GEFRAN

GF_PROMER

Graphic setpoint programmer, 4 zones
3.5” and 5.7” screens, TFT, Colour, Touch screen

Main applications

- *Furnaces for heat treatment of metals*
- *Laboratory furnaces for material tests*
- *Furnaces for tempering, aging, sintering*
- *Climate cells*
- *Test benches*
- *Incubators*
- *Autoclaves*
- *Dryers*
- *Greenhouses*
- *Chemical and pharmaceutical industry*
- *Pasteurizers, sterilizers, food aging plants*

Main characteristics

- *Colour graphics screens, TFT, 3.5” and 5.7” touch screen*
- *Simplified programming with complete, direct messages and icons*
- *“Centralized” and “distributed” control architectures*
- *Flexibility in selection of Gefran “Geflex” and “Gilogik II” series input/output modules*
- *Up to 300 steps in 100 programs*
- *Free configuration of step sequence repetitions and entire programs*
- *Up to 4 control loops with setpoint profile*
- *16 programmable enable inputs, 16 programmable event outputs for each step*
- *On-line trend for variables and setpoints, with selectable channels and zoom*
- *Programmed setpoint profile trend*
- *PV, SP and Power% bargraph with selectable channels*
- *Active alarms control*
- *Data and parameter saving on USB key*
- *Ability to add auxiliary I/O for program control, enable inputs, event outputs*
- *Functions: Self-tuning / Auto-tuning, Soft-start, sensor diagnostics, solid state actuator diagnostics*
- *Communications lines: Ethernet, Modbus RTU, Modbus TCP, Profibus DP*
- *USB port for SW updates*

PROFILE

GF_PROMER is a time-variable setpoint programmer, 4-loop controller, graphic trend and bargraph display, all in a single device with data saving functions. The user interface, based on an LCD TFT colour touch screen (3.5” and 5.7”), is extremely simple to use.
Configuration menus are identified by keys and icons that give immediate access to work program creation pages.
Every program is identifiable with a number and a name, a time base definable in days/hours, hours/min, min/sec, different start and stop strategies. In addition, a number of cyclical repetitions of the program can be set. The programs are in easily scrollable list form and are selected directly on the screen.
The steps are configured the same way with numbers and name, with up to 4 setpoint values for the 4 available loops, and step duration in the time base for the selected program.
Cyclical repetitions of a sequence of contiguous steps can be easily created.
To facilitate and speed up programming, there are copy, delete, and add functions for both steps and programs.
When a program has been created, it can immediately be displayed in trend form to intuitively display correctness of the programming.
The program to be run can be selected from the programs list (from screen or digital inputs) and the Monitor page is automatically called up, from which all of the main process data are controlled.
The monitor page is divided into two parts and simultaneously shows, in trend form, the trend of controlled variables (at the left of the screen) and of programmed setpoints (on the right).
The data are always based on the real time seen at the center of the page.
The top of the page shows basic data on program name and run state, plus lapsed and remaining time. The monitor page can be adapted to display needs at any time: buttons let you display / hide trend tracks, while a zoom key lets you expand the time base to the value required.
States of enable inputs and event outputs are displayed graphically for each step being run, and the steps are highlighted by name or number on the screen.
Loop engineering scales are independent and each value can be represented on graphs and bar graphs.
The “Hold Back Band” function, independently settable with different values for each step of each loop, checks that the variables trend remains in the defined tolerance “window,” blocking execution of the program if maximum deviation is exceeded.
Bargraph display pages for channels offer immediate data on analog indicators, with different colors to identify heating and cooling phases, and deviation between PV and SP, while a specific bargraph displays output power level.
These pages are also adaptable to the application via buttons, which display zones freely, from 1 to 4.
Under the conditions required, manual variations of setpoint, supplied power, and PID values can be made on the page for each zone.
GF_PROMER provides complete alarms control, with recognition functions, protection of the entire application based on various password levels, and saving of historical data, programs, settings, via USB key.
The choice of “distributed” or “centralized” control architecture makes GF_PROMER flexible and adaptable to equipment with various performance and modularity requirements.

CONTROLLER

Advanced control algorithms provide excellent management of process variables.
Various types of control are available: ON/OFF, P, PI, PID both only heat or cool and double-action heat+ cool.
In addition, the cool action can be set via indication of the cooling fluid used: air, oil, water.
Calculation of the most appropriate process parameters is extremely rapid and efficient thanks to the use of sophisticated automatic tuning procedures. Advanced tuning lets you check the best PID parameters under all conditions.

ALARMS

Two alarm setpoints (minimum and maximum) for each zone.
For each alarm, you can select:
- the control variable to assign to it
- setpoint value
- hysteresis value
- 5 properties (with latch, disable at switch-on, normal/symmetrical, absolute / deviation, direct/inverse).
You can set LBA, HB, SBR alarms: alarm presence is displayed with an icon and described on the alarms page.

TECHNICAL DATA

OPERATOR INTERFACE

DISPLAY

Type:	TFT Colour
Nr.colors:	262K
Diagonal:	3,5” (35CT) - 5,7” (57CT)
view area display:	70,08 x 52,56 mm (35CT) 117,2 x 88,4 mm (57CT)
Resolution:	320x240
Luminosity:	300 cd/mq (35CT) 500 cd/mq (57CT)
Contrast:	200:1 (35CT) 400:1 (57CT)
Backlighting:	8 white LEDs (35CT) 18 white LEDs (57CT)
Angle of view O/V:	45°/15°-35°(35CT) 75°/60°-75° (57CT)
Keyboard:	6 keys (35CT) no keys (57CT)
Operations:	> 3 million

TOUCH SCREEN

Type:	Resistive, 4 wires
Life:	>1,000,000 operations
Controller:	integrated

PROCESSOR

Type: EP9307 Cirrus Logic

MEMORY

System:	64MB (DRAM)
User:	256KB (SRAM)
Mass:	64MB (FLASH)

PERIPHERALS

Ethernet:	Ethernet 10/100 Mbps Base-T - RJ45 Connector with led
Serial:	RS485 optically isolated, baud rate 9,6…115 kBaud, RJ10 4p4c connector (*only with distributed control)*)
USB Port:	USB 2.0 HOST (500mA) type A 4 pin connector
BUS for I/O:	Expansion for L-BUS4, 50 pin connector

OS SUPPORTED: Linux

POWER SUPPLY

24Vdc ± 25% (3 pin female screw-type connector)

Max consumption:
240mA 5W (35CT)
480mA 8,5W (57CT)

Max. consumption with I/O:
360mA 7W (35CT)
490mA 9W (57CT)

Protection: from polarity inversion (both) overcurrents on input circuit (57CT)

Battery: Lithium Manganese Dioxide 3V 65mA/h rechargeable (ML2032T6) life without power supply > 7500h Expected life 7 years Low-voltage signal

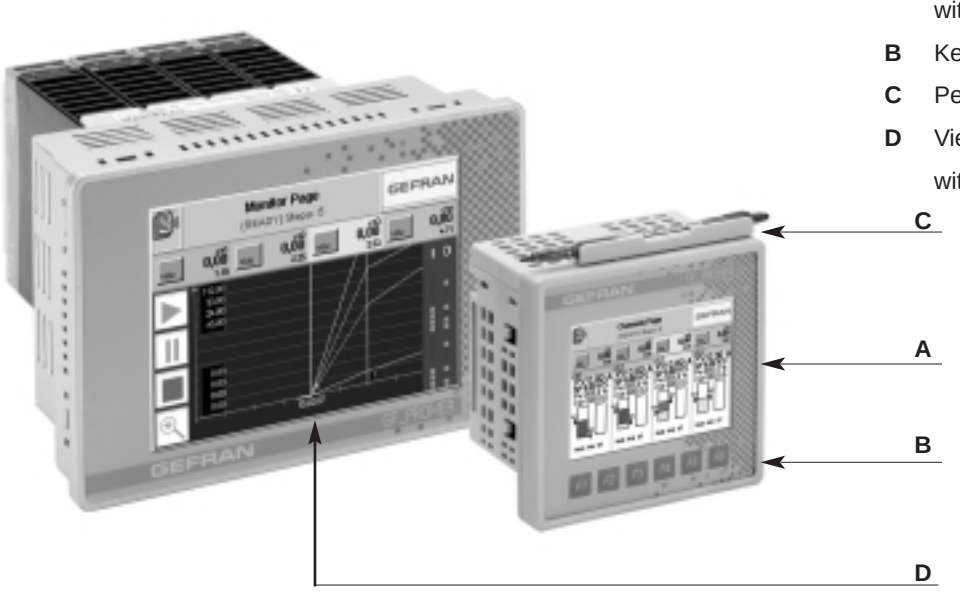
WEIGHT

(Kg): 0,4 (35CT) - 0,8 (57CT) With 4 GilogikII modules (Kg) 1 (35CT) - 1,4 (57CT)

GENERAL INFORMATION

Front:	100x100x64mm (35CT) 169x120x76mm (57CT) Protection IP65
with Gilogik II modules:	100x100x171mm (35CT) 169x120x187 mm(57CT)
Template:	93x93mm (35CT) 162x115mm (57CT)
max panel thickness:	4mm (35CT) 3mm (57CT)
Certifications:	CE, UL

DESCRIPTION OF FRONT PANEL



A Viewable area LCD TFT color 3.5” with touch-screen

B Keyboard 6 keys

C Pen for touch-screen

D Viewable area LCD TFT color 5.7” with touch-screen

OPTIONAL UNITS / MODULES

- Unit for distributed control

• GFX Controller for DIN bar

• GFX4 zone modular power controller

• GFXTERMO4 Modular controller with 4 control zones (see the individual data sheets for characteristics of modular controllers)

- Modules for integrated control

the following modules are inserted in Backplane L-BUS4 (slot 1-2-3)

• **R-TC8:** module with processor with 8 temperature inputs, configurable via software and optically isolated, plus 16 digital outputs for temperature control.

• **R-MIX:** module with optically-isolated inputs/outputs.
Resources in the standard configuration for GF_LOOPER are:
4 configurable analog inputs, 8 digital inputs and 8 digital outputs.

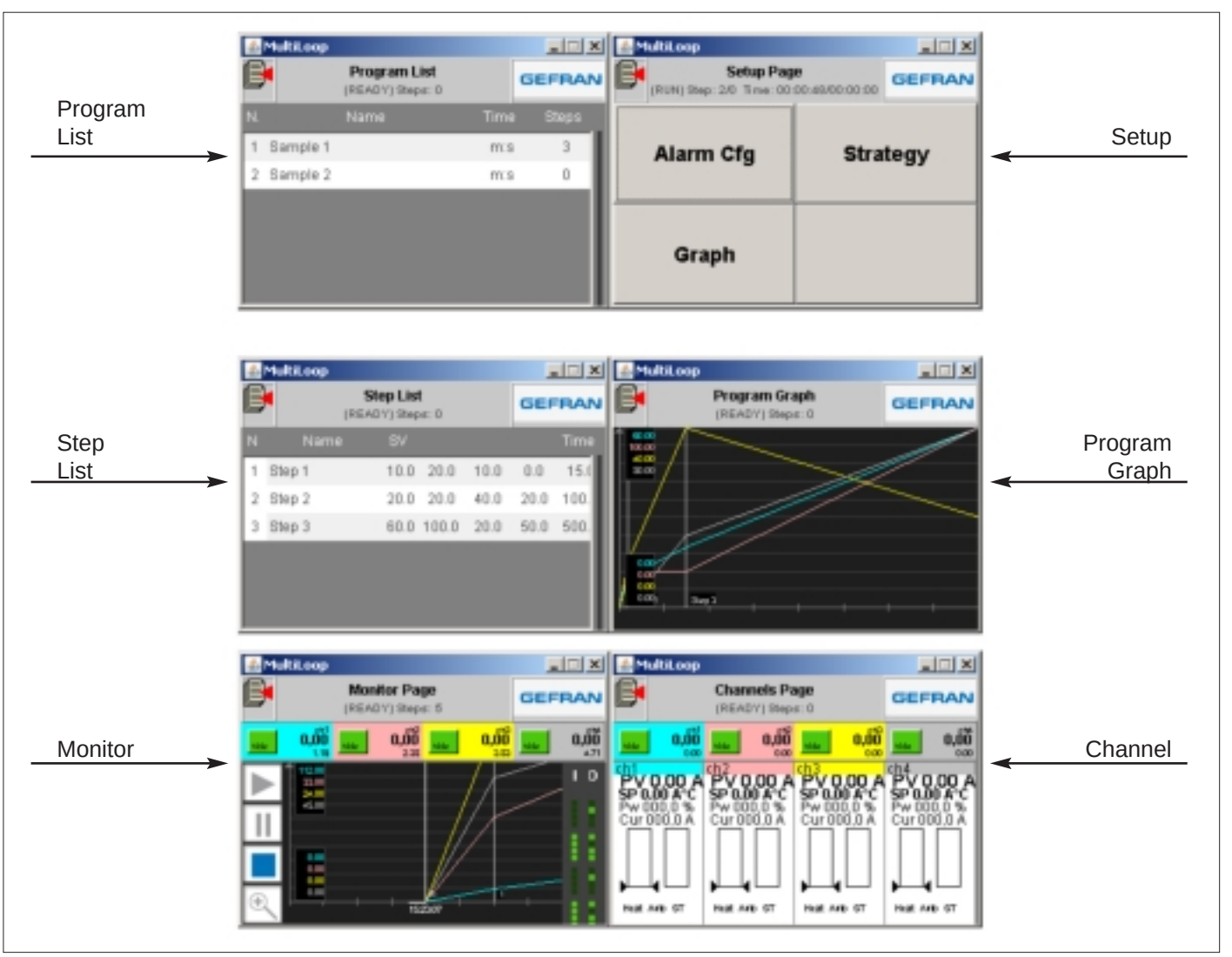
• **R-EU16:** mixed module with 8 digital inputs and 8 digital outputs.
The 24V PNP inputs have a programmable software filter.
The module is organized in 8 inputs + common GND and 2 groups of 4 outputs.
The PNP outputs are provided for inductive loads and protected against short circuit, overload and overheat.

For the Fieldbus option, the following modules are inserted in the Backplane
L-BUS4 (slot 4):
R-GPBs2 (Profibus DP slave)
See the individual data sheets for characteristics of modules.

Characteristics	R-TC8	R-MIX	R-EU16
Inputs			
Analog inputs	8 TC	4 configurable analog inputs	
A/D	24 bit	16 bit	
Type	TC J TC K	linear:10V, power, 2.5V, 20mA differential 60mV, Strain-gauge with full-scale 25 and 100mV , TC type J K R S T, PT100 and PT1000	
Scale	CT type J (0.0 – 800.0 °C / 1470.0 °F) TC type K (0.0 – 1200.0 °C / 2190.0 °F)		
Acquisition time	< 200 msec for 8 channels		
Max input frequency	20 Hz		
Input impedance	> 1 Mohm	> 1 Mohm	
Accuracy	better than 0,5%	better than 0,5%	
Room temp. compensation	Integrates	Integrates	
CT input isolation	> 2 KV	> 2 KV	
CT inputs TA		2	
Input impedance		50 ohm	
Digital input(s	1	8	8
Type and power supply	PNP 24 Vdc ± 25%	PNP 24 Vdc ± 25%	PNP 24 Vdc ± 25%
Max voltage	32Vdc 25mA max	32Vdc 25mA max	32Vdc 25mA max
Protection	Polarity inversion	Polarity inversion	Polarity inversion
Input trigger	L <= 12Vdc H >= 15Vdc	L <= 5Vdc H >= 11Vdc	L <= 12Vdc H >= 15Vdc
Filters	1,5KHz	50KHz (1…4), 5KHZ (5…8)	100Hz , 5KHz select. Software
Input overvolt. for 1msec			max 1KV
Optical isolation	> 2 KV	> 2 KV	> 3KV
Outputs			
Digital	16	8	8
Type and power supply	Source 24Vdc ±25%	Source 24Vdc ±25%	Source 24Vdc ±25%
Max current per output	2 A	0,5 A	2A
Max total current	6 A	5A	8A
Max corrent per group	4 A		5A
Optical isolation	> 3 KV		>3KV

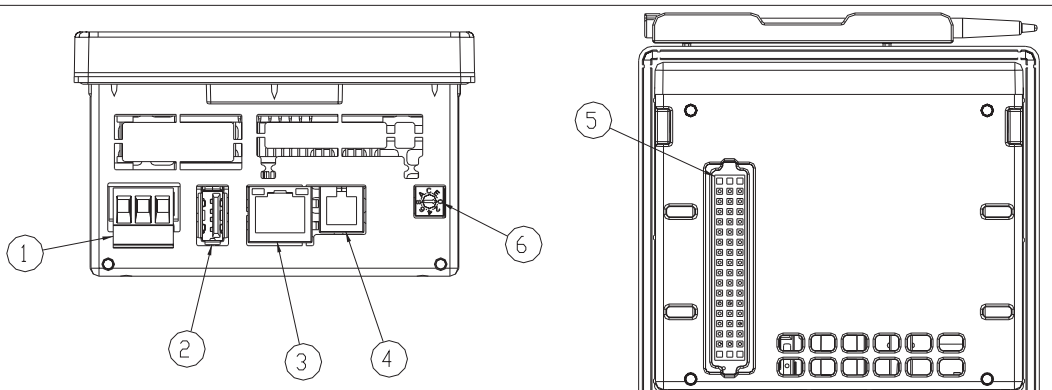
Characteristics	R-TC8	R-MIX	R-EU16
Organization of groups	group 1 (outputs 1,2,3,4) group 2 (outputs 5,6,7,8) group 3 (outputs 9,10,11,12) group 4 (outputs 13, 14, 15 , 16)		group 1 (outputs 1,2,3,4) group 2 (outputs 5,6,7,8)
Current prot. per output	> 2,2 A	1,2 A	2,2A
Output overvolt. for 1msec			>1KV
Outputs			
Analog		2	
D/A		16 bit	
Type		±10V max 20mA ± 20mA (max 600 ohm)	
Isolation		> 2KV	
Diagnostics – Mechanicals Ambient conditions			
Signal and diagnostics	Led	Led	Led
Dimensions	92x90x25,4 mm	92x90x25,4 mm	92x90x25,4 mm
Weight	130 g	130 g	130g max
Installation	Snaps on L-BUS4	Snaps on L-BUS4	Snaps on L-BUS4
Connector(s)	36-pin spring lock	36-pin spring lock 8-pin screw for relay outputs (option)	20-pin spring lock
Protection	IP20	IP20	IP20
Working temperature	0- 50°C	0- 50°C	0- 50°C
Humidity	Max 90% Ur non-condensing	Max 90% Ur non-condensing	Max 90% Ur non-condensing

EXAMPLES OF GRAPHICS PAGES



USER CONNECTIONS

The user resource connections indicated in Table 4 are made at the bottom with standard connectors and Gefran custom connectors.



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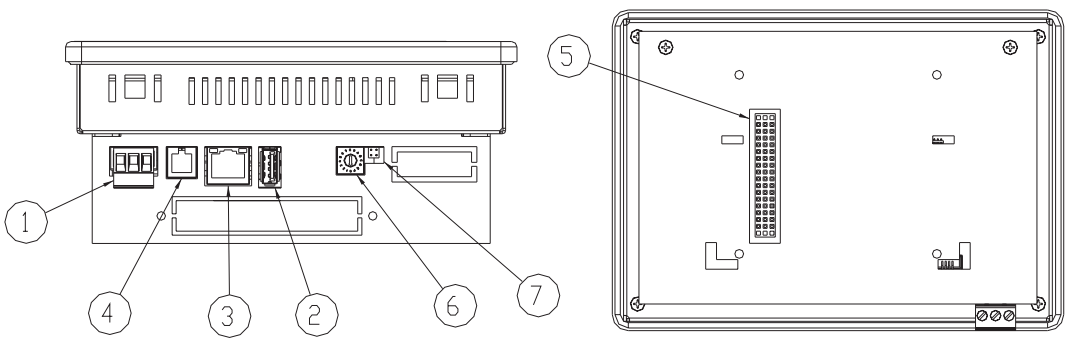
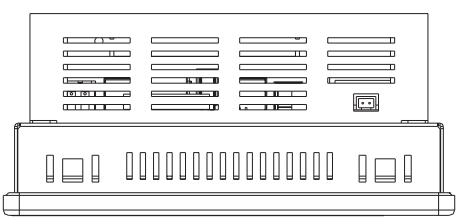


Name	Description
1	Power supply
2	USB
3	Ethernet 10/100
4	Serial RS485
5	BUS-G
6	Rotary-switch
7	Battery enable

Description of connectors



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Connection with optional units / modules

For all information on connecting:

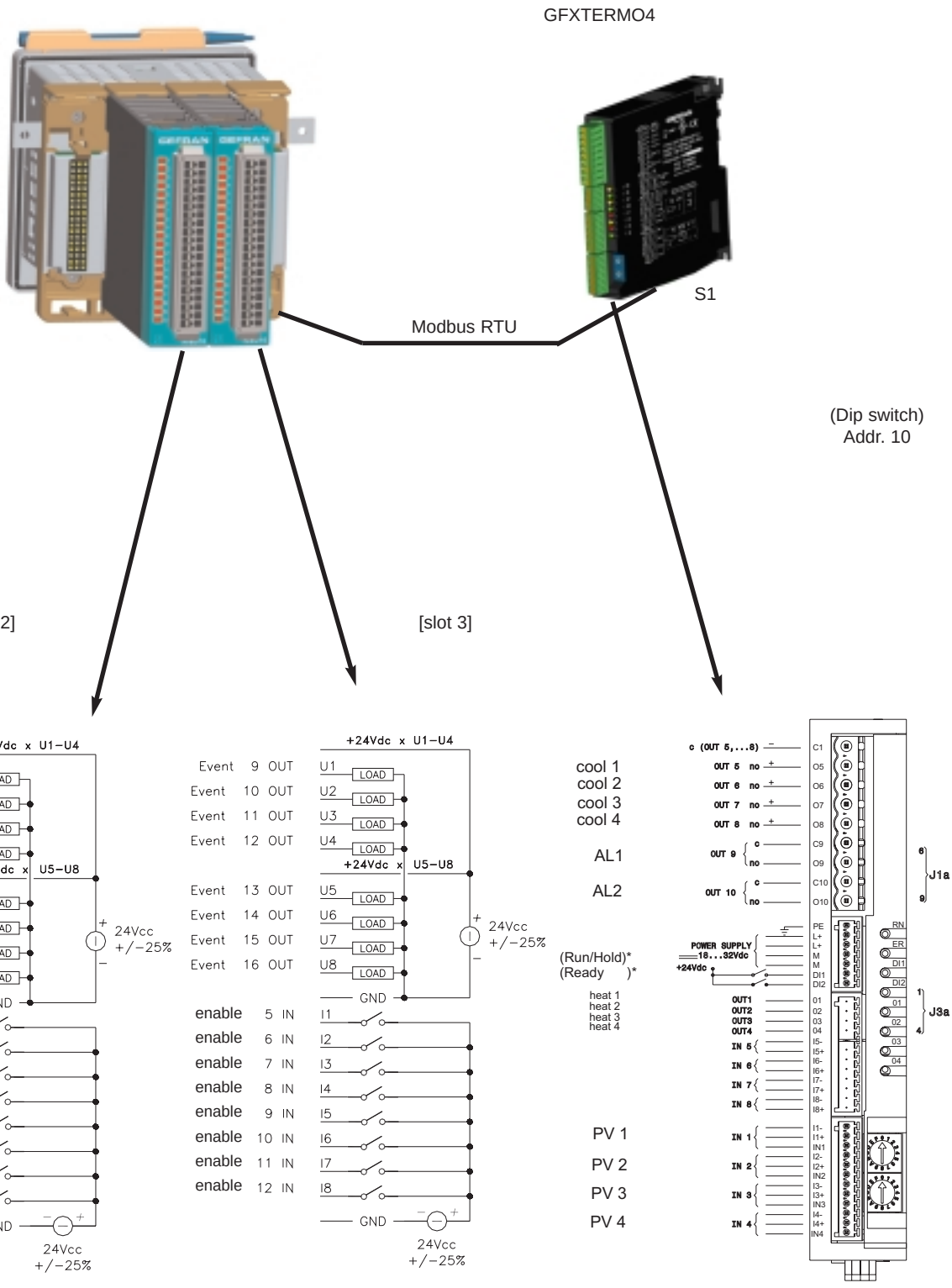
- Backplane L-BUS4
- GFX
- GFX4
- GFXTERMO4
- R-TC8
- R-MIX
- R-GPBs2

see the data sheets and manuals.

CONNECTION DIAGRAMS

Connection with GFXTERMO4 unit (distributed control)

GF_PROMER XXCT LX0 0 2 x x x x con 1 GFXTERMO4 unit)

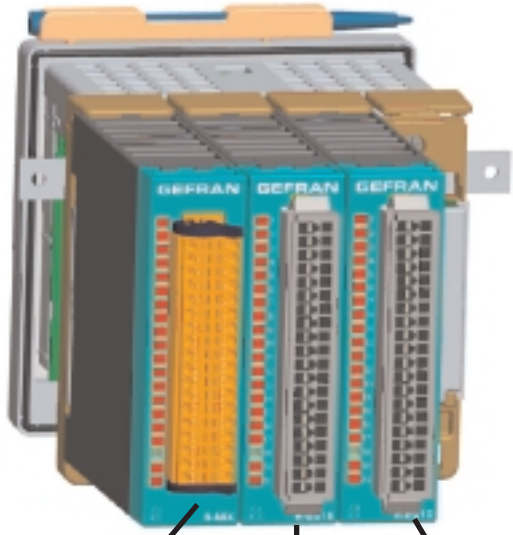


AL1 = OR alarms 1 and 3 of zone 1-4
AL2 = OR alarms 2 of zone 1-4
* absent with R-EU16 model

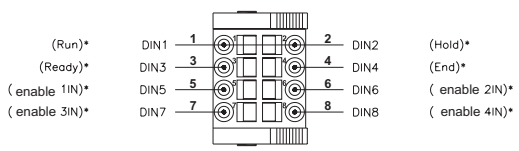
CONNECTION DIAGRAMS

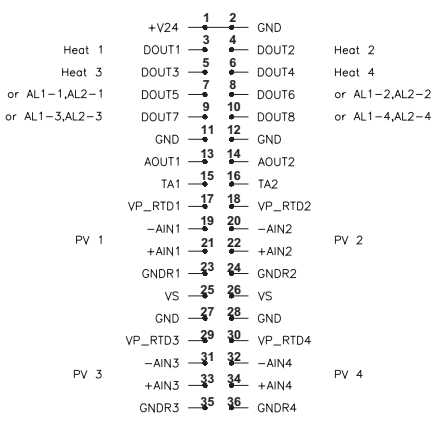
Connection with GFXTERMO4 unit (distributed control)

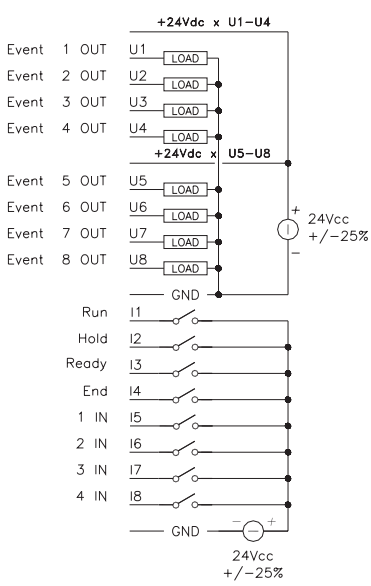
GF_PROMER xxCT LX0 4 2 x x x x (1 R-MIX module , 2 R-EU16 modules inserited in L-BUS4 backplane)

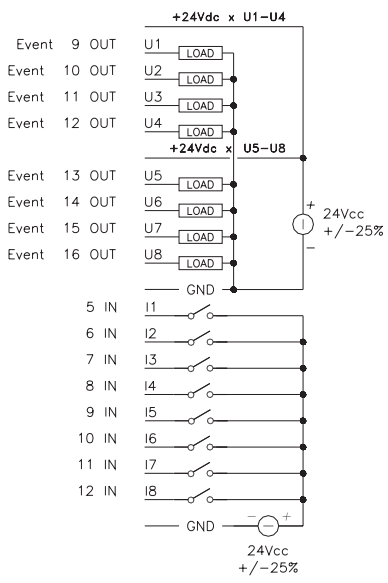


[slot 1] [slot 2] [slot 3]









()* with module R−EU16

CONNECTION DIAGRAMS

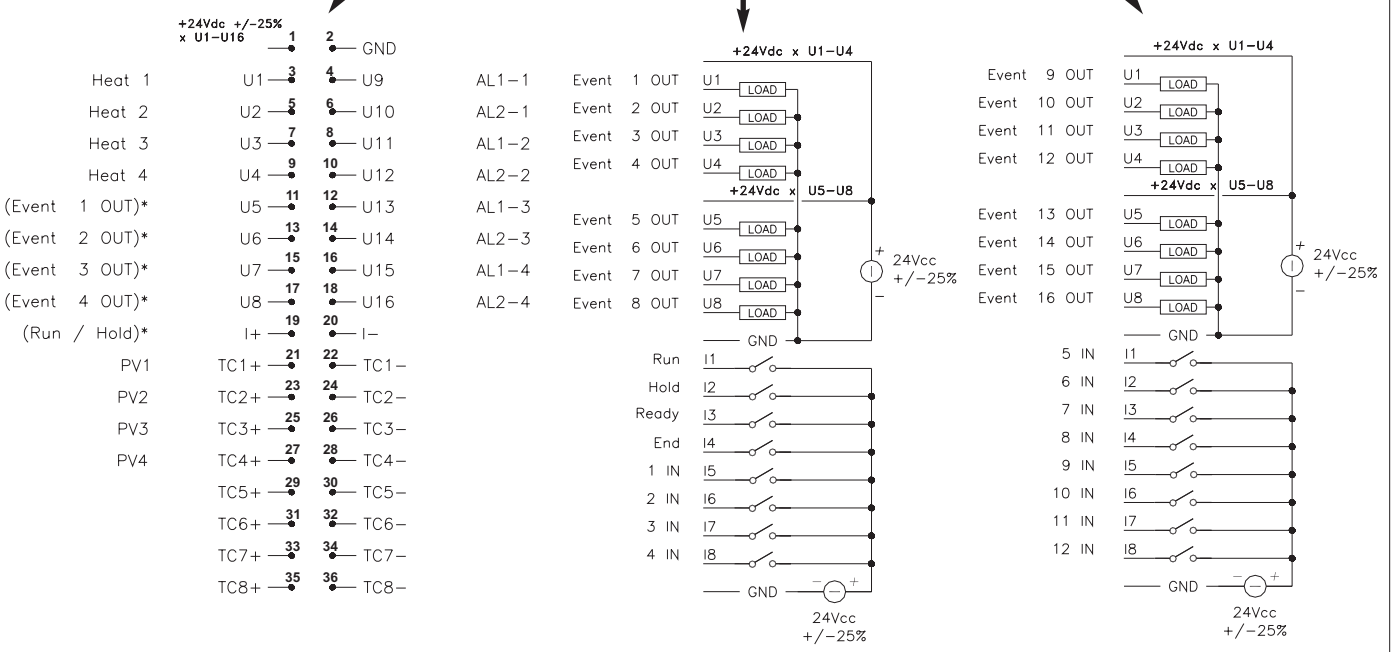
Connection with GFXTERMO4 unit (distributed control)

GF_PROMER xxCT LX0 3 2 x x x x (1 R-TC8 module , 2 R-EU16 modules inserited in L-BUS4 backplane)

[slot 1]

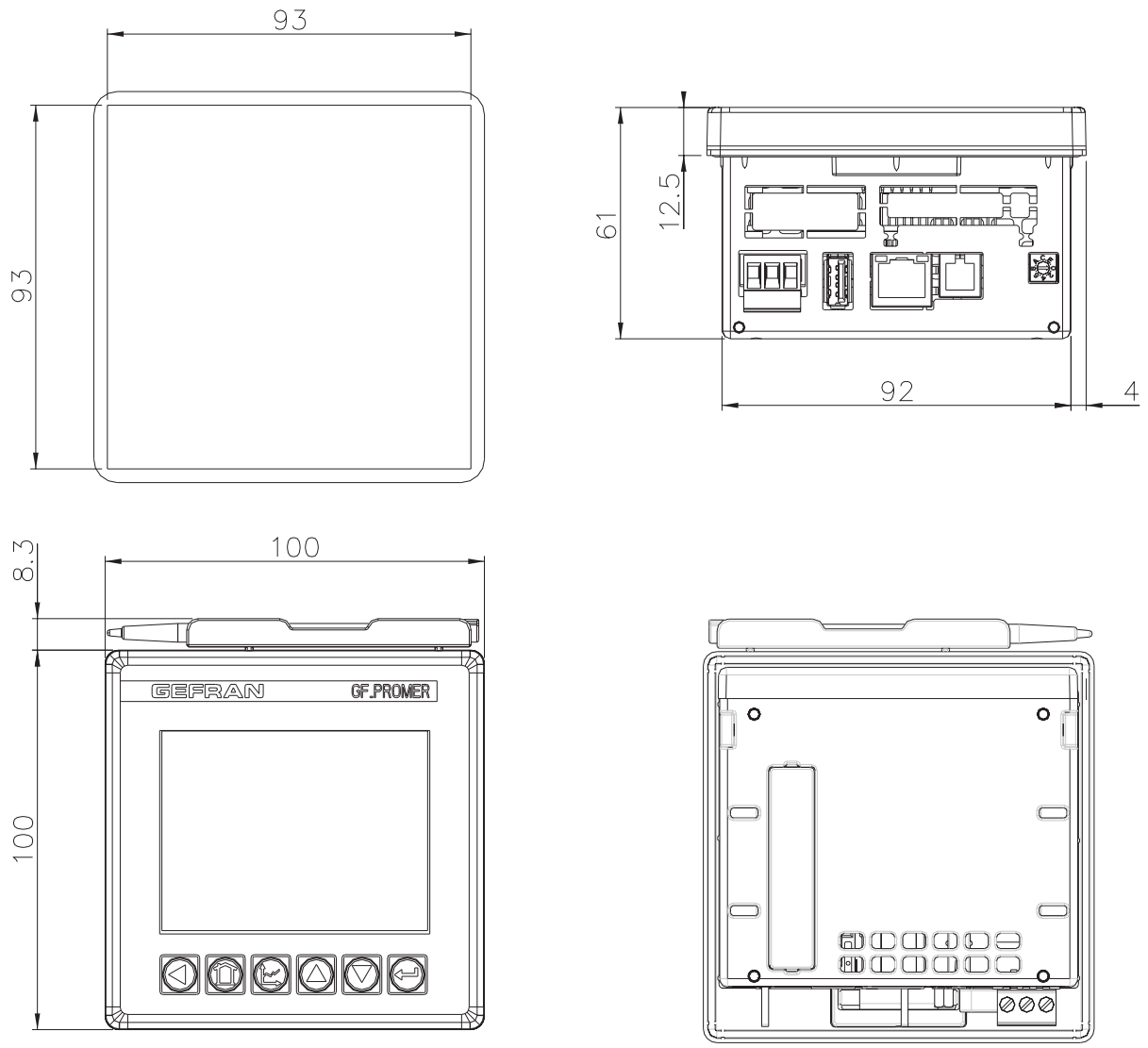
[slot 2]

[slot 3]

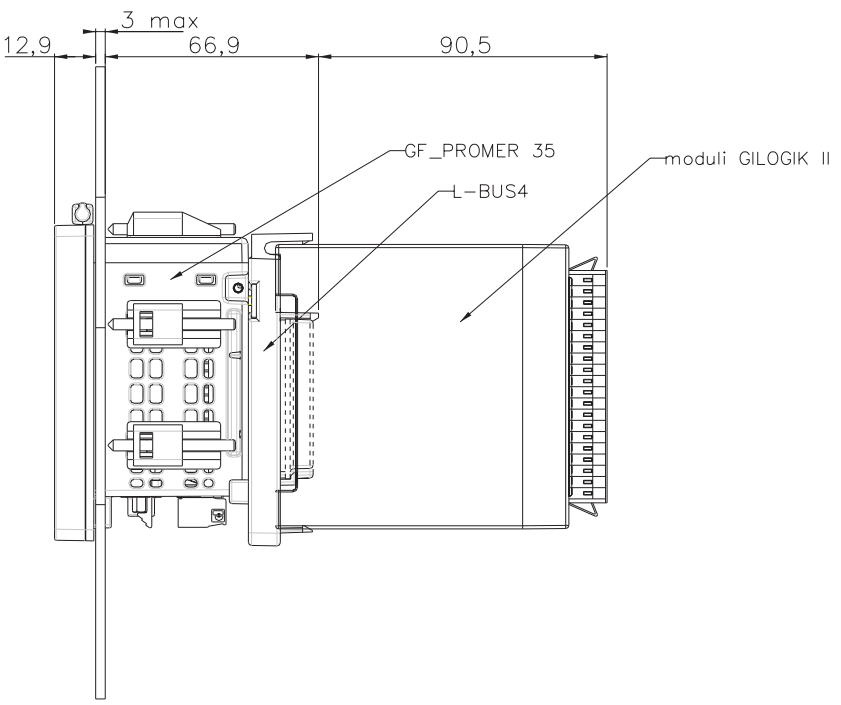


()* with module R-EU16

OVERALL DIMENSIONS AND TEMPLATE

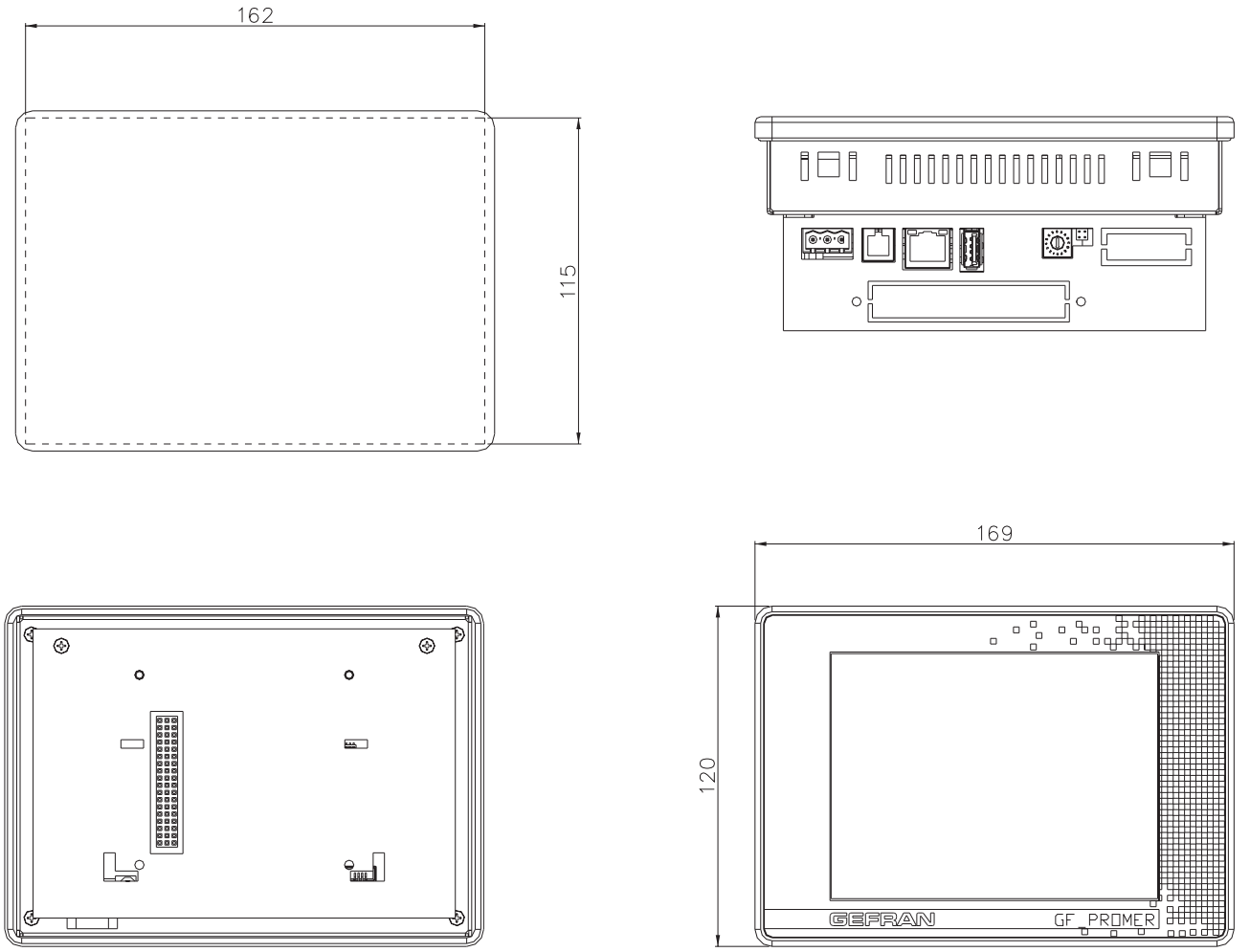


Physical dimensions and for drilling template - 35CT -

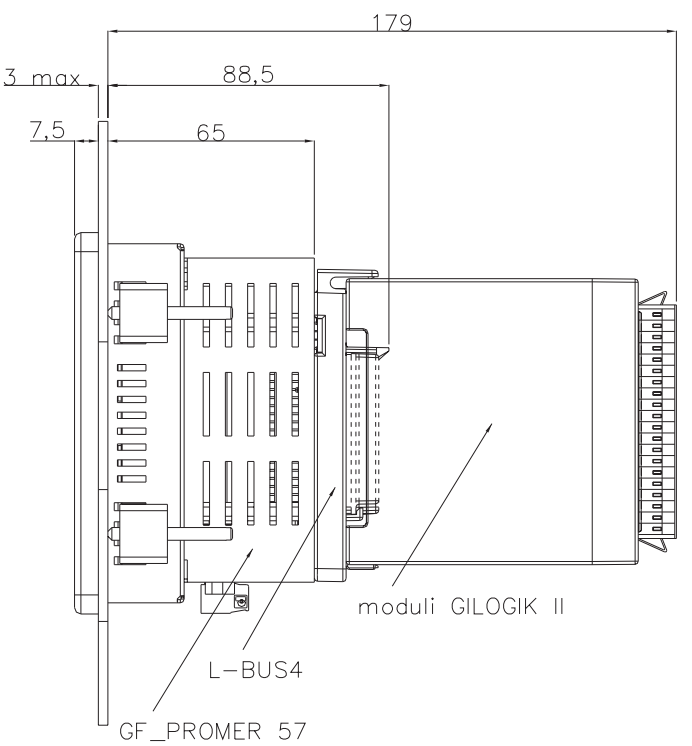


Overall dimensions - 35CT -

OVERALL DIMENSIONS AND TEMPLATE



Physical dimensions and for drilling template - 57CT -



Overall dimensions - 57CT -

ORDER CODE

GF_PROMER [ ] **LX0** [ ] [ ] [ ] [ ] [ ] [ ] [ ]

DISPLAY	
3,5”colour + touch screen	35CT
5,7”colour + touch screen	57CT

CONTROL TYPE	
Distributed (unit connected via RS485 serial) With GFX / GFX4 / GFXTERMO4	0
Integrated (modules inserted in L-BUS4 backplane,slot1) 4 zones with R-TC8 module (8 inputs TC,J/K,1DI, 16DO)	3
4 zones with R-MIX module (4 inputs TC RTD mA V , 2 analog outputs, 8DI/8DO)	4

ENABLE INPUTS / AUXILIARY EVENT OUTPUTS (GilogiKII module(s) included in supply, with L-BUS4 backplane, SLOT 2 and 3)	
none	0
8DI+8DO (1 R-EU16 module in slot 2)	1
16DI+16DO (2 R-EU16 module in slot 2-3)	2

Fieldbus (con backplane L-BUS4, slot 4)	
None	0
Profibus DP slave	P

Additional SW options	
None	0

USB Port	
Absent	0
USB	U

LEXAN	
Gefran	G
Neutre	N

Please contact GEFRAN for information regarding availability of codes

GEFRAN spa reserves the right to make aesthetic and/or functional changes at any time and without notice.

CE The instrument conforms to the European Directives 2004/108/CE and 2006/95/CE with reference to the generic standards:
- CEI-EN 61000-6-2 (immunity in industrial environments) - **EN 50081-1** (emission in residential environments) - **EN 61010-1** (safety)

GEFRAN

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