INSTALLATION AND CONNECTION

This section contains the instructions needed for correct installation of GTF controllers on the machine/host system control panel and for correct connection of the power supply, inputs, outputs and interfaces.

CAREFULLY READ THE FOLLOWING WARNINGS BEFORE INSTALLING THE INSTRUMENT!
Disregard of such warnings could create electrical safety and electromagnetic compatibility problems, as well as void the warranty.

ELECTRICAL POWER SUPPLY

• the controller DOES NOT have an On/Off switch: the user must install switch/isolator conforming to safety requisites (CE mark) to cut off the power supply up-line of the controller.The switch must be installed in the immediate vicinity of the controller in easy reach of the operator. A single switch can be used for multiple devices.

* the earth connection must be made with a specific lead

• if the product is used in applications with risk of harm to persons or damage to machines or materials, it MUST be equipped with auxiliary alarm devices.

It is advisable to provide the ability to check for tripped alarms during regular operation.

NOTES ON ELECTRICAL SAFETY AND ELECTROMAGNETIC COMPATIBILITY

CE MARKING: EMC (electromagnetic compatibility) conformity in compliance with Directive 2014/30/EU and following modifications.
Series GTF controllers are mainly intended for industrial use, installed on panels or control panels of production process machines or systems. For purposes of electromagnetic compatibility, the most restrictive generic standards have been adopted, as shown on the table.
LV (low voltage) conformity in compliance with Directive 2014/35/EU.
EMC conformity has been verified with the connections indicated on table 1 (see user's manual).

RECOMMENDATIONS FOR CORRECT INSTALLATION FOR PURPOSES OF EMC

Instrument power supply

- The power supply for the electronic instrumentation on the panels must always come directly from a cut-off device with fuse for the instrument part.
- Electronic instrumentation and electromechanical power devices such as relays, contactors, solenoids, etc., MUST ALWAYS be powered by separate lines.
- When the power supply line of electronic instruments is heavily disturbed by switching of thyristor power groups or by motors, you should use an isolation transformer only for the controllers, grounding its sheathing.
- It is important for the system to be well-grounded:
  - voltage between neutral and ground must not be > 1V
  - Ohmic resistance must be < 6Ω;
- If the grid voltage is highly unstable, use a voltage stabilizer.
- In proximity of high-frequency generators or arc welders, use adequate grid filters.
- The power supply lines must be separate from instrument input and output lines.

• Supply from Class II or from limited energy source.

Input and output connections

Before connecting or disconnecting any connection, always check that the power and control cables are isolated from voltage.
Appropriate devices must be provided: fuses or automatic switches to protect power lines.

- Connected outside circuits must be doubly isolated.
- it's necessary to:

- physically separate the input cables from those of the power supply, outputs, and power connections.
- use braided and shielded cables, with sheathing grounded at a single point.

Installation notes

Install the voltage stabilizer enclosed with the product (see Installation section).

- Moreover, the applications with solid-state units require a safety automatic switch to section the load power line.

To ensure maximum reliability, the device must be correctly installed in the panel in such a way as to obtain adequate heat exchange between the heat sink and the surrounding air under conditions of natural convection.
Fit the device vertically (maximum angle 10° to the vertical axis)

- Vertical distance between a device and the panel wall >100mm
- Horizontal distance between a device and the panel wall at last 20mm
- Vertical distance between a device and the next one at last 300mm.
- Horizontal distance between a device and the next one at last 20mm.

Check that the cable holder runners do not reduce these distances, in this case fit the cantilever units opposite the panel so that the air can flow vertically on the dissipator without any obstacles.

- Dissipation of device thermic power with effects on installation room temperature.
- Thermal power dissipation with limits on installation room temperature.
- Requires exchange with external air or an air conditioner to transfer dissipated power outside the panel
- maximum limits of voltage and derived power of transients on the line, for which the solid state power unit contains protective devices (based on the model).
- presence of dispersion current in GTF in non-conducting state (current of a few mA due to RC Snubber circuit to protect).

GEFRAN S.p.A. assumes no liability for any damage to persons or property deriving from tampering, from incorrect or improper use, or from any use not conforming to the characteristics of the controller and to the instructions in this User Manual.

Conformity: TC RU C-IT. AЛ32.B.00422	UL *Conformity C/UL/US File no. E243386 vol. 1 sez. 5*
CE	*This device conforms to European Union Directive 2014/30/EU and 2014/35/EU with reference to standard: EN 60947-4-3 (product)*

GEFRAN

GTF-Xtra

POWER CONTROLLER WITH OVERCURRENT PROTECTION

code **80313D - 03/2023 - ENG**

INSTALLATION AND OPERATION MANUAL

Side 1 Installation and connection
Electrical connections

Side 2 Technical caracteristics
General caracteristics
Dimensions
Template/Installation
Derating curves

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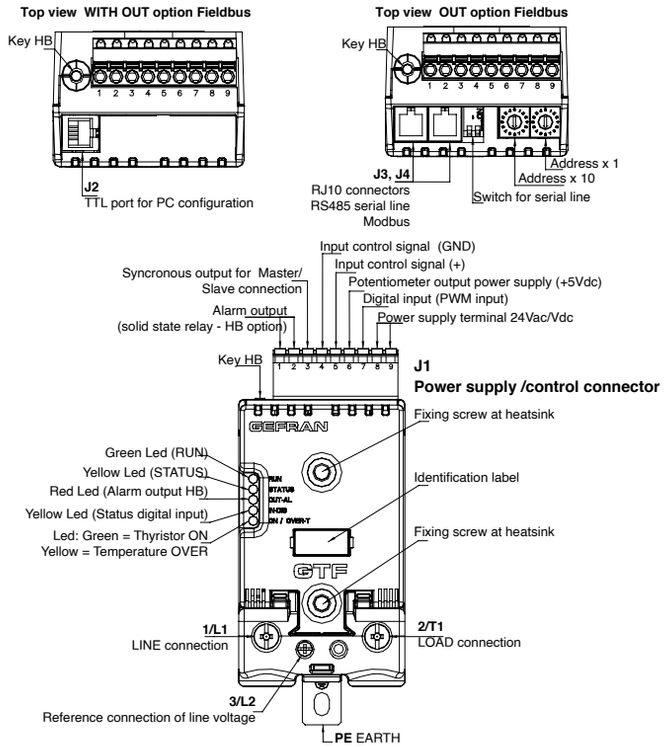
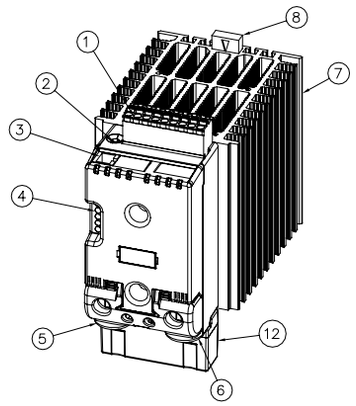
ELECTRICAL CONNECTIONS

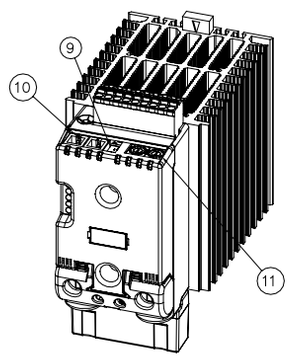


GTF Standard



1. Supply/control connnector
2. HB key calibration
3. TTL port for configuration
4. LED indicators
5. Power terminal "Line" (1/L1)
6. Power terminal "Load" (2/T1)

GTF with RS485 option



7. Heatsink
8. Attachment DIN bar
9. Switch serial line terminal
10. RS485 serial port connector
11. Address Rotary switch
12. GTF-Xtra Surge protector

RECOMMENDED WIRE GAUGES

GTF CURRENT LEVEL	TERMINAL	CABLE WIRE	WIRE TERMINAL	TIGHTENING TORQUE / TOOL
25A	1/L1, 2/T1, PE	4 mm² 10 AWG	Wire terminal / Eye D. 6mm	2.5 Nm / Phillips screwdriver PH2 - PH3
40A	1/L1, 2/T1, PE	10 mm² 7 AWG	Wire terminal / Eye D. 6mm	2.5 Nm / Phillips screwdriver PH2 - PH3
50A	1/L1, 2/T1, PE	10 mm² 7 AWG	Wire terminal / Eye D. 6mm	2.5 Nm / Phillips screwdriver PH2 - PH3
60A	1/L1, 2/T1, PE	16 mm² 5 AWG	Wire terminal / Eye D. 6mm	2.5 Nm / Phillips screwdriver PH2 - PH3
-	3/L2 (Ref. Vline)	0.25 ...2.5 mm² 23...14 AWG	Wire stripped for 8 mm or with tag terminal	0.5 ...0.6 Nm / Flat-head screwdriver tip 0.6 x 3.5 mm

Note: Cables must be copper "Stranded Wire" or "Compact-Stranded Wire" type with maximum operating temperature 60/75°C

TECHNICAL CHARACTERISTICS

POWER (SOLID STATE)				
Category of use (Table 2 EN60947-4-3)	AC 51 resistive or low inductance loads AC 55b Infrared lamps AC 56a: single-phase transformers (not allowed , for application consult Gefran)			
Trigger mode	**PA** - Load management by adjusting the firing angle (only configuration single-phase or delta open) **ZC** - Zero Crossing with constant cycle time (settable in range 1-200s) **BF** - Burst Firing with variable cycle time (GTT) optimized minimum. **HSC** - Half Single Cycle corresponds to Burst Firing that includes ON and OFF half-cycles. Useful for reducing flicker with short-wave IR loads (applied only to single-phase resistive or 3-phase 6-wire open delta loads)			
Feedback mode	**V, V2:** Voltage feedback proportional to RMS voltage value on load (useful to compensate possible variations in line voltage)). **I, I2:** Current feedback: bound to RMS current value on load to compensate variations in line voltage and/or variations in load impedance). **P:** Power feedback: proportional to real power value on load (useful to keep constant values of electrical power assigned regardless of load impedance or line voltage variations			
Max rated voltage	480Vac			
Work voltage range	90…530Vac			
Non-repetitive voltage	1200Vp			
Rated frequency	50/60Hz auto-determintion			
Rated current AC51 -AC55b non inductive or slightly inductive loads, IR lamps (@ Tamb = 40°C)	**GTF-Xtra 25**	**GTF-Xtra 40**	**GTF-Xtra 50**	**GTF-Xtra 60**
	25A	40A	50A	60A
Rated current AC56A permitted trigger modes ZC, BF with DT (Delay Triggering), PA with sofstart (@ Tamb =40 °C)	20A	32A	40A	50A
Critical Dv/dt with output deactivated	1000V/µs			
Breaking	5KA/480V **Warning**: Maximum permissible inductance loop impedance 500uH			
Held nominal voltage of to the impulse	4KV			
Diagnostics	Detection of short load circuit absence line voltage, HB alarm (partial breakage of load)			
GENERAL DATA				
Power supply	GTF 25-60A: 24 Vac 50-60Hz / Vdc ± 25%, max 3VA			
Power supply external fan	24 Vdc ± 10%, max 200mA			
Signals	5 leds: RUN: run state of CPU STATUS: operating state ALARM: state of alarm output DIGITAL INPUT: state of digital inputs ON / OVER-TEMP.: state control tirystor / Alarm for overheating			
Load type and connection	Single phase load / Independent single-phase load in open delta 3-phase load / 3-phase load (star without neutral or closed triangle) with bi-fase control			
Protection	IP20			
Work/storage temperature	0…40°C (refer to dissipation curves) / -20 °C - +70 °C average temperature over a period of 24hour not exceeding 35° C(to EN 60947-4-3 § 7.1.1)			
Relative humidity	20…85% Ur non-condensing			
Ambient conditions for use	indoor use, altitude up to 2000m			
Installation	DIN bar EN50022 or panel with screws			
Installation requirements	Installation category II, pollution level 2, double isolation (Only for >120A models) - Max temperature of air surrounding device 40°C ; for temperature >40°C refer at derating curves. - Device type: “UL Open Type”			
Weight	**25A**	**40A**	**50A**	**60A**
	0,97 Kg	1,1 Kg	1,1 Kg	1,5 Kg

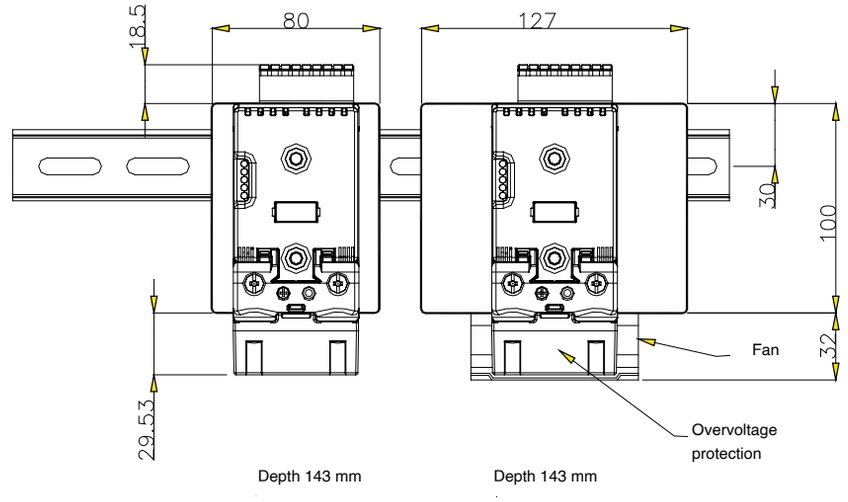
EMC filters are required in PA mode (Phase Angle, i.e., SSR trigger with phase angle modulation). The filter model and current level depend on the configuration and load used.
The power filter MUST by connected as close as possible to the GTF. You can use a filter connected between the power line and GTF or an LC group connected between the GTF output and the load.

DIMENSIONS

Models option Fuse = 0

GTF 25 (without fan)
GTF 40 (with fan)
GTF 50 (with fan

GTF 60 (with fan)



Fastening may be done on DIN guide (EN50022) or with (5MA).
All dimensions are expressed in mm.

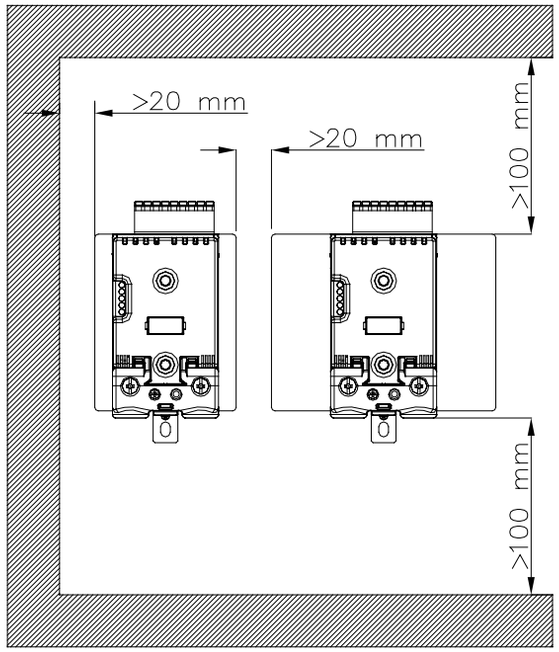
Graphic symbols

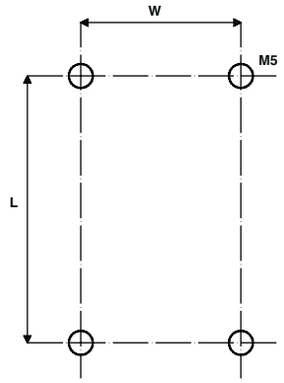
Indicates contents of sections, general instructions, notes, and other points to which the reader’s attention needs to be called.

Indicates a particularly delicate situation that could affect the safety or correct operation of the controller, or an instruction that MUST be followed to prevent hazards.

I Indicates a risk to the user’s safety due to high voltage at the points indicated.

TEMPLATE / INSTALLATION





Models	L (mm)	W(mm)
GTF 25-40-50A	112	44
GTF 60A	112	113

Attention:
respect the minimum distances shown in figure to provide adequate air circulation.

DERATING CURVE