GEFRAN

600
CONTROLLER

Main applications

- *Extrusion lines*
- *Injection presses for plastics*
- *Heat punches*
- *Presses for rubber*
- *Packaging machines*
- *Packing machines*
- *Polymerization and synthetic fiber plants*
- *Food processing pants*
- *Die-casting plants*
- *Cooling plants*
- *Climatic cells and test benches*
- *Dryers for ceramics and construction parts*
- *Ovens*
- *Painting plants*

Main features

- *Universal input configurable from faceplate*
- *Accuracy better than 0.2% f.s. under nominal conditions*
- *Control output: relay, logic, Triac , continuous, digital insulated*
- *Hot/cold function with selection of cooling fluid*
- *3 alarms with completely configurable function*
- *Analog retransmission output*
- *Isolated digital input with configurable function*
- *Auxiliary input for CT (TA) (50mAac)*
- *Heater break or probe short-circuit alarm*
- *Self-tuning, Auto-tuning, Soft-start, bumpless Man/Auto function*
- *Double set, set ramp, timed output function*
- *Optically isolated RS485 serial line. Protocol: GEFRAN CENCAL or MODBUS RTU*
- *Self-diagnosis*
- *Rapid configuration from PC with Winstrum packet*

PROFILE

Microprocessor controller, format 48x48 (1/16 DIN) manufactured using SMT. Provides a complete operator interface protected by a Lexan membrane that ensures level IP65 faceplate protection. 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. 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. A second auxiliary analog input from the current transformer is also available. 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 4 outputs: relay (5A at 250Vac/30Vdc cosφ = 1), logic 24V ±10% (10V min at 20mA), digital insulated, triac. An analog output in voltage or current is also available. 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 or retransmission input by process variable, setpoint, drift, alarm limits and values acquired from serial line. Another output (at 10 or 24Vdc, 30mA max.) is available to power external transmitters. The serial communication option (available in RS485 standard) allows connection to supervision systems and PLCs with two protocols: GEFRAN CENCAL and MODBUS RTU. 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 600 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 GF_eXpress).

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
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
(NI-Ni18Mo)	0...1100°C / 32...2012°F
custom	-1999...9999

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:
$R_i > 1M\Omega$ for 60mV,1V
$R_i > 10K\Omega$ for 5V, 10V
$R_i = 50\Omega$ for 20mA
32-segment custom linearization can be inserted.

Auxiliary input
(alternative to output out 3)
Input for current transformer
50mAac, 50/60Hz, $R_i=10\Omega$

Digital input
$R_i = 4,7K\Omega$ (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
4 configurable outputs:
• OUT1-OUT4: relay only
• OUT2: relay, logic, triac, digital insulated
• OUT3: relay, logic, digital insulated, continuous or analog retransmission as alternative to aux. input
Freely assignable to control functions and single alarms in "OR" or "AND".
Can be slaved to front panel key or aux. digital input.

Relay
(indicated in code with R)
With contacts: 5A at 250Vac/30Vdc, cosφ=1

Logic
(indicated in code with D)
24Vdc ±10% (10V min at 20mA)

Digital insulated (indicated in code with M)
optoinsulated MOS output 1500V$_{RMS}$
equivalent to NO contact
Vmax 40Vac/Vdc I$_{MAX}$ 100mA
Load ON max 0,8Ω

Triac
(indicated in code with T)
20...240Vac ± 10%, 50/60Hz, 1A max.
I^{2}t = 128A^{2}sec.
Leakage current 1,5mA max at 200Vac.

Continuous
(indicated in code with C)
0...10V $R_{LOAD} \geq 250K\Omega$
0/4...20mA $R_{LOAD} \leq 500\Omega$
for heating/cooling control output only.

Analog retransmission
(indicated in code with W)
0...10V $R_{LOAD} \geq 250K\Omega$
0/4...20mA $R_{LOAD} \leq 500\Omega$ 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...240Vac ± 10%
On request: 11...27Vac/dc ± 10%
50/60Hz, max. 8VA
Protection by internal fuse not serviceable by user

TRANSMITTER POWER SUPPLY
24V ±10% non-stabilized, 30mA
15V for transmitter, 30mA
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.
• 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.
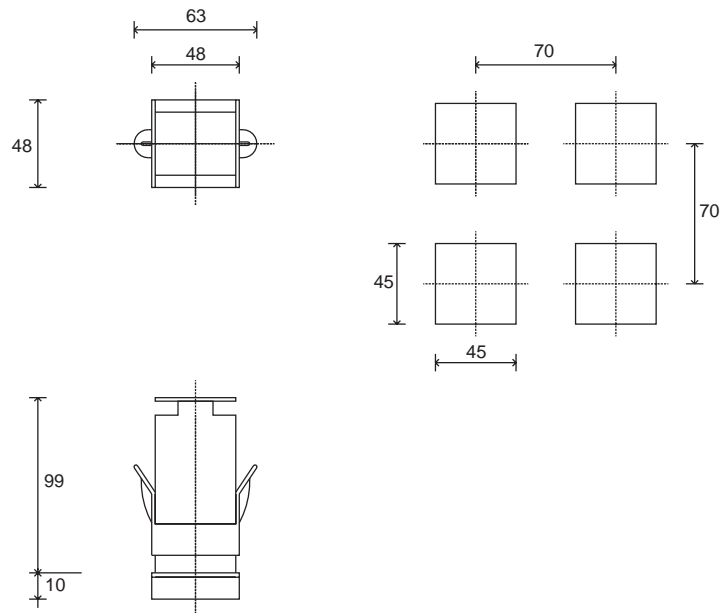
WEIGHT
160g in complete version

FACEPLATE DESCRIPTION

A - Indication of process variable (PV), green digits h. 10mm
B - Indication of set point (SV), green digits h. 7mm
C - "Function" key
D - "Lower" key
E - "Raise" key
F - Auto/Man selection
G - Function indicator, red LED
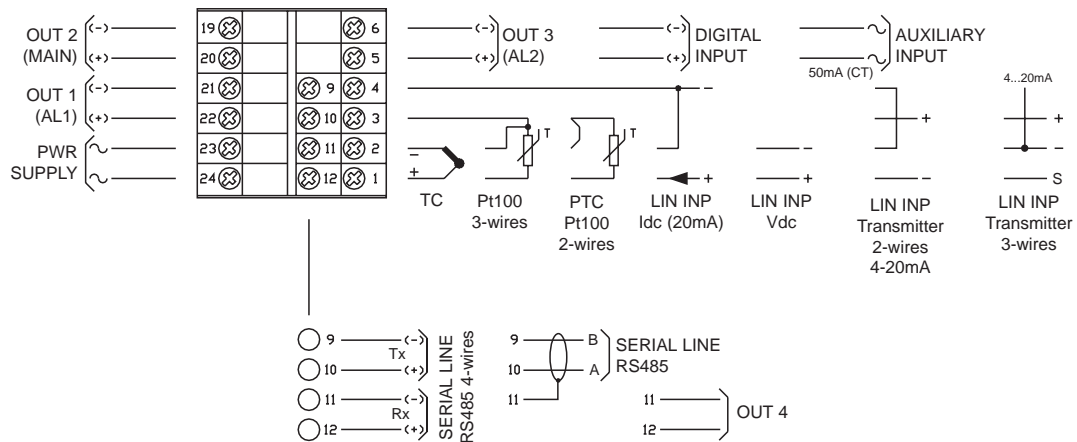**H** - Indication of output states, red LED
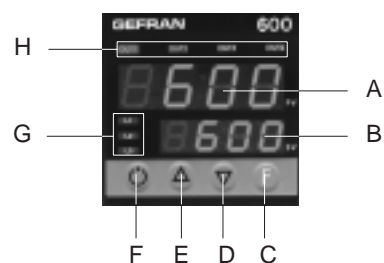
Faceplate protection IP65

DIMENSIONS

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

CONNECTION DIAGRAM

- Maximum driving torque for screws: 0,5 Nm
- Minimum section of flexible or rigid stripped wire: 0,5 mm²
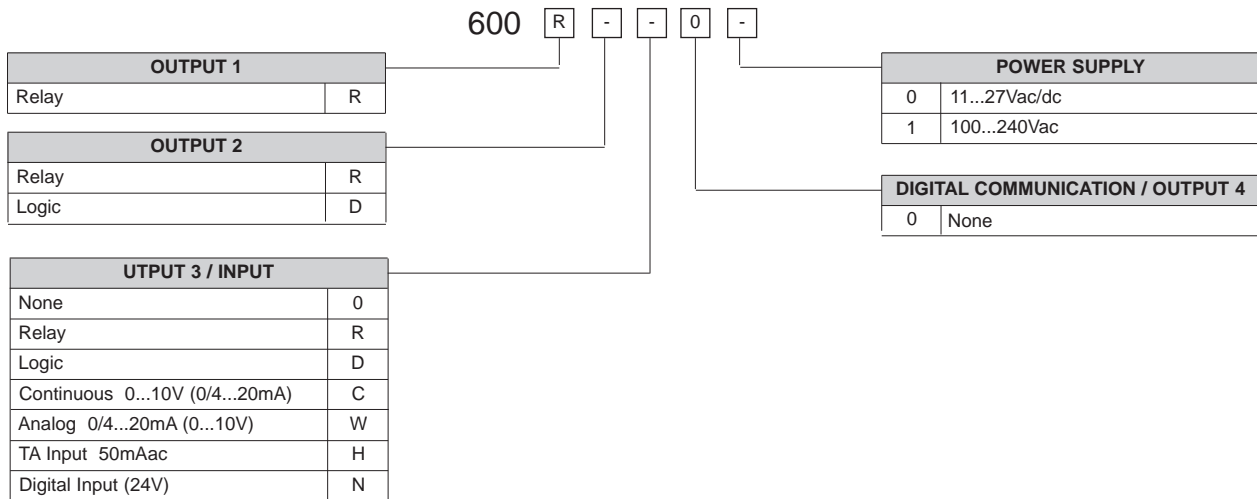- Maximum section of flexible or rigid stripped wire: 1,5 mm²

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

The controller is available in 2 versions:

BASIC VERSION
Up to 3 output options; option 4 not available. Unit with 12 terminals rear socket.

600 | R | - | - | 0 | -

OUTPUT 1	
Relay	R

OUTPUT 2	
Relay	R
Logic	D

UTPUT 3 / INPUT	
None	0
Relay	R
Logic	D
Continuous 0...10V (0/4...20mA)	C
Analog 0/4...20mA (0...10V)	W
TA Input 50mAac	H
Digital Input (24V)	N

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

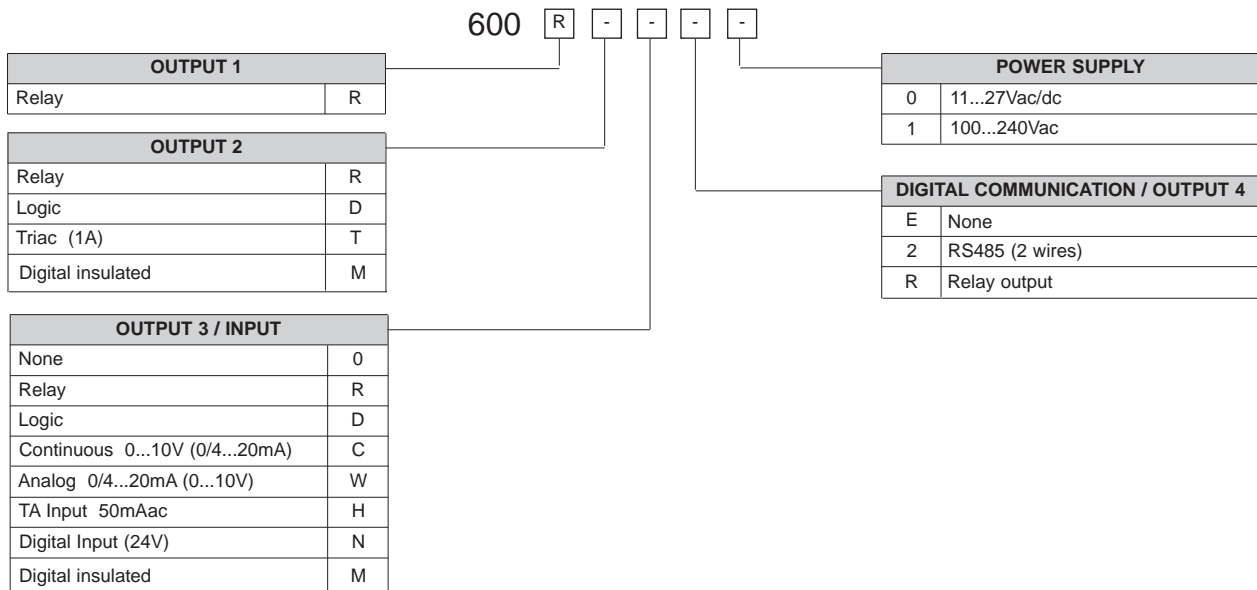| DIGITAL COMMUNICATION / OUTPUT 4	
0	None

EXPANDABLE VERSION
Up to 4 output options. Unit with internal plug and complete rear socket.

With this version, option 4 can be added at a later stage.

For optional I/O boards, please see "Accessories" section.

600 | R | - | - | - | -

OUTPUT 1	
Relay	R

OUTPUT 2	
Relay	R
Logic	D
Triac (1A)	T
Digital insulated	M

OUTPUT 3 / INPUT	
None	0
Relay	R
Logic	D
Continuous 0...10V (0/4...20mA)	C
Analog 0/4...20mA (0...10V)	W
TA Input 50mAac	H
Digital Input (24V)	N
Digital insulated	M

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

DIGITAL COMMUNICATION / OUTPUT 4	
E	None
2	RS485 (2 wires)
R	Relay output

Please, contact GEFRAN sales people for the codes availability.

For correct installation, follow the instructions contained in the manual.