

### Main applications

- Extrusion lines and injection presses for plastics
- Hot channels
- Thermoforming machines
- Packing and packaging machines

### Main features

- 4 independent channels
- Logic signal input control
- Switching at voltage zero crossing.
- LED display of logic control state
- Overvoltage protection
- Faston connections
- Provision for DIN bar attachment, panel attachment and base attachment

### PROFILE

GTS-L4 power solid state relays have four miniaturized solid state relays mounted on a single aluminum heatsink and control four independent resistive loads. The control inputs are four independent logic signals with zero crossing switching.

Various models are available for currents up to 15A and voltages up to 440 VAC. All models guarantee operation at rated currents with continuous power supply at 40°C.

Small channel size and "4-way" modularity make the GTS-L4 ideal for applications with many temperature-controlled zones.

GTS-L4 models are the perfect addition to Gefran's GFXTERMO multichannel controllers for single-phase and bi-phase applications, and can be replaced individually on each channel.

Their high performance makes them suitable for applications demanding very short switching times, offering millions of operations without component wear. Connections are Faston-type; mounting is on DIN rail or panel.

### TECHNICAL DATA

#### General features

Category of use: AC1

Nominal voltage

- 230Vac (max. range 24...253Vac)

- 440Vac (max. range 24...484Vac)

Nominal frequency: 50/60Hz

Non-repetitive voltage:

- 500Vp for model with 230 VAC rated voltage

- 800Vp for model with 440 VAC rated voltage

Zero switching voltage: < 20V

Activation time: =1/2 cycle

Deactivation time: =1/2 cycle

Voltage drop at nominal current : =

< 1.4Vrms

Power factor = 1

Maximum dissipated power:

$P_d = 4 \times I_L \times 1,5$  [W]

With  $I_L$  = current of each load [A]

#### Control inputs

Max. input: 15mA @32V

Max. reverse voltage: 36Vdc

#### GTS-L4 5/10/15

Control voltage: 3...32Vdc

Activation voltage: >2.55Vdc

Deactivation voltage: <1Vdc

### OUTPUTS

#### GTS-L4 5

Nominal current: 5A@40°C in continuous service for every channel

Non-repetitive overcurrent  $t=20$ ms: 80A

$I^2t$  for blowout: 45A<sup>2</sup>s

dV/dt critical with output deactivated: 500V/μs

#### GTS-L4 10

Nominal current:

10 A@40°C in continuous service for every channel

Non-repetitive overcurrent  $t=20$  ms: 120A

$I^2t$  for blowout: 100A<sup>2</sup>s

dV/dt critical with output deactivated: 500V/μs

#### GTS-L4 15

Nominal current:

15 A@40°C in continuous service for every channel

Non-repetitive overcurrent  $t=20$  ms:160A

$I^2t$  for blowout: 180A<sup>2</sup>s

dV/dt critical with output deactivated: 500V/μs

#### Isolation

Rated isolation voltage input/output: 2500VAC rms

#### Ambient conditions:

- Working temperature: 0 to 80°C (see the dissipation curves)

- Max. relative humidity: 50% to 40°C
- Max. installation altitude: 2000m asl
- Pollution level: 3
- Storage temperature: -20..+85°C
- Internal use

**Installation notes**

Models with external heatsink must be grounded.

Use the high-speed fuse indicated in the catalog according to the connection example.

Applications with power solid state relays require an automatic safety cutout to disconnect the load power line.

For maximum reliability, install the device correctly in the panel to have sufficient heat exchange between the heatsink and the air under conditions of normal convection.

Mount it vertically (max. 10° inclination from the vertical axis)

- Vertical distance between a device and the panel walls >100mm
- Horizontal distance between a device and the panel walls: at least 20mm
- Vertical distance between devices: at least 300mm
- Horizontal distance between devices: at least 20 mm.

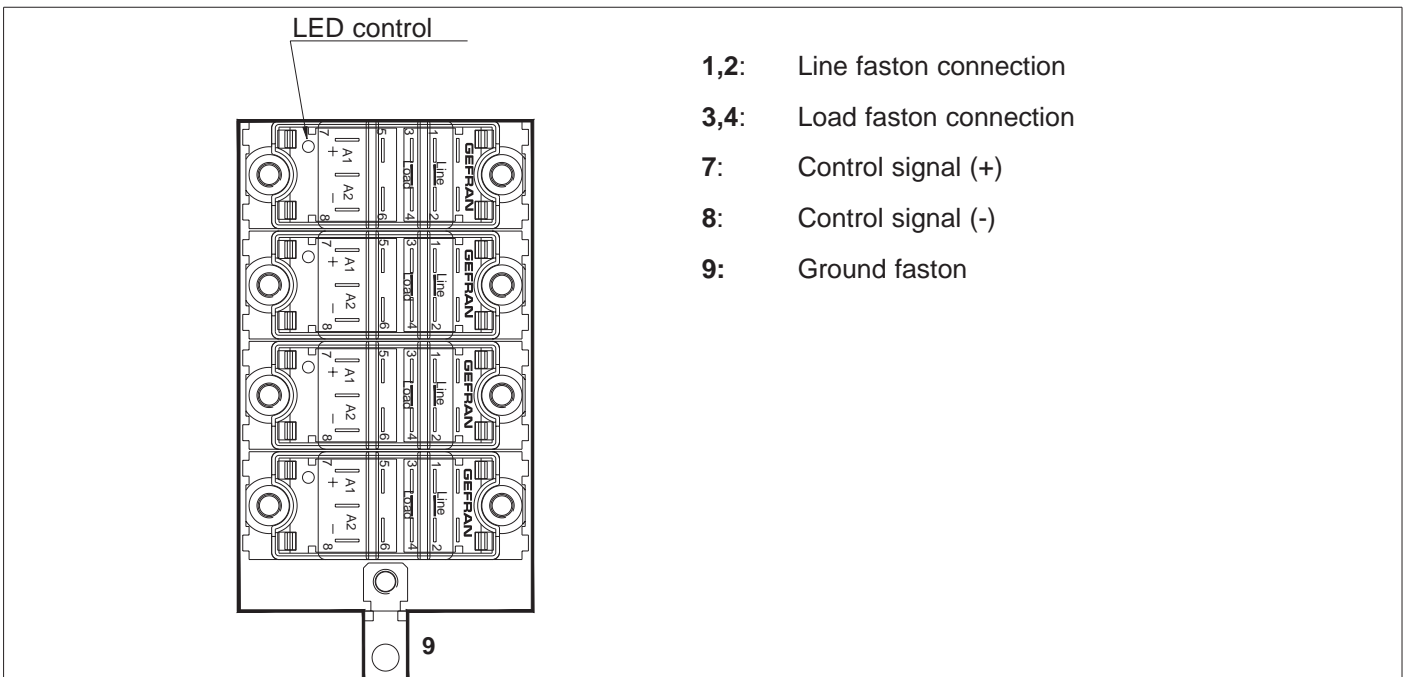
Make sure that the wire raceways do not reduce such distances: if they do, install the groups cantilevered to the panel so that air can flow vertically over the heat sink without obstructions.

**Limits of use**

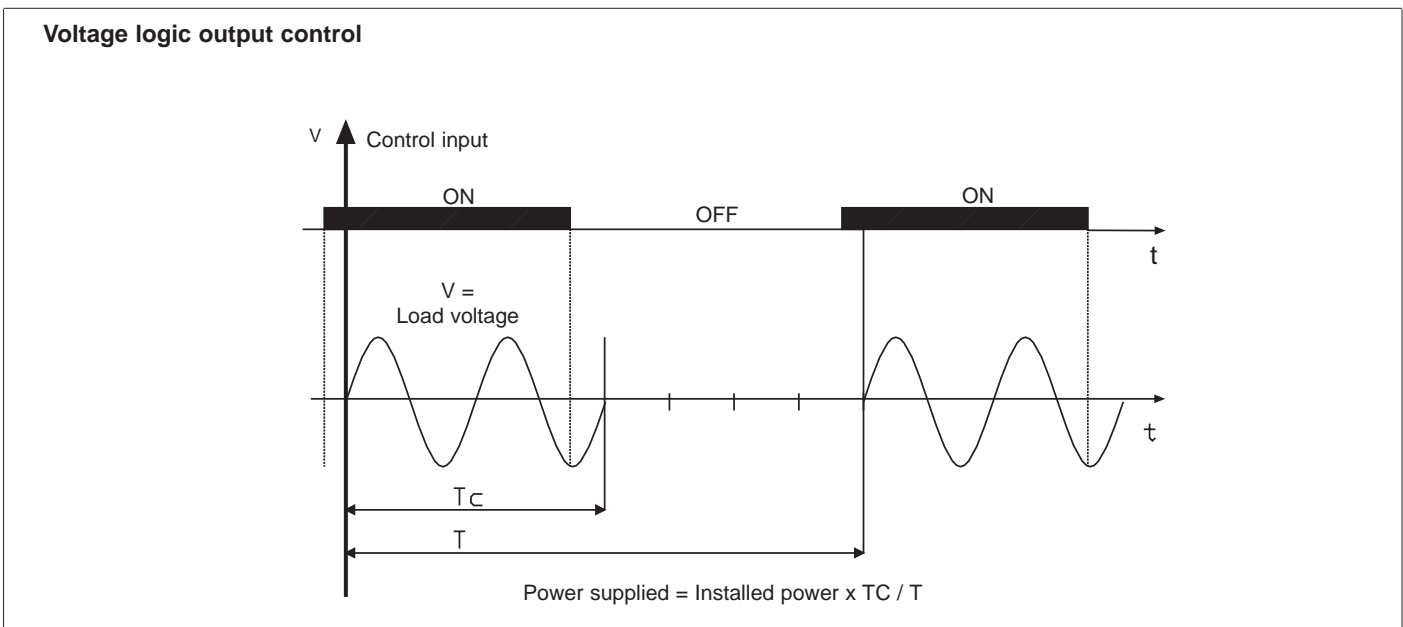
- Dissipation of thermal power on the device with restraints on the ambient temperature of the installation.

- Equip the cabinet with an external air source or air-conditioning unit, to exhaust the dissipated heat power.
- Installation restraints (distances to be respected to grant dissipation with natural convection)
- Line transistor max. voltage and derivative limits, for which the solid state relay is equipped with inside safety devices (varistor).
- pLeakage current < 4mA for GTS-L4. (max. value with rated voltage and junction temperature of 125°C).

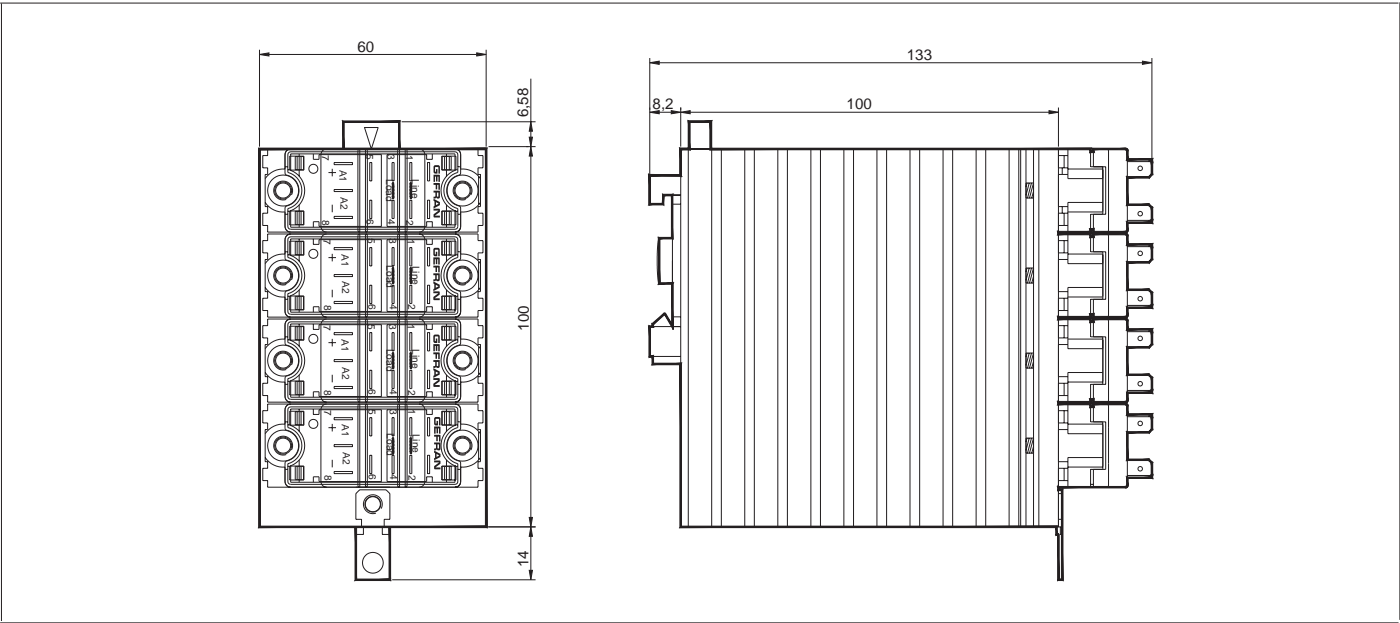
**FACEPLATE DESCRIPTION**



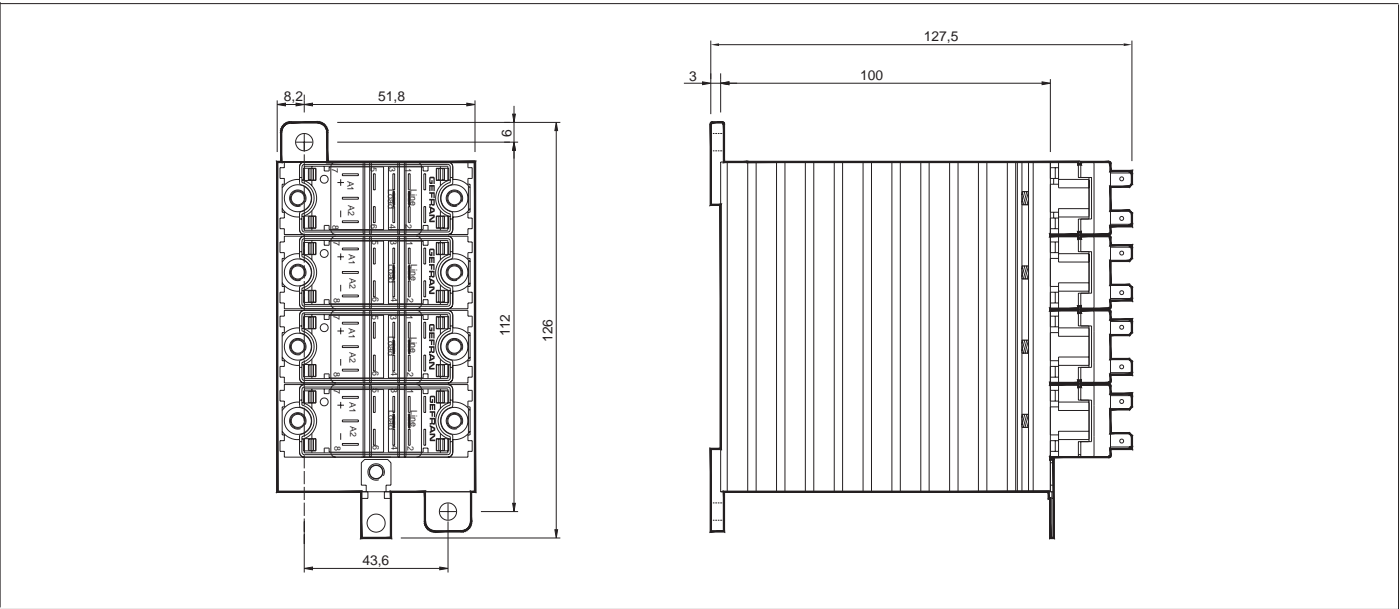
**WORKING TYPOLOGY**



**MOUNTING DIMENSIONS**



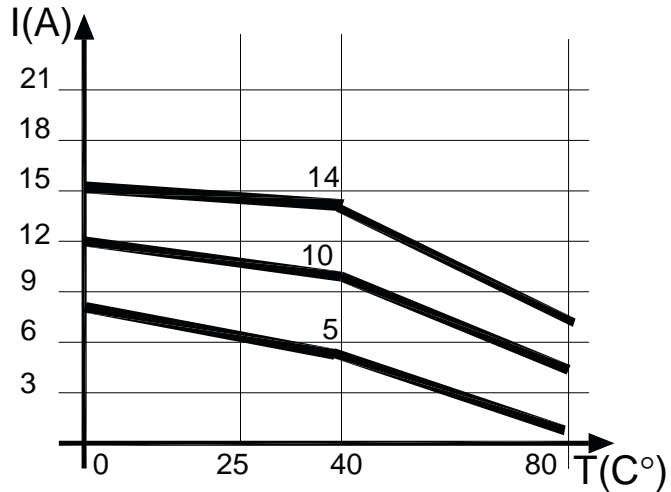
**USE WITH PANEL MOUNTING (ACCESSORY)**



**DISSIPATION CURVES**

Rated current curves based on room temperature.  
(understood as current running in all modules at 100% of conduction)

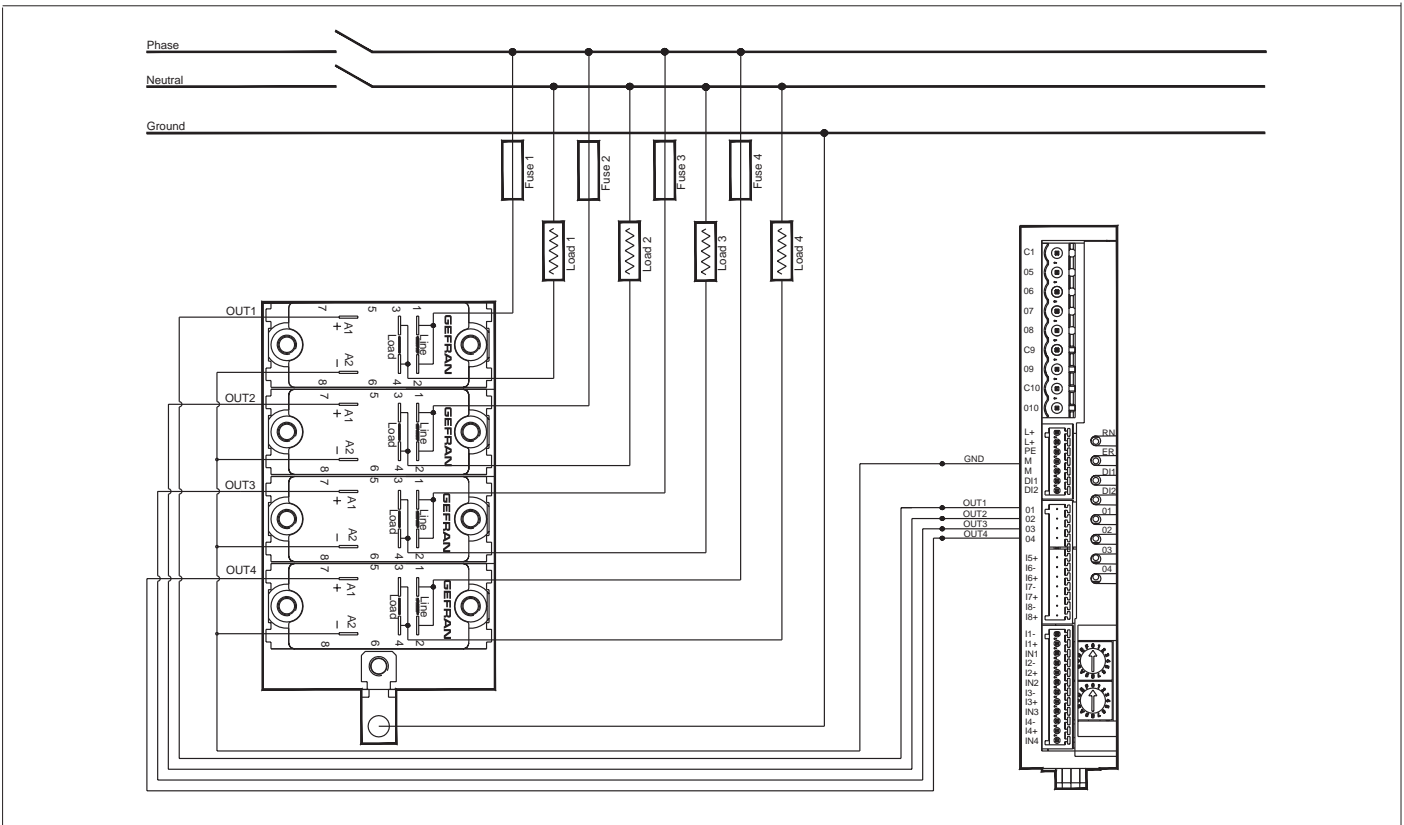
**GTS - L4 5 / 10 / 15**



## SAFETY AND PROTECTIONS

- The heatsink must be grounded.
- With currents higher than 8 Amps, you have to connect the relay to the line and to the load by connecting both Line (1, 2) and Load (3, 4) terminals in parallel, according to the connection diagrams.
- The relay must be protected by an appropriate high-speed fuse suitable for the application with I<sub>2t</sub> lower than that of the solid state relay.
- With currents lower than 8 Amperes (if only one Line terminal and one Load terminal are used), it is important to realize that the other two fastons are potentially dangerous in case of accidental contact. Therefore, these must be appropriately protected by blocking access to the GTS-L4 or by using other insulated fastons to cover these contacts.

## CONNECTION EXAMPLES



## TABLE OF TERMINAL AND LOAD CHARACTERISTICS

Size	CONTROL TERMINAL			POWER TERMINAL			GROUND TERMINAL •	
	Contact area (WxD) screw type	pre-insulated wire terminal	Max. sect conductor tightening torque	Contact area (WxD) screw type	pre-insulated wire terminal	Max. sect wire tightening torque	Contact area (WxD) screw type	Max. section conductor tightening torque
5A	-	Faston connector*	2,5mm <sup>2</sup>	6,4x9	Faston connector*	2,5mm <sup>2</sup>	9x12 M5	2,5mm <sup>2</sup> 1,3-1,8 Nm
10A	-	Faston connector*	2,5mm <sup>2</sup>	6,4x9	Faston connector*	2,5mm <sup>2</sup>	9x12M5	2,5mm <sup>2</sup> 1,3-1,8 Nm
15A	-	Faston connector*	2,5mm <sup>2</sup>	6,4x9	Faston connector*	2,5mm <sup>2</sup>	9x12M5	2,5mm <sup>2</sup> 1,3-1,8 Nm

(\*) Female Faston 4,8 X 0,5 mm

(\*\*)Maximum sections indicated refer to unipolar copper leads isolated in PVC.

Note: you have to use an **eye terminal** for the **ground** connection.

(WxD) = width x depth

## ACCESSORIES

A wide range of accessories is available, such as fuses and fuse holders, relay bases, panel attachments and DIN guide attachments, thermostats.

To choose accessories, see the section "Solid state relays - Accessories".

**ORDER CODE**GTS-L4     / 

<b>Model</b>	
	GTS-L4

<b>Nominal current</b>	
5Aac	5
10Aac	10
15Aac	15

<b>Nominal voltage</b>	
230Vac	230
440Vac	440

Please contact GEFTRAN personnel for information on availability of codes.

**•WARNINGS**

**WARNING:** this symbol indicates danger.

**Before installation, please read the following advices:**

- follow the indications of the manual scrupulously when making the connections to the instrument.
- use a cable that is suitable for the ratings of voltage and current indicated in the technical specifications.
- if the instrument is used in applications where there is risk of injury to persons and damage to machines or materials, it is essential that it is used with an auxiliary alarm device.

It is advisable to verify frequently that the alarm device is functional even during the normal operation of the equipment.

- The instrument must NOT be used in environments where there could be the presence of dangerous atmospheres (inflammable or explosive).
- During continuous operation, the heatsink may reach 100°C and remain at a high temperature due to thermal inertia even after the device is switched off. Therefore, DO NOT touch the heat sink or the electrical wires.
- do not operate on the power circuit unless the main supply is disconnected.
- DO NOT open the cover if device is "ON"!  
(use the holes in the cover for eventual re-calibration).

**Installation:**

- connect the device to the ground using the proper ground terminal.
- the power supply wiring must be kept separate from that of inputs and outputs of the instrument; always check that the supply voltage corresponds to that indicated on the instrument cover.
- evitare la polvere, l'umidità, i gas corrosivi, le fonti di calore.
- keep away from dust, humidity, corrosive gases and heat sources.
- The connection cable must be shorter than 3 meters if the current transformer is used.

**Maintenance:** Check the correct operation of the cooling fans at regular intervals; clean the ventilation air filters of the installation at regular intervals.

- Repairs must be performed only by specialized or appropriately trained personnel. Cut off power to the device before accessing internal parts.
- Do not clean the box with solvents derived from hydrocarbons (trichloroethylene, gasoline, etc.). Using such solvents will compromise the mechanical reliability of the device. To clean external plastic parts, use a clean cloth wet with ethyl alcohol or water.

**Technical service :** GEFTRAN has a technical service department. Defects caused by use not conforming to the instructions are excluded from the warranty.

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



In conformity to ECC 2004/108/CE and 2006/95/CE with reference to standards:  
**EN 61000-6-2** (immunity in industrial environment) **EN 61000-6-4** (emissions in industrial environments) **EN 61010-1** (safety requirements).

**GEFRAN**

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