



The compact 1893-FGA temperature controller is designed for the use in the areas of de-icing and frost protection. It combines two functions in one device. It can either be used as a dual thermostat with a bottom threshold temperature for the heating function (for example in order to de-ice gutters) or as a self-monitoring control with a bottom alarm temperature (for example for trace heating).

Functions and characteristics:

- function selection by alternative sensor connection
- easy adjustment by means of two rotary adjusters on front
- switching capacity of primary relay 4.6 kW (20 A)* max. at 230 V
- switching capacity of secondary relay 1.38 kW (6 A)* max. at 230 V
- alarm relay as changeover relay for notification about sensor error, power failure or internal malfunctions
- optional: secondary relay 1.38 kW (6 A)** for 230 V circuit, e. g. local audio alarm or second heating level

FUNCTIONS AND OPERATION

The control function is selected by connecting the temperature sensor either to T1 (threshold value operation) or T2 (alarm temperature operation). Two rotary adjusters at the front of the device allow for an easy adjustment of the switching temperatures.

In the **threshold temperature operation** the controller acts as a two-point control. The setpoint temperature and the threshold temperature can be defined individually. The output is activated if the temperature lies in the range between the setpoint temperature and the threshold temperature. The setpoint temperature can be set in the range between -5 °C and +10 °C, the threshold temperature between -20 °C and 0 °C. The switching hysteresis is preset to +1 K for both temperatures.

In the **alarm temperature operation** the controller acts as a two-point control. The setpoint temperature and the temperature difference with regard to the alarm value can be defined individually. The output is activated as soon as the temperature falls below the setpoint value. An alarm is raised if the temperature falls below the setpoint value by more than the defined difference even though the heating is on. The setpoint temperature can be set in the range between 0 °C and 60 °C, the difference between setpoint and alarm temperature between -1 K bis -5 K or else to „alarm off“. The switching hysteresis is preset to +3 K for both temperatures.

As a self-monitoring control the 1893-FGA is mainly used for trace heating, i. e. for temperature ranges of 0 to 10 °C for water-based fluids or 40 to 50 °C for greasy media. In order to ensure that a fine-tuned adjustment is possible despite the wide temperature range of 0 °C to 60 °C, the scaling of the setpoint temperature is non-linear so that there is a higher resolution in the priority areas.

The controller can be set into a programming mode via a bridge at the "P" input. In this mode the rotary adjusters are used to set subordinate parameters of the normal control functions, the sensor type and a signaling delay.

Two bicolour LEDs are used to display the current operating mode. These LEDs also provide feedback when the parameters are adjusted.

SETTINGS AND PARAMETERS

Setting	Threshold temperature operation	Alarm temperature operation
Setpoint temperature	-5 °C to +10 °C	0 °C to +60 °C (stretched)
Threshold/alarm value	-20 °C to 0 °C	alarm off, -1 K to -5 K

Parameter	Threshold temperature operation	Alarm temperature operation
Hysteresis	+0,5 K to +2,5 K (1 K) / -0 K	+1 K to +10 K (3 K) / -0 K
Signalling delay	0 s to 30 s (10 s)	
Function of SELV relay	for notification: active/inactive (inactive)	
Function of 230 V relay (option)	for notification: active/inactive (active)	
Sensor type	Series 31 / Series 30 / Pt1000 (Series 31)	

Information in brackets = factory default settings

CONNECTIONS

Signalling (top)	Power (bottom)
NC Signalling relay, normally closed contact	R1 Signalling relay 230 V (zero-potential) *
C Signalling relay, middle contact	R2 Signalling relay 230 V (zero-potential) *
NO Signalling relay, normally open contact	SH2 Secondary relay 230 V (zero-potential), normally open
⊕ TGN bus	N2 Secondary relay 230 V (zero-potential), normally open
⊥ Ground, parameter setting	L Mains connection L (4 mm ²)
P Parameter setting	N Mains connection N (4 mm ²)
T2 Input, sensor 2	N/N1 Heating unit N/N1 (4 mm ²)
⊥ Ground, sensor 1/2	SH/SH1 Heating unit SH/SH1 (4 mm ²)
T1 Input, sensor 1	

* option, either normally open or normally closed contact

ORDERING INFORMATION

Type	Description
1893-FGA	Temperature controller as dual thermostat or self-monitoring control
1893/R-FGA	Temperature controller as Type 1893-FGA, however, with additional 230 V signalling relay (normally closed)
1893/A-FGA	Temperature controller as Type 1893-FGA, however, with additional 230 V signalling relay (normally open)
1893/L-FGA	Temperature controller as Type 1893-FGA, however with secondary 230 V/N relay (normally open)

TECHNICAL DATA (EXTRACT)

Rated voltage:	230 V, 50 Hz (acceptable voltage range 207 V to 253 V)
Power consumption:	approx. 1.5 VA
Nominal switching capacity primary relay:	4,6 kW corresponding to 20 A for rated voltage *
Signalling output (SELV):	zero-potential changeover relay, 1 A max. for 30 V= potential separation from sensor inputs: 50 V~
Secondary relay/signalling output 230 V (opt.):	zero-potential normally open/closed relay, 3 A max. for 230 VAC **
Low-voltage connections:	cage clamp terminals for 2.5 mm ² (top)
Connecting terminals load circuit:	cage clamp terminals for 4 mm ² (bottom)
Connecting terminals second. circuit (opt.):	cage clamp terminals for 2.5 mm ² (bottom)
Sensor types:	tekmar Ser. 31 (NTC acc. to DIN EN 50350), tekmar Ser. 30, Platinum sensor PT1000
Measuring range:	-30 °C (-20 °C for Series 30) to +105 °C
Enclosure:	rail-mounted device 3 HP (according to DIN 43880)
Mounting:	mounting rail TH-35 (according to DIN EN 60715)
Degree of protection, protection class:	IP 20 (according to EN 60529), II if installed properly
Pollution degree:	2
Rated surge voltage:	4000 V
Action type:	type 1.B
Area of operation:	up to 2000 m above sea level
Operating/storage temperature:	-15 °C to +40 °C / -20 °C to +70 °C, no condensation
Weight:	approx. 0.25 kg

* sum of the load on both outputs max. 20 A / 4.6 kW

** load on secondary relay max. 3 A / 0.7 kW for room temperature applications, otherwise max. 6 A / 1.4 kW

All information, descriptions and values are preliminary and may be changed by tekmar without prior notice.

The product corresponds to the following rules and regulations:

EMC Directive, Low-voltage Directive, RoHS Directive, WEEE-Reg.-No.: DE 75301302,