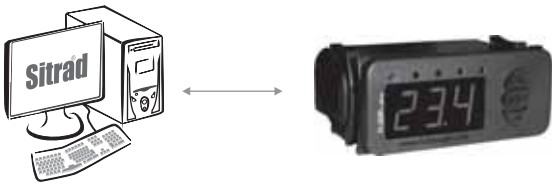
TI-33R*i plus*

THREE SENSORS DIGITAL THERMOMETER WITH SERIAL COMMUNICATION

Ver.01



TI33V01-03T-10871

1. DESCRIPTION

The **TI-33R*i plus*** is a temperature indicator with serial communication. It can work with up to three sensors. Each sensor input can be configured individually through the advanced function menu, where the user can enable or disable each sensor and adjust their calibration offset. The functions dIF and AVr provide indication for differential and average temperature among the sensors.
Through serial output, the RS-485 allows communication with SITRAD® software, which makes its configuration simple and fast.

2. APPLICATION

Freezers, operating machines, hothouses, stoves, freezing trucks, acclimatized rooms, food/ chemical/ drug industry.

3. TECHNICAL SPECIFICATIONS

- Power supply: TI-33Ri plus → 115 or 230 Vac ±10%(50/60 Hz)
  TI-33RiL plus → 12 or 24 Vac/dc
- Temperature range: -50 to 105.0ºC
  -58 to 221°F
- Resolution: 0.1°C from -10 to 100°C to 1°C in the rest of the range
  1°F from -58 to 221°F
- Dimensions: 71 x 28 x 71 mm
- Sensor: Termistor NTC
- Operation temperature: 0 to 50°C / 32 to 122°F
- Operation humidity: 10 to 90% RH(without condensation)

4. CONFIGURATIONS

4.1 Entering the functions menu

Press ▼ and ▲ keys simultaneously for 2 seconds until SEL is displayed, then release the keys. When Cod is displayed, press SET (shortly) and input the code (123) through ▼ and ▲ keys. Press SET to confirm. You can get access to other functions through ▼ and ▲ keys. Use the same procedure above mentioned to configure them. To exit the menu and return to normal operation, press SET (shortly) until --- is displayed.

4.2 - Parameters table

		CELSIUS				FAHRENHEIT			
Fun	Description	Min	Max	Unit	Standard	Min	Max	Unit	Standard
Cod	Access Code	-99	999	-	0	-99	999	-	0
S-1	Sensor 1 (ON or OFF)	0-off	1-on	-	1-on	0-off	1-on	-	1-on
S-2	Sensor 2 (ON or OFF)	0-off	1-on	-	0-off	0-off	1-on	-	0-off
S-3	Sensor 3 (ON or OFF)	0-off	1-on	-	0-off	0-off	1-on	-	0-off
OF1	Sensor 1 offset indication	-5.0	5.0	°C	0.0	-9	9	°F	0
OF2	Sensor 2 offset indication	-5.0	5.0	°C	0.0	-9	9	°F	0
OF3	Sensor 3 offset indication	-5.0	5.0	°C	0.0	-9	9	°F	0
Ind	LED display indication setup mode	0	5	-	0	0	5	-	0
dIF	Differential calculation setup mode	0	3	-	0	0	3	-	0
AVr	Average calculation setup mode	0	4	-	0	0	4	-	0
Add	RS-485 network address	1	247	-	1	1	247	-	1

Cod Access Code
An access code is required when you want to change the configuration parameters. Access code is not required if you just want to view the parameters adjusted.

S-1 Sensor 1 ON or OFF
Sets the temperature measurement from sensor 1 to ON or OFF. This input can be disabled only when it is not being used by any other indicator function and at least one other input is ON.

- OFF Sensor 1 input OFF
- On Sensor 1 input ON

S-2 Sensor 2 (ON or OFF)
Sets the temperature measurement from sensor 2 to ON or OFF. This input can be disabled only when it is not being used by any other indicator function and at least one other input is ON.

- OFF Sensor 2 input OFF
- On Sensor 2 input ON

S-3 Sensor 3 (ON or OFF)
Sets the temperature measurement from sensor 3 to ON or OFF. This input can be disabled only when it is not being used by any other indicator function and at least one other input is ON.

- OFF Sensor 3 input OFF
- On Sensor 3 input ON

OF1 Sensor 1 offset indication
Allows you to compensate the readings of temperature value from any change caused by an eventual cable length modification or sensor replacement.

OF2 Sensor 2 offset indication
Allows you to compensate the readings of temperature value from any change caused by an eventual cable length modification or sensor replacement.

OF3 Sensor 3 offset indication
Allows you to compensate the readings of temperature value from any change caused by an eventual cable length modification or sensor replacement.

Ind LED display indication setup mode
This function allows you to configure the preference temperature to be displayed. Choose one of the following:

- t-1 Displays sensor 1 temperature
- t-2 Displays sensor 2 temperature
- t-3 Displays sensor 3 temperature
- dIF Displays the differential temperature
- AVr Displays the average temperature
- ALL Displays all temperatures, sequentially

dIF Differential calculation setup mode
You can configure how the differential temperature calculation is performed.

- OFF Differential temperature calculation OFF
- 1-2 Sensor 1 temperature minus sensor 2 temperature
- 1-3 Sensor 1 temperature minus sensor 3 temperature
- 2-3 Sensor 2 temperature minus sensor 3 temperature

AVr Average calculation setup mode
You can configure how the average temperature calculation is performed.

- OFF Average temperature calculation OFF
- 1-2 Average temperature between sensor 1 and sensor 2
- 1-3 Average temperature between sensor 1 and sensor 3
- 2-3 Average temperature between sensor 2 and sensor 3
- ALL Average temperature among all sensors (1, 2 and 3)

Add Device address in the RS-485 network
Device address in the network for communicating with SITRAD®.
Note: You cannot have two or more devices with the same address in a network.

5. FUNCTIONS WITH EASY ACCESS

5.1 Viewing other temperatures

For scrolling through the many temperatures (sensor 1, sensor 2, sensor 3, differential and average temperature) press ▼ until your selection is displayed:

- t-1 Sensor 1 temperature
- t-2 Sensor 2 temperature
- t-3 Sensor 3 temperature
- dIF Differential temperature
- AVr Average temperature

The selected temperature will be displayed for 15 seconds and then returns to the preference temperature (previously selected in the Ind function).

5.2 Viewing min./ max. Temperature values

Press the ▲ key to view the min./ max. temperatures for each sensor and the min./ max differential temperature. If you press the ▲ key shortly, the t-1 message is displayed indicating sensor 1 temperature followed by min./ max temperatures. Then sensor 2 temperatures (t-2) are displayed followed by sensor 3 (t-3), differential (dIF) and average (AVr) temperatures.
If you hold the ▲ key for a while the values are reset and the rSt message is displayed.

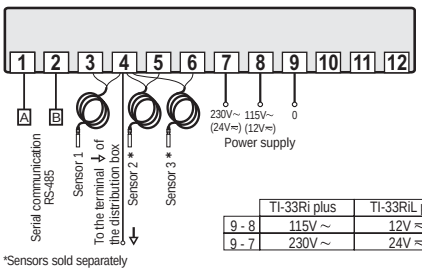
6. SIGNALLING

- Er1 Sensor 1 disconnected or out of range
- Er2 Sensor 2 disconnected or out of range
- Er3 Sensor 3 disconnected or out of range
- PPP Configuration parameters not set or out of range

7. UNIT SELECTION (°C / °F)

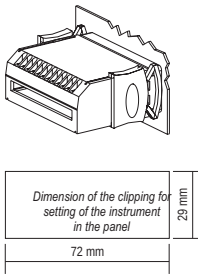
For configuring the measurement unit to be displayed, enter the function menu [Cod] using the access code "231" and confirm it by pressing the SET key. The [Uni] indication is displayed. Press ▼ or ▲ key to choose between [°C] or [°F] and confirm it by pressing the SET key.
After selecting the measurement unit [FAC] is displayed and the device returns to [Cod] function.
Every time the measurement unit is changed, the parameters return to "default" values and must be reconfigured.

8. WIRING DIAGRAM

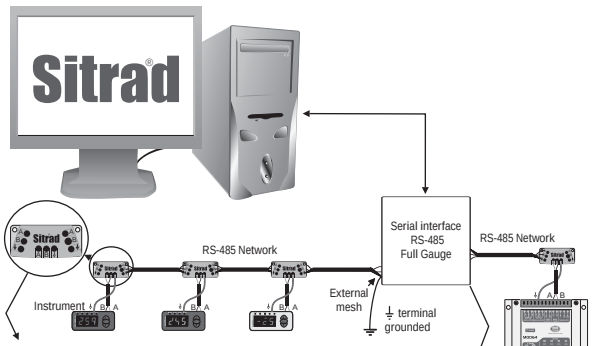


*Sensors sold separately

	TI-33Ri plus	TI-33RiL plus
9 - 8	115V ~	12V ≂
9 - 7	230V ~	24V ≂



Integrating Controllers, RS-485 Serial Interface and Computer



Distribution Box
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 distribution box, 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 distribution box must be connected to the respective terminals ⏚ of each instrument.

RS-485 Serial Interface
Device used to establish the connection Full Gauge Controls' instruments with the Sitrad®.

IMPORTANT

According to the chapters of IEC 60364 standard:
1: Install protectors against overvoltages in the power supply line.
2: Sensor and computer signal cables may be together, however, not in the same electrodut through which electric power supply and load activation cables run.

For more information contact our Application Engineering Department through the e-mail Support@fullgauge.com or by the phone +55 51 34753308.

PROTECTIVE VINYL:

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

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