



MT-512R_λ

DIGITAL CONTROLLER FOR COOLING
WITH NATURAL DEFROST THROUGH
COMPRESSOR SHUTDOWN

Ver.09



MT512RV09-02T-11715

1. DESCRIPTION

The **MT-512R_λ** is a temperature controller and indicator, with a joined cyclical timer. Controls cooling and defrosts through compressor shutdowns.

Product complies with CE (European Union) and UL Inc. (United States and Canada).

2. APPLICATIONS

- Counters
- Cooled chambers

3. TECHNICAL SPECIFICATION

- Power supply: MT-512Ri → 115 or 230 Vac ±10%(50/60 Hz)
MT-512RIL → 12 or 24 Vac/dc
- Control temperature: -50 to 105°C (-58 to 221°F)
- Maximum current: NO → 16(8)A/250Vac 1HP
NC → 8A/250Vac
- Dimensions: 71 x 28 x 71mm
- Operating temperature: 0 to 50°C / 32 to 122°F
- Operating humidity: 10 to 90% RH (without condensation)

CLASSIFICATION ACCORDING TO IEC60730-2-9 STANDARD:

- Temperature limit of the installation surface: 50°C / 122°F
- Type of construction: Built-in electronic controller
- Automatic action: Type 1
- Control of pollution: Level 2
- Impulse voltage: 1.5kV
- Temperature for the test of sphere pressure: 75°C and 125°C / 167°F and 257°F
- Insulation: Class II

4. CONFIGURATIONS

4.1 - Control temperature adjust (SETPOINT)

- Press **SET** for 2 seconds until appears **SEL** and then release the key. The set control temperature will appear.
- Use the **▼** and **▲** keys in order to change the value and, when ready, press **SET** to record.

4.2 - Parameters table

Configuration parameters protected by access code.

Fun	Description	CELSIUS				FAHRENHEIT			
		Min	Max	Unit	Standard	Min	Max	Unit	Standard
F01	Access code: 123 (one hundred and twenty three)	-	-	-	-	-	-	-	-
F02	Indication offset	-5.0	5.0	°C	0	-9	9	°F	0
F03	Minimum setpoint allowed for the end user	-50	105	°C	-50	-58	221	°F	-58
F04	Maximum setpoint allowed for the end user	-50	105	°C	75.0	-58	221	°F	167
F05	Control differential (hysteresis)	0.1	20.0	°C	0.1	1	40	°F	2
F06	Delay to turn the cooling output on	0	999	sec.	20	0	999	sec.	20
F07	Cooling time	1	999	min.	240	1	999	min.	240
F08	Defrosting time (*)	0	999	min.	30	0	999	min.	30
F09	Initial state up on energizing the instrument	0-cooling	1-degelo	-	0-cooling	0-cooling	1-degelo	-	0-cooling
F10	Indication of the temperature locked during defrost (**)	0-no	1-yes	-	0-no	0-no	1-yes	-	0-no
F11	Delay on the activation of the instrument	0	240	min.	0	0	240	min.	0
F12	Additional time at the end of the first cycle	0	240	min.	0	0	240	min.	0
F13	Situation of the compressor with the damaged sensor	0-off	1-on	-	0-off	0-off	1-on	-	0-off
F14	Intensity of the digital filter (***)	0	9	-	0	0	9	-	0

* Heating operation mode - To make the instrument work in heating operation mode, simply adjust the F08 function with minimum value until **HEA** appears.

** Frozen indication on display - If F10 is enabled, the indication is only released in the next cooling cycle after the temperature reaches that "locked" value again or after 15 minutes in refrigeration (as security).

*** This filter aims at simulating an increase of the mass of sensor, thus increasing its response time (thermal inertia). The larger the value adjusted in this function, the longest the response time of sensor.

Atypical application requiring this filter is the freezer for ice cream or frozen goods, because when the door is opened a hot air mass reaches the sensor directly, causing the indication of the measured temperature to rise quickly and the compressor to be activated unnecessarily many times.

4.3 - Parameters alteration

- Access function "F01" by simultaneously pressing keys **▼** and **▲** for 2 seconds. When the message **FUN** appears release the keys, when the indication **F01** appears on the display press the **SET** key and use **▼** or **▲** to enter the access code (123) When ready press the **SET** Button to confirm.
- Use keys **▼** and **▲** to access the desired function.
- After selecting the function, press **SET** (press once quickly) to view the value configured for that function.
- Use the **▼** and **▲** keys to change the value and, when ready, press **SET** to memorize the configured value and return to the function menu.
- To exit the menu and return to the normal operation (temperature indication), press **SET** (hold it in) until **---** appears.

5. FUNCTIONS WITH FACILITATED ACCESS

5.1 - Maximum and minimum temperature logs

Press the **▲** key. The minimum and maximum temperatures registered will appear.

Note: To restart the logs you just have to keep the **▲** key pressed during the viewing of the minimum and maximum temperatures until **SEL** to be displayed.

Manual defrost:

- To change from "cooling" to "defrost" or vice-versa, irrespective of the programming, hold **▲** key in for four seconds, until **DEF** or **REF** appears in the display.

To visualize the status and the elapsed time, press **▼**.

DEL → Initial delay **REF** → Refrigeration **DEF** → Defrosting

6. SIGNALLING

REFRIG - Cooling output on

DEFROST - Performing natural defrost

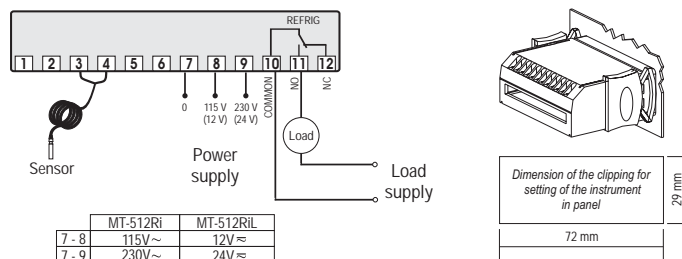
ERR - Sensor disconnected or temperature out of the specified range.

7. SELECTION OF THE UNIT (°C / °F)

In order to define the unit that the instrument will operate in, enter function "F01" with the access code 231 and confirm with the **SET** key. Press the **▲** key and the indication **UN** will appear.

Press **SET** to choose between **°C** or **°F** and confirm. After selecting the unit the **FAC** message will appear, and the instrument will return to the function "F01". Every time that the unit is changed, the parameters should be reconfigured, since they assume the "standard" values.

8. WIRING DIAGRAM



Note: The length of the sensor cable may be increased by the user up to 200 meters, using a PP 2 x 24 AWG cable. For immersion in water, use thermometric well.

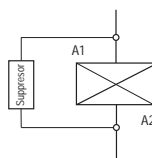
IMPORTANT

According to the chapters of norm IEC 60364:

- 1: Install protector against overvoltage on the power supply.
- 2: Sensor cables and signal cables of the computer may be joined, but not in the same electric conduit through which the electric input and the activation of the loads run.
- 3: Install transient suppressors (RC filters) parallel to the loads as to increase the product life of the relays.

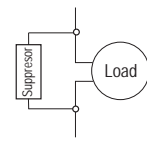
For more information, please contact our Technical Support by e-mail: support@fullgauge.com or by phone +55 51 3475.3308.

Schematic for the connection of suppressors to contactors



A1 and A2 are the contactor coil terminals.

Schematic for the connection of suppressors to direct activation loads



For direct activation the maximum specified current should be taken into consideration.



This adhesive vinyl (included inside the packing) protects the instruments against water drippings, as in commercial refrigerators, for example. Do the application after finishing the electrical connections.

Remove the protective paper and apply the vinyl on the entire superior part of the device, folding the flaps as indicated by the arrows.

