Controllers, Programmers, Multiloop

# CONTROLLERS, PROGRAMMERS, MULTILOOP

# GENERAL DESCRIPTION

Control instruments let you acquire one or more analog inputs, convert them into engineering units, and compare them to setpoints. By applying PID control algorithms with automatic parameter calculation, they supply output signals to control actuators installed on the process.

Gefran's catalog of Controllers range from popular general purpose models to advanced, high-performance solutions made with graphics devices and distributed or integrated control architectures. They can be connected in a network and set for remote access for remote control.

## Multiloop Graphic Controllers GF_LOOPER

**IP65**
Front protection

**CONTROL**
Remoted control boards.

**COMMUNICATION**
Connections via Ethernet, RS485, Modbus, USB port..

**GRAPHICS PAGES**
Monitor pages for all zones, single zone, alarms, trends, bargraph, clock.

**DISPLAY**
TFT color graphics display 3.5" and 5.7", touch screen.

## Programmers/Controllers Graphic 4 Loop GF_PROMER

**GRAPHICS PAGES**
Monitor pages with trend, bargraph, alarms, clock.

**I/Os**
On-board control boards.


**IP65**
Front protection

**COMMUNICATION**
Connections via Ethernet, RS485, Modbus, USB port.

**DISPLAY**
TFT color graphics display 3.5" and 5.7", touch screen.

**CONTROL**
Remoted control boards.

**KEYBOARD**
Keyboard with 6 mechanical keys, pressed key feedback.

**LOGIC FUNCTIONS**
Configurable logical blocks in order to realize automatic sequences.

# Characteristics / Advantages

## Characteristics

**Flexibility**
HW/SW flexibility.

**Hardware recognition**
Automatic recognition of hardware resource.

**Process input flexibility**
Connection of various types of input sensors (TC, RTD, V, I).

**Simple settings**
Setting via parameters, tick, icon and via Software for PC.

**Shared software of programming**
Methods of use identical in all Gefran controllers.

**Parameters**
Displayed parameters described by an acronym, or with complete description.

**Ready to use**
Preinstalled hardware and software configuration.

## Advantages

**Every resource is used**
Rational use of resource generates highly profitable and efficient operation, with maximum modularity.

**Safety**
The user has to set only the hardware parameters for safe use of the controller. Password management of graphics models.

**One instrument, many applications**
Thanks to its flexibility, you can now usone instrument for many applications.

**Immediate learning**
Very little time is needed to configure the instrument for specific requirements.

**Reuse**
Shared software of programming lets you go from one controller to another with great ease.

**Intuitive setting**
The use of acronyms lets you set the parameters with extreme confidence.

**"Zero" startup time**
The user can start the instrument in a time virtually equal to zero.

## GRAPHICS MODELS

**Alarms**
Dedicated pages with explanatory messages.

**Trend**
Trending of variables and setpoints.

**Historical data**
Data saved to file.

**Diagnostics**
All critical situations under control.

**Process display**
Variables are continuously monitored.

**Analyses, Storage, Quality**
Data can be exported to USB flash drive.

## "General Purpose" Single Loop Controllers

**PID**
Sophisticated control algorithms simplify every control

**INPUTS**
A wide range of digital/analog inputs for various functions such as reading of process input, state of digital input, reading of delivered current, etc.

**OUTPUTS**
Various types of outputs to control: process, alarms, retransmission.


**IP65**
Front protection.

**LEDs**
Leds for instantaneous display of instrument state.

**DISPLAY**
Clear and efficient display of main variables.

**KEYBOARD**
Keyboard for rapid setting and diagnostics.

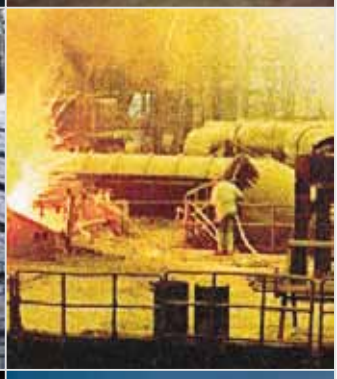
600

# APPLICATIONS

Plastics

Test benches

Rubber



Metal deformation

Heat treatment ovens

Pharmaceutical

Food

Petrochemical

Water treatment

Packaging

# MODEL DESCRIPTIONS

## MULTILOOP MODELS

### Graphics controllers with TFT, color display, touch screen, 3.5" and 5.7"

4, 8, 12, 16 control loops

Complete control and monitor pages

Bargraph, Trend, alarms management, recipe saving, Real Time Clock functions for clock/calendar

### 4 loop controllers

Inputs: universal, Outputs: relay, logic, analog
Digital inputs, Current transformers inputs (option)
Fieldbus communication: Profibus DP, CANopen, DeviceNet, Modbus RTU, Modbus TCP, Ethernet IP
Specific functions for "hot runners"
Power supply: isolated
Installation: DIN rail

## HIGH-PERFORMANCE MODELS

### "High speed" 2500 controller

3 displays and bargraphs to control pressures, web tension control, ratio control, math calculations for process controls

### Graphics programmers with color display, TFT, touch screen, 3.5" and 5.7"

4 universal inputs TC, RTD, mA, V, local or remote, digital inputs (optional)

logic outputs, relay (optional), analog, and for motorized valves

Fieldbus communication Modbus TCP

### Advanced functions

Setpoint programmer with 100 programs and 300 steps; up to 4 different setpoint profiles with the same time base; repetition of programs and sequence of steps; bargraph, trend, alarms management, historical data, Real Time Clock function for clock/calendar; 16 inputs/16 outputs for event programmable for each step, with programmable logic functions.

## ADVANCED MODELS

### Double Display

Input: universal
Auxiliary analog input: CT, linear, potentiometer read
Digital inputs: 2
Outputs: min.2 max.5 (isolated analog outputs)
Serial: RS485 Modbus RTU

### Valves

Specific algorithms to control floating valves with or without feedback ("V" models)

### Programmers

Four programs available for a total of sixteen steps to control setpoint profiles ("P" models)

## BASIC MODELS

### Single display

Input: universal
Auxiliary analog input: CT read
Outputs: min.2, max.3

### Double display

Input: universal
Auxiliary analog input: read CT
Digital inputs: min. 1, max. 2
Outputs : min.2, max.4
Serial: RS485 Modbus RTU

Model 600 OF OpenFrame totally customizable

- Mechanics adaptable to various customizations
- Double display
- Optional I/O resources
- On-board or external keyboard
- Up to 3 programmable setpoint steps

## FRONT PANEL INSTALLATION DIN FORMAT

FORMAT

| | BASIC MODELS | | ADVANCED MODELS | | |
|---|---|---|---|---|---|
| | single display | | double display | | |
| 169x120 | | | | | |
| 96x96 | |  1300 |  1800 | valves  1800V | programmers  1800P |
| 48x96 | |  1200 |  1600 |  1600V |  1600P |
| 48x48 |  400  401 |  600 |  800 |  800V |  800P |
| 90x45x45 | |  600 OF | | | |
| | PLASTICS, PACKAGING, FURNACES | | PLANTS, OVENS, PROCESS | | |

## HIGH-PERFORMANCES HIGH-PERFORMANCE - MULTILOOP MODELS

triple display

LCD display

GF_PROMER 5,7”

GF_LOOPER 5,7”

controllers


2500

GF_PROMER 3,5”

GF_LOOPER 3,5”

4 loop controllers (for DIN rail)

GFXTERMO4

PROFIBUS

CANopen

DeviceNet

Modbus TCP/RTU

EtherNet/IP

PROFINET

PRESSURE, FORCE

HEAT TREATMENT OVENS, CLIMATIC CHAMBERS, FOOD, PROCESS

# BASIC MODELS

| | | 400 | 401 |
|---|---|---|---|
| **INPUTS** | | | |
| Process analog | Number | 1 | |
| | Function | acquisition of process variable | |
| Sensor type | Thermocouple | TC: J,K,T,N,R,S,B,E internal cold junction compensation | |
| | Resistance thermometers | RTD: PT100 DIN43760 | |
| | Thermistor | PTC: 990Ω@25°C on request | |
| | Linear voltage | V voltage: 0...60mVdc,0...10Vdc | |
| | Linear current | I current: 0/4...20mA | |
| | Sampling time | 120 ms | |
| | Accuracy | 0,2% fs±1 digit | |
| | Resolution | < 4µV on 60mV, < 0,8mV on 10Vdc | |
| | Linearization | < 0,1% FS | |
| | Input filter | 0...20,0 sec | |
| Auxiliary analog | Number | - | 1 |
| | Function | - | read: current absorbed by load |
| | Sensor type | - | Current transformer 0...50mAac <20Ω |
| Auxiliary digital | Number | - | |
| | Function | - | |
| | Type | - | |
| **OUTPUTS** | | | |
| | Number | min.2 max.3 | |
| | Out. 1 Type | R,D | |
| | Out. 2 Type | R,D | |
| | Out. 3 Type | - | R,D alternative to auxiliary analog input |
| | Out. 4 Type | - | - |
| | Out. 5 Type | | |
| | Out. 6 Type | | |
| | Function | heating, cooling, alarm | |
| | Type description | R Relay: NO/NC,max 5A,250Vac/30Vdc (resistive load)<br>D Digital: 24Vdc,30mA, Rout:100Ω<br>T Triac: 20...240Vac±10%V, 50/60Hz, 1A max. snubberless | |
| | Transmitter power supply | - | |
| **DISPLAY / KEYBOARD** | | | |
| Display | | | |
| | Number | 1 | |
| | Color | green | |
| | Display range | -1999...9999 | |
| | Keyboard | 4 keys | |
| **FUNCTIONS** | | | |
| | Main input security | sensor open or in short circuit (SBR) | |
| | Main output security | control loop open (LBA) | |
| | Auxiliary analog input security | - | load interrupted (HB) |
| | Regulation | P, PD, PI, PID, on/off - single action heat or cool / double action heat + cool | |
| | Tuning | selftuning, autotuning, | |
| | Alarms no./ | max.2 | max.3 |
| | Types | absolute, relative, symmetrical, direct, inverse | |
| **SERIAL COMMUNICATION** | | | |
| | Type | - | |
| | Protocol | - | |
| **GENERAL DATA** | | | |
| | Format | 48x48 (1/16 DIN) | |
| | Depth | 99mm | |
| | Front protection | IP65 | |
| | Mounting | removable panel | |
| | Power supply | 100...240Vac ±10%<br>opt. 11...27Vac ±10%<br>50/60Hz, 10VA max | |
| | Certifications | UL | |

| 600 | 1200 | 1300 | 600 OF |
|---|---|---|---|
|  |  |  |  |
| 1 | | | |
| acquisition of process variable | | | |
| TC: J,K,T,R,S, custom, internal cold junction compensation | | | TC: J,K,T,R,S, custom, internal cold junction compens. |
| RTD: PT100 DIN43760, PT100,custom | | | RTD: PT100 DIN43760, PT100,custom |
| PTC,NTC 990Ω@25°C/1KΩ@25°C | | | PTC,NTC 990Ω@25°C/1KΩ@25°C |
| V voltage: 0...60mVdc,0...10Vdc custom | | | V voltage: 0...60mVdc,0...10Vdc custom |
| I current: 0/4..20mA, custom | | | I current: 0/4..20mA, custom |
| 120 ms | | | 0-120 ms |
| 0,2% fs±1 digit | | | |
| < 2µV on 60mV, < 0,4mV on 10Vdc | | | <2mV on 60mV, <0,4mV on 10Vdc |
| < 0,1% FS | | | |
| 0...20,0 sec | | | |
| 1 | | | - |
| read: current absorbed by load | | | - |
| Current transformer 0...50mAac <20Ω | | | - |
| 1, auxiliary analog input, OUT3 | 2 | | - |
| configurable (man/auto,loc/rem,hold...) | | | configurable (man/auto,loc/rem,hold...) |
| NPN 4,5mA, PNP 5mA 24Vdc isol.1500V | | | - |
| | | | |
| min.2 max.4 | | | 5 |
| R | | | R, D |
| R,D,T | | | R |
| none, R,D,C,W alternative to auxiliary input | none, R,D,C,W | | R |
| none, R, alternative to serial line | none, R, D | | R |
| - | - | | buzzer |
| - | - | | D |
| heating, cooling, alarm | | | |
| R Relay: NO/NC,max 5A,250Vac/30Vdc __(resistive load) | | | |
| D Digital: 24Vdc,30mA, Rout:100Ω | | | |
| T Triac: 20...240Vac±10%V, 50/60Hz, 1A max. snubberless | | | |
| C Continue: 0...10Vdc, 0/4...20mA 500Ω not isolated | | | |
| W Continue: 0...10Vdc, 0/4...20mA 500Ω isolated | | | |
| 2 wires, 15/24Vdc±10%, 50mA short-circuit protection | | | - |
| | | | |
| 2 | | | |
| green, green | | | |
| -1999...9999 | | | |
| 4 keys | | | |
| | | | |
| sensor open or in short circuit (SBR) | | | |
| control loop open (LBA) | | | |
| load interrupted (HB) | | | control loop open (LBA) |
| P, PD, PI, PID, on/off - single action heat or cool / double action heat + cool | | | |
| selftuning, autotuning, autotuning single action - (**600-OF**: 3 steps for set profile) | | | |
| max.3 absolute, relative, symmetrical, direct, inverse, latching or non-latching | | | |
| | | | |
| RS485 | | | RS485 (on request) |
| Modbus RTU / Cencal GEFRAN | | | Modbus RTU |
| | | | |
| 48x48 (1/16 DIN) | 48x96 (1/8 DIN) | 96x96 (1/4 DIN) | 90x45 |
| 99mm | 100mm | | 45mm |
| IP65 | | | - |
| removable panel | | | rear panel |
| switching 100...240Vac ±10% opt. 11...27Vac ±10% 50/60Hz 8VA | switching 100...240Vac ±10% 50/60Hz 18VA opt. 11...27Vac ±10% 50/60Hz 11VA | | switching 100...240Vac ±10% 50/60Hz 8VA |
| UL | | | - |

# ADVANCED MODELS



| | | 800 | 1600 | 1800 |
|---|---|---|---|---|
| **INPUTS** | | | | |
| Process analog | Number | 1 | | |
| | Function | acquisition of process variable | | |
| Sensor type | Thermocouple | TC: J,K,T,N,R,S,B,E,N,L(GOST),Ni-Ni18Mo, custom, internal cold junction compensation | | |
| | Resistance thermometers | RTD: PT100 DIN43760,JPT100,custom | | |
| | Thermistor | PTC: 990Ω@25°C, custom | | |
| | Linear voltage | V voltage: 0...60mVdc,0...10Vdc custom | | |
| | Linear current | I current: 0/4...20mA custom | | |
| | Sampling time | 120 ms | | |
| | Accuracy | 0,2% fs±1 digit | | |
| | Resolution | < 1µV on 60mV, < 0,2mV on 10Vdc | | |
| | Linearization | < 0,1% FS | | |
| | Input filter | 0...20,0 sec | | |
| Auxiliary analog | Number | 1 | | |
| | Function | read: current absorbed by load - linear input, potentiometer | | |
| | Sensor type | Current transfomer 0...50mA 50/60HZ - Linear voltage 0/2...10V, Ri>1MΩ, linear current 0/4...20mA, Ri=5Ω - pot. > 500Ω | | |
| Auxiliary digital | Number | 2 (second input alternative to output 5) | | |
| | Function | configurable (man/auto,loc/rem,hold...) | | |
| | Type | NPN 4,5mA, PNP 3,6mA 24V isol.1500V | | |
| **OUTPUTS** | | | | |
| | Number | min.2 max.5 | min.2 max.6 | |
| | Out. 1 Type | R,D | R,D | |
| | Out. 2 Type | R,D | R | |
| | Out. 3 Type | none, R, D | R | |
| | Out. 4 Type | none, R, V, I | none V, I | |
| | Out. 5 Type | none, V, I alternative Second digital input alternative | none V, I | |
| | Out. 6 Type | none | none V, I | |
| | Function | heating, cooling, alarm | | |
| | Type description | R Relay: NO/NC, max.5A, 250V ~(resistive load)<br>D Digital: 12Vdc, 20mA, Rout 220Ω<br>V Analog: 0...10Vdc 500Ω resolution 12bit<br>I Analog: 0/4..20mA 500Ω insulated resolution 12bit | | |
| | Transmitter power supply | 2wires, 10Vdc/24Vdc, 30mA Short-circuit protection, isolated | | |
| **DISPLAY / KEYBOARD** | | | | |
| Display | | | | |
| | Number | 2 | | |
| | Color | green, green | | |
| | Display range | -1999...9999 | | |
| | Keyboard | 4 keys | | |
| **FUNCTIONS** | | | | |
| | Main input security | sensor open or in short circuit (SBR) | | |
| | Main output security | control loop open (LBA) | | |
| | Auxiliary analog input security | load interrupted (HB) | | |
| | Regulation | P, PD, PI, PID, on/off - single action heat or cool - double action heat + cool | | |
| | Tuning | selftuning, autotuning, single action | | |
| | Alarms no./Types | max. 5 absolute, relative, symmetrical, direct, inverse | | |
| **SERIAL COMMUNICATION** | | | | |
| | Type | RS232-RS422/485 - current loop, optoisolated, 4 wires | | |
| | Protocol | Modbus RTU - Cencal GEFRAN | | |
| **GENERAL DATA** | | | | |
| | Format | 48x48 (1/16 DIN) | 48x96 (1/8 DIN) | 96x96 (1/4 DIN) |
| | Depth | 129mm | 115mm | |
| | Front protection | IP65 | | |
| | Mounting | removable panel | | |
| | Power supply | switching 100...240Vac/dc ±10%<br>opt. 20...27Vac/dc ±10%<br>50/60Hz, 12VA max | | |
| | Certifications | RINA | UL | |

# ADVANCED MODELS

| | | 800V | 1600V | 1800V |
|---|---|---|---|---|
| | |  |  |  |
| **INPUTS** | | | | |
| Process analog | Number | 1 | | |
| | Function | acquisition of process variable | | |
| Sensor type | Thermocouple | TC: J,K,T,N,R,S,B,E,N,L(GOST),Ni-Ni18Mo, custom, internal cold junction compensation | | |
| | Resistance thermometers | RTD: PT100 DIN43760,JPT100,custom | | |
| | Thermistor | - | | |
| | Linear voltage | V voltage: 0...60mVdc,0...10Vdc custom | | |
| | Linear current | I current: 0/4...20mA custom | | |
| | Sampling time | 120 ms | | |
| | Accuracy | 0,2% fs±1 digit | | |
| | Resolution | < 1µV on 60mV, < 0,2mV on 10Vdc | | |
| | Linearization | < 0,1% FS | | |
| | Input filter | 0...20,0 sec | | |
| Auxiliary analog | Number | 1 | | |
| | Function | read: current absorbed by load - linear input, potentiometer | | |
| | Sensor type | Current transfomer 0...50mA 50/60HZ - Linear voltage 0/2...10V, Ri>1MΩ, linear current 0/4...20mA, Ri=5Ω - pot. > 500Ω | | |
| Auxiliary digital | Number | 2 (second input alternative to output 5) | | |
| | Function | configurable (man/auto,loc/rem,hold...) | | |
| | Type | NPN 4,5mA, PNP 3,6mA 24V isol.1500V | | |
| **OUTPUTS** | | | | |
| | Number | min.2 max.5 | min.2 max.6 | |
| | Out. 1 Type | R | R,D | |
| | Out. 2 Type | R | R | |
| | Out. 3 Type | none, R, D | R | |
| | Out. 4 Type | none, R, V, I | none V, I | |
| | Out. 5 Type | none, V, I alternative<br>Second digital input alternative 2 | none V, I | |
| | Out. 6 Type | none | none V, I | |
| | Function | Open, close, heating, cooling, alarm | | |
| | Type description | R Relay: NO/NC, max.3A, 250V __(resistive load)<br>D Digital: 12Vdc, 20mA<br>V Analog: 0...10Vdc 500Ω isolated 12bit<br>I Analog: 0/4..20mA 500Ω isolated 12bit | | |
| | Transmitter power supply | 10Vdc/24Vdc, 30mA Short-circuit protection, isolated | | |
| **DISPLAY / KEYBOARD** | | | | |
| Display | Number | 2 | 2 + bargraph | |
| | Color | green, green | green, green, red | |
| | Display range | -1999...9999 | | |
| | Keyboard | 4 keys | 5 keys | |
| **FUNCTIONS** | | | | |
| | Main input security | sensor open or in short circuit (SBR) | | |
| | Main output security | control loop open (LBA) | | |
| | Auxiliary analog input security | load interrupted (HB) | | |
| | Regulation | P, PD, PI, PID, on/off - single action heat or cool - double action heat + cool<br>Tree step motorized valves (with or without position feedback) | | |
| | Tuning | selftuning, autotuning, single action | | |
| | Alarms no./Types | max. 5 absolute, relative, symmetrical, direct, inverse | | |
| **SERIAL COMMUNICATION** | | | | |
| | Type | RS232-RS422/485 - current loop, optoisolated, 4 wires | | |
| | Protocol | Modbus RTU - Cencal GEFRAN | | |
| **GENERAL DATA** | | | | |
| | Format | 48x48 (1/16 DIN) | 48x96 (1/8 DIN) | 96x96 (1/4 DIN) |
| | Depth | 129mm | 115mm | |
| | Front protection | IP65 | | |
| | Mounting | removable panel | | |
| | Power supply | switching 100...240Vac/dc ±10%<br>opt. 20...27Vac/dc ±10%<br>50/60Hz, 12VA max | | |
| | Certifications | RINA | UL | |

# ADVANCED MODELS

| | | 800P | 1600P | 1800P |
|---|---|---|---|---|
| **INPUTS** | | | | |
| Process analog | Number | 1 | | |
| | Function | acquisition of process variable | | |
| Sensor type | Thermocouple | TC: J,K,T,N,R,S,B,E,N,L(GOST),Ni-Ni18Mo, custom, internal cold junction compensation | | |
| | Resistance thermometers | RTD: PT100 DIN43760,JPT100,custom | | |
| | Thermistor | - | | |
| | Linear voltage | V voltage: 0...60mVdc,0...10Vdc custom | | |
| | Linear current | I current: 0/4...20mA custom | | |
| | Sampling time | 120 ms | | |
| | Accuracy | 0,2% fs±1 digit | | |
| | Resolution | < 1µV on 60mV, < 0,2mV on 10Vdc | | |
| | Linearization | < 0,1% FS | | |
| | Input filter | 0...20,0 sec | | |
| Auxiliary analog | Number | 1 | | |
| | Function | read: current absorbed by load - linear input - potentiometer | | |
| | Sensor type | TA 0...50mA 50/60HZ<br>lin. voltage 0/2...10V, Ri>1MΩ,<br>lin. current 0/4...20mA,<br>Ri=5Ω - pot. > 500Ω | 0...50mA ac <20Ω - 0/4...20mA<br>0..10Vdc > 1MΩ - 100...1000Ω isol.1500V | |
| Auxiliary digital | Number | 2 (second input alternative to output 5) | | |
| | Function | configurable (man/auto, loc/rem,hold...) | | |
| | Type | NPN 4,5mA, PNP 3,6mA 24V isol.1500V | | |
| **OUTPUTS** | | | | |
| | Number | min.2 max.5 | min.2 max.6 | |
| | Out. 1 Type | R,D | R,D | |
| | Out. 2 Type | R, D | R | |
| | Out. 3 Type | none, R, D | R | |
| | Out. 4 Type | none R, V, I | none R,D | |
| | Out. 5 Type | none, V, I alternative<br>Second digital input alternative | none V, I | |
| | Out. 6 Type | none | none V, I | |
| | Function | Open, close, heating, cooling, alarm | | |
| | Type description | R Relay: NO/NC, max.3A, 250V ~(resistive load)<br>D Digital: 12Vdc, 20mA<br>V Analog: 0...10Vdc 500Ω isolated 12bit<br>I Analog: 0/4..20mA 500Ω isolated 12bit | | |
| | Transmitter power supply | 2 wires, 10Vdc/24Vdc, 30mA Short-circuit protection, isolated | | |
| **DISPLAY / KEYBOARD** | | | | |
| Display | Number | 2 | 2 + bargraph | |
| | Color | green, green | green, green, red | |
| | Display range | | -1999...9999 | |
| | Keyboard | 4 keys | 5 keys | |
| **FUNCTIONS** | | | | |
| | Main input security | sensor open or in short circuit (SBR) | | |
| | Main output security | control loop open (LBA) | | |
| | Auxiliary analog input security | load interrupted (HB) | | |
| | Regulation | P, PD, PI, PID, on/off<br>- single action heat or cool<br>- double action heat + cool | P, PD, PI, PID, on/off - single action heat or cool<br>- double action heat + cool - Tree step motorized valves<br>(with or without position feedback) | |
| | Tuning | selftuning, autotuning, single action | | |
| | Alarms no./Types | max. 5 absolute, relative, symmetrical, direct, inverse | | |
| Set programmer | Nr. programs | 4 | | |
| | Nr. steps | up to 16 steps | | |
| **SERIAL COMMUNICATION** | | | | |
| | Type | RS232-RS422/485 - current loop, optoisolated, 4 wires | | |
| | Protocol | Modbus RTU - Cencal GEFRAN | | |
| **GENERAL DATA** | | | | |
| | Format | 48x48 (1/16 DIN) | 48x96 (1/8 DIN) | 96x96 (1/4 DIN) |
| | Depth | 129mm | 115mm | |
| | Front protection | IP65 | | |
| | Mounting | removable panel | | |
| | Power supply | switching 100...240Vac/dc ±10%<br>opt. 20...27Vac/dc ±10% - 50/60Hz, 12VA max | | |
| | Certifications | RINA | UL | |

# ULTRA-FAST CONTROLLERS MULTILOOP

| | | 2500 | GFXTERM04 |
|---|---|---|---|
| | |  |  |
| **INPUTS** | | | |
| Process analog | Number | 2 | 4 |
| | Function | acquisition of process variable | |
| Sensor type | Thermocouple | Strain gauge: 350, sensibility 1,5...4mV/V, with probe power supply 5/10Vdc. Potentiometer: £100Ω, Ri>10MΩ-@2,5Vdc DC linear: ±60mV, ±100mV, Ri>10MΩ, ±60mV, ±100mV, Ri> 10MΩ - TC | J,K,T,R,S, custom, internal cold junction compensation |
| | Resistance thermometers | | PT100 DIN43760, PT100, custom |
| | Linear voltage | | 0/12...60mV, Ri>1MΩ, 0/0,2...1V, Ri>1MΩ, custom 60mV |
| | Linear current | | 0/4...20mA, Ri=50Ω, custom 20mA at 32 segments |
| | Sampling time | 2 ms | 120ms |
| | Accuracy | 0,1% fs ±1 digit | 0,2% fs ±1 scale point at 25°C |
| | Resolution | < 0,6µV on 60mV, < 0,1mV on 10Vdc | - |
| | Input filter | 0...20,0 sec | |
| Auxiliary analog | Number | 2 | 4 |
| | Function | remote set, offset, mathematics | Read: current absorbed by load - linear input - TC |
| | Sensor type | Potentiometer: 1...10KΩ-@10Vdc DC linear 10V, Ri>2mΩ, 0/4...20mA, Ri=50Ω | external CT 50mAac; 50/60Hz, Ri = 10Ω Range voltage 0/12...60mV, Ri > 1MΩ TC J, K, R, S, T, custom |
| Auxiliary digital | Number | from 2 to 6 | 1 |
| | Function | configurable | configurable (man/auto,loc/rem,hold, prg ..) |
| | Type | NPN 5mA - PNP 5mA 24Vdc isolated | PNP, 24Vdc, 8mA (isol. 3500V) |
| **OUTPUTS** | | | |
| | Number | 4 | min.6 max.10 |
| | Out. 1 Type | none, R,D,V,I - alternative R power supply | D |
| | Out. 2 Type | none, R,D,V,I | D |
| | Out. 3 Type | transmitter power supply alternative | D |
| | Out. 4 Type | R alternative | D |
| | Out. 5 Type | - | O,R,D,C,T |
| | Out. 6 Type | - | O,R,D,C,T |
| | Out. 7 Type | - | O,R,D,C,T |
| | Out. 8 Type | - | O,R,D,C,T |
| | Out. 9 Type | - | R |
| | Out. 10 Type | - | R |
| | Function | heating, cooling, alarm | |
| | Transmitter power supply | 24Vdc, 100mA | - |
| | Probe power supply | 10Vdc, bridge resistance 250mA | - |
| **DISPLAY / KEYBOARD** | | | |
| | Color | green, red | - |
| | Keyboard | 6 keys | - |
| **FUNCTIONS** | | | |
| | Main input security | sensor open or in short circuit (SBR) | |
| | Main output security | control loop open (LBA) | |
| | Auxiliary analog input security | load interrupted (HB) | |
| | Regulation | P, PD, PI, PID, on/off, single action heat or cool, double action heat + cool | |
| | Tuning | selftuning, autotuning, autotuning single action | |
| | Alarms no./Types | max 10 | max.8, absolute, relative, symmetrical, direct, inverse, latching or non-latching |
| **SERIAL COMMUNICATION** | | | |
| | Serial 1 | optional | always present |
| | Type | RS485 | RS485 |
| | Protocol | - | Modbus RTU |
| | Serial 2 | - | optional |
| | Type | - | according to protocol |
| | Protocol | Modbus RTU, Profibus | Profibus DP, CANopen, DeviceNet, Modbus TCP, Modbus RTU, Ethernet IP, EtherCAT, Profinet |
| **GENERAL DATA** | | | |
| | Power supply | switching 100...240Vac/dc ±10% option 20...27Vac/dc ±10% 48/62Hz, max 15VA | 24Vdc ±25%, 5VA max |
| | Certifications | UL | |

# HIGH-PERFORMANCE MODELS

## GF_PROMER 3,5”

Distributed solution with series GFX modules

## GF_PROMER 5,7”

| | | GFX1 | GFX2 | GFX4/GFX4-IR | GFXTERM04 |
|---|---|---|---|---|---|
| **INPUTS** (per module) | | | | | |
| Process analog | Number of PID loops | 1 | 1 | 4 | 4 |
| | Function | Acquisition of process variable | | | |
| Sensor type | Thermocouple | J,K,R,S,T, TC custom (32 pti), internal cold junction compensation | | | |
| | Resistance thermometers | PT100 DIN 43760, PT100 custom (32 pti) | | | |
| | Voltage | 0/12...60mV, Ri>1MΩ; 0/0,2...1V, Ri>1MΩ; 0-60mV custom (32 pti) | | | |
| | Current | 0/4-20mA, Ri=50Ω, mA custom (32 pti) | | | |
| | Sampling time | 120 msec. | | | |
| | Accuracy | 0,2% f.s. ±1 scale point at 25°C | | | |
| | Input filter | 0...20,0 seconds | | | |
| Auxiliary analog | Number | 0 | 1 | 4TA / 4 AUX | |
| | Function | | Feeedback pot | Read external CT/visual.AUX | |
| | Sensor type | | Potentiometer min...max. | 50mAac; 50/60Hz, Ri=10Ω / TC 0-60mV | |
| Digital | Number | 1 | 1 | 2 | 1 |
| | Function | run/hold programs | run/hold programs | run/hold/ready programs | run/hold/ready programs |
| | Type | PNP, 24Vdc, 8mA (isolation 3500V) | | | |
| **OUTPUTS** (per module) | | | | | |
| Control analog | Number | | 2 | 4 | 4 |
| | Function | Heating/Cooling control outputs | | | |
| | Type description | 0-10V, 0/4-20mA | | | |
| Digital/Relay | Number | max 4 | max 4 | max 6 | max 10 (max 6 Relay) |
| | Function | Heat / Cool / Alarms / Event outputs | | | |
| **DISPLAY** | | | | | |
| | Dimensions | 3,5” and 5,7” | | | |
| | Type | display LCD TFT colors, 1/4 VGA, touch screen | | | |
| | Keyboard | resistive touch screen, 6 mechanical keys, pressed key feedback (mod. 35CT) | | | |
| | Functions | data display, programmed setpoint graphics, PV+SP graphics, PV+SP bargraph Pout% bargraph, alarms, password, RTC calendar | | | |
| **FUNCTIONS** | | | | | |
| | Main input security | sensor open or in short circuit (SBR) | | | |
| | Main output security | control loop open (LBA) | | | |
| | Actuator/load safety | load interrupted alarm (even partial) with inputs from CT and alarm outputs | | | |
| | Regulation | ON/OFF, Proportional (P), Proportional Derivative (PD), Proportional Integral Derivative (PID) Heat, Cool, Heat/Cool with double independent PID | | | |
| | Tuning | selftuning, autotuning, one shot autotuning | | | |
| **PROGRAMMER** | | | | | |
| | Programs | 100 programs | | | |
| | Steps | 300 steps | | | |
| | Program repetition | infinite | | | |
| | Steps repetition | infinite | | | |
| | Clearance inputs | up to max 16 (with optional modules) | | | |
| | Event outputs | up to max 16 (with optional modules) | | | |
| | Logical functions | 100 logical blocks (AND, OR, TIMER, TRIGGER) configurable | | | |
| | Save config. parameters | to internal solid disk, can be copied to USB flash drive | | | |
| | Save recipes | to internal solid disk, can be copied to USB flash drive | | | |
| **SERIAL COMMUNICATION** | | | | | |
| | Type | RS485, Ethernet port, port USB | | | |
| | Protocol | Modbus RTU, Modbus TCP | | | |
| **GENERAL DATA** | | | | | |
| | Format | 96x96mm (3,5”) / 169x120mm (5,7”) | | | |
| | Front protection | IP65 | | | |
| | Mounting | panel (and on DIN bar in case of distributed solution) | | | |
| | Power supply | 24V dc | | | |
| | Certifications | CE, UL | | | |

# HIGH-PERFORMANCE MODELS

## GF_LOOPER 3,5”

Distributed solution with series GFX modules

## GF_LOOPER 5,7”

| INPUTS (per module) | | GFX4/GFX4-IR | GFXTERM04 |
|---|---|---|---|
| Process analog | number of PID loops | 4 | 4 |
| | Function | Acquisition of process variable | |
| Sensor type | Thermocouple | J,K,R,S,T, TC custom (32 pti), internal cold junction compensation | |
| | Resistance thermometers | PT100 DIN 43760, PT100 custom (32 pti) | |
| | Voltage | 0/12...60mV, Ri>1MΩ; 0/0,2...1V, Ri>1MΩ; 0-60mV custom (32 pti) | |
| | Current | 0/4-20mA, Ri=50Ω, mA custom (32 pti) | |
| | Sampling time | 120 msec. | |
| | Accuracy | 0,2% f.s. ±1 scale point at 25°C | |
| | Input filter | 0...20,0 seconds | |
| Auxiliary analog | Number | | 4TA / 4 AUX |
| | Function | | Read external CT |
| | Sensor type | | 50mAac 50/60Hz Ri=10Ω / TC 0-60mV |
| Digital | Number | - | |
| | Function | - | |
| | Type | - | |

| OUTPUTS (per module) | | | |
|---|---|---|---|
| Control analog | Number | 4 | 4 |
| | Function | Heating/Cooling control outputs | |
| | Type description | 0-10V, 0/4-20mA | |
| Digital/Relay | Number | max 6 | max 10 (max 6 Relay) |
| | Function | Heat / Cool / Alarms | |

| DISPLAY | |
|---|---|
| Dimensions | 3,5” e 5,7” |
| Type | TFT colors LCD display, 1/4 VGA, touch screen |
| Keyboard | resistive touch screen, 6 mechanical keys, pressed key feedback (mod. 35CT) |
| Functions | data display, PV+SP graphics, PV+SP bargraph, Pout% bargraph, alarms, password, RTC calendar |

| FUNCTIONS | |
|---|---|
| Main input security | sensor open or in short circuit (SBR) |
| Main output security | control loop open (LBA) |
| Actuator/load safety | load interrupted alarm (even partial) with inputs from CT and alarm outputs |
| Regulation | ON/OFF, Proportional (P), Proportional Derivative (PD), Proportional Integral Derivative (PID) Heat, Cool, Heat/Cool with double independent PID |
| Tuning | selftuning, autotuning, one shot autotuning |

| MULTILOOP | |
|---|---|
| Number of loops | from 4 to 16 |
| GFX communications | with Modbus RTU (RS485) |
| Double setpoint SP/SP2 | available |
| UP/DOWN SP working | available |
| ON/OFF single Loop | available |
| Data logging | available |
| Multilanguage | available |
| Save config. parameters | to internal solid disk, can be copied to USB flash drive |
| Save recipes | to internal solid disk, can be copied to USB flash drive |

| SERIAL COMMUNICATION | |
|---|---|
| Type | RS485, port Ethernet, port USB |
| Protocol | Modbus RTU, Modbus TCP |

| GENERAL DATA | |
|---|---|
| Format | 96x96mm (3,5”) / 169x120mm (5,7”) |
| Front protection | IP65 |
| Mounting | panel (and on DIN bar in case of distributed solution) |
| Power supply | 24V dc |
| Certifications | CE, UL |

GEFRAN


**Headquarter**
**GEFRAN Spa**
Via Sebina, 74
25050 PROVAGLIO D'ISEO (BS) ITALY
Ph. +39 03098881
Fax +39 0309839063
info@gefran.com

**Drive & Motion Control Unit**
Via Carducci, 24
21040 GERENZANO (VA) ITALY
Ph. +39 02967601
Fax +39 029682653
info.motion@gefran.com


www.gefran.com


**GEFRAN BENELUX**
Lammerdries-Zuid 14A
B-2250 OLEN
Ph. +32 (0) 14248181
Fax. +32 (0) 14248180
info@gefran.be

**GEFRAN BRASIL ELETROELETRÔNICA**
Avenida Dr. Altino Arantes,
377/379 Vila Clementino
04042-032 SÃO PAULO - SP
Ph. +55 (0) 1155851133
Fax +55 (0) 1132974012
gefran@gefran.com.br

**GEFRAN DEUTSCHLAND**
Philipp-Reis-Straße 9a
63500 SELIGENSTADT
Ph. +49 (0) 61828090
Fax +49 (0) 6182809222
vertrieb@gefran.de

**GEFRAN SUISSE**
Rue Fritz Courvoisier, 40
2302 LA CHAUX-DE-FONDS
Ph. +41 (0) 329684955
Fax +41 (0) 329683574
office@gefran.ch

**GEFRAN FRANCE**
4, rue Jean Desparmet - BP 8237
69355 LYON Cedex 08
Ph. +33 (0) 478770300
Fax +33 (0) 478770320
commercial@gefran.fr

**GEFRAN UK Ltd**
7 Pearson Road - Central Park
Telford - TF2 9TX
Ph. +44 (0) 8452 604555
Fax +44 (0) 8452 604556
sales@gefran.co.uk

**GEFRAN S.p.A.**
Sucursal en España
Calle Vic, números 109-111
08160 - MONTMELÓ - (BARCELONA)
Ph. +34 934982643
Fax +34 935721571
comercial.espana@gefran.es

**SIEI AREG - GmbH**
Gottlieb-Daimler Strasse 17/3
D-74385 - Pleidelsheim
Ph. +49 (0) 7144 897360
Fax +49 (0) 7144 8973697
info@sieiareg.de

**GEFRAN SIEI - ASIA**
Blk.30 Loyang Way
03-19 Loyang Industrial Estate
508769 Singapore
Ph. +65 6 8418300
Fax +65 6 7428300
info@gefransiei.com.sg

**GEFRAN SIEI Electric**
(Shanghai) Pte. Ltd.
No.1285, Beihe Road, Jiading
District, Shanghai, China 201807
Ph. +86 21 69169898
Fax +86 21 69169333
info@gefransiei.com.cn

**GEFRAN SIEI Drives Technology**
(Shanghai) Co., Ltd
No.1285, Beihe Road, Jiading
District, Shanghai, China 201807
Ph. +86 21 69169898
Fax +86 21 69169333
info@gefransiei.com.cn

**GEFRAN INDIA Pvt. Ltd.**
Survey No.: 182/1 KH, Bhukum
Paud Road, Taluka, Mulshi
Dist.Pune-411042, MH, INDIA
Ph. +91 20 3939 4400
Fax +91 20 3939 4401

**GEFRAN Inc.**
**Sensors and Automation**
8 Lowell Avenue
WINCHESTER - MA 01890
Toll Free 1-888-888-4474
Fax +1 (781) 7291468
info@gefraninc.com

**GEFRAN TAIWAN**
Rm. 3, 9F., No.8, Ln. 157, Cihui 3rd St.,
Zhongli City,
Taoyuan County 320, Taiwan (R.O.C.)
Tel/Fax +886-3-4273697
dino.yeh@gefransiei.com.sg


## AUTHORIZED DISTRIBUTORS

Argentina
Austria
Australia
Bosnia/Herzegovina
Bulgaria
Canada
Chile
Cyprus
Colombia
Croatia
Czech Republic
Denmark
Egypt
Finland
Greece
Hong Kong
Hungary
Iran
Israel
Japan
Jordan
Korea
Kosovo
Lebanon
Macedonia
Malaysia
Maroc
Mexico
Montenegro
New Zealand
Norway
Peru
Poland
Portugal
Rumania
Russia
Saudi Arabia
Serbia
Singapore
Slovakia Republic
Slovenia
South Africa
Sweden
Sri Lanka
Thailland
Tunisia
Turkey
Ukraine
United Arab Emirates
Venezuela

COD. 80261E - 10/2011