GEFRAN

GF_LOOPER

Multiloop Graphic Controller, 4-8-12-16 zones 3.5” and 5.7” screens, TFT, color, touch screen

Main characteristics

- *Color graphics screens, TFT, 3.5” and 5.7”, touch screen*
- *Simplified programming with numeric and alphanumeric keyboards, ticks, direct complete messages and icons*
- *Integrated and distributed control architectures*
- *Flexible selection of control modules in “Geflex” Gefran serie*
- *Preloaded applications: 16 loops*
- *Operation with double setpoint preimp state and shared up/down for all setpoints*
- *Shared pages for supervisions of multiple zones and single pages for each zone*
- *Bargraph for % output power and deviation*
- *Active and historic alarms management*
- *Storage of recipes and configuration parameters on USB key*
- *Functions include Self-tuning/Auto-tuning, Softstart, sensor diagnostics, solid state actuator diagnostics*
- *Communication lines on Ethernet, Modbus RTU, Modbus TCP, Profibus DP, USB port*
- *Data acquisition and recording*
- *On-line trend of variables and setpoints, with selectable channels and zoom*

Main applications

- *Temperature control of small extruders*
- *Thermoformers*
- *Temperature control of hot runners for injection presses*
- *Multizone furnaces*
- *Dryers*

PROFILE

GF_LOOPER is an advanced series of multi-runner controllers offered in 16 zone configurations, with complete and easy to use functions for a variety of applications.
The operator interface is based on an LCD TFT color touch screen, 3.5” and 5.7”, designed for very easy use.
The work and configuration pages are identified by keys with intuitive icons that give immediate access to selected functions.
Predefined password levels, compatible with operator authorization, guarantee controlled access to functions.
The supervision pages offer a complete view of the zones, each with its own PV, SP, output power, and main alarms status levels.
All of the control zones can be switched on or off with a single button, and all of the setpoints can be simultaneously changed by the same engineering quantity with two up/down keys.
Selecting the page of a single zone displays the status of all of its parameters, with PV and SP in different colors and a bargraph for intuitive indication of shifts and of the power %.
An icon constantly signals zone status and any fault conditions, such as input interrupt, short circuit, partial or total load interrupt.
If the password level is compatible, the SP, alarm thresholds, AUTOmatico/MANuale status can be changed and the zone switched on/off from this page.
The various pages can be selected directly from the touch screen and, with the 3.5” model, also with 6 mechanical keys with pressed key feedback.
The ability to name and save entire recipes of work parameters for all of the zones provides quick and simple management of device setup for various processes and guarantees error-free operation at all times.
Alarms are displayed on specific screens with clear messages and can be recognized and reset with keys.
Five passwords are provided for different protection levels, ranging from maximum protection (allowing only the active setpoint to be changed) to a level giving access to all parameters.
The data storage page lets you save both work parameters and HW configuration parameters in separate files.
Saving the configuration parameters simplifies replacement of an I/O module with Hot Swp functions.
A Trend display page shows the trend of controlled variables, with various colors and the ability to zoom on duration of graphics, with configurable sample time and data saving on USB key in CSV format.
For greater flexibility, GF_LOOPER offers a clock/calendar function that switches all of the zones on/off at preset times and days of the week.Different types of control can be selected for each zone, from simple ON/OFF to precise Heat/Cool control with individual double PID.
Selection of optimum control parameters for each zone is made easier by Selftuning and Autotuning functions, activated by keys.
GF_LOOPER diagnostics always display any critical process conditions, such as interrupted or short-circuited inputs, and signal total and partial load break with video alarms and physical outputs.
Control of Modbus RTU serial communication signals any communication interrupts.
GF_LOOPER interconnects with other control systems, data storage systems,

and supervisors via Ethernet, RS485, and USB ports.
Available protocols: Modbus RTU (Master), Modbus TCP, Profibus DP.
The following functions can be activated for specific applications with hot runners: softstart, control with rapid burst firing for solid state relays and specific diagnostics to detect unwanted variations in power supply and input breaks, with ability to continue to supply average power calculated during the last 5 minutes of operation.
Choice of distributed control architecture makes GF_LOOPER a affidable, flexible solution adaptable to equipment of different sizes and with different performance and modularity requirements.

CONTROLLER

Advanced control algorithms provide excellent management of process variables.
Various types of control are possible: ON/OFF, P, PI, PID, both heat or cool only and heat+cool.
In addition, cooling can be set by specifying the fluid used: air, oil, water.
Calculation of the best process parameters is extremely rapid and efficient thanks to the use of sophisticated automatic tuning processes.
The use of advanced tuning lets you check the best PID parameters under all conditions.

ALARMS

Two alarm thresholds (minimum and maximum) for each zone.
For each alarm, you can select:
- the control variable to be assigned
- the threshold value
- the hysteresis value
- 5 properties (with latch, disable at power-on, deviation/symmetrical, absolute/relative, direct/inverse).
LBA, HB, SBR alarms can be set; the presence of the alarm is displayed on the screen via LEDs.

TECHNICAL DATA

OPERATOR INTERFACE

DISPLAY

Type:	TFT Color
No. colors:	262K
Diagonal:	3,5” (35CT) - 5,7” (57CT)
Display area:	70,08 x 52,56 mm (35CT) 117,2 x 88,4 mm (57CT)
Resolution:	320x240
Luminosity:	400 cd/mq (35CT) 500 cd/mq (57CT)
Contrast:	400:1 (35CT) 400:1 (57CT)
Backlighting:	8 white LEDs (35CT) 18 white LEDs (57CT)
Angle of view	
H/V:	75°/55°-75°(35CT) 75°/60°-75° (57CT)
Keyboard:	Number of keys 6 (35CT) absent (57CT)
Life:	> 3 million operations

TOUCH SCREEN

Type:	Resistive, four-wire
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 (*present only with distributed control*)
USB port:	USB 2.0 HOST (500mA) 4-pin type A connector
BUS for I/O:	Expansion for L-BUS4, 50 pin connector

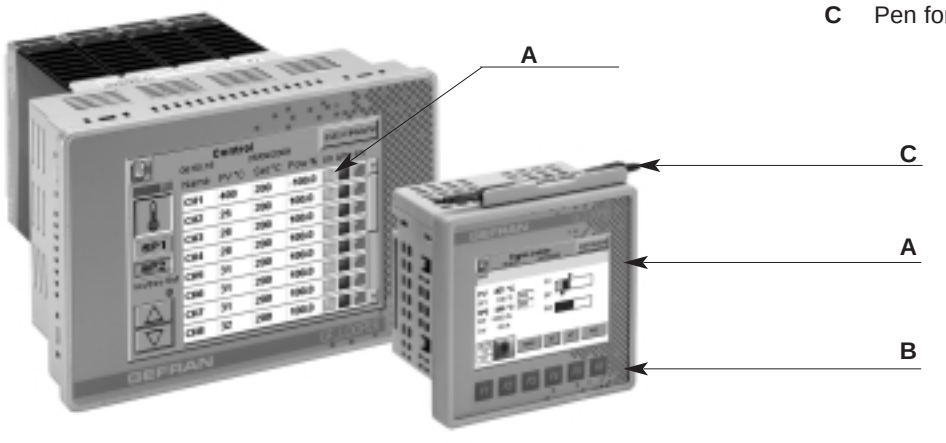
SUPPORTED OS: Linux

POWER SUPPLY

	24Vdc ± 25% (3-pin female screw connector)
Max. consumption:	
	240mA 5W (35CT) 480mA 8,5W (57CT)
Max. consumption with I/O:	
	360mA 7W (35CT) 490mA 9W (57CT)
Protection:	polarity inversion (both), input circuit overcurrent (57CT)
Battery:	Lithium Manganese Dioxide 3V 65mA/h rechargeable (ML2032T6) autonomy >7500h Expected life 7 years Low-power indication

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

FRONT PANEL DESCRIPTION



A LCD

B 6-key keyboard

C Pen for touch-screen

General information

Front panel: 100x100x64mm (35CT)
169x120x76mm (57CT)
IP65 protection level
with modules
GilogikII: 100x100x171mm (35CT)
169x120x187 mm(57CT)
Template: 93x93mm (35CT)
162x115mm (57CT)
Max panel
thickness: 4mm (35CT)
3mm (57CT)
Certifications: CE, UL

Optional units / Modules

- Units for distributed control
• GFX Controller for DIN bar
• GFX4/GF4-IR zone modular power controller
• GFXTERMO4 zone modular controller
(See the data sheets for characteristics of the modular controllers).
- Modules for integrated control
The following modules can be inserted in the L-BUS4 Backplane (slot 1-2-3-4)

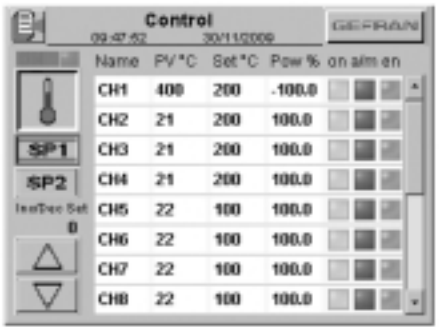
R-TC8 has a processor with 8 optically-isolated temperature inputs configurable via software, plus 16 digital outputs to manage temperature control.

R-TEMP4 has optically-isolated inputs/outputs.
Standard configuration resources for the GF_LOOPER are:
4 configurable analog inputs, 2 inputs for CT, 8 digital outputs.

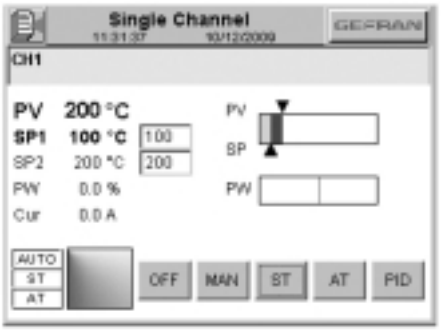
For the Fieldbus option, the following modules can be inserted in the L-BUS4 Backplane (slot 4)
R-GPBs2 (Profibus DP slave)
See the data sheets for characteristics of the modules.

Note:
The version with integrated PID control and on-board R-TC8 and R-TEMP4 cards is not available as standard.
Please check with GEFRAN for available versions.

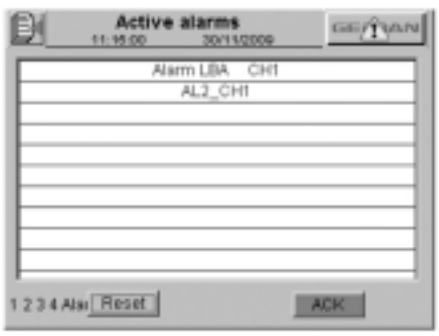
EXAMPLES OF GRAPHICS PAGES



Global view of 16 zones, each with its own controlled variable values (PV), Setpoint (Set), output power (Pow%), button to switch all zones on/off: the entire process is under control.



Single page for each zone; with settable setpoint (SP), load current read (A), display of Pout and deviation with con bargraph, zone Man/Auto button, icons for zone status.
Ability to preset two setpoints (SP1/SP2) for each zone, selected from keys SP1/SP2 in the Control page (Controllers): fast switching to standby setpoint for all zones if necessary.



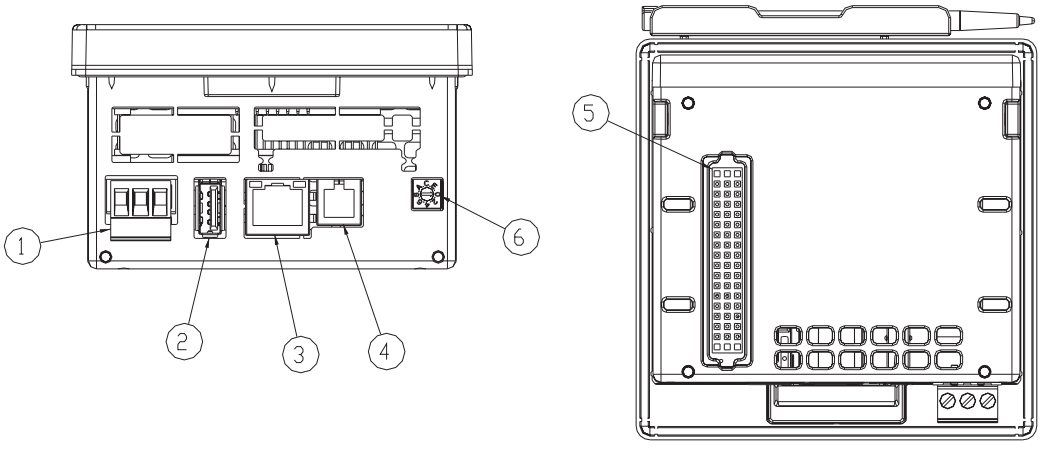
Alarms page with immediate messages and indication of zones involved.
Reset buttons and aknowledge.
Display of every fault condition regarding the process or connected devices.

Clock/calendar page for scheduled on/off of control in selected zones for optimized time and increased efficiency.

Storage page for graphic reports and for main HW configuration parameter for all zones.
Immediate setup for different processes, Hot Swap functions for replacement of HW modules.

USER'S CONNECTION: BASIC GF_LOOPER 35CT / 57CT CONNECTIONS

The user resource connections specified in the table are made at the bottom with standard and custom Gefran connectors.



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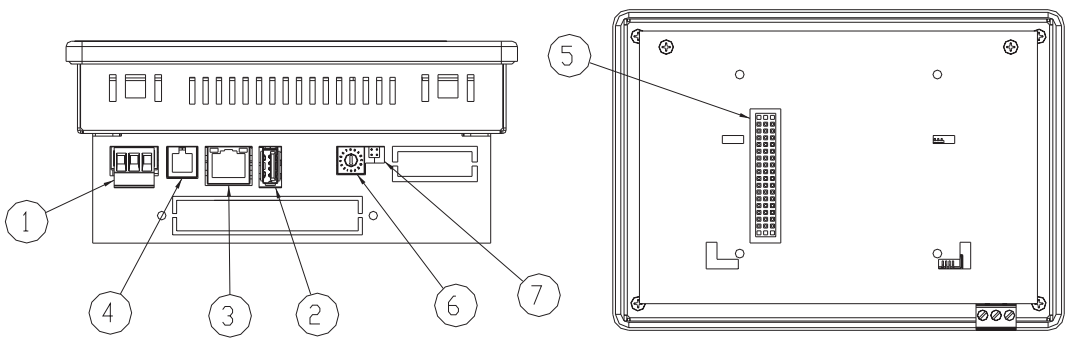
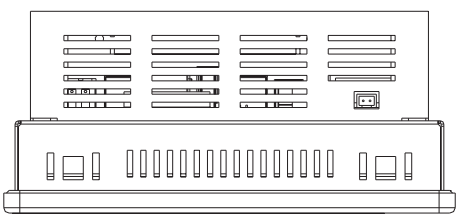


Denominazione	Descrizione
1	Alimentazione
2	USB
3	Ethernet 10/100
4	Seriale RS485
5	BUS-G
6	Rotary-switch
7	Abilitazione batteria

Descrizione dei connettori



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Connection with optional units / modules

For all information on connecting:

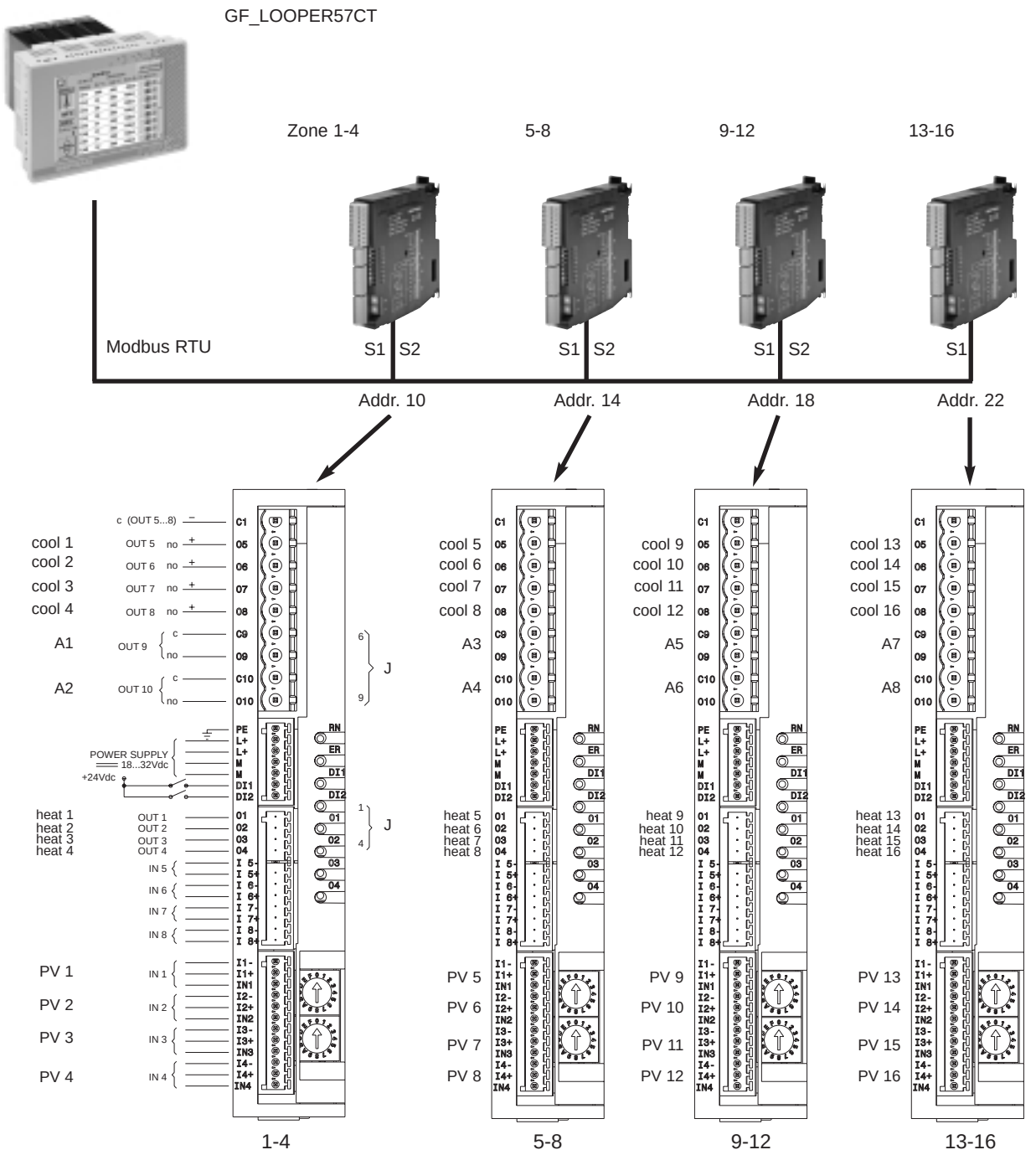
- Backplane L-BUS4
- GFX / GFX4 / GFX4-IR / GFXTERMO4
- R-TC8
- R-GPBs2

see the data sheets and manuals.

CONNECTION

Connection to GFXTERMO4 units (distributed control)

GF_LOOPER 57CT LX0 0 x x x x with 4 GFXTERMO4 units)



A1 = OR alarms AL1-AL3 of zone 1-4

A2 = OR alarms AL1-AL3 of zone 1-4

A3 = OR alarms AL1-AL3 of zone 5-8

A4 = OR alarms AL1-AL3 of zone 5-8

A5 = OR alarms AL1-AL3 of zone 9-12

A6 = OR alarms AL1-AL3 of zone 9-12

A7 = OR alarms AL1-AL3 of zone 13-16

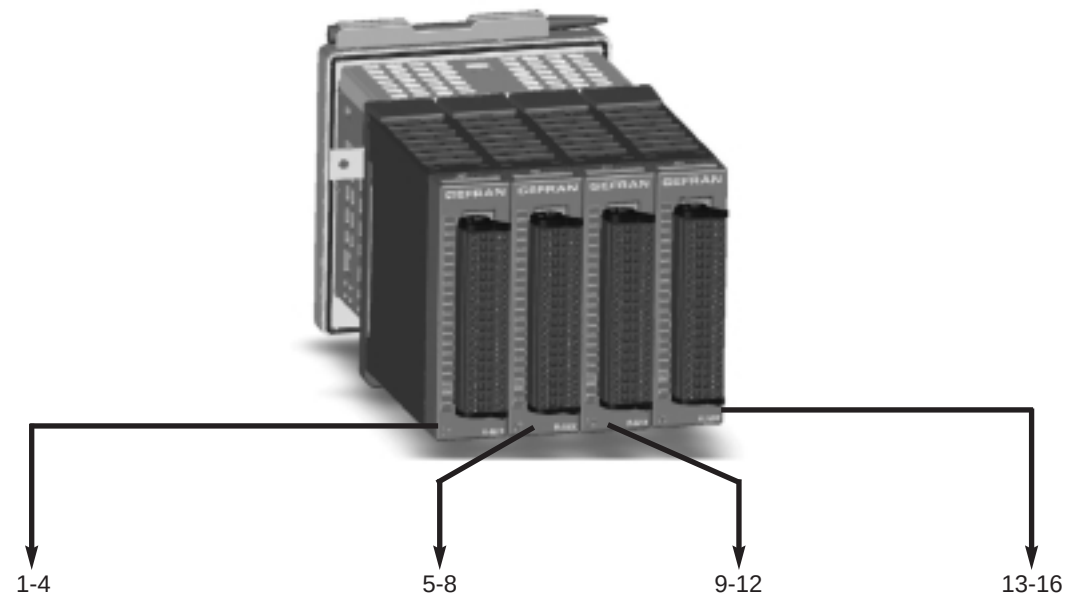
A8 = OR alarms AL1-AL3 of zone 13-16

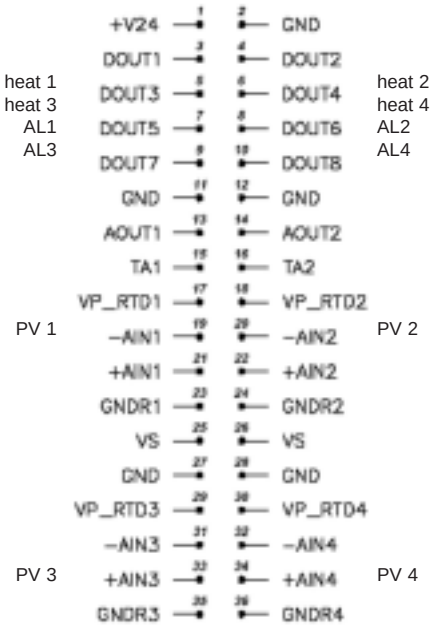
CONNECTION

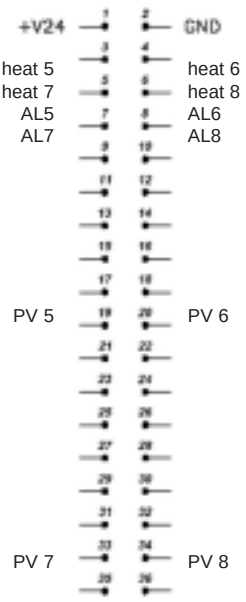
(integrated control. The modules are inserted in the L-BUS4 backplane)

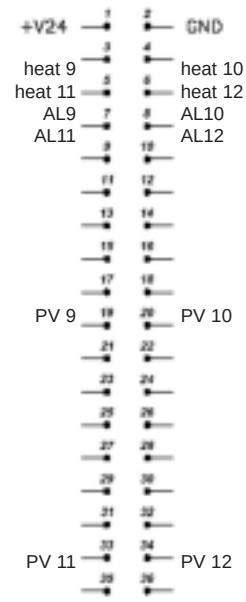
GF_LOOPER xxCT LX0 3 x x x x (1 module R-TEMP4 for 4 zones)
GF_LOOPER xxCT LX0 4 x x x x (2 modules R-TEMP4 forr 8 zones)
GF_LOOPER xxCT LX0 5 x x x x (3 modules R-TEMP4 for 12 zones)
GF_LOOPER xxCT LX0 6 x x x x (4 modules R-TEMP4 for 16 zones)

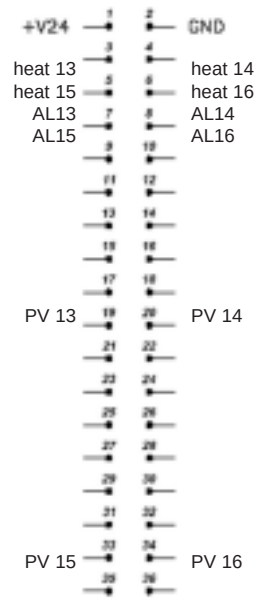
Note: The version with integrated PID control and on-board R-TEMP4 card is not available as standard. Please check with GEFRAN for available versions.











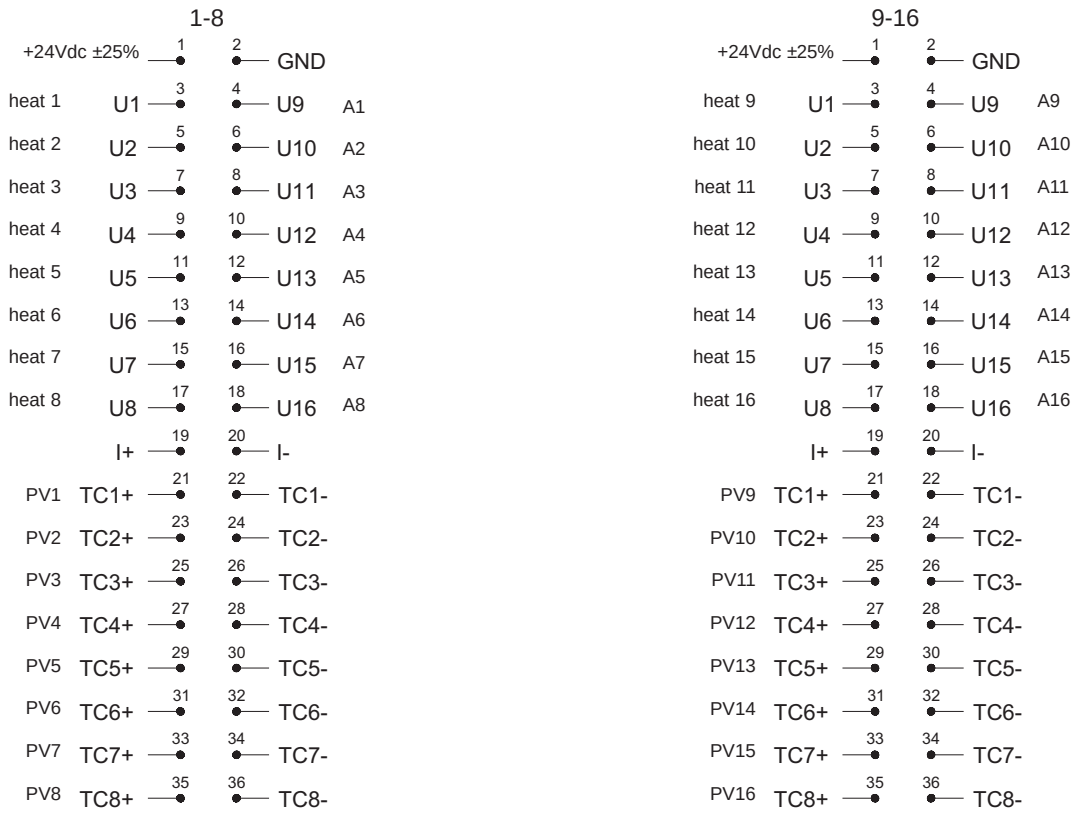
AL1 = OR max and min zone 1
AL2 = OR max and min zone 2
AL3 = OR max and min zone 3
AL4 = OR max and min zone 4
AL5 = OR max and min zone 5
AL6 = OR max and min zone 6
AL7 = OR max and min zone 7
AL8 = OR max and min zone 8
AL9 = OR max and min zone 9
AL10 = OR max and min zone 10
AL11 = OR max and min zone 11
AL12 = OR max and min zone 12
AL13 = OR max and min zone 13
AL14 = OR max and min zone 14
AL15 = OR max and min zone 15
AL16 = OR max and min zone 16

CONNECTION

(integrated control. The modules are inserted in the L-BUS4 backplane)

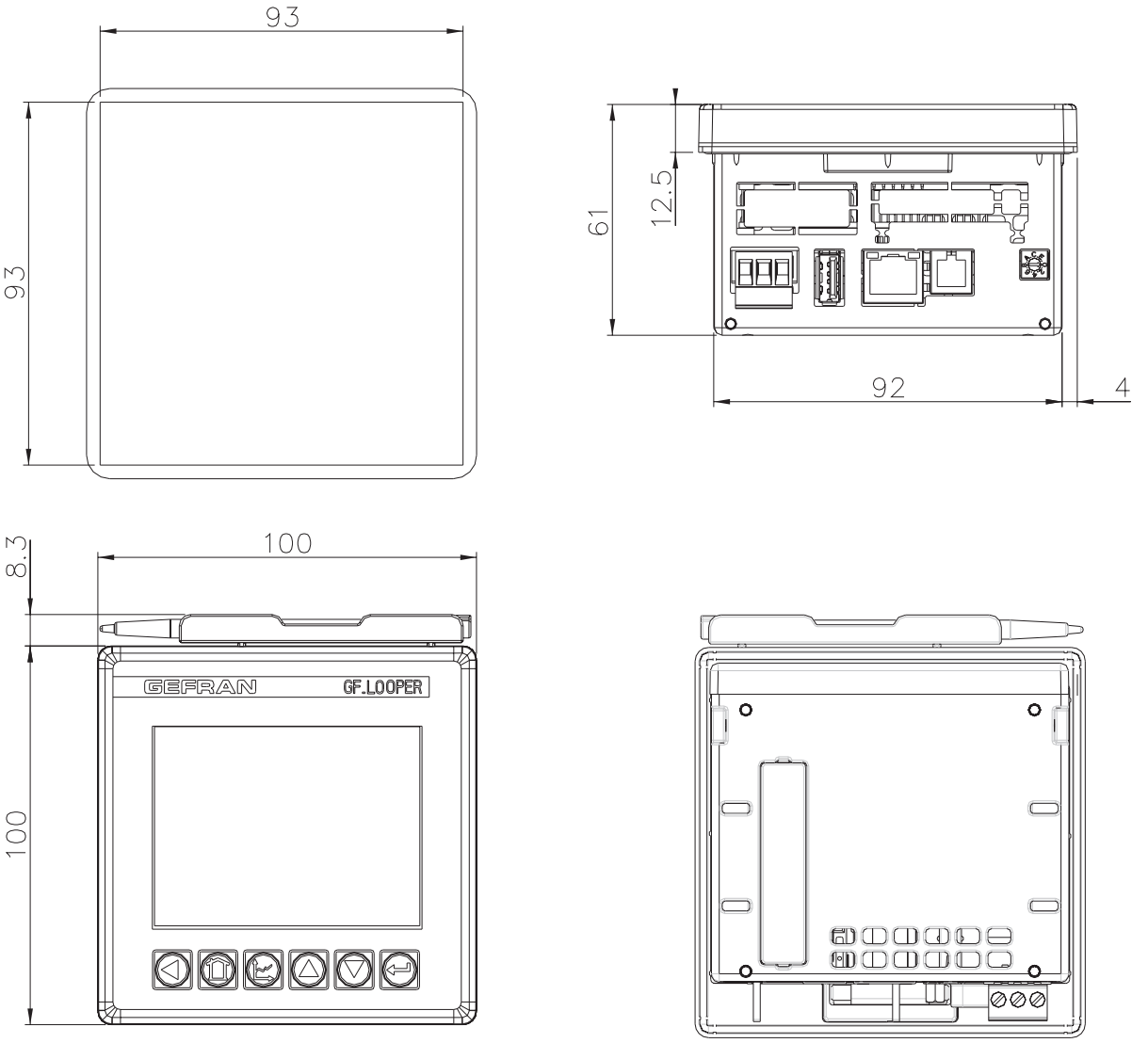
GF_LOOPER xxCT LX0 1 x x x x (1 module R-TC8 for 8 zones)
GF_LOOPER xxCT LX0 2 x x x x (2 modules R-TC8 for 16 zones)

Note: The version with integrated PID control and on-board R-TC8 card is not available as standard. Please check with GEFRAN for available versions.

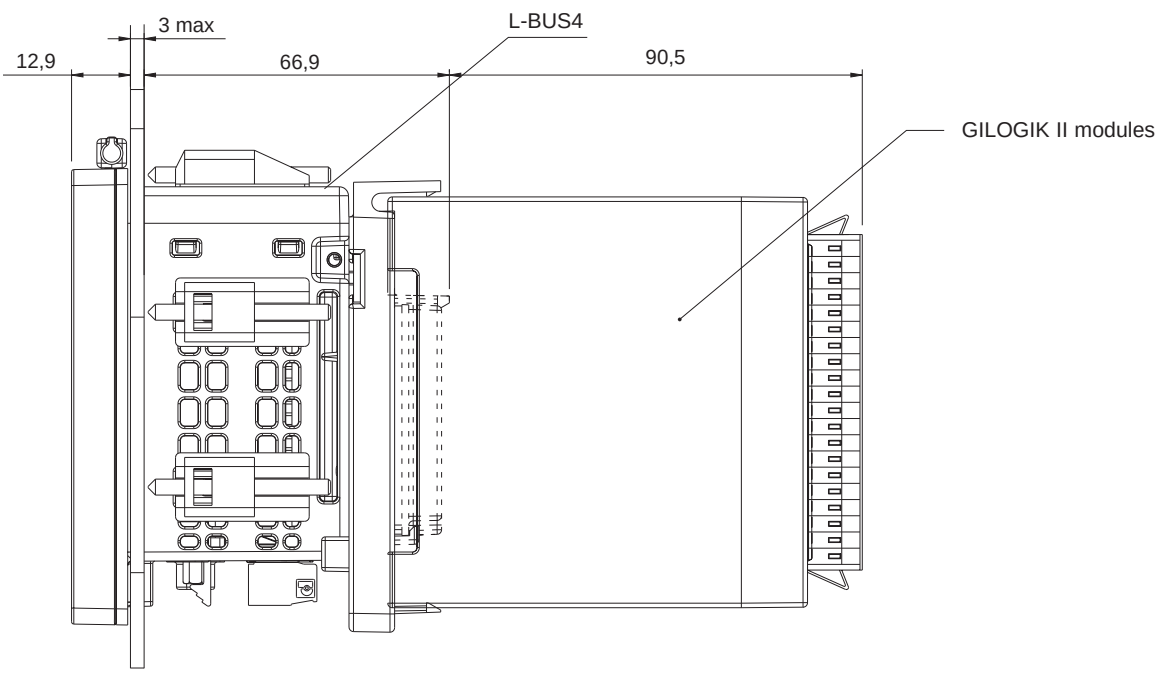


A1 = OR AL1-AL2-AL3-AL4 zone 1
A2 = OR AL1-AL2-AL3-AL4 zone 2
A3 = OR AL1-AL2-AL3-AL4 zone 3
A4 = OR AL1-AL2-AL3-AL4 zone 4
A5 = OR AL1-AL2-AL3-AL4 zone 5
A6 = OR AL1-AL2-AL3-AL4 zone 6
A7 = OR AL1-AL2-AL3-AL4 zone 7
A8 = OR AL1-AL2-AL3-AL4 zone 8
A9 = OR AL1-AL2-AL3-AL4 zone 9
A10 = OR AL1-AL2-AL3-AL4 zone 10
A11 = OR AL1-AL2-AL3-AL4 zone 11
A12 = OR AL1-AL2-AL3-AL4 zone 12
A13 = OR AL1-AL2-AL3-AL4 zone 13
A14 = OR AL1-AL2-AL3-AL4 zone 14
A15 = OR AL1-AL2-AL3-AL4 zone 15
A16 = OR AL1-AL2-AL3-AL4 zone 16

OVERALL DIMENSIONS AND TEMPLATE

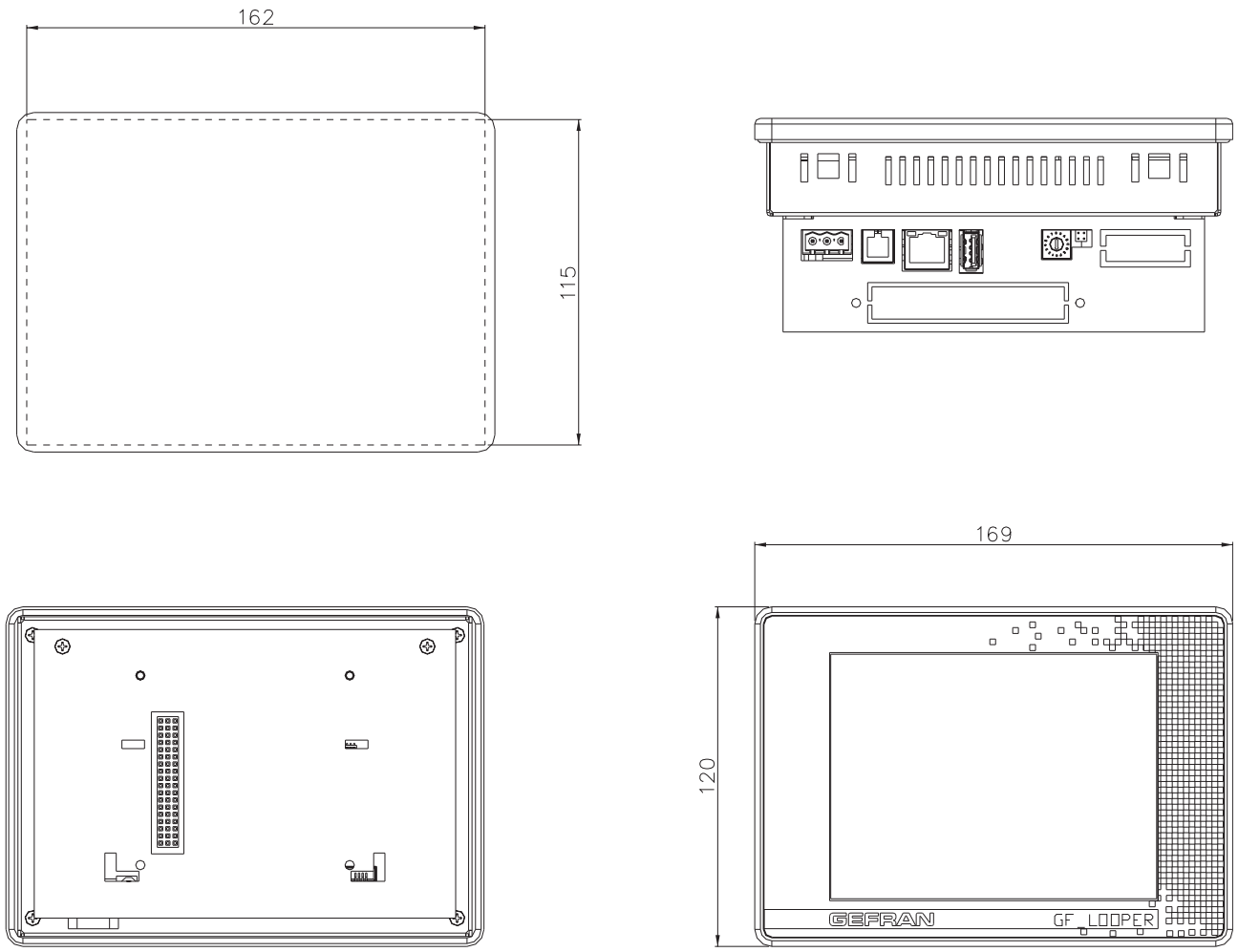


Physical dimensions and template dimensions for- 35CT -

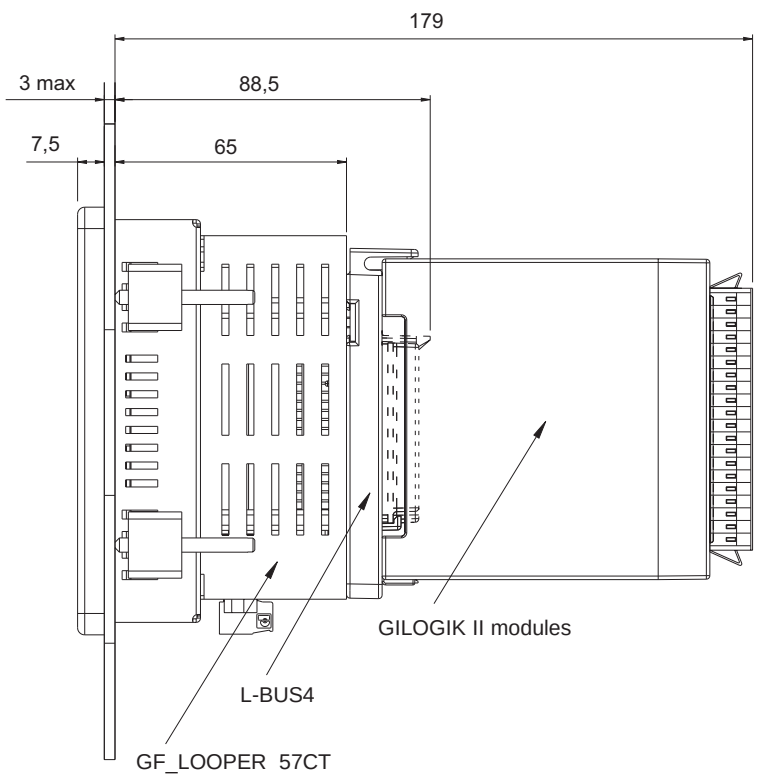


Template dimensions for - 35CT -

OVERALL DIMENSIONS AND TEMPLATE



Physical dimensions and template dimensions for GF_LOOPER 57CT terminals



Template dimensions for GF_LOOPER 57CT terminals

ORDER CODE

GF_LOOPER [ ] **LX0** [ ] **0** [ ] [ ] [ ] [ ]

DISPLAY	
3,5"color + touch screen	35CT
5,7"color + touch screen	57CT

CONTROL TYPE	
(*) **Distributed** (unit to be connected via RS485 serial) With GFX / GFX4 / GFX4-IR GFXTERMO4	0
(**) **Integrated** (module to insert in L-BUS4 backplane,slots1,2,3,4) 8 zones with R-TC8 module (8 inputs TC,1DI, 16DO)	1
16 zones with 2 R-TC8 modules	2
4 zones with R-TEMP4 module (4 inputs TC RTD mA V, 2 in CT 8 DO)	3
8 zones with 2 R-TEMP4	4
12 zones with 3 R-TEMP4	5
16 zones with 4 R-TEMP4	6***

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

Additional SW options	
None	0

Port USB Expansion	
Absent	0
USB	U

LEXAN	
Gefran	G
Neutral	N

NOTE: The version with integrated control: 1-2-3-4-5-6" is not available as standard.
Please check with GEFRAN for available versions.

(*) the GFX, GFX4, GFX4-IR, GFXTERMO4 models are ordered separately, each with its own order code.
(**) L-BUS4 and the selected modules are included in the supply.
(***) alternative positions

Kindly contact GEFRAN for information on the availability of codes.

CE In conformity to ECC 2004/108/CE (EMC) and 2006/95/CE (LVD) with reference to: **EN 61131-2** (product) **EN 61010-1** (safety).

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