# GEFRAN

# 800P
## PROGRAMMER - CONTROLLER

## Main applications

- *Plastics extrusion lines and injection moulding machines*
- *Polymerisation plant for synthetic fibre production*
- *Climatic chambers and test benches*
- *Continuous ovens and drying unit ceramics and bricks*
- *Chemical and pharmaceutical industries*
- *Furnaces*
- *Food processing plant*
- *Painting machines*
- *Water treatment*
- *Siderurgy industry*
- *Packaging machinery*

## 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 Heat/Cool function*
- *3 configurable alarms*
- *2 analogue outputs (retransmission )*
- *2 digital inputs with configurable function*
- *Auxiliary input for C.T. or remote setpoint*
- *Heater Break or shortcircuit probe alarm*
- *Self and Auto-tuning, Soft-start, Local/Remote setpoint, Auto/Man*
- *12 (16) steps arranged in max. 4 programs*
- *Second SP retransmitted to a slave controller, with same time-base*

## GENERAL

*Microprocessor setpoint programmer and controller, format 48x48mm (1/16 DIN). 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.*
*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.*
*It is possible to activate correction of the input using a linear function defined by way of two points on it. The type of input is selected from the faceplate keys and no external shunts or adapter are required. A second auxiliary isolated analogue input is available, which can also be configured for a linear input, potentiometer or current transformer. There are two isolated digital inputs for entering the program commands of start, stop and reset, choosing the program and*

*to step through the program.*
*The instrument can have up to 4 relay (5A/250V) or logic (11Vdc, 20mA) outputs and up to 2 isolated analogue outputs in voltage or current.*
*The function of each output is configurable and event outputs linked to the individual program step as well as control and alarm functions can be provided.*
*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 it is possible to write to any of the instrument parameters.*
*The sequence for setting up the programmer is particularly brief and there are up to 8 steps, each with a setpoint ramp and hold.*
*It is also easy to set up any interlocks required from logic inputs and the event outputs, as well as the type of restart preferred using the few set-up steps in the "Step" menu.*

*The various steps can be regrouped in 4 different programs.*
*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 is needs to display as a function of the hardware configuration, automatically concealing 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).*
*The programmer, as well as executing the program controlling the main output (heat/cool with two independent PID loops), can also retransmit 2 different setpoint profiles, with a common time base, to a slave controller using the two analogue outputs. In the execution phase of the programmer, the two displays are used to monitor the behaviour of the program and make any necessary adjustments immediately.*

## TECHNICAL DATA

### INPUTS

Accuracy 0,2% f.s. ±1digit.
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
Custom linearisation with 32 segment

### Auxiliary input

insulation 1500V
For remote setpoint:
  (0...10V, 2...10V, Ri=1MΩ)
  (0...20mA, 4...20mA, Ri=5Ω)
  potentiometer > 500Ω
For current transformer:
CT 50mAac, 50/60Hz, Ri=1,5Ω

### Logic inputs

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

### OUTPUTS

Outputs fully configurable for:
single alarm, "OR" or "AND" of multiple alarms, logic input repetition.

### Relay

With rating: 5A/250V, cosφ=1
(order code R)

### Logic

11Vdc, Rout=220Ω.=(20mA, max.6V)
(order code D)

### Analogue retransmission

isolated 1500V
- Up to 2 analogue outputs for control or retransmission (input signal, setpoint, auxiliary input, alarm setpoint).
- Scale range selectable from keyboard.
- Configurable output 0...10Vdc;
0...20/4...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: GEFRAN CENCAL or MODBUS

### POWER SUPPLY

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

### Transmitter Supply

isolatedxd 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

Cooling setpoint relative to Heating setpoint
On/Off, P, PD, PID for heating and cooling with configurable parameters.
• Proportional band 0,0...999,9% f.s.
• Integral time 0,0...999,9 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
• Soft-start 0,0...500,0 min

### 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

210g in complete version

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## FACEPLATE DESCRIPTION

**A** - Indication of process variable (PV), green digits h. 10mm
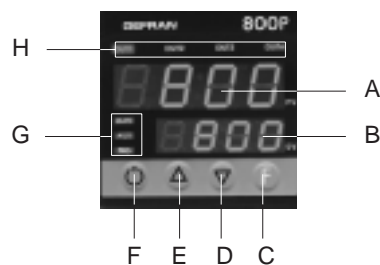**B** - Indication of the set point (SV) green digits h. 7mm
**C** - "Function" key
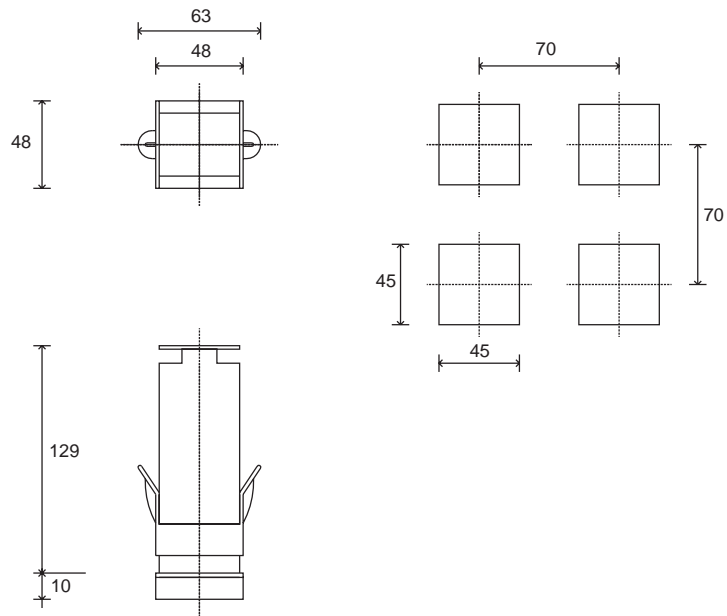**D** - "Lower" key
**E** - "Raise" key
**F** - Auto/Man selection
**G** - Function indication, red led
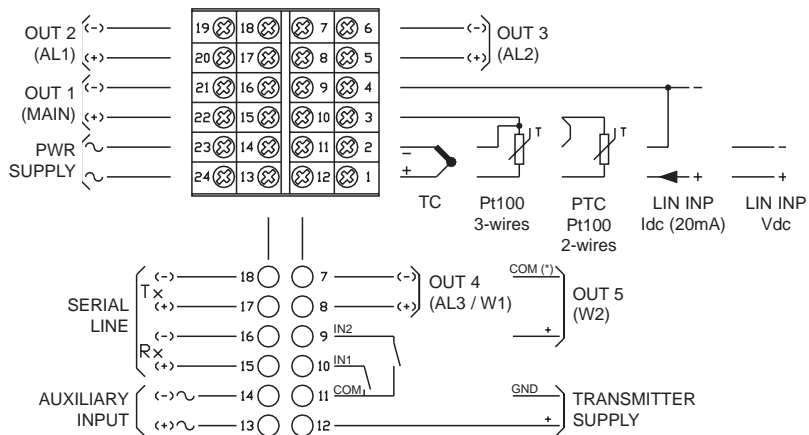**H** - Indication of active outputs, red led

IP65 faceplate protection

## DIMENSIONS AND CUT OUT

63

48

48

70

70

45

45

129

10

Dimensions: 48x48mm (1/16DIN) depth 129mm

## CONNECTION DIAGRAM

OUT 2 (-) — 19 18 | 7 6 — (-) OUT 3
(AL1) (+) — 20 17 | 8 5 — (+) (AL2)
OUT 1 (-) — 21 16 | 9 4
(MAIN) (+) — 22 15 | 10 3
PWR ~ — 23 14 | 11 2
SUPPLY ~ — 24 13 | 12 1

TC    Pt100    PTC    LIN INP    LIN INP
     3-wires   Pt100   Idc (20mA)  Vdc
              2-wires

SERIAL LINE
Tx (-) — 18    7 — (-) OUT 4
Tx (+) — 17    8 — (+) (AL3 / W1)    COM (*)  OUT 5 (W2)
Rx (-) — 16    9 IN2
Rx (+) — 15    10 IN1                +

AUXILIARY INPUT
(-)~ — 14    11 COM               GND  TRANSMITTER
(+)~ — 13    12                    +   SUPPLY

(*) COM is on terminal 7 for output OUT4, continuous-type (W1).
    COM is on terminal 11 for output OUT4, relay- or logic-type

⚠ Apply users' manual warnings for a correct installation

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| OUTPUT 1 | |
|---|---|
| Relay | R |
| Static | D |

| OUTPUT 2 | |
|---|---|
| Relay | R |
| Static | D |

| OUTPUT 3 | |
|---|---|
| None | 0 |
| Relay | R |
| Static | D |

| OUTPUT 4 | |
|---|---|
| None | 0 |
| Relay | R |
| Analogue (W1) 0...10V | V |
| Analogue (W1) 0/4...20mA | I |

# Potentiometer input requires 10V supply transmitter

Make specific calibration request for PTC input.

| POWER SUPPLY | |
|---|---|
| 0 | 20...27Vac/Vdc |
| 1 | 100...240Vac/Vdc |

| DIGITAL COMMUNICATIONS | |
|---|---|
| 0 | None |
| 2 | RS 485 / RS 232C |

| AUXILIARY INPUTS | |
|---|---|
| 0 | None |
| 1 | 0...1V |
| 2 | 0...10V / Potentiometer # |
| 3 | 0/4...20mA |
| 5 | TA 50mAac |

| OUTPUT 5 - DIGITAL INPUTS IN1, IN2 - TRANSMITTER SUPPLY | |
|---|---|
| 00 | None |
| 01 | Output 5 Analogue (W2) 0...10V |
| 02 | Output 5 Analogue (W2) 0/4...20mA |
| 03 | IN1, IN2 NPN; 10V/24V transmitter supply |
| 04 | IN1, IN2 PNP; 10V/24V transmitter supply |
| 05 | IN1 NPN; 10V24V transmitter supply; Output 5 Analogue (W2) 0...10V |
| 06 | IN1 PNP; 10V/24V transmitter supply; Output 5 Analogue (W2) 0...10V |
| 07 | IN1 NPN; 10V/24V transmitter supply; Output 5 Analogue (W2) 0/4...20mA |
| 08 | IN1 PNP; 10V24V transmitter supply; Output 5 Analogue (W2) 0/4...20mA |

Please, contact GEFRAN sales people for the codes availability.

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