



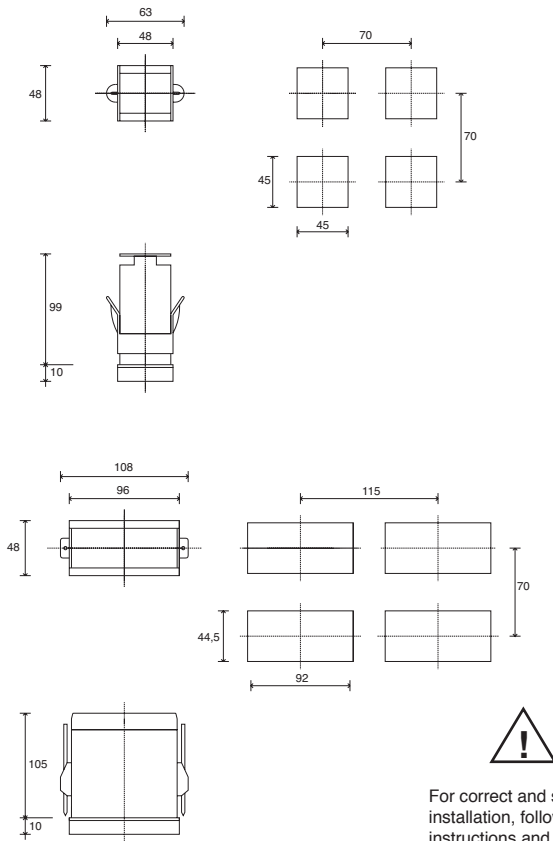
USER'S MANUAL

SOFTWARE VERSION 1.0x / 2.0x
code 81661G / edition 10 - 09/2016



1 • INSTALLATION

• Dimensions and cut-out: Panel mounting



Panel mounting:

Fix the device with the bracket provided before making any electrical connections.
To mount two or more devices side by side, use the cut-out dimensions shown above.

CE MARKING: EMC (electromagnetic compatibility): conforms to directive 2014/30/EU with reference to standard EN61326-1
Safety LVD: conforms to directive 2014/35/EU with reference to standard EN 61010-1

MAINTENANCE: Repairs must be done out only by trained and specialized personnel. Cut power to the device before accessing internal parts. Do not clean the case with hydrocarbon-based solvents (Petrol, Trichlorethylene, etc.). Use of these solvents can reduce the mechanical reliability of the device. Use a cloth dampened in ethyl alcohol or water to clean the external plastic case.

SERVICE: GEFran has a service department. The warranty excludes defects caused by any use not conforming to these instructions.

2 • TECHNICAL SPECIFICATIONS

Display	3, 4 digit red LED's mod. 48 digit height 10mm (4 digits) mod. 96 digit height 20mm (3 digits), digit height 14mm (4 digits)
Keys	3 mechanical keys (Raise, Lower, F)
Accuracy	0.2% f.s. for 2 Vac, 20 Vac, 20mAac inputs 50mAac, 1Aac, at room temperature of 25° C 0.5% f.s. for 200Vac, 500Vac, 200mAac, 5Aac inputs, values shown are for max. rms value with sine wave signal
Resolution	>13bit - 8000 points
Main input	2Vac, 20Vac, 200Vac, 500Vac, Ri ≥ 1MΩ Max. continuous voltage = 600Vac Max. voltage for 1 minute = 900Vac Voltage pulse 1,2/50ms = 2Kvpeak 20mAac, 50mAac, 200mAac, Ri = 1,6Ω Max. continuous current = 400mAac at 50°C 1Aac, 5Aac, Ri = 16mΩ Max. continuous current = 5.5Aac at 50°C Max. frequency = 60Hz
Linear scale ranges	-1999 to 9999 (with 4 digit display) -999 to 999 (with 3 digit display - only for model 96) Configurable decimal point position
Alarms (set points)	Maximum of three configurable alarms: absolute, deviation, symmetrical deviation. Adjustable hysteresis
Alarm masking	- exclude on power-up - latch reset from key and/or external contact - insert delay filter (DON, DBI, DOF, DPO) - set minimum intervention time
Relay contact	NO (NC) 5A, 250V
Logic output	11VDC, Rout = 220 Ω (6V/20mA)
Triac output (option, only for 96 format)	20...240Vac ±10%, 3A max Snubberless, inductive and resistive load I _t = 128A ² S
Fault settings	Alarm states can be configured in probe fault condition
Analog retransmission (option)	4 to 20mA, max. 150 Ω load
Logic input	Ri=5.6KΩ (24v, 4mA), 1500 V isolation
Logic input functions	configurable for alarm memory reset, hold, flash, zero, selection of max., min. peak value, peak-peak
Power supply (switching)	40A 48 (standard) 100...240Vac ±10% - 8VA (optional) 20...27Vac/dc ±10% - 8VA 40A 96 (standard) 100...240Vac/dc ±10% - 7,5VA (optional) 11...27Vac/dc ±10% - 5VA 50/60Hz
Fuse (inside device, not operator serviceable)	100 to 240Vac/dc - type T - 500mA - 250V 11 to 27Vac/dc - type T - 1.25A - 250V
Faceplate protection	IP65
Working / Storage temperatures	0 to 50°C / -20 to 70°C
Relative humidity	20 to 85%, non-condensing
Environmental conditions of use	for internal use only, altitude up to 2000m
Installation	Panel mounting, extractable from front
Weight	160g (mod. 48); 320g (mod. 96) for the complete version

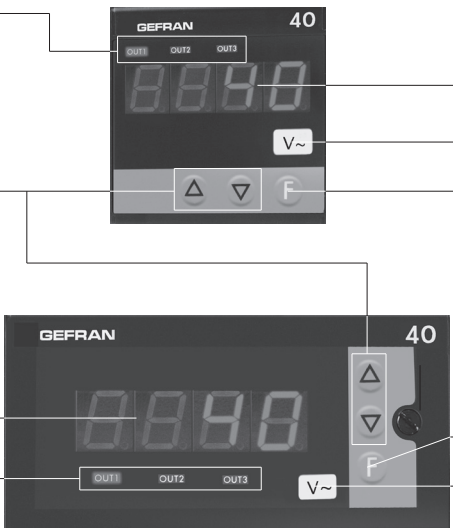
3 · DESCRIPTION OF FACEPLATE

Indication of output states:
OUT 1 (Alarm 1); OUT 2 (Alarm 2);
OUT 3 (Alarm 3)

"Raise" and "Lower" keys:
These keys are used for any operation that requires a numerical parameter to be raised or lowered. ••The speed of change is proportional to the time the key is pressed. •• The operation is not cyclic: once the maximum (minimum) limit is reached, there will be no further increase (decrease) of the value, even if the key remains pressed.
The keys can be configured to perform reset, hold, display of the peak value, etc. as determined by the 't.U.' and 't.d.' parameters on the 'In' menu.

PV display: Indication of process variable •• Indication of 'HI' or 'Lo' out of range •• Indication of off scale beyond the limits of positive calibration (br) and negative (Er) •• Display of configuration and calibration messages

Indication of output states:
OUT 1 (Alarm 1); OUT 2 (Alarm 2);
OUT 3 (Alarm 3)



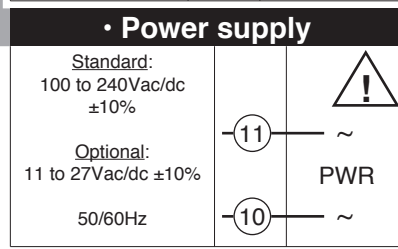
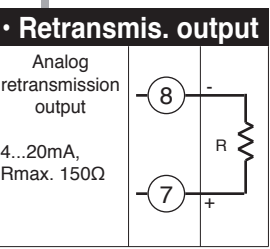
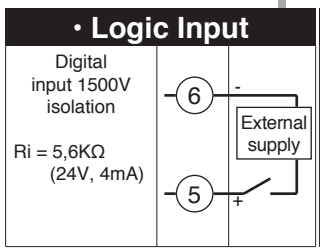
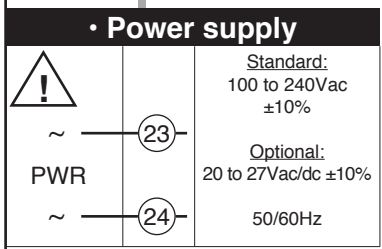
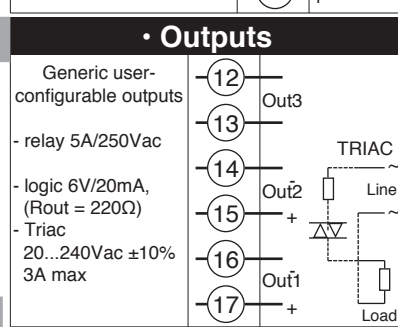
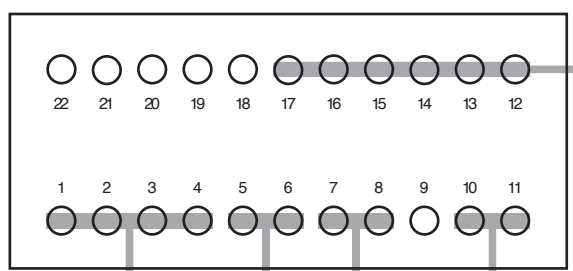
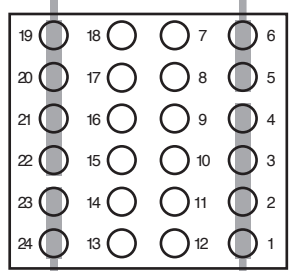
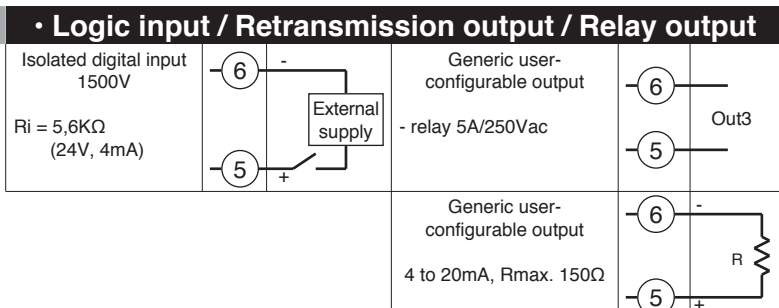
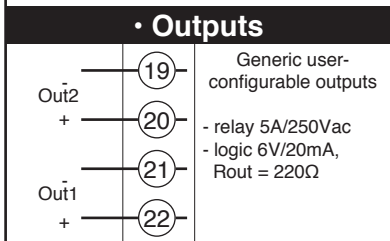
PV display: Indication of process variable •• Indication of 'HI' or 'Lo' out of range •• Indication of off scale beyond the limits of positive calibration (br) and negative (Er) •• Display of configuration and calibration messages

Label with engineering units

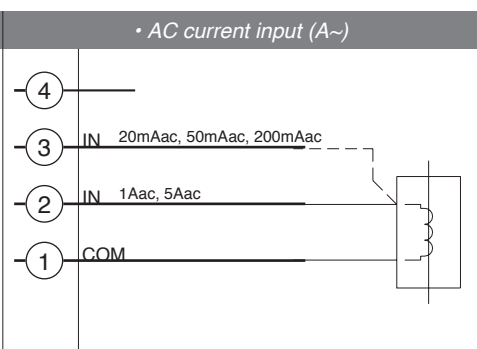
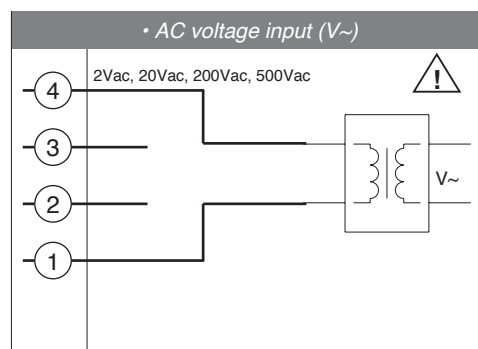
Function key:
Gives access to different configuration stages •• Confirms any parameter changes

Label with engineering units

4 · CONNECTIONS



• Inputs

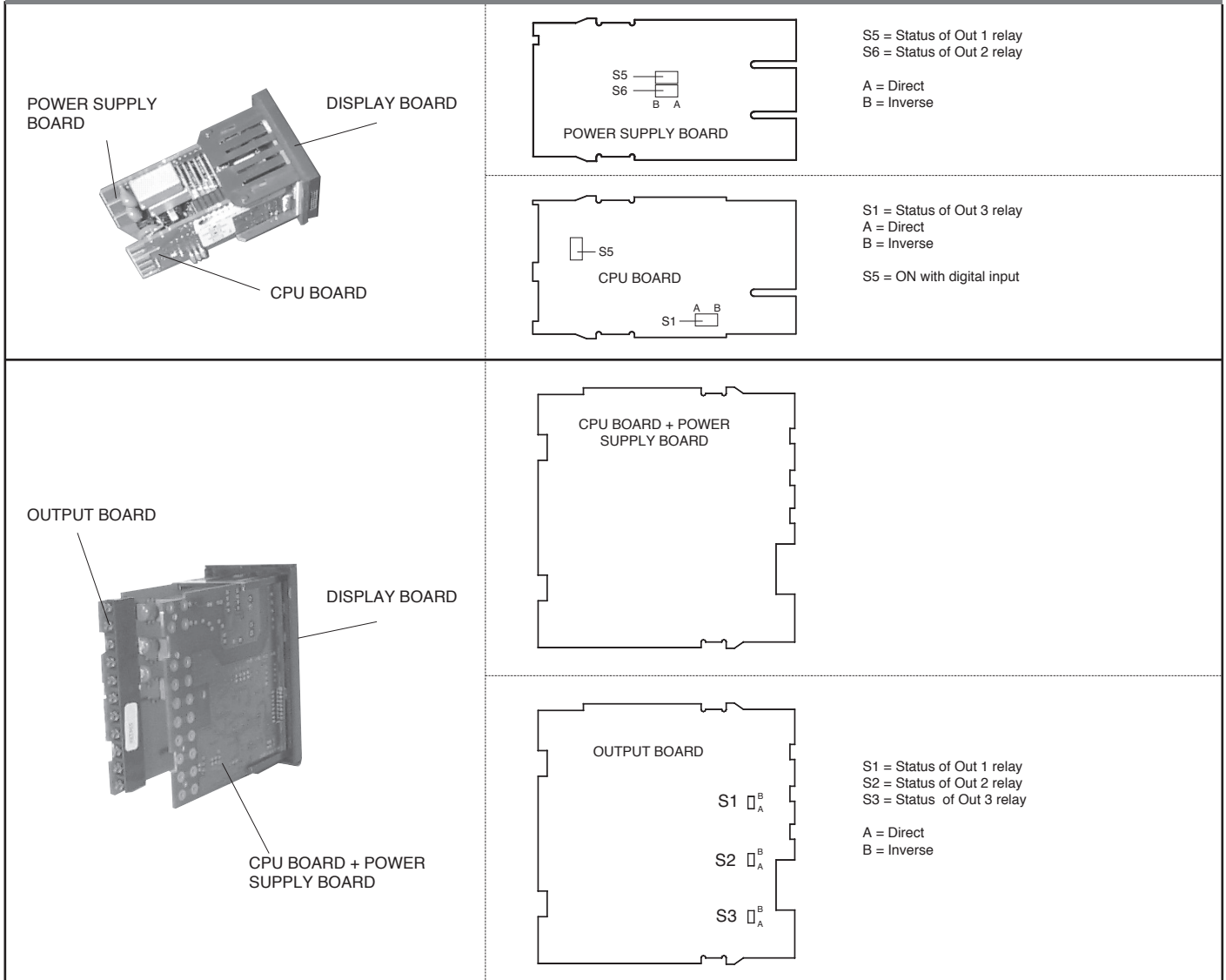


ATTENTION:

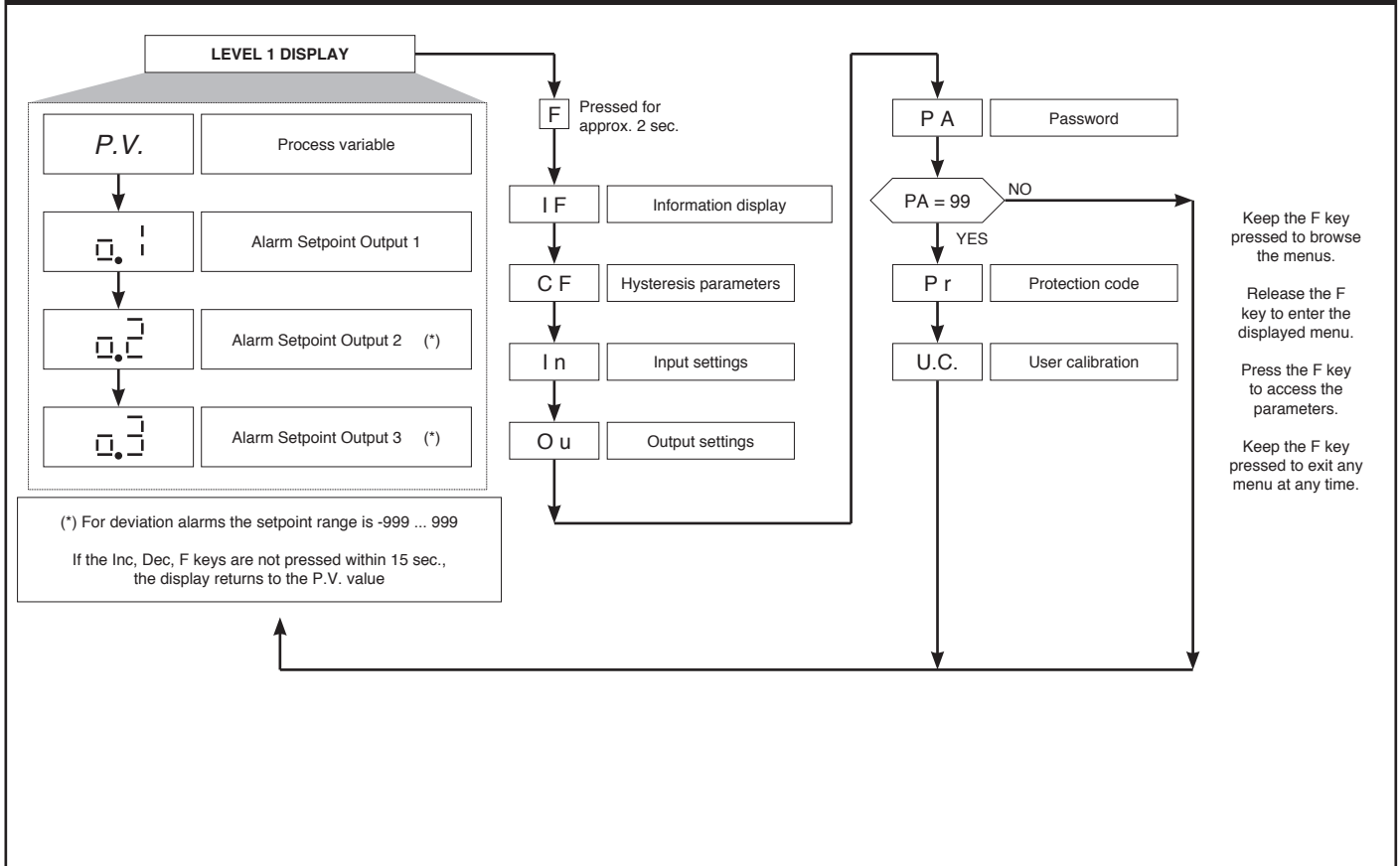
- Analog retransmission output option: negative reference is connected electrically to terminal 1.
- Logic output: negative reference is connected electrically to terminal 1.
- Connection of the input directly to high voltage (200Vac, 500Vac) requires relay-type outputs without retransmission only; otherwise, you have to use a transformer with double isolation with maximum secondary voltage of 20Vac

ATTENTION: Terminals 2 and 3 are connected to terminal 1 at low impedance

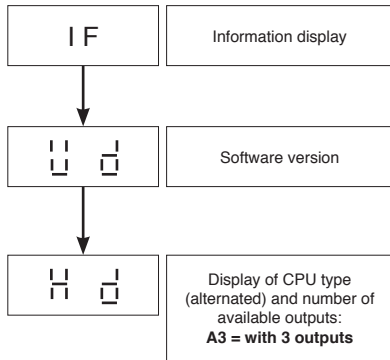
Device structure: identification of boards



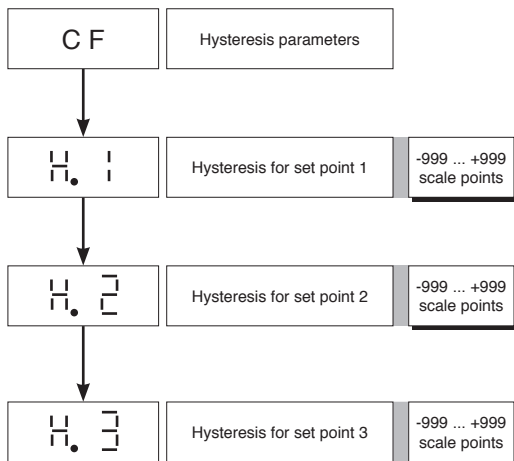
5 · PROGRAMMING and CONFIGURATION



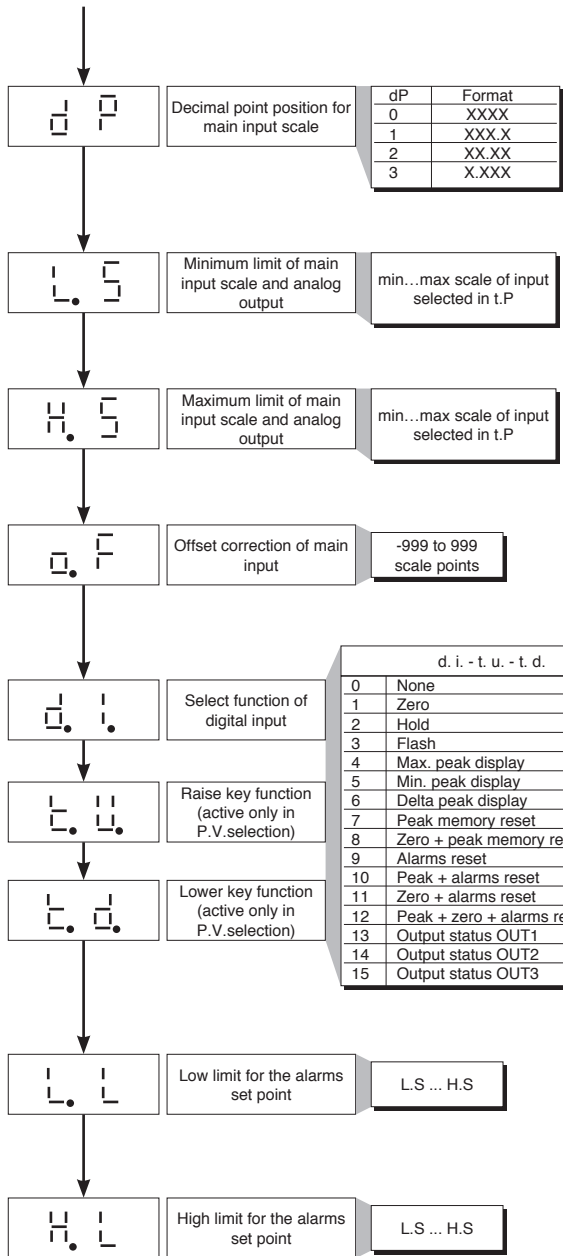
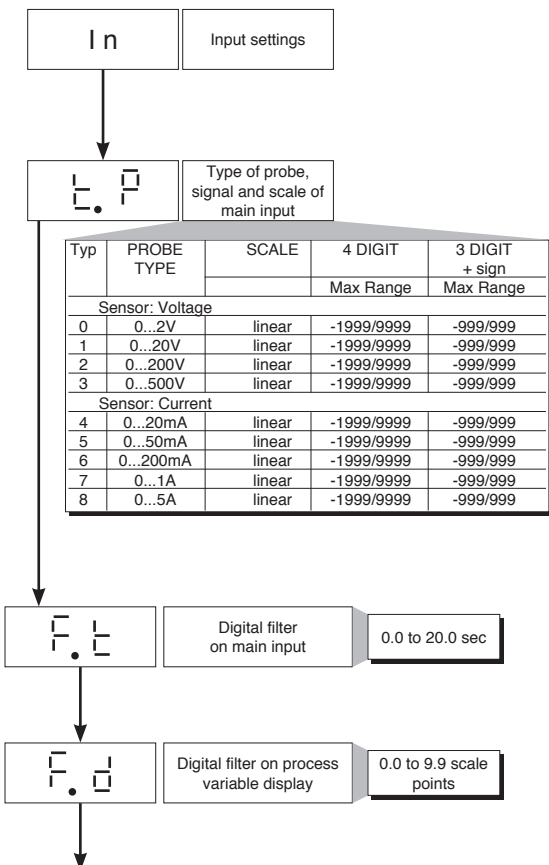
Information display



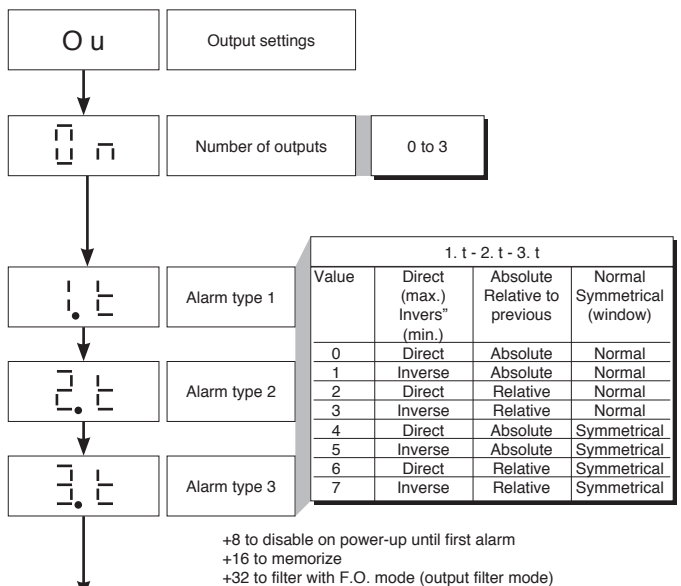
Configuration parameters



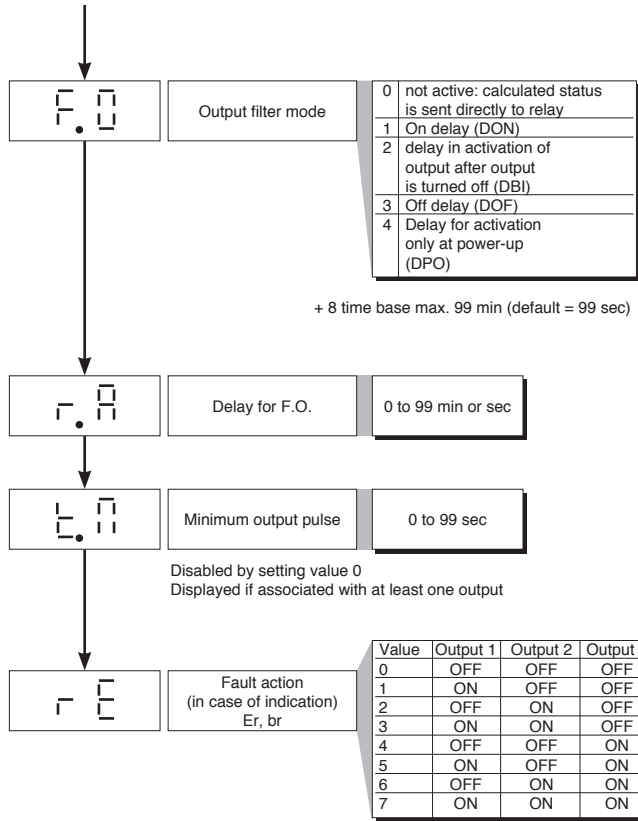
AC input parameters



Output parameters



• Protection



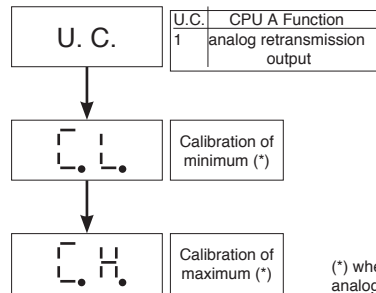
Pr

Protection code

Value	Displayed parameters	Modifiable parameters
0	o.1, o.2, o.3	o.1, o.2, o.3
1	o.1, o.2	o.1, o.2
2	o.1	o.1
3	o.1	none

+4 to disable In and Ou pages
 +8 to disable Cf page
 +16 to enable 0 offset memorization
 +32 base configuration (the following parameters will not be displayed:
In: Ft, Fd, Of, L_L, H_L
Ou: On [forced to no. outputs present], rE)

• User Calibration



(*) when U.C. = 1 press keys Δ ∇ to calibrate analog output

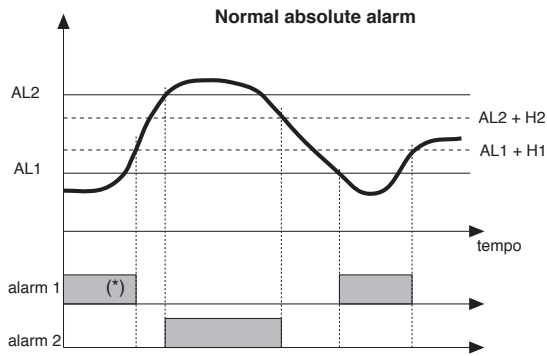
• HOLD function

The input value and alarms are frozen while the logic input is active.
 With the logic input active, a reset turns OFF both the relay outputs and the alarms latch.

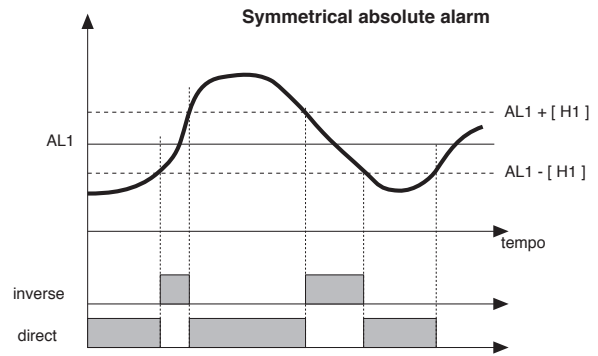
• FLASH function

Input value is sampled; state of alarms is not transferred to outputs; outputs are "frozen".
 When the logic input is active the input value is "frozen" and the outputs are updated according to the calculated alarms state, including the ones latched.

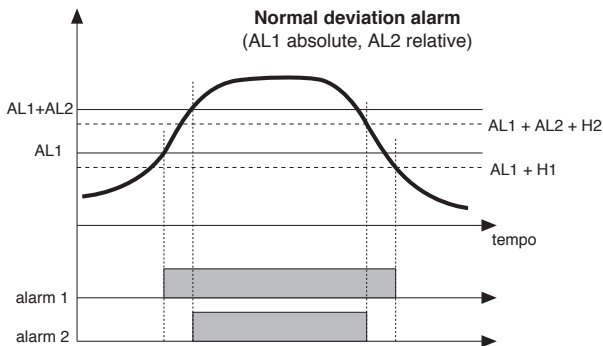
6 · ALARMS



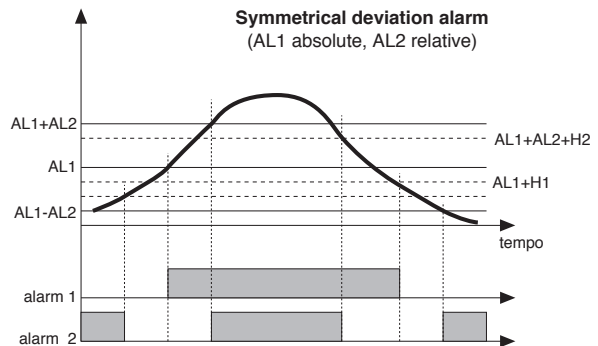
For AL1 inverse absolute alarm (min.) with positive H1, 1 t = 1
 (*) = OFF if disabling on power-on exists
 For AL2 direct absolute alarm (max) with negative H2, 2 t = 0



For AL1 inverse absolute, symmetrical alarm with hysteresis H1, 1 t = 5
 For AL1 direct absolute, symmetrical alarm with hysteresis H1, 1 t = 4



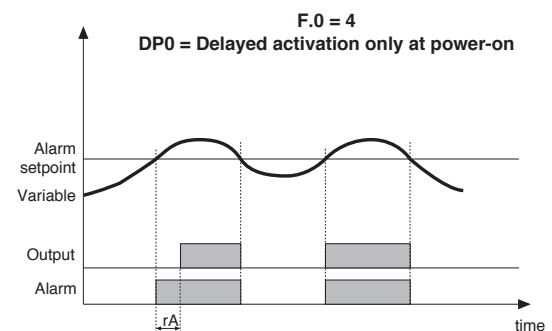
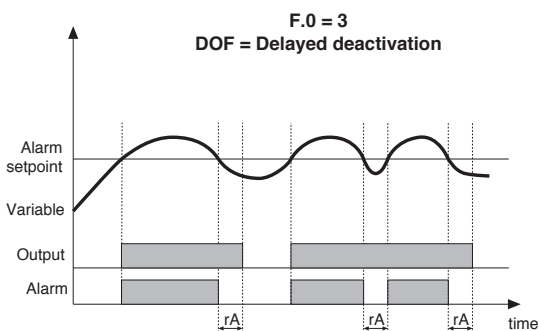
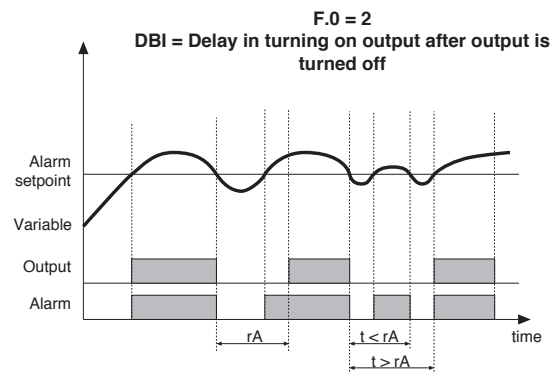
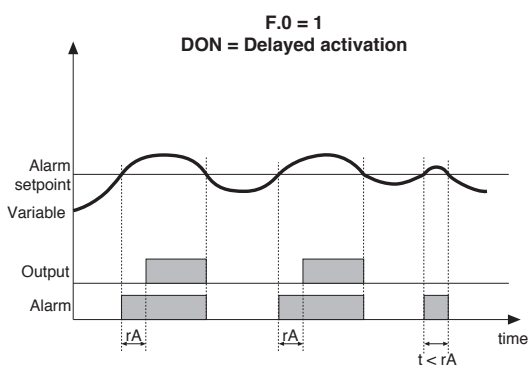
For AL1 direct absolute alarm (max) with negative H 1, 1 t = 0
 For AL2 direct relative alarm (max) with negative H2, 2 t = 2



For AL1 direct absolute alarm (max) with negative H1, 1 t = 0
 For AL2 symmetrical deviation alarm H2, 2 t = 6

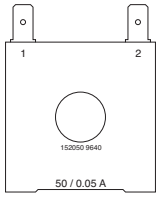
• Filter - outputs with reference to parameters F.0 and r.A

The diagrams refer to a normal absolute alarm with hysteresis H = 0



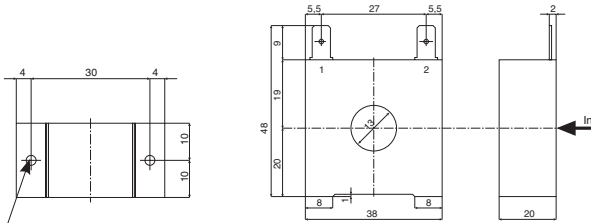
7 · ACCESSORIES

· CURRENT TRANSFORMER



These transformers are used to measure current at 50 ÷ 60Hz from 25A at 600A (rated primary current Ip). The special characteristic of these transformers is the high number of turns of the secondary (Is). This produces a very low secondary current, appropriate for an electronic measurement circuit. The secondary current can be read as voltage on a resistor.

ORDER CODE	Ip / Is	Ø Secondary Wire	n	OUTPUTS	Ru	Vu	ACCURACY
330201	25 / 0.05A	0.16 mm	n ¹⁻² = 500	1 - 2	40 Ω	2 Vac	2.0 %
330200	50 / 0.05A	0.18 mm	n ¹⁻² = 1000	1 - 2	80 Ω	4 Vac	1.0 %

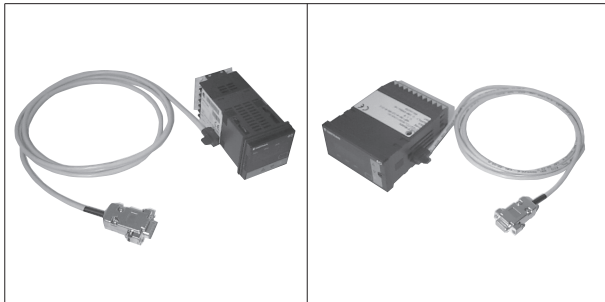


Fixing holes for self-threading screws: 2.9 x 9

· RS323 interface cable for configuration

48x48 format

96x48 format



N.B.: the PC configuration cable is supplied with the programming software.

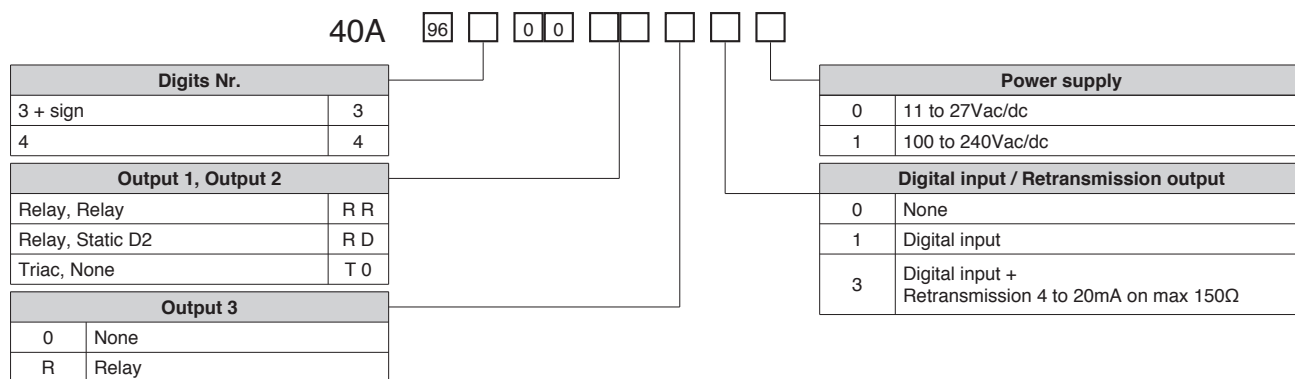
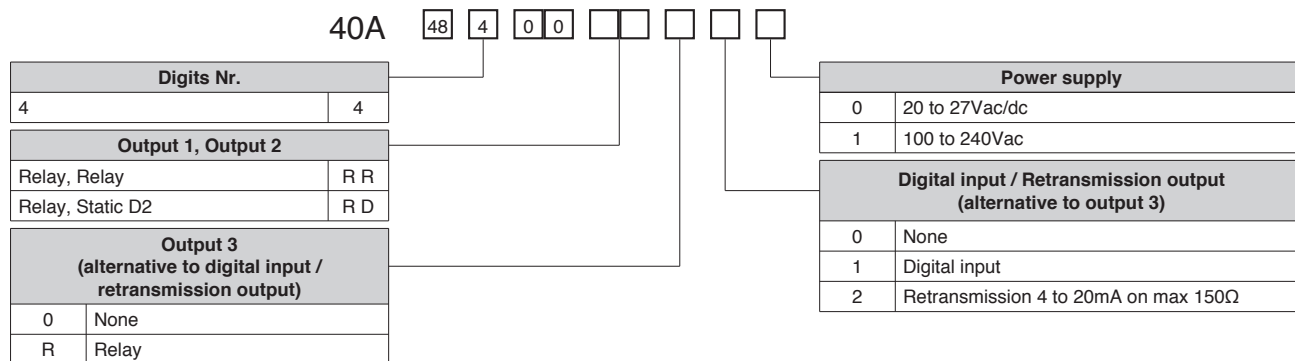
WARNING: make the connection with the device powered and with inputs and outputs disconnected.

· ORDER CODE

GF_EXK-0-0-0

Interface cable + CD GF_eXpress

ORDER CODE



Kindly contact GEFRA for information on available codes.

• WARNINGS



WARNING: this symbol indicates danger. It is seen near the power supply circuit and near high-voltage relay contacts.

Read the following warnings before installing, connecting or using the device:

- follow instructions precisely when connecting the device.
- always use cables that are suitable for the voltage and current levels indicated in the technical specifications.
- the device has no ON/OFF switch: it switches on immediately when power is turned on. For safety reasons, devices permanently connected to the power supply require a two-phase disconnecting switch with proper marking. Such switch must be located near the device and must be easily reachable by the user. A single switch can control several units.
- if the device is connected to electrically NON-ISOLATED equipment (e.g. thermocouples), a grounding wire must be applied to assure that this connection is not made directly through the machine structure.
- if the device is used in applications where there is risk of injury to persons and/or damage to machines or materials, it MUST be used with auxiliary alarm units. You should be able to check the correct operation of such units during normal operation of the device.
- before using the device, the user must check that all device parameters are correctly set in order to avoid injury to persons and/or damage to property.
- the device must NOT be used in inflammable or explosive environments. It may be connected to units operating in such environments only by means of suitable interfaces in conformity to local safety regulations.
- the device contains components that are sensitive to static electrical discharges. Therefore, take appropriate precautions when handling electronic circuit boards in order to prevent permanent damage to these components.

Installation: installation category II, pollution level 2, double isolation

The equipment is intended for permanent indoor installations within their own enclosure or panel mounted enclosing the rear housing and exposed terminals on the back.

- power supply lines must be separated from device input and output lines; always check that the supply voltage matches the voltage indicated on the device label.
- install the instrumentation separately from the relays and power switching devices
- do not install high-power remote switches, contactors, relays, thyristor power units (particularly if "phase angle" type), motors, etc... in the same cabinet.
- avoid dust, humidity, corrosive gases and heat sources.
- do not close the ventilation holes; working temperature must be in the range of 0...50°C.
- If the device has faston terminals, they must be protected and isolated; if the device has screw terminals, wires should be attached at least in pairs.
- **Power:** supplied from a disconnecting switch with fuse for the device section; path of wires from switch to devices should be as straight as possible; the same supply should not be used to power relays, contactors, solenoid valves, etc.; if the voltage waveform is strongly distorted by thyristor switching units or by electric motors, it is recommended that an isolation transformer be used only for the devices, connecting the screen to ground; it is important for the electrical system to have a good ground connection; voltage between neutral and ground must not exceed 1V and resistance must be less than 60Ω; if the supply voltage is highly variable, use a voltage stabilizer for the device; use line filters in the vicinity of high frequency generators or arc welders; power supply lines must be separated from device input and output lines; always check that the supply voltage matches the voltage indicated on the device label.
- **Input and output connections:** external connected circuits must have double insulation; to connect analog inputs (TC, RTD) you have to: physically separate input wiring from power supply wiring, from output wiring, and from power connections; use twisted and screened cables, with screen connected to ground at only one point; to connect adjustment and alarm outputs (contactors, solenoid valves, motors, fans, etc.), install RC groups (resistor and capacitor in series) in parallel with inductive loads that work in AC (*Note: all capacitors must conform to VDE standards (class x2) and support at least 220 VAC. Resistors must be at least 2W*); fit a 1N4007 diode in parallel with the coil of inductive loads that operate in DC.

GEFRAN spa will not be held liable for any injury to persons and/or damage to property deriving from tampering, from any incorrect or erroneous use, or from any use not conforming to the device specifications.