GEFRAN

600 OF

"OPEN FRAME" CONTROLLER

Main features

- *Universal input configurable from faceplate*
- *Accuracy better than 0.2% f.s. under nominal conditions*
- *Up to 5 outputs, relay, logic, for control, alarms*
- *Hot/cold function with selection of cooling liquid*
- *3 alarms with completely configurable function*
- *Software alarm for load interrupt or probe in short circuit (LBA)*
- *Self-tuning, Auto-tuning, Soft-start, bumpless Man/Auto function*
- *Double set, set ramp, timed output function*
- *Setpoint programmer functions with 3 configurable steps*
- *Configurable internal buzzer*
- *Optically isolated RS485 serial communication, protocol: MODBUS RTU*
- *Self-diagnosis*
- *Panel mounting*
- *Screw connections with removable terminals*

Main applications

- *Small industrial ovens*
- *Pipe welders*
- *Temperature control units*
- *Dryers*
- *Climatic cells and test benches*
- *Control panels with membrane keyboard*

PROFILE

Microprocessor controller, format 44x91 (1/16 DIN) manufactured using SMT.
Provides a complete operator interface. It has 4 keys, two green LED displays, each with 4 digits, 4 red signal LED's for the 4 logic or relay outputs, and 3 other programmable LED's to signal the various operational states of the instrument.
Can be connected to an external keyboard for custom solutions.
The main input for process variable is universal, and many types of signals can be connected: thermocouples, resistance thermometers, thermistors, normalized linear inputs, all with possibility of custom linearization using the faceplate keys. The type of input is selected from the faceplate keys; no external shunts are required.
Control functions are selectable from classic mode or from setpoint programmer mode with 3 settable steps.
With the isolated digital input you can select: one of the two presettable setpoints, select Manual-Automatic mode, reset the alarms memory, or enable the hold function.
The instrument can have up to 5 outputs: relay (5A at 250Vac/30Vdc cos_= 1) or logic 15V ±10% (12V min at 30mA). The function of each output is freely configurable from the faceplate keys. In addition to control and alarm outputs, you can have outputs that repeat the state of the digital input and values alarm limits acquired from serial line. Another output (±15Vdc 20mA max.) is available to power external transmitters.
The serial communication option (available in RS485 standard) allows connection to supervision systems and PLCs with the MODBUS RTU protocol. Instrument programming is facilitated by grouping parameters in functional blocks (CFG for control parameters, Inp for inputs, Out for outputs, etc.).
The instrument can also select display parameters based on hardware configuration, automatically masking irrelevant parameters. The instrument is supplied with an "EASY" configuration with just a few parameters (only those for the model ordered and essential for controller operation). In this way, you just have to set the setpoint and alarm, and launch selftuning from the button.
The 600OF does all the rest.
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).
Compact "Open Frame" mechanical structure makes the 600OF easy to use even on small panels and housings.

TECHNICAL DATA

INPUTS

Accuracy 0,2% f.s. ±1digit.
Sampling time 120msec.

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
(B, E, N, L-GOST, U, G, D, C, etc.)

RTD 2/3 wires
PT100 -200...850°C / -328...1562°F
JPT100 -200...600°C / -328...1112°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 settable from:-1999...9999
0...60mV / 12...60mV
0...10V / 2...10V
0...5V / 1...5V
0...1V / 0,2...1V
0...20mA / 4...20mA

Input impedance:
Ri > 1M _ for 60mV,1V
Ri > 10K _ for 5V, 10V
Ri = 50 _ for 20mA
32-segment custom linearization can be inserted.

Digital input

Ri = 4,7K. (24V, 5mA) insulation 1500V or no-voltage contact.
Function configurable for man/auto selection, local/remote (setpoint from serial line, setpoint1/setpoint2; Set/reset outputs, start/stop functions from tuning, software on/off, reset alarms memory, hold.

OUTPUTS

5 configurable outputs:
• OUT1 available in relay or logic
• OUT2, OUT3, OUT4: relay only
• OUT6: logic only
Freely assignable to control functions and single alarms in "OR" or "AND". Can be slaved to front panel key or aux. digital input.

Relay
With contacts: 5A at 250Vac/30Vdc, cos_=1

Logic
15Vdc ±10% (12V min a 30mA)

Buzzer (Output 5)
Settable signal type

External keyboard
5 pin connector for 4 external keys

Serial line
Isolated RS485
Protocol: MODBUS

POWER SUPPLY
1100...240Vac ± 10%; 50/60Hz, 8VA max.
Protection by internal fuse not serviceable by user

TRANSMITTER POWER SUPPLY
+15V ±10% non-stabilized, 20mA max
Short-circuit protection

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

CONTROL
On/Off, P, PD, PID for heating and cooling, with parameters settable from keys.
Cooling setpoint relative to heating setpoint.
Setpoint programming function with 3 program steps settable with times from 0.0 to 99059 minutes
- Manual reset -999...999 digit
- Power reset -100,0...100,0%
- Cycle time 0...200sec
- Softstart 0,0...500,0 min

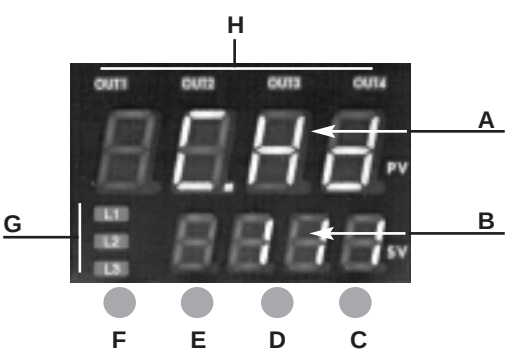
For each action:
- Proportional band 0,0...999,9% f.s.
- Integral time 0,0...99,99 min
- Derivative time 0,0...99,99 min
- Max power limit 0,0...100,0%

ALARMS
• 3 alarms settable as absolute, deviation, symmetrical deviation to setpoint with direct or reverse function.
• Alarm point can be set anywhere on selected scale
• Alarms can be masked with exclusion at power-on, with memory, with delayed trip
• LBA alarm for setting control
• Hysteresis settable for each alarm
• Alarm assigned to current input with different operating modes.

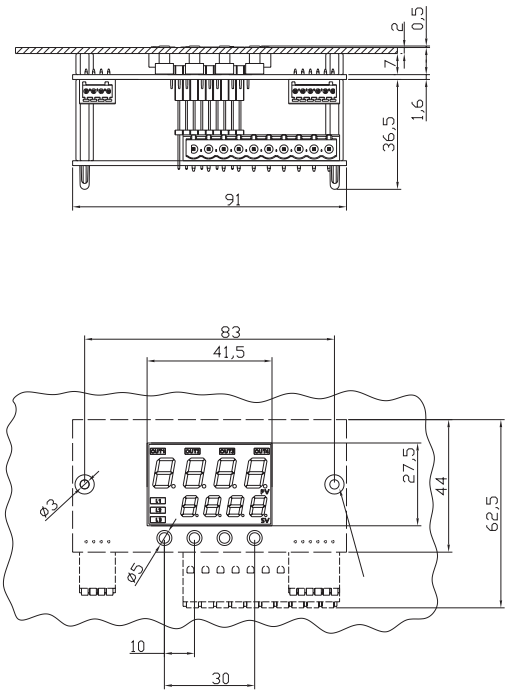
WEIGHT
160g in complete version

FACEPLATE DESCRIPTION

A – Indication of process variable (PV), green digits height 10mm
B – Indication of setpoint (SV), green digits height 7mm
C – “Function” key
D – “Lower” key
E – “Raise” key
F – Auto/Man selection
G – Function indicators, red LEDs
H – Indication of output states, red LEDs

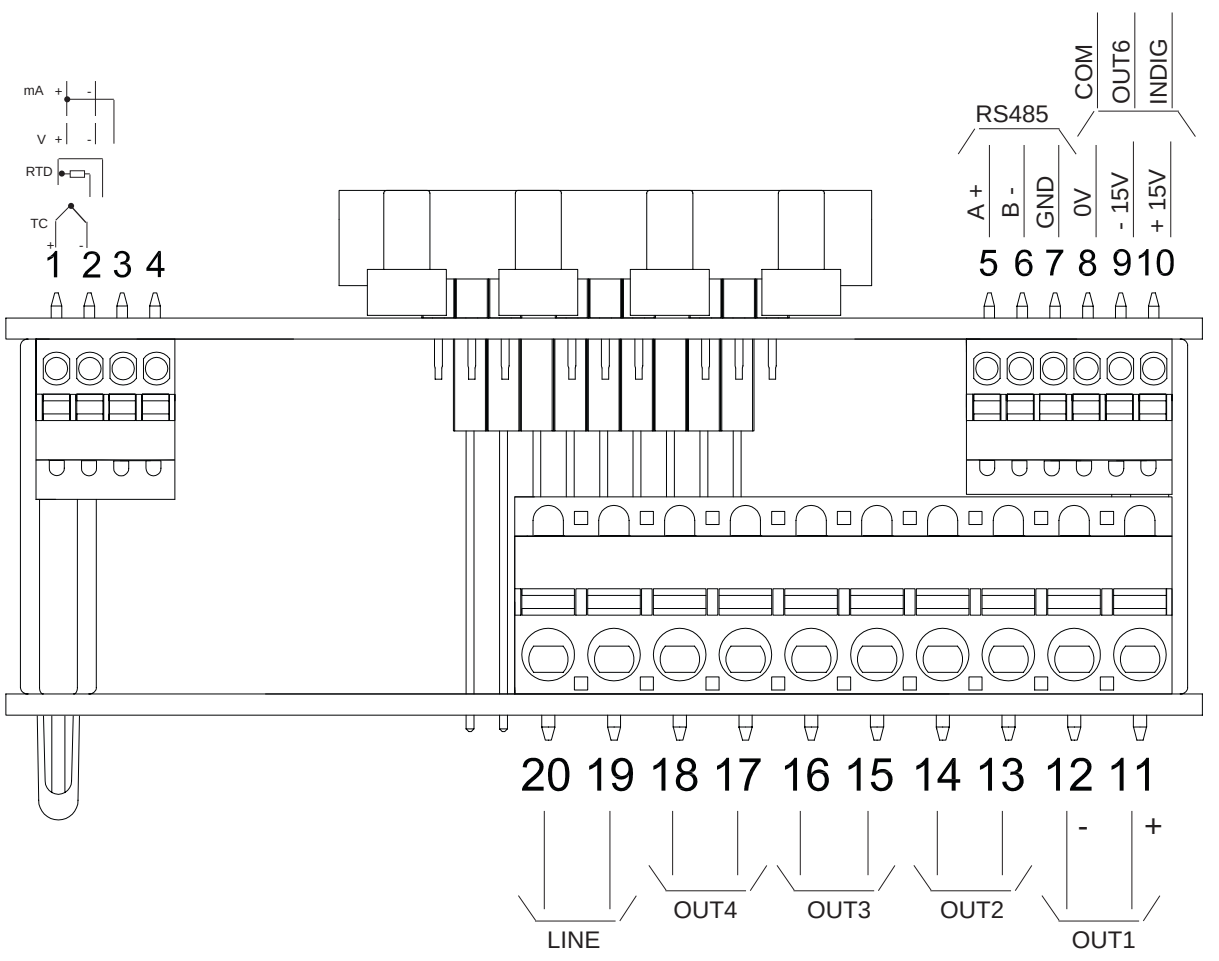


DIMENSIONS AND CUT OUT



Overall dimensions: 44x91 mm depth 46 mm with 62.5x91mm connectors, depth 46 mm

CONNECTION DIAGRAM



⚠ For correct installation, read the warnings in the instruction manual

ORDER CODE

F032998

600OF Model A

Description of variants	
Output 1:	relay
Ouput 2-3-4:	relay
Aux Ouput:	+15V, -15V
External keyboard	

F032999

600 OF Model B

Description of variants	
Output 1:	logic
Output 2-3-4:	relay
Aux Ouput:	+15V, -15V
External keyboard	

F033000

600 OF Model C

Description of variants	
Output 1:	logic
Output 2-3-4:	relay
Aux Ouput:	+15V, -15V
Serial RS485	
Buzzer	
External keyboard	

F033001

600 OF Model D

Description of variants	
Output 1:	logic
Output 2-3-4:	none
External keyboard	

F033002

600 OF Model E

Description of variants	
Output 1:	logic
Output 2-3-4:	relay
Digital input NPN (PNP)	
External keyboard	

F033003

600 OF Model F

Description of variants	
Output 1:	logic
Output 2-3-4:	relay
Digital input NPN (PNP)	
Serial RS485	
RTC	
External keyboard	

F034009

600 OF Model G

Description of variants	
Output 1:	relay
Output 2-3-4:	relay
Output 6:	logic
External keyboard	

F037470

600 OF Model H

Description of variants	
Output 1:	logic
Output 2:	relay
Aux Output :	+15V, -15V
External keyboard	

Please, contact GEFRAN sales people for the codes availability.
For correct installation, follow the instructions contained in the manual.

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)

GEFRAN

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