

Data Sheet - G3 Series RTD Temperature Module

Part Numbers and Mapping

Module Part No.	I/O Type	Alarms	Diagnostics	Input Points
240-311	RTD	Hi/Low Temp for each Channel	Open/Short, Out of Range	4

Input Mapping								
BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
X (Required)	RTD Channel 0	RTD Channel 0	RTD Channel 0	RTD Channel 0	RTD Channel 0	RTD Channel 0	RTD Channel 0	RTD Channel 0
X + 1 (Required)	Sign Bit Channel 0	RTD Channel 0	RTD Channel 0	RTD Channel 0	RTD Channel 0	RTD Channel 0	RTD Channel 0	RTD Channel 0
X + 2 (Required)	RTD Channel 1	RTD Channel 1	RTD Channel 1	RTD Channel 1	RTD Channel 1	RTD Channel 1	RTD Channel 1	RTD Channel 1
X + 3 (Required)	Sign Bit Channel 1	RTD Channel 1	RTD Channel 1	RTD Channel 1	RTD Channel 1	RTD Channel 1	RTD Channel 1	RTD Channel 1
X + 4 (Required)	RTD Channel 2	RTD Channel 2	RTD Channel 2	RTD Channel 2	RTD Channel 2	RTD Channel 2	RTD Channel 2	RTD Channel 2
X + 5 (Required)	Sign Bit Channel 2	RTD Channel 2	RTD Channel 2	RTD Channel 2	RTD Channel 2	RTD Channel 2	RTD Channel 2	RTD Channel 2
X + 6 (Required)	RTD Channel 3	RTD Channel 3	RTD Channel 3	RTD Channel 3	RTD Channel 3	RTD Channel 3	RTD Channel 3	RTD Channel 3
X + 7 (Required)	Sign Bit Channel 3	RTD Channel 3	RTD Channel 3	RTD Channel 3	RTD Channel 3	RTD Channel 3	RTD Channel 3	RTD Channel 3
X + 8 (Optional)	Channel 3 Out of Range	Channel 2 Out of Range	Channel 1 Out of Range	Channel 0 Out of Range	Channel 3 Open/Short	Channel 2 Open/Short	Channel 1 Open/Short	Channel 0 Open/Short
X + 9 (Optional)	Channel 3 High Alarm	Channel 3 Low Alarm	Channel 2 High Alarm	Channel 2 Low Alarm	Channel 1 High Alarm	Channel 1 Low Alarm	Channel 0 High Alarm	Channel 0 Low Alarm

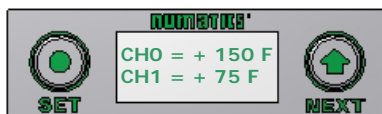
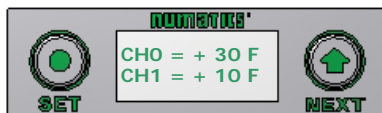
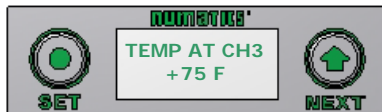
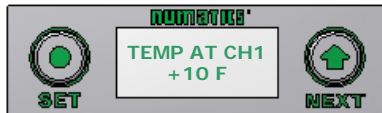
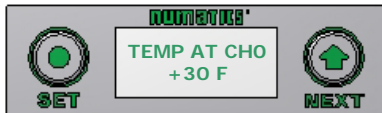
Where X = starting byte



Data is represented by **Two's Complement**, in tenths of a degree.

Menu System

RTD Module / Temperature Monitoring



- 1) Press the NEXT button to scroll through the **Temperature Monitoring** display options.

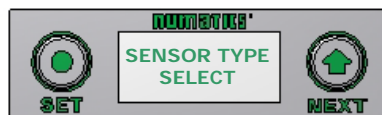
Pressing the SET button while in one of the Temperature Monitoring displays, will return the display back to the home screen.

If "DISABLED" is the temperature identified at any channel, advance the display to Sensor Type Select, to choose a sensor/Enable the channel, or press the "SET" button to jump directly to the selection display.

Unused channels should be left "DISABLED".



RTD Module / Sensor Type Select (**Channel Enable**)



- 2) Allows the sensor type for each channel to be selected, and, enable the channel selected.

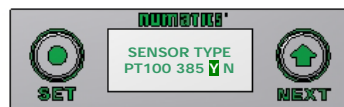
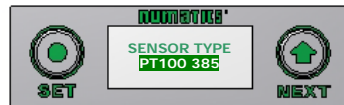
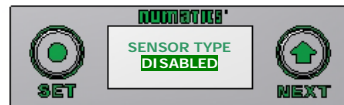


- A) Press the SET button to enter the Sensor Type Select sub menu.



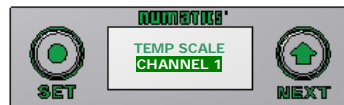
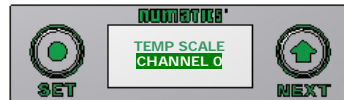
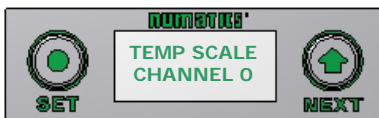
- B) Press the NEXT button to scroll through the channels.

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- C) Press the SET button to select the desired channel.
If "DISABLED" is the first selection, the channel is not enabled. Select a sensor type to enable the channel.
- D) Press the NEXT button to scroll through the available sensor types.
- E) Press the SET button to select the desired sensor type.
- F) Press the SET button to load the selected sensor type.

RTD Module / Temperature Scale

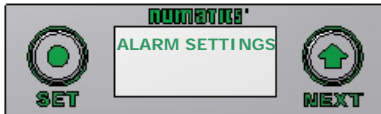


- 3) Allows the temperature scale for each channel to be set to Celsius or Fahrenheit.

- A) Press the SET button to enter the Temp Scale sub menu.
- B) Press the NEXT button to scroll through the channels.
- C) Press the SET button to choose the desired channel.
- D) Press the NEXT button to choose the desired scale.
- E) Press the SET button to load the selection.

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RTD Module / Alarm Settings



4) Allows the Low and High alarms of each RTD Input channel to be set. This parameter generates a visual and logical (bit) when set value is achieved.

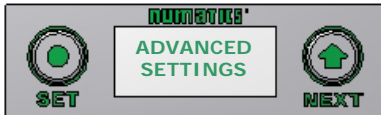
- A) Press the SET button to enter the Alarm Settings sub-menu.
- B) Press the NEXT button to scroll through the RTD Input channels.
- C) Press the SET button to enter the alarm setting for the selected Input channel.
- D) Press the NEXT button to select the Lo or High setting for the selected channel.
- E) Press the SET button to select the change process for the chosen alarm. The first digit/sign will be highlighted.
- F) Press the NEXT button to choose the value, or the SET button to select and move to the next digit.
- G) Press the NEXT button to choose "Y" or "N" Select. Then press the SET Button to Accept.



When Alarm values are set to maximum/minimum values, the alarm function is disabled.
Factory default settings for all alarms are disabled.

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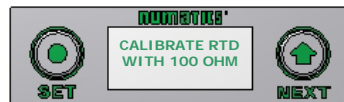
RTD Module / Advanced Setting



5) Allows the Update Filters for each channel to be set and *Field Calibration to be performed.



A) Press the SET button to enter the Advance Settings sub-menu.



B) Press the NEXT button to choose the option; Update Filters or Calibrate RTD.

*Calibration is not normally required and can **only** be performed with high tolerance ($\pm 0.005\%$) 100 ohm and 350 ohm resistors.

Update Filters



C) Press the SET button to choose the Update Filter setting.



D) Press the NEXT button to scroll through the filter times.

E) Press the SET button to select the desired Update Filter time.

Calibrate RTD



F) Press the SET button to choose the Calibrate RTD setting.



G) Press the NEXT button to scroll through the channels.



H) Press the SET button to begin calibration for the selected channel. Follow Screen prompts.



*Resistors must be connected during calibration procedure. See diagrams on page 10.

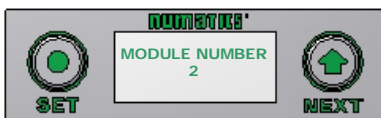
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RTD Module / I/O Mapping Input Byte



- 1) Displays the logical mapping starting byte of the data for the module.

RTD Module / Module Number (Position)



- 2) Displays the assigned module number for the module, identifying its position in the I/O side of the G3 system.

RTD Module / Module Description



- 3) Displays the module type.

RTD Module / Part Number



- 4) Displays the part number of the module.

RTD Module / Firmware Revision



- 5) Displays the level of firmware loaded in the module.

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RTD Module / Set Display Brightness



6) Allows the Brightness of the display to be changed



A) press the SET button to enter the Set Brightness sub menu.



B) Press the NEXT button to scroll through the brightness options

C) Press the SET button to load the selection.

RTD Module / Flip Display



7) Allows the Display to be flipped 180 degrees.



A) press the SET button to enter the Flip Display sub menu.



B) Press the NEXT button to choose the orientation.



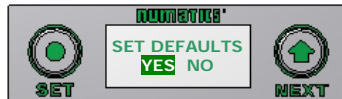
C) Press the SET button to load the selection.

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RTD Module / Factory Defaults

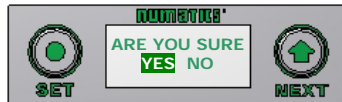


8) Allows all parameter settings to be set back to default values.



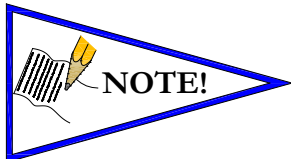
A) Press the SET button to enter the Factory Defaults sub menu.

B) Press the NEXT button to choose Yes or No.



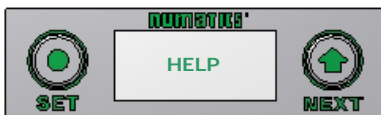
C) Press the SET button to confirm.

D) Press the SET button again.



Factory Default Settings	
Alarm – High & Low	Disabled (Set to Min/Max for each chosen sensor)
Input Update Filter	5 mS
Sensor Type	Pt 100 385
Temp Scale	Celsius
Display Brightness	Medium
Flip Display	Normal

RTD Module / HELP

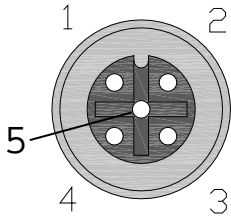


9) Directs the user to online help.



A) Identifies the Numatics web adress.

Connector Pin Out



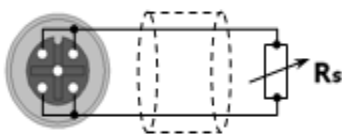
FEMALE

- PIN 1 = Sensor Current Source (I+)
- PIN 2 = Sense Voltage (VIN+)
- PIN 3 = Sensor Current Source (I-)
- PIN 4 = Sense Voltage (VIN-)
- PIN 5 = Not Used



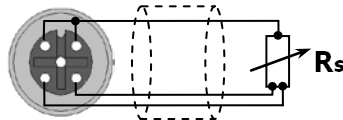
Wiring Diagrams

2 Wire Sensor Type
2 Wire Cable (Fig 1)

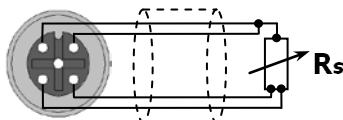


2 Wire
Sensor Type
Low Accuracy

3 Wire Sensor Type
3 Wire Cable (Fig 2)

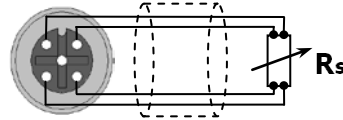


3 Wire Sensor Type
4 Wire Cable (Fig 3)

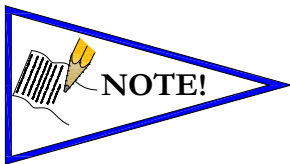


3 Wire
Sensor Type
Medium Accuracy

4 Wire Sensor Type
4 Wire Cable (Fig 4)



4 Wire
Sensor Type
High Accuracy



- For maximum accuracy on a 3 wire sensor type make identified jumper connections at the sensor end (see Fig3). Cable resistance, resulting from cable length, affects measuring error; therefore use cables that are as short as possible.
- For long cable runs and high accuracy use 4 wire sensor types.