RT-607E plus Ver.03

DIGITAL THERMOSTAT WITH EVENT SCHEDULE

Full Gauge CONTROLS®

⚠ Have this manual in the palm of your hand by **FG Finder** application.

Event Schedule	Functions Lock	Control Functions Shutdown	**Sitrad** Supervisory system	Serial programming	**IP 65** FRONT Protection level

RT607EPLV03-02T-16701

1. DESCRIPTION

Digital temperature controller and indicator combined with a time scheduler which allows the user to configure up to eight daily events, with programmable start and end time, which may be daily, weekly or split into business days and weekends. It allows the user to activate the load manually even out of the events. In addition to that, it offers parameters for recirculation and protection of water heaters. With the sensor disabled it works as a time scheduler only. It includes serial communication for connection to Sitrad.

2. SAFETY RECOMMENDATIONS

- Check the controller for correct fastening;
- Make sure that the power supply is off and that it is not turned on during the controller installation;
- Read the present manual before installing and using the controller;
- Use adequate Personal Protective Equipement (PPE);
- For application at sites subject to water spills, such as refrigerated counters, install the protecting vinyl supplied with the controller;
- For protection under more critical conditions, we recommend the Ecase cover, which we make available as an optional item (sold separately);
- The installation procedures should be performed by a qualified technician.

3. APPLICATIONS

• Air Conditioning
• Water heaters
• Displays with static coils
• Defrost control
• Ovens, injection machines
• All processes that require time scheduling

4. TECHNICAL SPECIFICATIONS

Electric supply	**RT-607E plus:** 115 or 230 Vac ±10%(*) (50/60 Hz) **RT-607EL plus:** 12 or 24 Vac/dc +10%(*)
Approximate consumption	0.7 VA
Control temperature	-50 to 105ºC (-58 to 221°F)(**)
Operating temperature	0 to 50 ºC / 32 to 122°F
Minimum interval between events	10 minutes
Maximum current/power per output	**THERM -** Thermostat control output: 16(12)A 250Vac 2HP **EVENT -** Event schedule activation output: 10A / 240Vac ¼ HP
Operating humidity	10 to 90% RH (no condensation)
Dimensions (mm)	76 x 34 x 77 mm (WxHxD)
Dimensions for cutting – to fasten the instrument	71 ± 0,5 x 29 ± 0,5 mm (see image V)

(*) Acceptable variation in relation to the rated voltage.
(**) This device can measure and control temperatures of up to 200°C when used in conjunction with a model SB59 silicon sensor cable (sold separately)
Note: Sensor cable length can be increased to up to 200 meters by the user by using a PP 2 x 24 AWG cable.

5. INDICATIONS AND KEYS

Event schedule indicator LED
Heating indication LED
Cooling indication LED
Functions lock indication LED
Control functions off indication LED
Temperature unit indication LED
Quick access menu key (Flatec)
Set key
Increase key
Decrease key

RT-607E plus
www.fullgauge.com

6. WIRING DIAGRAM

6.1. Identifications (see Images I to IV)

- **Image I:** RT-607E plus , supplied at 115 Vac.
- **Image II:** RT-607E plus, supplied at 230 Vac.
- **Image III:** RT-607EL plus, supplied at 12 Vac/dc.
- **Image IV:** RT-607EL plus, supplied at 24Vac/dc.

⚠ **IMPORTANT**

INSTRUMENTS IN THE EVOLUTION SERIES HAVE TWO DIFFERENT TERMINAL SIZES, BUT BOTH ARE COMPATIBLE WITH THE SCREWDRIVER 2.0mm. USING THE APPROPRIATE TOOLS DURING INSTALLATION ENSURES A LONGER LIFE AND THE PROPER OPERATION OF THE PRODUCTS.

Image I: RT-607E plus - 115Vac

SITRAD A B D1
5 6 7 8 | 1 2 3 4 | 9 10 11 12 13 14 15 16 17
S1
EVENT THERM
115 Vac

Image II: RT-607E plus - 230 Vac

SITRAD A B D1
5 6 7 8 | 1 2 3 4 | 9 10 11 12 13 14 15 16 17
S1
EVENT THERM
230 Vac

Image III: RT-607EL plus - 12Vac/dc

SITRAD A B D1
5 6 7 8 | 1 2 3 4 | 9 10 11 12 13 14 15 16 17
S1
EVENT THERM
0 12Vac/dc
Power supply

Image IV: RT-607EL plus - 24Vac/dc

SITRAD A B D1
5 6 7 8 | 1 2 3 4 | 9 10 11 12 13 14 15 16 17
S1
EVENT THERM
0 24Vac/dc
Power supply

Surge Protective Device (SPD) (sold separately)

Wiring diagram for instalation of SPD in magnectic contactor
A1 and A2 are the terminals of the contactor coil.

SPD A1 A2

Wiring diagram for instalation of SPD in line with loads
For direct drive take in to consideration the specified maximum current.

SPD LOAD

6.2. Temperature sensor connection

- Connect the sensor wires to terminals '1 and 2': the polarity is not relevant.
- Length of the sensor cables can be increased by user himself to up to 200 meters, using a PP 2x24 AWG cable.

6.3. Controller power supply

Use the pins according to table below, considering the set version:

Pins	RT-607E plus	RT-607EL plus
9 and 10	115 Vac	12 Vac/dc
9 and 11	230 Vac	24 Vac/dc

6.4. Recommendations of IEC60364 standard

a) Install overload protectors in the controller supply.
b) Install transient suppressors – suppressor filter RC – in the circuit to increase the service life of the controller relay. See connection instructions of the filter on the previous page.
c) The sensor cables may be together, but not in the same conduit where the power supply of the controller and/or of the loads passes through.

7. FASTENING PROCEDURE

a) Cut out the panel plate (Image V - item 13) where the controller shall be fastened, with sizes X = 71±0,5 mm and Y = 29±0,5 mm;
b) Remove side locks (Image VI - item 13): to do that, compress the central elliptical part (with the Full Gauge Controls logo) and displace the locks backwards;
c) Introduce the controller in the notch made on the panel, inwards;
d) Place the locks again and then displace them until they compress into the panel, fastening the controller to the housing (see arrow indication in Image VI - item 13);
e) Perform the electric installation as described in item 6;
f) Adjust the parameters as described in item 8.
⚠ **ATTENTION: for installations requiring liquid tight sealing, the notch sizes for the controller installation should be no more than 70.5x29mm. The side locks should be fastened so that they press the sealing rubber avoiding infiltration between the notch and the controller.**
Protector vinyl - Image VII (item 13)
It protects the controller when installed at a site subject to water spills, such as refrigerated counters. This adhesive vinyl is supplied with the instrument in the package.
⚠ **IMPORTANT: Make the application only after completing the electrical connections.**
a) Retreat the side locks (Image VI - item 13);
b) Remove the protective film from the adhesive vinyl face;
c) Apply the vinyl over the entire upper part, bending the flaps, as indicated by the arrows - Image VII (item 13);
d) Reinstall the locks.
NOTE: The vinyl is transparent, allowing visualization of the wiring system of the instrument.

8. OPERATIONS

8.1. Quick Access Menu Map

To access or browse the quick access menu use the 🗹 key (quick touch) while the controller is displaying the temperature/time. With each touch the next function in the list is displayed. To confirm use the 🗹 key (quick touch). See chapter 8.3 for more details. The map of functions is shown below:

SWITCH THE EVENT OUTPUT
ON/OFF (MANUAL MODE)

EXIT FUNCTION

SCHEDULE EVENT
PROGRAMMING

FUNCTION SELECTION

DATE AND TIME VIEW

ADJUSTING DESIRED
TEMPERATURE
(SETPOINT)

CONTROL FUNCTIONS
SHUTDOWN

FUNCTIONS LOCKDOWN

8.2. Quick access keys map

When controller is on temperature/time display mode, the following keys can be used as a shortcut for the following functions:

🔲SET	Hold down for 2 seconds: setpoint adjustment (desired temperature).
🔲SET	Quick touch: the current day, month, year, day of the week, hour, and minute/ temperature will be shown in sequence on the display.
🔼	Quick touch: display of the maximum and minimum measurements recorded.
🔼	Hold down for 2 seconds: clear history when records are being displayed.
🔽	Hold down for 10 seconds: manual activation of the event output.
🗹	Quick touch: enter the quick access menu.
🗹	Hold down for 5 seconds: control functions shutdown.
🔼🔽	Enters function selection.

8.3. Basic operations

8.3.1. Adjusting setpoint (desired temperature)

Hold the 🔲 key down for 2 seconds until the message `5Et` is displayed. The adjusted control temperature will be displayed when the key is released. Use the 🔼 or 🔽 key to change the value and then press 🔲 to save. The desired temperature can also be changed in the quick access menu, (see map on item 8.1).

8.3.2. Functions lock 🔒

The use of the functions lock brings greater security to the operation of the instrument. When it is active, the setpoint and other parameters can be visible to the user, but are protected against undue changes `F15` = 2 or you can block changes of control functions and leave the adjustment of the setpoint enabled `F15` =1. Using the 🗹 key (quick touch), access the function `LOC` in the quick access menu, confirm by pressing 🔲 (quick touch), then the message `no` will be displayed. After that keep the 🔽 key pressed for the time configured for the functions lock `F16` until `LOC` is displayed. The message `On` will be displayed indicating the function lock is activated upon releasing the key.

To unlock, turn the controller off and then turn it on again with the 🔽 key pressed. Keep the key pressed until `LOC` is displayed. Keep the key pressed for 10 seconds and the message `OFF` will be displayed indicating the function lock is deactivated upon releasing the key.

8.3.3. Control functions shutdown ⏻

Turning the control functions off allows for the controller to operate just as an indicator of temperature, keeping the control outputs and the alarms disconnected. Use of this feature is enabled or not by the control functions shutdown function `F17`. When enabled, the control and alarms functions are turned off (`Ctrl` `OFF`) or on (`Ctrl` `On`) through the quick access menu in the option `Ctrl`. When the control functions are off the message `OFF` will then be displayed alternately with the temperature and the other messages.
Except when `F17` is equal to 3 or 4, in which case the display is switched off, keeping only the ⏻ icon on.

NOTE: It is also possible to switch the control functions on/off by pressing the 🗹 key for five seconds.
NOTE: When switching the control functions back on, **RT-607E plus** will continue to respect the functions "`F06` - Minimum thermostat output off time".

8.3.4. Minimum and Maximum Temperature Record

Holding the 🔼 key down (quick touch) or also via the quick access menu, will cause the message `rEg` to be displayed and the minimum and maximum temperatures to be recorded.
NOTE: If the 🔼 key is pressed while the events are being displayed the values will be reset and the message `rSEt` will be displayed.
NOTE: If the temperature sensor is disabled the messages `____` and `‾‾‾‾` will be displayed.

8.3.5. View current date and time

Quickly pressing the 🔲 key makes possible to view the current date and time set in the controller. However the display will show sequentially the current day (`--d`), month (`--n`), year (`--y`), weekday(`dAy-`), hour and minute (`00:00`) and if the preferred view set in `F09` is `Hour`, the temperature is also displayed. It is also possible to view the date and time through the quick access menu in the option `CLO`.

8.3.6. Manual triggering of event output

Pressing the key 🔽 for 10 seconds activates an event manually. This will be deactivated after the time set in the `F09` function has elapsed. Pressing the key 🔽 again for 10 seconds deativavates the manual operation. When activating the manual trigger, the `Eon` message and the `EOFF` message are displayed when you turn off the manual trigger. It is also possible to perform the activation in the `nAn` menu.

8.3.7. Date and time adjustment

Through the quick access menu, the `CLO` option allows you to set controller date and time. Use 🔼 or 🔽 to change the value and press 🔲 when ready to save the configured value. If the date entered is invalid, the message `ECLO` will be shown on the display.
Example 1 (correct access code entered):
`00d`- day `00n`- month `004`- year `00:00`
time ↓ minute
flashing

IMPORTANT:
The controller has an auxiliary internal power supply to keep the clock running for at least 72 hours in case of a power cut. If the controller remains off for a long period of time, the message `ECLO` may be displayed to indicate that the clock is not programmed. In this case, the date and time must be adjusted and the controller must be kept on for 10 hours to fully recharge the auxiliary power supply.

NOTE: To set the date and time through the menu outside the facilitated menu, it is necessary to enter the access code **123**.
a) Press the key 🗹 (quick touch) simultaneously, 🔼 and 🔽 (quick touch), the `CodE` option appears, asking you to entered the access code.
b) Press 🔲 and enter the access code **123** using the 🔼 or 🔽 keys, confirming with the key 🔲. The `CodE` option will again appear.
c) Navigate through the menu using the 🔼 or 🔽 keys until `CLo` appears, and then press 🔲 key.

If the controller's clock is not programmed (message `ECLO`) it is possible to adjust the time even when the functions are locked (message `LOC`). Under these conditions the clock adjustment is enabled and the other functions remain locked. After the clock is adjusted the adjustment function is locked again.

8.3.8. Event schedule programming

This option allows entering the values of the time intervals for each event. Data input depends on the configured operation mode. Up to eight events may be configured for each day. The start time and end time of each event is set using options $\boxed{On1}$ to $\boxed{On8}$ $\boxed{OFF8}$, where:

$\boxed{On1}$ - **Start time of the 1st event.**
$\boxed{OFF1}$ - **End time of the 1st event.**
.
.
.
$\boxed{On8}$ - **Start time of the 8th event.**
$\boxed{OFF8}$ - **End time of the 8th event.**

NOTE: To program the event schedule outside the facilitated menu, it is necessary to enter the access code **123**. From the menu, press the key (quick touck) until you teach the $\boxed{Prog}$ menu, skip steps a and b and then press (quick touch).

a) Press ▲ and ▼ (quick touch) simultaneously, the option $\boxed{CodE}$, will be displayed to request the access code.

b) Press SET and enter the access code 123 using the ▲ or ▼ key, confirming with SET. The option $\boxed{CodE}$ will appear again.

c) Browse the menu using the ▲ or ▼ key until the option $\boxed{Prog}$ appears, and then press SET. The following programming options may be displayed depending on the operation mode:

$\boxed{ModE}$

		Events programmable by day
$\boxed{Ib1}$ - **Weekly Programming**		
$\boxed{P1}$ - Sunday		$\boxed{On1}$ - Start time of the 1st event
$\boxed{P2}$ - Monday		$\boxed{OFF1}$ - End time of the 1st event
$\boxed{P3}$ - Tuesday		.
$\boxed{P4}$ - Wednesday		.
$\boxed{P5}$ - Thursday		.
$\boxed{P6}$ - Friday		$\boxed{On8}$ - Start time of the 8th event
$\boxed{P7}$ - Saturday		$\boxed{OFF8}$ - End time of the 8th event
$\boxed{2t6}$ - **Weekdays Programming**		
$\boxed{P26}$ - Monday to Friday		
$\boxed{P7}$ - Saturday		
$\boxed{P1}$ - Sunday		
$\boxed{It7}$ - **Daily Programming**		
$\boxed{P17}$ - Every day		

If it is not necessary to use all the eight events then they may be configured in the disabled mode by increasing the switch off time ($\boxed{OFF1}$ for instance) until $\boxed{OFF}$ is displayed. It is also possible to configure an event to cross midnight by incrementing the switch off time until the option $\boxed{Cro}$ is displayed and adjusting an event for the following day starting at 12:00 AM.

d) The time configured for the chosen event will be displayed. Use the ▲ or ▼ key to change the time and press SET again to return to the event programming menu.

e) To leave the event programming menu and return to the home screen, press SET until the message $\boxed{----}$ is displayed.

NOTE: By default, the event schedule leaves the factory with the same events for every day of the week, and the schedules defined as fallows:
$\boxed{On1}$ - Opening time of 1st event: 04:00
$\boxed{OFF1}$ - End time of 1st event: 08:00
$\boxed{On2}$ - Start time of the 2nd event: 17:00
$\boxed{OFF2}$ - End time of the 2nd event: 21:00
Other events are disabled.
NOTE 2: When the event schedule operation mode is changed all events return to the default.

8.3.9. Unit Selection

To select the units that the system will use to operate, press ▲ and ▼ simultaneously as the temperature is being displayed, enter the option $\boxed{CodE}$ using the access code $\boxed{231}$ and then press SET. Then select the desired unit $\boxed{oC}$ or $\boxed{oF}$ using the ▲ ▼ keys, and press SET to confirm.
NOTE: Whenever the units are changed, the functions' configuration assumes the factory default, so they need to be configured again.

8.4. Advanced operations

8.4.1. Adjustment of the parameters

Parameter adjustment can be done through the quick access menu ( ) by accessing the option $\boxed{Func}$, or by pressing ▲ and ▼ simultaneously when the temperature/time is being displayed.
The following options will be displayed:
$\boxed{CodE}$ Entry to the access code
$\boxed{Func}$ Change the advanced parameters
$\boxed{ModE}$ Event schedule operation mode
$\boxed{Prog}$ Event schedule programming
$\boxed{CLO}$ Adjustment or visualization of the date and time

Select the desired function using the ▲ and ▼ keys. Press SET (quick touch) after selecting the function to view its value. Use ▲ or ▼ to change the value and press SET when ready to save the configured value and return to the functions menu. To leave the menu and return to the normal operating mode (temperature indication), hold down SET (long touch) until $\boxed{----}$ appears.
Note: If the function lock is active, the controller will show the message $\boxed{LOC}$ in the display upon pressing ▲ or ▼ and will not allow the adjustment of the parameters.

8.4.2. Access code

To change the parameters or adjust the clock, select the $\boxed{CodE}$ option by pressing SET (quick touch) and entering the access code 123 (one hundred and twenty-three) using the ▲ or ▼ key, and confirm with SET.

8.4.3. Event schedule operation mode

In the main menu (after entering the code 123) select the option $\boxed{ModE}$ and then the desired function using the ▲ or ▼ keys. The factory default for the controller is $\boxed{It7}$ - **Daily Programming.**
To leave the menu and return to the normal operating mode (temperature indication), hold down SET (long touch) until $\boxed{----}$ appears.
$\boxed{Ib1}$ - **Weekly Programming:** In this mode the instrument can configure up to 8 events for each day of the week.
$\boxed{2t6}$ - **Weekdays Programming:** In this mode, the instrument keeps the same events from weekdays (Monday to Friday) and allows you to program different events for Saturday and Sunday.
$\boxed{It7}$ - **Daily Programming:** In this mode, the instrument keeps the same events for all days of the week.

8.5. Parameters table

Fun	Description	CELSIUS				FAHRENHEIT			
		Min	Max	Unit	Standard	Min	Max	Unit	Standard
F01	Temperature control differential (hysteresis)	0.1	20.0	°C	1.0	1	36	°F	2
F02	Sensor indication offset	-5.1(off)	5.0	°C	0.0	-10(off)	9	°F	0
F03	Minimum setpoint allowed to the end user	-50	200	°C	-50.0	-58	392	°F	-58
F04	Maximum setpoint allowed to the end user	-50	200	°C	105.0	-58	392	°F	221
F05	Operation mode	0(cool.)	1(heat.)	-	1(heat.)	0(cool.)	1(heat.)	-	1(heat.)
F06	Minimum thermostat output off time	0(no)	999	sec.	0(no)	0(no)	999	sec.	0(no)
F07	Link the thermostat to the event schedule	no	yes	-	yes	no	yes	-	yes
F08	Event schedule link mode	0	7	-	0	0	7	-	0
F09	Time for manual activation of the event output	0(no)	999	min.	120	0(no)	999	min.	120
F10	Preferred measurement view	temp.	all	-	temp.	temp.	all	-	temp.
F11	Recirculation - Scan time	0(no)	999	min.	0(no)	0(no)	999	min.	0(no)
F12	Interval between scans	0(no)	999	min.	0(no)	0(no)	999	min.	0(no)
F13	Maximum time the thermostat output remains on without reaching the setpoint	0(no)	999	min.	0(no)	0(no)	999	min.	0(no)
F14	Thermostat output off time in state of alarm for not reaching the setpoint	1	999	min.	1	1	999	min.	1
F15	Digital input operation mode	0(off)	2	-	0(off)	0(off)	2	-	0(off)
F16	Digital filter intensity applied to the sensor	0(no)	9	-	0(no)	0(no)	9	-	0(no)
F17	Function lock mode	0	2	-	0	0	2	-	0
F18	Time for functions lock	15	60	sec.	15	15	60	sec.	15
F19	Control functions shutdown	0(no)	4	-	0(no)	0(no)	4	-	0(no)
F20	Address of the instrument in the RS-485 network	1	247	-	1	1	247	-	1

8.5.1. Description of parameters

F01- Temperature control differential (Hysteresis):
It is the difference in temperature (hysteresis) between TURNING ON and OFF the cooling (or heating).
Example: One wants to control the temperature at 4.0 °C with a differential of 1.0 °C. Therefore, the cooling is switched off at 4.0 °C and switched back on at 5.0 °C (4.0 + 1.0), in the heating mode the output is switched off at 4° C and is switched on again at 3° (4.0 - 1.0), as per the charts below:

F02 - Sensor indication offset:
It allows compensating possible deviations in the temperature reading caused by the replacement of the sensor or changes in the cable length. The temperature sensor can be switched off by adjusting this function to the minimum value until the message $\boxed{OFF}$ is displayed. Under these conditions the thermostat is disabled and the THERM output changes to the same state as the EVENT output.

F03 - Minimum setpoint allowed to the end user:
Avoids regulation of excessively low setpoint temperatures by mistake.

F04 - Maximum setpoint allowed to the end user:
Avoids regulation of excessively high setpoint temperatures by mistake.

F05 - Operation mode:
Allows selecting the controller operation mode.
$\boxed{0}$ - Refrigeration
$\boxed{1}$ - Heating

F06 - Minimum thermostat output off time:
It is the minimum time the thermostat output will remain off, i.e. the length of time between the last stop and the next start up. It is used to relieve the discharge pressure and increase the service life of compressor. This time is also used as an activation delay when the controller is switched on. This function can be switched off by setting it at the minimum value 0 $\boxed{no}$.

F07 - Link the thermostat to the event schedule:
This option allows linking the operation of the thermostat output to the event schedule. If the option 0 (no) is selected, the thermostat output will be controlled by the temperature only. In the case of option 1, the thermostat output will be controlled by the temperature and will only be activated with a valid event in the schedule.

F08- Event Schedule link mode:
This function allows the user to define whether the thermostat will work together with the event output or not. Case the thermostat is linked to the event calendar (F07 = On), this function will inform which events (times) the THERM and EVENT outputs will work. Otherwise, only EVENT events will be selected.
$\boxed{0}$ THERM linked to events 1,2,3,4,5,6,7 and 8. EVENT linked to events 1,2,3,4,5,6,7 and 8.
$\boxed{1}$ THERM linked to event 1. EVENT linked to events 2,3,4,5,6,7 and 8.
$\boxed{2}$ THERM linked to events 1,2. EVENT linked to events 3,4,5,6,7e 8.
$\boxed{3}$ THERM linked to events 1,2,3. EVENT linked to events 4,5,6,7e and 8.
$\boxed{4}$ THERM linked to events 1,2,3,4. EVENT linked to events 5,6,7e 8.
$\boxed{5}$ THERM linked to events 1,2,3,4,5. EVENT linked to events 6,7 and 8.
$\boxed{6}$ THERM linked to events 1,2,3,4,5,6. EVENT linked to events 7 and 8.
$\boxed{7}$ THERM linked to events 1,2,3,4,5,6,7. EVENT linked to event 8.

F09- Time for manual activation of the event output:
Time for which the event output remains on when manually activated. After this time has elapsed the event output returns to the automatic operation. This function can be switched off by setting it at the minimum value 0 $\boxed{no}$.

F10 - Preferred measurement view:
It allows choosing which measurement will be displayed:
$\boxed{tEMP}$ - Temperature (if sensor is enabled).
$\boxed{Hour}$ - Hour
$\boxed{ALL}$ - Switches between temperatures (if sensor is enabled) and time.

F11 - Recirculation - Scan time (if F05 = 1- heating):
Time during which the controller keeps the water circulation activated to equalize the water temperature in the keg.

F12 - Interval between scans (if F05 = 1- heating):
It is the interval between the last and the next temperature scan.
NOTE: If the temperature to switch on the thermostat is reached the scan cycle is restarted.

F13 - Maximum time the thermostat output remains on without reaching the setpoint (if F05 = 1-heating):
It is the maximum time the thermostat output will remain on without reaching the setpoint during the heating process. When this time is exceeded the visual alarm $\boxed{AL r M}$ is activated and the thermostat output remains off according to the time defined in F13. Functions F12 and F13 serves as protections for the gas-fired heater so that in case of fault (flame out for instance), the water circulation is interrupted and the heater is switched off to protect it.
This function can be switched off by setting it at the minimum value 0 $\boxed{no}$.

F14 - Thermostat output off time in state of alarm for not reaching the setpoint (if F05 = 1-heating):
It allows adjusting the time for which the controller will keep the thermostat output off while in state of alarm for not reaching the setpoint. If the setpoint is reached during this time the alarm is switched off. If the setpoint is not reached after this time has elapsed, new checks are performed during the time defined in F12.

F15 - Digital input operating mode:
Allows the output associated with the event calendar to be associated outside of the schedule of events, respecting the functions options and F07- Toggle thermostat to the event schedule and F09- Time of manual activation of the event output.
$\boxed{OFF}$ Off
$\boxed{1}$ Activate / deactivate manual override (NO button)
$\boxed{2}$ Activate / deactivate manual activation (NF button)

F16 - Digital filter intensity applied to the sensor:
This filter has the purpose of simulating an increase in thermal mass at the sensor thereby increasing its response time (thermal inertia). The higher the value set in this function, the more time the sensor takes to respond. This function can be switched off by setting it at the minimum value 0 $\boxed{no}$.

F17 - Function lock mode:
It allows and configures the function lock.
$\boxed{0}$ Do not allow the function lock.
$\boxed{1}$ It allows a partial lock where the control functions will be locked but the adjustment of the setpoint, date views, and maximum and minimum record views are allowed.
$\boxed{2}$ It allows the full lock, enabling only the date views and maximum and minimum record views.

F18 - Time for functions lock:
Allows lockdown of control functions (see item 8.3.2).
$\boxed{15}$ - $\boxed{60}$ - Defines the time in seconds for the controller to activate.

F19 - Control functions shutdown:
Allows the turning off the control functions (see item 8.3.3).
$\boxed{0}$ Disables the control functions shutdown.
$\boxed{1}$ Enables activation/deactivation of the control functions only if the functions are unlocked.
$\boxed{2}$ Enables activation/deactivation of the control functions even if the functions are locked.
$\boxed{3}$ It enables the activation/deactivation of the control functions only if the functions are unlocked, switching off the display.
$\boxed{4}$ Enables activation/deactivation of the control functions even if the functions are locked, switching off the display.
NOTE: In options 3 and 4 the display is switched off if no keys are pressed and switched on when any key is pressed, remaining on for five seconds.

F20 - Address of the instrument in the RS-485 network:
Equipment's network address for communicating with Sitrad® software.
Note: One network must not have different equipment with the same address.

9. SIGNALS

$\boxed{Err 1}$	Error in sensor: Sensor disconnected or damaged.
$\boxed{LOC}$ $\boxed{On}$	Functions lock.
$\boxed{LOC}$ $\boxed{OFF}$	Unlocking of functions.
$\boxed{OFF}$	Control functions off.
$\boxed{CLO}$	Adjustment or visualization of the date and time.
$\boxed{ECLO}$	Invalid date and/or time (adjust the clock).
$\boxed{AL r M}$	Alarm for failure to reach the setpoint.
$\boxed{ECAL}$	Contact Full Gauge Controls.
$\boxed{PPPP}$	Reconfigure the values of the functions.

10. INTEGRATING CONTROLLERS, RS-485 SERIAL INTERFACE AND COMPUTER

Sitrad
Keep Sitrad updated in website:
http://www.sitrad.com

Watch Sitrad installation video in:
http://www.fullgauge.com/
videos/sitrad

CONV. 32 or CONV. 256

RS-485 Network
External mesh
⏚ terminal grounded
Instrument

*__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®.

11. GLOSSARY OF ACRONYMS
- **°C:** Temperature in Celsius degrees.
- **°F:** Temperature in Fahrenheit degrees.
- **Heat.:** Heating.
- **LOC:** Blocked.
- **OFF:** Turned off/disabled.
- **ON:** Turned on, enabled.
- **Refr:** Refrigeration.
- **SET (as in "Setting")** (setting or configuration).
- **Vac:** Electrical voltage (volts) of alternating current.
- **Vdc:** Electrical voltage (volts) of direct current.

12. OPTIONAL ITEMS - Sold Separately

Ecase 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.

ECASE PROTECTIVE COVER

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.

CONTROLLER
EXTENDED FRAME
SWITCHES

EasyProg - version 2 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 download 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.

EASYPROG

IMPORTANT

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

Image V

PANEL

Image VI

CONTROLLER

LOCKS PANEL

Image VII

VINYL

CONTROLLER

CONTROLLER

ENVIRONMENTAL INFORMATION

Packaging:
The materials used in the packaging of Full Gauge products are 100% recyclable. Try to perform disposal through specialized recyclers.

Product:
The components used in Full Gauge controllers can be recycled and reused if disassembled by specialized companies.

Disposal:
Do not incinerate or dispose the controllers that have reached the end of their service as household garbage. Observe the laws in your area regarding disposal of electronic waste. If in doubt, please contact Full Gauge Controls.