

POWER CONTROL
**SOLID STATE RELAYS, CONTACTORS,
AND POWER CONTROLLERS**

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.

For 40 years, Gefran has been designing and producing technologically advanced actuators and solid state relays to control resistive/inductive loads and infrared lamps used in modern temperature control systems.

Our knowledge of the market transforms your needs into practical, high-quality answers.



QUALITY AND TECHNOLOGY

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

Thanks to its **complete line of controllers and actuators**, Gefran can be your sole provider of solutions for **electrical heating control.**

Gefran's know-how and experience guarantee **continuous** and practical 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.

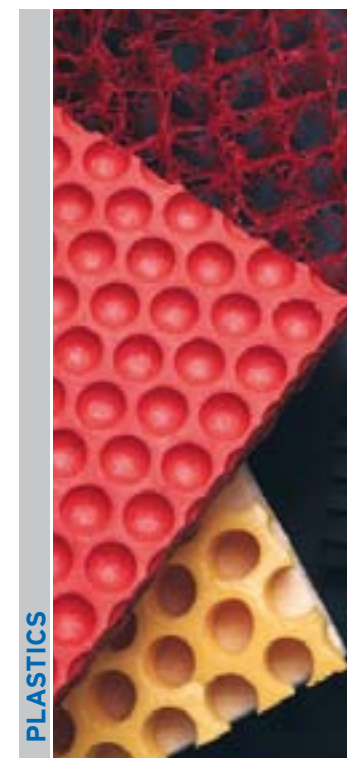


SOFTWARE

GF_eXpress

Configuration kit for Gefran instruments by means of PC (Windows environment). Lets you read or write all of the parameters of a single instrument via serial connection.

- > A single software for all models
- > Easy configuration
- > Copy/paste, save recipe, trend functions
- > Rapid configuration of instruments
- > Saving and management of parameter recipes
- > On-line trend and saving of historical data
- > Recovery of factory settings
- > Custom linearization
- > On-line user manual



PLASTICS



HEAT TREATMENT



GLASS



FOOD

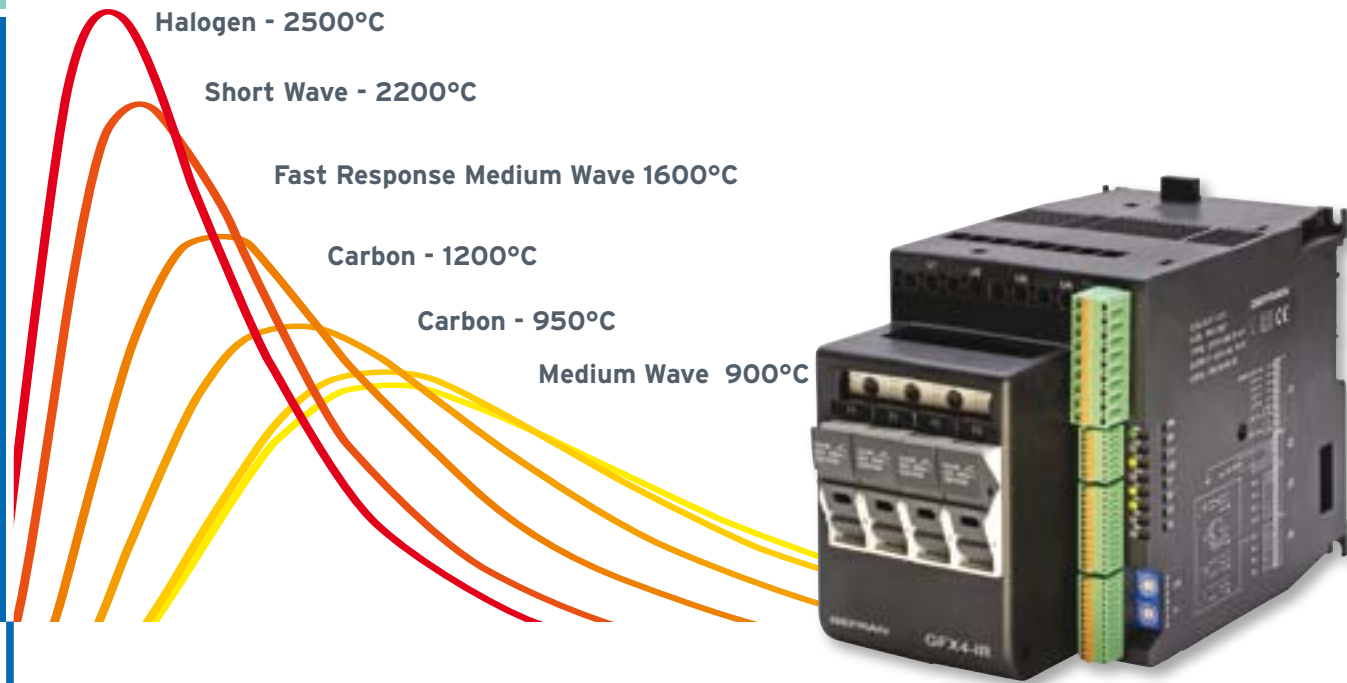


PAPER



ENERGY

IR SOLUTION



IDEAL SOLUTIONS FOR IR LAMP APPLICATIONS

Gefran introduces its GFX4-IR, a new 4-zone PID power controller for infrared lamps, transformers, and inductive loads.

The GFX4-IR is extremely compact, saving you space and wiring time..
GFX4-IR runs full and continuous diagnostics of process current, temperature, and voltage.

CHARACTERISTICS

- Up to 4 zones single-phase or 1 zone 3-phase + 1 single-phase
- All connection types (star, delta, with/without neutral)
- Zero-crossing operation with pulse train and half single cycle
- Phase-angle operation
- Soft start, soft stop, current limit, V, I, P feedback functions
- Iac rms and Vac rms read, interrupted load and short circuit diagnostics

GTF -GFW



GTF

GTF plus is the new line of GEFAN power controllers, designed to control all types of industrial electric heaters. Versatility, plus easy and guided configuration with GEFAN user friendly software make the device ideal for all power control applications.

- Longer load life with Soft Start and current limits
- Process accuracy and reliability via voltage, current, power feedback
- Powerful diagnostics of total and partial load interrupt
- Greatly reduced downtimes with incorporated electronic fuse
- Great flexibility with all types of control and load

GFW

GFW adv is the new modular line of GEFAN power controllers, designed to control all types of industrial electric heaters with any connection mode (**mono-phase, bi-phase and tri-phase**).

Advanced control functions, feedback algorithms, phase synchronisation, and energy totalisers are the main advantages of the GFW's calculation functions. Advanced Fieldbus performance and easy configuration with **user-friendly** software.

- Full integration in automation architectures thanks to Fieldbuses
- Modularity for all mono/bi/ tri-phase applications
- Integrated solution with incorporated temperature controller
- Powerful diagnostics for total and partial load interrupt and for overtemperature,
- Greatly reduced downtimes with incorporated electronic fuse
- Great flexibility with all types of control and load

PRINTING



PLASTICS - BLOWING



PHOTOVOLTAICS



TEXTILE



WOODWORKING MACHINES




AUTOMOTIVE



PLASTIC, PHOTOVOLTAIC, FURNACES, WOOD, GLASS, PAPER, FOOD

Solid State Power Controller

GFX4
(16,32,40A)
[4 CHANNELS]
FIELDBUS*



PLASTICS, PACKAGING, FURNACES

Contactors
Solid State

GTS
(15... 120A)



GTZ
(25... 55A)
(3-PHASE)



GTD
(25,40A)



W211
(400, 600A)



W212
(400, 600A)



PLASTICS, PACKAGING

Solid State Relay

GQ
(15... 90A)



GS
(15... 120A)



GZ
(10... 55A)
(3-PHASE)



GD
(40A)




ZERO CROSSING

HB ALARM

ZERO CROSSING BURST FIRING

HALF SINGLE CYCLE, PHASE ANGLE

GTF
(25...250A)



Modbus TCP/RTU
PC Configurable

GTT
(25... 120A)



GFW
(40...250A)
FIELDBUS*



GFX4-IR
(16, 32, 40A)
(4 CHANNELS)
FIELDBUS*



FIELDBUS*




Modbus TCP/RTU






PC Configurable

GUIDE TO SELECTION BY FUNCTION

		SERIE	SOLID STATE RELAY				
			GQ	GS	GD	GT	GZ
RATINGS	Rated voltage (Vac)	230Vac; 480Vac; 600Vac	230Vac 480Vac	480Vac	480Vac	400Vac, 480Vac, 600Vac	
	Rated current (A)	15, 25, 50, 90	15, 25, 40, 50, 60, 75, 90, 120	40A	25, 40, 50, 60, 75, 90, 120	10, 25, 40, 55	
INTEGRATED HEAT-SINK	Integrated heat-sink with DIN bar attachment	no	no	no	no	no	
LOAD TYPE	Heating elements with low thermal coefficient	GQ	GS	GD	GT	GZ	
	Long-wave IR lamps	GQ	GS	GD	GT	GZ	
	Medium-wave IR lamps						
	Short-wave IR lamps						
	Heating elements with high thermal coefficient: (Kanthal, Super Kanthal, silicon carbide)						
	Single-phase Transformers						
INPUT CONTROL	Three-phase Transformers						
	Digital ON/OFF	GQ	GS	GD		GZ	
	Digital PWM						
	Analog 0-10V, 4-20mA				GT		
	Analog, potentiometer				GT		
	Modbus RTU serial						
FIRING MODE	Fieldbus						
	Zero crossing, ON/OFF (ZC)	GQ	GS	GD		GZ	
	Rapid Zero crossing "Burst firing" (BF)				GT		
	Optimized rapid Zero crossing (HSC)						
	Phase angle (PA)						
	Delay firing (DT)						
OPTIONS	Soft Start						
	Current limit						
	Load interrupt alarm			GD	GT		
	Short circuit alarm						
	Overtemperature alarm			GD		GZ	
	Integrated high-speed fuse						
FEED-BACK FUNCTIONS	Integrated electronic fuse						
	On-board temperature PID						
	Voltage Feedback						
FIELDBUS	Current Feedback						
	Power Feedback						
	Profibus DP						
	CanOpen						
	Devicenet						
	Modbus TCP/RTU						
CONFIGURATION	Ethernet/ IP						
	EtherCAT						
	Profinet						
	Configuration from PC						
CERTIFICATIONS	Easy "Smart Configuration" configuration						
	Programmazione da tastierino portatile						
	CE	GQ	GS	GD	GT	GZ	
UL	GQ	GS		GT	GZ		
TÜV							

SOLID STATE CONTACTOR					POWER CONTROLLERS			
GTS	GTD	GTT	GTZ	Wattcor	GFX4	GFX4-IR	GTF	GFW
230Vac; 480Vac	480Vac	480Vac	400Vac, 480Vac, 600Vac	660Vac	480Vac	480Vac	480Vac; 600Vac	480Vac; 600Vac
15, 25, 40, 50, 60, 75, 90, 120	25, 40	25, 40, 50, 60, 75, 90, 120	25, 40, 55	25, 40, 75, 100, 150, 250, 400, 600	16,32,40	16,32,40	25, 40, 50, 60, 75, 90, 120, 150, 200, 250	40, 60, 100, 150, 200, 250
yes	yes	yes	yes	yes (panel attachment)	yes	yes	yes	yes (panel attachment)
GTS	GTD	GTT	GTZ	Wattcor	GFX4	GFX4-IR	GTF	GFW
GTS	GTD	GTT	GTZ	Wattcor	GFX4	GFX4-IR	GTF	GFW
						GFX4-IR	GTF	GFW
						GFX4-IR	GTF	GFW
						GFX4-IR	GTF	GFW
						GFX4-IR	GTF	GFW
GTS	GTD		GTZ	Wattcor	GFX4	GFX4-IR	GTF	GFW
						GFX4-IR	GTF	GFW
		GTT		Wattcor	GFX4	GFX4-IR	GTF	GFW
		GTT		Wattcor		GFX4-IR	GTF	GFW
					GFX4	GFX4-IR	GTF	GFW
					GFX4	GFX4-IR	GTF	GFW
GTS	GTD		GTZ	Wattcor	GFX4	GFX4-IR	GTF	GFW
		GTT				GFX4-IR	GTF	GFW
						GFX4-IR	GTF	GFW
				W312		GFX4-IR	GTF	GFW
						GFX4-IR	GTF	GFW
					GFX4	GFX4-IR	GTF	GFW
	GTD	GTT		Wattcor	GFX4	GFX4-IR	GTF	GFW
					GFX4	GFX4-IR	GTF	GFW
	GTD		GTZ		GFX4	GFX4-IR	GTF	GFW
				Wattcor	GFX4	GFX4-IR	GTF (I >= 150A)	GFW
							GTF (I <= 60A)	GFW (I <= 100A)
					GFX4	GFX4-IR		GFW
						GFX4-IR	GTF	GFW
						GFX4-IR	GTF	GFW
					GFX4	GFX4-IR		GFW
					GFX4	GFX4-IR		GFW
					GFX4	GFX4-IR		GFW
					GFX4	GFX4-IR	GTF (Modbus RTU)	GFW
					GFX4	GFX4-IR		GFW
					GFX4	GFX4-IR		GFW
					(in progress)	GFX4-IR		(in progress)
					GFX4	GFX4-IR	GTF	GFW
						GFX4-IR	GTF	GFW
					GFX4	GFX4-IR		GFW
GTS	GTD	GTT	GTZ	Wattcor	GFX4	GFX4-IR	GTF	GFW
GTS		GTT	GTZ		GFX4	GFX4-IR	pending	pending
							GTF	

GUIDE TO SELECTION BY CONNECTION / LOAD TYPE

Wiring	Load Typology	Series									
		GQ	GS	GD	GT	GZ	GTS	GTD	GTT	GTZ	Wattcor
		15...90A	15...120A	25...40A	15...120A	10...55A	15...120A	25...40A	15...120A	10...55A	400,600A
SINGLE PHASE	HEATING ELEMENTS WITH LOW THERMAL COEFFICIENT										
	Wire resistance	1x	1x	1x	1x		1x	1x	1x		1x
	Infrared Long wave	1x	1x	1x	1x		1x	1x	1x		1x
	HEATING ELEMENTS WITH HIGH THERMAL COEFFICIENT										
	Infrared Lamps Medium Wave										
	Infrared Lamps Short Wave										
	Kanthal, Super Kanthal heaters										
	Elementi in carburo di silicio										
SINGLE PHASE TRANSFORMER	HEATING ELEMENTS WITH LOW THERMAL COEFFICIENT										
	Wire resistance										
	Infrared Long wave										
	HEATING ELEMENTS WITH HIGH THERMAL COEFFICIENT										
	Infrared Lamps Medium Wave										
	Infrared Lamps Short Wave										
	Kanthal, Super Kanthal heaters										
	Elementi in carburo di silicio										
BI-FASE (Closed Delta/ star without neutral)	HEATING ELEMENTS WITH LOW THERMAL COEFFICIENT										
	Wire resistance	2x	2x		1M 1S		2x		1M 1S		1M 1S
	Infrared Long wave	2x	2x		1M 1S		2x		1M 1S		1M 1S
	HEATING ELEMENTS WITH HIGH THERMAL COEFFICIENT										
	Infrared Lamps Medium Wave										
	Infrared Lamps Short Wave										
	Kanthal, Super Kanthal heaters										
	Silicon Carbide heaters										
THREE-PHASE - OPEN DELTA	HEATING ELEMENTS WITH LOW THERMAL COEFFICIENT										
	Wire resistance	3x	3x	3x	3x	1x	3x	3x	3x	1x	3x
	Infrared Long wave	3x	3x	3x	3x	1x	3x	3x	3x	1x	3x
	HEATING ELEMENTS WITH HIGH THERMAL COEFFICIENT										
	Infrared Lamps Medium Wave										
	Infrared Lamps Short Wave										
	Kanthal, Super Kanthal heaters										
	Silicon Carbide heaters										
THREE-PHASE - STAR WITH NEUTRAL	HEATING ELEMENTS WITH LOW THERMAL COEFFICIENT										
	Wire resistance	3x	3x	3x	3x	1x	3x	3x	3x	1x	3x
	Infrared Long wave	3x	3x	3x	3x	1x	3x	3x	3x	1x	3x
	HEATING ELEMENTS WITH HIGH THERMAL COEFFICIENT										
	Infrared Lamps Medium Wave										
	Infrared Lamps Short Wave										
	Kanthal, Super Kanthal heaters										
	Silicon Carbide heaters										
TRI-FASE (Closed delta/star without neutral)	HEATING ELEMENTS WITH LOW THERMAL COEFFICIENT										
	Wire resistance	3x	3x		1M 2S	1x	3x		1M 2S	1x	1M 2S
	Infrared Long wave	3x	3x		1M 2S	1x	3x		1M 2S	1x	1M 2S
	HEATING ELEMENTS WITH HIGH THERMAL COEFFICIENT										
	Infrared Lamps Medium Wave										
	Infrared Lamps Short Wave										
	Kanthal, Super Kanthal heaters										
	Silicon Carbide heaters										
THREE-PHASE TRANSFORMER	HEATING ELEMENTS WITH LOW THERMAL COEFFICIENT										
	Wire resistance										
	Infrared Long wave										
	HEATING ELEMENTS WITH HIGH THERMAL COEFFICIENT										
	Infrared Lamps Medium Wave										
	Infrared Lamps Short Wave										
	Kanthal, Super Kanthal heaters										
	Silicon Carbide heaters										

Series				Firing Mode suggested					Function suggested				Nominal Current Dimensioning (*)	Notes
GFX4	GFX4-IR	GTF	GFW	ZC	BF	HSC	PA	DT	Soft Start	Current Limit	Feedback (I)	Feedback (P)	P= total max power I= current value to select the size of the product	pw= power % provided to the load
16,32,40A	16,32,40A	25...250A	40...250A											
1/4x	1/4x	1M	1M	x	x								I=P/Vline	
1/4x	1/4x	1M	1M	x	x								I=P/Vline	
	1/4x	1M	1M			x	x		x	x			I=P/Vline	
	1/4x	1M	1M			x	x		x	x			I=P/Vline	
	1/4x	1M	1M				x				x		I=P/Vline	
	1/4x	1M	1M			x	x		x			x	I=P/Vline	
	1/4x	1M	1M	x				x					I= 1,2 (P+10%)/ Vline	
	1/4x	1M	1M	x				x					I= 1,2 (P+10%)/ Vline	
	1/4x	1M	1M				x		x	x			I= 1,2 (P+10%)/ Vline	
	1/4x	1M	1M				x		x	x			I= 1,2 (P+10%)/ Vline	
	1/4x	1M	1M				x		x		x		I= 1,2 (P+10%)/ Vline	
	1/4x	1M	1M				x		x			x	I= 1,2 (P+10%)/ Vline	
2/4x		1M 1S	2PH	x	x								I= P/ (√3 Vline)	
2/4x		1M 1S	2PH	x	x								I= P/ (√3 Vline)	
3/4x	3/4x	1M 2S	3PH	x	x								I= P/ (3 Vline)	
3/4x	3/4x	1M 2S	3PH	x	x								I= P/ (3 Vline)	
	3/4x	3M	3PH			x	x		x	x			I= P/ (3 Vline)	
	3/4x	3M	3PH			x	x		x	x			I= P/ (3 Vline)	
	3/4x	3M	3PH				x		x		x		I= P/ (3 Vline)	
	3/4x	3M	3PH			x	x		x			x	I= P/ (3 Vline)	
3/4x	3/4x	1M 2S	3PH	x	x								I= P/ (√3 Vline)	
3/4x	3/4x	1M 2S	3PH	x	x								I= P/ (√3 Vline)	
	3/4x	3M	3PH			x	x		x	x			I= P/ (√3 Vline)	
	3/4x	3M	3PH			x	x		x	x			I= P/ (√3 Vline)	
	3/4x	3M	3PH				x		x		x		I= P/ (√3 Vline)	
	3/4x	3M	3PH			x	x		x			x	I= P/ (√3 Vline)	
3/4x	3/4x	1M 2S	3PH	x	x								I= P/ (√3 Vline)	
3/4x	3/4x	1M 2S	3PH	x	x								I= P/ (√3 Vline)	
	3/4x		3PH			x	x		x	x			I= P/ (√3 Vline)	pw>6%P
	3/4x		3PH			x	x		x	x			I= P/ (√3 Vline)	pw>6%P
	3/4x		3PH				x				x		I= P/ (√3 Vline)	pw>6%P
	3/4x		3PH	x				x					I= 1,2 (P+10%)/ (√3 Vline)	
	3/4x		3PH	x				x					I= 1,2 (P+10%)/ (√3 Vline)	
	3/4x		3PH			x	x		x	x			I= 1,2 (P+10%)/ (√3 Vline)	pw>6%P
	3/4x		3PH			x	x		x	x			I= 1,2 (P+10%)/ (√3 Vline)	pw>6%P
	3/4x		3PH				x				x		I= 1,2 (P+10%)/ (√3 Vline)	pw>6%P

(*) It is always suggested to add a margin of at least 10% to the calculation of the current value x = (Ipc) Not available

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