TC-900RG2P

DIGITAL CONTROLLER FOR
REFRIGERATION AND DEFROST

Version 01

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MADE IN BRAZIL

TC900RG2P-02I-10653

DESCRIPTION

The **TC-900RG2P** is a digital controller of temperature with outputs to compressor, fan, defrost and hot gas.
With big display, the temperature can be sight oh far.
Aplication: Expositors of beer with fiancé veil effect

TECHNICAL SPECIFICATIONS

- **Power supply:** 110 or 220 Vac (50/60 Hz) external tension selector
- **Maximum load:** 16 Amperes - Compressor output
  10 Amperes - Fan and heater outputs
- **Dimensions:** 96,8 x 49 x 31 mm
- **Sensors:** two of NTC type with cable of 1,5 m
- **Operation temperature:** 0 to 60°C
- **Humidity operation:** 10 to 90% HR (without condensation)

PARAMETERS ALTERATION

Put the selector keys in the desired position and pressthe key for 10 seconds until appearing 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-900RG2P allows adjustments of ±5.0°C in the ambience sensor (S1) in relation to the standart calibration. For this just press the key for 15 seconds until appearing the indication OF . Use th alue of this function.

SIGNALING

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 resistences ON.

VISUAL ALARMS

99 Ambience sensor in short circuit or temperature above of P8

88 Ambience 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 (FRONTAL ACCESS OR IN THE BACK PART)

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 in the display
P 2	Time to defrost with the sensor of evaporator on	30 min.	30 min.	30 min.	30 min.	→ Programmable parameter, indication td in the display
P 3	Time to defrost 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 in the display
P 5	Diferential of control (histeresys)	3.0 ºC	3.0 ºC	3.0 ºC	3.0 ºC	→ Programmable parameter, indication dF in the display
P 6	Minimum delay to restart the compressor	120 sec.	120 sec.	120 sec.	120 sec.	
P 7	Low temperature or ambience sensor open	-20 ºC	-20 ºC	-20 ºC	-20 ºC	
P 8	High temperature or ambience sensor in short circuit	45 ºC	45 ºC	45 °C	45 ºC	
P 9	Displacement of indication of ambience sensor (offset))	0.0 ºC	0.0 ºC	0.0 ºC	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 starts
The controller will make defrost when energized if the temperature of the ambience sensor (S1) he will be below of 30 ºC and temperature of the sensor of the evaporator (S2) below of 15 ºC.

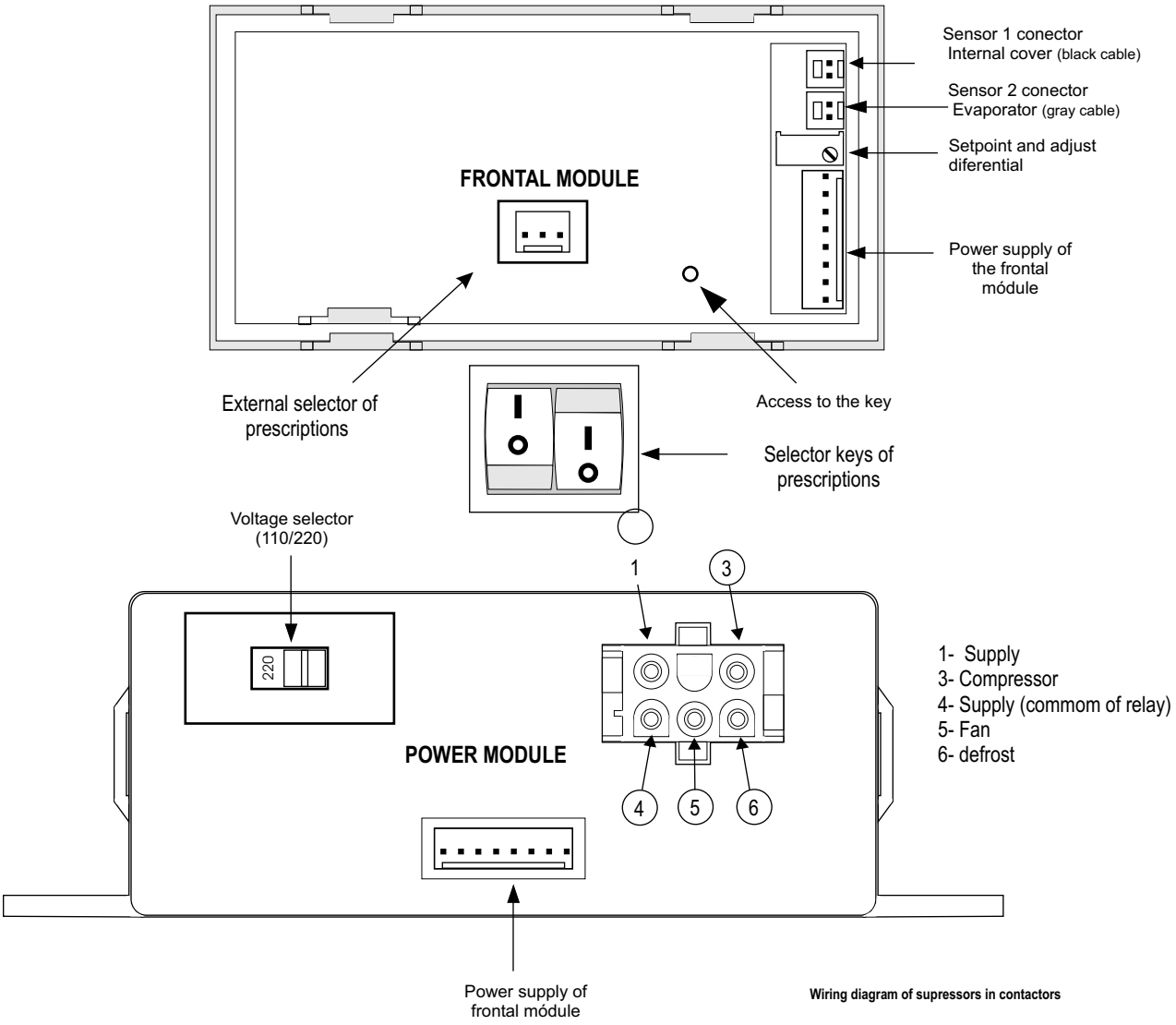
Refrigeration
The compressor turns on and turns off by temperature, according the value adjusted in the P4 parameter (see table above) during the refrigeration time (P1). After elapsed the time the controller will initiate a defrost cycle (if the temperature of the ambience sensor will be below of 30 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 finishedwhen the temperature in the evaporator (S2) reach 15 ºC or in the a temperature in the ambience (S1) reach 30 ºC . In contrary case, the defrost will be finished after elapsed the maximum defrost time configured (2 P 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 reach the setpoint (compressor turn off), the delayime (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 prescriptions.

WIRING DIAGRAM FOR TC-900RG2P



IMPORTANT

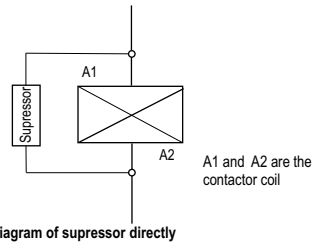
As chapters of IEC 60364 norm:

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



Wiring diagram of supressor directly