



MT-530E Super Ver.04

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

- Functions lockdown
- Buzzer
- IP 65 FRONT
- Sitrad System supervisor



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

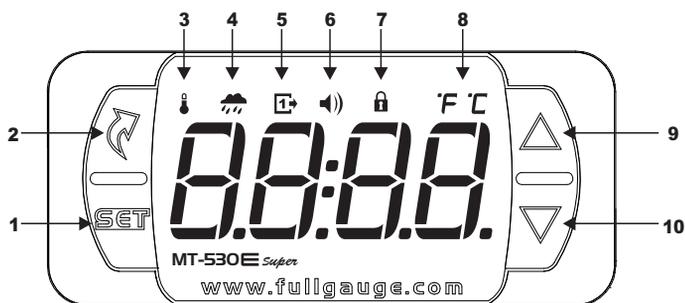
*For high percentage of humidity in the presence of water condensation, use the model AHC-80 Ri plus.

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 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 ⓘ : 16(8)A/250Vac 1HP
Humid ⓘ : 5(3)A/250Vac 1/8HP
Aux ⓘ : 5(3)A/250Vac 1/8HP
- Dimensions: 76 x 34 x 77 mm (WxHxD)

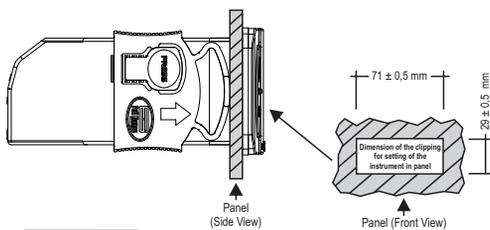
- Dimensions of the clipping for fixing of the instrument: 71 ± 0,5 x 29 ± 0,5 mm (see item 5)

4. INDICATIONS AND KEYS



1	Key Set
2	Menu key facility
3	Therm output led indicator
4	Humidity output led indicator
5	Aux output led indicator
6	Buzzer output led indicator
7	Lock functions led indicator
8	Temperature unit led indicator
9	Upper key
10	Lower key

5. INSTALLATION - ELECTRICAL CONNECTIONS AND PANEL



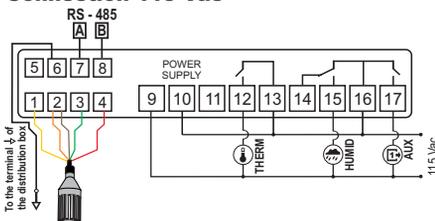
IMPORTANT

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;

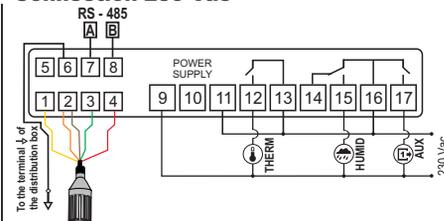
ATTENTION

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.

Connection 115 Vac



Connection 230 Vac



LEGEND			
1 Yellow	3 Green		
2 Orange/Brown	4 Red		

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:

SETPOINT OUTPUT THERM



SETPOINT OUTPUT HUMID



SETPOINT OUTPUT AUX*



INHIBITOR BUZZER*



LOCK FUNCTION



CONTROL FUNCTIONS SHUTDOWN



EXIT THE MENU



SELECTION FUNCTION



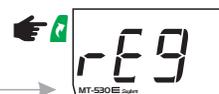
ALTERNATE VIEWING MEASURE



CLEAR VALUES MAX. AND MIN.



REGISTRATION OF TEMPERATURE MIN. AND MAX.



* These parameters are displayed when necessary.

6.2 FACILITATED KEY MAP

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

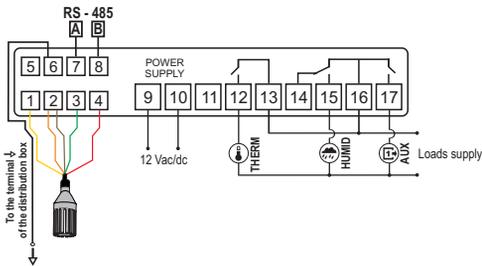
	Press 2 sec: Adjust setpoint.
	Short press: Switch display of temperature or humidity for 4s.
	Press 2 sec: When the buzzer is active inhibits the alarm.
	Short press: Display of records minimum and maximum measures.
	Press 2 sec: When the record is displayed, clear the history.
	Enter the function selection.

6.3 BASIC OPERATIONS

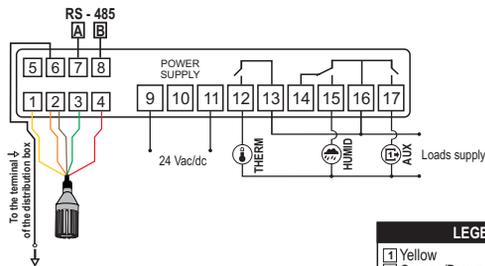
6.3.1 Adjusting the desired temperature and humidity (setpoint)

To enter the setup menu press the setpoints ⓘ for 2 seconds. The message "[SP 1]" will appear on the display then the value of the setpoint output Therm adjustment. Use ⏪ and ⏩ keys to modify the value and confirm by pressing ⓘ . Then the message "[SP 2]" will appear indicating the adjustment of setpoint output Humid. Again use the ⏪ and ⏩ keys to modify the value and confirm by pressing ⓘ . If the operating mode for the Aux output require setting a setpoint the message "[SP 3]" 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.

Connection 12 Vac/dc



Connection 24 Vac/dc



LEGEND			
1	Yellow	3	Green
2	Orange/Brown	4	Red

6.3.2 Function Lock

For safety reasons, this controller provides the ability to lock functions. With this setting enabled, the setpoint and the other parameters are protected against undue changes however, they can be viewed. In this condition, when trying to change these values the message `[L O C]` will appear on the display. To perform the lock function is necessary, first, that the parameter "F42 - Time lock function" is set to the value exceeding 14 (below the value 15, it is shown `[n o]` is not allowing the blocking of functions). With the key `[F]` (short press), select `[4]`, then press `[2]` (short press), after hold the key `[F]` until `[L O C]` (time in seconds programmed in `[F42]`). When you release the key the message `[L O C]` will appear on the display.



To unlock, turn off the controller and reconnect it with the key `[F]` pressed. Keep the key pressed until the message `[L O C]` appears, then release and `[OFF]` will appear on the display.

6.3.3 Control Functions Shutdown

With the shutdown of the control functions the controller will operate only as a temperature and humidity indicator and the output relays stays off.

The way to operate the control functions shutdown depends on the parameter setting "`[F43]` - Control functions shutdown":

- `[0]` Does not allow the shutdown of the control functions.
- `[1]` Allows to turn on and off the control functions only if the functions are unlocked.
- `[2]` Allows to turn on and off the control functions even when the functions are locked.

With key `[F]` (quick touch), select `[F43]`, then press `[2]` (quick touch) to confirm.



Then, the message `[Ctrl] [OFF]` will appear. At this time the temperature display will switch to the `[OFF]` message.

To turn the control functions on again, just follow the same procedure as that for shutdown, selecting with the `[F]` key (quick touch). Once the user presses the `[F]` key the message `[Ctrl] [On]` will appear.

6.3.4 Registers of minimum and maximum measures

Pressing key `[F]` or also through the quick access menu (see chapter 6), the message `[rE9]` will appear, followed by the minimum and maximum recorded temperatures.

To turn the current minimum and maximum values off, press key `[F]` (short press) repeatedly, until the message `[rE9]` is displayed, finally press the `[F]` button to confirm. Another way is to press `[F]` 2 seconds while displaying the records. This operation is indicated by the message `[rSEt]`.

6.3.5 To visualize humidity or temperature

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



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

6.3.6 Buzzer Inhibit

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



6.3.7 Unit Selection (°C / °F)

In order to define the unit that the instrument will operate in, enter function "`[F01]`" with the access code `[23]` and confirm with the `[F]` key, then the user can select the unit by pressing the keys `[C]` and `[F]` where there are alternating messages `[°C]` or `[°F]`. Press the key `[F]` to confirm the desired unit. Therefore, the corresponding indication unit `[C]` or `[F]` 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 `[F01]` by pressing keys `[F]` and `[F]` simultaneously or through the quick access menu. After that, `[F01]` will appear, then, press the `[F]` key (short press). Use keys `[C]` or `[F]` to enter with access code `[123]` and, when ready, press `[F]`. Use keys `[C]` or `[F]` to access the desired function. After selecting the function, press the key `[F]` (short press), to visualize the set value for that function. Use keys `[C]` or `[F]` to change the value, and when ready, press `[F]` to memorize the set value and return to the functions menu. To exit the menu and return to normal operation (temperature indication) press `[F]` (long press) until `[---` appears on the display.

Obs: If the lock function is active, by pressing the `[C]` or `[F]` to change the value of the function, the controller will display the message `[L O C]` and will not allow to set the of parameter.

7.2 Parameter table

Fun	Description	CELSIUS				FAHRENHEIT			
		Min.	Max.	Unit	Standard	Min.	Max.	Unit	Standard
<code>[F01]</code>	Access code: 123 (one hundred and twenty-three)	-99	999	-	-	-99	999	-	-
<code>[F02]</code>	Thermostat operation mode (THERM output)	0 - refrig.	1 - heat	-	0 - refrig.	0 - refrig.	1 - heat	-	0 - refrig.
<code>[F03]</code>	Minimum setpoint allowed to the end user (thermostat)	-10.0	70.0	°C	-10.0	14	158	°F	14
<code>[F04]</code>	Maximum setpoint allowed to the end user (thermostat)	-10.0	70.0	°C	70.0	14	158	°F	158
<code>[F05]</code>	Control differential (hysteresis) of the thermostat	0.1	20.0	°C	1.5	1	36	°F	3
<code>[F06]</code>	Minimum delay to turn the thermostat output on	no	999	seg.	no	no	999	seg.	no
<code>[F07]</code>	Humidistat operation mode (HUMID output)	0 - dehum.	1 - humid.	-	1 - humid.	0 - dehum.	1 - humid.	-	1 - humid.
<code>[F08]</code>	Minimum setpoint allowed to the end user (humidistat)	0	100	%RH	0	0	100	%RH	0
<code>[F09]</code>	Maximum setpoint allowed to the end user (humidistat)	0	100	%RH	100	0	100	%RH	100
<code>[F10]</code>	Control differential (hysteresis) of the humidistat	0.1	20.0	%RH	5	0.1	20.0	%RH	5
<code>[F11]</code>	Minimum delay to turn the humidistat output on	no	999	sec.	no	no	999	sec.	no
<code>[F12]</code>	Humidity output (time on)	0	999	sec.	5	0	999	sec.	5
<code>[F13]</code>	Humidity output (time off)	0	999	sec.	5	0	999	sec.	5
<code>[F14]</code>	Auxiliary output operation mode (AUX)	0	10	-	5	0	10	-	5
<code>[F15]</code>	Minimum setpoint allowed to the end user (AUX output)	0	100	-	0	0	100	-	0
<code>[F16]</code>	Maximum setpoint allowed to the end user (AUX output)	0	100	-	100	0	100	-	100
<code>[F17]</code>	Control differential (hysteresis) of the AUX output	0.1	20.0	-	5	0.1	20.0	-	5
<code>[F18]</code>	Minimum delay to turn the AUX output on	no	999	sec.	no	no	999	sec.	no
<code>[F19]</code>	Time base of AUX output timer	0	999	-	0	0	999	-	0
<code>[F20]</code>	AUX output (time on)	0	999	sec.	5	0	999	sec.	5
<code>[F21]</code>	AUX output (time off)	0	999	sec.	5	0	999	sec.	5
<code>[F22]</code>	Low room temperature alarm	-10.0	70.0	°C	-10.0	14	158	°F	14
<code>[F23]</code>	High room temperature alarm	-10.0	70.0	°C	70.0	14	158	°F	158
<code>[F24]</code>	Low room humidity alarm	0	100	%RH	0	0	100	%RH	0
<code>[F25]</code>	High room humidity alarm	0	100	%RH	100	0	100	%RH	100
<code>[F26]</code>	Minimum delay to turn the AUX output on (alarm mode)	0	999	min.	0	0	999	min.	0
<code>[F27]</code>	Buzzer operation mode	0	1	-	1	0	1	-	1

<input type="checkbox"/> F28	Acting point of Buzzer by low temperature	-10.0	70.0	°C	-10.0	14	158	°F	14
<input type="checkbox"/> F29	Acting point of Buzzer by high temperature	-10.0	70.0	°C	70.0	14	158	°F	158
<input type="checkbox"/> F30	Acting point of Buzzer by low humidity	0	100	%RH	0	0	100	%RH	0
<input type="checkbox"/> F31	Acting point of Buzzer by high humidity	0	100	%RH	100	0	100	%RH	100
<input type="checkbox"/> F32	Maximum time of the activated THERM output to activate the alarm	no	999	min.	no	no	999	min.	no
<input type="checkbox"/> F33	Maximum time of the activated HUMID output to activate the alarm	no	999	min.	no	no	999	min.	no
<input type="checkbox"/> F34	Maximum time of the activated AUX output to activate the alarm	no	999	min.	no	no	999	min.	no
<input type="checkbox"/> F35	Buzzer time on	0	999	sec.	1	0	999	sec.	1
<input type="checkbox"/> F36	Buzzer time off	0	999	sec.	1	0	999	sec.	1
<input type="checkbox"/> F37	Inhibition time of Buzzer during electrical supply	0	999	min.	0	0	999	min.	0
<input type="checkbox"/> F38	Output status in case of alarm	0	1	-	0	0	1	-	0
<input type="checkbox"/> F39	Display mode	0	2	-	0	0	2	-	0
<input type="checkbox"/> F40	Temperature display offset	-5.0	5.0	°C	0	-9	9	°F	0
<input type="checkbox"/> F41	Humidity display offset	-20.0	20.0	%RH	0	-20.0	20.0	%RH	0
<input type="checkbox"/> F42	Time to lock functions	no	60	sec.	no	no	60	sec.	no
<input type="checkbox"/> F43	Control functions shutdown	no	2	-	no	no	2	-	no
<input type="checkbox"/> F44	Network equipment address RS-485	1	247	-	1	1	247	-	1

Legend: no = no

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 - Thermostat operation mode (THERM output):

- 0 Refrigeration
 1 Heating

F03 - Minimum setpoint allowed to the end user (thermostat):

F04 - Maximum setpoint allowed to the end user (thermostat):
 To prevent incorrect temperature setting.

F05 - Control differential (hysteresis) of the thermostat:

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

F06 - 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.

F07 - Humidistat operation mode (HUMID output):

- 0 Dehumidification
 1 Humidification

F08 - Minimum setpoint allowed to the user (humidistat):

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

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

F10 - Control differential (hysteresis) of the humidistat:

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

F11 - 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.

F12 - Humidity output (time on):

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

F13 - Humidity output (time off):

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

Note: F12 and F13 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.

F14 - 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
 When changing the value of this function the following parameters will be automatically adjusted with their default values: F15, F16, F17 and setpoint for the AUX output.

F15 - Minimum 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 F14.

F17 - 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 F14.

F18 - 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 (F14) configured in 0, 1, 2 or 3).

F19 - Time base of AUX output timer:

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

Value	Time on (F20)	Time off (F21)
<input type="checkbox"/> 0	Seconds	Seconds
<input type="checkbox"/> 1	Minutes	Minutes
<input type="checkbox"/> 2	Seconds	Minutes
<input type="checkbox"/> 3	Minutes	Seconds

F20 - AUX output (time on):

It is the time that AUX output will keep turned on when set to alarm or cyclical timer. See F14.

F21 - AUX output (time off):

It is the time that AUX output will keep turned off when set to alarm or cyclical timer. See F14.

F22 - Low room temperature alarm:

Temperature for activation of the low temperature alarm.

F23 - High room temperature alarm:

Temperature for activation of the high temperature alarm.

F24 - Low room humidity alarm:

Humidity for activation of the low humidity alarm.

F25 - High room humidity alarm:

Humidity for activation of the high humidity alarm.

F26 - 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 (F14) configured in 4 or 5).

F27 - Buzzer operation mode:

- 0 Intra-range alarm
 1 Extra-range alarm

F28 - Acting point of Buzzer by low temperature:

It is the minimum temperature to trigger the buzzer the configured Operation Mode of Buzzer F27.

F29 - 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 F27.

F30 - 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 F27.

F31 - 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 F27.

F32 - 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 no is displayed.

F33 - 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 no is displayed.

F34 - 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 no is displayed.

F35 - 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.

F36 - 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.

F37 - Inhibition time of Buzzer during electrical supply:

It is the time were the alarm will 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.

F38 - Output status in case of alarm:

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

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

F39 - Display mode:

- 0 Alternated indication of temperature and humidity
- 1 Only indication of temperature
- 2 Only indication of humidity

F40 - 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.

F41 - 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.

F42 - Time for functions lockdown:

With this setting enabled, the setpoint and the other parameters are protected against unauthorized changes. With the lockdown of the controller the user will only be able to visualize the setpoint and the parameters. To lock the functions, see chapter 6.3.2 - Basic Operations, Functions lockdown item.

F43 - Control functions shutdown:

It allows to switch off the output to perform maintenance, see chapter 6.3.3 - Basic Operations, Control functions shutdown item.

F44 - 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.

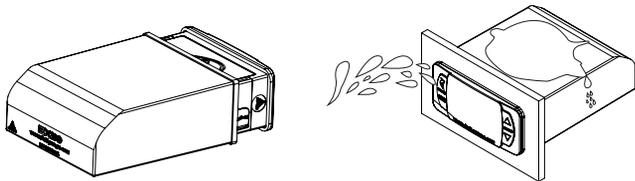
8. SIGNALLING

	Temperature sensor disconnected or damaged.
	Humidity sensor disconnected or damaged.
	Functions lockdown.
	Unlocking of functions.
	Buzzer inhibitor.
	Receiving preset.
	Operation successful.
	Control functions shutdown.
	Please contact Full Gauge Controls.
	Reconfigure the values of the functions.

9. OPTIONAL ITEMS - Sold Separately

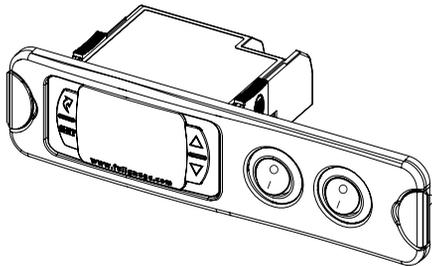
9.1 Ecase

Protective cover for controllers (Evolution line), which prevents the entrance of water and inner moisture. It protects the product when washing is carried out in the location where the controller is installed.



9.2 Extension Frame

The Full Gauge Controls extension frame allows the installation of Evolution / Ri line with measures 76x34x77 mm (dimensions of the clipping for fixing in the extension frame is 71x29mm) in varied situations, since it eliminates precision cut to embed the instrument. Allows customization via a sticker with the brand and the company contact, and accompany two 10A (250 Vac) switches that can trigger internal light, air curtain, on / off system or fan.



9.3 Electrical noise suppressing filter

Contact suppressor connection diagram

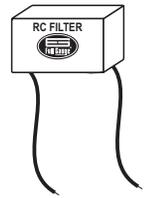
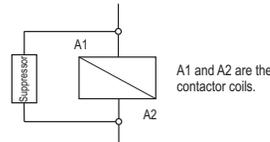
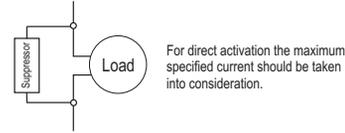


Diagram for suppressor installation for direct drive load inputs



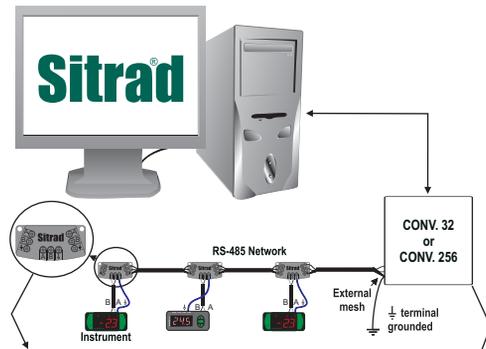
Note: The sensor cable length can be increased by the user until 200 meters using PP 2 x 24 AWG cable.

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



***Connecting Block for Serial Communication**

Used to connect more than one instrument to the Interface. The wire's connections must be made in agreement with the following rules: terminal A of the instrument connects to the terminal A of the connecting block, that must be connected with the terminal A of the Interface. Repeat the action for terminals B and +, being + the cable shield. The terminal - of connecting block must be connected to the respective terminals - of each instrument.

***Sold Separately**

RS-485 Serial Interface

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



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 91210-030 - Canoas - Rio Grande do Sul - Brasil