°F
C	0...2300°C / 32...4172°F
custom	-1999...9999

TC - Thermocouple
(3 digit + sign)

J	0...999°C / 32...999°F
K	0...999°C / 32...999°F
R	0...999°C / 32...999°F
S	0...999°C / 32...999°F
T	-200...400°C / -328...752°F
B	non disponibile
E	-100...750°C / -148...999°F
N	0...999°C / 32...999°F
L-GOST	0...600°C / 32...999°F
U	-200...400°C / -328...752°F
G	0...999°C / 32...999°F
D	0...999°C / 32...999°F
C	0...999°C / 32...999°F
custom	-999...999

RTD (2 or 3 wire)
(4 digit)
PT100 -200...600°C / -328...1112°F
JPT100 -200...600°C / -328...1112°F

(3 digit + sign)
PT100 -200...600°C / -328...999°F
JPT100 -200...600°C / -328...999°F

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

NTC
1KΩ, 25°C   -10...70°C / 14...158°F

DC - Linear
With scale configurable within the limits:
-1999...9999 (4 digit)
-999...999 (3 digit + sign)
0...60mV / 12...60mV
0...10V / 2...10V
0...5V / 1...5V
0...1V / 0,2...1V

0...20mA / 4...20mA
Input impedance for voltage signals:
Ri > 1MΩ for f.s. 60mV / 1V,
Ri > 10KΩ for f.s. 5V / 10V.
for current signals Ri = 50Ω.
32-segment configurable linearisation can be used.

Potentiometer
Supply 1,2V >100Ω

Digital input
PNP: Ri = 4,7KΩ (24V, 5mA) 1500V insulation
NPN: free contact from tension
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 relay or Triac
• OUT2 available to relé, logic
• OUT3/OUT4 available only to relé (*)
(*) OUT4 alternative to the analog retransmission output

Relay
(R in order code)
with contacts rated at
5A/250Vac/30Vdc at cosφ = 1.

Logic
(D in order code)
24Vdc, Rout = 100Ω (10V/20mA).

Triac
(T in order code)
24 to 240Vac ±10%, 50/60Hz, 1A max
Snubberless, $I^2t = 128A^2sec$
Current in loss 1,5mA max to 200Vac

A maximum of 4 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.

Analogue retransmission
0...10V, 0/4...20mA, at 500Ω max resolution 12 bit, useful for retransmission of variable.

Serial line
Isolated 2/4 wires, RS422/485 interface (1200, 2400, 4800, 9600, 19200 baud)
Prot.: GEFRAN CENCAL or MODBUS

POWER SUPPLY
Standard:
100 to 240Vac/dc ± 10% max 18VA
Optional:
11 to 27Vac/dc ± 10% max 11VA
50/60Hz, protected by an internal fuse (not replaceable by the operator).

POWER SUPPLY transmitter
24V ±10% unstabilised, 50mA
15V for transmitter, 50mA
1,2V for potentiometer > 100Ω

AMBIENT CONDITIONS
Working temperature range:
0 to 50°C
Storage temperature range:
-20 to 70°C
Humidity:
20 to 85%Ur non-condensing

WEIGHT
320g in the complete version

FACEPLATE DESCRIPTION

A -indication of process variable digits h. 20mm (3 digit), 14mm (4 digit), 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
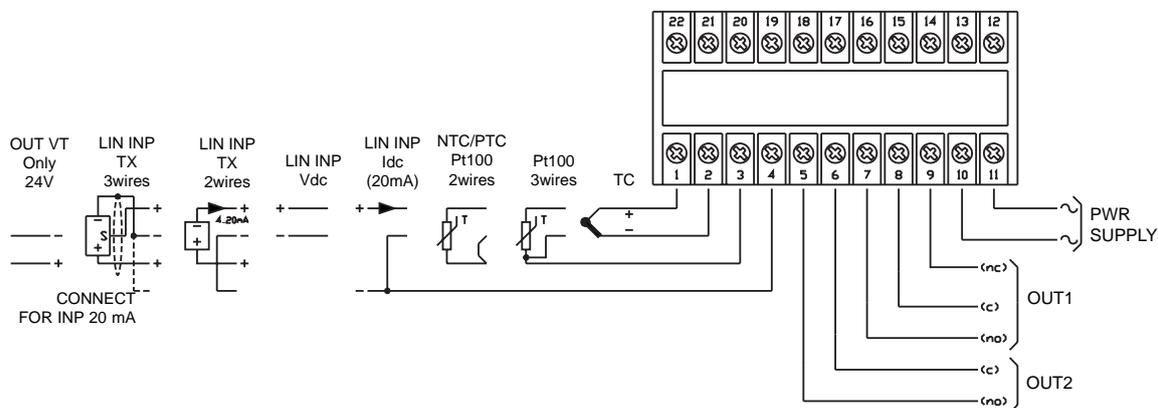
IP65 faceplate protection

4 digits

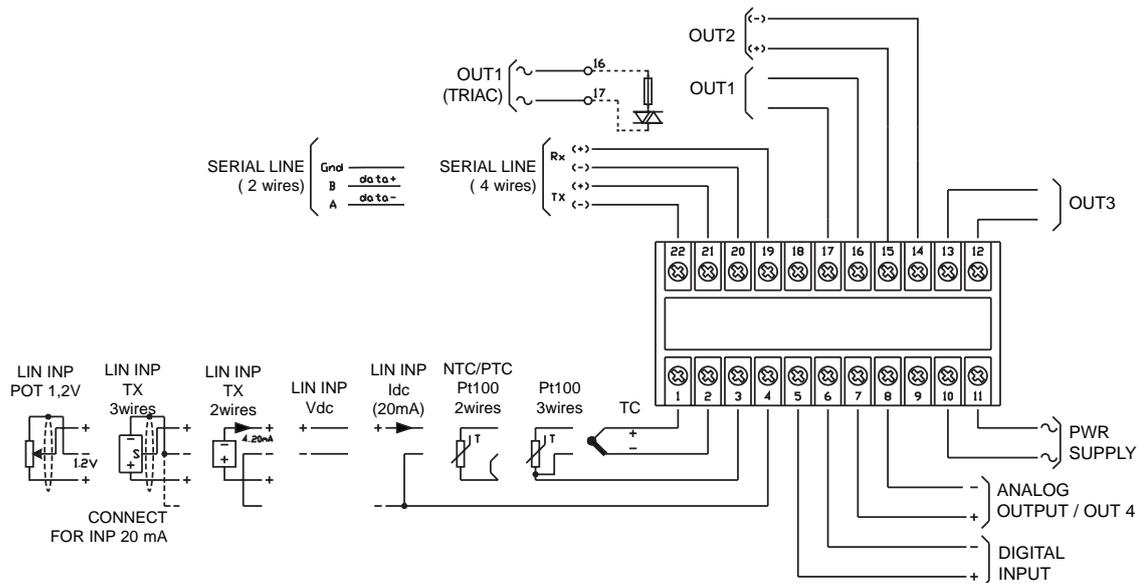3 digits

DIMENSIONS and CUT-OUT

108

96

48

115

70

44,5

92

105

10
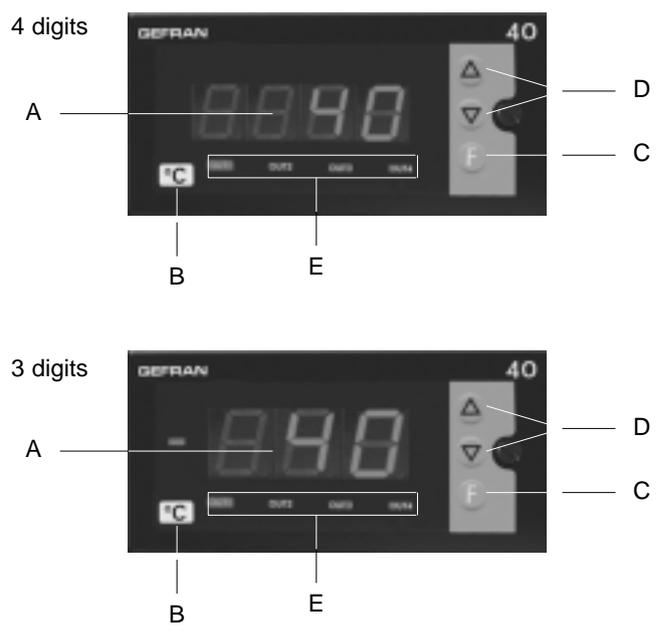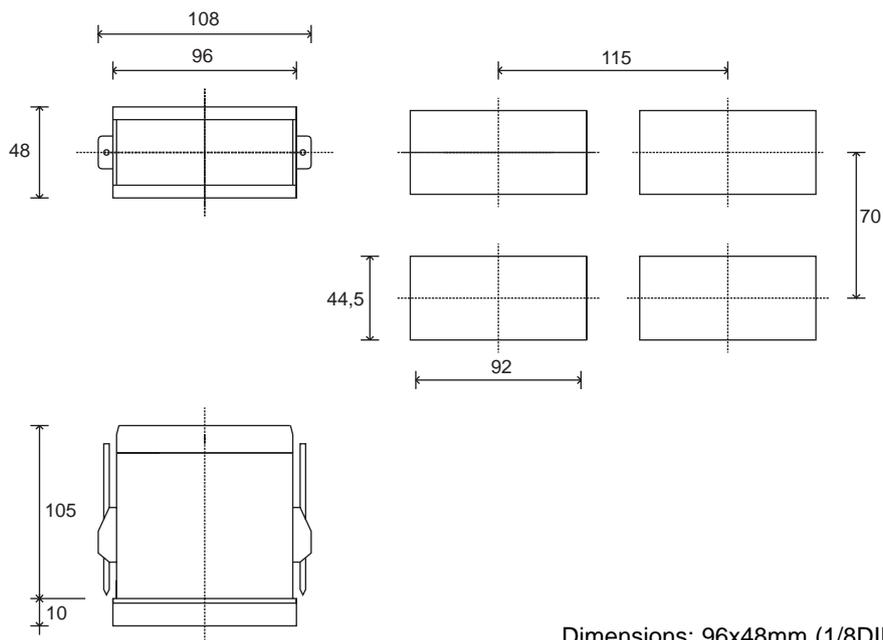
Dimensions: 96x48mm (1/8DIN), depth 105mm

CONNECTION DIAGRAM

Version base with two relay of output (output 1, output 2 = 2R)

22 21 20 19 18 17 16 15 14 13 12

OUT VT
Only
24V

LIN INP
TX
3wires

LIN INP
TX
2wires

LIN INP
Vdc

LIN INP
Idc
(20mA)

NTC/PTC
Pt100
2wires

Pt100
3wires

TC

+
–

1 2 3 4 5 6 7 8 9 10 11

CONNECT
FOR INP 20 mA

4..20mA

PWR
SUPPLY

(nc)
(c)   OUT1
(no)

(c)   OUT2
(no)

Expandible version

OUT2 (-) (+)

OUT1 ~ !6
(TRIAC) ~ !7

OUT1

OUT3

SERIAL LINE
(2 wires)
Gnd
B   data+
A   data-

SERIAL LINE
(4 wires)
Rx (+)
(-)
Tx (+)
(-)

22 21 20 19 18 17 16 15 14 13 12

LIN INP
POT 1,2V

LIN INP
TX
3wires

LIN INP
TX
2wires

LIN INP
Vdc

LIN INP
Idc
(20mA)

NTC/PTC
Pt100
2wires

Pt100
3wires

TC

1,2V

+
–

1 2 3 4 5 6 7 8 9 10 11

CONNECT
FOR INP 20 mA

4..20mA

PWR
SUPPLY

–
+   ANALOG
OUTPUT / OUT 4

–
+   DIGITAL
INPUT

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

ORDER CODE

40T [96] ☐ ☐☐ ☐ ☐☐ ☐ ☐☐ ☐

NR. DIGITS	
3 + sign	3
4	4

TRANSMITTER POWER SUPPLY	
None	0 0
For T input (alternative to RTD, PTC, NTC)	
1,2Vdc for potentiometer (**) (*)	0 1
15Vdc for transmitter (**)	1 5
24Vdc, 50mA	2 4
ALL ****	99

OUT 1, OUT 2	
Relay, Relay	2 R
Relay, Relay	R R
Relay, logic	R D
Triac, Absent	T 0

OUT 3, OUT 4 (**)	
None	0 0
Relay, absent	R 0
Relay, Relay (***)	RR

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

DIGITAL COMMUNICATION (**)	
0	None
2	RS485

DIGITAL INPUT / RETRANSMISSION OUTPUT (**)	
0	None
1	Digital input
2	Analogue output 0...20mA (0...10V) (***)
3	Both (***)

(*) R77 for potentiometer input (Rinput >10Mohm)

(**) Not available in the case of output 1, output 2 = 2R

(***) Output 4 relay alternative to the retransmission output

**** Selectable (standard 24Vdc)

Please, contact GEFRAN 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