TC-900RG2 slim

DIGITAL CONTROLLER FOR
REFRIGERATION AND DEFROST

Version 01

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MADE IN BRAZIL

UL-Underwriters Laboratories

DESCRIPTION

The **TC-900RG2 slim** is a digital temperature controller with outputs to compressor, fan and defrost.

Application: Beverage freezers

TECHNICAL SPECIFICATIONS

- Power supply: 90~264Vac (50/60 Hz)
- Maximum load: FAN - 5(3)A / 250Vac 1/8HP - Fan output
  DEFR - 10(3)A/ 250Vac 1/4HP - Defrost output
  COMP - 16(8)A / 250Vac 1HP - Compressor output
- Sensors: S1 (Room)
  S2 (Evaporator)
- Operation temperature: 0 to 50°C
- Humidity operation: 10 to 90% RH (without condensation)

PARAMETERS ALTERATION

Put the selector keys in the desired position and press the key for 10 seconds until appear the indication tr. Release key and wait until appears the value programmed for this function, use the key again to modify this value. After adjusted the new value for the function wait 4 seconds. The controller will record the new parameter and will pass to the function td . Use the same procedure to modify the value of this function. Repite this for the functions SP and dF that will be the next to be showed in the display to be configured. After the alteration of the parameters the display comes to the indication of temperature.

INDICATION DISPLACEMENT (OFFSET)

The **TC-900RG2 slim** allows adjustments of ±5.0°C in the room sensor (S1) in relation to the standard calibration. For this just press the key for 15 seconds until appearing the indication OF . Use the same procedure to modify the value of this function.

SIGNALLING

The luminous pointer in the frontal signals the status of the controller:

Led blinking → The controller is in refrigeration mode, with the compressor and fan ON. When the instrument is in refrigeration with the stopped indication led blinks in a lesser frequency.

Led turned off → The controller is in refrigeration mode, with the compressor and the fan OFF.

Led turned on → The controller is in defrost mode, with the compressor and fan OFF and the resistances ON.

VISUAL ALARMS

99 Room sensor in short circuit or temperature above of P8

88 Room sensor opened or temperature below of P7

00 Evaporator sensor damaged or temperature in the sensor below of -30 ºC or above of 50ºC. In this situation the duration of the thawing will be of 10 minutes.

KEY (ACCESS IN THE FRONT PANEL)

To change the refrigeration to defrost or vice-versa, just a simple touch on the key. To visualize the temperature measured by the evaporator sensor (S2), keep pressed the key for 5 seconds.

OPERATION PARAMETERS — SELECTOR KEYS POSITION

Item	Parameters	0 0	0 1	1 0	1 1	
P 1	Refrigeration time	12 hours	6 hours	6 hours	10 hours	→ Programmable parameter, indication tr at display
P 2	Defrost time with the sensor of evaporator working	30 min.	30 min.	30 min.	30 min.	→ Programmable parameter, indication td at display
P 3	Defrost time with the sensor of evaporator damaged	10 min.	10 min.	10 min.	10 min.	
P 4	Control temperature (setpoint)	5.0 ºC	-6.0 ºC	-1.0 ºC	2.0 ºC	→ Programmable parameter, indication SP at display
P 5	Differential of control (hysteresis)	3.0 ºC	3.0 ºC	3.0 °C	3.0 ºC	→ Programmable parameter, indication dF at display
P 6	Minimum delay to restart the compressor	120 sec.	120 sec.	120 sec.	120 sec.	
P 7	Low temperature or room sensor open	-20 ºC	-20 ºC	-20 ºC	-20 ºC	
P 8	High temperature or room sensor in short circuit	45 ºC	45 ºC	45 °C	45 ºC	
P 9	Displacement of indication of room sensor (offset)	0.0 ºC	0.0 ºC	0.0 °C	0.0 ºC	→ Programmable parameter, indication OF in the display

FUNCTIONING DESCRIPTION

Parameters visualization

When the controller is energized, it will appear the parameters of configuration in the following order:

REFRIGERATION TIME → DEFROST TIME → SETPOINT → DIFFERENTIAL

Defrost on start

The controller will make defrost when energized if the temperature of the room sensor (S1) he will be below of 30 ºC and temperature of the sensor of the evaporator (S2) below of 15 ºC.

Refrigeration

The compressor turns on and turns off by temperature, according the value adjusted in the P4 parameter (see table above) during the refrigeration time (P1). After elapsed the time the controller will initiate a defrost cycle (if the temperature of the room sensor will be below of 30 ºC), turning off the compressor and the evaporator fan. During the stage of refrigeration evaporator fan remains turned on only while the compressor will be functioning .

Defrost

The defrost will be finished when the temperature in the evaporator (S2) reaches 15 ºC or the temperature in the room (S1) reach 30 ºC . Otherwise, the defrost will be finished after elapsed the maximum defrost time configured (P2 or P3). During the defrost the last temperature measured in the refrigeration cycle will be frozen in the display. The indication will be defrosted when this temperature be reached again or 15 minutes after the end of the defrost.

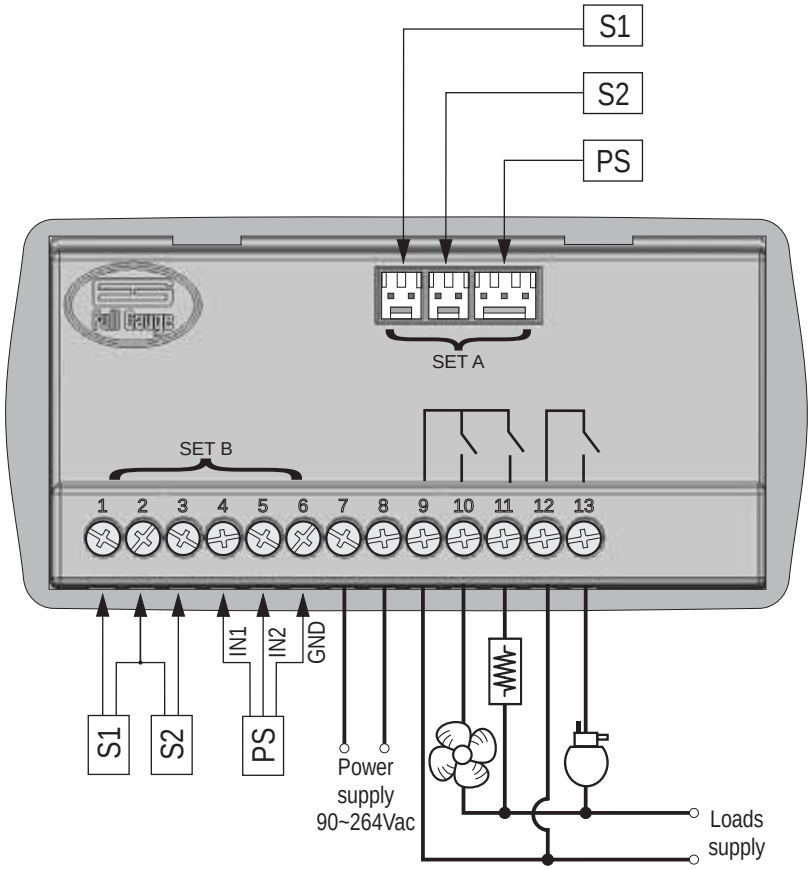
Delay

When the instrument is energized or the temperature in the S1 sensor reaches the setpoint (compressor turn off), the delay (P6) starts to be counted, preventing that the compressor must be restarted in a period very short. Even than by temperature it wold be necessary to turn on the compressor the delay (P6) is respected.

External selector

The external selector allows, with a combination of two keys, to define the functioning of the controller with programmable presets.

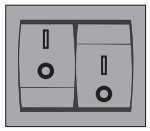
WIRING DIAGRAM FOR **TC-900RG2 slim**



S1 Room sensor (black cable)

S2 Evaporator sensor (gray cable)

PS Presets selector



FAN OUTPUT
5(3)A / 250Vac 1/8HP

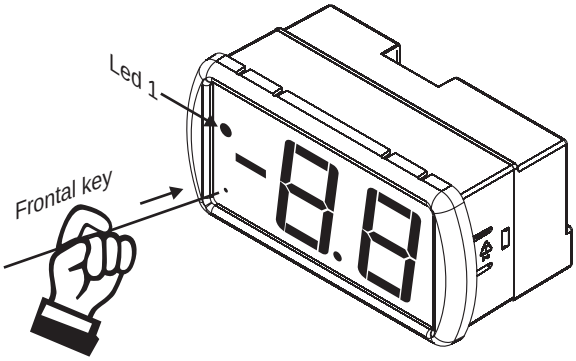
DEFROST OUTPUT
10(3)A / 250Vac 1/4HP

COMPRESSOR OUTPUT
16(8)A / 250Vac 1HP

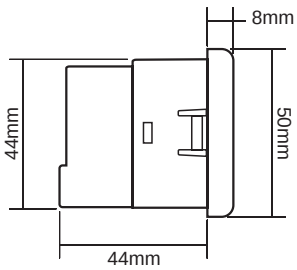
NOTE1: Connect the temperature sensors and the presets selector in the connectors set A or B (according to the connection type of the supplied acessories) but not in both sets at the same time.

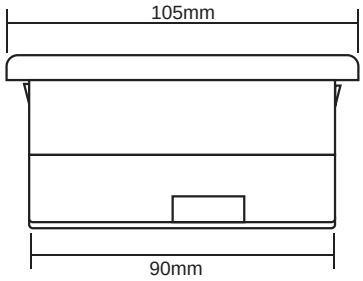
NOTE2: If necessary, the sensor cables may be increased by the user until 200m using PP 2 x 24AWG cable.

KEY ACCES (FRONTAL PART) AND INDICATION



DIMENSIONS





IMPORTANT

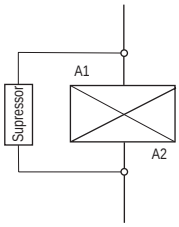
As chapters of IEC 60364 norm:

1: Install protectors against over voltage on power supply.

2: Sensor cables and computer signals can be together, however not at the same place where power supply and load drive pass for.

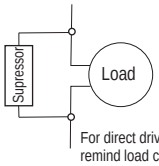
3: Install suppressor of transient in paralell to loads to increase the usefull life of relays. For more information contact our Application Eng. Department through *e-mail support@fullgauge.com or dial +55 51 34753308.*

Wiring diagram of supressors in contactors



A1 and A2 are the contactor coil

Wiring diagram of supressor directly



For direct drive remind load current specified