MT-516E Ver.13

DIGITAL TEMPERATURE CONTROL WITH CONFIGURABLE 2nd STAGE

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

Alarm | Buzzer | Cyclic Timer | Functions Lockdown | Control Functions Shutdown | Serial programming | IP 65 FRONT Protection level

c UL us E251415

MT516EV13-01T-18803

1. DESCRIPTION

MT-516E is a temperature controller for cooling or heating applications. Equipped with a cyclic timer output, it can also be used as alarm output, with the option of an internal audible alarm (buzzer), or second cooling or heating stage. Another feature available is the turning off of the control functions, making the **MT-516E** operate only as a temperature meter. Through an intelligent function blocking system, it prevents unauthorized personnel from changing the control settings.
Product conforming to UL Inc. (United States and Canada).

2. SAFETY RECOMMENDATIONS

- Check the controller for correct assembling;
- 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 Equipmenet (PPE);
- For application at sites subject to water spills, such as refrigerated cabinets, 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

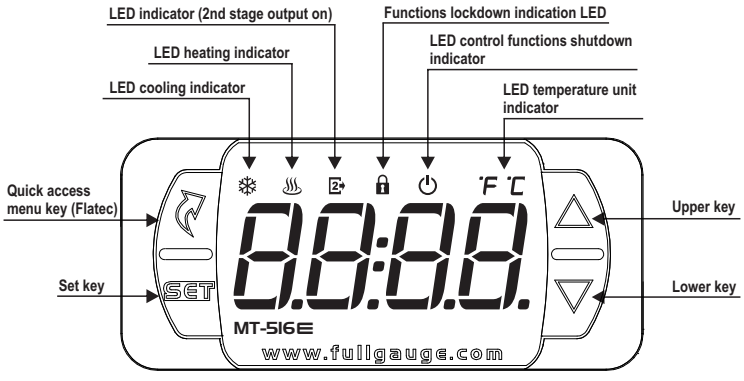
- Milk cooling tanks
- Refrigerated counters
- Air conditioning with automatic winter/summer system

4. TECHNICAL SPECIFICATIONS

Power supply	**MT-516E:** 115 or 230 Vac ±10%(*) (50/60 Hz) **MT-516EL:** 12 or 24 Vac/dc +10%(*)
Control temperature	-50 to 105ºC (-58 to 221°F)(**)
Operating temperature	0 to 50 ºC / 32 to 122°F
Maximum output current	**OUT1:** 16(12)A / 240Vac 2HP **OUT2:** 10A / 240Vac 1/4HP
Operating humidity	10 to 90% RH (without condensation)
Dimensions (mm)	76 x 34 x 77 mm (WxHxD)
Cutout dimensions (mm)	71 ± 0,5 x 29 ± 0,5 mm (see image V)

(*)Admissible variation in relation to the voltage rating.
(**)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



6. WIRING DIAGRAM

6.1. Identifications (see Images I to IV)

- **Image I:** MT-516E , supplied at 115 Vac.
- **Image II:** MT-516E, supplied at 230 Vac.
- **Image III:** MT-516EL, supplied at 12 Vac/dc.
- **Image IV:** MT-516EL, supplied at 24Vac/dc.

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;

Image I: MT-516E - 115Vac

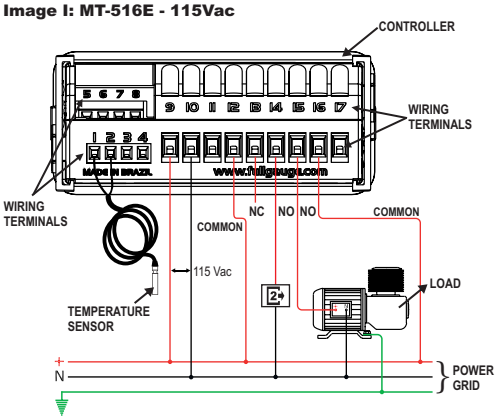


Image II: MT-516E - 230 Vac

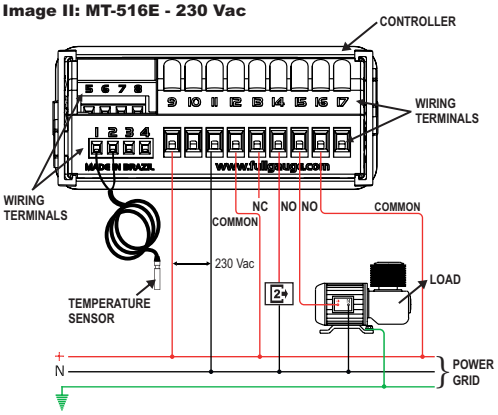


Image III: MT-516EL - 12Vac/dc

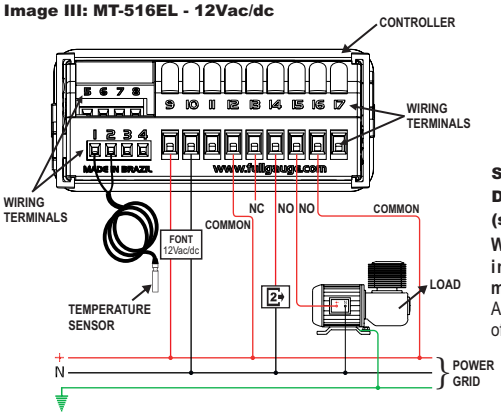
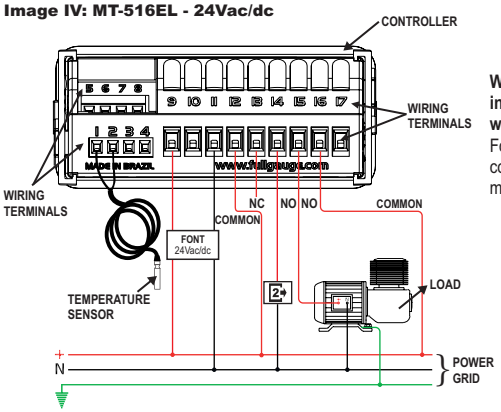
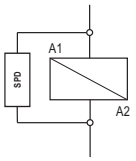


Image IV: MT-516EL - 24Vac/dc

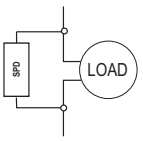


Surge Protective Device (SPD) (sold separately)

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



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



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	MT-516E	MT-516EL
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.
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. ASSEMBLING PROCEDURE

a) Cut out the panel plate (Image V - item 12) 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 12): 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 12);
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 12)

This adhesive vinyl is supplied with the instrument in the package.

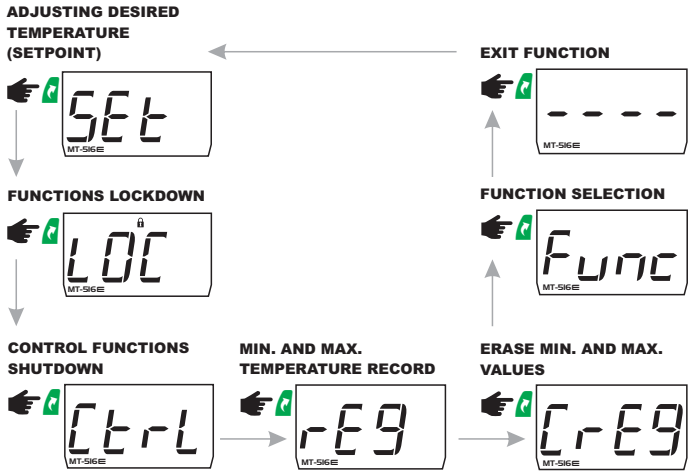
⚠ **IMPORTANT: Make the application only after completing the electrical connections.**

a) Retreat the side locks (Image VI - item 12);
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 12);
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 in the quick access menu, use the key (quick touch) while the temperature is being displayed by the controller. Each touch displays the next function in the list; to confirm, use the key (quick touch). For further details, refer to chapter 8.3. See below the functions map



8.2. Quick access keys map

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

SET	**Hold down for 2 seconds: setpoint adjustment and cyclic timer (F08=2).**
▼	**Hold down for 2 seconds: inhibit audible alarm.**
▼	**Hold down for 4 seconds: reverses cyclic timer status.**
▲	**Quick touch: minimum and maximum temperature display.**
▼	**Quick touch: displays the cyclic-timer elapsed time.**
	Enters quick access menu.
▲ ▼	**Enters function selection.**

8.3. Basic operations

8.3.1. Adjusting desired temperature (setpoint) and cyclic timer times

Hold down the key for 2 seconds to enter the setpoint adjustment menu. The message SP1 will be shown in the display and then the value to adjust the 1st stage setpoint. Use the ▲ or ▼ keys to change the value and press . to confirm. If the 2nd stage is set as thermostat (F08 = 0 or 1), then the SP2 message will be displayed, indicating the setting of the 2nd stage setpoint. Again use the ▲ or ▼ keys to modify the value, then confirm by pressing , if the 2nd stage is set as cyclic timer (F08=2) it will be possible to set the time on ton and the time off toFF.

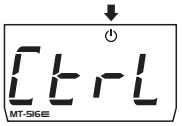
8.3.2. Functions Lockdown

Using the functions lockdown option ensures greater security whilst operating the device. When it is active, the setpoint and other parameters may be visible to the user, but are protected against undue changes (F25=2). Alternatively, you can block the changes in the control functions by releasing the setpoint setup (F25=1), time ON and time OFF of the cyclic timer.
Using the key (quick touch), access the LOC function in the quick access menu, confirm by pressing (quick touch), then the message no will be displayed. After that, hold down the ▼ key for the time configured for the functions lock (F26), until LOC. is displayed. Upon releasing the key, the message On will be displayed indicating that the block function has been activated.

To unlock, turn off the controller then turn it back on whilst holding down the ▼ key. Keep holding down the key until the message LOC appears. Keep the key held down for ten seconds and the message OFF will be shown on the display, indicating the deactivation of the block function once the key is released.

8.3.3. Control Functions Shutdown

Turning the control functions off allows the controller to operate just as a temperature indicator, keeping the control outputs and the alarms disconnected. The use of this feature is enabled or disabled by the control functions shutdown F27. function. When enabled, the control and alarms functions are turned off (CtrL OFF) or on (CtrL On) through the quick access menu via the option CtrL. When the control functions are off, the message OFF will be displayed alternately with the temperature and the other messages.



NOTE: When switching the control functions back on, **MT-516E** will continue to adhere to the same functions "F07 - Delay to turn on the 1st stage output on" and "F18 - Delay to turn on the 2nd stage output".

8.3.4. Display of the time elapsing in the cyclic timer

When the 2nd stage is set as cyclic timer (F08=2), it is possible to display the time elapsed in the cyclic timer by pressing the ▼ key (quick touch).

8.3.5. Manually changing the cyclic timer status

When the 2nd stage is set as cyclic timer (F08=2), pressing the ▼ key for 4 seconds allows you to manually change the cyclic timer output status from "on" to "off" and vice-versa, irrespective of the time elapsed. Changing the cyclic timer status will display the message - - .

8.3.6. Minimum and Maximum Temperature Record

By pressing down the ▲ key or via the quick access menu, the message rE9 appears, after which the minimum and maximum temperatures recorded will be displayed. To erase the current minimum and maximum values, hold down the key (quick touch) until the message CrE9 appears and confirm using the key.
Note: The maximum and minimum temperatures will only be recorded if the setpoint of one of the stages is reached at least once. Before that, the - - - message will be displayed for the records of minimum temperature and - - - - for the records of maximum temperature.

8.3.7. Unit Selection

To select the unit in which the device will operate, enter the function F01 using the access code 231. Then, press the . key. After this, select the unit desired °C or °F using the ▲ or ▼ keys; to confirm press . Every time the unit is changed, the functions settings return to the default value, thus, they must be set up again.

8.3.8. Buzzer inhibition

When activated, the buzzer can be inhibited by pressing the ▼ key for two seconds.

8.4. Advanced operations

The functions menu can be accessed through the quick access menu, using the Func option or by simultaneously pressing the ▲ and ▼ keys whilst the temperature is being displayed. To allow the parameters to be changed, enter F01 by pressing (quick touch) and using the ▼ or ▲ keys enter code 123 (one hundred and twenty-three), and then confirm with . To change the other functions, browse the menu using the ▼ or ▲ keys and proceed the same way to adjust them. To exit the menu and return to the normal operation display, press (long touch) until - - - - .
NOTE: If the functions lock is enabled, when pressing the ▼ or ▲, keys, the controller will display the message LOC and will not allow parameter adjustment.

8.5. Parameters table

		CELSIUS				FAHRENHEIT			
Fun	Description	Min	Max	Unit	Standard	Min	Max	Unit	Standard
F01	Access code:123 (one hundred and twenty three)	0	999	-	0	0	999	-	0
F02	Sensor indication displacement (offset)	-20	20	°C	0.0	-36	36	°F	0
F03	1st stage operation mode	0-cool.	1-heat.	-	0-cool.	0-cool.	1-heat.	-	0-cool.
F04	Minimum setpoint allowed to end user (1st stage)	-50	200	°C	2.0	-58	392	°F	35
F05	Maximum setpoint allowed to end user (1st stage)	-50	200	°C	5.0	-58	392	°F	41
F06	1st stage control differential (Hysteresis)	0.1	20.0	°C	1.0	1	36	°F	1
F07	Delay to turn the 1st stage output on	0(no)	9999	sec.	180	0	9999	sec.	180
F08	2nd stage operation mode	0	4	-	2	0	4	-	2
F09	Cyclic timer/alarm time base	0	3	-	3	0	3	-	3
F10	Cyclic timer/alarm on time	1	9999	sec./min.	5	1	9999	sec./min.	5
F11	Cyclic timer/alarm off time	0	9999	sec./min.	15	0	9999	sec./min.	15
F12	Initial cyclic timer status	off	on	-	on	off	on	-	on
F13	Cyclic timer always on while OUT1 output is on	no	yes	-	yes	no	yes	-	yes
F14	Minimum temperature to turn the cyclic timer off	-50	200	°C	0	-58	392	°F	32
F15	Min. allowed setpoint/Low temp. alarm (2nd stage)	-50	200	°C	-50	-58	392	°F	-58
F16	Max. allowed setpoint/High temp. alarm (2nd stage)	-50	200	°C	105	-58	392	°F	221
F17	2nd stage control differential (Hysteresis)	0.1	20.0	°C	1.0	1	36	°F	1
F18	Delay to turn on the 2nd stage output	0(no)	9999	sec.	0(no)	0(no)	9999	sec.	0(no)
F19	Alarm inhibition time when connecting the controller	0(no)	9999	min.	0(no)	0(no)	9999	min.	0(no)
F20	Enable Buzzer (0-Disabled / 1-Enabled)	off	on	-	off	off	on	-	off
F21	Status of outputs with damaged sensor	0	2	-	0	0	2	-	0
F22	Output-on time in the event of error	1	9999	min.	15	1	9999	min.	15
F23	Output-off time in the event of error	1	9999	min.	15	1	9999	min.	15
F24	Digital filter intensity applied to the sensor	0	9	-	0	0	9	-	0
F25	Functions lockdown	0	2	-	0	0	2	-	0
F26	Time for functions lockdown	15	60	sec.	15	15	60	sec.	15
F27	Control functions shutdown	0(no)	2	-	0(no)	0(no)	2	-	0(no)

Legend: YES = yes
no = no
On = on
OFF = off

8.5.1. Description of parameters

F01 - Access code 123 (one hundred and twenty-three):
This is required to change the configuration parameters. Entering this code is not required to see the adjusted parameters.
It allows you to enter the following access codes:
123 - Allows you access for changing the table parameters
231 - Allows you to configure the unit of measurement oF or oC

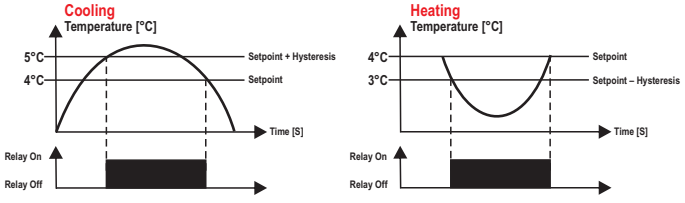
F02 - Sensor indication displacement (offset):
Enables compensation for any temperature deviations resulting from sensor replacement or change in the cable length.

F03 - 1st stage operation mode:
Selects the 1st stage operation mode (OUT1):
0 - Cooling
1 - Heating

F04 - Minimum setpoint allowed to end user (1st stage):
Prevents accidental setting of extremely low setpoint temperatures.

F05 - Maximum setpoint allowed to end user (1st stage):
Prevents accidental setting of extremely high setpoint temperatures.

F06 - 1st stage control differential (Hysteresis):
Difference in temperature (hysteresis) between turning the refrigeration (or heating) ON and OFF.
Example: You want to control the temperature at 4.0 °C with a differential of 1.0 °C. Therefore, the refrigeration will be turned off at 4.0 °C and turned on again at 5.0 °C (4.0 + 1.0). In the heating mode the output goes off at 4°C and turns on again at 3° (4.0-1.0); in the heating mode the output turns off at 4°C and turns on again at 3° (4.0-1.0), according to graphs below:



F07 - Delay to turn the 1st stage output on:
The minimum time during which the 1st stage output remains off, i.e., the time interval between the last stop and the next start. It relieves the discharge pressure and increases the service life time of the compressor. This delay also occurs when starting up the device. In facilities with several equipment units, assigning different values to the delay time at the start up of each device will allow for demand peaks to be avoided when the devices are activated at different times.
This function can be turned off by setting it at the minimum value 0 no.

F08 - 2nd stage operation mode:
Selects the 2nd stage operation mode:
0 - Cooling
1 - Heating
2 - Cyclic timer
3 - Absolute extra-range alarm: Considers the values defined in F15 and F16 as minimum and maximum values to activate the alarm output.
4 - Extra-range alarm relating to the 1st stage setpoint: Considers the 1st stage setpoint and the absolute values defined in F15 and F16, i.e., the positive value of these functions as minimum and maximum values to activate the alarm output. Limits: (SP1 - F15 and SP1 + F16).

F09 - Cyclic timer/alarm time base (F08=2, 3 or 4):
Allows setting of the time bases to turn the OUT 2 output on and off when the 2nd stage is set in cyclic timer or alarm modes. The possible settings for output time on and output time off are, respectively:
0 - Seconds/Seconds
1 - Seconds/Minutes
2 - Minutes/Seconds
3 - Minutes/Minutes

F10 - Cyclic timer/alarm on time (F08= 2, 3 or 4):
Allows setting of time the controller remains with OUT 2 output on when the 2nd stage is set in cyclic timer or alarm modes.

F11 - Cyclic timer/alarm off time (F08= 2, 3 or 4):
Allows setting of time the controller remains with OUT 2 output off when the 2nd stage is set in cyclic timer or alarm modes.

F12 - Initial cyclic timer status (F08= 2):
Allows you to choose whether the cyclic timer starts on or off.
On - Connected
OFF - Disconnected
NOTE: The OUT 2 output will take this status whenever the cyclic timer resumes operation.
Example: By the end of delay to turn the 2nd stage output (F18) on, when exceeding the value set in F14 or exiting the cyclic timer status on while OUT1 output is on (F08=2).

F13 - Cyclic timer always on while OUT1 output is on (F08=2):
Keeps OUT2 output always on while OUT 1 output is on. This is recommended for milk coolers, where the cyclic timer commands the stirrer, which remains activated while cooling is activated.
no - Stand-alone cyclic timer
YES - Cyclic timer always on while OUT1 output is on. When OUT1 output is off the timer will cycle according to times set in F10 and F11.

F14 - Minimum temperature to turn the cyclic timer off (F08=2):
This is the minimum temperature in which the cyclic timer will work; below this limit, the cyclic timer is turned off. It is recommended for milk coolers, to allow the stirrer to operate without excessive load, thus avoiding the engine burning out.
NOTE: Function F14 has priority over F13.

F15 - Minimum allowed setpoint/Low temperature alarm (2nd stage):
F16 - Maximum allowed setpoint/High temperature alarm (2nd stage):
When the 2nd stage is defined as thermostat (F08 = 0 or 1), these are the electronic limits. The purpose of this is to avoid unintentional regulation of extremely high or low setpoint temperatures. When the 2nd stage is defined as alarm (F08 = 3 or 4), these are the electronic limits of low AtLo and high AtHi temperatures, respectively. The differential for turning off the alarm is set at 0.1°C/1°F.
For safety reasons, the 1st stage output will switch off if a high temperature alarm AtHi is activated when configured for heating, or if a low temperature alarm AtLo is activated when configured for cooling. For this reason, you must configure the alarm threshold above (if heating) or below (if cooling) the desired temperature (setpoint of the 1st stage).

F17 - 2nd stage control differential (Hysteresis) (F08 = 0 or 1):
This is the temperature difference (hysteresis) between turning the cooling (or heating) ON and OFF.

F18 - Delay to turn on the 2nd stage output (F08 = 0.1 or 2):
This is the minimum time during which the 2nd stage output remains off, i.e., the time interval between the last stop and next start. This delay also happens when the device is started-up. This function can be turned off by setting it at the minimum value 0 no.
Note: If the 2nd stage is set as cyclic timer (F08=2), this delay will only occur at the device start-up.

F19 - Alarm inhibition time when connecting the controller (F08= 3 or 4):
This function is used to inhibit the alarm for a period of time when the system has not yet reached the operating temperature.
This function can be switched off by setting it at the minimum value 0 no.

F20 - Enable buzzer (0-Disabled/1-Enabled):
Allows enabling and disabling of the internal buzzer for alarm signaling.

F21 - Status of outputs with damaged sensor:
If a sensor short circuits, is turned off, or is off the measurement range, the output takes the status set in this function.
0 - Output off
1 - Output on
2 - Cycling according to times defined in F22 and F23
Note: Function available for thermostat only, not valid for cyclic timer. If it is in heating and/or alarm mode and/or has a malfunctioning sensor, the output will turn off.

F22 - Output-on time in the event of error:
F23 - Output-off time in the event of error:
These define the minimum time during which the output will remain on/off, respectively, if the sensor is turned off, or is off the measurement range.

F24 - Digital filter intensity applied to the sensor:
This filter has the purpose of simulating 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 no.

F25 - Functions Lockdown:
This enables and configures the functions lockdown:
0 - Does not enable the functions lockdown.
1 - Enables a partial lock where the control functions will be locked but the adjustment of the setpoint, process times, cyclic timer times and visualization of the maximum and minimum record are allowed.
2 - Enables a total lock, only displaying the time of the cyclic timer and the record of maximum and minimum temperatures.

F26 - Time for functions lockdown:
Allow lockdown of control functions (see item 8.3.2).
15 - 60 Defines the time in seconds for the controller to activate.

F27 - Control functions shutdown:
Enables control functions shutdown (refer to item 8.3.3).
0 -Disables control functions shutdown.
1 -Enables activation/deactivation of the control functions only if the functions are unlocked.
2 -Enables activation/deactivation of the control functions even if the functions are locked.

9. SIGNALS

Err 1	Error in sensor: Sensor disconnected or damaged.
AtLo	Low temperature alarm.
AtHi	High temperature alarm.
inib	Buzzer inhibited.
ton	Cyclic time on.
toFF	Cyclic time off.
LOC On	Functions lockdown.
LOC OFF	Unlocking of functions.
OFF	Control functions off.
ECAL	Contact Full Gauge Controls.
PPPP	Reconfigure the values of the functions.

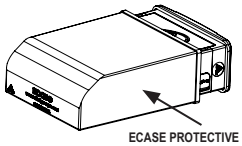
10. GLOSSARY OF ACRONYMS

- ***°C:*** *Temperature in Celsius degrees.*
- ***°F:*** *Temperature in Fahrenheit degrees.*
- ***Heat.:*** *Heating.*
- ***LOC:*** *Blocked.*
- ***No:*** *No.*
- ***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.*
- ***Yes:*** *Yes.*

11. OPTIONAL ITEMS - Sold Separately

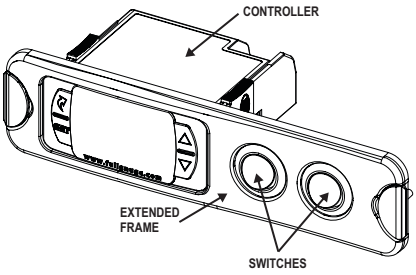
Ecase protective cover

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.



Extended frame

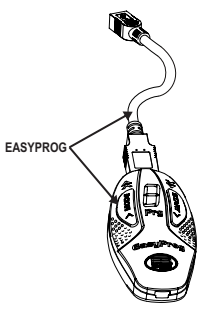
It allows the installation of Evolution line controllers with sizes 76 x 34 x 77 mm in various situations, since it does not require precision in the notch of the instrument fitting panel.
The frame integrates two switches of 10 Amperes that may be used to actuate interior light, air curtain, fan, and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



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.



12. ANNEXES - Reference Images

Image V

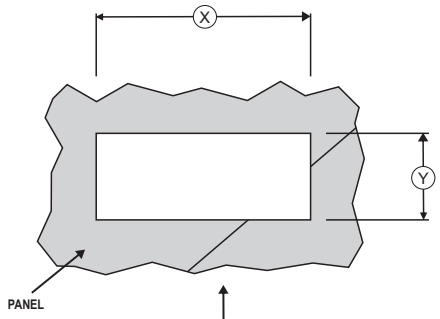


Image VI

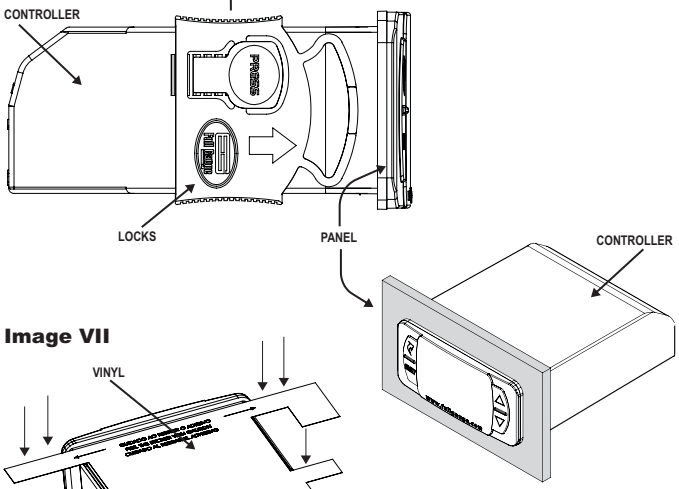
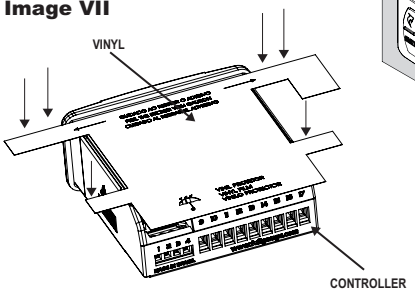


Image VII



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.

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

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