



MT-530E Super Ver.06

DIGITAL CONTROLLER AND INDICATOR OF TEMPERATURE AND HUMIDITY WITH SERIAL COMMUNICATION TO SITRAD

- Functions lockdown
- Buzzer
- System supervisor
- Serial programming
- Protection level
- Modbus Protocol



1. DESCRIPTION

The **MT-530E Super** has three outputs: one for temperature control, one for humidity control and a third auxiliary output that acts as a second stage temperature control, humidity control, alarm or timer cyclical.

This controller is indicated for low and medium relative humidity (10-85% non-condensing). Its temperature sensors and humidity are united in a single bulb, reducing installation space and wiring. It also includes an audible alarm (buzzer) and an intelligent system locking functions, preventing unauthorized people from changing the control parameters.

The instrument features a serial communication for connection to Sitrad®. Product complies with UL Inc. (United States and Canada).

2. APPLICATION

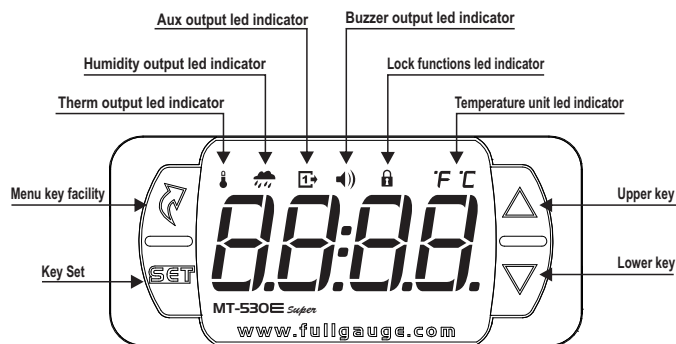
- Humidifiers / dehumidifiers
- Grains drying
- Laboratories
- Surgical rooms
- Climatized cellars
- Information technology centers

*For high percentage of humidity in the presence of water condensation, use the model AHC-80 Ri plus.

3. TECHNICAL SPECIFICATIONS

Power Supply	MT-530E Super: 115 or 230 Vac ±10%(50/60 Hz) MT-530EL Super: 12 or 24 Vac/dc +10%
Control Temperature	-10 to 70.0 °C ±1.5°C (with resolution of 0.1°C) 14 to 158 °F ±3°F (with resolution of 0.1°F)
Operation temperature	0 to 50°C / 32 to 122°F
Control humidity	10 to 85% RH ± 5%RH (with resolution of 0.1%RH)
Operation humidity	10 to 85% RH (without condensation)
Load current	Therm $\bar{\Delta}$: 16(8)A/250Vac 1HP Humid $\bar{\Delta}$: 5(3)A/250Vac 1/8HP Aux $\bar{\Delta}$: 5(3)A/250Vac 1/8HP
Dimensions (mm)	76 x 34 x 77 mm / 2,99" x 1,33" x 3,03" W x H x D
Dimensions of the clipping for fixing of the instrument	71 ± 0,5 x 29 ± 0,5 mm (see item 5) 2,79" ± 0,02" x 1,14" ± 0,02"

4. INDICATIONS AND KEYS



6. OPERATIONS

6.1 Facilitated menu map

By pressing the button , it is possible to navigate through the function menus. See the map functions below:

FUNCTION SELECTION



MANUAL DEFROST*



THERM OUTPUT SETPOINT



HUMID OUTPUT SETPOINT



AUX OUTPUT SETPOINT*



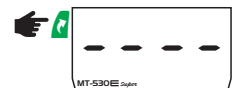
INHIBITOR BUZZER*



LOCK FUNCTION



EXIT THE MENU



PROCESS VIEWER



TOGGLE MEASUREMENT DISPLAY



CLEAR VALUES MAX. AND MIN.



TEMPERATURE RECORD MIN. AND MAX.

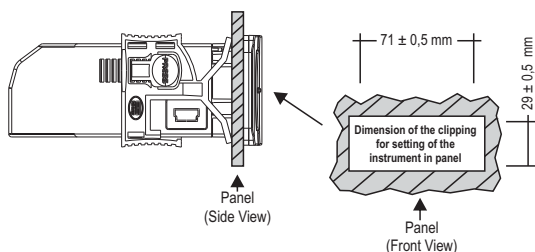


CONTROL FUNCTIONS SHUTDOWN



* These parameters are displayed when necessary.

5. INSTALLATION - ELECTRICAL CONNECTIONS AND PANEL



IMPORTANT

THE USE OF APPROPRIATE TOOLS IS ESSENTIAL TO AVOID DAMAGE IN THE CONNECTION AT INSTRUMENT TERMINALS:

- ⊖ SCREWDRIVER SLOT 3/32"(2.4mm) FOR ADJUSTMENTS IN THE SIGNAL TERMINALS;
- ⊕ SCREWDRIVER PHILLIPS #1 FOR ADJUSTMENTS IN THE POWER TERMINALS.

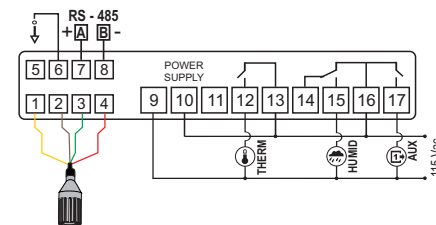
ATTENTION

FOR INSTALLATIONS WHERE A SEALING IS REQUIRED TO AVOID LIQUID CONTACT, THE CUT FOR THE CONTROLLER MUST BE OF 70.5x29mm MAXIMUM. THE SIDE LOCKS MUST BE FIXED SO IT PRESSES THE RUBBER SEALING AVOIDING INFILTRATION BETWEEN THE CUT AND THE CONTROLLER.

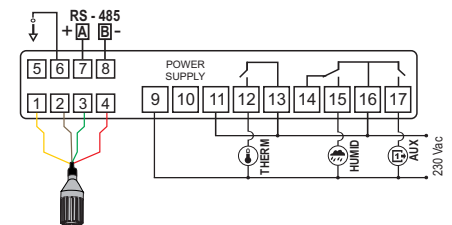
LEGEND

- 1 Yellow
- 2 Brown
- 3 Green
- 4 Red

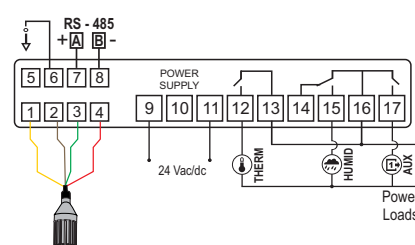
Connection 115 Vac



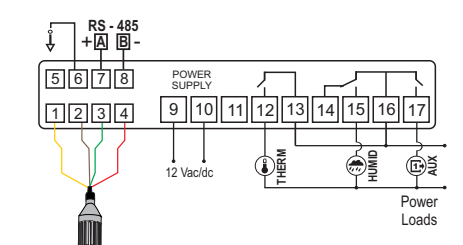
Connection 230 Vac



Connection 24 Vac/dc



Connection 12 Vac/dc



6.2 Facilitated key map

When the controller is on display temperature, the following shortcut keys are used for the following functions:

	Press 2 sec: Adjust setpoint.
	Short press: Switch display of temperature or humidity for 4s.
	Press 2 sec: When the buzzer is active inhibits the alarm.
	Press 4 sec: Displays thermostat processes.
	Short press: Display of records minimum and maximum measures.
	Press 2 sec: When the record is displayed, clear the history.
	Press 4 sec: Perform manual defrosting.
	Short press: Easy menu.
	Press 4 sec: Shutdown of control functions.
	Enter the function selection.

6.3 Basic operations

6.3.1 Adjusting the desired temperature and humidity (setpoint)

To enter the setup menu press the setpoints for 2 seconds. The message "" will appear on the display then the value of the setpoint output Therm adjustment. Use or keys to modify the value and confirm by pressing . Then the message "" will appear indicating the adjustment of setpoint output Humid. Again use the or keys to modify the value and confirm by pressing . If the operating mode for the Aux output require setting a setpoint the message "" will appear and it can be adjusted the same way is the previous ones. At the end the message "" will appear indicating setup completion. The setpoints can also be adjusted individually on the facilitated menu.

6.3.2 Function Lock

The use of the function block brings greater security to the operation of the instrument. With it active, the setpoints and other parameters can be visible to the user, but protected against undue changes (=2) or you can just block changes in the control functions leaving the adjustment of thereleased setpoints (=1). To lock the functions, access the option in the quick access menu using the (F1atec) key and confirm by pressing the key. The message will be displayed if blocking is disabled. At this moment, press and hold the key for the time configured in function .



Activation will be indicated by the message and will only occur if function is set to 1 or 2. To deactivate the lock, turn off the controller and turn it on again with the key pressed. Keep the key pressed until the message indicates unlocking (10 seconds).

6.3.3 Control Functions Shutdown

Turning off the control functions allows the controller to operate only as a temperature indicator, keeping the control outputs and alarms turned off. The use of this resource is enabled by the control functions shutdown function . When enabled, the control and alarm functions are turned off () or on () through the quick access menu in the option .



When the control functions are turned off, the message will be displayed alternating with the temperature and the other messages. It is also possible to turn off/on the control functions by pressing the key for 4 seconds.

7.2 Parameter table

Fun	Description	CELSIUS				FAHRENHEIT			
		Min	Max	Unit	Standard	Min	Max	Unit	Standard
	Access code: 123 (one hundred and twenty-three)	-99	999	-	-	-99	999	-	-
	Instrument energization delay	0(Off)	240	min.	0(Off)	0(Off)	240	min.	0(Off)
	Thermostat operation mode (THERM output)	0 - refrig.	1 - heat.	-	0 - refrig.	0 - refrig.	1 - heat.	-	0 - refrig.
	Minimum setpoint allowed to the end user (thermostat)	-10.0	70.0	°C	-10.0	14.0	158.0	°F	14.0
	Maximum setpoint allowed to the end user (thermostat)	-10.0	70.0	°C	70.0	14.0	158.0	°F	158.0
	Control differential (hysteresis) of the thermostat	0.1	20.0	°C	1.5	0.1	36.0	°F	2.7
	Minimum delay to turn the thermostat output on	0(Off)	999	sec.	0(Off)	0(Off)	999	sec.	0(Off)
	Humidistat operation mode (HUMID output)	0	3	-	1	0	3	-	1
	Minimum setpoint allowed to the end user (humidistat)	0.0	100.0	%UR	0.0	0.0	100.0	%UR	0.0
	Maximum setpoint allowed to the end user (humidistat)	0.0	100.0	%UR	100.0	0.0	100.0	%UR	100.0
	Control differential (hysteresis) of the humidistat	0.1	20.0	%UR	5.0	0.1	20.0	%UR	5.0
	Minimum delay to turn the humidistat output on	0(Off)	999	sec.	0(Off)	0(Off)	999	sec.	0(Off)
	Humidity output (time on)	0	999	sec.	5	0	999	sec.	5
	Humidity output (time off)	0	999	sec.	5	0	999	sec.	5
	Auxiliary output operation mode (AUX)	0	11	-	5	0	11	-	5
	Minimum setpoint allowed to the end user (AUX output)	10.0/0.0	70.0/100.0	°C/%UR	-10.0/0.0	14.0/0.0	158.0/100.0	°F/%UR	14.0/0.0
	Maximum setpoint allowed to the end user (AUX output)	10.0/0.0	70.0/100.0	°C/%UR	70.0/100.0	14.0/0.0	158.0/100.0	°F/%UR	158.0/100.0
	Control differential (hysteresis) of the AUX output	0.1	20.0	°C/%UR	1.5/5.0	0.1	36.0/20.0	°F/%UR	2.7/5.0
	Minimum delay to turn the AUX output on	0(Off)	999	sec.	0(Off)	0(Off)	999	sec.	0(Off)
	Time base of AUX output timer	0	3	sec./min.	0	0	3	sec./min.	0
	AUX output (time on)	0	999	sec./min.	5	0	999	sec./min.	5
	AUX output (time off)	0	999	sec.	5	0	999	sec.	5
	Low room temperature alarm	-10.0	70.0	°C	-10.0	14.0	158.0	°F	14.0

6.3.4 Registers of minimum and maximum measures

Pressing key or also through the quick access menu (see chapter 6), the message will appear, followed by the minimum and maximum recorded temperatures. To turn the current minimum and maximum values off, press key (short press) repeatedly, until the message is displayed, finally press the button to confirm. Another way is to press 2 seconds while displaying the records. This operation is indicated by the message .

6.3.5 To visualize humidity or temperature

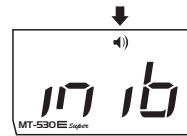
It is possible to view the other measure (humidity or temperature) by pressing .



Indication:
- "T" temperature record
- "H" record humidity

6.3.6 Buzzer Inhibit

When buzzer starts it can be inhibited by pressing for two seconds or by quick access menu.



6.3.7 Thermostat Process Visualization

To view the thermostat status and elapsed time (THERM output), press the key for 4 seconds. In this way, the controller will display the stage and elapsed time of the current process, and the following messages may be displayed on the display:

- control turned off
 - initial delay
 - refrigeration
 - heating
 - defrost

6.3.8 Manual defrost THERM output

The defrost process can be activated or deactivated manually through the quick menu in the option or by pressing the key for 4 seconds. Activation or deactivation will be indicated by the message or , respectively.

6.3.9 Unit Selection (°C / °F)

In order to define the unit that the instrument will operate in, enter function "" with the access code and confirm with the key. then the user can select the unit by pressing the keys or where there are alternating messages or . Press the key to confirm the desired unit. Therefore, the corresponding indication unit or will be turned on. Every time the unit is changed, the parameters must be reconfigured, since they assume the "standard" values.

7. ADVANCED OPERATIONS

7.1 Changing the parameters of the controller

Access function by pressing keys and simultaneously for 2 seconds until the message or through the quick access menu. After that, will appear, then, press the key (short press). Use keys or to enter with access code and, when ready, press . Use keys or to access the desired function. After selecting the function, press the key (short press), to visualize the set value for that function. Use keys or to change the value, and when ready, press to memorize the set value and return to the functions menu. To exit the menu and return to normal operation (temperature indication) press (long press) until appears on the display.

Note: If the lock function is active, by pressing the or to change the value of the function, the controller will display the message and will not allow to set the of parameter.

Fun	Description	CELSIUS				FAHRENHEIT			
		Min	Max	Unit	Standard	Min	Max	Unit	Standard
F24	High ambient temperature alarm	-10.0	70.0	°C	70.0	14.0	158.0	°F	158.0
F25	Low ambient humidity alarm	0.0	100	%UR	0.0	0.0	100	%UR	0.0
F26	High ambient humidity alarm	0.0	100	%UR	100.0	0.0	100	%UR	100.0
F27	Minimum delay to turn the AUX output on (alarm mode)	0	999	min.	0	0	999	min.	0
F28	Buzzer operation mode	0	1	-	1	0	1	-	1
F29	Acting point of Buzzer by low temperature	-10.0	70.0	°C	-10.0	14.0	158.0	°F	14.0
F30	Acting point of Buzzer by high temperature	-10.0	70.0	°C	70.0	14.0	158.0	°F	158.0
F31	Acting point of Buzzer by low humidity	0.0	100	%UR	0.0	0.0	100	%UR	0.0
F32	Acting point of Buzzer by high humidity	0.0	100	%UR	100.0	0.0	100	%UR	100.0
F33	Maximum time of the activated THERM output to activate the alarm	0(Off)	999	min.	0(Off)	0(Off)	999	min.	0(Off)
F34	Maximum time of the activated HUMID output to activate the alarm	0(Off)	999	min.	0(Off)	0(Off)	999	min.	0(Off)
F35	Maximum time of the activated AUX output to activate the alarm	0(Off)	999	min.	0(Off)	0(Off)	999	min.	0(Off)
F36	Buzzer time on	0	999	seg.	1	0	999	sec.	1
F37	Buzzer time off	0	999	seg.	1	0	999	sec.	1
F38	Inhibition time of Buzzer during electrical supply	0	999	min.	0	0	999	min.	0
F39	Status of outputs in case of alarm	0	1	-	0	0	1	-	0
F40	Thermostat cooling time (interval between defrosts)	1	9999	min	240	1	9999	min	240
F41	Thermostat defrost time	0(Off)	999	min	0(Off)	0(Off)	999	min	0(Off)
F42	Thermostat initial state when powering up the controller	0-refrig.	1-defrost	-	0-refrig.	0-refrig.	1-defrost	-	0-refrig.
F43	Additional time at the end of the first refrigeration cycle	0(Off)	240	min	0(Off)	0(Off)	240	min	0(Off)
F44	View mode	0	2	-	0	0	2	-	0
F45	Shifting the temperature display (temperature offset)	-20.0	20.0	°C	0.0	-36.0	36.0	°F	0.0
F46	Offset of the humidity indication (humidity offset)	-20.0	20.0	%UR	0.0	-20.0	20.0	%UR	0.0
F47	Function lock mode	0	2	-	0	0	2	-	0
F48	Time to lock functions	15	60	sec.	15	15	60	sec.	15
F49	Control functions shutdown	0(Off)	2	-	0(Off)	0(Off)	2	-	0(Off)
F50	Network equipment address RS-485	1	247	-	1	1	247	-	1

7.2.1 Parameters description

F01 - Access code: 123 (one hundred and twenty-three):

It is required for changing the configuration parameters. To visualize the adjusted parameters, it is not necessary to insert this access code.

F02 - Instrument energization delay:

When the instrument is turned on, it may remain for a while with its control functions disabled, delaying the start of the process. During this time, it only works as a temperature and/or humidity indicator. It serves to avoid peak electricity demands, in case of failure and return of it when there are multiple devices connected to the same grid. To do this, simply set different times for each device.

F03 - Thermostat operation mode (THERM output):

- 0 Refrigeration
- 1 Heating

F04 - Minimum setpoint allowed to the end user (thermostat):

F05 - Maximum setpoint allowed to the end user (thermostat):

To prevent incorrect temperature setting.

F06 - Control differential (hysteresis) of the thermostat:

It is the difference of temperature (hysteresis) between ON and OFF the THERM output.

F07 - Minimum delay to turn the thermostat output on:

It is the minimum time that the thermostat will keep turned off, it means, the space of time between the last stop and the next start.

F08 - Humidistat operation mode (HUMID output):

- 0 Dehumidification
- 1 Humidification
- 2 Dehumidification by resistance linked to the thermostat

In this option, the thermostat output has priority over humidity. Humidity is controlled only if the THERM output is turned off.

- 3 Hot gas dehumidification linked to the thermostat

In this option, the thermostat output has priority over humidity. When the temperature reaches the refrigeration setpoint, the THERM output remains on and the HUMID output starts to control the humidity through the reversing valve. The two outputs are switched off when the humidity setpoint is reached.

F09 - Minimum setpoint allowed to the user (humidistat):

F10 - Maximum setpoint allowed to the user (humidistat):

Electronic limits whose purpose is to prevent too high or too low setpoint humidities are set.

F11 - Control differential (hysteresis) of the humidistat:

It is the difference of humidity (hysteresis) between turn ON and turn OFF the HUMID output.

F12 - Minimum delay to turn the humidistat output on:

It is the minimum time that the HUMID output will keep turned off, it means, the space of time between the last stop and the next start.

F13 - Humidity output (time on):

It allows to adjust the time that HUMID output will keep turned on.

F14 - Humidity output (time off):

It allows to adjust the time that HUMID output will keep turned off.

Note: [F13] and [F14] functions control a cyclical program (in seconds) for the humidistat output. This cyclical program allows that pulverized water has time to transform in relative air humidity. To disable this function, adjust the values to zero.

F15 - Auxiliary output operation mode (AUX):

- 0 Refrigeration
- 1 Heating
- 2 Dehumidification
- 3 Humidification
- 4 Intra-range alarm

- 5 Extra-range alarm

- 6 Independent cyclic timer

- 7 Cyclic timer operating only when the temperature reaches the setpoint (THERM output deactivated)

- 8 Cyclic timer operating only when the humidity reaches the setpoint (HUMID output deactivated)

- 9 Cyclic timer operating when the temperature or humidity reaches their setpoint

- 10 Cyclic timer operating only when the temperature and humidity reaches their setpoints

- 11 Evaporator fan: The auxiliary output is activated together with the thermostat output.

If [F08] = 2 or 3 (a humidistat linked to the thermostat), the auxiliary output will also activate if the humidistat output is active. If defrost is activated, the fan will turn on during the defrost stage (natural defrost with forced ventilation).

Note: When changing the value of this function the following parameters will be automatically adjusted with their default values: [F16], [F17], [F18] and setpoint for the AUX output.

F16 - Minimum setpoint allowed to the user (AUX output):

F17 - Maximum setpoint allowed to the user (AUX output):

Electronic limits whose purpose is to prevent that too high or too low setpoint values are set.

The limits will depend on the operation mode of the output adjusted in [F15].

F18 - Control differential (hysteresis) of the AUX output:

It is the difference of temperature or humidity (hysteresis) between turn ON and turn OFF the AUX output. This function depends on the operation mode of the output adjusted in [F15].

F19 - Minimum delay to turn the AUX output on:

It is the minimum time that the AUX output will keep turned off, it means, the space of time between the last stop and the next start. This time is valid only when AUX output is configured in the control mode ([F15] configured in 0, 1, 2 or 3).

F20 - Time base of AUX output timer:

Allows configuration of the on or off time scale for AUX output cyclic timer.

Value	Time on (F21)	Time off (F22)
0	Seconds	Seconds
1	Minutes	Minutes
2	Seconds	Minutes
3	Minutes	Seconds

F21 - AUX output (time on):

It is the time that AUX output will keep turned on when set to alarm or cyclical timer. See [F15].

F22 - AUX output (time off):

It is the time that AUX output will keep turned off when set to alarm or cyclical timer. See [F15].

F23 - Low room temperature alarm:

Temperature for activation of the low temperature alarm.

F24 - High room temperature alarm:

Temperature for activation of the high temperature alarm.

F25 - Low room humidity alarm:

Humidity for activation of the low humidity alarm.

F26 - High room humidity alarm:

Humidity for activation of the high humidity alarm.

F27 - Minimum delay to turn the AUX output on (alarm mode):

It is the minimum time that the AUX output will keep turned off after controller initialization. This time is valid only when AUX output will be configured in the alarm mode ([F15] configured in 4 or 5).

F28 - Buzzer operation mode:

- 0 Intra-range alarm
- 1 Extra-range alarm

F29 - Acting point of Buzzer by low temperature:

It is the minimum temperature to trigger the buzzer the configured Operation Mode of Buzzer .

F30 - Acting point of Buzzer by high temperature:

It is the superior value of temperature to the buzzer alarm act as the configured Operation Mode of Buzzer .

F31 - Acting point of Buzzer by low humidity:

It is the inferior value of humidity to the buzzer alarm act as the configured Operation Mode of Buzzer .

F32 - Acting point of Buzzer by high humidity:

It is the superior value of humidity to the buzzer alarm act as the configured Operation Mode of Buzzer .

F33 - Maximum time of the activated THERM output to activate the alarm:

Allows configuring the maximum time the output THERM can stay activated without reaching the setpoint before activating the audible alarm (BUZZER). To deactivate this function, just decrement the value until the message is displayed.

F34 - Maximum time of the activated HUMID output to activate the alarm:

Allows configuring the maximum time the output HUMID can stay activated without reaching the setpoint before activating the audible alarm (BUZZER). To deactivate this function, just decrement the value until the message is displayed.

F35 - Maximum time of the activated AUX output to activate the alarm:

Allows configuring the maximum time the output AUX can stay activated without reaching the setpoint before activating the audible alarm (BUZZER). To deactivate this function, just decrement the value until the message is displayed.

F36 - Buzzer time on:

It is the time that the Buzzer will be turned on (cycle on). To turn it off the sonore alarm (Buzzer) adjust the value "0" to this function.

F37 - Buzzer time off:

It is the time that the buzzer will be turned off (cycle off). To turn the sonore alarm (Buzzer) always on, adjust the value "0" to this function.

F38 - Inhibition time of Buzzer during electrical supply:

It is the time where the alarm will be kept turned off even if in alarm conditions. It serves to inhibit the buzzer during the time while the system do not reaches the working control temperature.

F39 - Output status in case of alarm:

- Status output do not change in case of alarm;
- Turn off the output THERM, HUMID and AUX;

Note: The AUX output will not turn off if it is set to alarm output intra-extra range or cyclic timer. In case of sensor failure the outputs will be switched off independently of the parameter settled in that function.

F40 - Thermostat cooling time (interval between defrosts):

Corresponds to the time that the controller will operate in refrigeration, at the end of this time the controller enters the defrost process.

F41 - Thermostat defrost time:

It is the duration of the defrost. During this period, the relay will remain off, at the end of which, the controller will return to the refrigeration state.

Note: During the defrost process, high/low temperature alarms are disregarded.

F42 - Initial state of the thermostat when powering up the controller:

It makes it possible to perform a defrost when the controller is energized.

F43 - Additional time at the end of the first refrigeration cycle:

It serves to increase the refrigeration time only in the first refrigeration cycle. In installations with several pieces of equipment, it is possible to avoid demand peaks, causing the defrosts to be carried out at different times, by assigning different values to this function.

Note: The defrost parameters (to) apply only to the main thermostat (THERM output). The defrost functionalities are only available if the THERM output is configured as cooling (= 0) and the thermostat defrost time is different from .

F44 - Display mode:

- Alternated indication of temperature and humidity
- Only indication of temperature
- Only indication of humidity

F45 - Temperature display offset:

It allows to compensate eventual shunting lines in the reading of temperature proceeding from the exchange of the sensor or cable length alteration.

F46 - Humidity display offset:

It allows to compensate eventual shunting lines in the reading of humidity proceeding from the exchange of the sensor or cable length alteration.

F47 - Function lock mode:

Allows and configures the blocking of functions (see item 6.3.2).

- : Does not allow blocking of functions;
- : Allows the partial blocking, where the control functions will be blocked but the setpoints adjustment remain released;
- : Enables total blocking, leaving only access to the facilitated menu functions available.

F48 - Time for blocking functions

With this functionality active, the parameters are protected against undue changes, making them available only for viewing. In this condition, when trying to change these values, the message will be shown on the display.

F49 - Shutdown of control functions:

With the shutdown of the control functions, the controller starts to operate only as a temperature indicator with all the outputs turned off. This function can operate in the following ways:

- : Does not allow turning off the control functions;
- : Allows turning on and off the control functions only if the functions are unlocked;
- : Allows you to turn control functions on and off even if the functions are blocked.

F50 - Network equipment address:

This is the device address for communication with Sitrad® software.

Note: You cannot have two or more devices with the same address in the network.

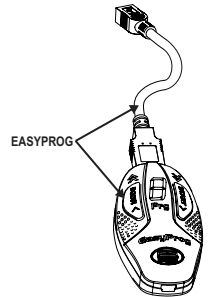
8. SIGNALLING

<input type="text" value="EERR"/>	Temperature sensor disconnected or damaged.
<input type="text" value="HERR"/>	Humidity sensor disconnected or damaged.
<input type="text" value="LOC"/> <input type="text" value="ON"/>	Functions lockdown.
<input type="text" value="LOC"/> <input type="text" value="OFF"/>	Unlocking of functions.
<input type="text" value="Inib"/>	Buzzer inhibitor.
<input type="text" value="SPCR"/>	Receiving preset.
<input type="text" value="done"/>	Operation successful.
<input type="text" value="OFF"/>	Control functions shutdown.
<input type="text" value="EERR"/>	Please contact Full Gauge Controls.
<input type="text" value="PPPP"/>	Reconfigure the values of the functions.

9. OPTIONAL ITEMS**EasyProg - version 6.1 or higher**

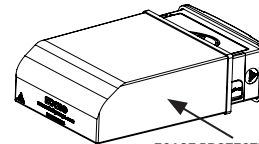
It is an accessory that has as its main function to store the parameters of the controllers. At any time, you can load new parameters of a controller and unload them on a production line (of the same controller), for example. It has three types of connections to load or unload the parameters:

- **Serial RS-485:** It connects via RS-485 network to the controller (only for controllers that have RS-485).
- **USB:** it can be connected to the computer via the USB port, using Sitrad's Recipe Editor.
- **Serial TTL:** The controller can be connected directly to EasyProg by the TTL Serial connection.



IMPORTANT

TO PERFORM THE COMMUNICATION WITH EASYPROG THIS EQUIPMENT MUST NOT BE COMMUNICATING WITH SITRAD SOFTWARE.



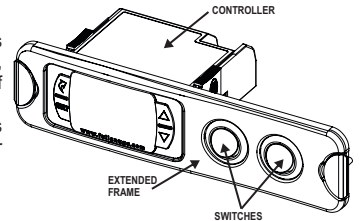
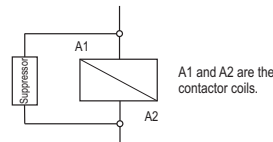
ECASE PROTECTIVE COVER

Ecace protective cover

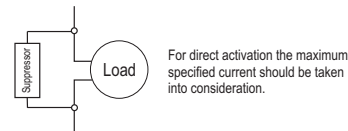
It is recommended for the Evolution line, keeps water from entering the back part of the instrument. It also protects the product when the installation site is washed.

Extended frame

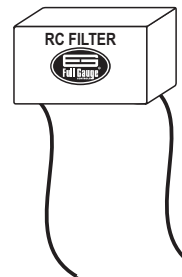
It allows the installation of Evolution line controllers with sizes 76 x 34 x 77 mm in various situations, since it does not require precision in the notch of the instrument fitting panel. The frame integrates two switches of 10 Amperes that may be used to actuate interior light, air curtain, fan, and others.

**Electrical noise suppressing filter****Contact suppressor connection diagram**

A1 and A2 are the contactor coils.

Diagram for suppressor installation for direct drive load inputs

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



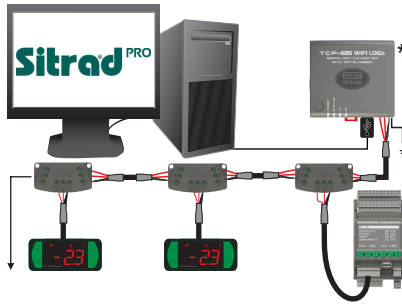
Note: The sensor cable length can be increased by the user until 200 meters using 5x22AWG (-40+105°C) cable.

IMPORTANT

According to the chapters from the IEC60364 standard:

- 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 wires pass for
- 3: Install suppressor of transient in parallel to loads to increase the useful life of the relays

INTEGRATING CONTROLLERS, RS-485 SERIAL INTERFACE AND COMPUTER



*INTERFACE SERIAL RS-485

Device used to establish the connection of Full Gauge Controls instruments with Sitrad®.

* Full Gauge offers different interface options, including technologies such as USB, Ethernet, Wifi, among others. For more information, consult Full Gauge Controls.

Sold separately.

MODBUS PROTOCOL

The controller allows you to configure the RS-485 communication port for the MODBUS-RTU protocol. For more information about the implemented commands and the registration table, contact Full Gauge Controls.



CONNECTION BLOCK

It is used to connect more than one controller to the Interface. The wire connections must be made as follows: Terminal **A** of the controller connect to terminal **A** of the connection block, which in turn, must be connected to terminal **A** of the Interface. Repeat the procedure for terminals **B** and $\frac{1}{2}$, being $\frac{1}{2}$ the cable screen.

The **MT-530E Sabres** allows you to configure the RS-485 communication port for the MODBUS-RTU protocol. For more information about the implemented commands and the registration table, contact Full Gauge Controls.



ENVIRONMENTAL INFORMATION

Package:

The packages material are 100% recyclable. Just dispose it through specialized recyclers.

Products:

The electro components of Full Gauge controllers can be recycled or reused if it is disassembled for specialized companies.

Disposal:

Do not burn or throw in domestic garbage the controllers which have reached the end-of-life. Observe the respectively law in your region concerning the environmental responsible manner of dispose its devices. In case of any doubts, contact Full Gauge controls for assistance.

WARRANTY - FULL GAUGE CONTROLS

Products manufactured by Full Gauge Controls, as of May 2005, have a two (02) year warranty, as of the date of the consigned sale, as stated on the invoice. They are guaranteed against manufacturing defects that make them unsuitable or inadequate for their intended use.

EXCEPTIONS TO WARRANTY

The Warranty does not cover expenses incurred for freight and/or insurance when sending products with signs of defect or faulty functioning to an authorized provider of technical support services. The following events are not covered either: natural wear and tear of parts; external damage caused by falls or inadequate packaging of products.

LOSS OF WARRANTY

Products will automatically lose its warranty in the following cases:

- The instructions for assembly and use found in the technical description and installation procedures in Standard IEC60364 are not obeyed;
- The product is submitted to conditions beyond the limits specified in its technical description;
- The product is violated or repaired by any person not a member of the technical team of Full Gauge Controls;
- Damage has been caused by a fall, blow and/or impact, infiltration of water, overload and/or atmospheric discharge.

USE OF WARRANTY

To make use of the warranty, customers must send the properly packaged product to Full Gauge Controls together with the invoice or receipt for the corresponding purchase. As much information as possible in relation to the issue detected must be sent to facilitate analysis, testing and execution of the service.

These procedures and any maintenance of the product may only be provided by Full Gauge Controls Technical Support services in the company's headquarters at Rua Júlio de Castilhos, 250 - CEP 92120-030 - Canoas - Rio Grande do Sul - Brasil

Rev. 03

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