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Мы не работаем с частными (физическими) лицами.

Мы работаем только с юридическими лицами(организациями) и ИП и только по безналичному расчёту.

**GEFRAN ТВЕРДОТЕЛЬНЫЕ РЕЛЕ, [каталог](#), [описание](#), [технические](#), [характеристики](#), [datasheet](#),
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GEFRAN

GTS 15/25/40/50/60/75/90/120A

СИЛОВОЕ ТВЕРДОТЕЛЬНОЕ РЕЛЕ
С ЛОГИЧЕСКИМ УПРАВЛЕНИЕМ Vdc / Vac

Основные приложения

- Пластиковые экструзионные линии и инжекционные прессы
- Упаковочные машины
- Установки для полимеризации изготовления синтетических волокон
- Производство вулканизации резины
- Сушилки для керамики и строительных элементов
- Химическая и фармацевтическая промышленность
- Промышленные электропечи
- Пищевое производство



Основные функции

- Управляющий вход от логического сигнала Vdc / Vac
- Переключение при переходе через нуль
- Индикатор включения питания
- Защита MOV (варистор)
- крепление к DIN-рейке (стандарт); на панели (опция)
- Выход аварийного сигнала для прерывания нагрузки
- Встроенная температурная защита SCR со светодиодным сигналом (только для моделей с током > 40A)

ОБЩЕЕ

Включение или выключение электрической нагрузки требует использования подходящего устройства прерывания и защиты, которое является безопасным и невосприимчивым к помехам. Для оптимального управления технологическими процессами необходимо управлять нагрузкой с очень коротким временем переключения: наилучшим решением является использование твердотельных реле.

Gefran предлагает реле серии GTS с пересечением нулевого напряжения, токами 10A ... 120A и номинальным напряжением 230 Vac, 480 Vac и 600 Vac. Все модели работают с номинальным током при постоянном управлении мощностью при температуре окружающей среды 40 ° C.

Для менее критических рабочих условий используются приборы за пределами номинальных токов (используя кривые рассеяния в качестве эталона).

Доступны различные принадлежности, например, крепление для панели, плавкие предохранители и держатели предохранителей.

ОПЦИЯ СИГНАЛИЗАЦИИ:

Для моделей с управлением переменным током (Тип входа = "A")

ОПИСАНИЕ РАБОТЫ

Опция выхода тревоги активирует закрытие изолированного контакта, когда он обнаруживает следующие неисправности:

- Сигнал управления активен, но отсутствует ток нагрузки (нулевой ток, прерванная нагрузка)
 - Управляющий сигнал активен, но напряжение на линии электропередачи (без линии)
 - Сигнал управления активен, но SCR / радиатор находится в перегреве (тепловая защита GTS)
- ПРИМЕЧАНИЕ: при отсутствии управления выход сигнализации всегда открыт (функция фиксации памяти тревоги недоступна, как в случае с GTS с вводом типа «D»).

ОПИСАНИЕ ФУНКЦИИ ОПЦИЙ:
для моделей с управлением постоянным током (тип входа = "D")

Функция выхода тревоги активирует выходной переключатель (или цифровой выход PNP), когда определяет следующие ситуации:

- Сигнал управления ВКЛ, но нет тока в нагрузке (нет тока, нет нагрузки)
- Сигнал управления ВКЛ, но отсутствует питание от сети GTS. Напряжение питания линии (нет состояния линии)
- Сигнал управления ВКЛ, но SCR / Радиатор находится в перегреве (состояние тепловой защиты GTS)

Выход сигнала тревоги фиксируется: его состояние сохраняется, если управляющий сигнал выключен, выход сигнала тревоги сбрасывается при восстановлении тока нагрузки или при выключении и включении питания GTS 24V (сброс V_supply).

Опция выхода тревоги доступна как изолированный полупроводниковый переключатель (или как цифровой выход PNP), с нормально разомкнутым переключателем (или PNP нормально-не активным) или нормально замкнутым переключателем (или PNP нормально активным).

ТЕХНИЧЕСКИЕ ДАННЫЕ

ОБЩИЕ ХАРАКТЕРИСТИКИ

Категория использования: AC1

Номинальное рабочее напряжение

- 230Vac (макс. диапазон 24...280Vac)

- 480Vac (макс. диапазон 24...530Vac)

- 600Vac (макс. диапазон 24 ... 660Vac)

Номинальная частота: 50/60Hz

Неповторяющееся напряжение:

• 500Vp для модели с 230Vac

• 1200Vp для модели с 480Vac

• 1400Vp для модели с 600Vac

Переключающее напряжение для

нуля: <20V

Время активации: = 1/2 цикла

Время деактивации: = 1/2 цикла

Падение потенциала при

номинальном токе:

= <1,4Vrms

Коэффициент мощности = 1

Управляющие входы

- DC Вход (тип "D"):

Макс. вход: < 10mA @32V

Макс. обратное напряжение: 36Vdc

Управляющее напряжение:

6...32Vdc

Напряжение возбуждения: > 5.1Vdc

Напряжение выключения:< 3Vdc

- AC Вход (тип "A"):

Управляющее напряжение:

20...260 (250)* Vac/Vdc

* CSA сертификация

УСТАНОВИТЬ

ПРЕДОХРАНИТЕЛЬ (ЗА МАКС.)

НА ЦЕПИ ВХОДА УПРАВЛЕНИЯ

Напряжение возбуждения:

> 15 Vac / Vdc

Напряжение отключения:

< 6 Vac / Vdc

Токовая нагрузка:

<= 8 mAac/dc @ 260 Vac/Vdc

Опция:

Сигнал о сбое нагрузки или обрыва

линии имеет твердотельный выход

или цифровой выход PNP (макс.

номинал: 30 V - сопротивление

поводника 150 mA 15 Ohm).

Максимальная задержка

срабатывания сигнализации

прерывания нагрузки <400 ms

Максимальная длина проводов

между GS и нагрузкой для

правильной работы диагностики

нагрузки <25 m

ВЫХОДЫ

GTS 15

Номинальный ток: 15 A@40°C при

постоянной работе Неповторяемая

перегрузка по току t=20 ms: 400A

I²t для разрыва ≤450A²s

dV/dt критично с отключенным

выходом: 1000V/μs

GTS 25

Номинальный ток: 25 A@40°C при

постоянной работе Неповторяемая

перегрузка по току t=20 ms: 400A

I²t для разрыва: ≤645A²s

dV/dt критично с отключенным

выходом: 1000V/μs

GTS 40

Номинальный ток: 40 A@40°C при

постоянной работе Неповторяемая

перегрузка по току t=20 ms: 600A

I²t для разрыва: ≤1010A²s

dV/dt критично с отключенным

выходом: 1000 V/μs

GTS 50

Номинальный ток: 50 A@ 40°C при

постоянной работе Неповторяемая

перегрузка по току t=20 ms: 1150A

I²t для разрыва: ≤6600A²s

dV/dt критично с отключенным

выходом: 1000V/μs

GTS 60

Номинальный ток: 60 A@ 40°C

при постоянной работе

Неповторяемая перегрузка по

току t=20 ms: 1150A

I²t для разрыва: ≤6600A²s

dV/dt критично с отключенным

выходом: 1000V/μs

GTS 75

Номинальный ток: 75 A@ 40°C

при постоянной работе

Неповторяемая перегрузка по

току t=20 ms: 1300A

I²t для разрыва: ≤8000A²s

dV/dt критично с отключенным

выходом: 1000V/μs

GTS 90

Номинальный ток: 90A@ 40°C при

постоянной работе

Неповторяемая перегрузка по

току t=20 ms: 1500A

I²t для разрыва: ≤11200A²s

dV/dt критично с отключенным

выходом: 1000V/μs

GTS 120

Номинальный ток: 120A@ 40°C

при постоянной работе (с

вентилятором)

Неповторяемая перегрузка по

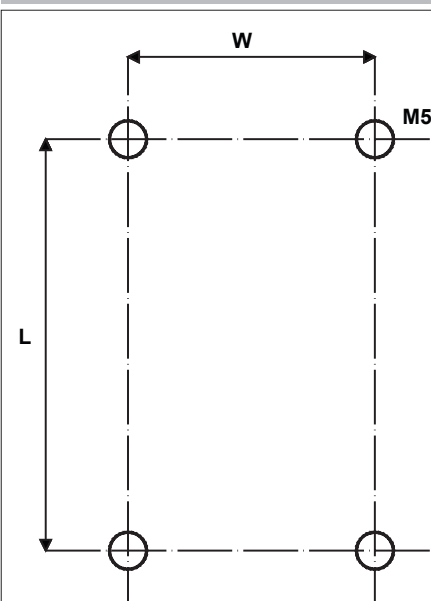
току t=20 ms: 1500A

I²t для разрыва: ≤11200A²s

dV/dt критично с отключенным

выходом: 1000V/μS

МОНТАЖНЫЕ РАЗМЕРЫ



	L (mm)	W (mm)
GTS 15-25	112	0
GTS 40	112	25
GTS 50-60	112	44
GTS 75-90-120	112	113

ТЕПЛОВАЯ ЗАЩИТА

(Только для моделей GTS с током > 40А):

Температура модуля SCR постоянно контролируется внутри устройства.

Когда превышает максимальный температурный порог ($T = 110^{\circ}C$), ток нагрузки на нагрузку прерывается и состояние сигнализируется включением желтого светодиода тепловой защиты.

Изоляция

Номинальное напряжение изоляции на входе/выходе: 4000VAC rms

Условия окружающей среды

- **Рабочая температура окружающей среды:** от 0 до $80^{\circ}C$ (согласно кривых рассеяния)
- **Макс. относительная влажность:** 50% при $40^{\circ}C$
- **Макс. высота установки:** 2000m над уровнем моря
- **Уровень загрязнения:** 2
- **Температура хранения:** $-20...+85^{\circ}C$

Заметки по монтажу

Используйте высокоскоростной плавкий предохранитель, указанный в каталоге, в соответствии с приведенным примером подключения.

- Приложения с твердотельными силовыми модулями должны также включать в себя автоматический выключатель безопасности для отключения линии питания нагрузки.

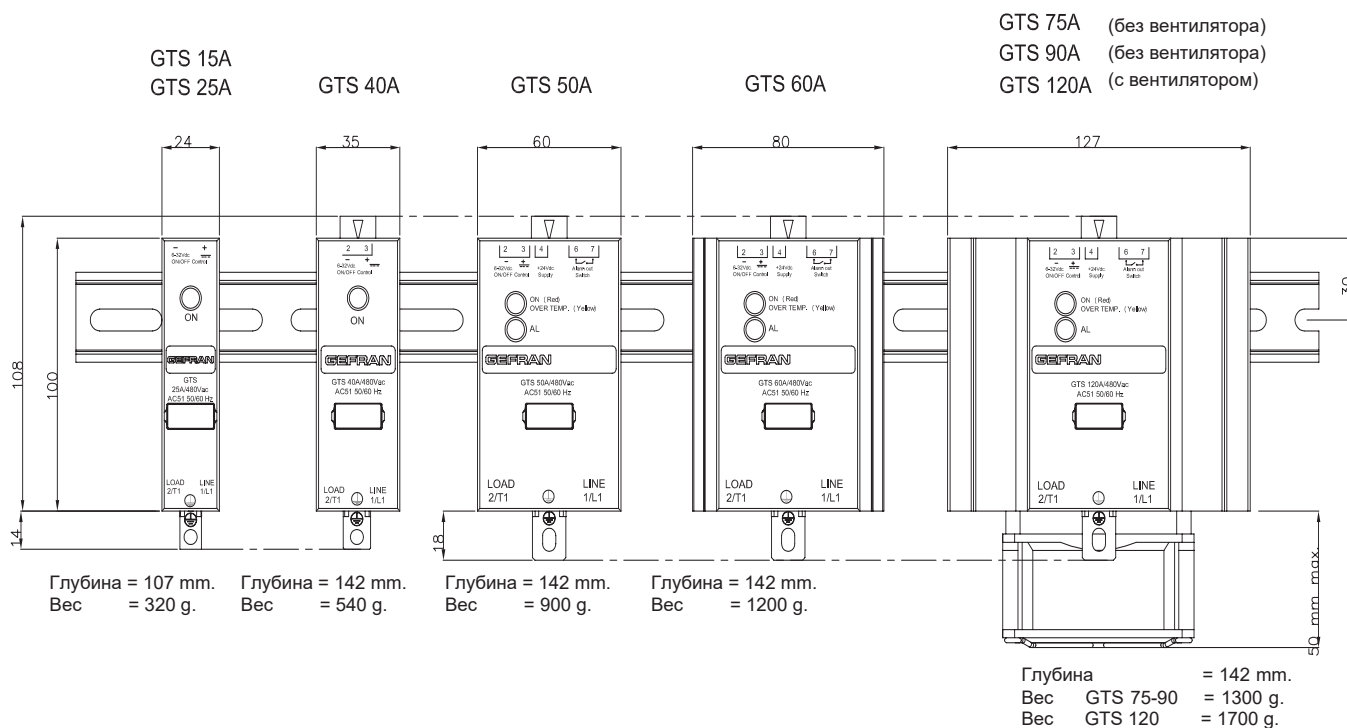
Для обеспечения максимальной надежности необходимо правильно установить прибор в панель, чтобы обеспечить достаточный теплообмен между радиатором и окружающим воздухом посредством естественной конвекции. Установите устройство вертикально (максимальный угол наклона 10° к вертикальной оси)

- Вертикальное расстояние между прибором и стенкой панели > 100 мм
- Горизонтальное расстояние между прибором и панелью: не менее 20 мм
- Вертикальное расстояние между двумя реле: не менее 300 мм.
- Горизонтальное расстояние между двумя реле: не менее 20 мм. Убедитесь, что кабельные каналы не уменьшают такие расстояния; Если это так, установите группы консольно на панель так, чтобы воздух мог проходить вертикально по теплоотводу без препятствий.

Ограничения по использованию

- рассеяние тепловой мощности устройства с ограничением температуры в месте монтажа.
- требуется обмен с наружным воздухом или кондиционером для передачи рассеиваемой энергии за пределы панели.
- установочные ограничения (расстояния между устройствами для обеспечения рассеяния естественной конвекцией)
- Макс. пределы напряжения и производные переходных процессов в линии, для которых твердотельный блок имеет внутренние защитные устройства (в зависимости от модели).
- наличие тока утечки < 3 mA (максимальное значение при номинальном напряжении и температуре перехода $125^{\circ}C$).

РАЗМЕРЫ И МОНТАЖНЫЕ ДАННЫЕ

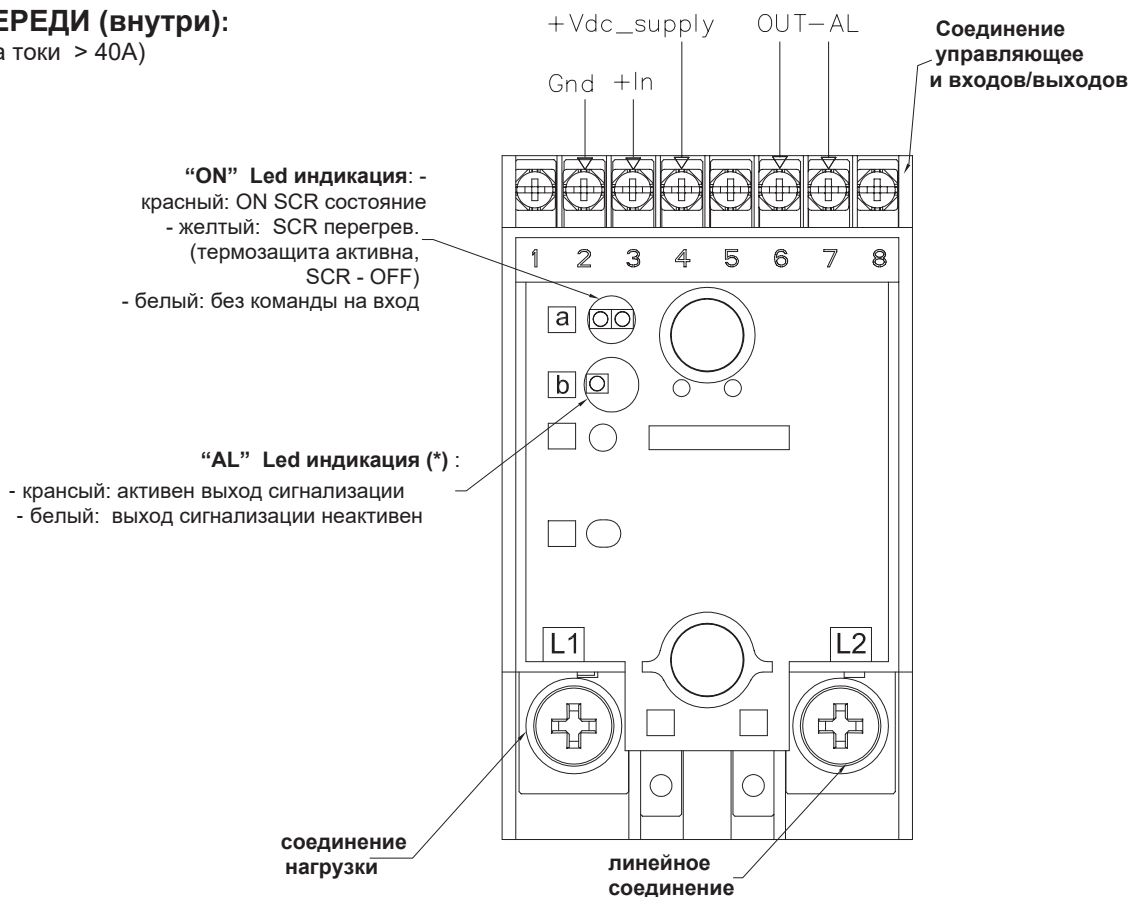


- Светодиод "ON" - красный с активным управлением и желтый, если тепловая защита отключена.
- Светодиод "AL" LED доступен только с опцией выхода сигнализации

ОПИСАНИЕ ЛИЦЕВОЙ ПАНЕЛИ

ВИД СПЕРЕДИ (внутри):

(Модели на токи > 40A)



Описание клемм входов/выходов (GTS > 40A)

№	Описание	Заметки для входа “D” типа		Заметки для входа “A” типа
1	не используется			
2	Управляющий вход GND ON/OFF	Vdc вход GND (питание GND при опциональном решении)		Vac/Vdc вход (Диапазон 20 ... 260Vac/Vdc, I _{max} < 8 mA)
3	+ управляющий вход ON / OFF	Диапазон 6 ... 32Vdc, I _{max} = 10 mA (1 mA с опцией сигнализации)		
4 (*)	Vdc питание	Питание опциональных функций (диапазон 6 ...32 Vdc, I _{max} < 15 mA)		не используется
5	не используется			
6 (*)	выход сигнализации	С опциями 1-2: твердотельный контакт I _{max} = 150 mA V _{max} = 30 Vac/dc Z _{замкнуто} < 15 Ω Z _{разомкнуто} > 1 MΩ	С опциями 3-4: Клемма 6 внутренне присоединена к клемме 4 (Vdc_питание)	С опциями 1: твердотельный контакт I _{max} = 150 mA V _{max} = 30 Vac/dc Z _{замкнуто} < 15 Ω Z _{разомкнуто} > 1 MΩ
7 (*)	выход сигнализации		С опциями 3-4: клемма 7 - это PNP цифровой выход (+) I _{max} = 150 mA	
8	не используется			

(*) опционально

Заметка:

“ON” светодиод - стандартно

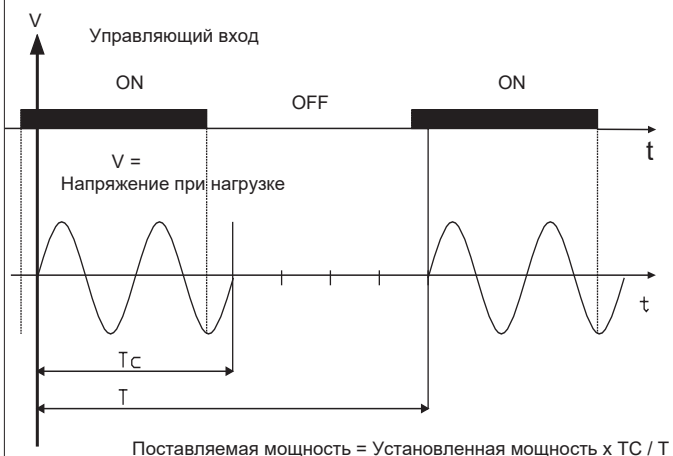
“AL” Led доступен только с опцией выхода сигнализации

ОПИСАНИЕ СВЕДИОДОВ СОСТОЯНИЯ

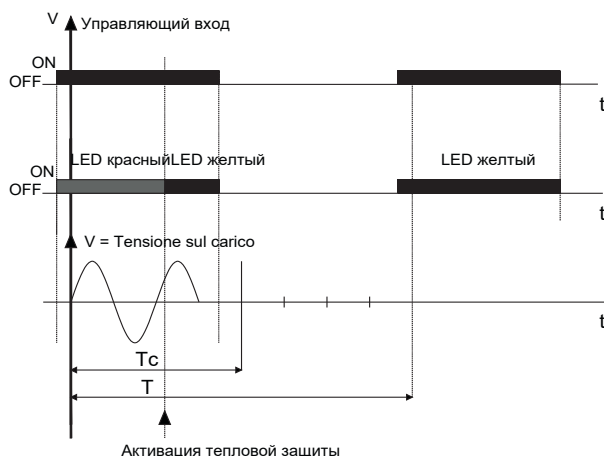
LED	ЦВЕТ	СОСТОЯНИЕ	LED	ЦВЕТ	СОСТОЯНИЕ	LED	ЦВЕТ	СОСТОЯНИЕ
ON	белый	SCR OFF, без сигнализации	ON	красный	SCR ON, без сигнализации	ON	красный	SCR ON, активна сигнализация
AL	белый		AL	белый		AL	красный	
LED	ЦВЕТ	СОСТОЯНИЕ	LED	ЦВЕТ	СОСТОЯНИЕ			
ON	белый	SCR OFF, выход сигнализации активен (тревога сохранена) (Состояние возможно только с GTS с входом “D” и опцией)	ON	желтый	Управляющий сигнал ON, защита от перегрева, SCR - OFF, выход сигнализации активен			
AL	красный		AL	красный				

ТИП ДЕЙСТВИЯ

Управление от логического выхода в напряжении

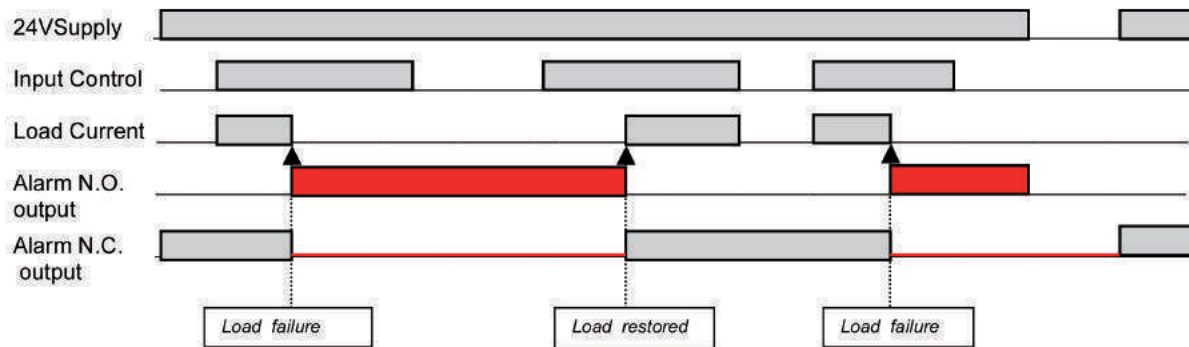


Тепловая защита GTS (только для моделей $\geq 50A$)

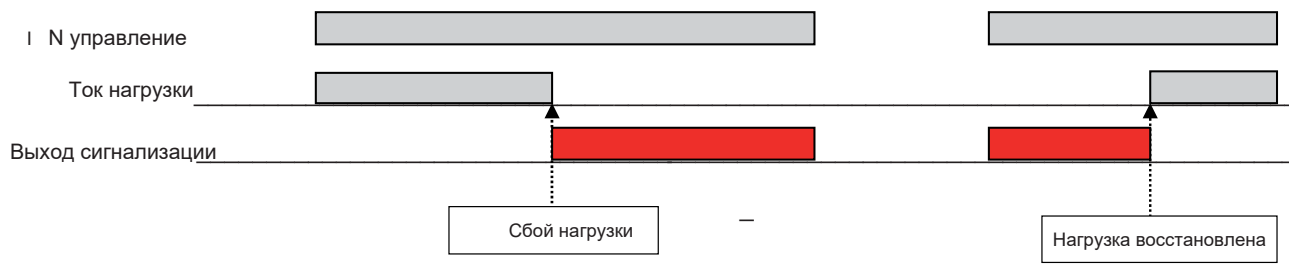


ТИП СИГНАЛА ТРЕВОГИ

с Vdc управлением ("D" тип управления)

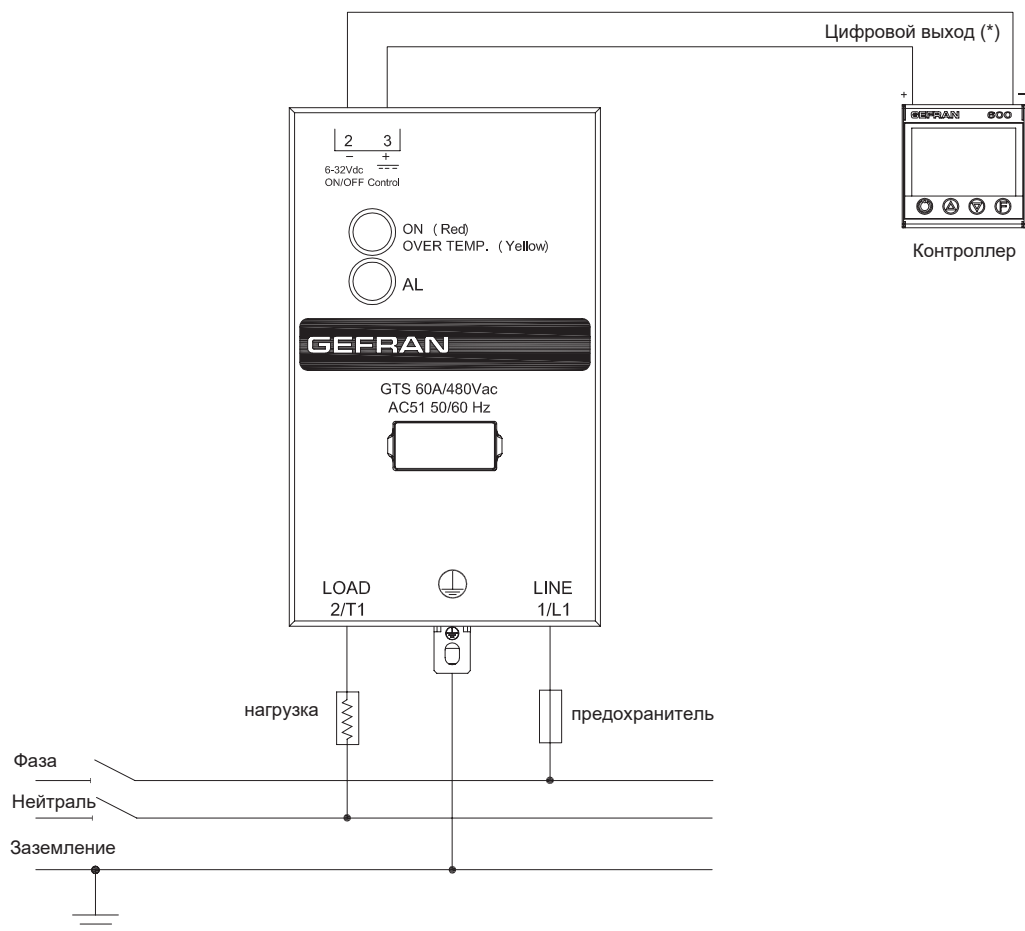


GTS с управлением Vac (тип управления «А»)

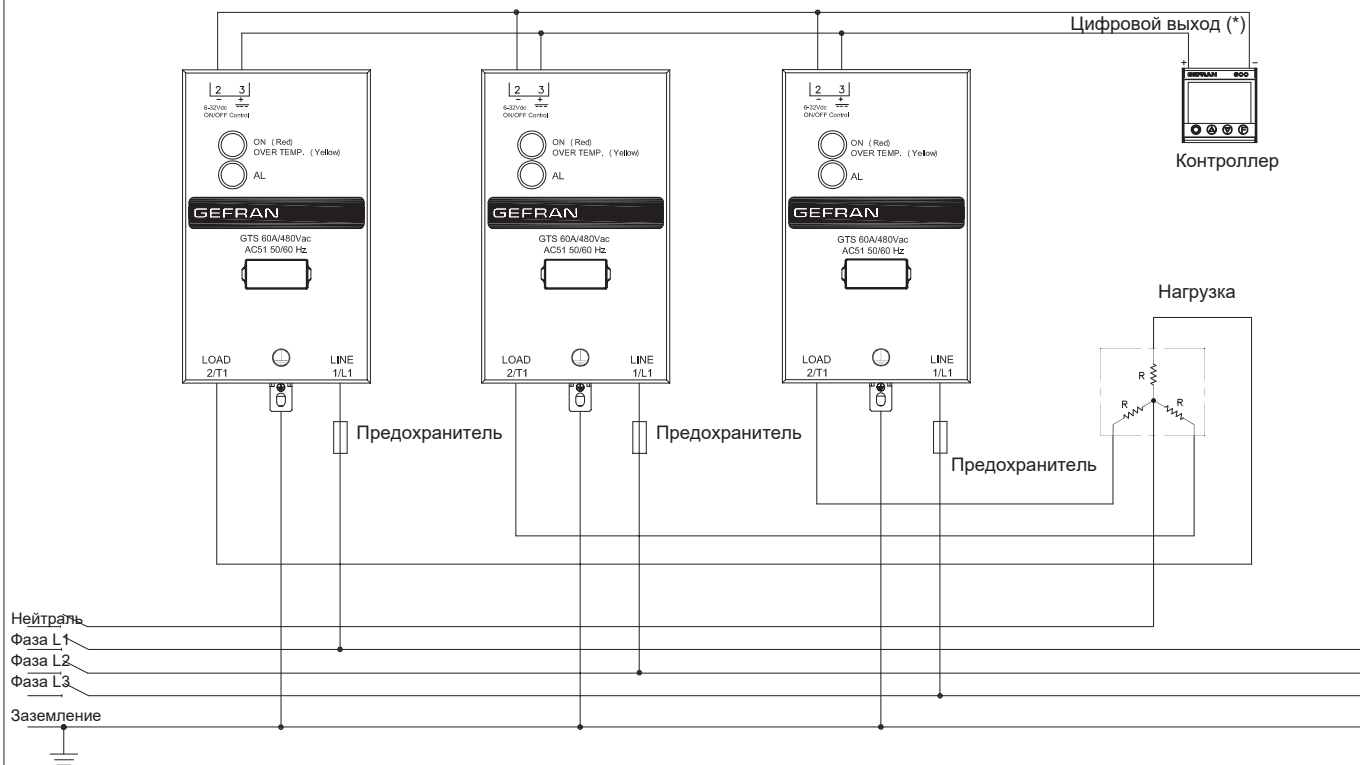


ПРИМЕРЫ СОЕДИНЕНИЯ

Однофазное подключение - GTS с входом управления Vdc (тип входа «D»)



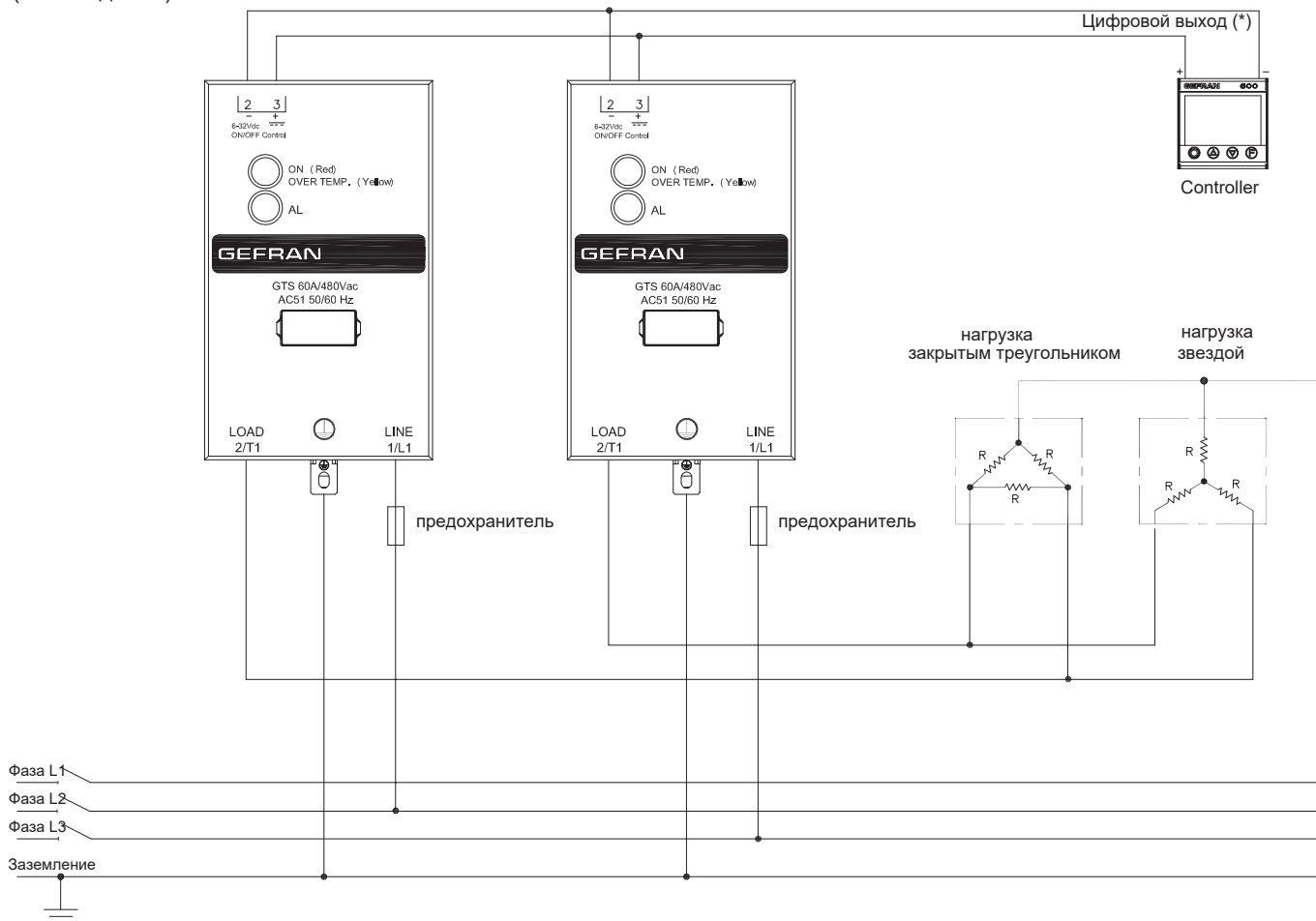
Трёхфазное соединение звездой с нейтралью - GTS с Vdc управляющим входом (тип входа «D»)



(*) либо релейный выход с VAC выходом
(использовать GTS с VAC управляющим входом, тип входа «А»)

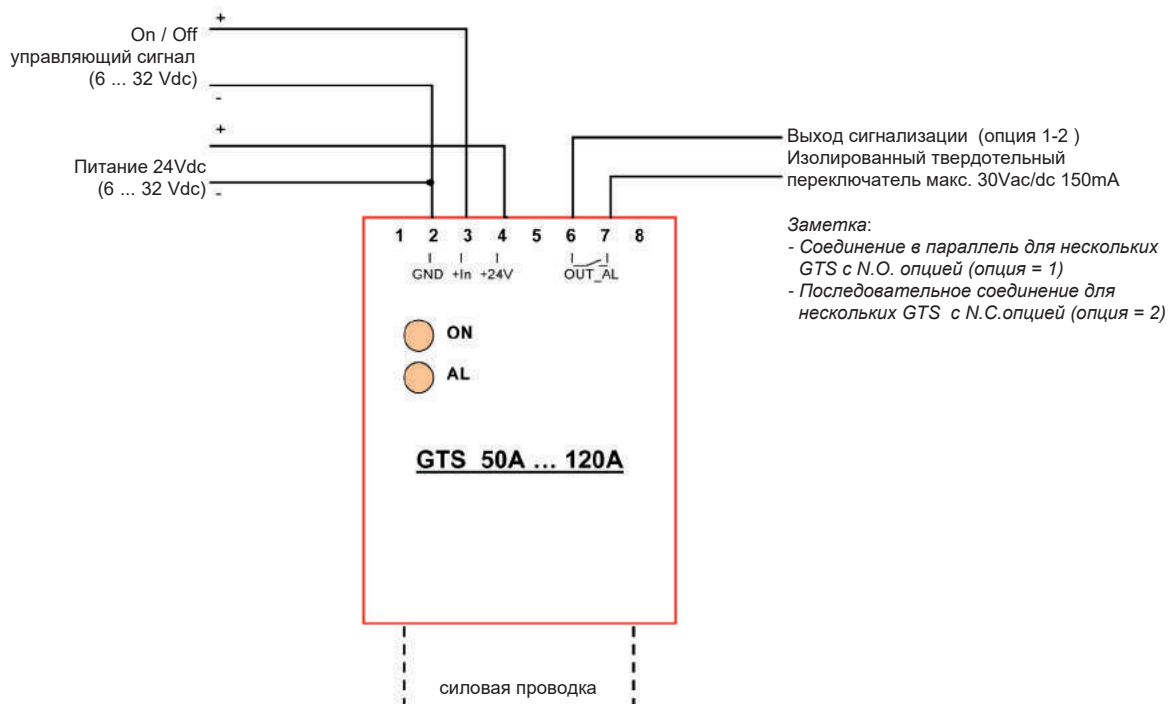
ПРИМЕРЫ ПОДКЛЮЧЕНИЯ

Трехфазное соединение треугольником либо звездой без нейтрали на двух фазах - GTS с VDC управляющим входом (тип входа "D")



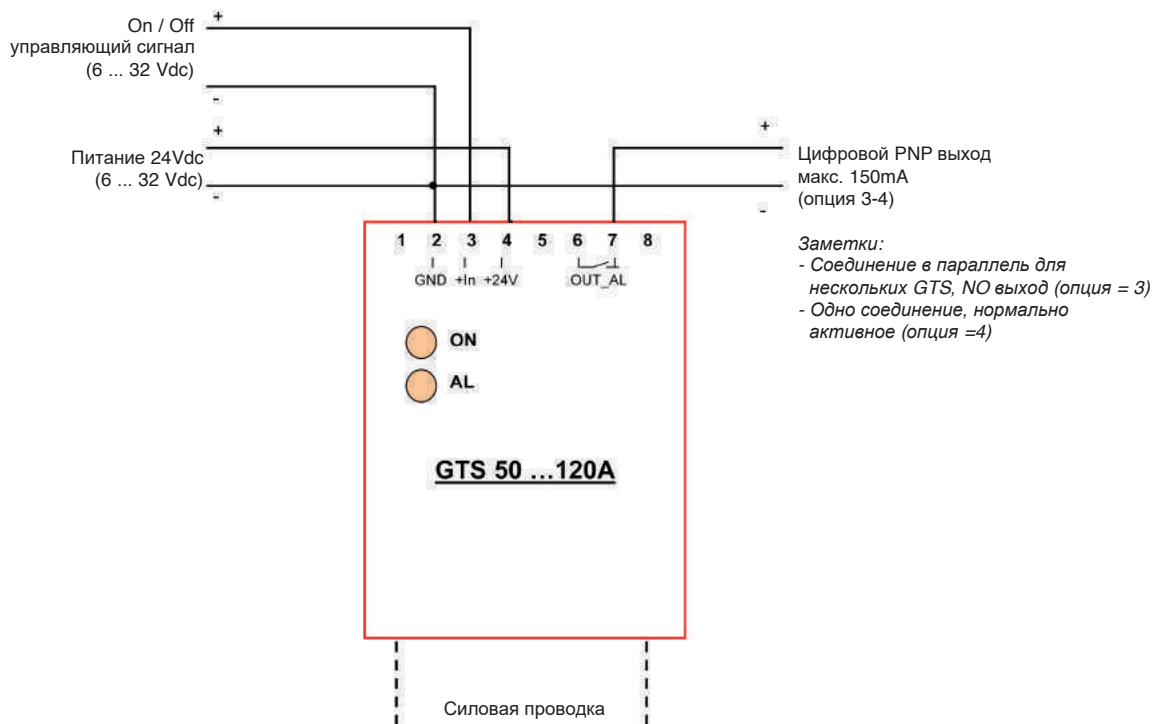
(*) либо релейный выход с VAC выходом
(использовать GTS с VAC управляющим входом, тип входа "A")

Пример соединения для GTS с Vdc управлением с опциональной сигнализацией изолированного контакта на выходе (только модели GTS-xx/xx-D-1 или GTS-xx/xx-D-2)

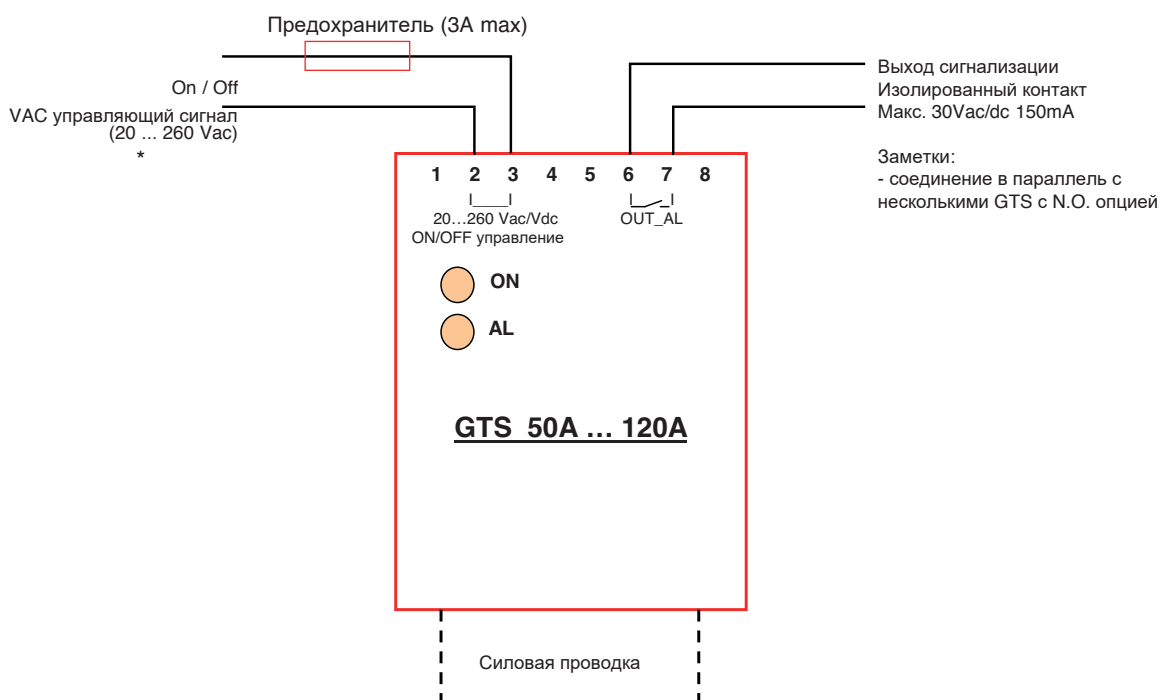


ПРИМЕРЫ ПОДКЛЮЧЕНИЯ

Пример соединения для GTS с Vdc управлением с опцией PNP сигнализации (только модели GTS-xx/xx-D-3 или GTS-xx/xx-D-4)



Пример соединения для GTS с Vac управлением с опцией сигнализации (опция 1) (только для моделей GTS-xx/xx-A-1)

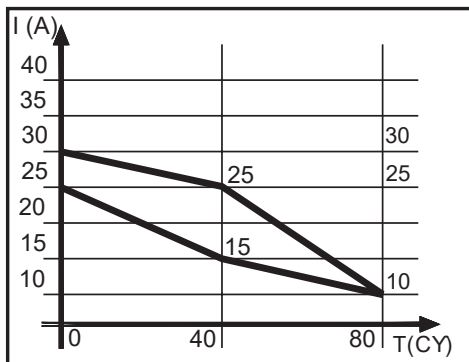


(*) 20...250Vac/Vdc для CSA сертификации

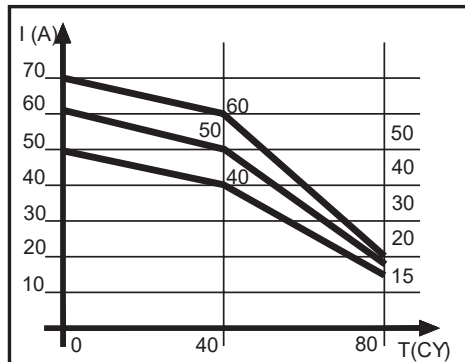
КРИВЫЕ РАССЕЯНИЯ

Кривые номинального тока в соответствии с комнатной температурой.

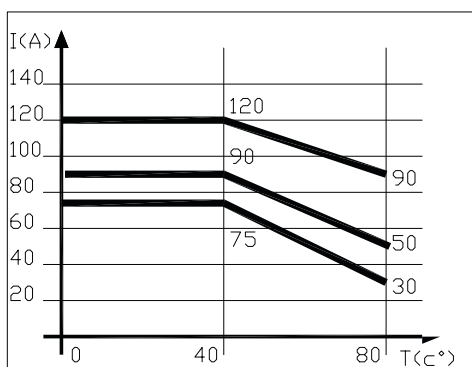
GTS 15 - 25



GTS 40 - 50 - 60



GTS 75 - 90 - 120



Заметка: кривые GTS 120 относятся к прибору со стандартным рабочим состоянием.

ТАБЛИЦА КЛЕММ И ПРОВОДНИКОВ

Размер	КЛЕММЫ УПРАВЛЕНИЯ			СИЛОВЫЕ КЛЕММЫ			КЛЕММЫ ЗАЗЕМЛЕНИЯ *	
	область контакта (WxD) тип винта	Тип изолированной клеммы	Макс. ** сечение проводника момент затяжки	область агеа (WxD) тип винта	Тип изолированной клеммы	Макс. ** сечение проводника момент затяжки	Область контакта (WxD) тип винта	Макс. ** сечение проводника момент затяжки
15A	6,4x9 M3	круглый/вилкой разъем с защелкой *	6mm ² 0,6Nm Max	6,4x9 M3	круглый/вилкой разъем с защелкой **	6mm ² 0,4-0,6Nm	9x12 M5	6mm ² 1,3-1,8Nm
25A	6,4x9 M3	круглый/вилкой разъем с защелкой *	6mm ² 0,6Nm Max	6,4x9 M3	круглый/вилкой	6mm ² 0,4-0,6Nm	9x12 M5	6mm ² 1,3-1,8Nm
40A	6,3x9 M3	круглый/вилкой наконечник	2,5mm ² 0,6Nm Max	12x12 M5	круглый/вилкой	16mm ² 1,5-2,2Nm	11,5x12 M5	16mm ² 1,5-2,2Nm
50/60A	6,3x9 M3	круглый/вилкой наконечник	2,5mm ² 0,6Nm Max	16x18 M6	круглый/вилкой	50mm ² 3,5-6Nm	14x16 M5	50mm ² 1,8-2,5Nm
75-90A	6,3x9 M3	круглый/вилкой наконечник	2,5mm ² 0,6Nm Max	16x18 M6	круглый/вилкой	50mm ² 3,5-6Nm	14x16 M5	50mm ² 1,8-2,5Nm
120A	6,3x9 M3	круглый/вилкой наконечник	2,5mm ² 0,6Nm Max	16x18 M6	круглый/вилкой	50mm ² 3,5-6Nm	14x16 M5	50mm ² 1,8-2,5Nm

(*) Розетка с защелкой (для вставки, снятия M3 винта нажать в посадочное место (**)
Макс. сечения указаны для однополюсных медных проводников с ПВХ изоляцией.

• Заметка: для клеммы заземления необходимо использовать круглую клемму (WxD) = ширина x глубина

ПРИНАДЛЕЖНОСТИ

Широкий диапазон принадлежностей (включая предохранители и их держатели, радиаторы, платы идентификации и термостаты).
Для выбора принадлежностей см. раздел "Твердотельные реле - Принадлежности"

КОД ЗАКАЗА

GTS - [] / [] - [] - [] [] []

Модель	
Версия с двойным тиристором	GTS

Номинальный ток	
15Аас	15
25Аас	25
40Аас	40
50Аас	50
60Аас	60
75Аас	75
90Аас	90
120Аас	120

Номинал. напряжение	V
230Vac	24
480Vac	48
600Vac	60

Тип входа	
6 ... 32 Vdc	D
20 ... 260 Vac / Vdc	A

Вентилятор (для 120А)	
VEN-90	80x80x40 230V 14W
VEN-91	80x80x40 115V 14W
VEN-92	80x80x25 24Vdc 4W *

Выход сигнализации	
Только для GS/GTS с номинальным током ≥ 50А	
0	нет
1	выход изолиров. переключателя (нормально открыт)
2 (**)	выход изолиров. переключателя (нормально закрыт)
3 (**)	Цифровой PNP (нормально открыт)
4 (**)	Цифровой PNP (нормально активен)

(**) только для моделей со входом "D" типа

* Принадлежности только для GEFLEX моделей GFX-** 120/480

Свяжитесь с представителем GEFAN для уточнения возможного исполнения

Заказ г.Минск www.tiristor.by email: minsk17@tut.by viber и тел.+375447584780

GEFRAN ТВЕРДОТЕЛЬНЫЕ РЕЛЕ, Минск тел.+375447584780

www.fotorele.net www.tiristor.by радиодетали, электронные компоненты

email minsk17@tut.by tel.+375 29 758 47 80 МТС

Мы не работаем с частными (физическими) лицами.

Мы работаем только с юридическими лицами(организациями) и ИП и только по безналичному расчёту.

**GEFRAN ТВЕРДОТЕЛЬНЫЕ РЕЛЕ, [каталог](#), [описание](#), [технические](#), [характеристики](#), [datasheet](#),
[параметры](#), [маркировка](#), [габариты](#), [фото](#), [даташит](#) [QR код](#)**



www.fotorele.net www.tiristor.by радиодетали, электронные компоненты
email minsk17@tut.by tel.+375 29 758 47 80 МТС

Реле, твердотельное каталог, описание, технические, характеристики, datasheet, параметры, маркировка, габариты, фото, даташит, gefran



Реле, твердотельное, Минск, Беларусь

Электронные компоненты, радиодетали

[где и как купить в Минске?](#)

Категория: Реле твердотельное, однофазные, трехфазные

GEFRAN

PRODUCT RANGE

GEFRAN

Заказ г.Минск www.tiristor.by email: minsk17@tut.by viber и тел.+375447584780
каталог, описание, технические, характеристики, datasheet, параметры,
маркировка, габариты, фото, модуль



GEFRAN

GEFRAN



THE ACKNOWLEDGED INTERNATIONAL LEADER

Thanks to forty years of experience, Gefran is the world leader in the design and production of solutions for **measuring, controlling, and driving industrial production processes**. We have 14 branches in 12 countries and a network of over 80 worldwide distributors.



QUALITY AND TECHNOLOGY

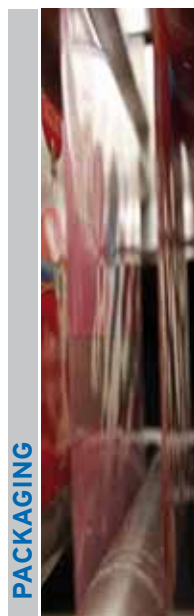
Gefran components are a **concentrate of technology**, the result of constant research and of **cooperation with major research centres**.

For this reason, Gefran is synonymous with **quality and expertise in the design and production of:**

- > **sensors** for measuring main variables such as **temperature, pressure, position and force**
- > **state-of-the-art components and solutions for indication and control**, satisfying demands for optimisation of processes and intelligent management of energy consumption
- > **automation platforms** of various complexities
- > **electronic drives and electric motors** in AC and DC for all industrial automation, lift, and photovoltaic needs.

Gefran's know-how and experience guarantee continuity and tangible solutions.

GEFRAN



AUTOMATION SOLUTIONS



PERFORMANCE

In addition to foreseeing the market's application needs, Gefran forms partnerships with its customers to find **the best way to optimise and boost the performance of various applications.** Gefran products communicate with one another to provide integrated solutions, and can dialogue with devices by other companies thanks to compatibility with numerous fieldbuses.



SERVICES

PRE AND POST SALES

A team of Gefran experts works with the customer to select the ideal product for its application and to help install and configure devices (customercare@gefran.com).

TRAINING

Gefran offers a wide range of courses at different levels for the technical-commercial study of the Gefran product range as well as specific courses on demand.

LAT 011 is Gefran's exclusive calibration service, offered on-site and at Gefran's modern laboratories. Gefran's LAT011 lab is part of the ACCREDIA circuit, and its **certifications, inspections, tests, and calibrations are recognised throughout the world.**

MARKETS



FOOD

GLASS

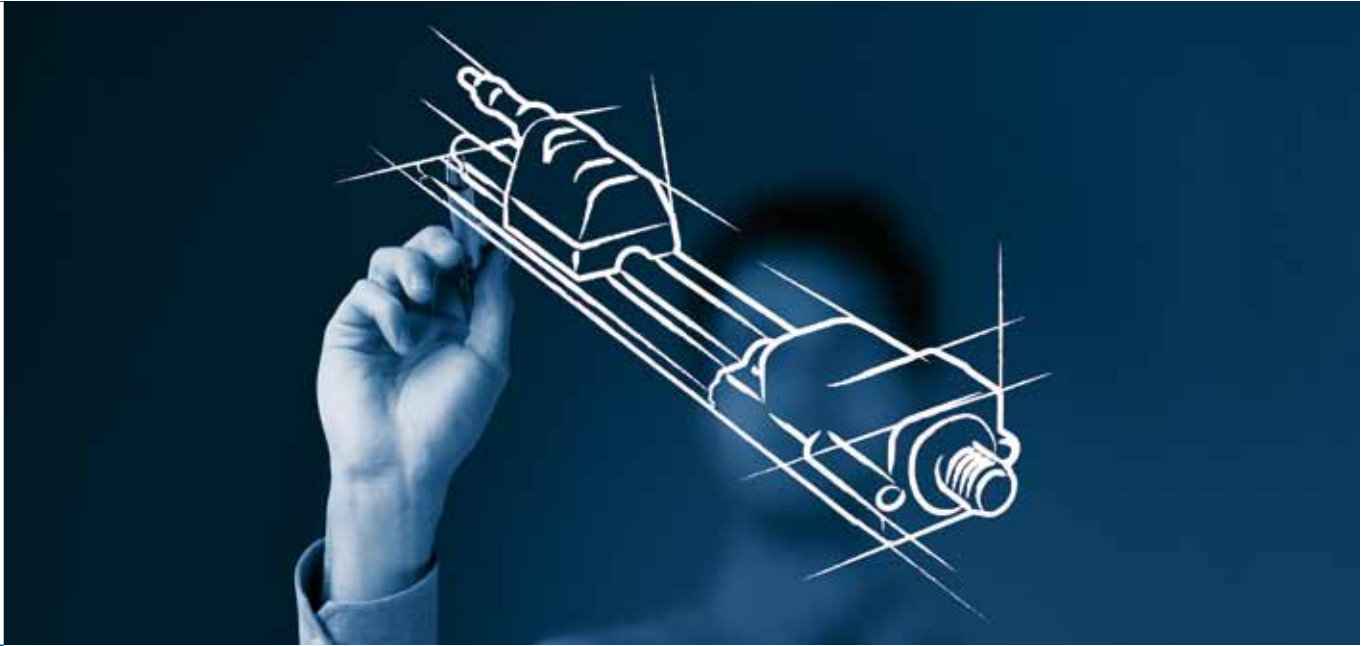
TEXTILE

ENERGY

AUTOMOTIVE

CERAMICS

INDUSTRIAL PRINTING



INDUSTRIAL PRESSURE TRANSDUCERS

For measuring fluids, liquids or gases - ideal for all industrial applications.
ATEX versions available for use in potentially explosive atmospheres.



MELT PRESSURE TRANSDUCERS

High temperature pressure transducers and transmitters are available with mercury filling, FDA-approved fluid, and fluid-free versions. Ideal for extrusion and injection applications.



LINEAR POTENTIOMETRIC TRANSDUCERS

For measuring displacement of moving mechanical parts. Sturdy and versatile, ideal for the majority of industrial applications, even under very harsh conditions.



LINEAR MAGNETOSTRICTIVE TRANSDUCERS

Created as the evolution of linear (potentiometric) displacement transmitters, Gefran magnetostrictives are designed for more complex applications, and now offer ONDA technology for simple installation, versatility, and excellent price/quality ratio.



THERMOCOUPLES AND THERMORESISTANCES

Simple and reliable temperature sensors, with a wide selection according to required application, ambient conditions, work, temperature range and precision.



LOAD CELLS AND FORCE TRANSDUCERS

For measuring the tension of plastic films and tapes, weight and measurement of compression loads and reaction force.





CONTROLLERS

A wide range of panel-mounted instruments for precise control of temperature, pressure, force, position, humidity, etc. Available in general purpose, advanced and high performance versions, with control and recording functions.



INDICATORS

Panel-mounted, configurable microprocessors to display temperature, pressure, flow rate, force, position, voltage, current, humidity, etc. With programmable alarms and diagnostics.



GEFLEX LINE

MODULAR POWER CONTROLLERS

All-in-one units for rear-panel installation that combine microprocessor controller, power actuator, current transformer and (in multifunction models) fuse and fuse holder.



SOLID-STATE RELAYS AND POWER UNITS

Solid-state actuators and relays to control resistive/inductive/infrared loads in modern temperature control systems. Complete range up to 250 A.





GCUBE FIT

COMPACT MACHINE CONTROLLER

A compact custom solution for the control and display of medium/small systems and machines.

Process control, data logging, and PLC: all in a single unit.



GCUBE MODULA

INTEGRATED MACHINE CONTROL

An integrated solution designed specifically for medium systems and machines where scalability, multi-protocol communication management, and remote access are essential characteristics.



GCUBE ADVANCED

DISTRIBUTED MACHINE CONTROL

A distributed solution with high refresh rate for use in high-performance systems and machines.

The use of Ethernet-base fieldbuses overcomes the limit of normal protocols and provides a no-compromise solution.



PROGRAMMING PLATFORM

Gefran automation platforms share a single programming tool. The use of advanced programming languages such as C++ and JAVA, and of programming environments conforming to IEC 61131-3 standards make GF_Project an open and *user-friendly* development environment.





INVERTERS

A wide range of field-oriented and sensorless vector inverters ensure high performance for general purpose and custom applications.



ACTIVE FRONT END INVERTER

Thanks to constant research, Gefran offers a wide range of inverters with AFE (Active Front End) technology for regeneration of dissipated heat.



SERVODRIVES

Precise and high-performance electronic devices to control brushless motors. Gefran servodrives integrate all typical motion control architecture technologies in a single drive.



AC, DC, REGENERATIVE CONVERTERS

A line of drives to control DC motors, designed to satisfy the needs of modern industrial systems. Integrates dedicated functions and application packets.



PV INVERTERS

A complete line of inverters for the photovoltaic sector, available in home and industrial version. Service and assistance complete the offer to the installer.



LIFT INVERTERS

A range of inverters designed for the civil lifting market. Technology and performance aimed at modern lifting systems and revamping projects.



GEFRAN

Panel Mount "Hockey Puck" Relays and DIN Rail Mounted Solid State Relays up to 120 Amps



With forty years of experience, Gefran is the world leader in the design and production of solutions for measuring, controlling, and driving industrial production processes. Gefran's know-how and experience guarantee continuity and tangible solutions. Gefran's line of solid state relays are the ideal solution for applications where high speed switching and long life are essential. In specific applications, solid state relays offer many advantages over electromechanical devices including no moving parts or contact arcing. In addition, solid state relays are directly compatible with logic components such as microprocessors and PLCs.

leakage. This feature is important in certain medical, residential and industrial applications. The Gefran solid state relays also include built-in metal oxide varistor (MOV) protection to protect against internal damage to the solid state relay.

Output Circuit Features

The Gefran solid state relays feature zero voltage turn-on, which means they are designed to turn on at the next zero crossover after application of the control voltage. This limits electromagnetic interference, reducing the chance of damage to downstream equipment. A built-in MOV reduces the likelihood of damage to the relay from rapid changes in voltage (dv/dt) and transient voltages.

Many safety and convenience features

All Gefran solid state relays come standard with an LED to indicate when the relay is in an operational state. This increases safety and speeds troubleshooting.

In addition, all GQ hockey puck type relays come standard with a load side cover that provides touch protection. The GTS DIN-Rail mounted relays also offer touch protection through the use of a removable protective cover plate.

Common Applications

- Heating controls*
- Injection molding machines*
- Semiconductor manufacturing equipment*
- Glass processing*
- Welding controls*
- Food processing*
- Industrial & commercial ovens*
- Soldering machines*
- Medical equipment*
- Office machinery*
- Robotics*

Broad selection for many applications

The Gefran GQ solid state relays are available in single phase "hockey puck" models up to 90 amps and the GTS DIN-rail single phase units with integral heatsink up to 120 amps. The GTZ three phase models with integral heatsink up to 55 amps are also available.

Opto-isolated input limits current leakage

All Gefran solid state relays feature opto-isolated inputs where an internal LED signals a photosensitive element when output switching is to occur. This provides up to 4,000V isolation between the input voltage and the output voltage and also limits current



Integral heatsink with DIN-rail mounting

A complete selection of solid state relays are available with a built-in heatsink (GTS/GTZ models). This eliminates the hassle of selecting and installing a properly sized heatsink, or mounting to a panel mount relay directly on the back pan with silicone thermoconductive grease.

Approvals

The Series GQ and GTZ solid state relays are cURus approved and CE marked. The GTZ DIN-rail solid state relays are cULus Listed and CE marked.



- ❶ Finger Safe Protection Covers
- ❷ AC or DC Input Connections
- ❸ AC Output Connection Models
- ❹ LED Status Indicator
- ❺ Internal MOV protection
- ❻ Integrated or optional heatsinks
- ❼ cURus, CE
- ❽ cULus, CE

Catalog Number Quick Guide

GQ- 15 - 24 - D - 1 - 4

	Nominal Current		Nominal Voltage		Control Voltage		Overvoltage		Connectors	
Hockey Puck	15	15A AC	24	230V AC	D	3...32V DC	1	Internal protection	4	Two-pin screw connector, low profile enclosed
1-Phase	25	25A AC	60	600V AC	A	20...260V AC				
Panel Mount	50	50A AC								
	90	90A AC								

GTS- 25 / 60 - D - 0 -

	Rated Current		Rated Voltage		Control Voltage		Alarm Output		Fan	
1-Phase	15	15A AC	48	480V AC	D	6...32V DC	0	None	VEN-90	230V 14W
DIN Rail mount	25	25A AC	60	600V AC	A	20...260V AC/DC				80x80x40
	40	40A AC							VEN-91	115V 14W
	50	50A AC								80x80x40
	60	60A AC								
	75	75A AC								
	90	90A AC								
	120	120A AC								Required on 120A models only

GTZ 40 / 60 - D - 0 - VEN-91

	Nominal Current		Nominal Voltage		Control Voltage		Alarm Output		Fan	
3-Phase	25	25A AC	48	480V AC	D	5...32V DC	0	None	VEN-90	230V 14W
DIN Rail mount	40	40A AC	60	600V AC	A	20...260V AC/DC				80x80x40
	55	55A AC							VEN-91	115V 14W
										80x80x40
										Required on 40A & 55A models only

1 Pole Panel Mount Relay, 3-32V DC Control, 230V AC Output


Specifications	15 Amp		25 Amp		50 Amp		90 Amp	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
		GQ-15-24-D-1-4	45	GQ-25-24-D-1-4	50	GQ-50-24-D-1-4	79	GQ-90-24-D-1-4
Input								
Voltage Range	3 - 32V DC		3 - 32V DC		3 - 32V DC		3 - 32V DC	
Turn-on Voltage (min.)	≥ 2.7V DC		≥ 2.7V DC		≥ 2.7V DC		≥ 2.7V DC	
Turn-off Voltage (max.)	≤ 1V DC		≤ 1V DC		≤ 1V DC		≤ 1V DC	
Consumption	≤ 13mA @ 32V		≤ 13mA @ 32V		≤ 13mA @ 32V		≤ 13mA @ 32V	
Reverse Voltage	< 36V DC		< 36V DC		< 36V DC		< 36V DC	
Output								
Amp Rating AC51	15		25		50		90	
Nominal Voltage	24...230V AC		24...230V AC		24...230V AC		24...230V AC	
Maximum Voltage	20...253V AC		20...253V AC		20...253V AC		20...253V AC	
Zero Switching Voltage	≤ 20V		≤ 20V		≤ 20V		≤ 20V	
Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)	58 (H) x 45 (W) x 30.5 (D), from base to top of control terminal 45 (D)							

1 Pole Panel Mount Relay, 20-260V AC Control, 230V AC Output


Specifications	15 Amp		25 Amp		50 Amp		90 Amp	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
		GQ-15-24-A-1-4	53	GQ-25-24-A-1-4	55	GQ-50-24-A-1-4	88	GQ-90-24-A-1-4
Input								
Voltage Range	20...260V AC		20...260V AC		20...260V AC		20...260V AC	
Turn-on Voltage (min.)	≥ 15V AC		≥ 15V AC		≥ 15V AC		≥ 15V AC	
Turn-off Voltage (max.)	≤ 6V AC		≤ 6V AC		≤ 6V AC		≤ 6V AC	
Consumption	≤ 8mA @ 260V AC		≤ 8mA @ 260V AC		≤ 8mA @ 260V AC		≤ 8mA @ 260V AC	
Output								
Amp Rating AC51	15		25		50		90	
Nominal Voltage	24...230V AC		24...230V AC		24...230V AC		24...230V AC	
Maximum Voltage	20...253V AC		20...253V AC		20...253V AC		20...253V AC	
Zero Switching Voltage	≤ 20V		≤ 20V		≤ 20V		≤ 20V	
Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)	58 (H) x 45 (W) x 30.5 (D), from base to top of control terminal 45 (D)							

1 Pole Panel Mount Relay, 3-32V DC Control, 600V AC Output


Specifications	50 Amp		90 Amp	
	Catalog Number	Price	Catalog Number	Price
		GQ-50-60-D-1-4	96	GQ-90-60-D-1-4
Input				
Voltage Range	3 - 32V DC		3 - 32V DC	
Turn-on Voltage (min.)	≥ 2.7V DC		≥ 2.7V DC	
Turn-off Voltage (max.)	≤ 1V DC		≤ 1V DC	
Consumption	≤ 13mA @ 32V		≤ 13mA @ 32V	
Reverse Voltage	< 36V DC		< 36V DC	
Output				
Amp Rating AC51	50		90	
Nominal Voltage	48...600V AC		48...600V AC	
Maximum Voltage	40...660V AC		40...660V AC	
Zero Switching Voltage	≤ 40V		≤ 40V	
Frequency Range	45...65 Hz		45...65 Hz	
Dimension (mm)	58 (H) x 45 (W) x 30.5 (D), from base to top of control terminal 45 (D)			

1 Pole Panel Mount Relay, 20-260V AC Control, 600V AC Output


Specifications	50 Amp		90 Amp	
	Catalog Number	Price	Catalog Number	Price
		GQ-50-60-A-1-4	104	GQ-90-60-A-1-4
Input				
Voltage Range	20...260V AC		20...260V AC	
Turn-on Voltage (min.)	≥ 15V AC		≥ 15V AC	
Turn-off Voltage (max.)	≤ 6V AC		≤ 6V AC	
Consumption	≤ 8mA @ 260V AC		≤ 8mA @ 260V AC	
Output				
Amp Rating AC51	50		90	
Nominal Voltage	48...600V AC		48...600V AC	
Maximum Voltage	40...660V AC		40...660V AC	
Zero Switching Voltage	≤ 40V		≤ 40V	
Frequency Range	45...65 Hz		45...65 Hz	
Dimension (mm)	58 (H) x 45 (W) x 30.5 (D), from base to top of control terminal 45 (D)			

GQ Relays are cUR (E243386). Not CSA.

1 Pole DIN-Rail Mount Relay, 6-32V DC Control, 480V AC Output  

**DISCONTINUED
SEE 600V**



Specifications	15 Amp		25 Amp		40 Amp		50 Amp	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	GTS-15/480-0	99	GTS-25/480-0	111	GTS-40/480-0	134	GTS-50/480-0	242
Input	6 - 32V DC		6 - 32V DC		6 - 32V DC		6 - 32V DC	
Voltage Range	6 - 32V DC		6 - 32V DC		6 - 32V DC		6 - 32V DC	
Turn-on Voltage (min.)	> 5.1V DC		> 5.1V DC		> 5.1V DC		> 5.1V DC	
Turn-off Voltage (max.)	< 3V DC		< 3V DC		< 3V DC		< 3V DC	
Consumption	≤ 10mA @ 32V		≤ 10mA @ 32V		≤ 10mA @ 32V		≤ 10mA @ 32V	
Reverse Voltage	< 36V DC		< 36V DC		< 36V DC		< 36V DC	
Output	15		25		40		50	
Amp Rating AC51	15		25		40		50	
Nominal Voltage	24...480V AC		24...480V AC		24...480V AC		24...480V AC	
Maximum Voltage	20...530V AC		20...530V AC		20...530V AC		20...530V AC	
Zero Switching Voltage	< 20V		< 20V		< 20V		< 20V	
Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)	100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

G
Gefran Solid State Relays

1 Pole DIN-Rail Mount Relay, 20-260V AC Control, 480V AC Output  

**DISCONTINUED
SEE 600V**



Specifications	15 Amp		25 Amp		40 Amp		50 Amp	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	GTS-15/480-0-AC	108	GTS-25/480-0-AC	117	GTS-40/480-0-AC	147	GTS-50/480-0-AC	250
Input	20...260V AC		20...260V AC		20...260V AC		20...260V AC	
Voltage Range	20...260V AC		20...260V AC		20...260V AC		20...260V AC	
Turn-on Voltage (min.)	≥ 15V AC		≥ 15V AC		≥ 15V AC		≥ 15V AC	
Turn-off Voltage (max.)	≤ 6V AC		≤ 6V AC		≤ 6V AC		≤ 6V AC	
Consumption	≤ 8mA @ 260V AC		≤ 8mA @ 260V AC		≤ 8mA @ 260V AC		≤ 8mA @ 260V AC	
Output	15		25		40		50	
Amp Rating AC51	15		25		40		50	
Nominal Voltage	24...480V AC		24...480V AC		24...480V AC		24...480V AC	
Maximum Voltage	24...530V AC		24...530V AC		24...530V AC		24...530V AC	
Zero Switching Voltage	< 20V		< 20V		< 20V		< 20V	
Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)	100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

R/F = Refer to factory for availability

1 Pole DIN-Rail Mount Relay, 6-32V DC Control, 480V AC Output  

**DISCONTINUED
SEE 600V**



Specifications		60 Amp		75 Amp		90 Amp		120 Amp	
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	without integrate fan (not required)	GTS-60/480-0	301	GTS-75/480-0	358	GTS-90/480-0	633		
	with integrated fan 230V							GTS-120/480-0-VEN-90	750
	with integrated fan 115V							GTS-120/480-0-VEN-91	
Input	Voltage Range	6 - 32V DC		6 - 32V DC		6 - 32V DC		6 - 32V DC	
	Turn-on Voltage (min.)	> 5.1V DC		> 5.1V DC		> 5.1V DC		> 5.1V DC	
	Turn-off Voltage (max.)	< 3V DC		< 3V DC		< 3V DC		< 3V DC	
	Consumption	≤ 10mA @ 32V		≤ 10mA @ 32V		≤ 10mA @ 32V		≤ 10mA @ 32V	
	Reverse Voltage	< 36V DC		< 36V DC		< 36V DC		< 36V DC	
Output	Amp Rating @ 40°C	60		75		90		120	
	Nominal Voltage	24...480V AC		24...480V AC		24...480V AC		24...480V AC	
	Maximum Voltage	24...530V AC		24...530V AC		24...530V AC		24...530V AC	
	Zero Switching Voltage	< 20V		< 20V		< 20V		< 20V	
	Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)		108 (H) x 80 (W) x 107 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 158 (D)	

1 Pole DIN-Rail Mount Relay, 20-260V AC Control, 480V AC Output  

**DISCONTINUED
SEE 600V**








Specifications		60 Amp		75 Amp		90 Amp		120 Amp	
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	without integrate fan (not required)	GTS-60/480-0-AC	316	GTS-75/480-0-AC	366	GTS-90/480-0-AC	646		
	with integrated fan 230V							GTS-120/480-0-AC-VEN-90	770
	with integrated fan 115V							GTS-120/480-0-AC-VEN-91	
Input	Voltage Range	20...260V AC		20...260V AC		20...260V AC		20...260V AC	
	Turn-on Voltage (min.)	≥ 15V AC		≥ 15V AC		≥ 15V AC		≥ 15V AC	
	Turn-off Voltage (max.)	≤ 6V AC		≤ 6V AC		≤ 6V AC		≤ 6V AC	
	Consumption	≤ 8mA @ 260V AC		≤ 8mA @ 260V AC		≤ 8mA @ 260V AC		≤ 8mA @ 260V AC	
	Reverse Voltage	< 36V DC		< 36V DC		< 36V DC		< 36V DC	
Output	Amp Rating @ 40°C	60		75		90		120	
	Nominal Voltage	24...480V AC		24...480V AC		24...480V AC		24...480V AC	
	Maximum Voltage	24...530V AC		24...530V AC		24...530V AC		24...530V AC	
	Zero Switching Voltage	< 20V		< 20V		< 20V		< 20V	
	Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)		108 (H) x 80 (W) x 107 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 158 (D)	






R/F = Refer to factory for availability

GTS Relays are cUL (E243386)

1 Pole DIN-Rail Mount Relay, 6-32V DC Control, 600V AC Output  

								
	15 Amp		25 Amp		40 Amp		50 Amp	
Specifications	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	GTS-15/60-D-0	109	GTS-25/60-D-0	122	GTS-40/60-D-0	147	GTS-50/60-D-0	266
Input	6 - 32V DC		6 - 32V DC		6 - 32V DC		6 - 32V DC	
Voltage Range	6 - 32V DC		6 - 32V DC		6 - 32V DC		6 - 32V DC	
Turn-on Voltage (min.)	> 5.1V DC		> 5.1V DC		> 5.1V DC		> 5.1V DC	
Turn-off Voltage (max.)	< 3V DC		< 3V DC		< 3V DC		< 3V DC	
Consumption	≤ 10mA @ 32V		≤ 10mA @ 32V		≤ 10mA @ 32V		≤ 10mA @ 32V	
Reverse Voltage	< 36V DC		< 36V DC		< 36V DC		< 36V DC	
Output	15		25		40		50	
Amp Rating AC51	15		25		40		50	
Nominal Voltage	24...600V AC		24...600V AC		24...600V AC		24...600V AC	
Maximum Voltage	20...660V AC		20...660V AC		20...660V AC		20...660V AC	
Zero Switching Voltage	< 20V		< 20V		< 20V		< 20V	
Frequency Range	50/60 Hz		50/60 Hz		50/60 Hz		50/60 Hz	
Dimension (mm)	100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	




1 Pole DIN-Rail Mount Relay, 20-260V AC Control, 600V AC Output  

								
	15 Amp		25 Amp		40 Amp		50 Amp	
Specifications	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	GTS-15/60-A-0	119	GTS-25/60-A-0	129	GTS-40/60-A-0	162	GTS-50/60-A-0	275
Input	20...260V AC/DC		20...260V AC/DC		20...260V AC/DC		20...260V AC/DC	
Voltage Range	20...260V AC/DC		20...260V AC/DC		20...260V AC/DC		20...260V AC/DC	
Turn-on Voltage (min.)	≥ 15V AC/DC		≥ 15V AC/DC		≥ 15V AC/DC		≥ 15V AC/DC	
Turn-off Voltage (max.)	≤ 6V AC/DC		≤ 6V AC/DC		≤ 6V AC/DC		≤ 6V AC/DC	
Consumption	≤ 8mA @ 260V AC/DC		≤ 8mA @ 260V AC/DC		≤ 8mA @ 260V AC/DC		≤ 8mA @ 260V AC/DC	
Output	15		25		40		50	
Amp Rating AC51	15		25		40		50	
Nominal Voltage	24...600V AC		24...600V AC		24...600V AC		24...600V AC	
Maximum Voltage	20...660V AC		20...660V AC		20...660V AC		20...660V AC	
Zero Switching Voltage	< 20V		< 20V		< 20V		< 20V	
Frequency Range	50/60 Hz		50/60 Hz		50/60 Hz		50/60 Hz	
Dimension (mm)	100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

1 Pole DIN-Rail Mount Relay, 6-32V DC Control, 600V AC Output  

								
	60 Amp		75 Amp		90 Amp		120 Amp	
Specifications	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
without integrate fan (not required)	GTS-60/60-D-0	331	GTS-75/60-D-0	394	GTS-90/60-D-0	696		
with integrated fan 230V							GTS-120/60-D-0-VEN-90	825
with integrated fan 115V							GTS-120/60-D-0-VEN-91	
Input	Voltage Range	6 - 32V DC	6 - 32V DC	6 - 32V DC	6 - 32V DC	6 - 32V DC	6 - 32V DC	
	Turn-on Voltage (min.)	> 5.1V DC	> 5.1V DC	> 5.1V DC	> 5.1V DC	> 5.1V DC	> 5.1V DC	
	Turn-off Voltage (max.)	< 3V DC	< 3V DC	< 3V DC	< 3V DC	< 3V DC	< 3V DC	
	Consumption	≤ 10mA @ 32V	≤ 10mA @ 32V	≤ 10mA @ 32V	≤ 10mA @ 32V	≤ 10mA @ 32V	≤ 10mA @ 32V	
	Reverse Voltage	< 36V DC	< 36V DC	< 36V DC	< 36V DC	< 36V DC	< 36V DC	
Output	Amp Rating @ 40°C	60	75	90	90	120	120	
	Nominal Voltage	24...600V AC	24...600V AC	24...600V AC	24...600V AC	24...600V AC	24...600V AC	
	Maximum Voltage	20...660V AC	20...660V AC	20...660V AC	20...660V AC	20...660V AC	20...660V AC	
	Zero Switching Voltage	< 20V	< 20V	< 20V	< 20V	< 20V	< 20V	
	Frequency Range	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	
Dimension (mm)	108 (H) x 80 (W) x 107 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 158 (D)	

1 Pole DIN-Rail Mount Relay, 20-260V AC Control, 600V AC Output  

								
	60 Amp		75 Amp		90 Amp		120 Amp	
Specifications	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
without integrate fan (not required)	GTS-60/60-A-0	348	GTS-75/60-A-0	403	GTS-90/60-A-0	711		
with integrated fan 230V							GTS-120/60-A-0-VEN-90	847
with integrated fan 115V							GTS-120/60-A-0-VEN-91	
Input	Voltage Range	20...260V AC/DC	20...260V AC/DC	20...260V AC/DC	20...260V AC/DC	20...260V AC/DC	20...260V AC/DC	
	Turn-on Voltage (min.)	≥ 15V AC/DC	≥ 15V AC/DC	≥ 15V AC/DC	≥ 15V AC/DC	≥ 15V AC/DC	≥ 15V AC/DC	
	Turn-off Voltage (max.)	≤ 6V AC/DC	≤ 6V AC/DC	≤ 6V AC/DC	≤ 6V AC/DC	≤ 6V AC/DC	≤ 6V AC/DC	
	Consumption	≤ 8mA @ 260V AC/DC	≤ 8mA @ 260V AC/DC	≤ 8mA @ 260V AC/DC	≤ 8mA @ 260V AC/DC	≤ 8mA @ 260V AC/DC	≤ 8mA @ 260V AC/DC	
Output	Amp Rating @ 40°C	60	75	90	90	120	120	
	Nominal Voltage	24...600V AC	24...600V AC	24...600V AC	24...600V AC	24...600V AC	24...600V AC	
	Maximum Voltage	20...660V AC	20...660V AC	20...660V AC	20...660V AC	20...660V AC	20...660V AC	
	Zero Switching Voltage	< 20V	< 20V	< 20V	< 20V	< 20V	< 20V	
	Frequency Range	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	
Dimension (mm)	108 (H) x 80 (W) x 107 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 158 (D)	

G Gefran Solid State Relays

GTS Relays are cUL (E243386)

3 Pole DIN-Rail Mount Relay, 5-32V DC Control, 480V AC Output  

**DISCONTINUED
SEE 600V**



Specifications		25 Amp		40 Amp		55 Amp	
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
Without integrated fan (not required)		GTZ25/480-0-0	285				
with integrated fan 230V AC				GTZ40/480-0-0-VEN-90	330	GTZ55/480-0-0-VEN-90	390
with integrated fan 115V AC				GTZ40/480-0-0-VEN-91		GTZ55/480-0-0-VEN-91	
Input	Voltage Range	5 - 32V DC		5 - 32V DC		5 - 32V DC	
	Turn-on Voltage (min.)	> 4.5V DC		> 4.5V DC		> 4.5V DC	
	Turn-off Voltage (max.)	≤ 3V DC		≤ 3V DC		≤ 3V DC	
	Consumption	18 mA @ 5V DC - 22mA @ 32V DC		18 mA @ 5V DC - 22mA @ 32V DC		18 mA @ 5V DC - 22mA @ 32V DC	
	Reverse Voltage	< 36V DC		< 36V DC		< 36V DC	
Output	Amp Rating AC51	25		40		55	
	Nominal Voltage	24...480V AC		24...480V AC		24...480V AC	
	Maximum Voltage	24...530V AC		24...530V AC		24...530V AC	
	Zero Switching Voltage	< 20V		< 20V		< 20V	
	Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)		100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

3 Pole DIN-Rail Mount Relay, 5-32V DC Control, 600V AC Output  

**DISCONTINUED
SEE 600V**



Specifications		40 Amp		55 Amp	
		Catalog Number	Price	Catalog Number	Price
with integrated fan 230V AC		GTZ40/600-0-0-VEN-90	350	GTZ55/600-0-0-VEN-90	410
with integrated fan 115V AC		GTZ40/600-0-0-VEN-91		GTZ55/600-0-0-VEN-91	
Input	Voltage Range	5 - 32V DC		5 - 32V DC	
	Turn-on Voltage (min.)	> 4.5V DC		> 4.5V DC	
	Turn-off Voltage (max.)	≤ 3V DC		≤ 3V DC	
	Consumption	18 mA @ 5V DC - 22mA @ 32V DC		18 mA @ 5V DC - 22mA @ 32V DC	
	Reverse Voltage	< 36V DC		< 36V DC	
Output	Amp Rating AC51	40		55	
	Nominal Voltage	24...600V AC		24...600V AC	
	Maximum Voltage	24...660V AC		24...660V AC	
	Zero Switching Voltage	< 20V		< 20V	
	Frequency Range	45...65 Hz		45...65 Hz	
Dimension (mm)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

GTZ Relays are cUR (E243386). Not CSA.

3 Pole DIN-Rail Mount Relay, 5-32V DC Control, 600V AC Output  

NEW



Specifications		25 Amp		40 Amp		55 Amp	
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	Without integrated fan (not required)	GTZ25/60-D-0	305				
	with integrated fan 230V AC			GTZ40/60-D-0-VEN-90	350	GTZ55/60-D-0-VEN-90	410
	with integrated fan 115V AC			GTZ40/60-D-0-VEN-91		GTZ55/60-D-0-VEN-91	
Input	Voltage Range	5 - 32V DC		5 - 32V DC		5 - 32V DC	
	Turn-on Voltage (min.)	> 4.5V DC		> 4.5V DC		> 4.5V DC	
	Turn-off Voltage (max.)	≤ 3V DC		≤ 3V DC		≤ 3V DC	
	Consumption	18 mA @ 5V DC - 22mA @ 32V DC		18 mA @ 5V DC - 22mA @ 32V DC		18 mA @ 5V DC - 22mA @ 32V DC	
	Reverse Voltage	< 36V DC		< 36V DC		< 36V DC	
Output	Amp Rating AC51	40		40		55	
	Nominal Voltage	24...600V AC		24...600V AC		24...600V AC	
	Maximum Voltage	24...660V AC		24...660V AC		24...660V AC	
	Zero Switching Voltage	< 20V		< 20V		< 20V	
	Frequency Range	50/60 Hz		50/60 Hz		50/60 Hz	
	Dimension (mm)	100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

3 Pole DIN-Rail Mount Relay, 20...260V AC Control, 600V AC Output  

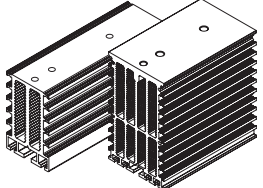
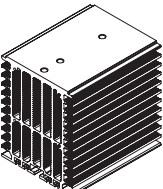
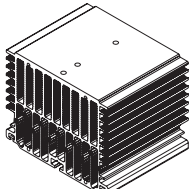



NEW

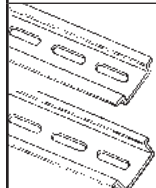


Specifications		25 Amp		40 Amp		55 Amp	
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	Without integrated fan (not required)	GTZ25/60-A-0	342				
	with integrated fan 230V AC			GTZ40/60-A-0-VEN-90	392	GTZ55/60-A-0-VEN-90	459
	with integrated fan 115V AC			GTZ40/60-A-0-VEN-91		GTZ55/60-A-0-VEN-91	
Input	Voltage Range	20...260V AC/DC		20...260V AC/DC		20...260V AC/DC	
	Turn-on Voltage (min.)	≥ 15V AC/DC		≥ 15V AC/DC		≥ 15V AC/DC	
	Turn-off Voltage (max.)	≤ 6V AC/DC		≤ 6V AC/DC		≤ 6V AC/DC	
	Consumption	≤ 8mA @ 260V AC/DC		≤ 8mA @ 260V AC/DC		≤ 8mA @ 260V AC/DC	
Output	Amp Rating @ 40°C	60		60		55	
	Nominal Voltage	24...600V AC		24...600V AC		24...600V AC	
	Maximum Voltage	24...660V AC		24...660V AC		24...660V AC	
	Zero Switching Voltage	< 20V		< 20V		< 20V	
	Frequency Range	50/60 Hz		50/60 Hz		50/60 Hz	
	Dimension (mm)	100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

GTZ Relays are cUR (E243386). Not CSA.

Accessories

Heatsinks	Description	Catalog Number	Price
 <p>DIS-25GD DIS-50G</p>	<p>Heatsink – Extruded aluminum DIN-rail mount for mounting one GQ relay. Includes PAN-1 kit attachment for panel mounting.</p> <ul style="list-style-type: none"> - For use with GQ 15A & 25A relays - 100 x 24 x 65mm - Thermal Resistance Rth > 2.8 K/W 	DIS-25GD	97
	<ul style="list-style-type: none"> - For use with GQ 25A & 50A relays - 100 x 60 x 100mm - Thermal Resistance Rth > 8.3 K/W 	DIS-50G	97
	<p>Heatsink – Extruded aluminum DIN-rail mount for mounting one GQ relay. Includes PAN-1 kit attachment for panel mounting.</p> <ul style="list-style-type: none"> - For use with GQ 50A relays - 100 x 80 x 100mm - Thermal Resistance Rth > 0.66 K/W 	DIS-60G	115
	<p>Heatsink – Extruded aluminum DIN-rail mount for mounting one GQ relay. Includes PAN-1 kit attachment for panel mounting.</p> <ul style="list-style-type: none"> - For use with GQ 90A relays - 100 x 126 x 100mm - Thermal Resistance Rth > 0.56 K/W 	DIS-90G	145
	<p>Kit Attachment – Allows for panel mounting the GTS Series and DIS heat sinks. Includes 2 plastic supports, 2 screws, and 2 washers.</p>	PAN-1	19
	<p>Silicone thermoconductive paste – for coupling the GQ Relay power module to the heat sink. 100 g tube.</p>	SIL-1	82
	<p>Graphite Film – 35 x 55 mm graphite film for GQ relays.</p> <ul style="list-style-type: none"> - 0.12 mm thick, 2.1 W (m²K). - 200 x 240 mm sheet with 25 adhesives 	SIL-GQ	79

Accessory	Description	Catalog Number	Price
	<p>DIN-rail - 2 meter lengths (6'6") Top Hat, low profile (price per rail) Top Hat, high profile (package of 20, price per rail)</p>	3F 3AF	See page A51

Cross Reference Series SAR/SAS to Gefran Solid State Relays

Sprecher+Schuh Catalog Number	Gefran Catalog Number	Gefran Product Status
SAR Series DIN-Rail Mount		
SAR6-25-1D	GTS-25/60-D-0	
SAR6-25-1	GTS-25/60-A-0	
SAR6-40-1D	GTS-40/60-D-0	
SAR6-40-1	GTS-40/60-A-0	
SAR6-50-1D	GTS-50/60-D-0	
SAR6-50-1	GTS-50/60-A-0	
SAR6-75-1D	GTS-75/60-D-0	
SAR6-75-1	GTS-75/60-A-0	
SAR6-100-1D	GTS-90/60-D-0	Select GTS-120/60-D... For above 90A+
SAR6-100-1	GTS-90/60-A-0	Select GTS-120/60-A... For above 90A+
~	GTS-120/60-D-0-VEN*	New 120A offering
~	GTS-120/60-A-0-VEN*	New 120A offering
SAR6-30-3D	GTZ25/60-D-0	Select GTZ40/60-D-0-VEN* for above 25A+
SAR6-30-3	GTZ25/60-A-0	Select GTZ40/60-A-0-VEN* for above 25A+
~	GTZ40/60-D-0-VEN*	New 40A offering
~	GTZ40/60-A-0-VEN*	New 40A offering
~	GTZ55/60-D-0-VEN*	New 55A offering
~	GTZ55/60-A-0-VEN*	New 55A offering
SAS Series Panel Mount		
SAS3-10-1D	GQ-15-24-D-1-4	
SAS3-10-1	GQ-15-24-A-1-4	
SAS3-25-1D	GQ-25-24-D-1-4	
SAS3-25-1	GQ-25-24-A-1-4	
SAS3-50-1D	GQ-50-24-D-1-4	
SAS3-50-1	GQ-50-24-A-1-4	
SAS3-75-1D	GQ-90-24-D-1-4	
SAS3-75-1	GQ-90-24-A-1-4	
SAS6-50-1D	GQ-50-60-D-1-4	
SAS6-50-1	GQ-50-60-A-1-4	
SAS6-75-1D	GQ-90-60-D-1-4	
SAS6-75-1	GQ-90-60-A-1-4	

* Suffix code for selected fan voltage

Technical Information

			GQ-15-24-...	GQ-25-24-...	GQ-50-24-...	GQ-90-24-...	GQ-50-60-...	GQ-90-60-...
Amp Rating	AC51	[A rms]	15	25	50	90	50	90
	AC53	[A rms]	3	5	15	20	15	20
Min. load current		[A rms]	0.1	0.3	0.3	0.5	0.3	0.5
Repetitive overcurrent (t = 1s)		[A rms]	≤ 35	≤ 60	≤ 125	≤ 150	≤ 125	≤ 150
Non-repetitive overcurrent (t = 20 s)		[A p]	200	300	600	1500	600	1500
Current drop at nominal voltage and frequencies		[mA rms]	≤ 8	≤ 8	≤ 8	≤ 10	≤ 8	≤ 10
I ² t for fusing (t = 1-10 ms)		[A ² s]	≤ 200	≤ 450	≤ 1,800	≤ 11,200	≤ 1,800	≤ 11,200
Critical dI/dt		[A/μs]	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100
Voltage drop at nominal current		[V rms]	≤ 1.45	≤ 1.45	≤ 1.35	≤ 1.35	≤ 1.35	≤ 1.35
Critical dV/dt off state		[V/μs]	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000
I _{th}		[A]	15	25	50	90	50	90

Input
DC Control

Voltage Range	3 - 32V DC
Turn-on Voltage (min.)	≥ 2.7V DC
Turn-off Voltage (max.)	≤ 1V DC
Consumption	≤ 13mA @ 32V
Reverse Voltage	< 36V DC

AC Control

Voltage Range	20...260V AC/V DC
Turn-on Voltage (min.)	≥ 15V AC/V DC
Turn-off Voltage (max.)	≤ 6V AC/V DC
Consumption	≤ 8mA ac/cc @ 260V AC/V DC

Output

Nominal Voltage	24...230V AC	48...600V AC
Maximum Voltage	20...253V AC	40...660V AC
Non-repetitive Voltage	600Vp	1200Vp
Zero Switching Voltage	≤ 20V	≤ 40V
Frequency Range	45...65 Hz	45...65 Hz

Insulation

Nominal voltage	input/output	[V ac]	≥ 4000
	output/case	[V ac]	≥ 2500
Resistance	input/output	[Ω]	≥ 10 ¹⁰
	output/case	[Ω]	≥ 10 ¹⁰
Capacity	input/output	[pF]	≤ 8
	output/case	[pF]	≤ 100

Ambient Conditions

Ambient temperature	-25...+80°C [-13...176°F]
Storage temperature	-55...+100°C [-67...212°F]
Maximum relative humidity	50% at 40°C
Maximum installation altitude	2000 m above sea level
Pollution level	3

Thermal Features

Junction temperature	≤ 125°C [257°F]						
R _{th}	junction/ambient	[K/W]	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
	junction/case	[K/W]	≤ 1.25	≤ 1.25	≤ 0.65	≤ 0.30	≤ 0.65

Heatsink

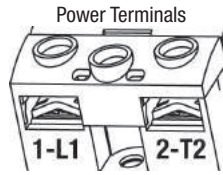
$$R_{th} = (90^{\circ}\text{C} - \text{max. amb. } T) / P_d$$

Where P_d = dissipated power

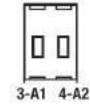
Max. amb. T = max. air temperature inside the electrical cabinet

Use a heatsink with thermal resistance less than the calculated R_{th} value

Terminals and Leads



Command Terminals



Terminal Type

Screw (m4) contact area (LxP) 13 x 11 mm

screw M2.5 MORS4 (22...16 AWG)

1(L1) 2(T1)		3(A1) 4(A2)	
	1x 2,5...6 mm ² 1x 14...10 AWG 2x 1,5...2,5 mm ² 2x 16...14 AWG 2x 2,5...6 mm ² 2x 14...10 AWG		1x 0,2...2,5 mm ² 1x 24...14 AWG 2x 0,2...1,5 mm ² 2x 24...16 AWG
	1x 1,5...6 mm ² 1x 16...10 AWG 2x 1,5...6 mm ² 2x 16...10 AWG		1x 0,25...2,5 mm ² 1x 23...14 AWG 2x 0,25...1 mm ² 2x 23...18 AWG
	2...2,4 Nm 18...21 lbf·in		
	GQ..15.. 2,5 mm ² 14 AWG	GQ..25.. 6 mm ² 10 AWG	GQ..50.. 12 mm ² (2x6) 7 AWG (2x10)
			GQ..90.. 25 mm ² 4 AWG

Recommended Fuses (by others)

HIGH SPEED FUSES			
Model	Size I ^T	Bussman Part No.	Dissipated power @ I _n
GQ15...	16A 150A ² S	FWC16A10F 338470	3,5W
	25A 390A ² S	FWC25A10F 338474	6W
GQ25...	375A ² S	FWC25A14F 338130	7W
	50A 1800A ² S	FWC50A14F 338079	9W
GQ50...	50A 1600A ² S	FWC50A22F 338127	9,5W
	80A 6600A ² S	FWP80A22F 338199	14W
GQ90...	100A 12500A ² S	FWP100A22F 338478	16W

Heatsink / Thermal Resistance

Model	Gefran Heatsink (see accessories)	Thermal Resistance
GQ15... GQ25...	DIS 25GD DIS 50G	$R_{th} \geq 2,8$ K/W $R_{th} \geq 0,83$ K/W
GQ50...	DIS 50G	$R_{th} \geq 0,83$ K/W
GQ90...	DIS 90G	$R_{th} \geq 0,56$ K/W

Data relating to 40°C ambient temperature, heatsink in vertical position with 15 cm of free air above and below.

Section Cable

Model	Section
GQ15...	2.5mm ² / 14 AWG
GQ25...	6mm ² / 10 AWG
GQ50...	12mm ² / 7 AWG
GQ90...	25mm ² / 4 AWG

Minimum allowed rated section based on the rated currents of the power solid state relays, for copper leads isolated in PVC in continuous use and at room temperature of 40°C, according to standards CEI 44-5, CEI 17-11, IEC 408 pursuant to standard EN60204-1.

Power terminals in compliance with standard EN60947-1

EMC Emission

EN 61000-6-4	Emissions conducted at radiofrequency	Class A (Industrial devices)
EN 61000-6-4	Emissions irradiated at radiofrequency	Class A (Industrial devices)

The product is designed for type A environments. Use of the product in type B environments may cause undesired electromagnetic noise. In this case, the user should take appropriate steps for improvement.

EMC Immunity

EN 61000-6-2	Immunity for industrial environments	
EN 61000-4-2	Electrostatic discharges 4kV by contact; 8 kV in air.	Performance criterion 2
EN 61000-4-6	Electromagnetic field at radiofrequency Test level 3. 0.15-80MHz	Performance criterion 1
EN 61000-4-3	Electromagnetic field at radiofrequency Test level 10V/m. 80-1000MHz	Performance criterion 1
EN 61000-4-4	Immunity to burst	Test level 2kV/100 KHz. Performance criterion 2
EN 61000-4-5	Immunity to surge	Test level: 2kV (Phase-ground); 1kV (Phase-phase). Performance criterion 2

Safety

EN 61010-1	Safety requirements
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Technical Information

Amp Rating		GTS-15	GTS-25	GTS-40	GTS-50	GTS-60	GTS-75	GTS-90	GTS-120
Rated Current @ 40°C (continuous service)	[A rms]	15	25	40	50	60	75	90	120
Non-repetitive overcurrent (t = 20 ms)	[A]	400	400	600	1150	1150	1300	1500	1500
I²t for blowout	[A²s]	≤ 450	≤ 645	≤ 1010	≤ 6600	≤ 6600	≤ 8000	≤ 11,200	≤ 11,200
dV/dt critical with output deactivated	[V/μs]	1000	1000	1000	1000	1000	1000	1000	1000

Input

DC Control	Voltage Range	6 - 32V DC
	Turn-on Voltage (min.)	> 5.1V DC
	Turn-off Voltage (max.)	< 3V DC
	Consumption	≤ 10mA @ 32V
	Reverse Voltage	< 36V DC
AC Control	Voltage Range	20...260V AC/DC
	Turn-on Voltage (min.)	≥15V AC/DC
	Turn-off Voltage (max.)	≤6V AC/DC
	Consumption	≤8mA @ 260V AC/DC

Output

Nominal Voltage	24...600V AC
Maximum Voltage	20...660V AC
Non-repetitive Voltage	500Vp for 230V models, 1200Vp for 480V models
Zero Switching Voltage	< 20V
Frequency Range	50/60 Hz

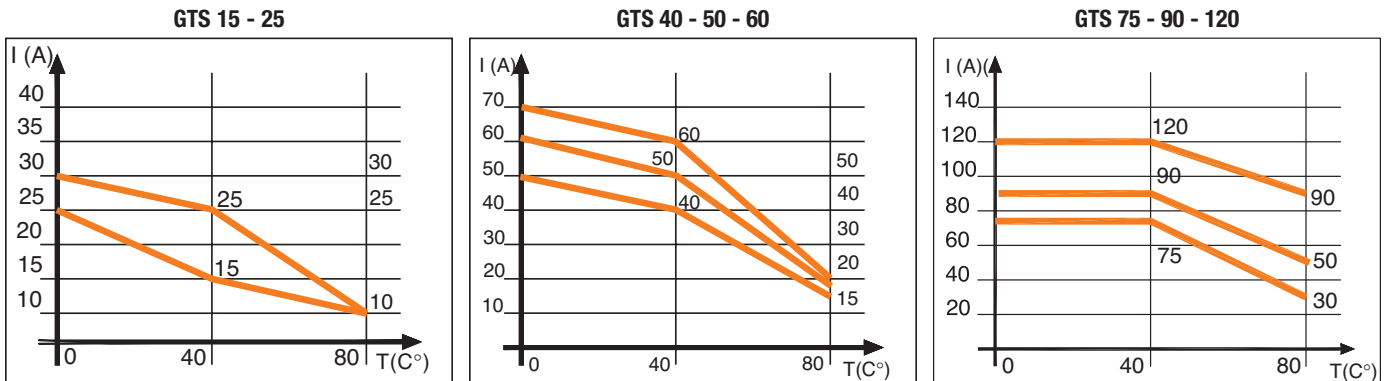
Isolation

Rated voltage input/output	[V ac]	≥ 4000
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Ambient Conditions

Ambient temperature	0°...+80°C [32°...+176°F] according to dissipation curves
Storage temperature	-20...+85°C [-4°...+185°F]
Maximum relative humidity	50% at 40°C
Maximum installation altitude	2000m above sea level
Pollution level	3

Dissipation Curves



N.B.: Curves for the GTS 120 refer to the device complete with standard running.

Technical Information
Terminal and Conductors

Size	Terminal	Contact area (WxD) screw type	Type of preisolated terminal ②	Max section. ① conductor tightening torque
15/20A	C	6.4x9 M3	1, 2, 4	6mm ² / 10AWG 0.6Nm max
	P	6.4x9 M3	1, 2, 4	6mm ² / 10AWG 0.4 - 0.6Nm
	G	9x12 M5	1	6mm ² / 10AWG 1.3 - 1.8Nm
25A	C	6.4x9 M3	1, 2, 4	6mm ² / 10AWG 0.6Nm max
	P	6.4x9 M3	1, 2	6mm ² / 10AWG 0.4 - 0.6Nm
	G	9x12 M5	1	6mm ² / 10AWG 1.3 - 1.8Nm
40A	C	6.3x9 M3	1, 2, 3	2.5mm ² / 14AWG 0.6Nm max
	P	12x12 M5	1, 2	16mm ² / 6AWG 1.5 - 2.2Nm
	G	11.5x12 M5	1	16mm ² / 6AWG 1.5 - 2.2Nm
50/60A	C	6.3x9 M3	1, 2, 3	2.5mm ² / 14AWG 0.6Nm max
	P	16x18 M6	1, 2	50mm ² / 0AWG 3.5 - 6Nm
	G	14x16 M5	1	50mm ² / 0AWG 1.8 - 2.5Nm
75-90A	C	6.3x9 M3	1, 2, 3	2.5mm ² / 14AWG 0.6Nm max
	P	16x18 M6	1, 2	50mm ² / 0AWG 3.5 - 6Nm
	G	14x16 M5	1	50mm ² / 0AWG 1.8 - 2.5Nm
120A	C	6.3x9 M3	1, 2, 3	2.5mm ² / 14AWG 0.6Nm max
	P	16x18 M6	1, 2	50mm ² / 0AWG 3.5 - 6Nm
	G	14x16 M5	1	50mm ² / 0AWG 1.8 - 2.5Nm

Terminal: C = Control, P = Power, G = Ground

Terminal Types


1. Eyelet



2. Fork



3. Tip

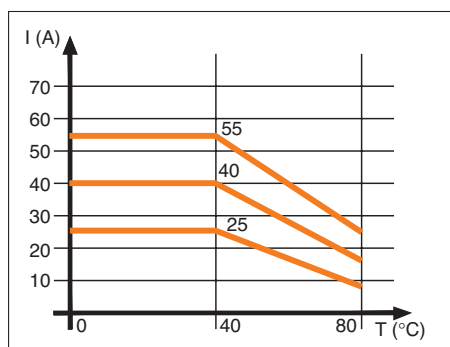


4. Faston

- ① The max. sections specified refer to unipolar copper wires isolated in PVC..
- ② The screw terminals must be suitable for field wiring connection only when the wire is provided with eyelet tube terminal type 1.

Technical Information

Amp Rating		GTZ-25/60	GTZ-40/60	GTZ-55/60	GTZ-40/60	GTZ-55/60
Category AC51, AC53a	[A rms]	25	40	55	40	55
Nominal current (I_{max})	[A rms]	3x25	3x40	3x55	3x40	3x55
Non-repetitive overcurrent (t = 20 ms)	[A]	400	600	1150	600	1150
I^2t for blowout	[A ² s]	645	1010	6600	1010	6600
DC Control Input	Voltage Command Circuit (U_c)	5...32V DC				
	Turn-on Voltage (min.)	> 4.5V DC				
	Turn-off Voltage (max.)	< 3V DC				
	Consumption	≤ 18mA @ 5V DC - 22mA @ 32V DC				
	Reverse Voltage	< 36V DC				
AC Control INPUT	Voltage Range	20...260V AC/DC				
	Turn-on Voltage (min.)	≥ 15V AC/DC				
	Turn-off Voltage (max.)	≤ 6V AC/DC				
	Consumption	≤ 8mA @ 260V AC/DC				
	Frequency Range	50/60 Hz				
Activation Time	≤ 1/2 cycle					
Deactivation Time	≤ 1/2 cycle					
Critical dV/dt OFF-state	[V/μs]	1000				
Potential drop at rated current	[Vrms]	≤ 1.4				
Peak Voltage	> 1200V DC					
Protection	IP20					
Isolation						
Nominal voltage (U)	[V ac]	600				
Insulation						
Nominal voltage input/output	[KV ac]	4				
Nominal impulse withstand (U_{imp})	[V AC]	2500				
Ambient Conditions						
Working temperature	-20...+80°C [-4°...176°F]					
Storage temperature	-20...+85°C [-4°...185°F]					
Maximum relative humidity	50% at 40°C					
Maximum installation altitude	1000m asl					
Pollution level	3 (suitable for use in degree 2 environment)					
Class	A (industrial device)					

Dissipation Curve
GTZ 25 - 40 - 55


Technical Information

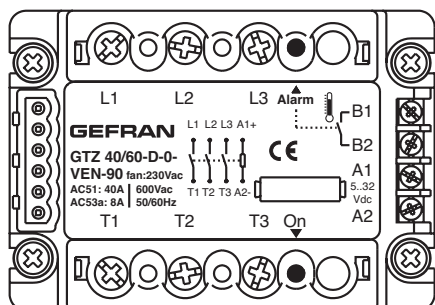
Terminals and Conductors

Size	Nominal Section Cable mm ²	Control Terminal (A1, A2, B1, B2)			Power Terminal (L1, L2, L3, T1, T2, T3)			Ground Terminal ❶	
		Contact area (WxD) screw type	Type of preisolated terminal	Section conductor tightening torque ❶	Contact area (WxD) screw type	Type of preisolated terminal	Max. section conductor tightening torque	Contact area (WxD) screw type	Max. section conductor tightening torque
25A	6	6.3x9 M3	Eye / fork / tip	min. 0.35 mm ² max. 2.5 mm ² 0.6 Nm Max	12 x 12 M5	Eye / fork / tip	<i>Tip Terminal</i> min. 1mm ² (17AWG) max. 10mm ² (7AWG)	12x12 self-tapping screw 3.9x12 DIN7981	min. 1mm ² (17AWG) max. 16mm ² (5AWG) 1.5 ...1.8Nm
40A	10						<i>Eye or Fork Terminal</i> min. 1mm ² (17AWG) max. 16mm ² (5AWG)		
55A	16						12x12 M5	1.5 ...2.2Nm	min. 1mm ² (17AWG) max. 16mm ² (5AWG) 2.5Nm

❶ Note: The maximum sections specified refer to unipolar copper wires isolated in PVC. For the ground terminal, a eye wire terminal is required. (WxD) = Width x depth

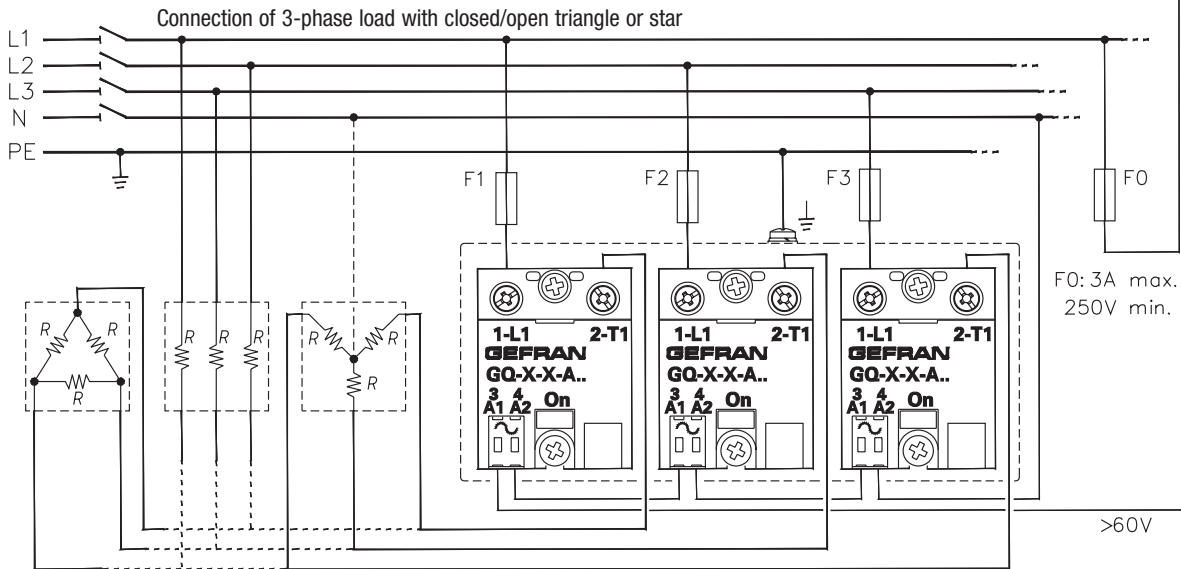
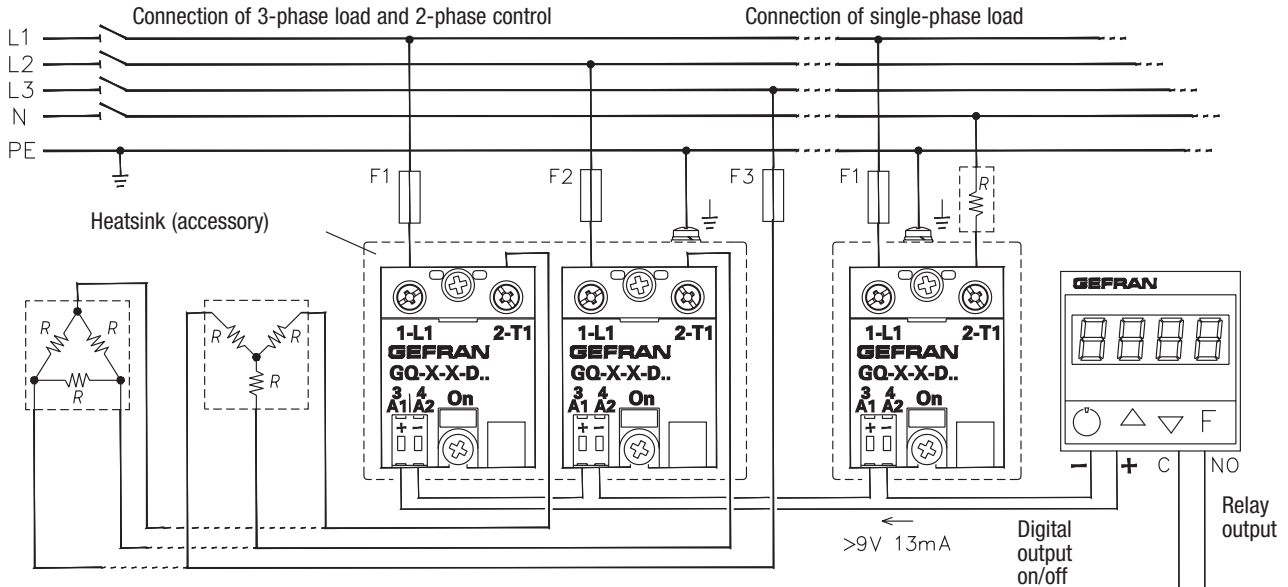
❷ The minimum acceptable nominal section based on the nominal currents of the power solid state units is given for copper conductors isolated in PVC, under continuous operating conditions and at 40°C ambient temperature according to standards CEI 44-5, CEI 17-11, IEC 408 in accordance with EN60204-1.

Connection Examples



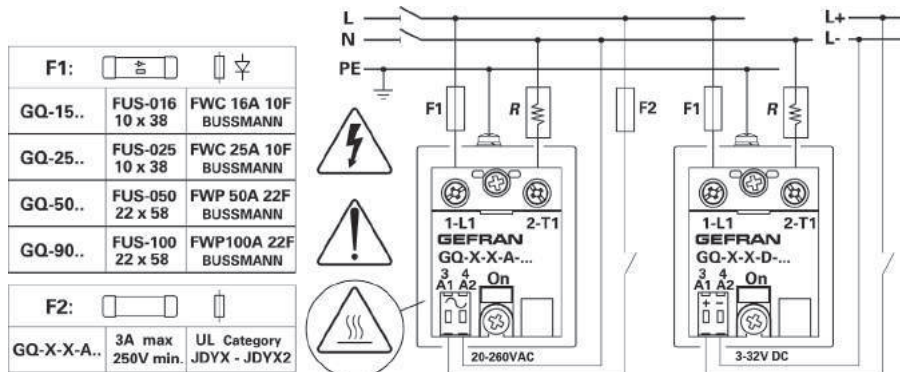
- L1 : Phase 1 input
- L2 : Phase 2 input
- L3 : Phase 3 input
- T1 : Phase 1 output
- T2 : Phase 2 output
- T3 : Phase 3 output
- A1 : Control signal (+)
- A2 : Control signal (-)
- B1 : Alarm output (+) (Special unit)
- B2 : Alarm output (-) (Special unit)
- Led1: Red led signal indicator
- Led2: Yellow led (alarm overtemperature junction)

Series GQ Solid State Relays



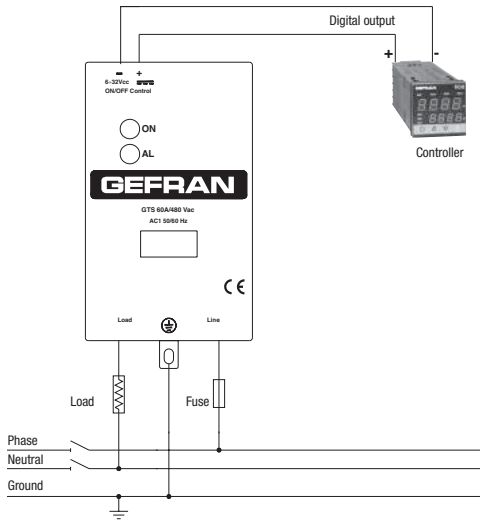
Series GQ Fuse Connections

The solid state group must be connected using proper fuses against short circuits

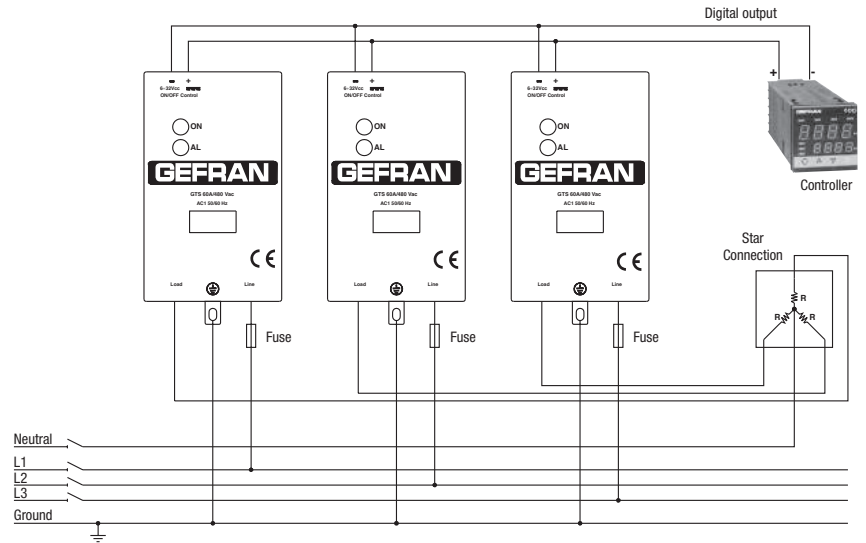


Series GTS Solid State Relays

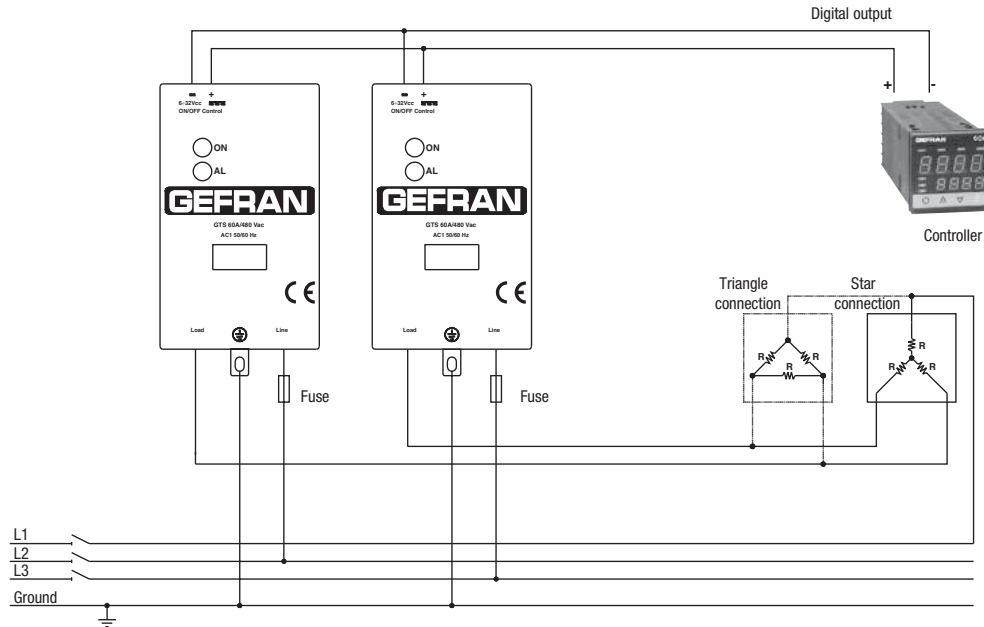
Single-phase connection



Three-phase Star connection with neutral



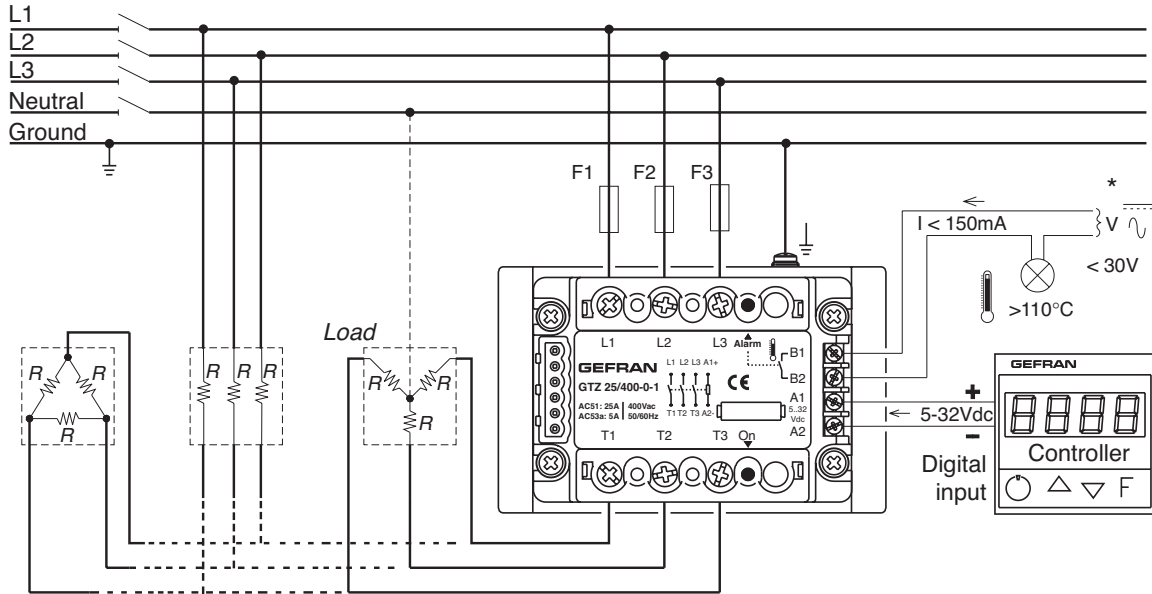
Three-phase Triangle or Star connection without neutral on two phases



G
Gefran Solid State Relays

Series GTZ Solid State Relays

Three-phase Triangle or Star connection (with and without neutral)

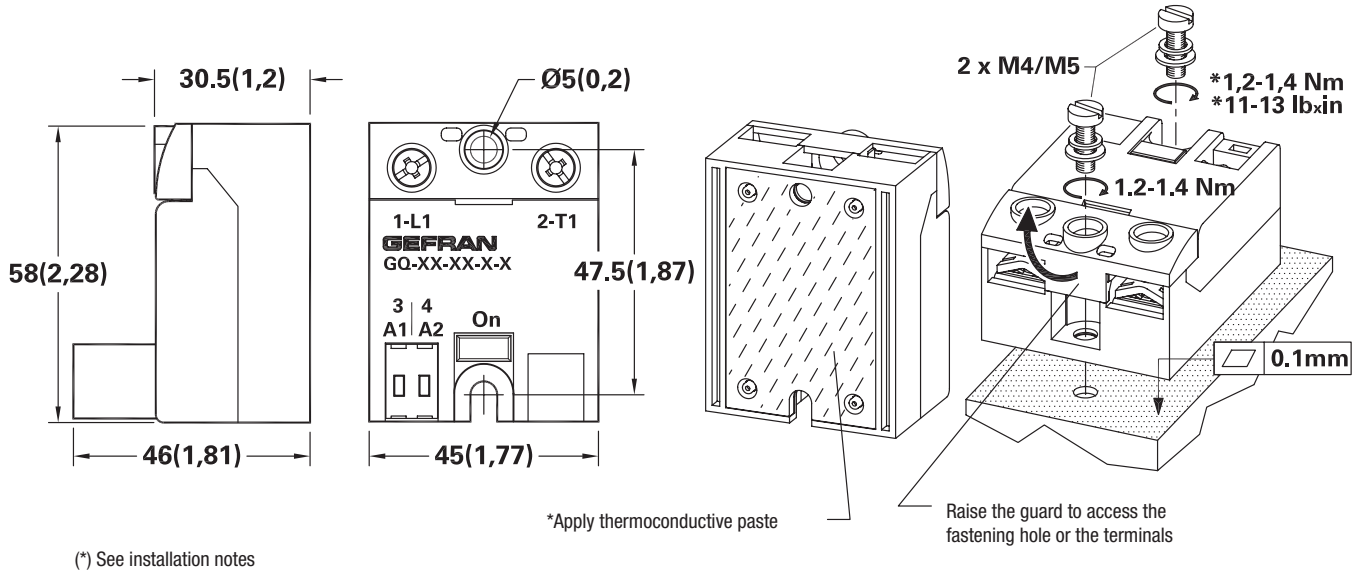


* Only in the version with option overtemperature alarm output

Заказ г.Минск www.tiristor.by email: minsk17@tut.by viber и тел.+375447584780
 каталог, описание, технические, характеристики, datasheet, параметры,
 маркировка, габариты, фото, модуль

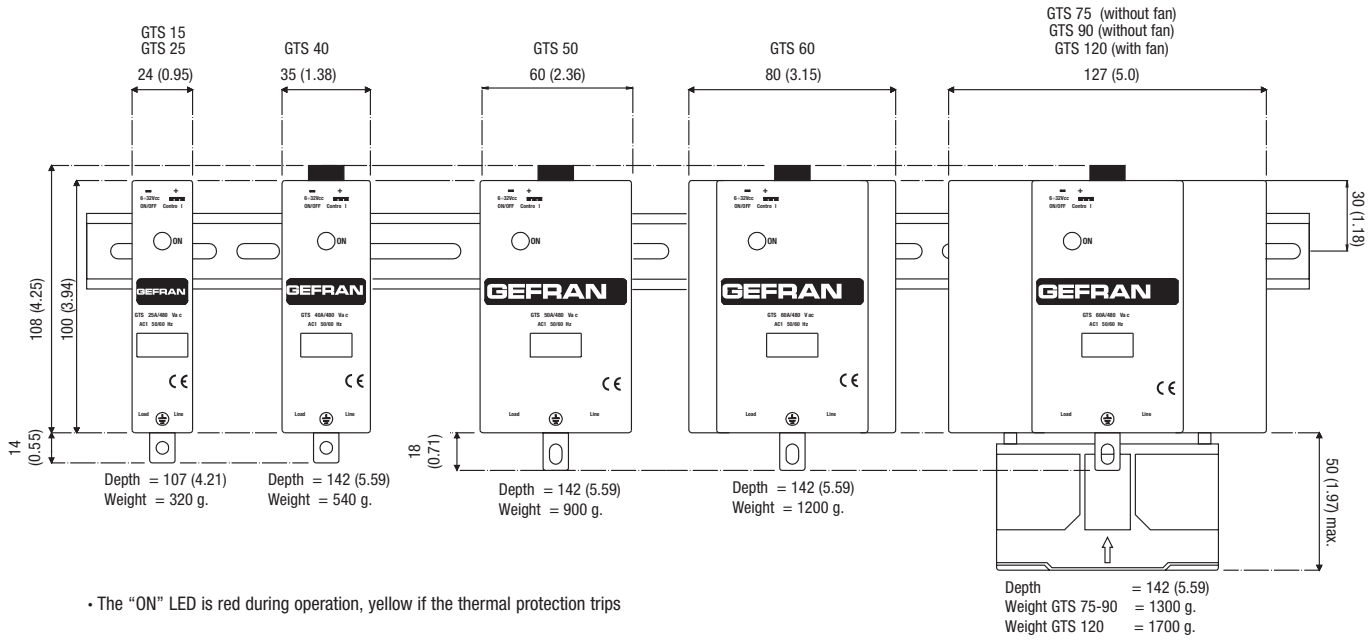
GQ Panel Mount Relays

Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.



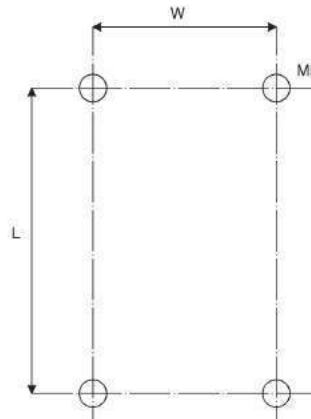
GTS 1-Pole DIN-Rail Mount Relays

Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.

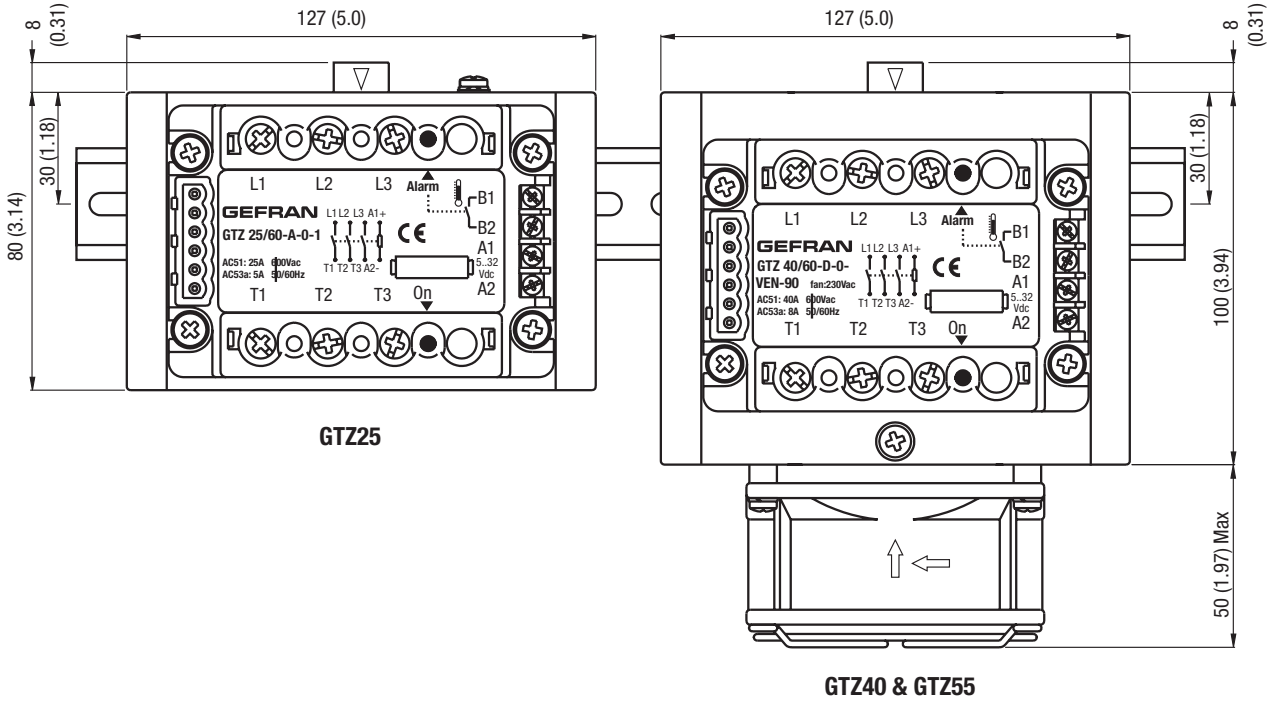


PAN-1 Panel Mount Accessory for GTS - Hole Template

GTS 1-Pole Relays	Length	Width
	mm (inches)	mm (inches)
GTS-15...25	112 (4.41)	0 (0.00)
GTS-40	112 (4.41)	25 (0.98)
GTS-50...60	112 (4.41)	44 (1.73)
GTS-90...120	112 (4.41)	113 (4.45)

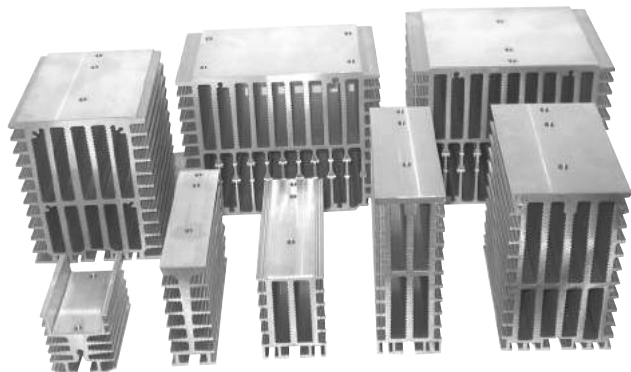


GTZ 3-Pole DIN-Rail Mount Relays



General Application Notes

Heatsinks



Different models of heatsinks have been designed and tested to meet size and dimension needs.

How to choose a heatsink

- Set max. air temperature inside the panelboard (T_{max_a})
- Set max. operating current: $I_{max} = I_{nom. load} + 10\%$
- Draw on the “graphs” T_{max_a} , I_{max} points.
- Choose the smallest heatsink (starting from upwards), which point [T_{max_a} , I_{max}] is in the gray working area of dissipation curves
- Respect installation distances

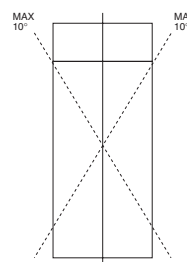
Installation

In order to obtain best reliability, it is important to install a heatsink correctly inside the panel, to reach an adequate thermal exchange between the device and the surrounding air in natural convection conditions.

How to install it correctly:

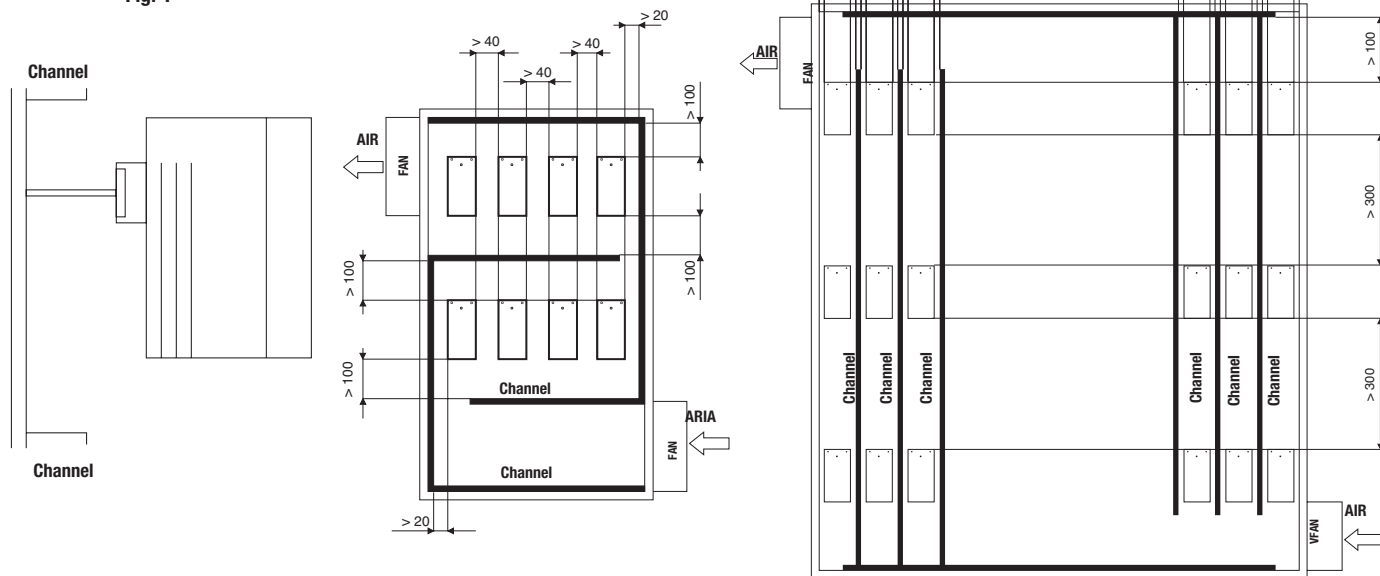
Mount it vertically (max. 10° inclination from the vertical axis)

- Vertical distance between a heatsink and the panel wall: 100 mm at least.
- Horizontal distance between a heatsink and the panel wall: 20 mm at least.
- Vertical distance between two heatsinks: 300 mm at least.
- Horizontal distance between two heatsinks: 40 mm at least.



Check that cable channels do not reduce these distances; should it happen, mount the relays overhanging from the panel, so that the air can flow vertically on the heatsink without obstacles (see Fig.1).

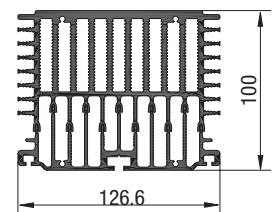
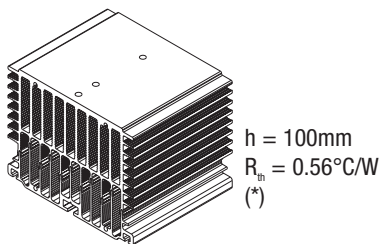
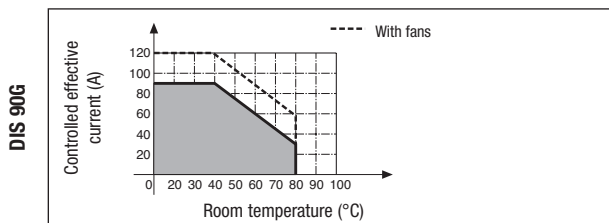
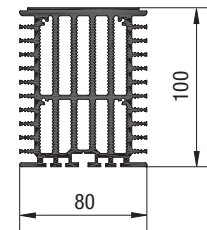
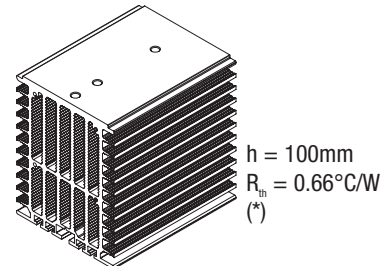
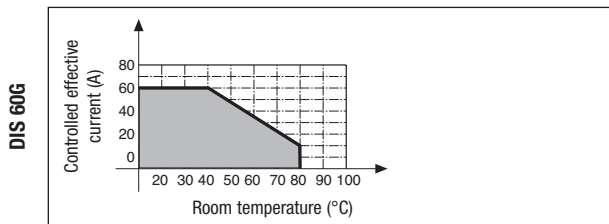
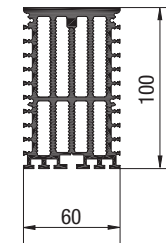
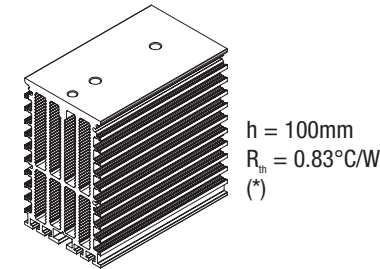
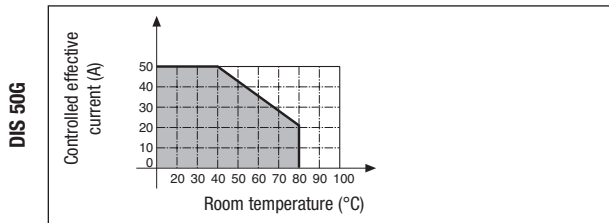
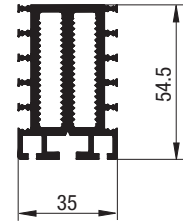
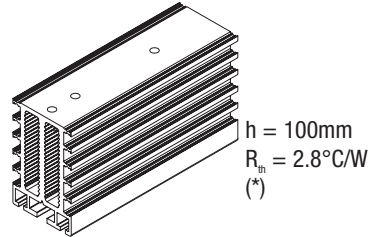
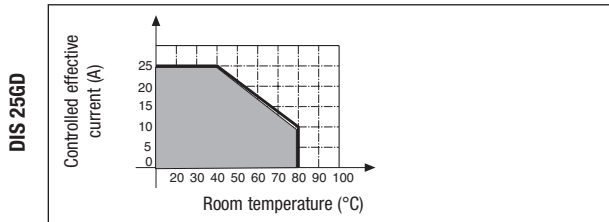
Fig. 1



General Application Notes (continued)

Dissipation Curves

Effective current controllable based on room temperature



General Application Notes (continued)

Varistors (MOV)

If your application is located near inductive loads, or shares power sources with large inductive loads that are creating transients in excess of the blocking voltage of the Gefran solid state relay, then you must install a metal oxide varistor (MOV) to protect the solid state relay. It is up to the installation company to properly size the MOV to the application! Ideally, the MOV protection is near the noise generating inductive load (such as a motor, drive, or other large inductive coil) or you can place MOVs directly across the output terminals of the SSR.



Fuses and Fuse Holders

These fuses ensure the maximum safety in solid state relay applications. Fuses with a very high cutoff power are used for this kind of applications. See Table 1.



Table 1.

Recommended Fuses (by others) for GQ, GTS & GTZ Relays					
Type relay	i²t	Nominal voltage	Size	Dimensions (mm)	Bussman Part No.
GQ 15A	450	230 480	16A	10x38	FWC16A10F
GTS 25A GQ 25A	645 450	230 480 600	25A	10x38	FWC25A10F
GTS 40A	1010	230 480	40A	14x51	FWP40A14
GTS 50A GQ 50A	6600	230 480 600	63A	22x58	FWP63A22F
GTS 60A	6600	230 480 600	80A	22x58	FWP80A22F
GTS 75A	8000	230 480	80A	22x58	FWP80A22F
GTS 90A GQ 90A	11200	230 480 600	100A	22x58	FWP100A22F
GTS 120A	11200	230 480 600	125A	0-0-0-TN/80 100x51x30	170M1418000-TN/80
GTZ 25A	450 645	400 480	25A	12x32	FWC25A10F
GTZ 40A	1010	480 600	40A	14x51	FWP40A14
GTZ 55A	6600	480 600	63A	22x58	FWP63A22F

(*) PF for fuseholders: LEGRAND, PFI for fuseholders: ITALWEBER

Recommended MOVs from EPCOS:

Part Number	Working Voltage (V)
S20K300	120-290 V AC
S20K420	291-400 V AC
S20K510	401-500 V AC

The Gefran solid state relays include technology that dramatically reduces your need to install an external MOV except in extremely noisy environments or inductive load applications.

General Application Notes (continued)
Series GQ Installation notes

- The heat sink must be grounded.
- Power controllers are designed to assure a switching function that does not include protection of the load line or of devices connected to it. The customer must provide all necessary safety and protection devices in conformity to current electrical standards and regulations.
- Protect the solid state relay by using an appropriate heat sink (accessory). The heat sink must be sized according to room temperature and load current.

Dissipated Power Calculation

Single-phase relay

$P_d \text{ GQ..15/25} = 1.45 * I_{RMS} [W]$

$P_d \text{ GQ..50/90} = 1.35 * I_{RMS} [W]$

I_{RMS} = single-phase load current

Heatsink Thermal Resistance Calculation

$R_{th} = (90^\circ C - \text{max amb. } T) / P_d$

- where P_d = dissipated power
- Max. amb. T = max air temperature inside the electrical cabinet.

Use a heatsink with thermal resistance inferior to the calculated one (R_{th}).

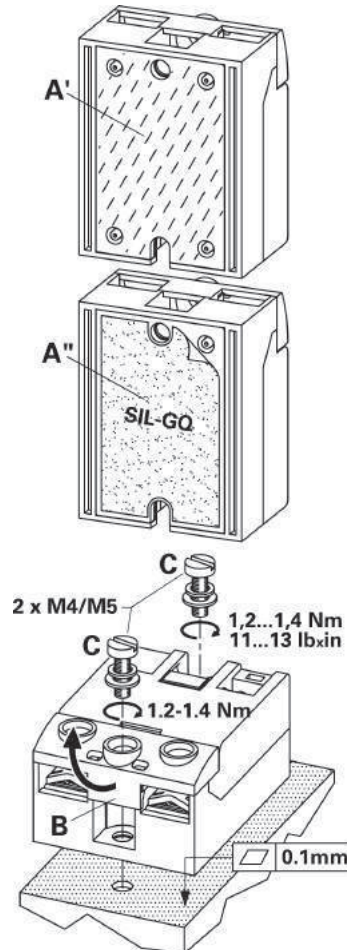
Maximum surrounding air temperature $40^\circ C$ suitable for use in pollution degree 2 or better.

Procedure for mounting on heat sink:

The module-heat sink contact surface must have a maximum planarity error of 0.05mm. and maximum roughness of 0.02mm. The fastening holes on the heat sink must be threaded and countersunk.

Attention: spread 1 gram of thermoconductive silicone (we recommend DOW CORNING 340 HeatSink) on the dissipative metal surface of the module. The surfaces must be clean and there must be no impurities in the thermoconductive paste. As alternative it is also possible to use the graphite film SIL-GQ available as accessory.

- Alternately tighten the two fastening screws until reaching a torque of 0.4...0.6 Nm. Wait 5 minutes for any excess paste to drain.
- Alternately tighten the two fastening screws until reaching a torque of 1.2...1.4 Nm.

Installation on sink:


General Application Notes (continued)

Series GTS Installation notes

Power controllers are designed to assure a switching function that does not include protection of the load line or of devices connected to it. The customer must provide all necessary safety and protection devices in conformity to current electrical standards and regulations.

To assure maximum reliability, it is essential to install the unit correctly in the panel in order to guarantee adequate heat exchange between the heat sink and the room under natural convection conditions.

Maximum surrounding air temperature 40°C “Open Type Equipment” suitable for use in pollution degree 2 or better.

Install the unit vertically (max 10° inclination from vertical axis).

- Vertical distance between unit and panel wall >100 mm
- Horizontal distance between unit and panel wall at least 20 mm
- Vertical distance between one unit and the next at least 300 mm
- Horizontal distance between one unit and the next at least 20 mm

Make sure that the wire raceways do not reduce such distances. If they do, install the units cantilevered to the panel so that air can flow vertically onto the heat sink without obstruction.

Equipment should be short circuit protected by semiconductor fuse type:

Model	Fuse manufacturer	Fuse Model size
GTS 15/230	Bussmann Div Cooper (UK) Ltd	FWC16A10F 10x38
GTS 25/480		FWC25A10F 10x38
GTS 40/230, GTS 40/480		FWP40A14F 14x51
GTS 50/230, GTS 50/480		FWP63A22F 22x58
GTS 60/230, GTS 60/480, GTS 75/230, GTS 75/480		FWP80A22F 22x58
GTS 90/230, GTS 90/480		FWP100A22F 22x58
GTS 120/230, GTS 120/480	Bussmann Intrn'l Inc. USA	170M1418 000-TN/80

Series GTZ Installation notes

Power controllers are designed to assure a switching function that does not include protection of the load line or of devices connected to it. The customer must provide all necessary safety and protection devices in conformity to current electrical standards and regulations.

To assure maximum reliability, it is essential to install the unit correctly in the panel in order to guarantee adequate heat exchange between the heat sink and the room under natural convection conditions.

Install the unit vertically (max 10° inclination from vertical axis).

- Vertical distance between a heatsink and panel wall >100 mm
- Horizontal distance between a heatsink and panel wall at least 20 mm
- Vertical distance between two heatsink at least 300 mm
- Horizontal distance between two heatsink at least 20 mm

Make sure that the cable raceways do not reduce such distances. If they do, install the GTZ overhanging from the panel, so that the air can flow vertically on the heatsink without obstruction.

General Application Notes *(continued)*

Warnings



During continuous operation, the heat sink can reach very high temperatures, and keeps a high temperature even after the unit is turned off due to its high thermic inertia.



DO NOT work on the power section without first cutting out electrical power to the panel.



Follow the instructions in the technical manual.

GEFRAN

GTS 15/25/40/50/60/75/90/120A

POWER SOLID STATE RELAYS WITH LOGIC CONTROL Vdc / Vac



Main applications

- Plastic extrusion lines and injection presses
- Packing and packaging machines
- Polymerization and production plants for synthetic fibers
- Rubber vulcanization plants
- Driers for ceramics and construction elements
- Chemical and pharmaceutical industry
- Industrial electric furnaces
- Food processing plants

Main features

- Control input from VDC/VAC logic signal
- Switching at voltage zero crossing
- LED power on indicator
- MOV protections (varistor)
- Fastening to DIN bar (standard); fastening to panel (optional)
- Option alarm output for interrupted load
- Integrated SCR thermal protection with LED signal (only for models with > 40A current)

GENERAL

Turning an electric load on or off requires the use of a suitable interrupt and protection device that is safe and immune to disturbances.

In addition, for optimum process control in many industrial applications, it is indispensable to drive the load with very short switching times: the best solution is the use of solid state relays.

Gefran proposes the GTS range of power solid state relays with voltage zero crossing, currents from 10A to 120A, and rated voltages of 230Vac, 480Vac and 600Vac.

All models are designed to guarantee operation at rated currents, with continuous driving of power at 40°C ambient temperature.

For less critical operating conditions, you can use the products beyond rated currents (using the dissipation curves as reference).

Various accessories are available, such as the attachment for panel fastening, fuses and fuse holders.

ALARM OPTION: for models with AC control (Input type = "A")

OPERATING DESCRIPTION

The alarm output option activates closing of an isolated contact when it detects the following fault conditions:

- Control signal active but no current on load (zero current, interrupted load)
- Control signal active but no power line voltage (no line)
- Control signal active but SCR / heatsink is in overtemperature (GTS thermal protection)

NOTE: in the absence of the control, the alarm output is always open (the alarm memory latch function is not possible, as with GTS with Type "D" input).

OPTION FUNCTION DESCRIPTION: for models with DC control (Input type = "D")

The Alarm Output Function activates the output switch (or PNP digital output) when detects the following situations:

- The control signal is ON, but there is not current in the Load (No Current, No Load condition)
- The control signal is ON, but there is not GTS power Line voltage supply (No Line condition)
- The control signal is ON, but the SCR / Heat sink is in over-temperature (GTS thermal protection condition)

The alarm output is latched: its status it is maintained if the Control signal is switched off, the alarm output resets when the load current is restored or when the GTS 24V_supply is switched off and on (V_supply reset).

The alarm output option is available as Insulated Solid State Switch (or as Digital Output PNP), with Normally open switch (or PNP normally non active) or normally closed switch (or PNP normally active) status.

TECHNICAL DATA

GENERAL FEATURES

Category of use: AC1

Rated working voltage

- 230Vac (max. range 24...280Vac)

- 480Vac (max. range 24...530Vac)

- 600Vac (max range 24 ... 660Vac)

Rated frequency: 50/60Hz

Non-repetitive voltage:

- 500Vp for model with rated voltage 230Vac

- 1200Vp for model with rated voltage 480Vac

- 1400Vp for model with rated voltage 600Va

Switching voltage for zero: < 20V

Activation time: = 1/2 cycle

Deactivation time: = 1/2 cycle

Potential drop at rated current:

= < 1.4Vrms

Power factor = 1

Control inputs

- DC INPUT (Type "D"):

Max. input: < 10mA @32V

Max. reverse voltage: 36Vdc

Control voltage: 6...32Vdc

Activation voltage: > 5.1Vdc

Deactivation voltage:< 3Vdc

- AC INPUT (Type "A"):

Control voltage:

20...260 (250)* VAC/VDC

* CSA certification

INSTALL FUSE (3A MAX) ON THE CONTROL INPUT CIRCUIT

Activation voltage:

> 15 Vac / Vdc

Deactivation voltage:

< 6 Vac / Vdc

Current draw:

<= 8 mAac/dc @ 260 Vac/Vdc

Option:

Load or line failure alarm option has a solid state output switch or PNP digital output (max ratings: 30V - 150mA conduction resistance 15ohm)

Maximum delay in tripping of load interrupt alarm < 400ms

Maximum length of wires between GS and load for correct operation of load diagnostics < 25m

OUTPUTS

GTS 15

Rated current:15 A@40°C in continuous service

Non-repetitive overcurrent t=20 ms:

400A

I²t for blowout: ≤450A²s

dV/dt critical with output deactivated:

1000V/μs

GTS 25

Rated current: 25 A@40°C in continuous service

Non-repetitive overcurrent t=20 ms:

400A

I²t for blowout: ≤645A²s

dV/dt critical with output deactivated:

1000V/μs

GTS 40

Rated current: 40 A@40°C in continuous service

Non-repetitive overcurrent t=20 ms:

600A

I²t for blowout: ≤1010A²s

dV/dt critical with output deactivated:

1000 V/μs

GTS 50

Rated current: 50 A@ 40°C in continuous service

Non-repetitive overcurrent t=20 ms:

1150A

I²t for blowout: ≤6600A²s

dV/dt critical with output deactivated:

1000V/μs

GTS 60

Rated current: 60 A@ 40°C in continuous service

Non-repetitive overcurrent t=20 ms: 1150A

I²t for blowout: ≤6600A²s

dV/dt critical with output deactivated: 1000V/μs

GTS 75

Rated current: 75 A@ 40°C in continuous service

Non-repetitive overcurrent t=20 ms: 1300A

I²t for blowout: ≤8000A²s

dV/dt critical with output deactivated: 1000V/μs

GTS 90

Rated current: 90A@ 40°C in continuous service

Non-repetitive overcurrent t=20 ms: 1500A

I²t for blowout:≤11200A²s

dV/dt critical with output deactivated: 1000V/μs

GTS 120

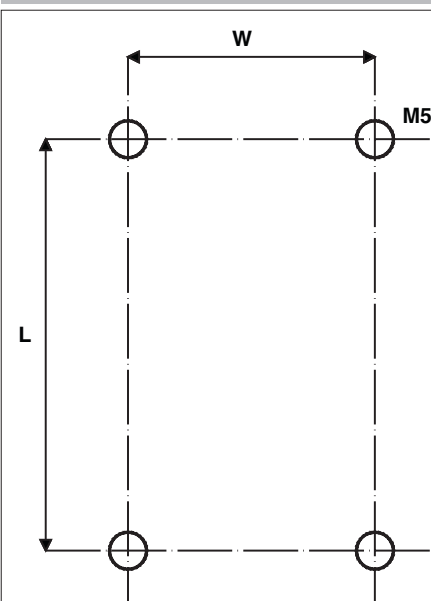
Rated current: 120A@ 40°C in continuous service (complete with fan standard)

Non-repetitive overcurrent t=20 ms: 1500A

I²t for blowout: ≤11200A²s

dV/dt critical with output deactivated: 1000V/μS

TEMPLATE DIMENSIONS



	L (mm)	W (mm)
GTS 15-25	112	0
GTS 40	112	25
GTS 50-60	112	44
GTS 75-90-120	112	113

Thermal Protection

(only on GTS models with > 40A current):

The SCR module's temperature is constantly monitored inside the device.

When the maximum temperature threshold (T=110°C) is exceeded, current flow to the load is interrupted and the condition is signaled by lighting of the yellow thermal protection LED.

Isolation

Rated isolation voltage input/output: 4000VAC rms

Ambient conditions

- **Working ambient temperature:** da 0 a 80°C (according to dissipation curves)
- **Max. relative humidity:** 50% at 40°C
- **Max. installation altitude:** 2000m asl
- **Pollution level :** 2
- **Storage temperature:** -20..+85°C

Installation notes

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

- Applications with solid state power units must also include an automatic safety switch to cut out the load power line.

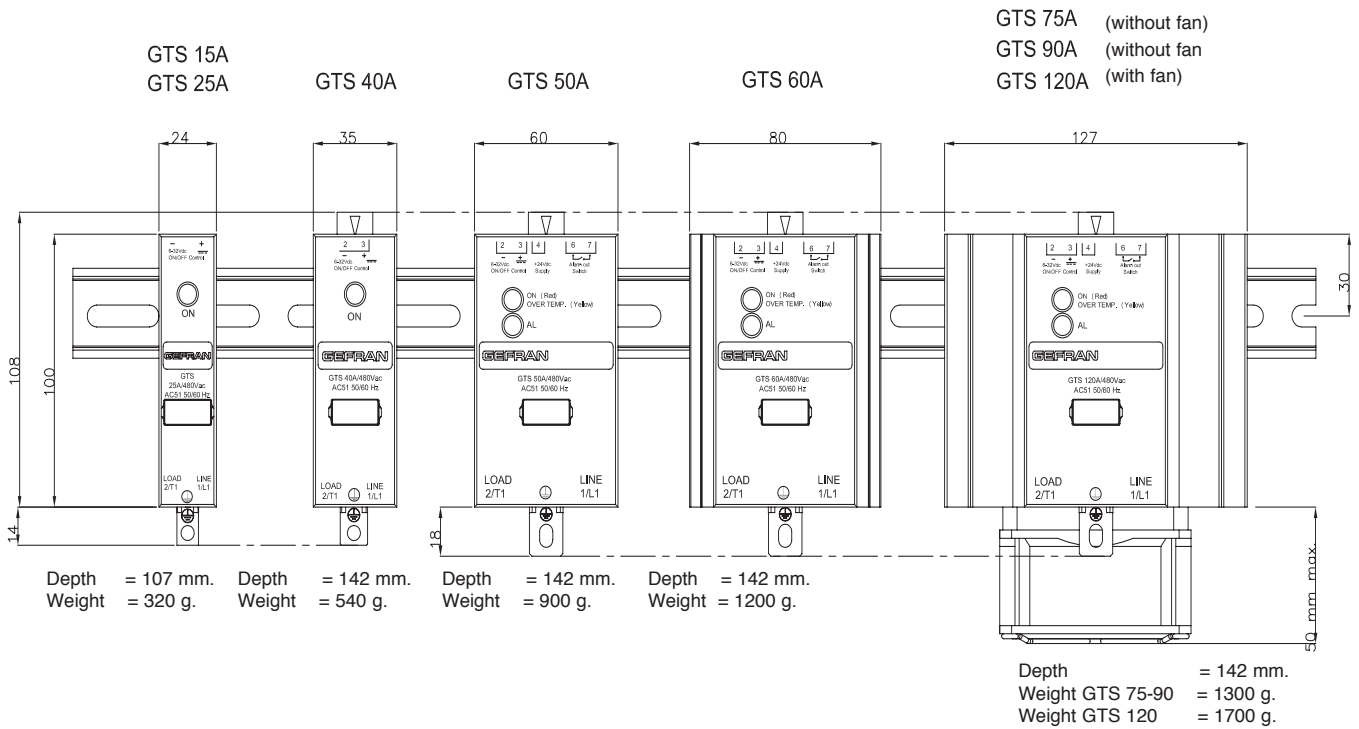
For maximum reliability, it is essential to install the device correctly in the panel in order to have adequate heat exchange between the sink and the surrounding air by natural convection. Install the device vertically (max. 10° inclination to vertical axis)

- Vertical distance between a device and panel wall >100mm
 - Horizontal distance between a device and panel wall: at least 20mm
 - Vertical distance between one device and another: at least 300mm.
 - Horizontal distance between one device and another: at least 20mm.
- Make sure that the cable channels do not reduce such distances; if so, install the groups cantilevered to the panel so that air can flow vertically on the heat sink without obstructions.

Limits of use

- dissipation of thermal power of device with restrictions on temperature of installation site.
- requires exchange with outside air or an air conditioner to transfer dissipated power outside the panel.
- installation restrictions (distances between devices to guarantee dissipation by natural convection)
- max. voltage limits and derivative of transients in line, for which the solid state unit has internal protection devices (depending on model).
- presence of leakage current < 3mA. (max. value with rated voltage and junction temperature of 125°C).

DIMENSIONS AND MOUNTING MEASUREMENTS

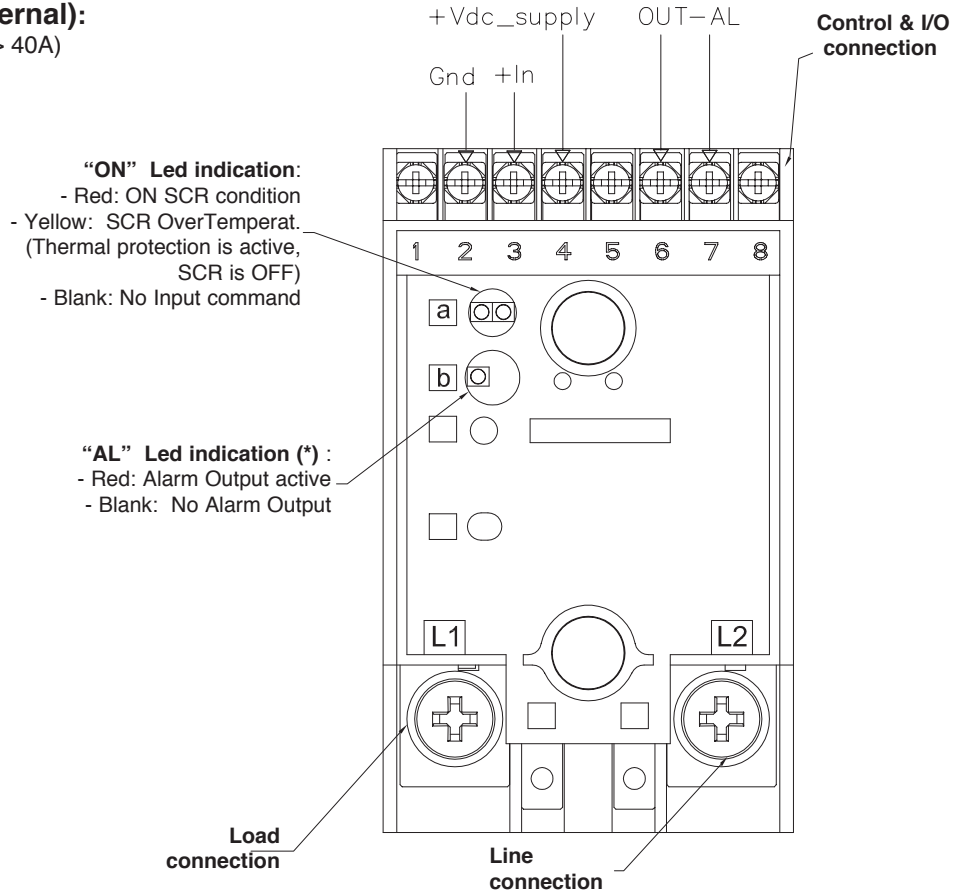


- The "ON" LED is red with the control active and yellow if the thermal protection trips.
- The "AL" LED is available only with alarm output option

DESCRIPTION OF FACEPLATE

FRONT VIEW (Internal):

(Models with current > 40A)



Description of I/O control terminals (GTS > 40A)

Ref.	Description	Notes for type “D” input		Notes for type “A” input
1	Not used			
2	Control input GND ON/OFF	VDC input GND (Supply GND in case of option)		VAC/VDC input (Range 20 to 260Vac/Vdc, I _{max} < 8 mA)
3	+ Control input ON / OFF	Range da 6 a 32Vdc, I _{max} = 10 mA (1 mA with alarm option)		
4 (*)	VDC Supply	Supply of optional functions (Range from 6 to 32 Vdc, I _{max} < 15 mA)		Not used
5	Not used			
6 (*)	Alarm output	With Options 1-2: solid state contact I _{max} = 150 mA V _{max} = 30 Vac/dc Z _{closed} < 15 Ω Z _{open} > 1 MΩ	With Options 3-4: Terminal 6 is internally connected to terminal 4 (Vdc_Supply)	With Options 1: solid state contact I _{max} = 150 mA V _{max} = 30 Vac/dc Z _{closed} < 15 Ω Z _{open} > 1 MΩ
7 (*)	Alarm output		With Options 3-4: Terminal 7 is PNP digital output (+) I _{max} = 150 mA	
8	Not used			

(*) Optional

STATE LED DESCRIPTION

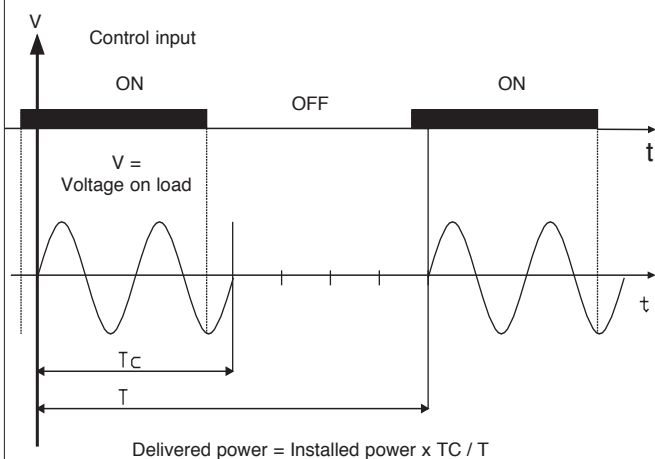
Note:

“ON” Led is standard
 “AL” Led is available only with output alarm Option

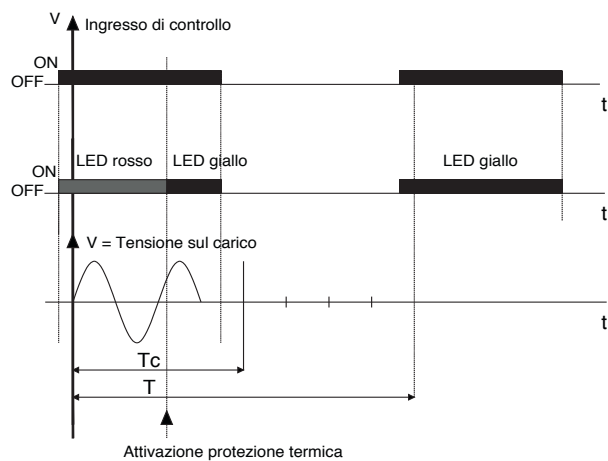
LED	COLOR	STATUS	LED	COLOR	STATUS	LED	COLOR	STATUS
ON	Blank	SCR OFF, No Alarm	ON	Red	SCR ON, No Alarm	ON	Red	SCR ON, Alarm Output active
AL	Blank		AL	Blank		AL	Red	
LED	COLOR	STATUS	LED	COLOR	STATUS	LED	COLOR	STATUS
ON	Blank	SCR OFF, Alarm Output active (alarm stored) (State possible only with GTS with type “D” input and with option)	ON	Yellow	Control signal ON, OverTemperature Protection, SCR is OFF, Alarm output is active	AL	Red	
AL	Red							

TYPE OF OPERATION

Control from logic output in voltage

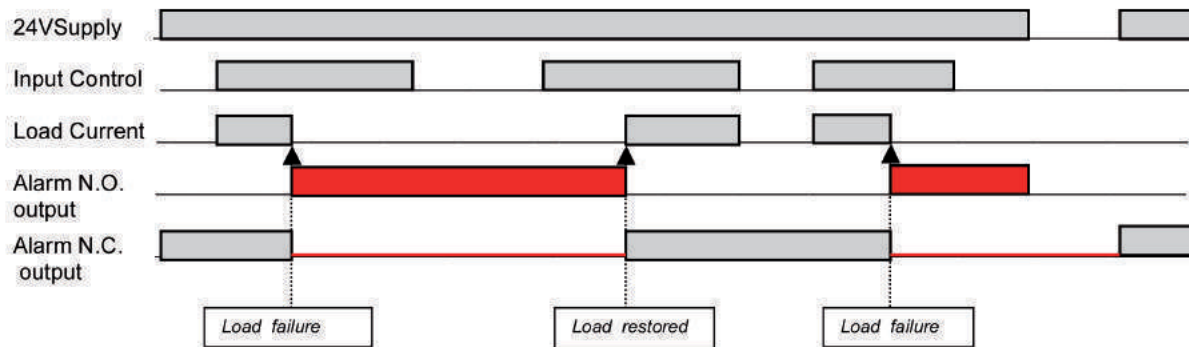


GTS thermal protection (only for models $\geq 50A$)

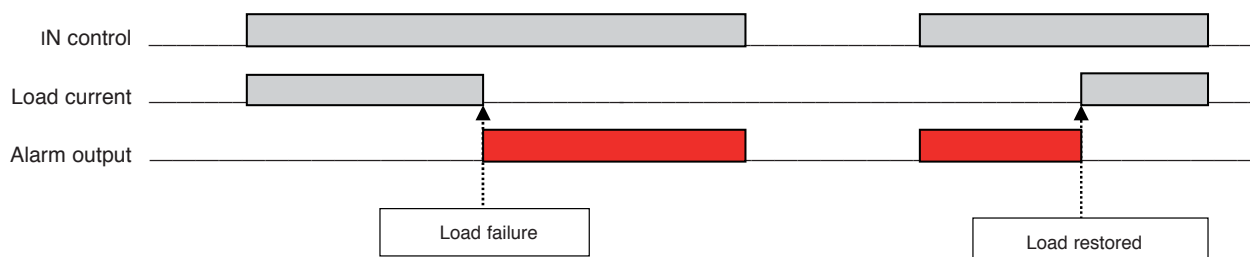


ALARM TYPE OF OPERATION

with VDC control (Control type "D")

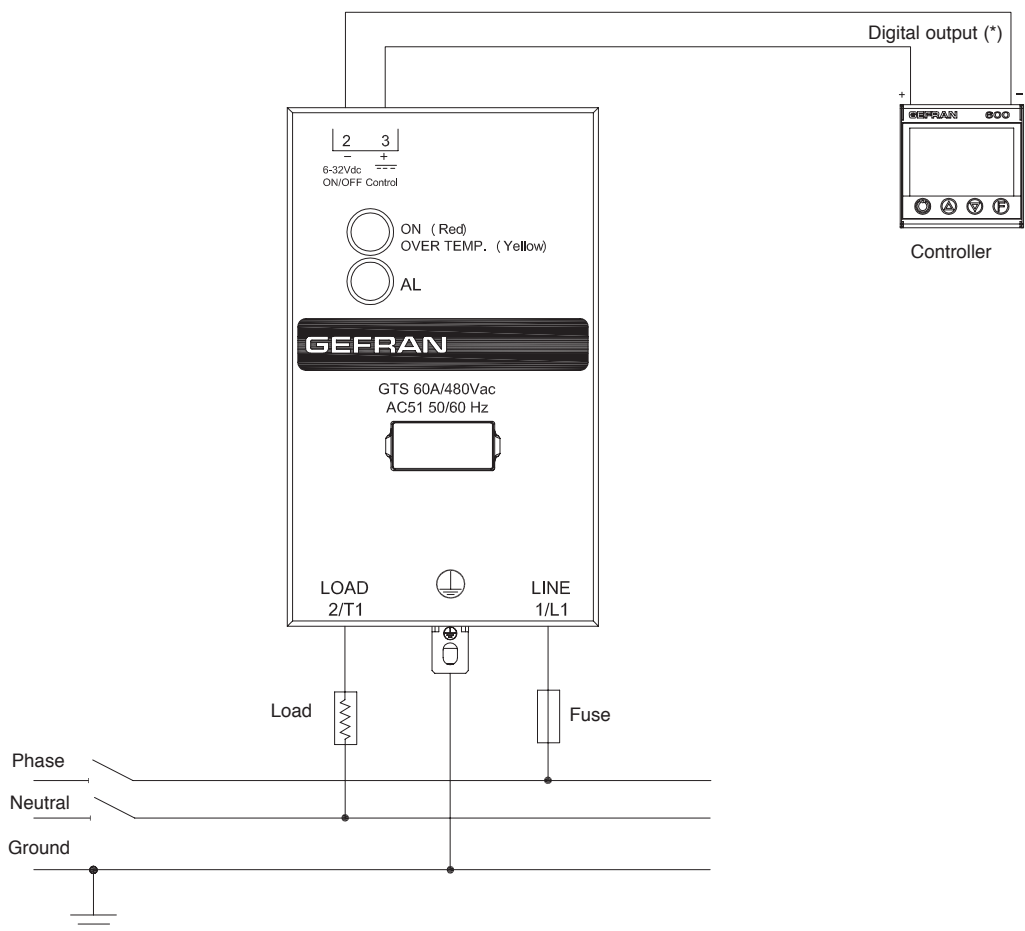


GTS with VAC control (Control type "A")

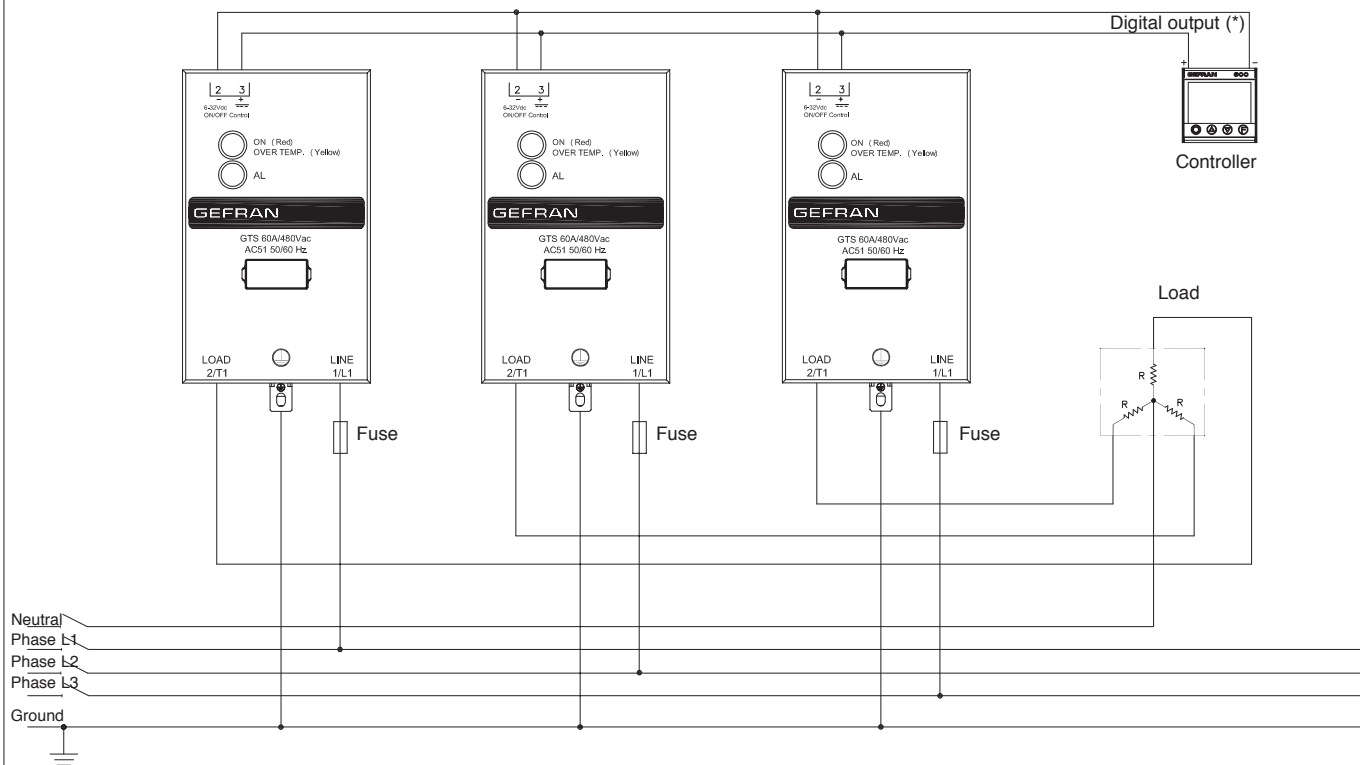


CONNECTION EXAMPLES

Single-phase connection - GTS with VDC control input (Input type "D")



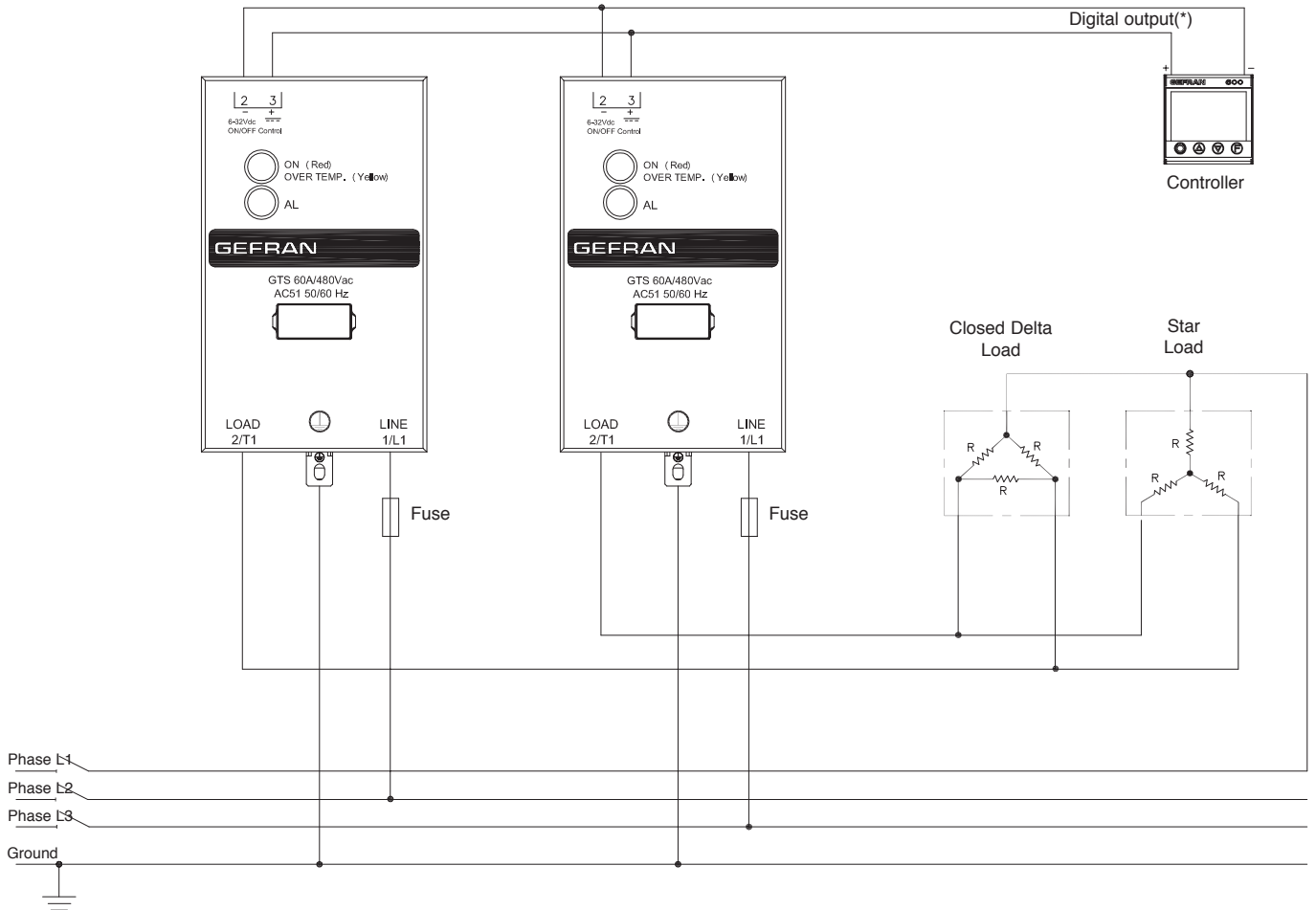
Three-phase Star connection with neutral - GTS with VDC control input (Input type "D")



(*) Or relay output with VAC output
(Use GTS with VAC control input, input type "A")

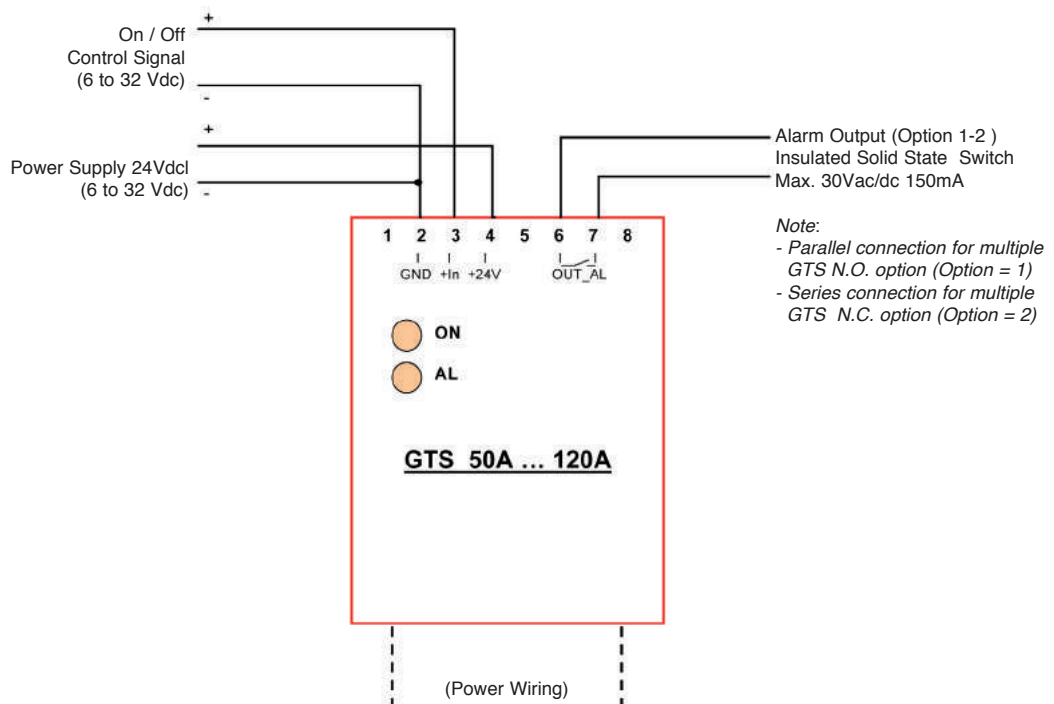
CONNECTION EXAMPLES

Three-phase Triangle or Star connection without neutral on two phases- GTS with VDC control input (Input type "D")



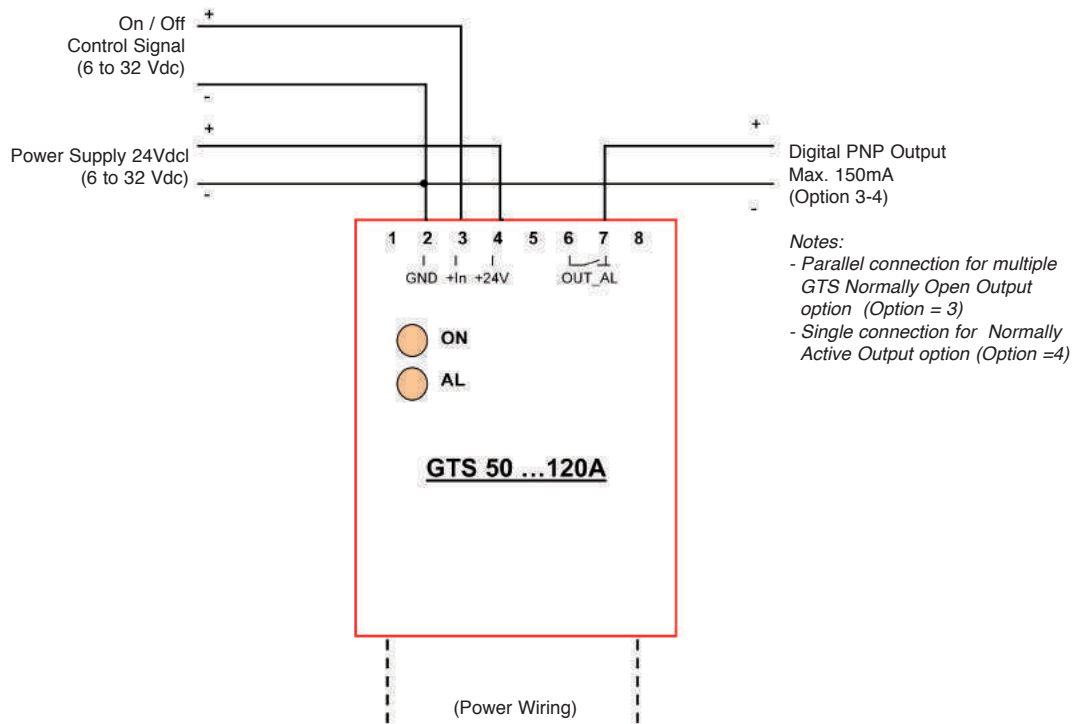
(*) Or relay output with VAC output
(Use GTS with VAC control input, input type "A")

Connection example for GTS with VDC control with isolated contact alarm output option
(only Models GTS-xx/xx-D-1 or GTS-xx/xx-D-2)

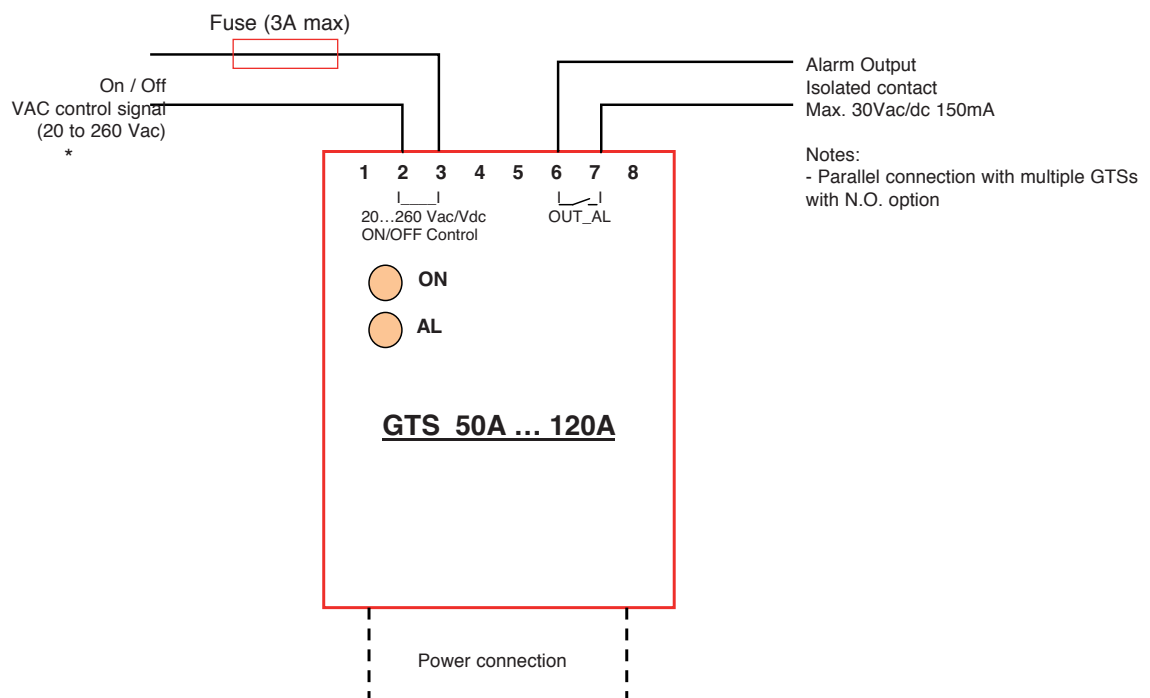


CONNECTION EXAMPLES

Connection example for GTS with VDC control with PNP alarm output option
(only Models GTS-xx/xx-D-3 or GTS-xx/xx-D-4)



Connection example for GTS with VAC control with alarm option (Option 1)
(only models GTS-xx/xx-A-1)

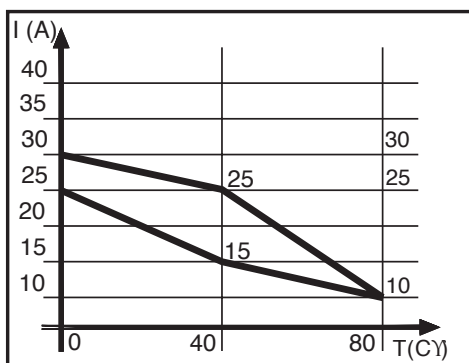


(*) 20...250Vac/Vdc for CSA certification

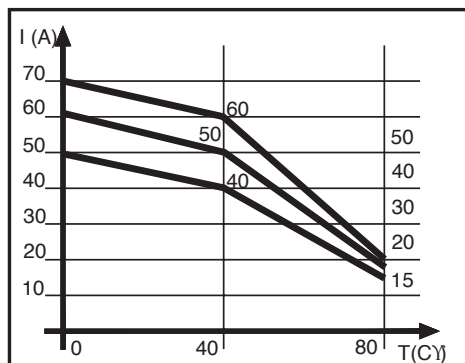
DISSIPATION CURVES

Curves of rated current according to room temperature.

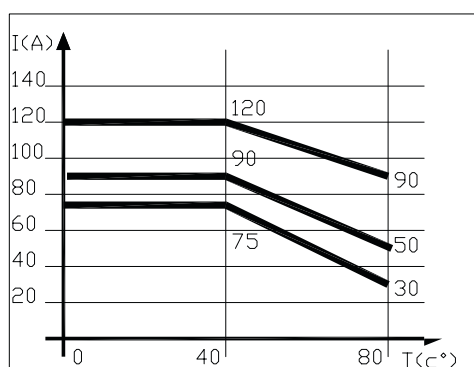
GTS 15 - 25



GTS 40 - 50 - 60



GTS 75 - 90 - 120



N.B.: Curves for the GTS 120 refer to the device complete with standard running.

TABLE OF TERMINALS AND CONDUCTORS

Size	CONTROL TERMINAL			POWER TERMINAL			GROUND TERMINAL •	
	Contact area (WxD) screw type	Type of preisolated terminal	Max. ** section conductor tightening torque	Contact area (WxD) screw type	Type of preisolated terminal	Max. ** section conductor tightening torque	Contact area (WxD) screw type	Max. ** section conductor tightening torque
15A	6,4x9 M3	Eye/fork Faston type connector*	6mm ² 0,6Nm Max	6,4x9 M3	Eye/fork Faston type connector**	6mm ² 0,4-0,6Nm	9x12 M5	6mm ² 1,3-1,8Nm
25A	6,4x9 M3	Eye/fork Faston type connector*	6mm ² 0,6Nm Max	6,4x9 M3	Eye/fork	6mm ² 0,4-0,6Nm	9x12 M5	6mm ² 1,3-1,8Nm
40A	6,3x9 M3	Eye/fork/tip	2,5mm ² 0,6Nm Max	12x12 M5	Eye/fork	16mm ² 1,5-2,2Nm	11,5x12 M5	16mm ² 1,5-2,2Nm
50/60A	6,3x9 M3	Eye/fork/tip	2,5mm ² 0,6Nm Max	16x18 M6	Eye/fork	50mm ² 3,5-6Nm	14x16 M5	50mm ² 1,8-2,5Nm
75-90A	6,3x9 M3	Eye/fork/tip	2,5mm ² 0,6Nm Max	16x18 M6	Eye/fork	50mm ² 3,5-6Nm	14x16 M5	50mm ² 1,8-2,5Nm
120A	6,3x9 M3	Eye/fork/tip	2,5mm ² 0,6Nm Max	16x18 M6	Eye/fork	50mm ² 3,5-6Nm	14x16 M5	50mm ² 1,8-2,5Nm

(*) Female faston (for insertion, remove the M3 screw by making the nut re-enter the seat in the holder)

(**) The max. sections specified refer to unipolar copper wires isolated in PVC..

• Note: For the ground terminal, you have to use an eye wire terminal.

(WxD) = Width x depth

ACCESSORIES

A wide range of accessories is available (including fuses and fuse holders, heat sinks, ID plates and thermostats).

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

ORDER CODE

GTS - [] / [] - [] - [] []

Model	
Version with double SCR	GTS

Rated current	
15Aac	15
25Aac	25
40Aac	40
50Aac	50
60Aac	60
75Aac	75
90Aac	90
120Aac	120

Rated voltage	V
230Vac	24
480Vac	48
600Vac	60

Input type	
6 ... 32 Vdc	D
20 ... 260 Vac / Vdc	A

Fan (for mod.120A only)	
VEN-90	Fan 80x80x40 230V 14W
VEN-91	Fan 80x80x40 115V 14W
VEN-92	Fan 80x80x25 24Vdc 4W *

Alarm Output Option	
Available only for GS/GTS rated current ≥ 50A	
0	None
1	Insulated switch output (normally open)
2 (**)	Insulated switch output (normally closed)
3 (**)	Digital PNP output (normally open)
4 (**)	Digital PNP output (normally active)

(**) available only for models with type "D" input

* Accessory for GEFLEX mod. GFX-** 120/480 only

Please contact GEFTRAN personnel for information on availability of codes.

•WARNINGS



WARNING: this symbol indicates danger.

Read the following warnings before installing, connecting or using the device:

- follow instructions precisely when connecting the device.
- always use cables that are suitable for the voltage and current levels indicated in the technical specifications.
- In applications with risk of damage to persons, machines or materials, you **MUST** install auxiliary alarm devices. It is advisable to verify frequently that the alarm device is functional even during the normal operation of the equipment.
- **DO NOT** operate the device in rooms with dangerous (inflammable or explosive) atmosphere.
- During continuous operation, the heat sink can reach up to 100°C, and stays at a high temperature even after the device is turned off due to thermal inertia; therefore, **DO NOT** touch it and avoid contact with electrical wires.
- do not work on the power part without first disconnecting electrical power to the panel.
- do not remove the cover when the device is powered!

Installation:

- correctly ground the device using the specific terminal.
- power supply lines must be separated from device input and output lines; always check that the supply voltage matches the voltage indicated on the device label.
- avoid dust, humidity, corrosive gases and heat sources.
- respect the installation distances between one device and another (to allow for dissipation of generated heat).
- to keep air in movement, we advise you to install a fan near the GTS group in the electrical panel containing the GTSs.
- respect the indicated dissipation curves

Maintenance: at regular intervals, check operation of the cooling fans and clean all air ventilation filters.

- repairs must be done out only by trained and specialized personnel. Cut 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 device's mechanical reliability. Use a clean cloth moistened with ethyl alcohol or water to clean external parts in plastic.

Service: GEFTRAN has a service department. The warranty excludes defects caused by any use not conforming to these instructions.

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

CSA	In Conformity with C/CSA/US CoFC no. 70051149
CE	This device conforms to European Union Directive 2004/108/CE and 2006/95/CE as amended with reference to generic standards: EN 61000-6-2 (immunity in industrial environment) EN 61000-6-4 (emission in industrial environment) - EN 61010-1 (safety regulations).
UL	In Conformity with UL508 - File: E243386

GEFRAN

GTT 25 / 40 / 50 / 60 / 75 / 90 / 120A POWER SOLID STATE RELAYS WITH ANALOG CONTROL



Main applications

- Plastics extrusion lines and injection moulding machines
- Polymerization plant for synthetic fibre production
- Rubber moulding machinery
- Driers for ceramics and components for the building industries
- Chemical and pharmaceutical industries
- Industrial electric ovens
- Food processing plants

Main features

- Command input from analogue voltage or current signal or potentiometer.
- Switching at voltage zero crossing.
- Partialization of wave train power with dynamically optimized time cycle.
- Antiparallel double SCR
- 2 led for supply indication, "ON" state, 1 optional LED for load interrupt alarm
- 4000V isolation between input circuit and power output
- MOV (varistor)
- Optional monitoring of interrupted load
- DIN rail mounting (standard); Panel mounting (optional)

PROFILE

The GTT family of solid-state relays has been designed with the aim of providing very accurate control of the load thanks to an analog control input, in voltage at 0...5V; 0...10V or in current at 0...20/4...20mA or a potentiometer (from 1K Ω to 10 K Ω).

The electronic design ensures that the cycle time for proportioning the power is automatically optimized.

The number of cycles that the GTT supplies to the load (wave trains) for a given input signal is calculated to be the minimum possible to maintain the necessary accuracy.

This guarantees a very fast and accurate control loop that enables the GTT, driven by a controller or a PLC with analogue output, to obtain very precise control.

The GTT can be used in three phase systems, using master-slave control architecture in which the control signal drives only one GTT (master) and this unit supplies the synchronized signals to the other GTT slaves.

Two GTS modules can also be used as slaves.

A load interrupt control option (HB) is available without having to use an external current transformer; alarm limit is settable with trimmer and yellow LED signal, with voltage-free contact, normally open.

The GTT solid-state relay has a green LED to indicate the presence of the 24Vac power supply and a red LED to indicate the switching based on the analog control input signal.

The LED signal will be continuous (off at minimum, on at maximum) at the ends of the scale, pulsing for intermediate values.

The units offer optional accessoires for panel mounting, fuses and fuseholders, current transformer, isolation transformers

TECHNICAL DATA

General features

Category of use AC1
Nominal voltage
- 480Vac (max. range 24...530Vac)
Nominal frequency: 50/60Hz
Non-repetitive voltage: 1200Vp
Zero switching voltage: $\leq 20V$
Voltage drop at nominal current $\leq 1,4V_{rms}$
Power factor = 1

Control inputs

Voltage: 0...5Vdc, 0...10Vdc (impedance $\geq 100K\Omega$)
Current: 0...20mA, 4...20mA (impedance 125 Ω)
Potentiometer: from 1K to 10K Ω (auto-fed by GTT)

OUTPUTS

GTT 25 (SCR version)

Nominal current:
25A@40°C in continuous service
Non-repetitive overcurrent $t=20$ ms: 400A
 I^2t for blowout $\leq 645A^2s$
dV/dt critical with output deactivated:
1000V/ μs

GTT 40 (SCR version)

Nominal current:

40A@40°C in continuous service

Non-repetitive overcurrent $t=20$ ms:

600A

I^2t for blowout: $\leq 1010A^2s$

dV/dt critical with output deactivated:

1000V/ μs

GTT 50 (SCR version)

Nominal current:

50A@40°C in continuous service

Non-repetitive overcurrent $t=20$ ms:

1150A

I^2t for blowout: $\leq 6600A^2s$

dV/dt critical with output deactivated:

1000V/ μs

GTT 60 (SCR version)

Nominal current:

60A@40°C in continuous service

Non-repetitive overcurrent $t=20$ ms:

1150A

I^2t for blowout: $\leq 6600A^2s$

dV/dt critical with output deactivated:

1000V/ μs

GTT 75 (SCR version)

Nominal current:

75A@40°C in continuous service

Non-repetitive overcurrent $t=20$ ms:

1300A

I^2t for blowout: $\leq 8000A^2s$

dV/dt critical with output deactivated:

1000V/ μs

GTT 90 (SCR version)

Nominal current:

90A@40°C in continuous service

Non-repetitive overcurrent $t=20$ ms:

1500A

I^2t for blowout: $\leq 11200A^2s$

dV/dt critical with output deactivated:

1000V/ μs

GTT 120 (versione SCR)

Nominal current:

120A@40°C in continuous service

(complete with fan and standard thermostat).

Non-repetitive overcurrent $t=20$ ms:

1500A

I^2t for blowout: $\leq 11200A^2s$

dV/dt critical with output deactivated:

1000V/ μs

Isolation

Rated isolation voltage input/output:

4000Vac

Ambient conditions

• Working temperature:

0 to 80°C (see the dissipation curves)

• Max. relative humidity:

50%...40°C

• Max. installation altitude:

2000m asl

• Pollution level: 2

• Storage temperature:

-20...+85°C

Power supply:

24Vac $\pm 10\%$, 50/60 Hz

Absorption: 1.5VA

Max. isolation voltage: 300Vdc

Options:

Interrupted HB load alarm.

Controls the load by measuring

current on a shunt inside the device.

The alarm limit is set with a multirev monorev trimmer.

The alarm output is obtained by

means of a solid state relay. The

contact is normally open (max. 30V,

150mA, conduction resistance 15

Ohm).

Installation notes

Use the high-speed fuse specified

in the catalog according to the

connection example given.

- Applications with solid state power units must also include an automatic safety switch to cut out the load power line.

In order to obtain best reliability,

it is important to install a heatsink

correctly inside the panel, to reach

an adequate thermal exchange

between the device and the

surrounding air in natural convection conditions.

Mount it vertically (max. 10°

inclination from the vertical axis)

• Vertical distance between a device

and the panel walls >100 mm

• 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.

Attention:

if you replace a GTT from an earlier

series, note the following:

- the GTT cannot be used as a slave of a master GTT from a previous series;

- the GTT can drive a slave from

a previous series only if a 10k Ω

resistance is connected in series to

the master/slave connection

- see the connection examples.

Limits of use

• Dissipation of thermic power on the device with restraints on the ambient temperature of the installation.

• Equip the cabinet with an external air change or air-condition it, to put out dissipated 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 (based on the models).

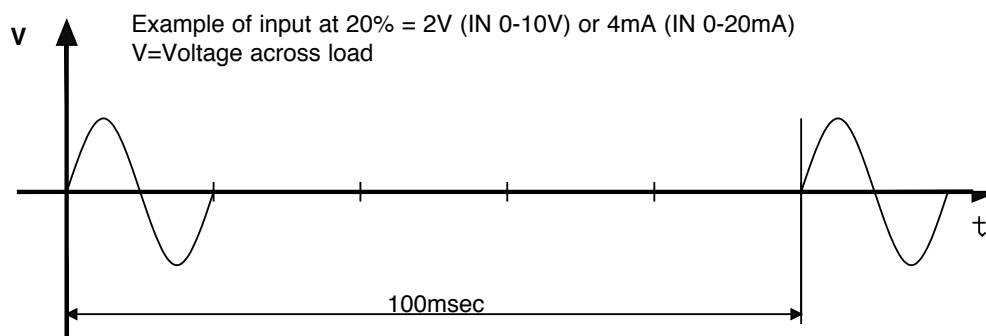
• Leakage current < 3 mA for SCR version GTTs.

(max. value with rated voltage and junction temperature of 125°C)

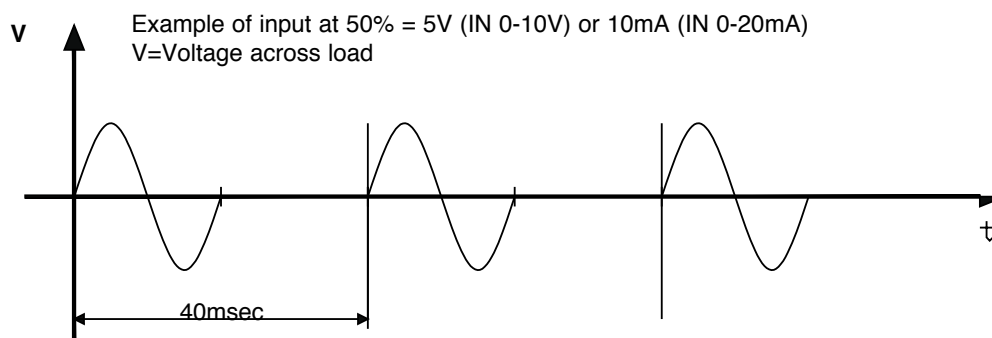
WORKING TYPOLOGY

“Zero crossing” with variable cycle time

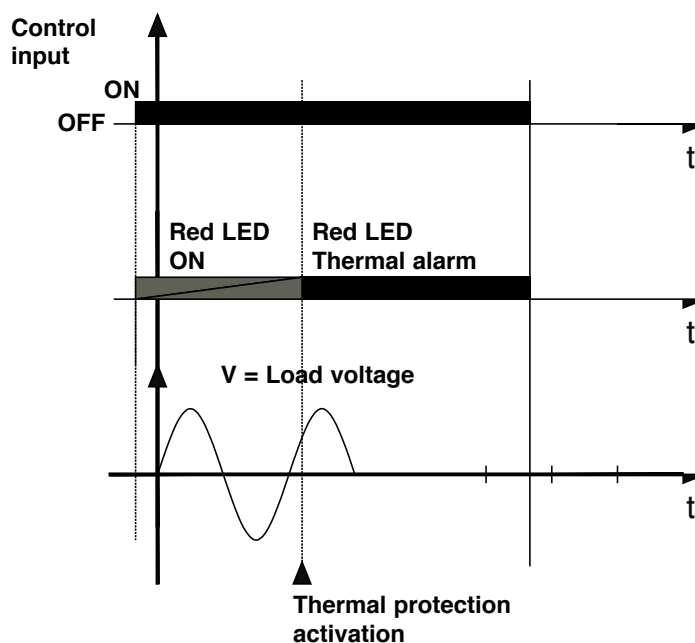
Examples of the operation of the GTT for different values of the input drive signal and the consequent different cycle times (100msec and 40msec respectively)



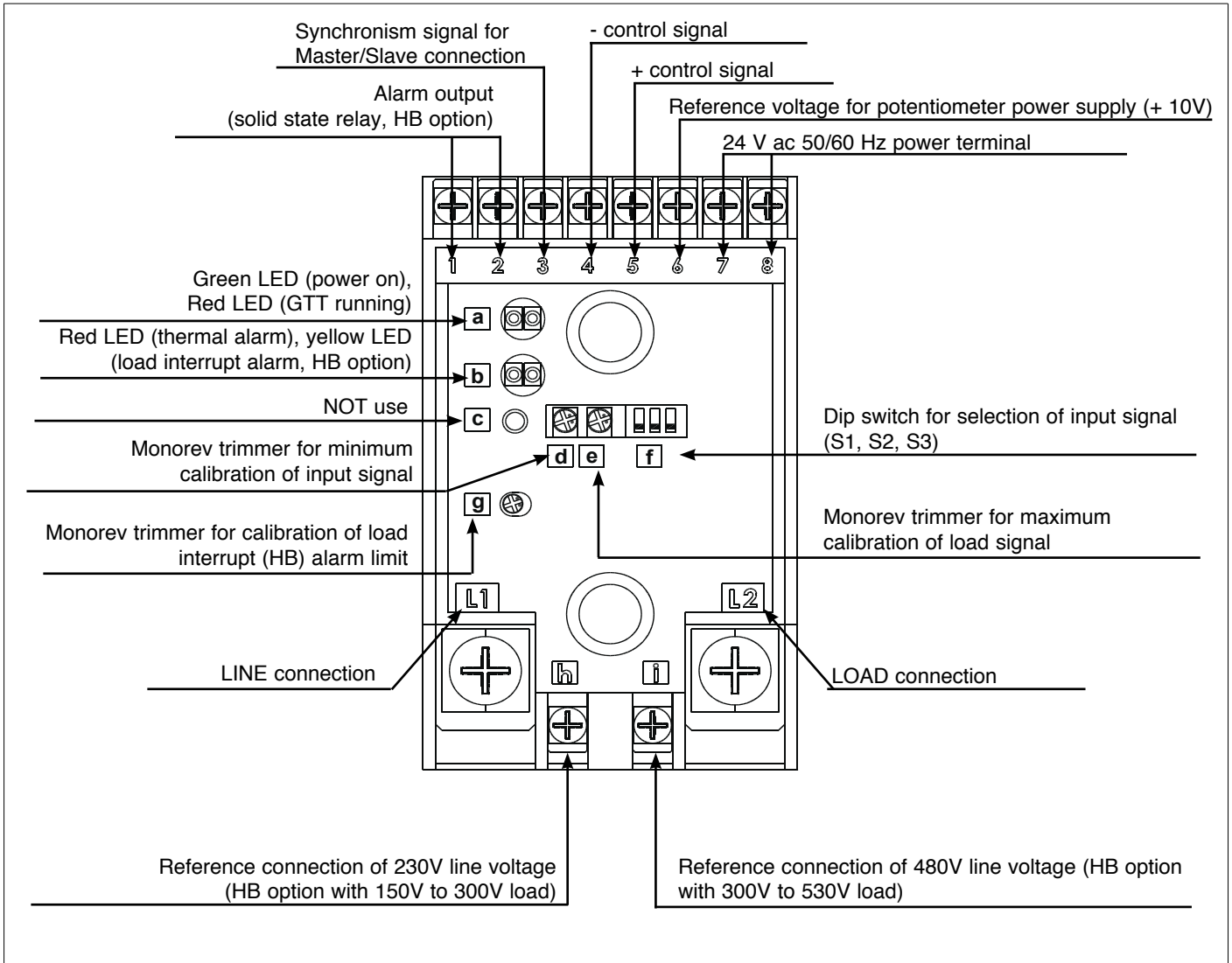
Logic output control for GTT



GTT thermal protection



FACEPLATE DESCRIPTION



CALIBRATION PROCEDURE OF THE INPUT SIGNAL

The solid-state power unit, GTT, is supplied factory calibrated for 0..5V, 0..10V, 0..20mA, 4..20mA inputs, 10Kohm potentiometer. Minimum and maximum values are adjusted with two monorev trimmers (d,e). Input signal type is selected with the f adjustment dip switches (S1,S2,S3).

Input signal type is selected with the f adjustment dip switches (S1,S2,S3).

Control signal	Dip Switch Position			e		V/mA In ---	f S1-S3	Rin
	S1	S2	S3					
0...5Vdc	OFF	OFF	ON	 96% 82%		On 0-5V Off		100K□
0...10Vdc	ON	OFF	ON			0-10V		100K□
0...20mA	OFF	ON	ON	 18% 4%		0-20mA		125□
4...20mA	OFF	ON	OFF			4-20mA		125□

Minimum adjustment trimmer (d) turned fully counterclockwise sets the start conducting limit at 4% of the signal; turned fully clockwise, the minimum conducting limit is set at 18% of the input signal.

Maximum adjustment trimmer (e) turned fully clockwise sets the full conducting limit at 96% of the signal; turned fully counterclockwise, the full conducting limit is set at 82% of the input signal

INTERRUPTED LOAD ALARM

The interrupted load alarm function enables the GTT to diagnose a variation of the load current (compared to a set limit), distinguishing it from one caused by a change in grid voltage. e. The solid state power unit must therefore be supplied with the voltage applied to the load terminals, i.e.: LOAD (L2): already connected internally;
LINE (h or i): connect terminal h for voltages from 150 to 300V; connect terminal i for voltages from 300 to 530V.
The alarm activates (relay closed and yellow alarm LED on) when the current, during the conduction of the device, falls below a preset level that may be adjusted using the trimmer on the faceplate.

Calibratio procedure (refer to the faceplate description drawing)

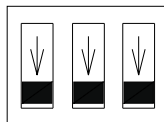
- 1) Use the adjustment system (or a calibrator) in order to supply the maximum signal (100% conduction or thered "ON" LED always illuminated). As an alternative, you can configure the GTT to 0-10 V DC input configuration and connect terminals 5 and 6.
- 2) Use a current sensing pliers to check that the load current is at rated level.
- 3) Turn alarm limit adjustment trimmer (g) fully clockwise. Check that yellow alarm LED (b) turns on.
- 4) Slowly turn trimmer (g) counterclockwise until the alarm LED turns off.
- 5) Turn the trimmer counterclockwise another 1/10 of a turn (1 notch on the scale).
In this way, the alarm limit is set below 10% of the rated load current.

N.B:

the partial load break alarm function operates with power partialization exceeding 15%. For partializations below 20%, tripping times increase due to the reduced load activation time. For correct operation of the option, the load current has to exceed 30% of rated current for the GTT.

Notes on use of the GTT with the digital On/Off control

- The logic control signal has to be connected with the correct polarities to terminals 4 and 5 of the analog input.
- Turn minimum adjustment trimmer (d) fully counterclockwise and maximum adjustment trimmer (e) fully clockwise.
- Set the 3 dip switches (f) to off.



For applications with a very short work cycle, you can drive the solid state group by means of the Master/Slave signal by driving it with a digital signal (OFF = 0 V dc; ON = from 4 V dc to 10 V dc)

Inhibiting the GTT

You can inhibit operation of the GTT by means of the Master/Slave signal.
To inhibit, connect control signal - (4) with the synchronism signal for Master/Slave connection (3).

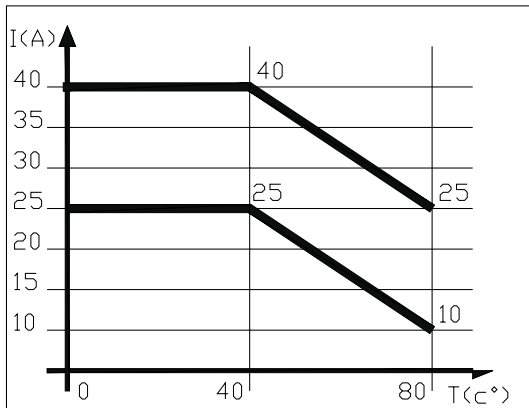
Notes on use of the GTT in Master/Slave configuration

The GTT can be used as a master to drive other solid state groups (slaves). With Master/Slave signal (3), you can drive up to 9 GTTs (see connection examples for GTT solid state power relays with three-phase load). You can also use a GTT to drive GTS solid state power relays (maximum of 2), as shown in the connection diagrams for GTT/GTS solid state power relays with three-phase load (attention: the HB option cannot be used for a three-phase application with neutral).

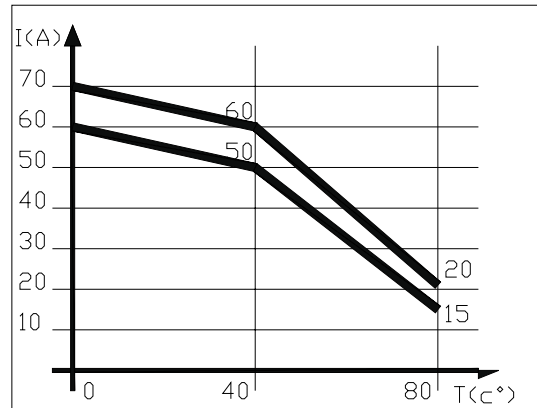
DISSIPATION CURVES

Rated current curves based on room temperature.

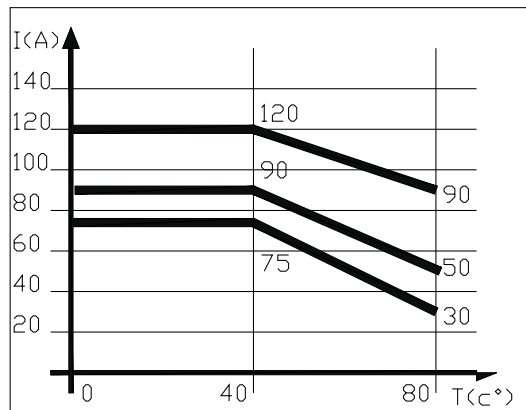
GTT 25 / 40



GTT 50 / 60



GTT 75 / 90 / 120



The GTT 120 curves refer to the device complete with standard fan running.

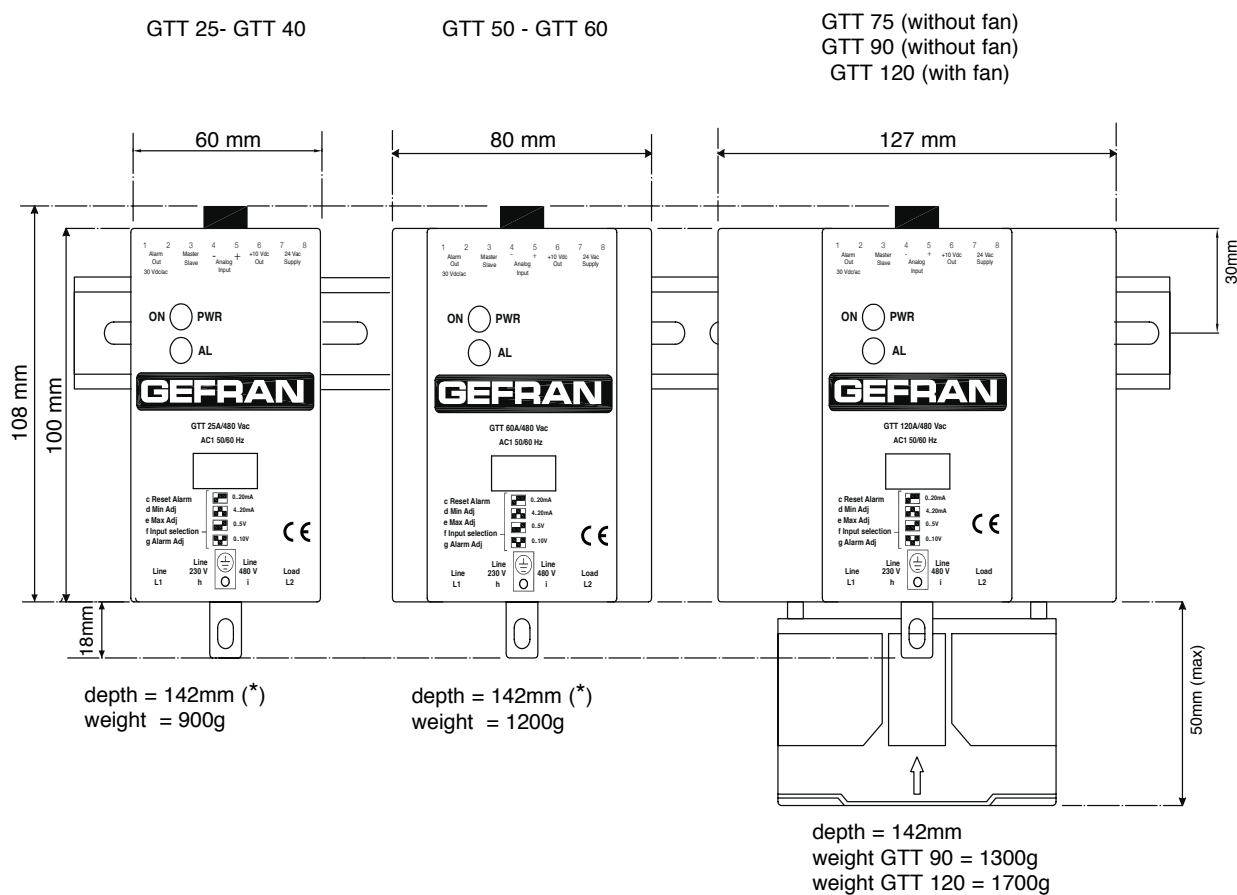
TABLE FOR TERMINAL CHOICE OF POWER TERMINAL BOARD

Size	CONTROL TERMINAL			POWER TERMINAL			GROUND TERMINAL *	
	Contact area (WxD) screw type	Pre-isolated wire terminal	Max. section ** conductor tightening torque	Contact area (WxD) screw type	Pre-isolated wire terminal	Max. section ** conductor tightening torque	Contact area (WxD) screw type	Max. section ** conductor tightening torque
25/40A 50/60A	6,3X9 M3	Eye/fork tip	2,5mm ² 0,6Nm Max	16x18 M6	Eye/fork	50mm ² 3,5-0,6Nm	14x16 M5	50mm ² 1,8-2,5Nm
75-90A	6,3X9 M3	Eye/fork tip	2,5mm ² 0,6Nm Max	16x18 M6	Eye/fork	50mm ² 3,5-0,6Nm	14x16 M5	50mm ² 1,8-2,5Nm
120A	6,3X9 M3	Eye/fork tip	2,5mm ² 0,6Nm Max	16x18 M6	Eye/fork	50mm ² 3,5-0,6Nm	14x16 M5	50mm ² 1,8-2,5Nm

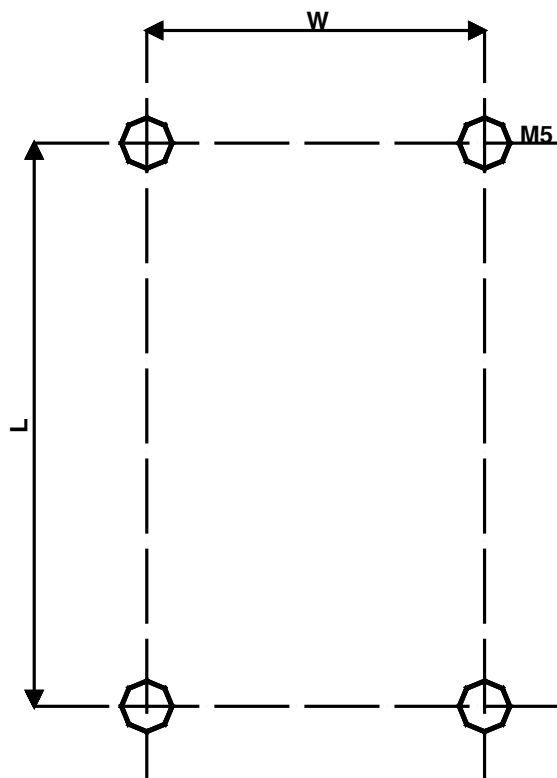
(**)The maximum sections indicated refer to unipolar copper wires with PVC insulation.

- Note: you have to use an eye terminal for the ground connection.
(WxD) = width x depth

DIMENSIONS AND CUT-OUT



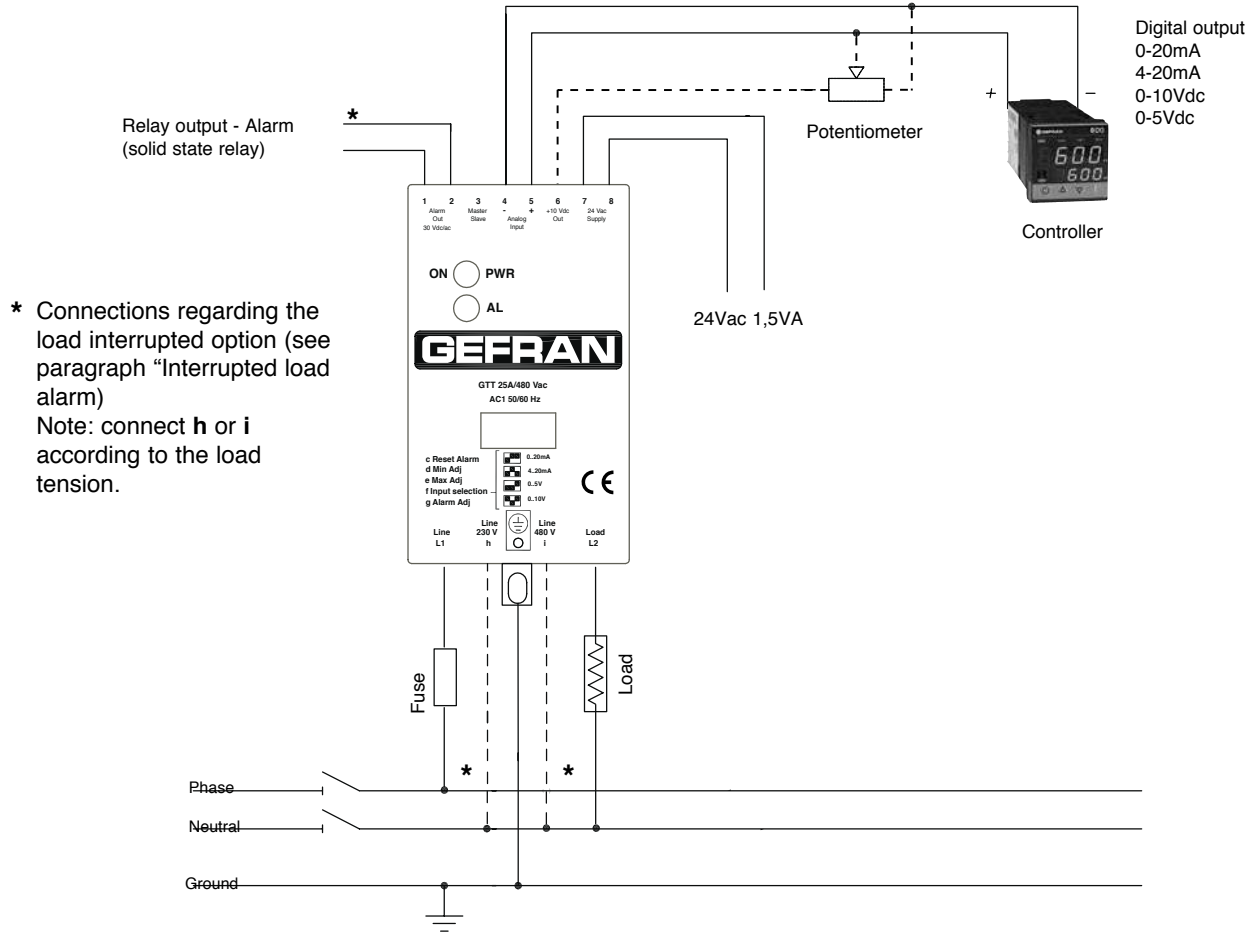
TEMPLATE DIMENSIONS



	L (mm)	W (mm)
GTT 25 - 40 - 50 - 60	112	44
GTT 75 - 90 - 120	112	113

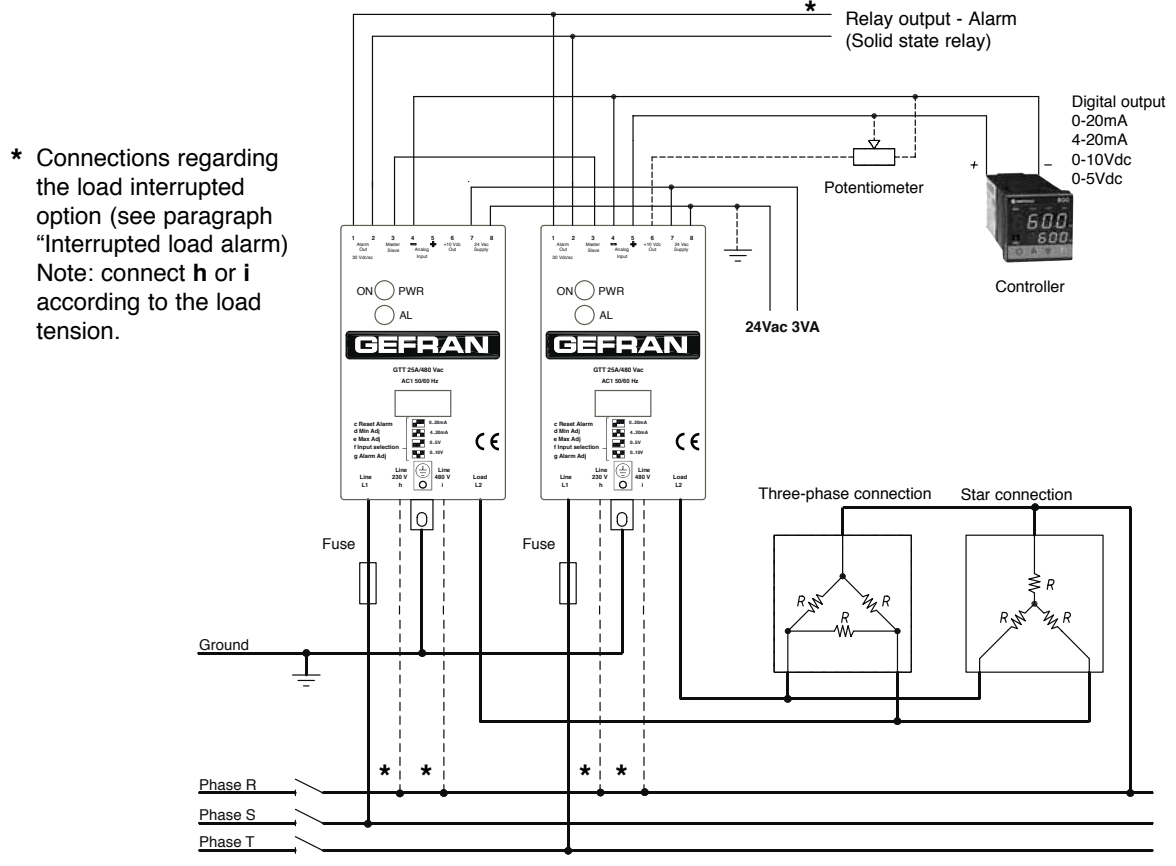
CONNECTION EXAMPLES

Single-phase connection with optional monitoring of interrupted load (command input from analog signal or potentiometer)



* Connections regarding the load interrupted option (see paragraph "Interrupted load alarm")
 Note: connect **h** or **i** according to the load tension.

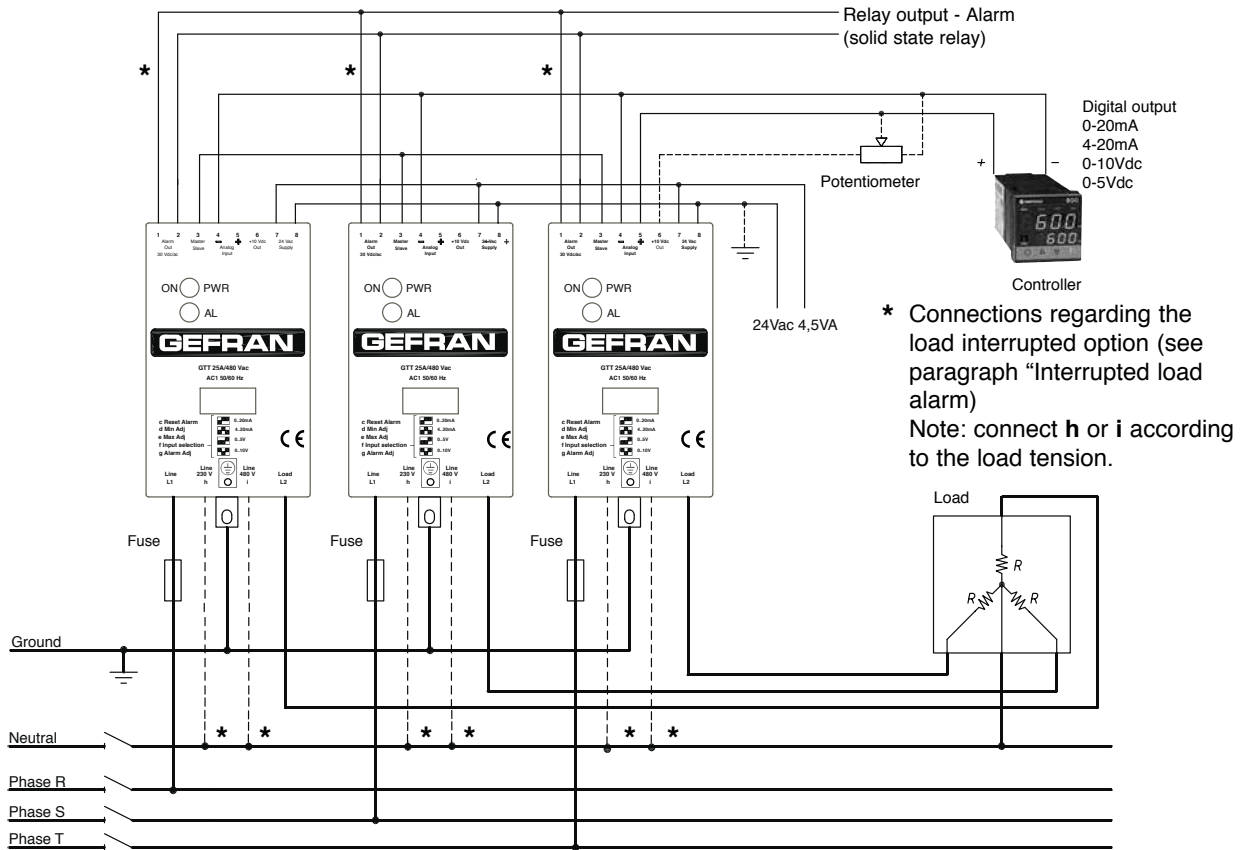
Star or delta three-phase connection without neutral, with control of two phases.



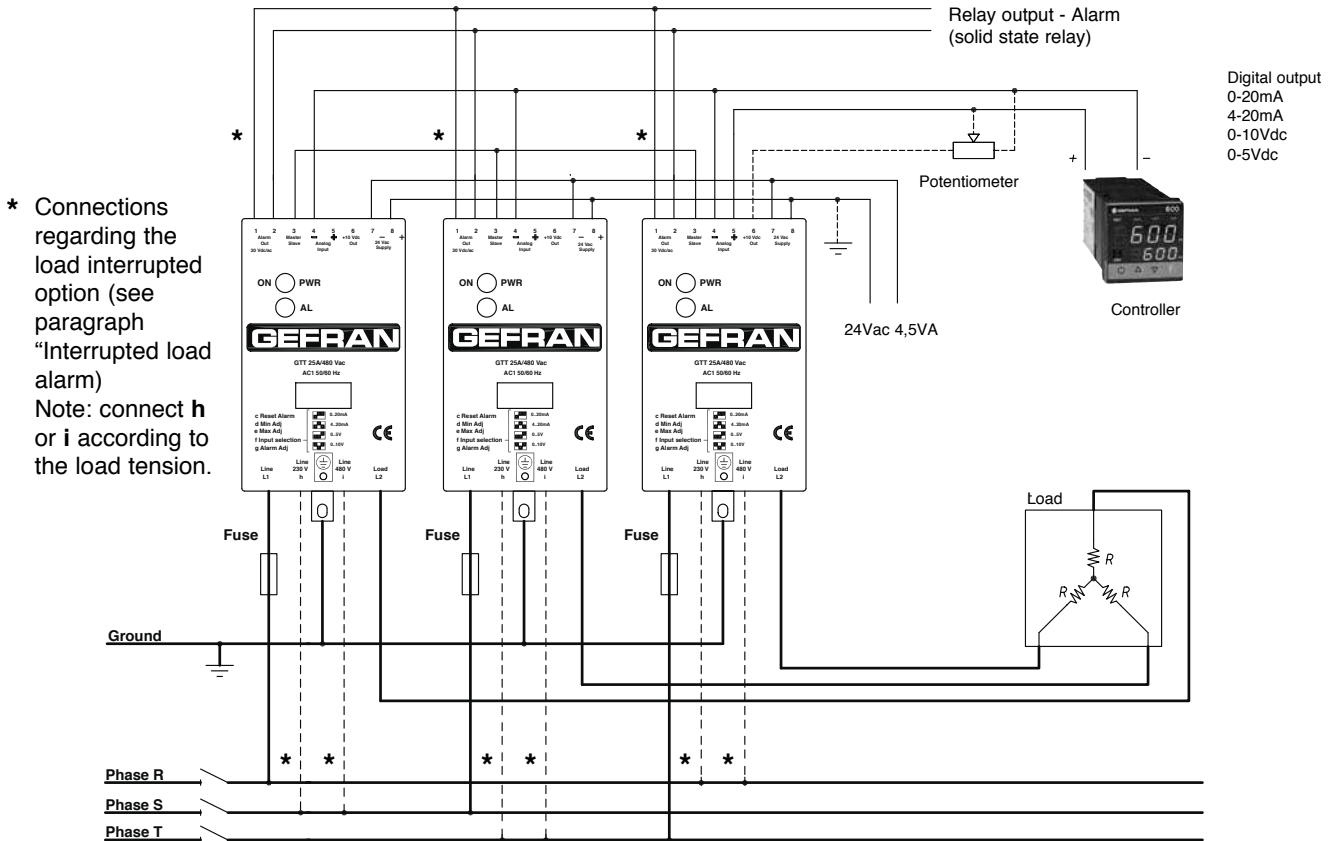
* Connections regarding the load interrupted option (see paragraph "Interrupted load alarm")
 Note: connect **h** or **i** according to the load tension.

CONNECTION EXAMPLES

Three-phase star connection with neutral.



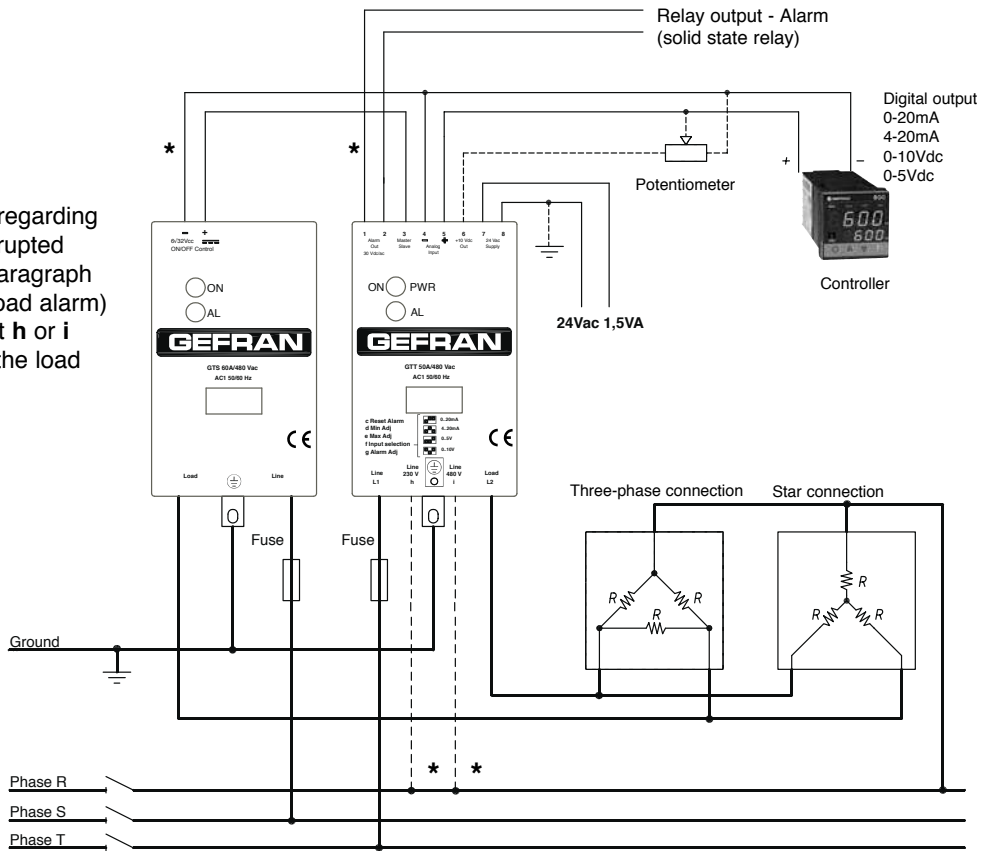
Star or delta three-phase connection without neutral, with control of three phases.



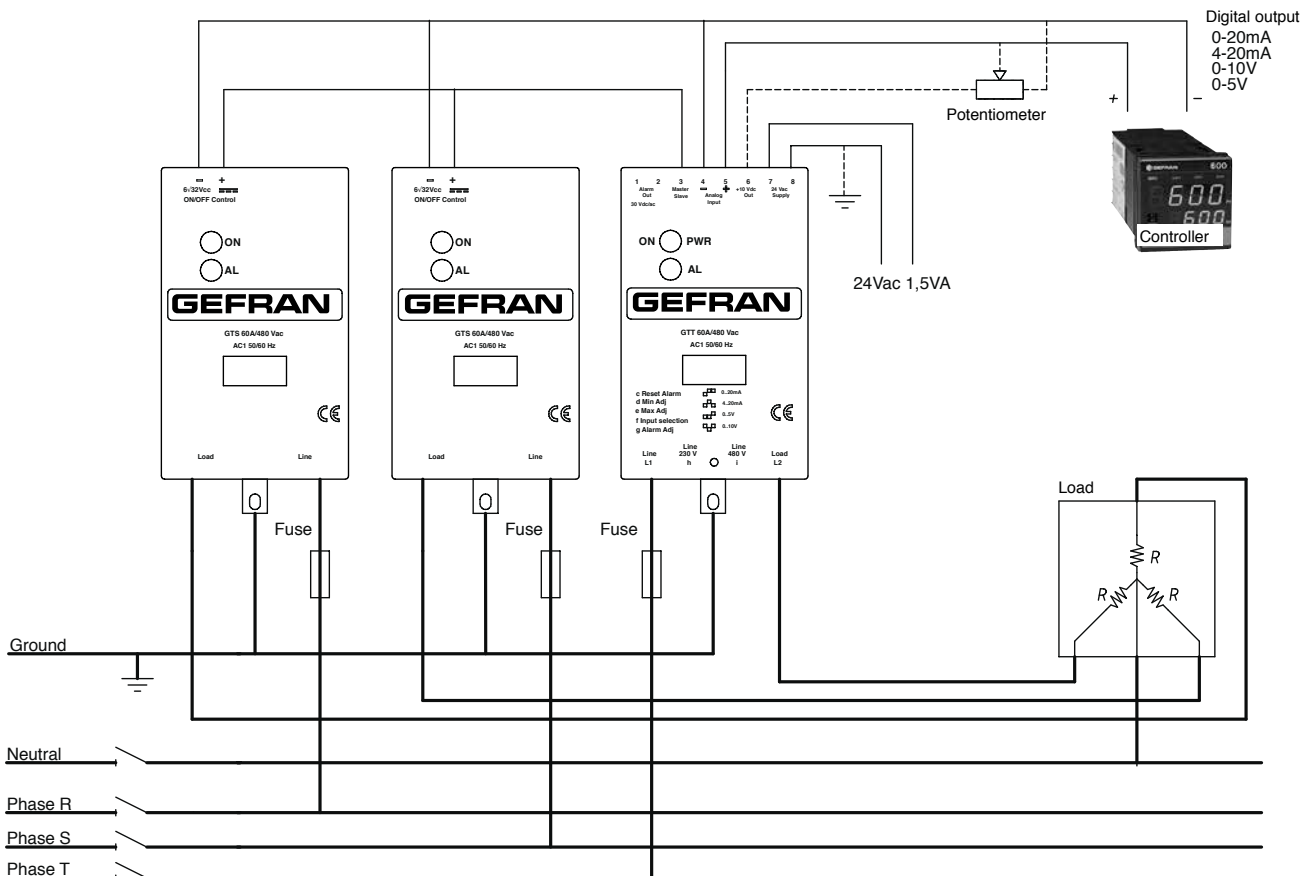
CONNECTION EXAMPLES

Three-phase connection (triangle or star) without neutral, with control of two phases using one GTT in Master configuration and one GTS in Slave configuration.

- * Connections regarding the load interrupted option (see paragraph "Interrupted load alarm")
Note: connect h or i according to the load tension.



Three-phase star connection with neutral using one GTT in Master configuration and two GTSs in Slave configuration.



ACCESSORIES

A wide range of accessories is available (including fuses and fuse holders, supports for fastening DIN bar, ID plates, thermostats, current transformers and isolation transformers). To choose accessories, see the section "Solid state relays - Accessories."

ORDER CODE

Model		GTT	/		480	-		-	
Nominal current									
25Aac	25								
40Aac	40								
50Aac	50								
60Aac	60								
75Aac	75								
90Aac	90								
120Aac (*)	120								
(*) Specify fan supply: 115Vac or 230Vac									
Nominal voltage									
480Vac	480								
Load interrupt (HB) option									
Without option	0								
With load interrupt option	1								

Fan (for model 120A only)	
Fan 80x80x40 230V 14W	VEN90
Fan 80x80x40 115V 14W	VEN91

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

CE	This device conforms to European Union Directive 2004/108/CE and 2006/95/CE as amended with reference to generic standards: EN 61000-6-2 (immunity in industrial environment) EN 61000-6-4 (emission in industrial environment) - EN 61010-1 (safety regulations).
UL	In Conformity with UL508 - File: E243386

GEFRAN

GEFRAN spa via Sebina, 74 - 25050 Provaglio d'Iseo (BS)
Tel. 03098881 - fax 0309839063 - Internet: <http://www.gefran.it>

DTS_GTT_07-2015_ENG

GEFRAN

GQ 15 / 25 / 50 / 90 A SINGLE PHASE SOLID STATE RELAYS



Main applications

- Packaging Machinery
- Thermoforming
- Plastic extrusion lines
- Industrial ovens and furnaces
- Control application with high switching speed

Main features

- Alternating current solid state relay
- Zero crossing switching
- Copper/semiconductor coupling technology
- 15, 25, 50 and 90Arms nominal current
- Non-repetitive voltage: up to 1600Vp
- Nominal Voltage: up to 600 Vac
- Control voltage : 3...32Vcc and 20...260Vac/Vcc with connector
- Isolation ((input-output) 4000Vrms
- Red LED drive active signal
- Internal MOV (option)

PROFILE

Zero crossing relay with antiparallel thyristor output is the most used solid state relay in industrial applications.

In fact, it can be used for resistive, inductive and capacity loads.

"Zero crossing" relay is energised when voltage meets the zero point and disenergised when current meets the zero point, depending on the signal control on the input circuit.

This relay has been designed to stand high-value transitory applications .

When the relay has to stand high currents for a long period, it is necessary to grant a proper dissipation and an adequate electrical connection between relay terminals and the load.

Varistors, fuses, thermostats and fans are available as fittings.

Use the relay with an opportune heatsink (see section accessories).

TECHNICAL DATA

General features

Rated frequency: 45...65Hz

Activation time:

GQ...-D- ≤1/2 cycle GQ...-A- ≤1 cycle

Deactivation time:

GQ...-D- ≤1/2 cycle GQ...-A- ≤1 cycle

Power factor: ≥0,5

Protection level: IP20

• $U_{imp} = 4,8KV$

• $U_i = 660V$

• Overload current profile = 10

• Conditional short circuit current = 5KA with type 1 coordination and respective fuse protections.

GQ15/25 fuse type aM6A

GQ50 fuse type aM16A

GQ90 fuse type aM20A

GQ...- 24-

Nominal voltage: 24...230 Vac
(max range 20...253Vac)

Non-repetitive voltage: ≥ 600 Vp

Zero switching voltage: ≤ 20V

GQ...- 48-

Nominal voltage: 48...480 Vac
(max range 40...528Vac)

Non-repetitive voltage: ≥ 1200 Vp

Zero switching voltage: ≤ 40 V

GQ...- 60-

Nominal voltage: 48...600 Vac
(max range 40...660Vac)

Non-repetitive voltage: ≥ 1200 Vp

Zero switching voltage: ≤ 40V

Control input A1 - A2

GQ...-D-

Control voltage: 3...32Vcc

Turn ON voltage: ≥ 2,7Vc.c

Turn OFF voltage: ≤ 1Vcc

Reverse voltage: < 36Vcc

Consumption: ≤ 13mA@32V

GQ...-A-

Control voltage: 20...260Vac/Vcc

Turn ON voltage: ≥ 15Vac/Vcc

Turn OFF voltage: ≤ 6Vac/Vcc

Consumption: ≤ 8mAac/cc@260Vac/Vcc

Series connection of control inputs:
max. no. GQ...-A in series = Vcontrol
-10% / 20

Output L1 - T1

GQ - 15 -

Nominal current :

AC51: 15Arms; AC53A (*): 3Arms

Min load current: 0,1Arms

Repetitive overcurrent t=1 s: ≤ 35Arms

Non-repetitive overcurrent t=20ms:200Ap

Current drop at nominal voltage and frequencies:
 $\leq 8 \text{ mArms}$
 I^2t for fusing $t=1-10\text{ms}$: $\leq 200\text{A}^2\text{s}$
 Critical dI/dt : $\geq 100\text{A}/\mu\text{s}$
 Voltage drop at nominal current: $\leq 1,45\text{Vrms}$
 Critical dV/dt off-state: $\geq 1000\text{V}/\mu\text{s}$
 $I_{th} = 15\text{A}$

GQ - 25 -

Nominal current :
 AC51: 25Arms; AC53A (*): 5Arms
 Min load current: 0,3Arms
 Repetitive overcurrent $t=1 \text{ s}$: $\leq 60\text{Arms}$
 Non-repetitive overcurrent $t=20\text{ms}$: 300Ap
 Current drop at nominal voltage and frequencies:
 $\leq 8 \text{ mArms}$
 I^2t for fusing $t=1-10\text{ms}$: $\leq 450\text{A}^2\text{s}$
 Critical dI/dt : $\geq 100\text{A}/\mu\text{s}$
 Voltage drop at nominal current: $\leq 1,45\text{Vrms}$
 Critical dV/dt off-state: $\geq 1000\text{V}/\mu\text{s}$
 $I_{th} = 25\text{A}$

GQ - 50 -

Nominal current :
 AC51: 50Arms; AC53A (*): 15Arms
 Min load current: 0,3Arms
 Repetitive overcurrent $t=1 \text{ s}$: $\leq 125\text{Arms}$
 Non-repetitive overcurrent $t=20\text{ms}$: 600Ap
 Current drop at nominal voltage and frequencies:
 $\leq 8 \text{ mArms}$
 I^2t for fusing $t=1-10\text{ms}$: $\leq 1800\text{A}^2\text{s}$
 Critical dI/dt : $\geq 100\text{A}/\mu\text{s}$
 Voltage drop at nominal current: $\leq 1,35\text{Vrms}$
 Critical dV/dt off-state: $\geq 1000\text{V}/\mu\text{s}$
 $I_{th} = 50\text{A}$

GQ - 50B -

(with high I^2t fusing current)
 Nominal current :
 AC51: 50Arms; AC53A (*): 18Arms
 Min load current: 0,4Arms
 Repetitive overcurrent $t=1 \text{ s}$: $\leq 140\text{Arms}$

Non-repetitive overcurrent $t=20\text{ms}$: 1150Ap
 Current drop at nominal voltage and frequencies:
 $\leq 10 \text{ mArms}$
 I^2t for fusing $t=1-10\text{ms}$: $\leq 6600\text{A}^2\text{s}$
 Critical dI/dt : $\geq 100\text{A}/\mu\text{s}$
 Voltage drop at nominal current: $\leq 1,2\text{Vrms}$
 Critical dV/dt off-state: $\geq 1000\text{V}/\mu\text{s}$
 $I_{th} = 50\text{A}$

GQ - 90 -

Nominal current
 AC51: 90Arms; AC53A (*): 20Arms
 Min load current: 0,5Arms
 Repetitive overcurrent $t=1 \text{ s}$: $\leq 150\text{Arms}$
 Non-repetitive overcurrent $t=20\text{ms}$: 1500 Ap
 Current drop at nominal voltage and frequencies:
 $\leq 10 \text{ mArms}$
 I^2t for fusing $t=1-10\text{ms}$: $\leq 11200\text{A}^2\text{s}$
 Critical dI/dt : $\geq 100\text{A}/\mu\text{s}$
 Voltage drop at nominal current: $\leq 1,35\text{Vrms}$
 Critical dV/dt off-state: $\geq 1000\text{V}/\mu\text{s}$
 $I_{th} = 90\text{A}$

(*) Only versions: GQ-XX-24-X-1
 GQ-XX-48-X-1

Insulation

Nominal insulation voltage
 Input/output: $\geq 4000 \text{ Vac}$
 Nominal insulation voltage
 Output/case: $\geq 2500 \text{ Vac}$
 Insulation resistance
 Input/output: $\geq 10^{10}\Omega$
 Insulation resistance
 Output/case: $\geq 10^{10}\Omega$
 Insulation capacity Input/Output: $\leq 8\text{pF}$
 Insulation capacity Output/case: $\leq 100\text{pF}$

Ambient conditions

- Ambient temperature: $-25...+80^\circ\text{C}$
- Storage Temperature: $-55...+100^\circ\text{C}$
- Maximum relative humidity: 50% a 40°C
- Maximum installation height: 2000 slm
- Pollution level: 3

Thermal features

GQ - XX -
 Junction Temperature: $\leq 125^\circ\text{C}$
 R_{th} junction/ambient: $\leq 12 \text{ K/W}$

GQ - 15 - / GQ - 25 -
 R_{th} junction/case: $\leq 1,25 \text{ K/W}$

GQ - 50 -
 R_{th} junction/case: $\leq 0,65 \text{ K/W}$

GQ - 50B -
 R_{th} junction/case: $\leq 0,33 \text{ K/W}$

GQ - 90 -
 R_{th} junction/case: $\leq 0,3 \text{ K/W}$

Solid State Relay Dissipated Power Calculation

Single phase state relay
 $P_d \text{ GQ } .. 15/25 = 1,45 \cdot I_{rms} \text{ [W]}$
 $P_d \text{ GQ } .. 50/90 = 1,35 \cdot I_{rms} \text{ [W]}$
 $P_d \text{ GQ } .. 50B = 1,2 \cdot I_{rms} \text{ [W]}$
 I_{RMS} = single-phase load current

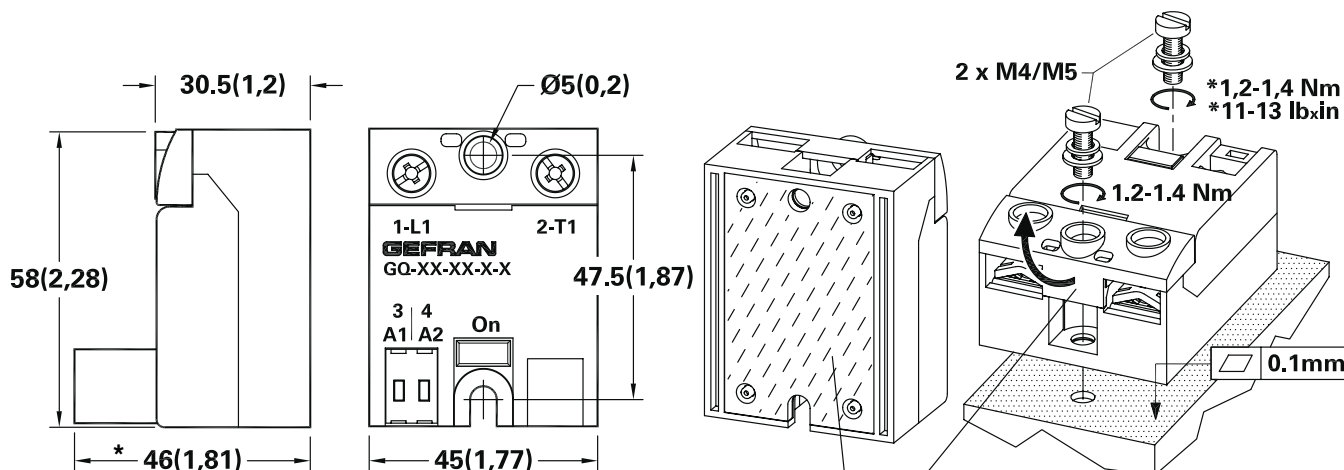
Heatsink Thermal Resistance Calculation

$R_{th} = (90^\circ\text{C} - T_{amb. max}) / P_d$
 where P_d = dissipated power
 Max. amb. T = max air temperature inside the electrical cabinet.
 Use a heatsink with thermal resistance inferior to the calculated one (R_{th}).

DIMENSIONS

Dimensions in mm, (inc)

(*) See installation notes



* 30.5 (1.2) with option "command signal Terminal" = 4

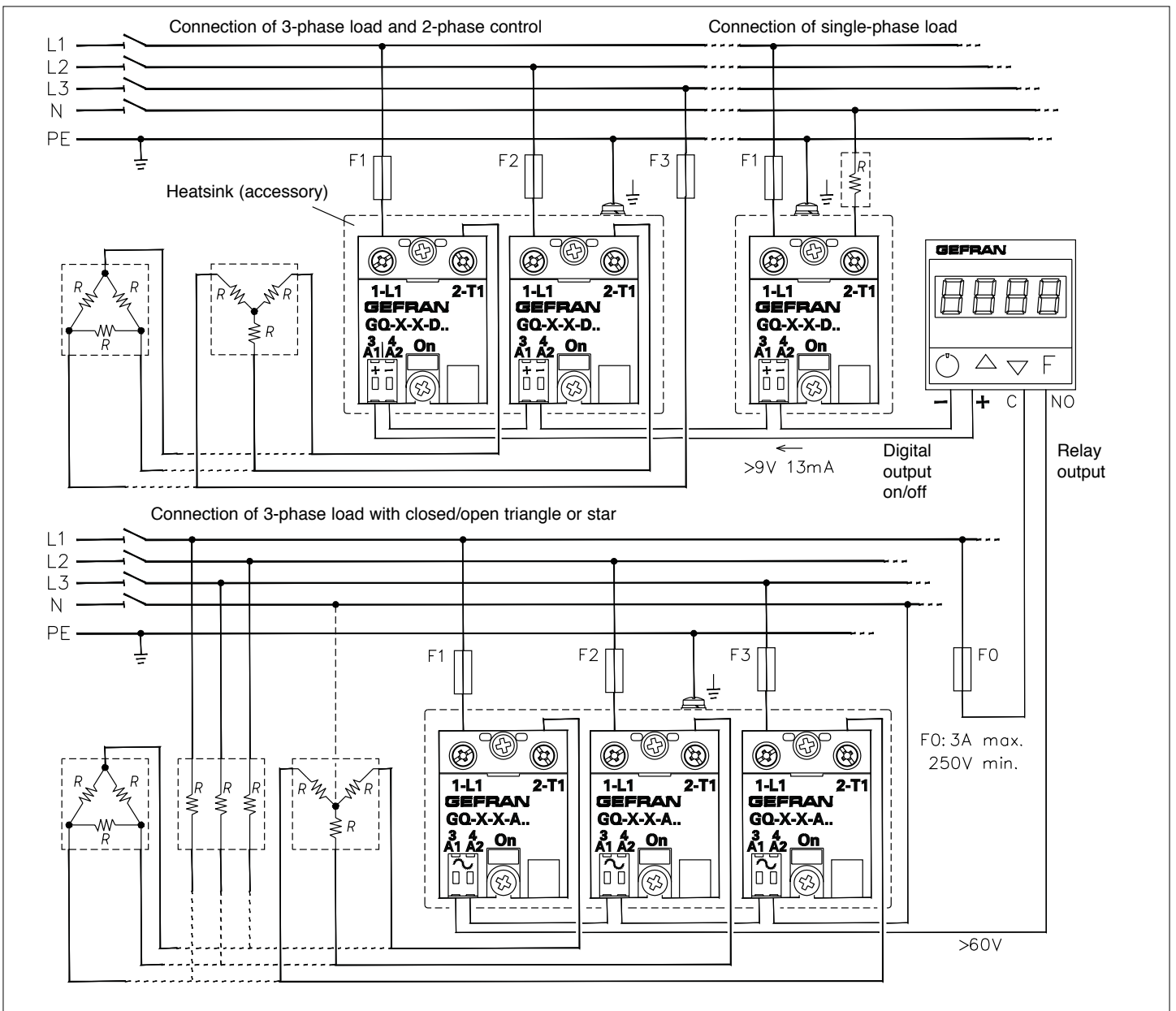
Installation notes

The device must be protected by a high speed fuse (accessory).
 Applications with power solid state relays must also have a switch to isolate the power line.
 Protect the solid state relay against overheating by using a heatsink (accessory).
 The heatsink must be sized according to room temperature and load current (see technical data).
 Heatsink installation procedure:
 spread 1 gram of thermoconductive silicone paste (we recommend DOW CORNING 340) on the dissipative metal surfaces of the module.
 The surfaces must be clean and the thermoconductive paste must not contain any impurities.
 As alternative it is also possible to use the slide SIL-GQ available as accessory.
 Alternately tighten the two fastening screws until reaching a torque of 0.4...0.6 Nm.
 Wait 5 minutes for any excess paste to run off.
 Alternately tighten the two fastening screws until reaching a torque of 1.2...1.4 Nm.





Attention

The contact surface of the heatsink module may have a maximum planarity error of 0.1 mm and maximum roughness of 0.02 mm.
 The fastening holes on the heatsink must be threaded and countersunk.
 The heatsink must be grounded.

ELECTRICAL CONNECTIONS



TERMINALS AND LEADS: SPECIFICATIONS

Description	Power terminals		Extractable 2 poles command terminals 3-A1 / 4-A2			
	1-L1	2-T2				
Terminal type	screw (M4) contact area (LxP) 13x11mm		with self-locking spring MORS1	with spring double connection MORS2	with screw M3 MORS3	with screw M2.5 MORS4
Stripped wire	1x2.5...6mm ² 2x1.5...2.5mm ² 2x2.5...6mm ² Stripped 11mm		1x0.2...2.5mm ² 2x0.5...0.75mm ² (#) Stripped 10mm	2x(1x0.2...2.5mm ²) 2x(2x0.2...0.75mm ²)(#) Stripped 10mm	1x0.25...2.5mm ² 2x0.25...1mm ² (#) Stripped 7mm	1x0.5...1.5mm ² Stripped 6mm
Prod cable	1x1.5...6mm ² 2x1.5...2.5mm ² 2x2.5...6mm ²		1x0.2...1.5mm ² 2x0.2...0.75mm ² (#)	2x(1x0.25...2.5mm ²) 2x(2x0.25...0.75mm ²) (#)	1x0.25...2.5mm ² 2x0.25...1mm ² (#)	---
Prod cable with collar	1x1.5...10mm ² 2x1.5...2.5mm ² 2x2.5...6mm ²		1x0.2...1.5mm ²	1x0.25...1.5mm ²	1x0.25...2.5mm ² 2x0.25...1.5mm ² (#)	---
Fork or eyelet cable	1x2.5...25mm ²		---	---	---	---
Locking torque / screwdriver type	slot 1x5...6mm cross ø 5...6mm 2...2,4Nm		with slot 0,6x3,5mm for contact opening thrust	with slot 0,6x3,5mm for contact opening thrust (with flexible stripped cable)	with slot 0,6x3,5mm with cross ø 3...3,8mm 0,5...0,6Nm	with slot 0.6x3.5mm 0.4Nm
(#) When inserting two leads in the same terminal they must have the same cross-section Note: The minimum and maximum sections shown refer to unipolar copper wires isolated in PVC.						

FUSES/ FUSES HOLDER

HIGH SPEED FUSES					FUSE HOLDER		
Model	Size I ² T	Code Format	Model Code	Dissipated power @ In	Model Code Approval	Max power dissipated	Max continuative current
GQ15...	16A 150A ² S	FUS-016 10x38	FWC16A10F 338470	3,5W	PFI-10x38 337134 UR 30A@690V	3W	13A
GQ25...	25A 390A ² S	FUS-025 10x38	FWC25A10F 338474	6W			13A
		375A ² S	FUS-026 14x51	FWC25A14F 338130	7W	PFI-14x51 337503 UR 50A@600V	18A
GQ50...	50A 1800A ² S	FUS-051 14x51	FWC50A14F 338079	9W	27A		
		50A 1600A ² S	FUS-050 22x58	FWC50A22F 338127	9,5W	PFI-22x58 337223 UR 80A@600V	50A
GQ90...	80A 6600A ² S	FUS-080 22x58	FWP80A22F 338199	14W	50A		
		100A 12500A ² S	FUS-100 22x58	FWP100A22F 338478	16W		60A

HEATSINK/ THERMAL RESISTANCE

Model	GEFRAN HEATSINK (see accessories)	THERMAL RESISTANCE
GQ15...	DIS 25GD	R _{th} ≥ 2,8 K/W
GQ25...	DIS 50G	R _{th} ≥ 0,83 K/W
GQ50...	DIS 50G	R _{th} ≥ 0,83 K/W
GQ90...	DIS 90G	R _{th} ≥ 0,56 K/W

Data relating to 40°C ambient temperature, heatsink in vertical position with 15 cm of free air above and below.

SECTION CABLE

Model	Section
GQ15...	2,5mm ²
GQ25...	6mm ²
GQ50...	12mm ²
GQ90...	25mm ²

Minimum allowed rated section based on the rated currents of the power solid state relays, for copper leads isolated in PVC in continuous use and at room temperature of 40°C, according to standards CEI 44-5, CEI 17-11, IEC 408 pursuant to standard EN60204-1.

Power terminals in compliance with standard EN60947-1

REFERENCE NORMS

EMC Emission

EN 61000-6-4	Emissions conducted at radiofrequency	Class A (Industrial devices)
EN 61000-6-4	Emissions irradiated at radiofrequency	Class A (Industrial devices)

The product is designed for type A environments. Use of the product in type B environments may cause undesired electromagnetic noise. In this case, the user should take appropriate steps for improvement.

EMC Immunity

EN 61000-6-2	Immunity for industrial environments	
EN 61000-4-2	Electrostatic discharges 4kV by contact; 8 kV in air.	Performance criterion 2.
EN 61000-4-6	Electromagnetic field at radiofrequency Test level 3. 0,15-80MHz	Performance criterion 1
EN 61000-4-3	Electromagnetic field at radiofrequency Test level 10V/m. 80-1000MHz	Performance criterion 1.
EN 61000-4-4	Immunity to burst	Test level 2kV/100 KHz. Performance criterion 2.
EN 61000-4-5	Immunity to surge	Test level: 2kV (Phase-ground); 1kV (Phase-phase). Performance criterion 2.

Safety

EN 61010-1	Safety requirements
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ORDER CODE

MODEL		GQ							
		GQ							
NOMINAL CURRENT									
15ACArms		15							
25ACArms		25							
50ACArms		50							
50ACArms	(*)	50B							
90ACArms		90							
NOMINAL VOLTAGE									
230VACrms		24							
480VACrms		48							
600VACrms	(**)	60							
CONNECTORS									
0	Without connector								
1	(MORS1) Two-pin spring connector, enclosed								
2	(MORS2) Two-pin double spring connector, enclosed								
3	(MORS3) Two-pin screw connector, enclosed								
4	(MORS4) Two-pin screw connector, low profile enclosed								
OVERVOLTAGE PROTECTION									
0	External								
1	Internal								
CONTROL VOLTAGE									
D	3...32Vc.c.								
A	20...260Vac/Vcc								

(*) Version with high I²t fusing current (short-circuit proof, using a specific magnetothermic switch)

(**) Available only in versions GQ-XX-60-X-1-X (overloading protection always present)

Please, contact GEFTRAN sales people for the codes availability.

•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.

Заказ г.Минск www.tiristor.by email: minsk17@tut.by viber и тел.+375447584780
каталог, описание, технические, характеристики, datasheet, параметры,
маркировка, габариты, фото, модуль

	In conformity to ECC 2004/108/CE and 2006/95/CE and following modification with reference to standard EN 60947-4-2 (Low voltage equipment - AC Semiconductor starters and contactors)
	In Conformity with UL508 - File: E243386

GEFRAN spa

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DTS_GQ_12-2012_ENG

Panel Mount "Hockey Puck" Relays and DIN Rail Mounted Solid State Relays up to 120 Amps



With forty years of experience, Gefran is the world leader in the design and production of solutions for measuring, controlling, and driving industrial production processes. Gefran's know-how and experience guarantee continuity and tangible solutions. Gefran's line of solid state relays are the ideal solution for applications where high speed switching and long life are essential. In specific applications, solid state relays offer many advantages over electromechanical devices including no moving parts or contact arcing. In addition, solid state relays are directly compatible with logic components such as microprocessors and PLCs.

leakage. This feature is important in certain medical, residential and industrial applications. The Gefran solid state relays also include built-in metal oxide varistor (MOV) protection to protect against internal damage to the solid state relay.

Output Circuit Features

The Gefran solid state relays feature zero voltage turn-on, which means they are designed to turn on at the next zero crossover after application of the control voltage. This limits electromagnetic interference, reducing the chance of damage to downstream equipment. A built-in MOV reduces the likelihood of damage to the relay from rapid changes in voltage (dv/dt) and transient voltages.

Many safety and convenience features

All Gefran solid state relays come standard with an LED to indicate when the relay is in an operational state. This increases safety and speeds troubleshooting.

In addition, all GQ hockey puck type relays come standard with a load side cover that provides touch protection. The GTS DIN-Rail mounted relays also offer touch protection through the use of a removable protective cover plate.

Common Applications

- Heating controls*
- Injection molding machines*
- Semiconductor manufacturing equipment*
- Glass processing*
- Welding controls*
- Food processing*
- Industrial & commercial ovens*
- Soldering machines*
- Medical equipment*
- Office machinery*
- Robotics*

Broad selection for many applications

The Gefran GQ solid state relays are available in single phase "hockey puck" models up to 90 amps and the GTS DIN-rail single phase units with integral heatsink up to 120 amps. The GTZ three phase models with integral heatsink up to 55 amps are also available.

Opto-isolated input limits current leakage

All Gefran solid state relays feature opto-isolated inputs where an internal LED signals a photosensitive element when output switching is to occur. This provides up to 4,000V isolation between the input voltage and the output voltage and also limits current



Integral heatsink with DIN-rail mounting

A complete selection of solid state relays are available with a built-in heatsink (GTS/GTZ models). This eliminates the hassle of selecting and installing a properly sized heatsink, or mounting to a panel mount relay directly on the back pan with silicone thermoconductive grease.

Approvals

The Series GQ and GTZ solid state relays are cURus approved and CE marked. The GTZ DIN-rail solid state relays are cULus Listed and CE marked.



- ❶ Finger Safe Protection Covers
- ❷ AC or DC Input Connections
- ❸ AC Output Connection Models
- ❹ LED Status Indicator
- ❺ Internal MOV protection
- ❻ Integrated or optional heatsinks
- ❼ cURus, CE
- ❽ cULus, CE

Catalog Number Quick Guide

Gefran Solid State Relays

GQ- 15 - 24 - D - 1 - 4

	Nominal Current		Nominal Voltage		Control Voltage		Overvoltage		Connectors	
Hockey Puck	15	15A AC	24	230V AC	D	3...32V DC	1	Internal protection	4	Two-pin screw connector, low profile enclosed
1-Phase	25	25A AC	60	600V AC	A	20...260V AC				
Panel Mount	50	50A AC								
	90	90A AC								

GTS- 25 / 60 - D - 0 -

	Rated Current		Rated Voltage		Control Voltage		Alarm Output		Fan	
1-Phase	15	15A AC	48	480V AC	D	6...32V DC	0	None	VEN-90	230V 14W
DIN Rail mount	25	25A AC	60	600V AC	A	20...260V AC/DC				80x80x40
	40	40A AC							VEN-91	115V 14W
	50	50A AC								80x80x40
	60	60A AC								
	75	75A AC								
	90	90A AC								
	120	120A AC								Required on 120A models only

GTZ 40 / 60 - D - 0 - VEN-91

	Nominal Current		Nominal Voltage		Control Voltage		Alarm Output		Fan	
3-Phase	25	25A AC	48	480V AC	D	5...32V DC	0	None	VEN-90	230V 14W
DIN Rail mount	40	40A AC	60	600V AC	A	20...260V AC/DC				80x80x40
	55	55A AC							VEN-91	115V 14W
										80x80x40
										Required on 40A & 55A models only

1 Pole Panel Mount Relay, 3-32V DC Control, 230V AC Output



Specifications	15 Amp		25 Amp		50 Amp		90 Amp	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
		GQ-15-24-D-1-4	45	GQ-25-24-D-1-4	50	GQ-50-24-D-1-4	79	GQ-90-24-D-1-4
Input								
Voltage Range	3 - 32V DC		3 - 32V DC		3 - 32V DC		3 - 32V DC	
Turn-on Voltage (min.)	≥ 2.7V DC		≥ 2.7V DC		≥ 2.7V DC		≥ 2.7V DC	
Turn-off Voltage (max.)	≤ 1V DC		≤ 1V DC		≤ 1V DC		≤ 1V DC	
Consumption	≤ 13mA @ 32V		≤ 13mA @ 32V		≤ 13mA @ 32V		≤ 13mA @ 32V	
Reverse Voltage	< 36V DC		< 36V DC		< 36V DC		< 36V DC	
Output								
Amp Rating AC51	15		25		50		90	
Nominal Voltage	24...230V AC		24...230V AC		24...230V AC		24...230V AC	
Maximum Voltage	20...253V AC		20...253V AC		20...253V AC		20...253V AC	
Zero Switching Voltage	≤ 20V		≤ 20V		≤ 20V		≤ 20V	
Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)	58 (H) x 45 (W) x 30.5 (D), from base to top of control terminal 45 (D)							

1 Pole Panel Mount Relay, 20-260V AC Control, 230V AC Output



Specifications	15 Amp		25 Amp		50 Amp		90 Amp	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
		GQ-15-24-A-1-4	53	GQ-25-24-A-1-4	55	GQ-50-24-A-1-4	88	GQ-90-24-A-1-4
Input								
Voltage Range	20...260V AC		20...260V AC		20...260V AC		20...260V AC	
Turn-on Voltage (min.)	≥ 15V AC		≥ 15V AC		≥ 15V AC		≥ 15V AC	
Turn-off Voltage (max.)	≤ 6V AC		≤ 6V AC		≤ 6V AC		≤ 6V AC	
Consumption	≤ 8mA @ 260V AC		≤ 8mA @ 260V AC		≤ 8mA @ 260V AC		≤ 8mA @ 260V AC	
Output								
Amp Rating AC51	15		25		50		90	
Nominal Voltage	24...230V AC		24...230V AC		24...230V AC		24...230V AC	
Maximum Voltage	20...253V AC		20...253V AC		20...253V AC		20...253V AC	
Zero Switching Voltage	≤ 20V		≤ 20V		≤ 20V		≤ 20V	
Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)	58 (H) x 45 (W) x 30.5 (D), from base to top of control terminal 45 (D)							

1 Pole Panel Mount Relay, 3-32V DC Control, 600V AC Output



Specifications	50 Amp		90 Amp	
	Catalog Number	Price	Catalog Number	Price
	GQ-50-60-D-1-4	96	GQ-90-60-D-1-4	134
Input				
Voltage Range	3 - 32V DC		3 - 32V DC	
Turn-on Voltage (min.)	≥ 2.7V DC		≥ 2.7V DC	
Turn-off Voltage (max.)	≤ 1V DC		≤ 1V DC	
Consumption	≤ 13mA @ 32V		≤ 13mA @ 32V	
Reverse Voltage	< 36V DC		< 36V DC	
Output				
Amp Rating AC51	50		90	
Nominal Voltage	48...600V AC		48...600V AC	
Maximum Voltage	40...660V AC		40...660V AC	
Zero Switching Voltage	≤ 40V		≤ 40V	
Frequency Range	45...65 Hz		45...65 Hz	
Dimension (mm)	58 (H) x 45 (W) x 30.5 (D), from base to top of control terminal 45 (D)			





1 Pole Panel Mount Relay, 20-260V AC Control, 600V AC Output



Specifications	50 Amp		90 Amp	
	Catalog Number	Price	Catalog Number	Price
	GQ-50-60-A-1-4	104	GQ-90-60-A-1-4	145
Input				
Voltage Range	20...260V AC		20...260V AC	
Turn-on Voltage (min.)	≥ 15V AC		≥ 15V AC	
Turn-off Voltage (max.)	≤ 6V AC		≤ 6V AC	
Consumption	≤ 8mA @ 260V AC		≤ 8mA @ 260V AC	
Output				
Amp Rating AC51	50		90	
Nominal Voltage	48...600V AC		48...600V AC	
Maximum Voltage	40...660V AC		40...660V AC	
Zero Switching Voltage	≤ 40V		≤ 40V	
Frequency Range	45...65 Hz		45...65 Hz	
Dimension (mm)	58 (H) x 45 (W) x 30.5 (D), from base to top of control terminal 45 (D)			





1 Pole DIN-Rail Mount Relay, 6-32V DC Control, 480V AC Output

**DISCONTINUED
SEE 600V**

								
Specifications	15 Amp		25 Amp		40 Amp		50 Amp	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	GTS-15/480-0	99	GTS-25/480-0	111	GTS-40/480-0	134	GTS-50/480-0	242
Input	6 - 32V DC		6 - 32V DC		6 - 32V DC		6 - 32V DC	
Voltage Range	6 - 32V DC		6 - 32V DC		6 - 32V DC		6 - 32V DC	
Turn-on Voltage (min.)	> 5.1V DC		> 5.1V DC		> 5.1V DC		> 5.1V DC	
Turn-off Voltage (max.)	< 3V DC		< 3V DC		< 3V DC		< 3V DC	
Consumption	≤ 10mA @ 32V		≤ 10mA @ 32V		≤ 10mA @ 32V		≤ 10mA @ 32V	
Reverse Voltage	< 36V DC		< 36V DC		< 36V DC		< 36V DC	
Output	15		25		40		50	
Amp Rating AC51	15		25		40		50	
Nominal Voltage	24...480V AC		24...480V AC		24...480V AC		24...480V AC	
Maximum Voltage	20...530V AC		20...530V AC		20...530V AC		20...530V AC	
Zero Switching Voltage	< 20V		< 20V		< 20V		< 20V	
Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)	100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

1 Pole DIN-Rail Mount Relay, 20-260V AC Control, 480V AC Output

**DISCONTINUED
SEE 600V**

								
Specifications	15 Amp		25 Amp		40 Amp		50 Amp	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	GTS-15/480-0-AC	108	GTS-25/480-0-AC	117	GTS-40/480-0-AC	147	GTS-50/480-0-AC	250
Input	20...260V AC		20...260V AC		20...260V AC		20...260V AC	
Voltage Range	20...260V AC		20...260V AC		20...260V AC		20...260V AC	
Turn-on Voltage (min.)	≥ 15V AC		≥ 15V AC		≥ 15V AC		≥ 15V AC	
Turn-off Voltage (max.)	≤ 6V AC		≤ 6V AC		≤ 6V AC		≤ 6V AC	
Consumption	≤ 8mA @ 260V AC		≤ 8mA @ 260V AC		≤ 8mA @ 260V AC		≤ 8mA @ 260V AC	
Output	15		25		40		50	
Amp Rating AC51	15		25		40		50	
Nominal Voltage	24...480V AC		24...480V AC		24...480V AC		24...480V AC	
Maximum Voltage	24...530V AC		24...530V AC		24...530V AC		24...530V AC	
Zero Switching Voltage	< 20V		< 20V		< 20V		< 20V	
Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)	100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

R/F = Refer to factory for availability

Gefran Solid State Relays

1 Pole DIN-Rail Mount Relay, 6-32V DC Control, 480V AC Output

**DISCONTINUED
SEE 600V**



Specifications		60 Amp		75 Amp		90 Amp		120 Amp	
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	without integrate fan (not required)	GTS-60/480-0	301	GTS-75/480-0	358	GTS-90/480-0	633		
	with integrated fan 230V							GTS-120/480-0-VEN-90	750
	with integrated fan 115V							GTS-120/480-0-VEN-91	
Input	Voltage Range	6 - 32V DC		6 - 32V DC		6 - 32V DC		6 - 32V DC	
	Turn-on Voltage (min.)	> 5.1V DC		> 5.1V DC		> 5.1V DC		> 5.1V DC	
	Turn-off Voltage (max.)	< 3V DC		< 3V DC		< 3V DC		< 3V DC	
	Consumption	≤ 10mA @ 32V		≤ 10mA @ 32V		≤ 10mA @ 32V		≤ 10mA @ 32V	
	Reverse Voltage	< 36V DC		< 36V DC		< 36V DC		< 36V DC	
Output	Amp Rating @ 40°C	60		75		90		120	
	Nominal Voltage	24...480V AC		24...480V AC		24...480V AC		24...480V AC	
	Maximum Voltage	24...530V AC		24...530V AC		24...530V AC		24...530V AC	
	Zero Switching Voltage	< 20V		< 20V		< 20V		< 20V	
	Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)		108 (H) x 80 (W) x 107 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 158 (D)	

1 Pole DIN-Rail Mount Relay, 20-260V AC Control, 480V AC Output

**DISCONTINUED
SEE 600V**



Specifications		60 Amp		75 Amp		90 Amp		120 Amp	
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	without integrate fan (not required)	GTS-60/480-0-AC	316	GTS-75/480-0-AC	366	GTS-90/480-0-AC	646		
	with integrated fan 230V							GTS-120/480-0-AC-VEN-90	770
	with integrated fan 115V							GTS-120/480-0-AC-VEN-91	
Input	Voltage Range	20...260V AC		20...260V AC		20...260V AC		20...260V AC	
	Turn-on Voltage (min.)	≥ 15V AC		≥ 15V AC		≥ 15V AC		≥ 15V AC	
	Turn-off Voltage (max.)	≤ 6V AC		≤ 6V AC		≤ 6V AC		≤ 6V AC	
	Consumption	≤ 8mA @ 260V AC		≤ 8mA @ 260V AC		≤ 8mA @ 260V AC		≤ 8mA @ 260V AC	
	Reverse Voltage	< 36V DC		< 36V DC		< 36V DC		< 36V DC	
Output	Amp Rating @ 40°C	60		75		90		120	
	Nominal Voltage	24...480V AC		24...480V AC		24...480V AC		24...480V AC	
	Maximum Voltage	24...530V AC		24...530V AC		24...530V AC		24...530V AC	
	Zero Switching Voltage	< 20V		< 20V		< 20V		< 20V	
	Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)		108 (H) x 80 (W) x 107 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 158 (D)	

R/F = Refer to factory for availability

GTS Relays are cUL (E243386)

1 Pole DIN-Rail Mount Relay, 6-32V DC Control, 600V AC Output

NEW





Specifications	15 Amp		25 Amp		40 Amp		50 Amp	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	GTS-15/60-D-0	109	GTS-25/60-D-0	122	GTS-40/60-D-0	147	GTS-50/60-D-0	266
Input	6 - 32V DC		6 - 32V DC		6 - 32V DC		6 - 32V DC	
Voltage Range	6 - 32V DC		6 - 32V DC		6 - 32V DC		6 - 32V DC	
Turn-on Voltage (min.)	> 5.1V DC		> 5.1V DC		> 5.1V DC		> 5.1V DC	
Turn-off Voltage (max.)	< 3V DC		< 3V DC		< 3V DC		< 3V DC	
Consumption	≤ 10mA @ 32V		≤ 10mA @ 32V		≤ 10mA @ 32V		≤ 10mA @ 32V	
Reverse Voltage	< 36V DC		< 36V DC		< 36V DC		< 36V DC	
Output	15		25		40		50	
Amp Rating AC51	15		25		40		50	
Nominal Voltage	24...600V AC		24...600V AC		24...600V AC		24...600V AC	
Maximum Voltage	20...660V AC		20...660V AC		20...660V AC		20...660V AC	
Zero Switching Voltage	< 20V		< 20V		< 20V		< 20V	
Frequency Range	50/60 Hz		50/60 Hz		50/60 Hz		50/60 Hz	
Dimension (mm)	100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

1 Pole DIN-Rail Mount Relay, 20-260V AC Control, 600V AC Output





NEW

Specifications	15 Amp		25 Amp		40 Amp		50 Amp	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	GTS-15/60-A-0	119	GTS-25/60-A-0	129	GTS-40/60-A-0	162	GTS-50/60-A-0	275
Input	20...260V AC/DC		20...260V AC/DC		20...260V AC/DC		20...260V AC/DC	
Voltage Range	20...260V AC/DC		20...260V AC/DC		20...260V AC/DC		20...260V AC/DC	
Turn-on Voltage (min.)	≥ 15V AC/DC		≥ 15V AC/DC		≥ 15V AC/DC		≥ 15V AC/DC	
Turn-off Voltage (max.)	≤ 6V AC/DC		≤ 6V AC/DC		≤ 6V AC/DC		≤ 6V AC/DC	
Consumption	≤ 8mA @ 260V AC/DC		≤ 8mA @ 260V AC/DC		≤ 8mA @ 260V AC/DC		≤ 8mA @ 260V AC/DC	
Output	15		25		40		50	
Amp Rating AC51	15		25		40		50	
Nominal Voltage	24...600V AC		24...600V AC		24...600V AC		24...600V AC	
Maximum Voltage	20...660V AC		20...660V AC		20...660V AC		20...660V AC	
Zero Switching Voltage	< 20V		< 20V		< 20V		< 20V	
Frequency Range	50/60 Hz		50/60 Hz		50/60 Hz		50/60 Hz	
Dimension (mm)	100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

1 Pole DIN-Rail Mount Relay, 6-32V DC Control, 600V AC Output

								
	60 Amp		75 Amp		90 Amp		120 Amp	
Specifications	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
without integrate fan (not required)	GTS-60/60-D-0	331	GTS-75/60-D-0	394	GTS-90/60-D-0	696		
with integrated fan 230V							GTS-120/60-D-0-VEN-90	825
with integrated fan 115V							GTS-120/60-D-0-VEN-91	
Input	Voltage Range	6 - 32V DC	6 - 32V DC	6 - 32V DC	6 - 32V DC	6 - 32V DC	6 - 32V DC	
	Turn-on Voltage (min.)	> 5.1V DC	> 5.1V DC	> 5.1V DC	> 5.1V DC	> 5.1V DC	> 5.1V DC	
	Turn-off Voltage (max.)	< 3V DC	< 3V DC	< 3V DC	< 3V DC	< 3V DC	< 3V DC	
	Consumption	≤ 10mA @ 32V	≤ 10mA @ 32V	≤ 10mA @ 32V	≤ 10mA @ 32V	≤ 10mA @ 32V	≤ 10mA @ 32V	
	Reverse Voltage	< 36V DC	< 36V DC	< 36V DC	< 36V DC	< 36V DC	< 36V DC	
Output	Amp Rating @ 40°C	60	75	90	90	120	120	
	Nominal Voltage	24...600V AC	24...600V AC	24...600V AC	24...600V AC	24...600V AC	24...600V AC	
	Maximum Voltage	20...660V AC	20...660V AC	20...660V AC	20...660V AC	20...660V AC	20...660V AC	
	Zero Switching Voltage	< 20V	< 20V	< 20V	< 20V	< 20V	< 20V	
	Frequency Range	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	
Dimension (mm)	108 (H) x 80 (W) x 107 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 158 (D)	

1 Pole DIN-Rail Mount Relay, 20-260V AC Control, 600V AC Output

								
	60 Amp		75 Amp		90 Amp		120 Amp	
Specifications	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
without integrate fan (not required)	GTS-60/60-A-0	348	GTS-75/60-A-0	403	GTS-90/60-A-0	711		
with integrated fan 230V							GTS-120/60-A-0-VEN-90	847
with integrated fan 115V							GTS-120/60-A-0-VEN-91	
Input	Voltage Range	20...260V AC/DC	20...260V AC/DC	20...260V AC/DC	20...260V AC/DC	20...260V AC/DC	20...260V AC/DC	
	Turn-on Voltage (min.)	≥ 15V AC/DC	≥ 15V AC/DC	≥ 15V AC/DC	≥ 15V AC/DC	≥ 15V AC/DC	≥ 15V AC/DC	
	Turn-off Voltage (max.)	≤ 6V AC/DC	≤ 6V AC/DC	≤ 6V AC/DC	≤ 6V AC/DC	≤ 6V AC/DC	≤ 6V AC/DC	
	Consumption	≤ 8mA @ 260V AC/DC	≤ 8mA @ 260V AC/DC	≤ 8mA @ 260V AC/DC	≤ 8mA @ 260V AC/DC	≤ 8mA @ 260V AC/DC	≤ 8mA @ 260V AC/DC	
Output	Amp Rating @ 40°C	60	75	90	90	120	120	
	Nominal Voltage	24...600V AC	24...600V AC	24...600V AC	24...600V AC	24...600V AC	24...600V AC	
	Maximum Voltage	20...660V AC	20...660V AC	20...660V AC	20...660V AC	20...660V AC	20...660V AC	
	Zero Switching Voltage	< 20V	< 20V	< 20V	< 20V	< 20V	< 20V	
	Frequency Range	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	
Dimension (mm)	108 (H) x 80 (W) x 107 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 142 (D)		108 (H) x 127 (W) x 158 (D)	

Gefran Solid State Relays

GTS Relays are cUL (E243386)

3 Pole DIN-Rail Mount Relay, 5-32V DC Control, 480V AC Output

**DISCONTINUED
SEE 600V**



Specifications		25 Amp		40 Amp		55 Amp	
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	Without integrated fan (not required)	GTZ25/480-0-0	285				
	with integrated fan 230V AC			GTZ40/480-0-0-VEN-90	330	GTZ55/480-0-0-VEN-90	390
	with integrated fan 115V AC			GTZ40/480-0-0-VEN-91		GTZ55/480-0-0-VEN-91	
Input	Voltage Range	5 - 32V DC		5 - 32V DC		5 - 32V DC	
	Turn-on Voltage (min.)	> 4.5V DC		> 4.5V DC		> 4.5V DC	
	Turn-off Voltage (max.)	≤ 3V DC		≤ 3V DC		≤ 3V DC	
	Consumption	18 mA @ 5V DC - 22mA @ 32V DC		18 mA @ 5V DC - 22mA @ 32V DC		18 mA @ 5V DC - 22mA @ 32V DC	
	Reverse Voltage	< 36V DC		< 36V DC		< 36V DC	
Output	Amp Rating AC51	25		40		55	
	Nominal Voltage	24...480V AC		24...480V AC		24...480V AC	
	Maximum Voltage	24...530V AC		24...530V AC		24...530V AC	
	Zero Switching Voltage	< 20V		< 20V		< 20V	
	Frequency Range	45...65 Hz		45...65 Hz		45...65 Hz	
Dimension (mm)		100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

3 Pole DIN-Rail Mount Relay, 5-32V DC Control, 600V AC Output

**DISCONTINUED
SEE 600V**



Specifications		40 Amp		55 Amp	
		Catalog Number	Price	Catalog Number	Price
	with integrated fan 230V AC	GTZ40/600-0-0-VEN-90	350	GTZ55/600-0-0-VEN-90	410
	with integrated fan 115V AC	GTZ40/600-0-0-VEN-91		GTZ55/600-0-0-VEN-91	
Input	Voltage Range	5 - 32V DC		5 - 32V DC	
	Turn-on Voltage (min.)	> 4.5V DC		> 4.5V DC	
	Turn-off Voltage (max.)	≤ 3V DC		≤ 3V DC	
	Consumption	18 mA @ 5V DC - 22mA @ 32V DC		18 mA @ 5V DC - 22mA @ 32V DC	
	Reverse Voltage	< 36V DC		< 36V DC	
Output	Amp Rating AC51	40		55	
	Nominal Voltage	24...600V AC		24...600V AC	
	Maximum Voltage	24...660V AC		24...660V AC	
	Zero Switching Voltage	< 20V		< 20V	
	Frequency Range	45...65 Hz		45...65 Hz	
Dimension (mm)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

GTZ Relays are cUR (E243386). Not CSA.

3 Pole DIN-Rail Mount Relay, 5-32V DC Control, 600V AC Output

NEW



Specifications		25 Amp		40 Amp		55 Amp	
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	Without integrated fan (not required)	GTZ25/60-D-0	305				
	with integrated fan 230V AC			GTZ40/60-D-0-VEN-90	350	GTZ55/60-D-0-VEN-90	410
	with integrated fan 115V AC			GTZ40/60-D-0-VEN-91		GTZ55/60-D-0-VEN-91	
Input	Voltage Range	5 - 32V DC		5 - 32V DC		5 - 32V DC	
	Turn-on Voltage (min.)	> 4.5V DC		> 4.5V DC		> 4.5V DC	
	Turn-off Voltage (max.)	≤ 3V DC		≤ 3V DC		≤ 3V DC	
	Consumption	18 mA @ 5V DC - 22mA @ 32V DC		18 mA @ 5V DC - 22mA @ 32V DC		18 mA @ 5V DC - 22mA @ 32V DC	
	Reverse Voltage	< 36V DC		< 36V DC		< 36V DC	
Output	Amp Rating AC51	40		40		55	
	Nominal Voltage	24...600V AC		24...600V AC		24...600V AC	
	Maximum Voltage	24...660V AC		24...660V AC		24...660V AC	
	Zero Switching Voltage	< 20V		< 20V		< 20V	
	Frequency Range	50/60 Hz		50/60 Hz		50/60 Hz	
	Dimension (mm)	100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

3 Pole DIN-Rail Mount Relay, 20...260V AC Control, 600V AC Output

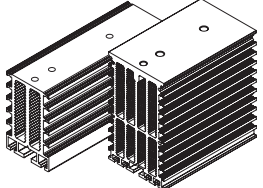
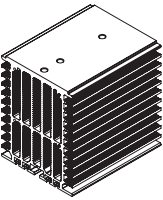
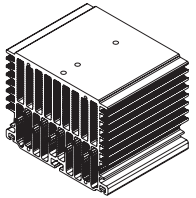



NEW

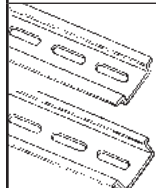


Specifications		25 Amp		40 Amp		55 Amp	
		Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
	Without integrated fan (not required)	GTZ25/60-A-0	342				
	with integrated fan 230V AC			GTZ40/60-A-0-VEN-90	392	GTZ55/60-A-0-VEN-90	459
	with integrated fan 115V AC			GTZ40/60-A-0-VEN-91		GTZ55/60-A-0-VEN-91	
Input	Voltage Range	20...260V AC/DC		20...260V AC/DC		20...260V AC/DC	
	Turn-on Voltage (min.)	≥ 15V AC/DC		≥ 15V AC/DC		≥ 15V AC/DC	
	Turn-off Voltage (max.)	≤ 6V AC/DC		≤ 6V AC/DC		≤ 6V AC/DC	
	Consumption	≤ 8mA @ 260V AC/DC		≤ 8mA @ 260V AC/DC		≤ 8mA @ 260V AC/DC	
Output	Amp Rating @ 40°C	60		60		55	
	Nominal Voltage	24...600V AC		24...600V AC		24...600V AC	
	Maximum Voltage	24...660V AC		24...660V AC		24...660V AC	
	Zero Switching Voltage	< 20V		< 20V		< 20V	
	Frequency Range	50/60 Hz		50/60 Hz		50/60 Hz	
	Dimension (mm)	100 (H) x 24 (W) x 107 (D)		108 (H) x 35 (W) x 142 (D)		108 (H) x 60 (W) x 142 (D)	

GTZ Relays are cUR (E243386). Not CSA.

Accessories

Heatsinks	Description	Catalog Number	Price
 DIS-25GD DIS-50G	Heatsink – Extruded aluminum DIN-rail mount for mounting one GQ relay. Includes PAN-1 kit attachment for panel mounting. <ul style="list-style-type: none"> - For use with GQ 15A & 25A relays - 100 x 24 x 65mm - Thermal Resistance $R_{th} > 2.8$ K/W 	DIS-25GD	97
	<ul style="list-style-type: none"> - For use with GQ 25A & 50A relays - 100 x 60 x 100mm - Thermal Resistance $R_{th} > 8.3$ K/W 	DIS-50G	97
	Heatsink – Extruded aluminum DIN-rail mount for mounting one GQ relay. Includes PAN-1 kit attachment for panel mounting. <ul style="list-style-type: none"> - For use with GQ 50A relays - 100 x 80 x 100mm - Thermal Resistance $R_{th} > 0.66$ K/W 	DIS-60G	115
	Heatsink – Extruded aluminum DIN-rail mount for mounting one GQ relay. Includes PAN-1 kit attachment for panel mounting. <ul style="list-style-type: none"> - For use with GQ 90A relays - 100 x 126 x 100mm - Thermal Resistance $R_{th} > 0.56$ K/W 	DIS-90G	145
	Kit Attachment – Allows for panel mounting the GTS Series and DIS heat sinks. Includes 2 plastic supports, 2 screws, and 2 washers.	PAN-1	19
	Silicone thermoconductive paste – for coupling the GQ Relay power module to the heat sink. 100 g tube.	SIL-1	82
	Graphite Film – 35 x 55 mm graphite film for GQ relays. <ul style="list-style-type: none"> - 0.12 mm thick, 2.1 W (m²K). - 200 x 240 mm sheet with 25 adhesives 	SIL-GQ	79

Accessory	Description	Catalog Number	Price
	DIN-rail - 2 meter lengths (6'6") Top Hat, low profile (price per rail) Top Hat, high profile (package of 20, price per rail)	3F 3AF	See page A51

Cross Reference Series SAR/SAS to Gefran Solid State Relays

Sprecher+Schuh Catalog Number	Gefran Catalog Number	Gefran Product Status
SAR Series DIN-Rail Mount		
SAR6-25-1D	GTS-25/60-D-0	
SAR6-25-1	GTS-25/60-A-0	
SAR6-40-1D	GTS-40/60-D-0	
SAR6-40-1	GTS-40/60-A-0	
SAR6-50-1D	GTS-50/60-D-0	
SAR6-50-1	GTS-50/60-A-0	
SAR6-75-1D	GTS-75/60-D-0	
SAR6-75-1	GTS-75/60-A-0	
SAR6-100-1D	GTS-90/60-D-0	Select GTS-120/60-D... For above 90A+
SAR6-100-1	GTS-90/60-A-0	Select GTS-120/60-A... For above 90A+
~	GTS-120/60-D-0-VEN*	New 120A offering
~	GTS-120/60-A-0-VEN*	New 120A offering
SAR6-30-3D	GTZ25/60-D-0	Select GTZ40/60-D-0-VEN* for above 25A+
SAR6-30-3	GTZ25/60-A-0	Select GTZ40/60-A-0-VEN* for above 25A+
~	GTZ40/60-D-0-VEN*	New 40A offering
~	GTZ40/60-A-0-VEN*	New 40A offering
~	GTZ55/60-D-0-VEN*	New 55A offering
~	GTZ55/60-A-0-VEN*	New 55A offering
SAS Series Panel Mount		
SAS3-10-1D	GQ-15-24-D-1-4	
SAS3-10-1	GQ-15-24-A-1-4	
SAS3-25-1D	GQ-25-24-D-1-4	
SAS3-25-1	GQ-25-24-A-1-4	
SAS3-50-1D	GQ-50-24-D-1-4	
SAS3-50-1	GQ-50-24-A-1-4	
SAS3-75-1D	GQ-90-24-D-1-4	
SAS3-75-1	GQ-90-24-A-1-4	
SAS6-50-1D	GQ-50-60-D-1-4	
SAS6-50-1	GQ-50-60-A-1-4	
SAS6-75-1D	GQ-90-60-D-1-4	
SAS6-75-1	GQ-90-60-A-1-4	

* Suffix code for selected fan voltage

Technical Information

			GQ-15-24-...	GQ-25-24-...	GQ-50-24-...	GQ-90-24-...	GQ-50-60-...	GQ-90-60-...
Amp Rating	AC51	[A rms]	15	25	50	90	50	90
	AC53	[A rms]	3	5	15	20	15	20
Min. load current		[A rms]	0.1	0.3	0.3	0.5	0.3	0.5
Repetitive overcurrent (t = 1s)		[A rms]	≤ 35	≤ 60	≤ 125	≤ 150	≤ 125	≤ 150
Non-repetitive overcurrent (t = 20 s)		[A p]	200	300	600	1500	600	1500
Current drop at nominal voltage and frequencies		[mA rms]	≤ 8	≤ 8	≤ 8	≤ 10	≤ 8	≤ 10
I ² t for fusing (t = 1-10 ms)		[A ² s]	≤ 200	≤ 450	≤ 1,800	≤ 11,200	≤ 1,800	≤ 11,200
Critical di/dt		[A/μs]	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100
Voltage drop at nominal current		[V rms]	≤ 1.45	≤ 1.45	≤ 1.35	≤ 1.35	≤ 1.35	≤ 1.35
Critical dV/dt off state		[V/μs]	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000
I _{th}		[A]	15	25	50	90	50	90

Input

DC Control

Voltage Range	3 - 32V DC
Turn-on Voltage (min.)	≥ 2.7V DC
Turn-off Voltage (max.)	≤ 1V DC
Consumption	≤ 13mA @ 32V
Reverse Voltage	< 36V DC

AC Control

Voltage Range	20...260V AC/V DC
Turn-on Voltage (min.)	≥ 15V AC/V DC
Turn-off Voltage (max.)	≤ 6V AC/V DC
Consumption	≤ 8mA ac/cc @ 260V AC/V DC

Output

Nominal Voltage	24...230V AC	48...600V AC
Maximum Voltage	20...253V AC	40...660V AC
Non-repetitive Voltage	600Vp	1200Vp
Zero Switching Voltage	≤ 20V	≤ 40V
Frequency Range	45...65 Hz	45...65 Hz

Insulation

Nominal voltage	input/output	[V ac]	≥ 4000
	output/case	[V ac]	≥ 2500
Resistance	input/output	[Ω]	≥ 10 ¹⁰
	output/case	[Ω]	≥ 10 ¹⁰
Capacity	input/output	[pF]	≤ 8
	output/case	[pF]	≤ 100

Ambient Conditions

Ambient temperature	-25...+80°C [-13...176°F]
Storage temperature	-55...+100°C [-67...212°F]
Maximum relative humidity	50% at 40°C
Maximum installation altitude	2000 m above sea level
Pollution level	3

Thermal Features

Junction temperature	≤ 125°C [257°F]							
R _{th}	junction/ambient	[K/W]	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
	junction/case	[K/W]	≤ 1.25	≤ 1.25	≤ 0.65	≤ 0.30	≤ 0.65	≤ 0.30

Heatsink

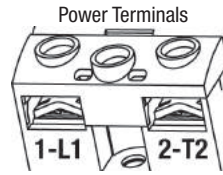
$$R_{th} = (90^{\circ}\text{C} - \text{max. amb. T} / P_d)$$

Where P_d = dissipated power

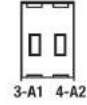
Max. amb. T = max. air temperature inside the electrical cabinet

Use a heatsink with thermal resistance less than the calculated R_{th} value

Terminals and Leads



Command Terminals



Terminal Type

Screw (m4) contact area (LxP) 13 x 11 mm

screw M2.5 MORS4 (22...16 AWG)

1(L1) 2(T1)		3(A1) 4(A2)		
	1x 2,5...6 mm ² 1x 14...10 AWG 2x 1,5...2,5 mm ² 2x 16...14 AWG 2x 2,5...6 mm ² 2x 14...10 AWG		1x 0,2...2,5 mm ² 1x 24...14 AWG 2x 0,2...1,5 mm ² 2x 24...16 AWG	
	1x 1,5...6 mm ² 1x 16...10 AWG 2x 1,5...6 mm ² 2x 16...10 AWG		1x 0,25...2,5 mm ² 1x 23...14 AWG 2x 0,25...1 mm ² 2x 23...18 AWG	
	1x 2,5...25 mm ² 1x 14...4 AWG			
	2...2,4 Nm 18...21 lbf·in			
	GQ..15.. 2,5 mm ² 14 AWG	GQ..25.. 6 mm ² 10 AWG	GQ..50.. 12 mm ² (2x6) 7 AWG (2x10)	GQ..90.. 25 mm ² 4 AWG

Recommended Fuses (by others)

HIGH SPEED FUSES			
Model	Size I ^T	Bussman Part No.	Dissipated power @ I _n
GQ15...	16A 150A ² S	FWC16A10F 338470	3,5W
	25A 390A ² S	FWC25A10F 338474	6W
GQ25...	375A ² S	FWC25A14F 338130	7W
	50A 1800A ² S	FWC50A14F 338079	9W
GQ50...	50A 1600A ² S	FWC50A22F 338127	9,5W
	80A 6600A ² S	FWP80A22F 338199	14W
GQ90...	100A 12500A ² S	FWP100A22F 338478	16W

Heatsink / Thermal Resistance

Model	Gefran Heatsink (see accessories)	Thermal Resistance
GQ15... GQ25...	DIS 25GD DIS 50G	$R_{th} \geq 2,8 \text{ K/W}$ $R_{th} \geq 0,83 \text{ K/W}$
GQ50...	DIS 50G	$R_{th} \geq 0,83 \text{ K/W}$
GQ90...	DIS 90G	$R_{th} \geq 0,56 \text{ K/W}$

Data relating to 40°C ambient temperature, heatsink in vertical position with 15 cm of free air above and below.

Section Cable

Model	Section
GQ15...	2.5mm ² / 14 AWG
GQ25...	6mm ² / 10 AWG
GQ50...	12mm ² / 7 AWG
GQ90...	25mm ² / 4 AWG

Minimum allowed rated section based on the rated currents of the power solid state relays, for copper leads isolated in PVC in continuous use and at room temperature of 40°C, according to standards CEI 44-5, CEI 17-11, IEC 408 pursuant to standard EN60204-1.

Power terminals in compliance with standard EN60947-1

EMC Emission

EN 61000-6-4	Emissions conducted at radiofrequency	Class A (Industrial devices)
EN 61000-6-4	Emissions irradiated at radiofrequency	Class A (Industrial devices)

The product is designed for type A environments. Use of the product in type B environments may cause undesired electromagnetic noise. In this case, the user should take appropriate steps for improvement.

EMC Immunity

EN 61000-6-2	Immunity for industrial environments	
EN 61000-4-2	Electrostatic discharges 4kV by contact; 8 kV in air.	Performance criterion 2
EN 61000-4-6	Electromagnetic field at radiofrequency Test level 3. 0.15-80MHz	Performance criterion 1
EN 61000-4-3	Electromagnetic field at radiofrequency Test level 10V/m. 80-1000MHz	Performance criterion 1
EN 61000-4-4	Immunity to burst	Test level 2kV/100 KHz. Performance criterion 2
EN 61000-4-5	Immunity to surge	Test level: 2kV (Phase-ground); 1kV (Phase-phase). Performance criterion 2

Safety

EN 61010-1	Safety requirements
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Technical Information

Amp Rating		GTS-15	GTS-25	GTS-40	GTS-50	GTS-60	GTS-75	GTS-90	GTS-120
Rated Current @ 40°C (continuous service)	[A rms]	15	25	40	50	60	75	90	120
Non-repetitive overcurrent (t = 20 ms)	[A]	400	400	600	1150	1150	1300	1500	1500
I ² t for blowout	[A ² s]	≤ 450	≤ 645	≤ 1010	≤ 6600	≤ 6600	≤ 8000	≤ 11,200	≤ 11,200
dV/dt critical with output deactivated	[V/μs]	1000	1000	1000	1000	1000	1000	1000	1000

Input

DC Control	Voltage Range	6 - 32V DC
	Turn-on Voltage (min.)	> 5.1V DC
	Turn-off Voltage (max.)	< 3V DC
	Consumption	≤ 10mA @ 32V
	Reverse Voltage	< 36V DC
AC Control	Voltage Range	20...260V AC/DC
	Turn-on Voltage (min.)	≥ 15V AC/DC
	Turn-off Voltage (max.)	≤ 6V AC/DC
	Consumption	≤ 8mA @ 260V AC/DC

Output

Nominal Voltage	24...600V AC
Maximum Voltage	20...660V AC
Non-repetitive Voltage	500Vp for 230V models, 1200Vp for 480V models
Zero Switching Voltage	< 20V
Frequency Range	50/60 Hz

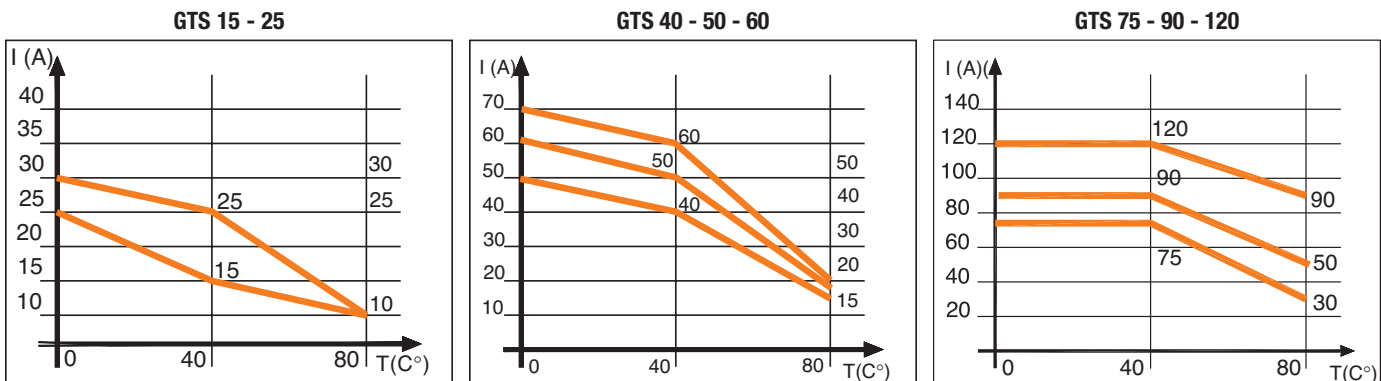
Isolation

Rated voltage input/output	[V ac]	≥ 4000
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Ambient Conditions

Ambient temperature	0°...+80°C [32°...+176°F] according to dissipation curves
Storage temperature	-20...+85°C [-4°...+185°F]
Maximum relative humidity	50% at 40°C
Maximum installation altitude	2000m above sea level
Pollution level	3

Dissipation Curves



N.B.: Curves for the GTS 120 refer to the device complete with standard running.

Technical Information

Terminal and Conductors

Size	Terminal	Contact area (WxD) screw type	Type of preisolated terminal ②	Max section. ① conductor tightening torque
15/20A	C	6.4x9 M3	1, 2, 4	6mm ² / 10AWG 0.6Nm max
	P	6.4x9 M3	1, 2, 4	6mm ² / 10AWG 0.4 - 0.6Nm
	G	9x12 M5	1	6mm ² / 10AWG 1.3 - 1.8Nm
25A	C	6.4x9 M3	1, 2, 4	6mm ² / 10AWG 0.6Nm max
	P	6.4x9 M3	1, 2	6mm ² / 10AWG 0.4 - 0.6Nm
	G	9x12 M5	1	6mm ² / 10AWG 1.3 - 1.8Nm
40A	C	6.3x9 M3	1, 2, 3	2.5mm ² / 14AWG 0.6Nm max
	P	12x12 M5	1, 2	16mm ² / 6AWG 1.5 - 2.2Nm
	G	11.5x12 M5	1	16mm ² / 6AWG 1.5 - 2.2Nm
50/60A	C	6.3x9 M3	1, 2, 3	2.5mm ² / 14AWG 0.6Nm max
	P	16x18 M6	1, 2	50mm ² / 0AWG 3.5 - 6Nm
	G	14x16 M5	1	50mm ² / 0AWG 1.8 - 2.5Nm
75-90A	C	6.3x9 M3	1, 2, 3	2.5mm ² / 14AWG 0.6Nm max
	P	16x18 M6	1, 2	50mm ² / 0AWG 3.5 - 6Nm
	G	14x16 M5	1	50mm ² / 0AWG 1.8 - 2.5Nm
120A	C	6.3x9 M3	1, 2, 3	2.5mm ² / 14AWG 0.6Nm max
	P	16x18 M6	1, 2	50mm ² / 0AWG 3.5 - 6Nm
	G	14x16 M5	1	50mm ² / 0AWG 1.8 - 2.5Nm

Terminal: C = Control, P = Power, G = Ground

Terminal Types



1. Eyelet



2. Fork



3. Tip



4. Faston

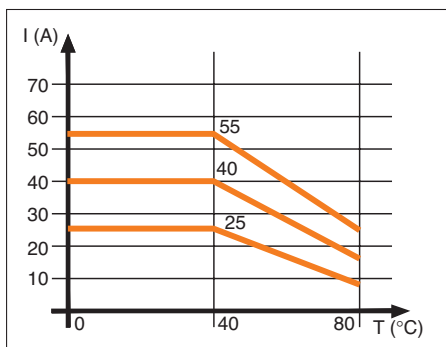
- ① The max. sections specified refer to unipolar copper wires isolated in PVC..
- ② The screw terminals must be suitable for field wiring connection only when the wire is provided with eyelet tube terminal type 1.

Technical Information

Amp Rating		GTZ-25/60	GTZ-40/60	GTZ-55/60	GTZ-40/60	GTZ-55/60
Category AC51, AC53a	[A rms]	25	40	55	40	55
Nominal current (I_{max})	[A rms]	3x25	3x40	3x55	3x40	3x55
Non-repetitive overcurrent (t = 20 ms)	[A]	400	600	1150	600	1150
I^2t for blowout	[A ² s]	645	1010	6600	1010	6600
DC Control Input	Voltage Command Circuit (U_c)	5...32V DC				
	Turn-on Voltage (min.)	> 4.5V DC				
	Turn-off Voltage (max.)	< 3V DC				
	Consumption	≤ 18mA @ 5V DC - 22mA @ 32V DC				
	Reverse Voltage	< 36V DC				
AC Control INPUT	Voltage Range	20...260V AC/DC				
	Turn-on Voltage (min.)	≥ 15V AC/DC				
	Turn-off Voltage (max.)	≤ 6V AC/DC				
	Consumption	≤ 8mA @ 260V AC/DC				
	Frequency Range	50/60 Hz				
Activation Time		≤ 1/2 cycle				
Deactivation Time		≤ 1/2 cycle				
Critical dV/dt OFF-state	[V/μs]	1000				
Potential drop at rated current	[Vrms]	≤ 1.4				
Peak Voltage		>1200V DC				
Protection		IP20				
Isolation						
Nominal voltage (U)	[V ac]	600				
Insulation						
Nominal voltage input/output	[KV ac]	4				
Nominal impulse withstand (U_{imp})	[V AC]	2500				
Ambient Conditions						
Working temperature		-20...+80°C [-4°...176°F]				
Storage temperature		-20...+85°C [-4°...185°F]				
Maximum relative humidity		50% at 40°C				
Maximum installation altitude		1000m asl				
Pollution level		3 (suitable for use in degree 2 environment)				
Class		A (industrial device)				

Dissipation Curve

GTZ 25 - 40 - 55



Technical Information

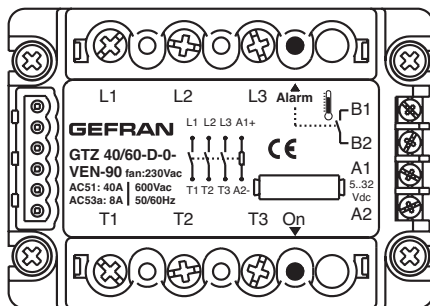
Terminals and Conductors

Size	Nominal Section Cable mm ²	Control Terminal (A1, A2, B1, B2)			Power Terminal (L1, L2, L3, T1, T2, T3)			Ground Terminal ❶	
		Contact area (WxD) screw type	Type of preisolated terminal	Section con- ductor tighten- ing torque ❷	Contact area (WxD) screw type	Type of preisolated terminal	Max. section conductor tightening torque	Contact area (WxD) screw type	Max. section conductor tightening torque
25A	6	6.3x9 M3	Eye / fork / tip	min. 0.35 mm ² max. 2.5 mm ² 0.6 Nm Max	12 x 12 M5	Eye / fork / tip	Tip Terminal min. 1mm ² (17AWG) max. 10mm ² (7AWG)	12x12 self-tapping screw 3.9x12 DIN7981	min. 1mm ² (17AWG) max. 16mm ² (5AWG) 1.5 ...1.8Nm
40A	10						Eye or Fork Terminal min. 1mm ² (17AWG) max. 16mm ² (5AWG)		
55A	16						12x12 M5	1.5 ...2.2Nm	min. 1mm ² (17AWG) max. 16mm ² (5AWG) 2.5Nm

❶ Note: The maximum sections specified refer to unipolar copper wires isolated in PVC. For the ground terminal, an eye wire terminal is required.
(WxD) = Width x depth

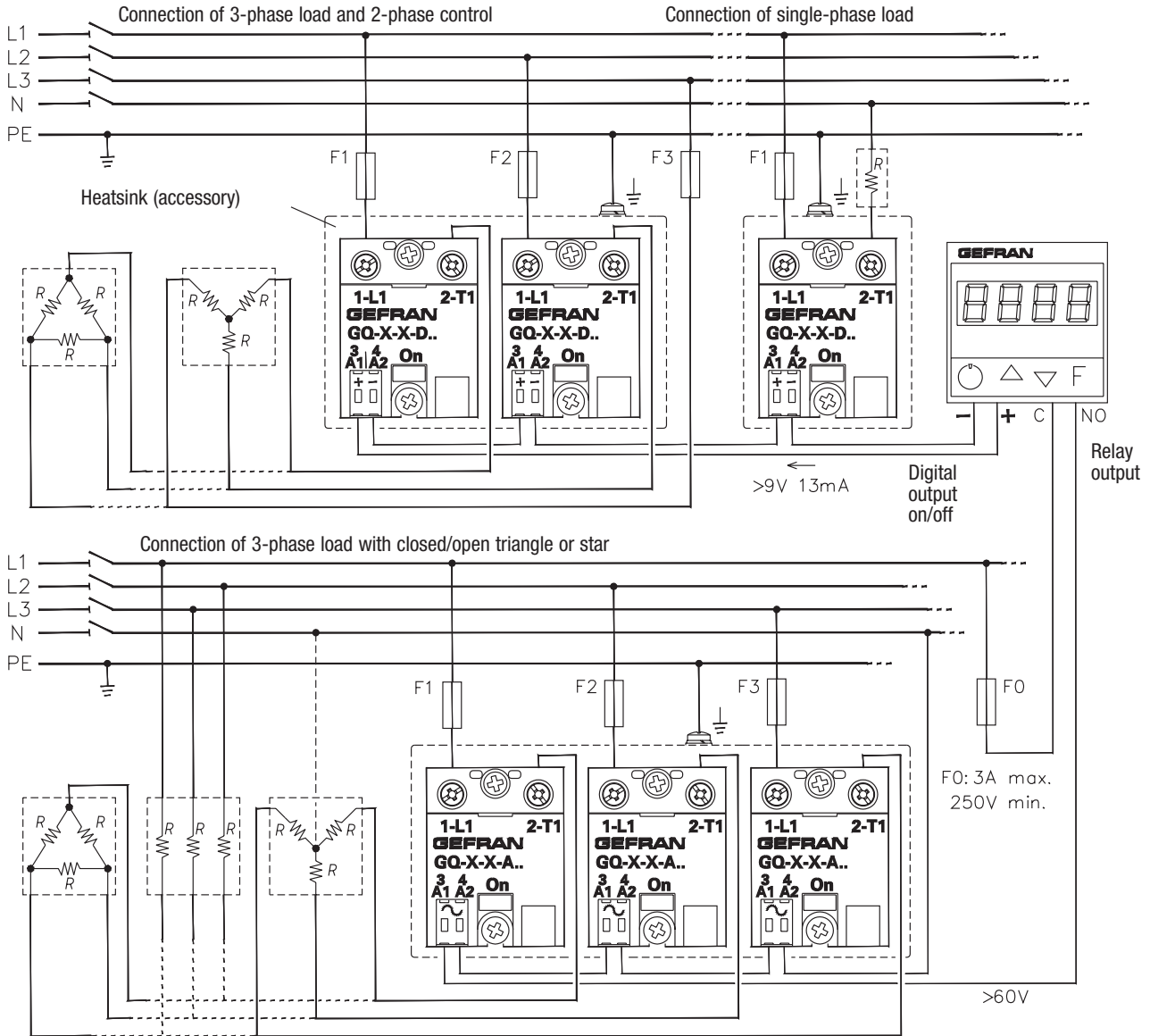
❷ The minimum acceptable nominal section based on the nominal currents of the power solid state units is given for copper conductors isolated in PVC, under continuous operating conditions and at 40°C ambient temperature according to standards CEI 44-5, CEI 17-11, IEC 408 in accordance with EN60204-1.

Connection Examples



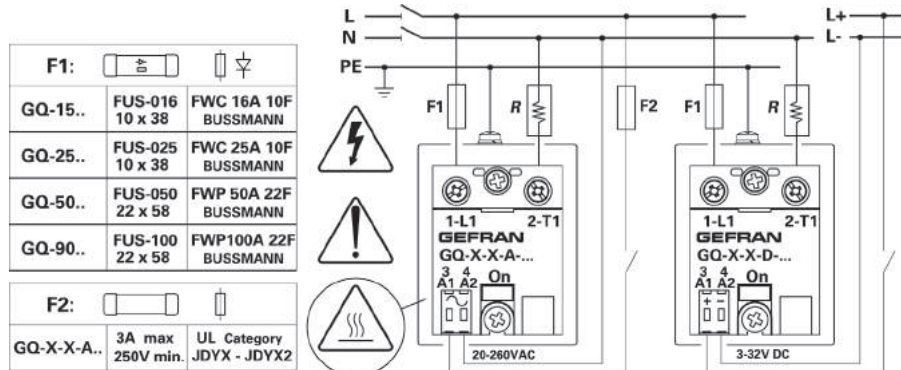
- L1 : Phase 1 input
- L2 : Phase 2 input
- L3 : Phase 3 input
- T1 : Phase 1 output
- T2 : Phase 2 output
- T3 : Phase 3 output
- A1 : Control signal (+)
- A2 : Control signal (-)
- B1 : Alarm output (+) (Special unit)
- B2 : Alarm output (-) (Special unit)
- Led1: Red led signal indicator
- Led2: Yellow led (alarm overtemperature junction)

Series GQ Solid State Relays



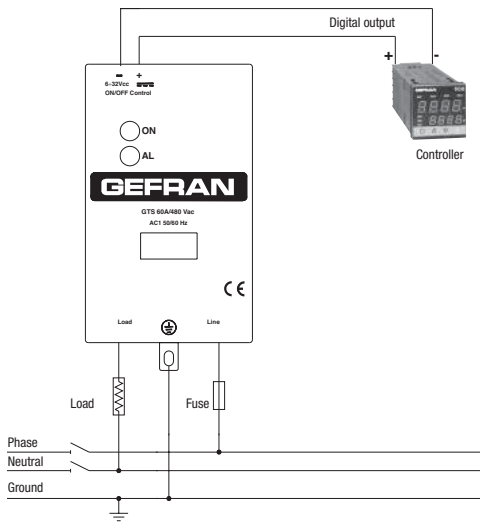
Series GQ Fuse Connections

The solid state group must be connected using proper fuses against short circuits

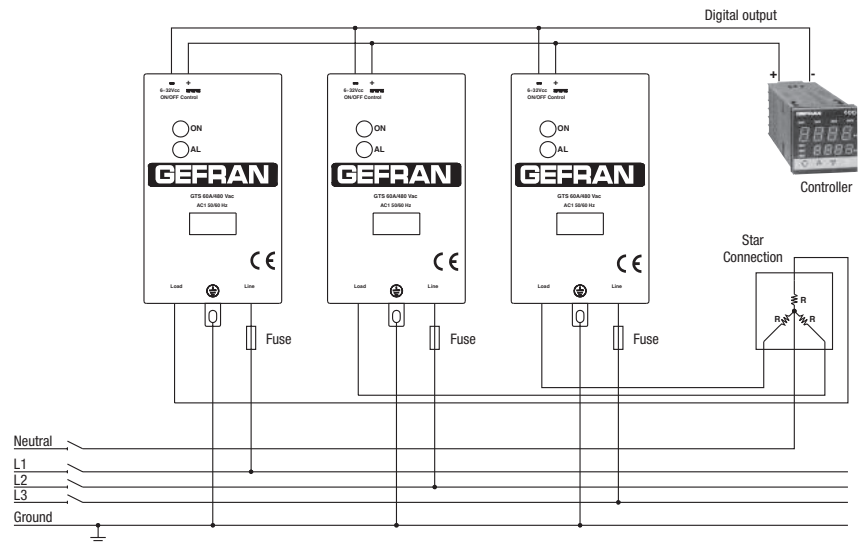


Series GTS Solid State Relays

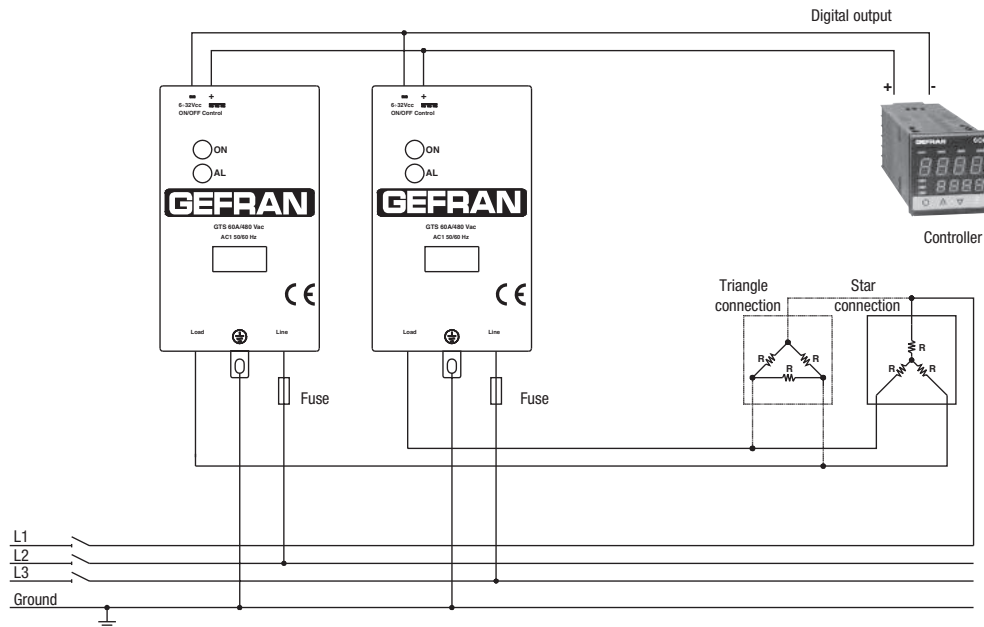
Single-phase connection



Three-phase Star connection with neutral



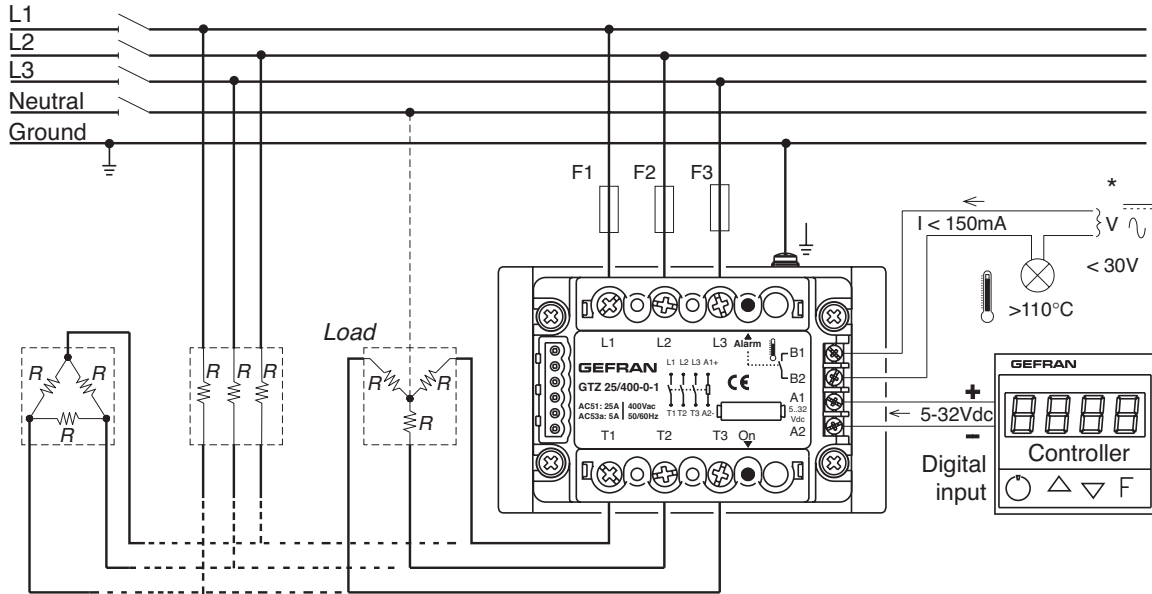
Three-phase Triangle or Star connection without neutral on two phases



G
Gefran Solid State Relays

Series GTZ Solid State Relays

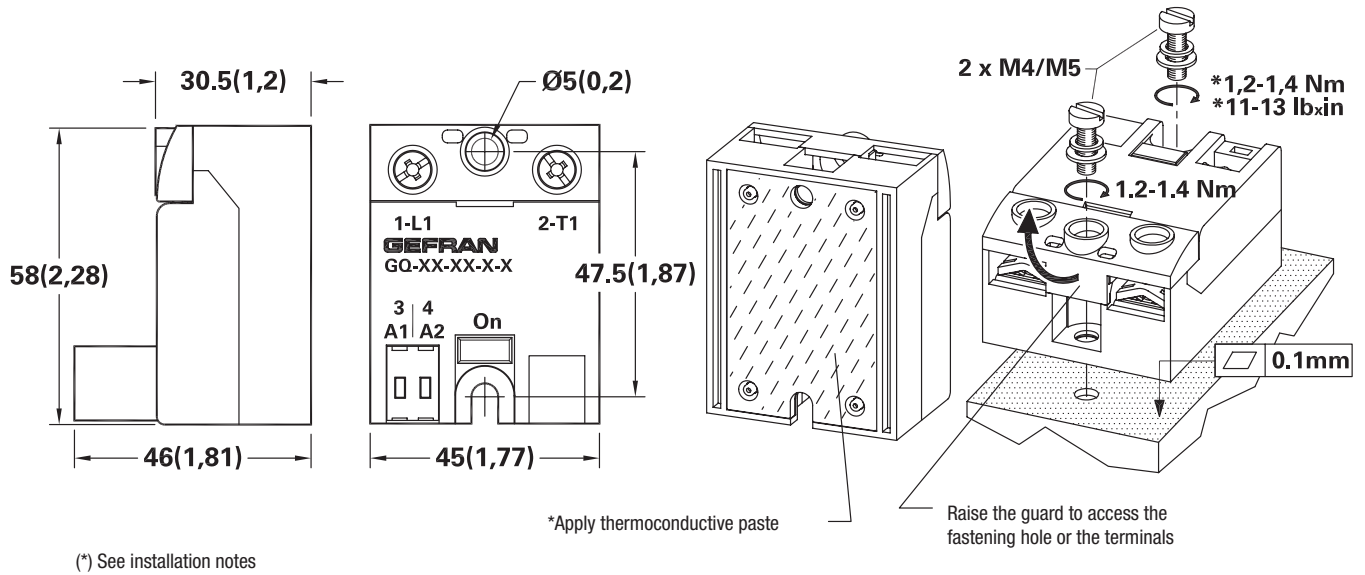
Three-phase Triangle or Star connection (with and without neutral)



* Only in the version with option overtemperature alarm output

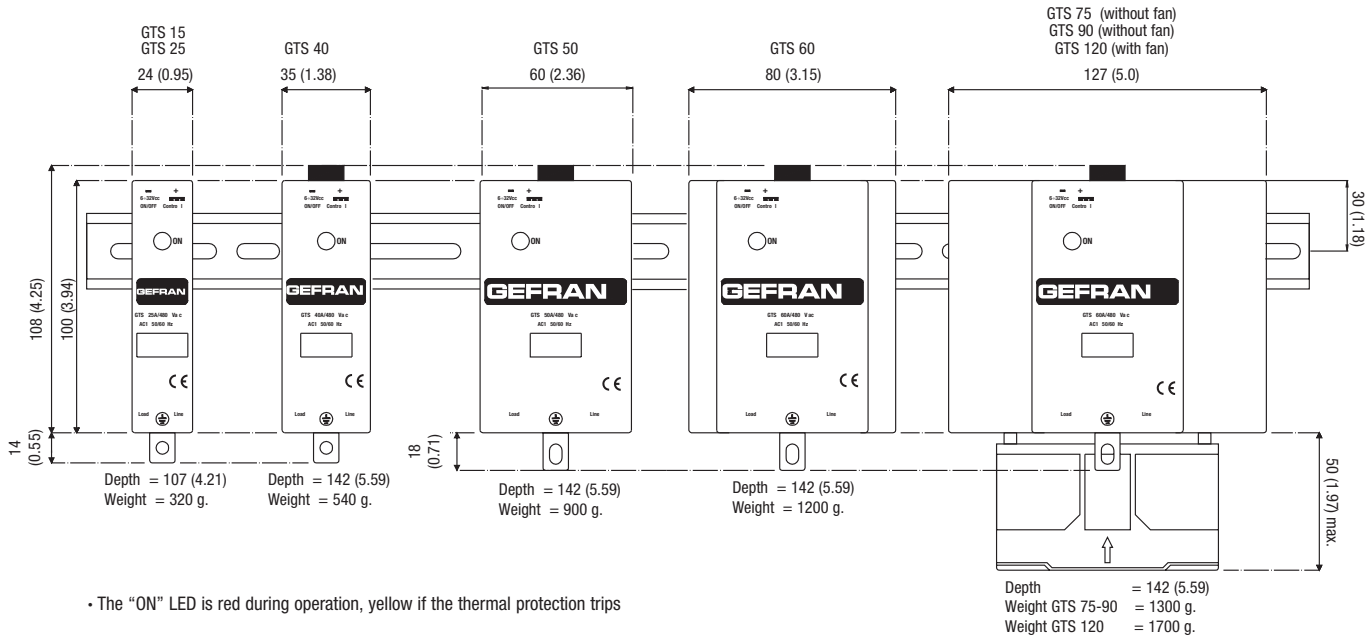
GQ Panel Mount Relays

Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.



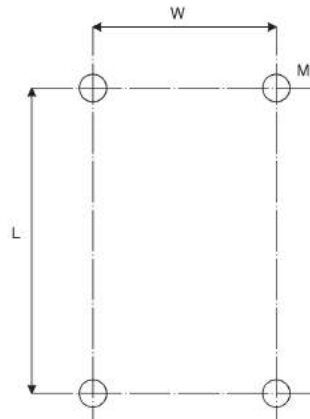
GTS 1-Pole DIN-Rail Mount Relays

Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.

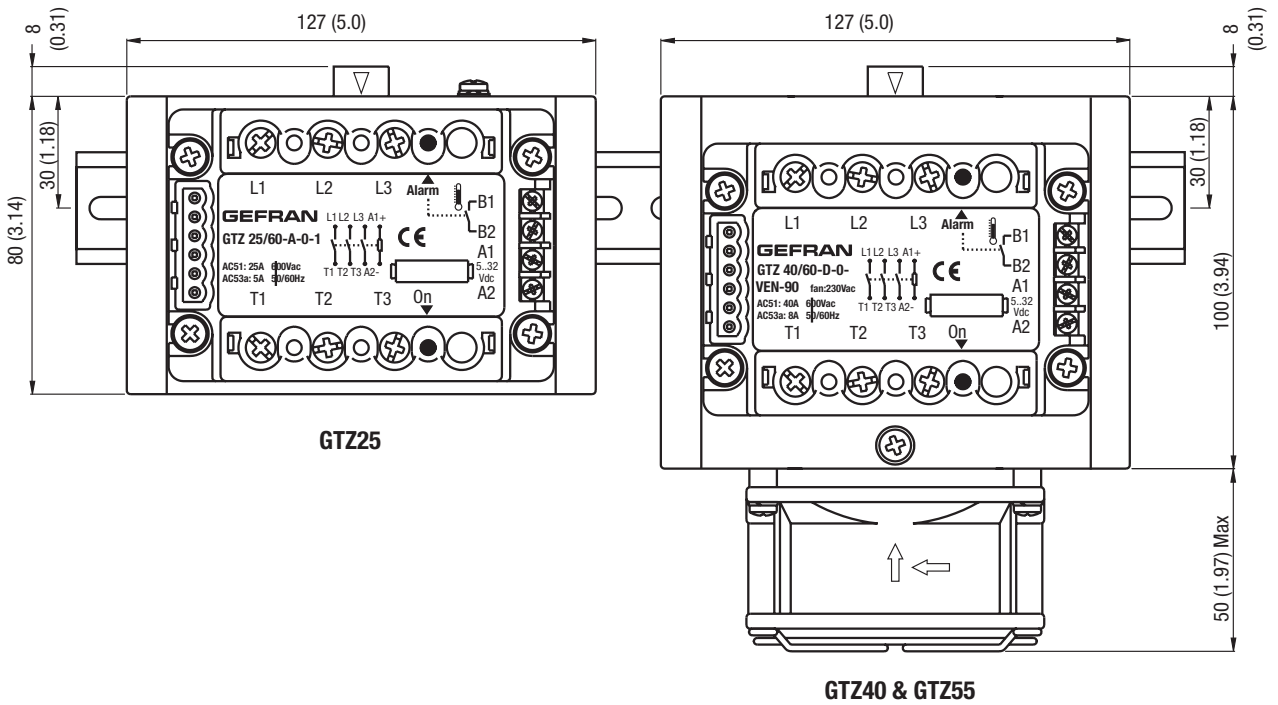


PAN-1 Panel Mount Accessory for GTS - Hole Template

GTS 1-Pole Relays	Length	Width
	mm (inches)	mm (inches)
GTS-15...25	112 (4.41)	0 (0.00)
GTS-40	112 (4.41)	25 (0.98)
GTS-50...60	112 (4.41)	44 (1.73)
GTS-90...120	112 (4.41)	113 (4.45)

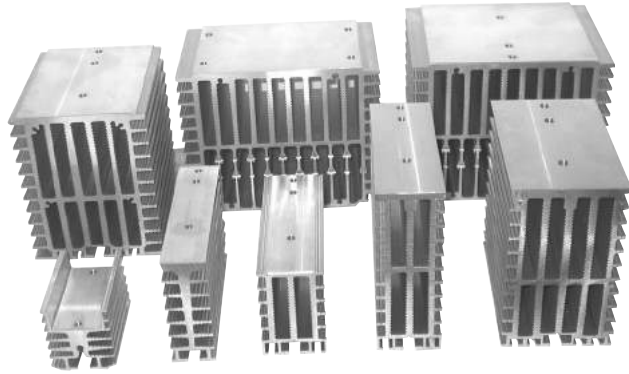


GTZ 3-Pole DIN-Rail Mount Relays



General Application Notes

Heatsinks



Different models of heatsinks have been designed and tested to meet size and dimension needs.

How to choose a heatsink

- Set max. air temperature inside the panelboard (T_{max_a})
- Set max. operating current: $I_{max} = I_{nom. load} + 10\%$
- Draw on the “graphs” T_{max_a} , I_{max} points.
- Choose the smallest heatsink (starting from upwards), which point [T_{max_a} , I_{max}] is in the gray working area of dissipation curves
- Respect installation distances

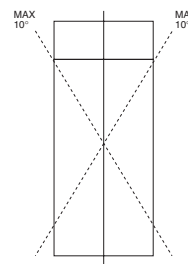
Installation

In order to obtain best reliability, it is important to install a heatsink correctly inside the panel, to reach an adequate thermal exchange between the device and the surrounding air in natural convection conditions.

How to install it correctly:

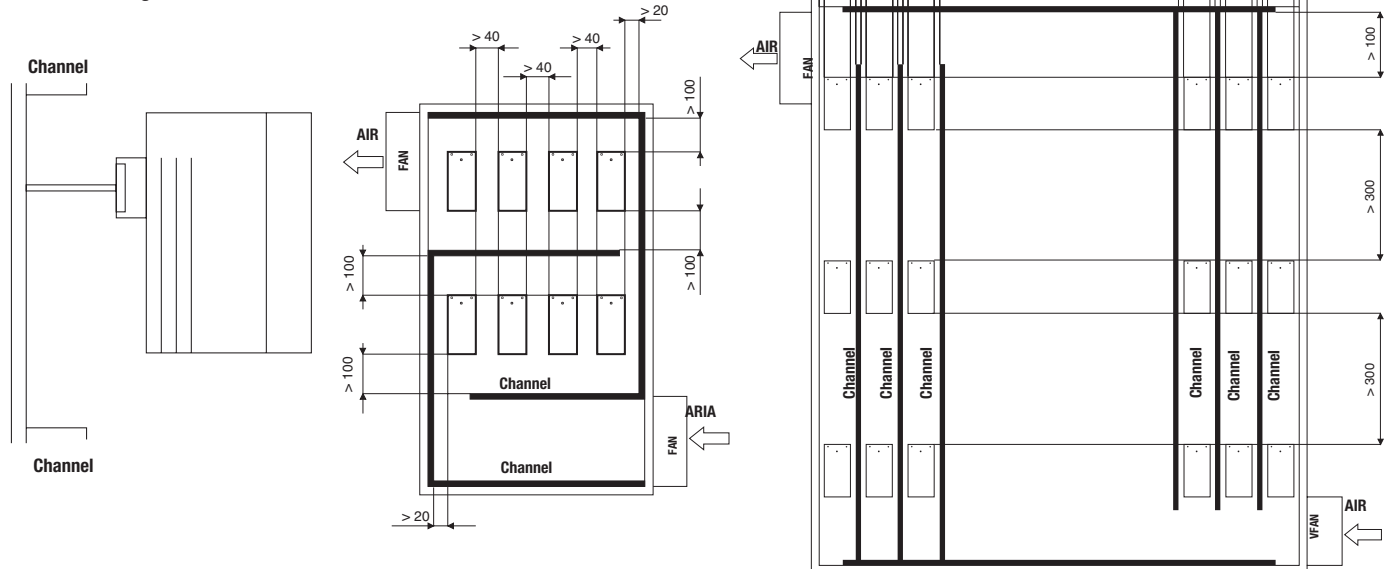
Mount it vertically (max. 10° inclination from the vertical axis)

- Vertical distance between a heatsink and the panel wall: 100 mm at least.
- Horizontal distance between a heatsink and the panel wall: 20 mm at least.
- Vertical distance between two heatsinks: 300 mm at least.
- Horizontal distance between two heatsinks: 40 mm at least.



Check that cable channels do not reduce these distances; should it happen, mount the relays overhanging from the panel, so that the air can flow vertically on the heatsink without obstacles (see Fig.1).

Fig. 1

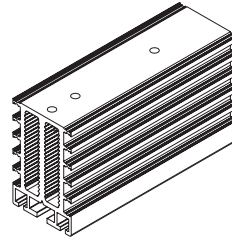
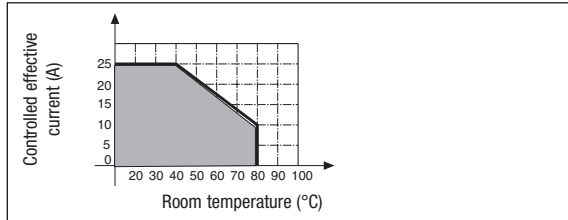


General Application Notes (continued)

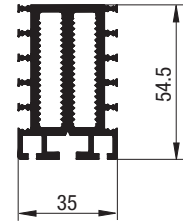
Dissipation Curves

Effective current controllable based on room temperature

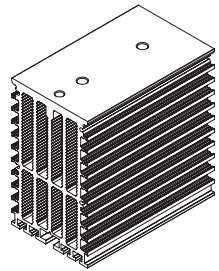
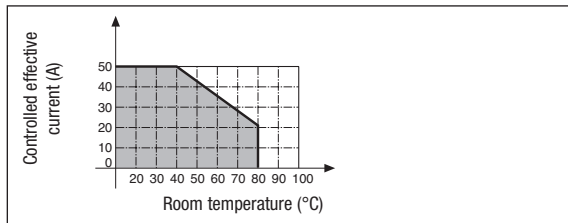
DIS 25GD



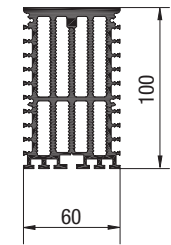
$h = 100\text{mm}$
 $R_{\theta} = 2.8^{\circ}\text{C/W}$
 (*)



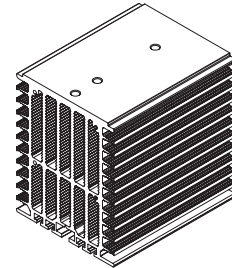
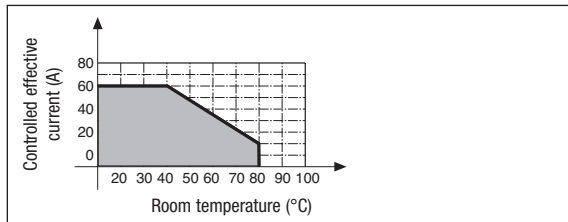
DIS 50G



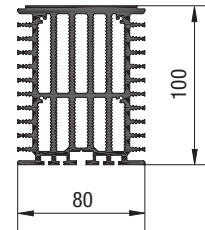
$h = 100\text{mm}$
 $R_{\theta} = 0.83^{\circ}\text{C/W}$
 (*)



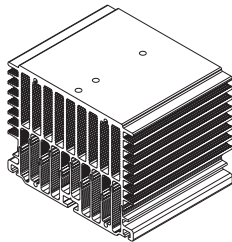
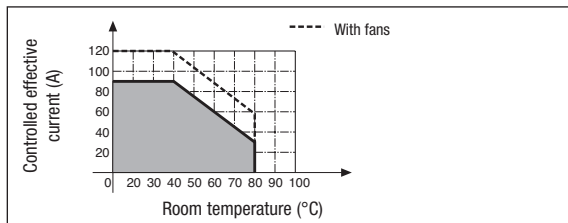
DIS 60G



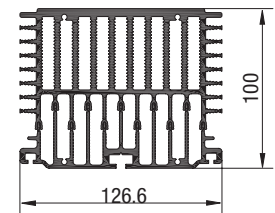
$h = 100\text{mm}$
 $R_{\theta} = 0.66^{\circ}\text{C/W}$
 (*)



DIS 90G



$h = 100\text{mm}$
 $R_{\theta} = 0.56^{\circ}\text{C/W}$
 (*)

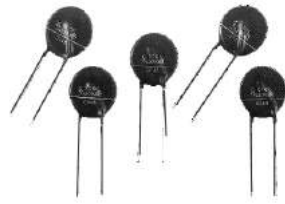


G
 Gefran Solid State Relays

General Application Notes (continued)

Varistors (MOV)

If your application is located near inductive loads, or shares power sources with large inductive loads that are creating transients in excess of the blocking voltage of the Gefran solid state relay, then you must install a metal oxide varistor (MOV) to protect the solid state relay. It is up to the installation company to properly size the MOV to the application! Ideally, the MOV protection is near the noise generating inductive load (such as a motor, drive, or other large inductive coil) or you can place MOVs directly across the output terminals of the SSR.



Recommended MOVs from EPCOS:

Part Number	Working Voltage (V)
S20K300	120-290 V AC
S20K420	291-400 V AC
S20K510	401-500 V AC

The Gefran solid state relays include technology that dramatically reduces your need to install an external MOV except in extremely noisy environments or inductive load applications.

Fuses and Fuse Holders

These fuses ensure the maximum safety in solid state relay applications. Fuses with a very high cutoff power are used for this kind of applications. See Table 1.



Table 1.

Recommended Fuses (by others) for GQ, GTS & GTZ Relays					
Type relay	i ² t	Nominal voltage	Size	Dimensions (mm)	Bussman Part No.
GQ 15A	450	230 480	16A	10x38	FWC16A10F
GTS 25A GQ 25A	645 450	230 480 600	25A	10x38	FWC25A10F
GTS 40A	1010	230 480	40A	14x51	FWP40A14
GTS 50A GQ 50A	6600	230 480 600	63A	22x58	FWP63A22F
GTS 60A	6600	230 480 600	80A	22x58	FWP80A22F
GTS 75A	8000	230 480	80A	22x58	FWP80A22F
GTS 90A GQ 90A	11200	230 480 600	100A	22x58	FWP100A22F
GTS 120A	11200	230 480 600	125A	0-0-0-TN/80 100x51x30	170M1418000-TN/80
GTZ 25A	450 645	400 480	25A	12x32	FWC25A10F
GTZ 40A	1010	480 600	40A	14x51	FWP40A14
GTZ 55A	6600	480 600	63A	22x58	FWP63A22F

(*) PF for fuseholders: LEGRAND, PFI for fuseholders: ITALWEBER

General Application Notes (continued)

Series GQ Installation notes

- The heat sink must be grounded.
- Power controllers are designed to assure a switching function that does not include protection of the load line or of devices connected to it. The customer must provide all necessary safety and protection devices in conformity to current electrical standards and regulations.
- Protect the solid state relay by using an appropriate heat sink (accessory). The heat sink must be sized according to room temperature and load current.

Dissipated Power Calculation

Single-phase relay

$P_d \text{ GQ..15/25} = 1.45 * I_{RMS} [W]$

$P_d \text{ GQ..50/90} = 1.35 * I_{RMS} [W]$

I_{RMS} = single-phase load current

Heatsink Thermal Resistance Calculation

$R_{th} = (90^\circ C - \text{max amb. } T) / P_d$

- where P_d = dissipated power
- Max. amb. T = max air temperature inside the electrical cabinet.

Use a heatsink with thermal resistance inferior to the calculated one (R_{th}).

Maximum surrounding air temperature $40^\circ C$ suitable for use in pollution degree 2 or better.

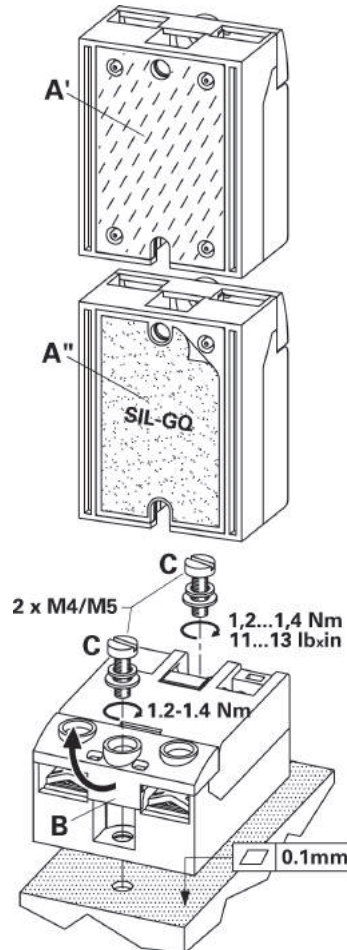
Procedure for mounting on heat sink:

The module-heat sink contact surface must have a maximum planarity error of 0.05mm. and maximum roughness of 0.02mm. The fastening holes on the heat sink must be threaded and countersunk.

Attention: spread 1 gram of thermoconductive silicone (we recommend DOW CORNING 340 HeatSink) on the dissipative metal surface of the module. The surfaces must be clean and there must be no impurities in the thermoconductive paste. As alternative it is also possible to use the graphite film SIL-GQ available as accessory.

- Alternately tighten the two fastening screws until reaching a torque of 0.4...0.6 Nm. Wait 5 minutes for any excess paste to drain.
- Alternately tighten the two fastening screws until reaching a torque of 1.2...1.4 Nm.

Installation on sink:



General Application Notes (continued)

Series GTS Installation notes

Power controllers are designed to assure a switching function that does not include protection of the load line or of devices connected to it. The customer must provide all necessary safety and protection devices in conformity to current electrical standards and regulations.

To assure maximum reliability, it is essential to install the unit correctly in the panel in order to guarantee adequate heat exchange between the heat sink and the room under natural convection conditions.

Maximum surrounding air temperature 40°C “Open Type Equipment” suitable for use in pollution degree 2 or better.

Install the unit vertically (max 10° inclination from vertical axis).

- Vertical distance between unit and panel wall >100 mm
- Horizontal distance between unit and panel wall at least 20 mm
- Vertical distance between one unit and the next at least 300 mm
- Horizontal distance between one unit and the next at least 20 mm

Make sure that the wire raceways do not reduce such distances. If they do, install the units cantilevered to the panel so that air can flow vertically onto the heat sink without obstruction.

Equipment should be short circuit protected by semiconductor fuse type:

Model	Fuse manufacturer	Fuse Model size
GTS 15/230	Bussmann Div Cooper (UK) Ltd	FWC16A10F 10x38
GTS 25/480		FWC25A10F 10x38
GTS 40/230, GTS 40/480		FWP40A14F 14x51
GTS 50/230, GTS 50/480		FWP63A22F 22x58
GTS 60/230, GTS 60/480, GTS 75/230, GTS 75/480		FWP80A22F 22x58
GTS 90/230, GTS 90/480		FWP100A22F 22x58
GTS 120/230, GTS 120/480	Bussmann Intrn'l Inc. USA	170M1418 000-TN/80

Series GTZ Installation notes

Power controllers are designed to assure a switching function that does not include protection of the load line or of devices connected to it. The customer must provide all necessary safety and protection devices in conformity to current electrical standards and regulations.

To assure maximum reliability, it is essential to install the unit correctly in the panel in order to guarantee adequate heat exchange between the heat sink and the room under natural convection conditions.

Install the unit vertically (max 10° inclination from vertical axis).

- Vertical distance between a heatsink and panel wall >100 mm
- Horizontal distance between a heatsink and panel wall at least 20 mm
- Vertical distance between two heatsink at least 300 mm
- Horizontal distance between two heatsink at least 20 mm

Make sure that the cable raceways do not reduce such distances. If they do, install the GTZ overhanging from the panel, so that the air can flow vertically on the heatsink without obstruction.

General Application Notes *(continued)*

Warnings

During continuous operation, the heat sink can reach very high temperatures, and keeps a high temperature even after the unit is turned off due to its high thermic inertia.



DO NOT work on the power section without first cutting out electrical power to the panel.



Follow the instructions in the technical manual.

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