GEFRAN

1000 / 1001 / 1101

CONFIGURABLE CONTROLLERS

Main applications

- *Plastics extrusion lines and injection moulding machines*
- *Polymerisation plant for synthetic fibre production*
- *Climatic chambers and test benches*
- *Chemical and pharmaceutical industries*
- *Food processing plant*
- *Packaging machinery*
- *Wood working machinery*
- *Polyurethane machinery*
- *Cooling systems*
- *Industrial ovens and furnaces*
- *Rubber moulding machinery*

Main features

- *Inputs for thermocouples and resistance thermometers completely configurable from the faceplate*
- *Offset function on the input signal*
- *Relay, mA or logic main output*
- *Between 1 and 3 configurable alarms*
- *Auxiliary input for C.T.*
- *Alarm for opencircuit load or shortcircuit probe*
- *PD alarm output configurable for cooling*
- *Self-tuning/Auto-tuning, Soft-start, bumpless Man/Auto transfer*
- *Serial line: optoisolated 4-wires*

GENERAL

Microprocessor controller, 48x96 (1/8 DIN) format for model 1000 and 96x96 (1/4 DIN) format for models 1001 and 1101 manufactured using SMT.
The 1000 family of controllers provide a complete operator interface, with a Lexan membrane faceplate to give IP54 frontal protection that has 3 keys, two green LED displays with 3 (1000) or 4 (1001 and 1101) digits, and red LED indicators for the 3 alarm relay outputs and a green LED for the main control output.
The main input for the control variable is universal and provides the possibility of connecting different types of signal:
ï Thermocouples of types J, K, N, S, R, T
ï Resistance thermometer Pt100 (3-wire)
ï Linear inputs:
0-50mV, 10-50mV keyboard definable 2-10V, 0-10V, 0-20mA, 4-20mA with an external shunt.
An auxiliary analogue input is available for a current transformer input.
The instrument has a double control output that is both relay (5A a 250Vac /30Vdc cosφ = 1) and static (24Vdc ± 10%, 12Vmin a 20mA) and up to a maximum of 3 alarm relay outputs (5A, 250Vac/30Vdc cosφ = 1).
Alternatively, the control output can be analogue (0-20mA, 4-20mA or 0-10V, 2-10V).

The optional communications port can be Current Loop or RS485 with GEFRAN (Cencal) protocol with a maximum speed of 9600 baud (RS485).
The programming of the instrument is simplified by the grouping of the parameters into function blocks.
Access to the configuration parameters is protected by a hardware jumper and a protection code can be used to restrict the number of parameters that can be displayed and modified by the user.
A PC programming kit is available for even simpler configuration, composed of a cable and a guided program for Windows environment (see data sheet code WINSTRUM).

TECHNICAL DATA

INPUTS

Accuracy 0,5% f.s. ± 1 digit
Sampling time 120msec

TC- Thermocouple

for **1000** instrument
J (Fe-CuNi) 0...800°C / 32...999°F
K (NiCr-Ni) 0...999°C / 32...999°F
N (NiCr-Si-NiSi) 0...999°C / 32...999°F
S (Pt10Rh-Pt) 0...999°C / 32...999°F
R (Pt13Rh-Pt) 0...999°C / 32...999°F
T (Cu-CuNi) -100...400°C / -148...752°F
for **1001, 1101** instruments
J (Fe-CuNi) 0...800°C / 32...999°F
K (NiCr-Ni) 0...1300°C / 32...1999°F
N (NiCr-Si-NiSi) 0...1300°C / 32...1999°F
S (Pt10Rh-Pt) 0...1600°C / 32...1999°F
R (Pt13Rh-Pt) 0...1600°C / 32...1999°F
T (Cu-CuNi) -100...400°C / -148...752°F

Configured from the faceplate.
The error on the ambient temperature compensation is 0,05°C for every 1°C variation. Over and under range, erroneous connection and opencircuit probe messages.

RTD 2/3-wires

for **1000** instrument
Pt100 -19,9...99,9°C / -19,9...99,9°F
Pt100 -199...400°C / -199...752°F

RTD 2/3-wires
for **1001, 1101** instruments
Pt100 -199,9...199,9°C / -199,9...199,9°F
Pt100 -200...400°C / -328...752°F

DC - Linear
0...50mV, 10...50mV
Ri > 1MΩ
To be used only with external shunt on the controller for 0...10V, 0...20mA, 4...20mA signals.

OUTPUTS

Main output with direct action (heating) or inverse action (cooling).

Relay
With rating 5A at 250Vac/30Vdc cosφ = 1 (3,5A at cosφ = 0,4);
Spark suppression on the NO contact.
(Order code R0);

Logic
24V± 10%, Rout = 470Ω
(12Vmin a 20mA).
Protected against inverse polarity and shortcircuit.

Continuous
0...20mA or 4...20mA dc output on a max. resistance of 500Ω configurable as 0...10V with 500Ω load.
Rload ≥ 47KΩ.
(order code V and I)

SERIAL LINE

Optoisolated 4-wires.
Passive Current Loop (1200 baud) interface or RS485 4-wires (1200/2400/4800/9600 baud).
Protocol: GEFRAN CENCAL

POWER SUPPLY

Standard: 100...240Vac/dc ± 10%
on request: 11...27Vac/dc ± 10%
50/60Hz; 9VA max.
Protection by internal fuse not serviceable by the user.

AMBIENT CONDITIONS

Working temperature: 0...50°C
Storage temperature: -20...70°C
Humidity: 20...85%Ur non condensing

CONTROL

On/Off, P, PD, PID either for heating or cooling, with parameters configurable from the faceplate:
• Proportional band: 0,0...99,9% f.s.
• Integral time: 0,0...99,9 min
• Derivative time:
0,0...9,99 min (0,0...19,99 min)
• Reset power (proportional band position): 0...100%.
• Hysteresis (only for On/Off control):
-199...999 (-999...1999) digit.
• Cycle time: -2...200 sec (0 for On/Off control).
• Soft-start (gradual increase of main output power over a predetermined time on switch on): 0...99,9 min
• Manual reset (correction of the offset after setting):
-199...999 (-999...1999) digit.
• Offset (setting a difference between the actual measurement of the input probe and the value read by the controller):
-199...300 (-300...300) digit.
- Automatic/Manual function with bumpless transfer between manual and automatic.
- Automatic power on and power off to disactivate the instrument.

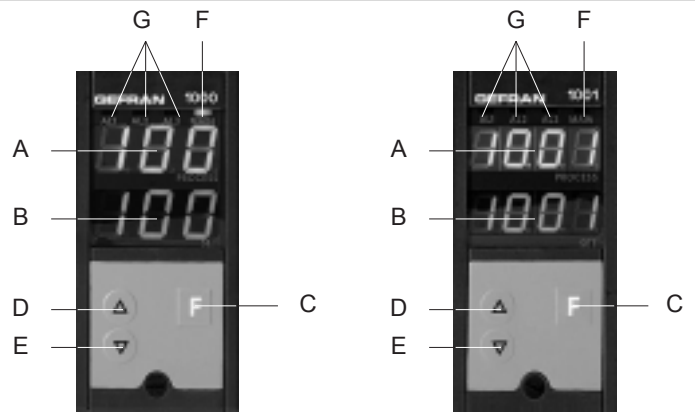
ALARMS

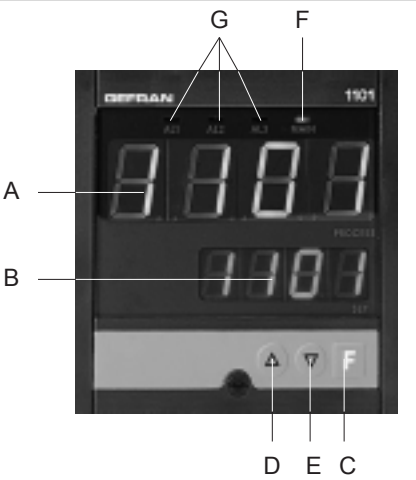
• 3 alarms, settable as absolute, deviation or symmetrical deviation alarm with respect to the control setpoint with configurable mode (Hi or Lo).
• The alarm point may be set anywhere within the configured scale.
• AL1 alarm with PD action with configurable parameters.
- Proportional band is set for the hysteresis of AL1 in the range:
-199...999 (-999...1999) digit.
- Derivative time:
0,0...9,99 (0,0...19,99)min.
- Cycle time: 1...200 sec (0 for On/Off alarm).
• Alarm (AL3) may be used as opencircuit load alarm (HB) when used with input from a current transformer; configurable current scale: 0...99,9 (0...199,9)
• LBA (Loop Break Alarm) function alarm.
• Intervention time and power output in the alarm condition are configurable from the faceplate.
• Hysteresis for the alarm setpoint is configurable from the faceplate in the range:
-199...999 (-999...1999) digit.

WEIGHT

320g (1000)
400g (1001, 1101)

FACEPLATE DESCRIPTION





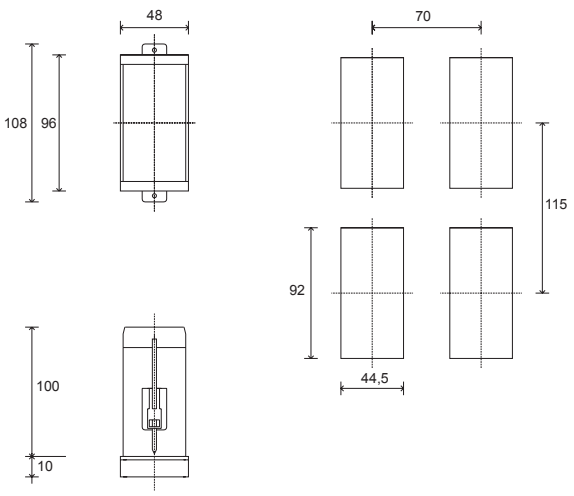
A - Indication of process variable
green digits h. 14mm (1000), 10mm (1001), 20mm (1 101)
B - Indication setpoint
green digits h. 14mm (1000), 10mm (1001), 14mm (1 101)
C - Function key
D - Raise key
E - Lower key

F - Main output indication, green led
G - Alarm LEDs, red led

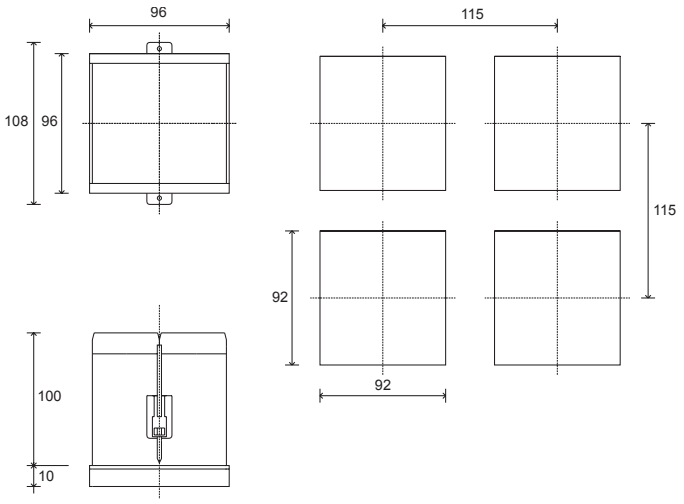
IP54 faceplate protection (IP65 available)

DIMENSIONS AND CUT-OUT

1000 / 1001

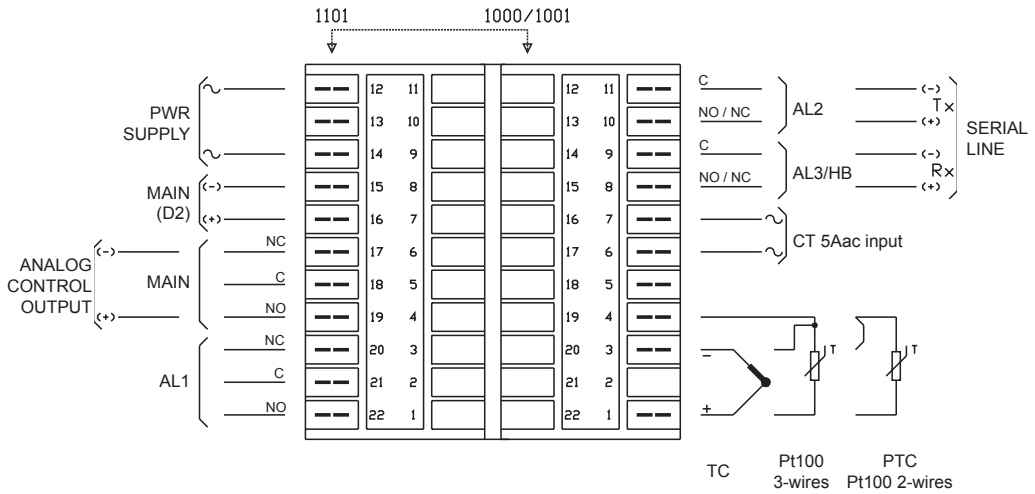


1101



Dimensions: 48x96mm - 96x96mm (1/8DIN- 1/4 DIN), depth 100mm

CONNECTION DIAGRAM



Apply users' manual warnings for a correct installation

ORDER CODE

MODEL	
1000	1000
1001	1001
1101	1101

MAIN OUTPUT	
Relay / Logic	R0
0...10V	V
0/4...20mA	I

ALARMS	
1 Alarm	1R (°)
2 Alarms	2R
3 Alarms	3R
HB	1H (°)
1 Alarm + HB	2H
2 Alarms + HB	3H

DIGITAL COMMUNICATIONS	
None	0
Current Loop	1
RS485	2

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

(°) Only type if the serial interface is requested

STANDARD CONFIGURATION HW and SW

- With HW/SW configuration protection

Setpoint = 400	_no = 1
AL1 = 100	bAU = 0
AL2 = -100	FA.P = 0
AL3 = 600	Pro = 19
Pb = 1,0%	AL = 11
rSt = 0	Out = 0
Ct = 20sec	Typ = 0
PSt = 0%	Ct.a = 20sec
S.tu = 0	dt.A = 1,00min
Lb.t = 0min	oFt = 0
Lb.P = 25%	LO.S = 0
It = 4,0min	HI.S = 800
dt = 1,0min	rEL = 0
SOF = 0	Ar.F = 0
Hy1 = 1	Ctr = 0
Hy2 = 1	Hbf = 0
Hy3 = 1	brd = 4 (1000)
Hb.S = 25,0	6 (1001)

Please, contact GEFRAN sales people for the codes availability.

c UL us	Conformity C/UL/US File no. E198546
CE	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)
C-TICK	**C - TICK**

GEFRAN