

# GEFRAN

## 1600V / 1800V

CONTROLLER for MOTORIZED VALVES



### Main applications

- Ovens
- Processing plants for chemical and pharmaceutical industries
- Food processing plants
- Sterilizers, autoclaves, continuous ovens and drying unit ceramics and bricks

### Main features

- Universal input configurable from the faceplate
- Acquisition of the input signal every 120msec ; resolution 30000steps
- Two control outputs: relay, logic or analogue with Open/Close valve function
- 3 configurable alarms
- 2 analogue outputs (retransmission)
- 2 digital inputs with configurable function
- Auxiliary input for valve position potentiometer feedback
- Heater Break or shortcircuit probe alarm
- Self and Auto-tuning, Soft-start, Local/Remote setpoint, Auto/Man
- Multiset function, timer set ramp

### GENERAL

Microprocessor controller for three-step motorised valves, 48x96 / 96x96 (1/8DIN - 1/4DIN) size.

Manufactured using SMT, the instrument 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 indicating LED's for the 4 logic or relay outputs, and a further 3 LED's that are programmable to indicate the various operational states of the instrument.

10 led red bargraph indication can be associated with analogue outputs for control, inputs, deviations or valve position.

The main input for the process variable is universal and provides the possibility to connect many types of input sensor: thermocouple, resistance thermometer, thermistor, linear inputs, potentiometer, all with the possibility of custom linearisation that can be defined using the faceplate keys.

The type of input is selected from the faceplate keys and no external shunts or adapter are required.

It is possible to activate correction of the input using a linear function defined by way of two points on it.

A second auxiliary isolated analogue

input is available, which can also be configured for a linear input or, potentiometer for valve position feedback. It is possible to configure the 2 available isolated digital inputs for selection of up to 4 local setpoints; start, stop and reset of internal timer; Auto/Man, Loc/Rem functions; alarms memory reset; input hold function.

This instrument has up to 4 relay (3A, 250V) or logic (12Vdc, 20mA) outputs, 2 of which will be dedicated to the open/close valve functions and up to 2 isolated analogic outputs, in voltage or current.

Every output function is configurable from keypad; available functions are control output (open/close valve); alarm output; timer controlled output; digital input repetition; retransmission of process value, setpoint, deviation, alarm setpoint or value read from digital communication. A further isolated output (10 or 24Vdc, 30mA max.) is available for powering external transmitters or potentiometers. The serial communication interface RS485 (RS232C compatible) makes it possible to read or modify any parameter and to govern the instrument online (local/remote manual/automatic commutation, internal timer control, direct control of outputs).

Protocols available: MODBUS RTU and

CENCAL (Gefran).

Using these protocols it is possible to write to any of the instrument parameters. Specific parameters are present for the valves control, i.e. the actuator stroke time, the minimum pulse time, the impulsive interval threshold, the dead zone; also the control type is configurable with or without potentiometer feedback; with PD or PID algorithm.

All the programming procedures of the instrument are facilitated by the grouping of the parameters in function blocks (**CFG** for the control parameters, **Inp** for the inputs, **Out** for the outputs, etc.) and by the possibility of selecting a simplified menu for entering the most frequently used parameters.

The instrument can also select the parameters to display depending on the hardware configuration, automatically hiding those that are not influential.

To simplify the configuration even further, a programming kit is available for PC, which includes a menu driven configuration program for Windows and the necessary cable to connect the instrument (see data sheet cod. WINSTRUM).

## TECHNICAL DATA

### INPUTS

Accuracy 0,2% f.s.  $\pm 1$  digit.  
Acquisition of the input signal 120msec.  
Decimal point position for linear groups can be set freely.  
For inputs from TC, RTD, PTC a decimal figure in the maximum display field (-199,9...999,9).

### TC - Thermocouples

**J** (Fe-CuNi) 0...1000°C / 32...1832°F  
**K** (NiCr-Ni) 0...1300°C / 32...2372°F  
**R** (Pt13Rh-Pt) 0...1750°C / 32...3182°F  
**S** (Pt10Rh-Pt) 0...1750°C / 32...3182°F  
**T** (Cu-CuNi) -200...400°C / -328...752°F  
**B** (Pt30Rh-Pt6Rh) 44...1800°C / 111...3272°F  
**E** (NiCr-CuNi) -100...750°C / -148...1382°F  
**N** (NiCrSi-NiSi) 0...1300°C / 32...2372°F  
**(Ni-Ni18Mo)** 0...1100°C / 32...2012°F  
**L-GOST** (NiCr-CuNi) 0...600°C / 32...1112°F  
**Custom** -1999...9999

### RTD 3-wires

**Pt100** -200...850°C / -328...1562°F  
**JPt100** (JIS C 1609/81) -200...600°C /  
-328...1112°F  
**Custom** -1999...9999

### PTC (alternative to RTD)

-55...120°C / -67...248°F  
**Custom** -1999...9999

### DC - Linear

0...50mV; 10...50mV; 0...20mA  
4...20mA; 0...10V; 2...10V

### Auxiliary input

(insulation 1500V)  
For Remote Setpoint:  
(0...10V, 2...10V,  $R_i=1M\Omega$ )  
(0...20mA, 4...20mA,  $R_i=5\Omega$ )  
Valve position potentiometer feedback:  
> 500 $\Omega$

### Logic inputs

Insulation 1500V  
NPN 24V/4,5mA (PNP 24V/3,6mA)  
Configurable function: Man/Auto,  
Loc/Rem, Alarms Reset, Hold, timer  
stop/start/reset, Setpoint selection.

### OUTPUTS

Outputs fully configurable for open/close  
valve function, single alarm, "OR" or  
"AND", of more alarms logic input repetition

### Relay

with rating: 5A/250V,  $\cos\phi=1$   
(order code: R)

### Logic

11Vdc,  $R_{out}=220\Omega$  (20mA, max.6V)  
(order code: D)

### Analog retransmission

isolated 1500V  
- Up to 2 analogue outputs for control or  
retransmission (input signal, setpoint,  
auxiliary input, valve position, alarm  
setpoint).  
- Scale range selectable from keyboard.  
- Configurable output 0...10Vdc; 0/4...20mA  
- Resolution 4000 steps

### SERIAL LINE

Optoisolated 4-wires  
Passive Current Loop configurable (1200  
baud) interface, RS232 and RS422/485  
(1200, 2400, 4800, 9600, 19200 baud).  
Protocol: GEFRA CENCAL or MODBUS

### POWER SUPPLY

Standard: 100 to 240Vac/dc  $\pm 10\%$   
on request: 20 to 27Vac/dc  $\pm 10\%$   
50/60Hz; 12VAmx.  
Protection by internal fuse not serviceable  
by the user

### TRANSMITTER SUPPLY

isolated 1500V

10/24Vdc max. 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

P, PD or PID for motorised valve (with or  
without potentiometer feedback), for  
heating/cooling with parameters  
configurable from the faceplate.  
• Proportional band 0,0...999,9% f.s.  
• Integral time 0,0...99,99 min  
• Derivative time 0,0...99,99 min  
• Max and min control output power  
limitation 0,0...100,0%  
• Manual reset -999...999 digit  
• Power reset -100,0...100,0%  
• Cycle time 0,1...200sec  
• Minimum pulse time / Actuator stroke  
time 0,0...25,0%  
• Pulsating control band in percentage of  
actuator stroke time 0,0...1000,0%  
• Dead band (symmetrical around control  
Setpoint), settable in percentage of f.s.  
0,0...25,0% f.s.

### Alarms

- Up to 3 alarms, settable as absolute,  
deviation or symmetrical deviation alarm  
with respect to the control setpoint with  
configurable function (Hi or Lo).  
- The alarm point may be set anywhere  
within the configured scale.  
- Heater Break Alarm  
- Loop Break Alarm  
- Alarm Hysteresis configurable  
- Alarms can be assigned to main input,  
auxiliary input or control SP.

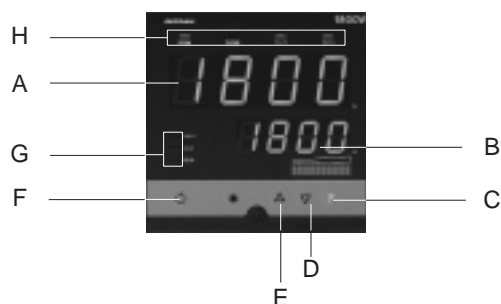
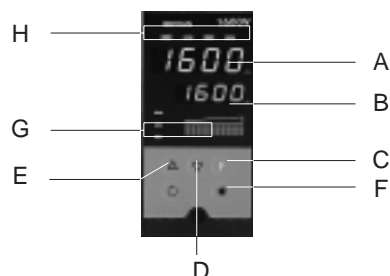
### WEIGHT

400g (1600V); 600g (1800V) max  
complete version

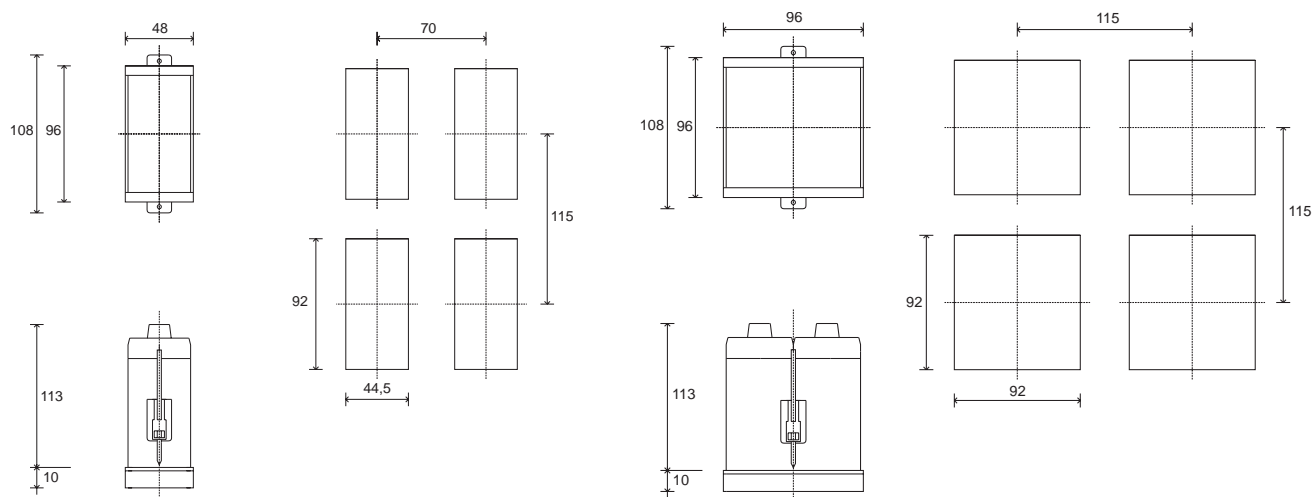
## FACEPLATE DESCRIPTION

- A - PV Display: process variable
- B - SV Display: setpoint value
- C - "Function" key
- D - "Lower" key
- E - "Raise" key
- F - "Automatic/Manual" selection
- G - Function indication
- H - Indication of active outputs

Double green LED display (4 Digit)  
Faceplate protection IP65

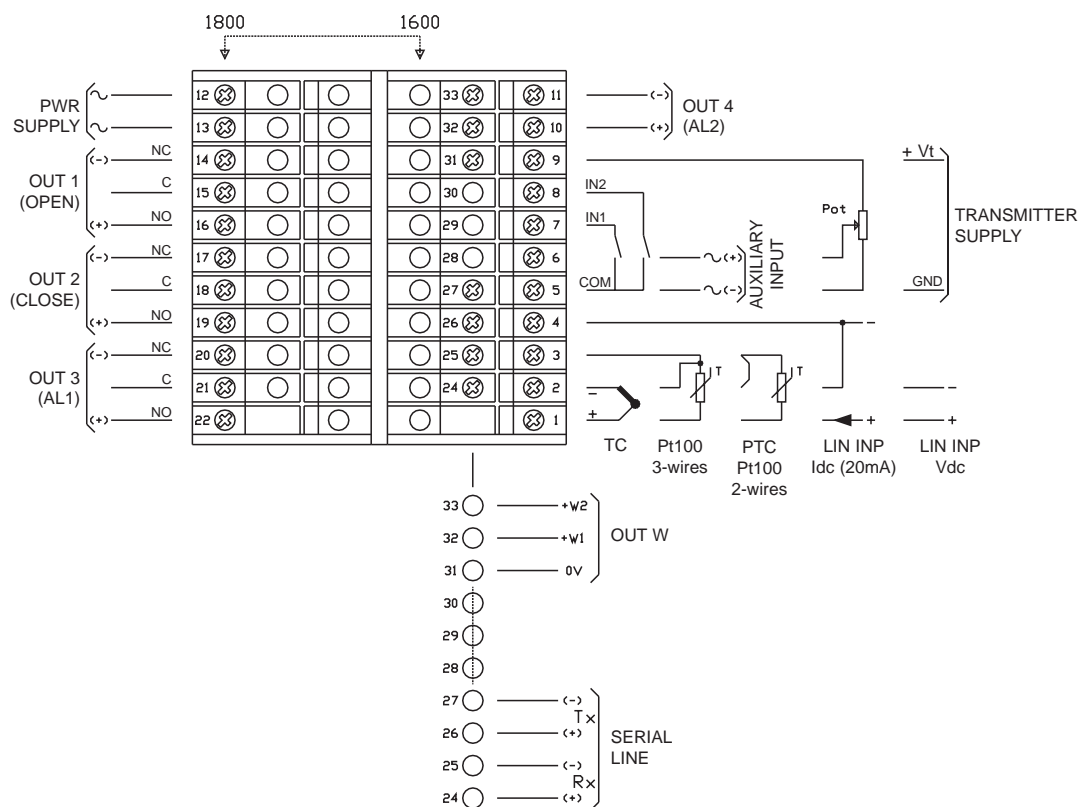


## DIMENSIONS AND CUT OUT



Dimensions: 48x96mm - 96x96mm (1/8DIN - 1/4DIN) depth 113mm

## CONNECTION DIAGRAM



Apply users' manual warnings for a correct installation

## ORDER CODE

MODEL	
1600V	1600V
1800V	1800V

POWER SUPPLY	
0	20...27Vac/dc
1	100...240Vac/dc

OUTPUTS 1,2,3,4 (R/D)	
Out1 (D) + Out2 (R) + Out3 (R)	DRR0
Out1 (D) + Out2 (R) + Out3 (R) + Out4 (R)	DRRR
Out1 (D) + Out2 (R) + Out3 (R) + Out4 (D)	DRRD
Out1 (R) + Out2 (R) + Out3 (R)	RRR0
Out1 (R) + Out2 (R) + Out3 (R) + Out4 (R)	RRRR
Out1 (R) + Out2 (R) + Out3 (R) + Out4 (D)	RRRD

DIGITAL COMMUNICATIONS	
0	None
2	RS 485 / RS 232

AUXILIARY INPUTS INSPR/INTA DIGITAL INPUTS IN1, IN2 TRANSMITTER SUPPLY	
00	None
01	IN1, IN2 NPN/PNP
03	Trasmitter Supply 10 V/24V
04	IN1, IN2 NPN/ PNP + Trasmitter Supply 10 V/24V
06	IN SPR (0...1V) + Trasmitter Supply 10 V/24V
07	IN SPR (0...10V) / IN Potentiometer # + Trasmitter Supply 10 V/24V
08	IN SPR (0/4...20mA) + Trasmitter Supply 10 V/24V
09	IN TA (5050mAac) + Trasmitter Supply 10 V/24V
10	IN1, IN2 NPN/PNP IN SPR (0...10V) + Trasmitter Supply 10V/24V
11	IN1, IN2 NPN/PNP IN SPR (0...10V) / IN Potentiometer # + Trasmitter Supply 10 V/24V
12	IN1, IN2 NPN/PNP IN SPR (0/4...20mA) + Trasmitter Supply 10V/24V
13	IN1, IN2 NPN/PNP IN TA (50mAac) + Trasmitter Supply 10V/24V
33	IN SPR (0...1V)
34	IN SPR (0...10V) / Potentiometer #
35	IN SPR (0/4...20mA)
36	IN TA (50mAac)





OUTPUTS 5, 6	
None	00
OUT 5 (W1) 0...10V	V0
OUT 5 (W1) 0/4...20mA	I0
OUT 5 (W1) 0...10V OUT 6 (W2) 0...10V	VV
OUT 5 (W1) 0/4...20mA OUT 6 (W2) 0...10V	IV
OUT 5 (W1) 0/4...20mA OUT 6 (W2) 0/4...20mA	II

# Potentiometer input requires 10V supply transmitter

Make specific calibration request for PTC input.

Kindly contact GEFRA for information on available codes.

GEFRA spa reserves the right to make any kind of design or functional modification at any moment without prior notice.

	Conformity C/UL/US File no. E216851
	Conformity C/CSA/US Certificato n. 188658 - 1079784
	In conformity to ECC 89/336/CEE and 73/23/CEE with reference to standards: <b>EN 61000-6-2</b> (immunity in industrial environment) <b>EN 61000-6-3</b> (emission in residential environment) - <b>EN 61010-1</b> (safety)
	<b>C - TICK</b>

**GEFRA**

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