27U / 27TS / 27RS / 27R / 27PM Temperature Transmitters

PC CONFIGURATOR SOFTWARE
Model: 27MCFG

Users Manual

CONTENTS

1. INTRODUCTION

1.1 GENERAL DESCRIPTION

The 27MCFG is used to program parameters for the models 27U, 27TS, 27RS, 27R and 27PM Temperature Transmitters (referred hereunder as 'device'). The following major functions are available:

- Edit parameters online (connected to the device) in real time
- Edit parameters offline (not connected to the device)
- Download parameters to the device, upload parameters from the device
- Save parameters as files, read parameters from files
- Compare parameters edited on the screen with the ones stored in the device

1.2 APPLICABLE DEVICES

The 27MCFG is applicable to the following products:

Function	Model No.	Symbol
Universal Transmitter	27U	**U**
Thermocouple Transmitter	27TS	**T**
RTD Transmitter	27RS, 27R	**R**
Potentiometer	27PM	**P**

In this manual, descriptions given with the above symbols are applied only to the models those symbols are assigned to. Other descriptions with no specific symbol are applied to all models.

1.3 PC REQUIREMENTS

The following PC performance is required for adequate operation of the 27MCFG.

PC	IBM PC compatible
OS	Windows 7 (32-bit, 64-bit)/Windows 10 (32-bit, 64-bit)
	The software may not operate adequately in certain conditions. Certain animation effect setting on Windows may result in abnormal behavior when scrolling windows.
CPU	Must meet the relevant Windows' requirements.
Memory	Must meet the relevant Windows' requirements.
Network port	USB port (COM1 through COM16)

Bell202 Modem (model: COP-HU) is also required to connect the transmitter device to the PC.

1.4 INSTALLING & DELETING THE PROGRAM

INSTALL

The program is provided as compressed archive. Decompress the archive and execute 'setup.exe' to start up the 27MCFG installer program. Follow instructions on the Windows.

DELETE

Open Control Panel > Add/Remove Programs. Select the 27MCFG from the program list and click Delete button.

2. GETTING STARTED

2.1 STARTING THE 27MCFG

Open Program > M-SYSTEM > Configurator > 27MCFG to start up the 27MCFG on the Windows PC.

2.2 CONNECTING TO THE DEVICE

1) Click [Settings] button at the left top of the screen.

2) Choose the COM port number to which the device is to be connected. Once one of the COM port is specified after the PC Configurator has been installed and started, you do not need to repeat the setting procedure until you want to change the COM port setting.

3) Click [Connect] button and connect the device to the PC's COM port via the Bell202 Modem.

4) The device's present parameters are uploaded and shown on the screen.
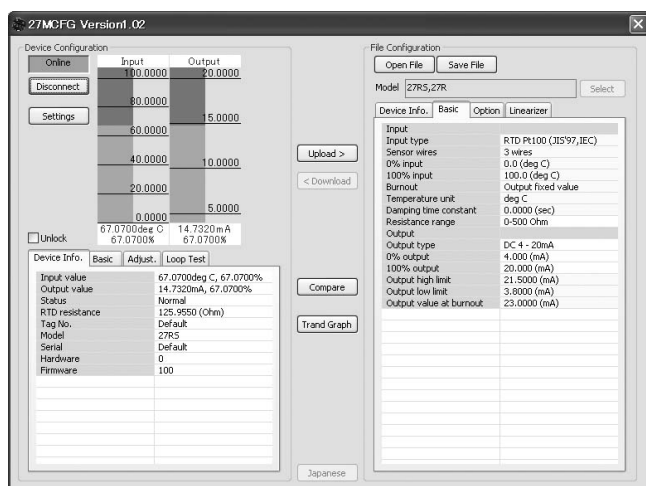
[Connect] button is now replaced with [Disconnect] button.

The bargraphs on the screen show real time I/O status of the device, and you can now access to the menu tabs such as Device Info, Basic, Calibration, Adjustments, and Loop Test.

When the cable is disconnected, the device info returns to blank status and the PC Configurator is ready to be connected to another device. In order to continue, just connect a new device. You do not need to click [Connect] button.

2.3 BASIC OPERATIONS

2.3.1 SCREEN COMPONENT IDENTIFICATION
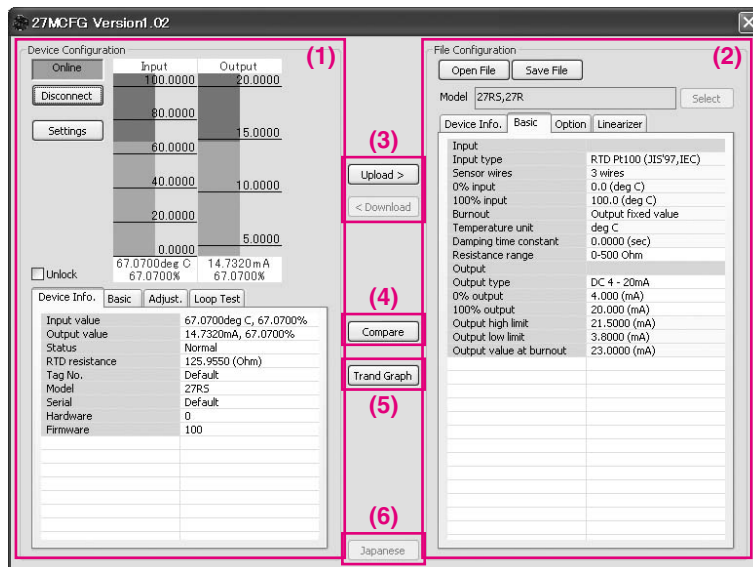
(1) Device Configuration

Shows the parameters of the device presently connected online. You can refer to the process values, refer and edit the parameters, perform fine adjustments and loop test output in real time.

(2) File Configuration

Used to create and edit parameter sets on the PC. You can upload a parameter set from a device, edit it and download it to the device again.

(3) Upload / Download

Used to read parameter setting in the device and to write one to the device.

(4) Compare

Opens Compare window to compare edited parameters from actual setting.

(5) Trend Graph

Opens Trend Graph window to show a trend graph for the connected device.

(6) English / Japanese

Switches the display language. Clicking the button switches between English and Japanese.

The program starts up in English mode as initial state when the OS is other than Japanese version. You can switch to Japanese only when the OS supports Japanese language.
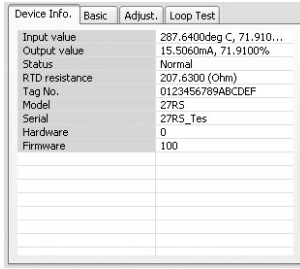
2.3.2 DEVICE INFO – DEVICE INFORMATION

Shows the present I/O data and status, last calibration date, model number and other information.

Name	Explanations
Input value	Shows the current input value in engineering unit and in percent.
Output value	Shows the current output value in engineering unit and in percent.
Status	Shows the current device status.
	Normal The device is operating in normal parameters.
	Burnout The input wire is broken.
	Fixed output The device in the loop test mode, supplying a fixed output.
Cold junction temp. **U T**	Shows the temperature measured at the CJC Sensor (CJM).
Terminal temperature **U T**	Shows the emf voltage measured at the thermocouple sensor.
RTD resistance **U R**	Shows the resistance measured at the RTD sensor.
Tag No.	Shows the device's tag name. When 'Unlock' box located above Device Info tab is checked, the tag can be modified.
	Enter at the maximum of 16 alphanumeric characters among the following: 0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ!\"#$%&'()=-+*^~|@`[]{};:<>?_,./
Model	Model number of the device
	This is the original model number at our factory. Actual model suffix codes may differ if the device setting has been changed at site.
Serial	Serial number of the device
Hardware	Hardware revision number of the device
Firmware	Firmware revision number of the device

2.3.3 BASIC – BASIC SETTING

Shows basic I/O setting of the device. Parameter items on the screen may change depending upon models.
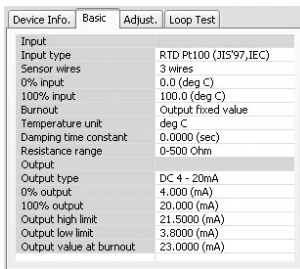
When 'Unlock' box located above Device Info tab is checked, modifiable parameters are highlighted on the light orange background. Click one of such parameters and to show a pull-down list or an edit box to modify it.

Model specific parameter items are explained in Section 4.

MG CO., LTD. www.mgco.jp
5-2-55 Minamitsumori, Nishinari-ku, Osaka 557-0063 JAPAN
       27MCFG EM-9252-A Rev.7   **7**

2.3.4 CALIBRATION
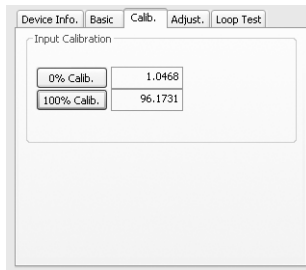
The Potentiometer input can be set from 0% to 100% based on the real input value. When you want to set the present input value to 0%, just push the button "0% Calib." and the input value in engineering unit is displayed beside the button. Use the same way to set the potentiometer input to 100% by using button "100% Calib.".

2.3.5 ADJUST – FINE ADJUSTMENTS

Fine adjustments can be conducted independently for the input and the output. Zero is adjusted by offset adjustment, while Span is adjusted by gain adjustment.

For the model 27U, both Input 1 and 2 can be independently adjusted (See Figure to the right below).

Caution !
Fine adjustments may not be performed correctly if the power supply to the device is removed or if the Bell202 Modem is detached during adjustments.
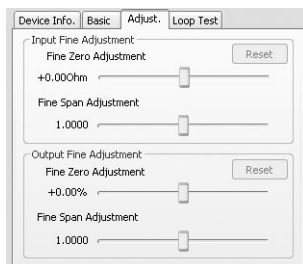
Figure. Fine adjustments
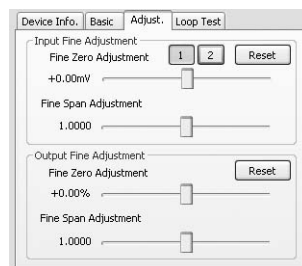
Figure. Fine adjustments, universal input

Input Fine Adjustment

1) Apply 0% input signal.

2) Adjust the sliding potentiometer until the monitored input signal shows 0% input.

3) Apply 100% input signal.

4) Adjust the sliding potentiometer until the monitored input signal shows 100% input.

Output Fine Adjustment

1) Apply 0% input signal.

2) Adjust the sliding potentiometer until the monitored output signal shows 0% output.

3) Apply 100% input signal.

4) Adjust the sliding potentiometer until the monitored output signal shows 100% output.

Caution !
Output values shown on the configurator do not change when fine adjustments are performed, while the monitored output values (actual output signal) change.

2.3.6 LOOP TEST

The device output signal can be simulated without actual input signals to conduct a loop test.

1) Click [Fixed Out] button.
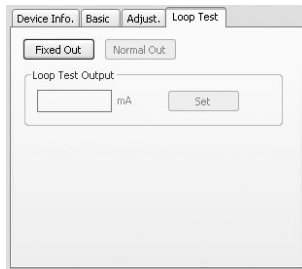
2) Enter a desired output value and click [Set].
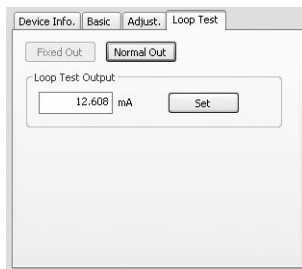
3) Click [Normal Out] button to cancel the loop test mode.

Caution !

Be sure not to forget to return the device to the normal output mode after the loop test. The loop test mode is not cancelled until the power supply to the device is turned off.

2.4 READING/WRITING PARAMETERS

2.4.1 READING PARAMETERS FROM DEVICE (UPLOAD)

Confirm the device connection (cable and software link) and click [Upload] to start reading parameters stored in the connected device. A progress bar is indicated on the screen and when the uploading is complete, the parameters are shown on File Configuration field.
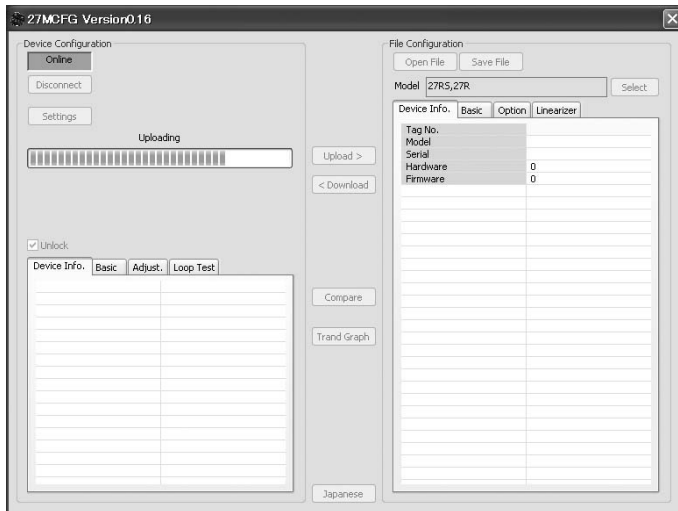
2.4.2 WRITING PARAMETERS TO DEVICE (DOWNLOAD)

Confirm the device connection (cable and software link) and click [Download] to start writing parameters edited on the screen to the connected device. A progress bar is indicated on the screen until the downloading is complete.
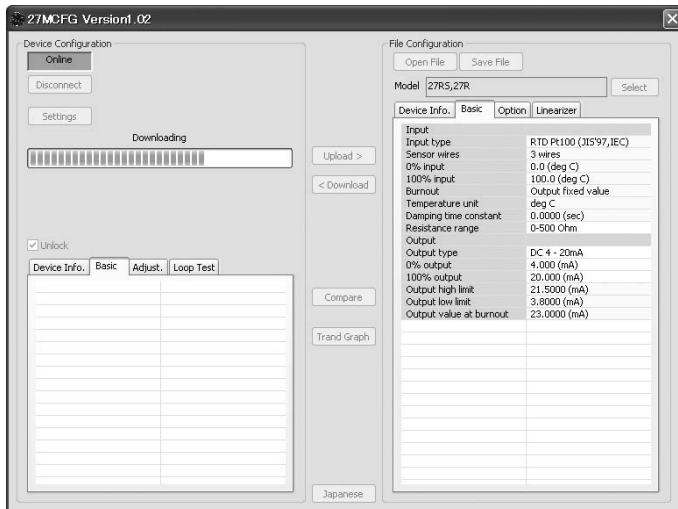
Caution !
DO NOT turn off the power supply to the device or disconnect the cable while downloading. The device setting may not be complete as expected.

2.5 COMPARING PARAMETERS

Parameters presently edited on the screen and those stored in the connected device can be compared side by side. Edited parameters could be from a file if you open one in advance, or another device if you uploaded one in advance.

Clicking [Compare] button starts reading parameters from the connected device. Parameters are compared and listed on the screen side by side. The rows showing differences between two sets of parameters are highlighted in red background. The total number of non-matching cases is mentioned at the bottom.

Group	Parameter name	Device configuration	File configuration
Input	Sensor wires	3 wires	4 wires
Input	0% input	0.0 (deg C)	0.0 (deg C)
Input	100% input	100.0 (deg C)	200.0 (deg C)
Input	Burnout	Output fixed value	Output fixed value
Input	Temperature unit	deg C	deg C
Input	Damping time constant	0.0000 (sec)	0.0000 (sec)
Input	Resistance range	0-500 Ohm	0-500 Ohm
Output	Output type	DC 4 - 20mA	DC 4 - 20mA
Output	0% output	4.000 (mA)	4.000 (mA)
Output	100% output	20.000 (mA)	20.000 (mA)
Output	Output high limit	21.5000 (mA)	21.5000 (mA)
Output	Output low limit	3.8000 (mA)	3.8000 (mA)
Output	Output value at burnout	23.0000 (mA)	22.5000 (mA)
Fine adjustment	Input fine zero adjust.	0.00 (Ohm)	0.00 (Ohm)
Fine adjustment	Input fine span adjust.	1.0000	1.0000
Fine adjustment	Output fine zero adjust.	+0.00 (%)	+0.00 (%)
Fine adjustment	Output fine span adjust.	1.0000	1.0000
Custom RTD	Custom RTD start	0.0000 (deg C)	0.0000 (deg C)
Custom RTD	Custom RTD step	1 (deg C)	1 (deg C)
Custom RTD	Custom RTD points	2	2
Custom RTD	R[0]	0.0000 (Ohm)	0.0000 (Ohm)
Custom RTD	R[1]	0.0001 (Ohm)	0.0001 (Ohm)
Custom RTD	R[2]	0.0000 (Ohm)	0.0000 (Ohm)
Custom RTD	R[3]	0.0000 (Ohm)	0.0000 (Ohm)
Custom RTD	R[4]	0.0000 (Ohm)	0.0000 (Ohm)
Custom RTD	R[5]	0.0000 (Ohm)	0.0000 (Ohm)
Custom RTD	R[6]	0.0000 (Ohm)	0.0000 (Ohm)
Custom RTD	R[7]	0.0000 (Ohm)	0.0000 (Ohm)
Custom RTD	R[8]	0.0000 (Ohm)	0.0000 (Ohm)

3 parameter(s) not matching.

2.6   FILES

2.6.1   READING PARAMETERS SAVED AS FILE

Clicking [Open File] calls up the Windows-standard Open dialog box. Select a parameter file to show a stored parameter setting.

In order to download the parameters to the connected device, click [Download] button.
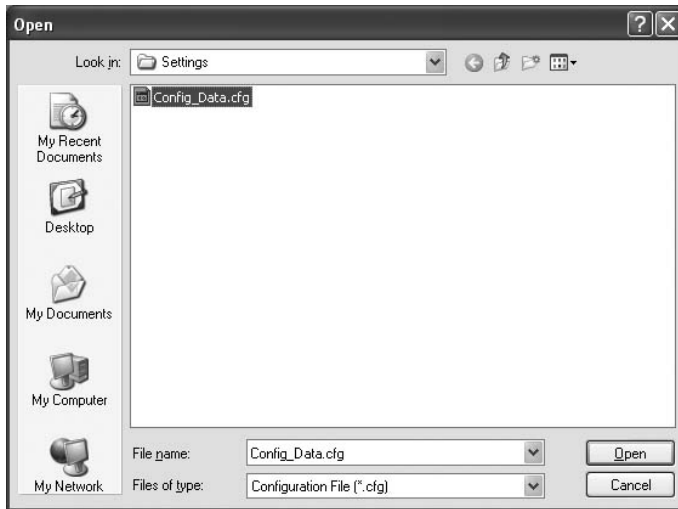
2.6.2   SAVING PARAMETERS IN A FILE

Clicking [Save File] calls up the Windows-standard Save As dialog box. Enter a desired file name to File Name field and click [Save] to store a parameter setting.

In order to save the parameters of the connected device, click [Upload] first and then save them as a file.
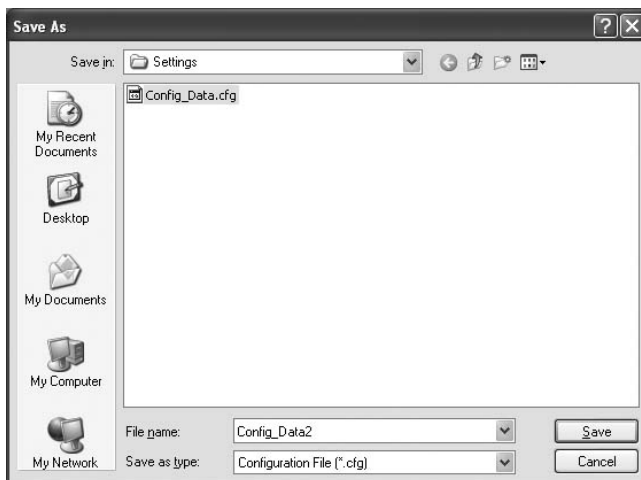
2.6.3   OFFLINE OPERATION

The parameters under File Configuration on the right side of the window can be edited freely regardless of the status of the connection or the connected device.

With a device connected online, only the parameters under Basic tab under Device Configuration can be edited in real time. In the offline state, all parameters under File Configuration including Linearizer and Option setting can be edited.

If you want to modify setting for the connected device, first upload the parameters from the device, edit them and then download them to the device.

2.7 TREND GRAPH

Input signal to the device can be monitored on a trend graph. The trend is recorded and displayed in 1 second intervals.
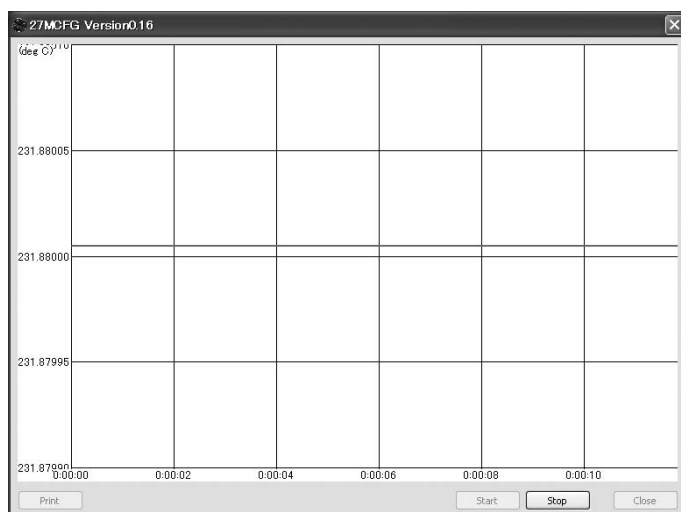
Click [Start] to start recording and displaying in real time.

Click [Stop] to stop monitoring, and the recorded trend graph can be studied more closely by scrolling and enlarging the screen:

Mouse	Screen
Press left mouse button and drag	Scrolls the screen to all directions.
Press right mouse button and drag	Forms an area on the screen to enlarge and fit it to the full-screen area when the mouse button is released.
Double-click left mouse button	Display range is reduced by half (trend curve is zoomed in).
Double-click right mouse button	Display range is doubled (trend curve is zoomed out).

[Print] is available only when the monitoring is stopped by [Stop] button.

Click [Print] to print the trend graph presently displayed on the screen.

3. HOW TO SETUP I/O (EXAMPLE)

Basic input/output range setting is as in the following.

The input of the 27RS is to be configured to Pt 100 for 0 to 500°C range in the below example.

3.1 CONNECTING TO THE DEVICE

Start up the 27MCFG software. Choose the COM port to which the device is connected and click [Connect]. Present parameter setting is uploaded and displayed under Device Configuration on the screen. Check 'Unlock' box so that you can now change the parameters.

3.2 INPUT

1) Click [Input type] field. Choose the input type 'RTD Pt100.'

2) Click [0% input] field. The input range is automatically set to the full-scale of the selected input type. Enter the scaled 0% temperature value (0.0 (deg C)).

3) Click [100% input] field. Enter the scaled 100% temperature value (500.0 (deg C)).

3.3 OTHER SETTING

The 27RS has more variety of functions than explained in the previous sections, including damping time constant setting, output high/low limits and linearization. Basic procedure is mostly the same as the above example.

Linearizer and Option setting must be edited offline. Upload the present setting to the PC (See 2.4.1), edit the file and then download the new setting (See 2.4.2).

For detailed explanations, please refer to Section 4. PARAMETER DETAILS.

3.4 DOWNLOADING NEW SETTING

Confirm 'Unlock' status and click [Download] to start downloading new parameters configured on the screen.

4. PARAMETER DETAILS

4.1 MODEL

Choose the appropriate hardware model type before starting setting. All related views are switched to those for the selected model when you have set the model type.

Model	Selectable Model Type	Function
27U	27U (TC)	Thermocouple input, single
	27U (RTD)	RTD input
	27U (V)	Voltage input
	27U (Res)	Resistance input
	27U (2TC-Diff)	Thermocouple input, dual, differential
	27U (2TC-Ave)	Thermocouple input, dual, average
27TS	27TS	Thermocouple input
27RS	27RS, 27R	RTD input
27R	27RS, 27R	RTD input
27PM	27PM	Potentiometer input

4.2 DEVICE INFO

TAG NO.

When 'Unlock' box located above Device Info tab is checked, the tag can be modified.

Enter at the maximum of 16 alphanumeric characters among the following:
0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ!\"#$%&'()=-+*^~|@`[]{};:<>?_,./

4.3 BASIC SETTING

4.3.1 INPUT TYPE 𝐓 𝐑 𝐔

Selectable input types depend upon model numbers.

Symbol	Selection
𝐓	TC K (CA)
	TC E (CRC)
	TC J (IC)
	TC T (CC)
	TC B (RH)
	TC R
	TC S
	TC C (WRe 5-26)
	TC D (WRe 3-25)
	TC N
	TC U
	TC L
	TC Custom TC (0-50mV)
	TC Custom TC (0-100mV)
𝐑	RTD Pt 100 (JIS '97, IEC)
	RTD JPt 100 (JIS '89)
	RTD Pt 500
	RTD Pt 1000
	RTD Custom RTD (0-500Ω)
	RTD Custom RTD (0-2.5kΩ)
	RTD Custom RTD (0-5kΩ)

For the model 27U, choose the input type according to the selected model type.

Symbol	Model Type	Selection
𝐔	27U (TC)	TC K (CA)
	27U (2TC-Diff)	TC E (CRC)
	27U (2TC-Ave)	TC J (IC)
		TC T (CC)
		TC B (RH)
		TC R
		TC S
		TC C (WRe 5-26)
		TC D (WRe 3-25)
		TC N
		TC U
		TC L
		TC Custom TC (0-50mV)
		TC Custom TC (0-100mV)
	27U (RTD)	RTD Pt 100 (JIS '97, IEC)
		RTD JPt 100 (JIS '89)
		RTD Pt 500
		RTD Pt 1000
		RTD Custom RTD (0-500Ω)
		RTD Custom RTD (0-2.5kΩ)
		RTD Custom RTD (0-5kΩ)
	27U (V)	DC -5-+50mV
		DC -10-+100mV
	27U (Res)	Res 0-500 Ohm
		Res 0-2.5k Ohm
		Res 0-5k Ohm

For a custom TC/RTD, choose also an appropriate range so that the maximum input voltage or resistance remains within the selected range.

4.3.2 SENSOR WIRES U R

Choose either 2 wires, 3 wires or 4 wires.

4.3.3 0% INPUT, 100% INPUT

Calibrated (scaled) temperature range.

4.3.4 0% DIFF, 100% DIFF U

Specifies 0% and 100% differential temperature values for the model type 27U (2TC-Diff). With this type, specify 0% and 100% input temperature range in Section 4.3.3. 0% INPUT, 100% INPUT.

[Example]

K thermocouple, measuring temperature difference of -100 to 100°C as 0 to 100%. Temperature range of each input is of 200 to 400°C.

Setting	Input type: TC K (CA)
	Input 0%: 200 (deg C)
	Input 100%: 400 (deg C)
	Diff 0%: -100 (deg C)
	Diff 100%: 100 (deg C)

Output actions	Input 1 = 350°C, Input 2 = 250°C ➡ Output = 100% (difference = 100°C)
	Input 1 = 250°C, Input 2 = 250°C ➡ Output = 50% (difference = 0°C)
	Input 1 = 300°C, Input 2 = 350°C ➡ Output = 25% (difference = -50°C)
	Input 1 = 500°C, Input 2 = 400°C ➡ Abnormal reading (Input 1 overrange)

4.3.5 BURNOUT

Specifies either the output should be fixed in case that a burnout is detected. Choose among the following:
>None
>Output fixed value

With 'Output fixed value' option selected, the device output is forcibly set to the value specified in 'Output value at burnout.'

4.3.6 LINEARIZATION P

Choose 'Enable' to enable the function, choose 'Disable' to disable the function.

4.3.7 TEMPERATURE UNIT T R U

Choose among the following:

>deg C
>deg F
>K

The device internally processes temperature in Celsius, and converts the value into Fahrenheit (°F) or Absolute Temperature (K) to show on the screen.

This means certain Fahrenheit values cannot be set and displayed exactly down to the limit of fractions.

When you enter a value in Fahrenheit, fractions of values converted into Celsius are rounded to four (4) decimal places before it is internally processed, then converted again into Fahrenheit to be displayed on the screen, its result's fractions rounded again.

For example:

Entering 96 [°F] is converted internally into (96 − 32) / 1.8 = 35.55555...., rounded to 35.5556. Then it is converted again into 35.5556 x 1.8 + 32 = 96.00008, rounded to 96.0001 [°F] on the screen.

4.3.8 COLD JUNCTION COMPENSATION U T

Specifies either the CJC sensor (model: CJM) incorporated to the device is used to measure the cold junction temperature or a preset fixed terminal temperature is used for cold junction compensation.

4.3.9 DAMPING TIME CONSTANT

First order lag filter. Time contact, time required for an step input to track and reach approx. 63% of the full-scale, is selectable from 0 to 30 seconds. No filter is applied when set to 0.

The I/O bargraphs also react accordingly.

4.3.10 THERMOELECTRIC VOLTAGE Ｕ Ｔ

Shows the valid emf range matching the selected input type.

4.3.11 RESISTANCE RANGE Ｕ Ｒ

Shows the valid resistance range matching the selected input type.

4.3.12 OUTPUT TYPE

The output type is fixed at DC 4 - 20mA.

4.3.13 0% OUTPUT, 100% OUTPUT

Calibrated (scaled) output range. Fixed at DC 4 - 20mA.

4.3.14 OUTPUT HIGH LIMIT, OUTPUT LOW LIMIT

Specify the maximum output range for which the signal proportional to the input is provided.

4.3.15 OUTPUT VALUE AT BURNOUT

Specify a current value used in case of a burnout.

4.4   OPTIONS

4.4.1   FINE INPUT ADJUSTMENTS Ｔ Ｒ Ｕ

For the dual inputs with the 27U, fine adjustments can be applied independently to Input 1 and Input 2.

The following equation is applied to finely adjust the input signal.

   Adjusted value = Input x Input Span Fine Adj. + Input Zero Fine Adj.

Unit depends upon the input type. Adjustable ranges for Input Zero Fine Adj. are as follows:

Symbol	Input type	Unit	Adjustable range
Ｕ Ｔ	Thermocouple	mV	-1.500 to 1.500
Ｕ Ｒ	RTD	Ω	-20.00 to 20.00

Adjustable range for Input Span Fine Adj. is 0.9500 to 1.0500 (95 to 105%).

4.4.2   FINE OUTPUT ADJUSTMENTS

The following equation is applied to adjust the output signal finely.

   Adjusted value = Output x Output Span Fine Adj. + Output Span x Output Zero Fine Adj.

Adjustable range for Output Zero Fine Adj. is -5.00 to 5.00%, for Output Span Fine Adj. is 0.9500 to 1.0500 (95 to 105%).

Caution !
Output values shown on the configurator do not change when fine adjustments are performed, while the monitored output values (actual output signal) change.


4.5 LINEARIZER

Different types of linearization are used depending upon models as shown below:

Symbol	Input type	Linearizer
P	Potentiometer	User Table Specified by a segment linearization table with calibration points defined with multiple sets of input (X) and output (Y) values.
T	Thermocouple	Custom TC Calibration points defined with a starting point, calibration step and calibration points. An EMF value is given to each point.
R	RTD	Custom RTD Calibration points defined with a starting point, calibration step and calibration points. A resistance value is given to each point.

Caution !

In order to ensure accurate cold junction compensation, include the transmitter's ambient temperature within the temperature range description for T/C input. (i.e. The start temperature must be lower than the ambient temperature.)   This is applicable for both the CJM and the fixed reference temperature.
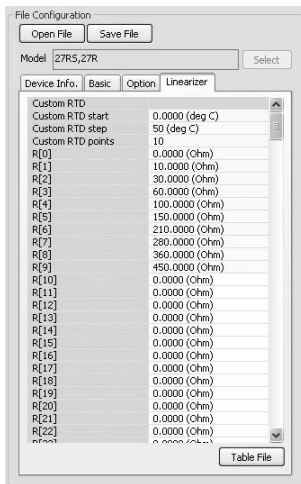
Alternatively, a table data file can be imported. Click [Table File] to open Linearization Table window.
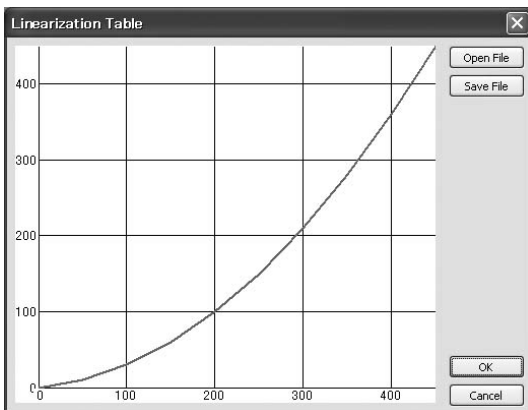
The graph shows the presently edited table. X axis represents temperature, while Y axis represents resistance.

Click [Open File] in this window to show a pre-defined table data.

Click [Save File] in this window to save the edited table data as files.

A custom TC/RTD table data can be stored in a simple text format, created by Windows application software such as 'note pad.'

Caution !

Be sure to go back to 'Basic Setting' to set 'Input type' again after a custom TC/RTD table has been created and imported. The parameters to be downloaded to the transmitter are updated only at that moment.

4.5.1 CUSTOM TC ᴜ ᴛ

Custom TC start

Specify the minimum temperature value from -300 to 1000°C.

Custom TC step

Specify the temperature step in which the resistance values are given in the table, from 1 to 50°C.

Custom TC points

Specify how many calibration points are given in the table, from 2 to 300 points.
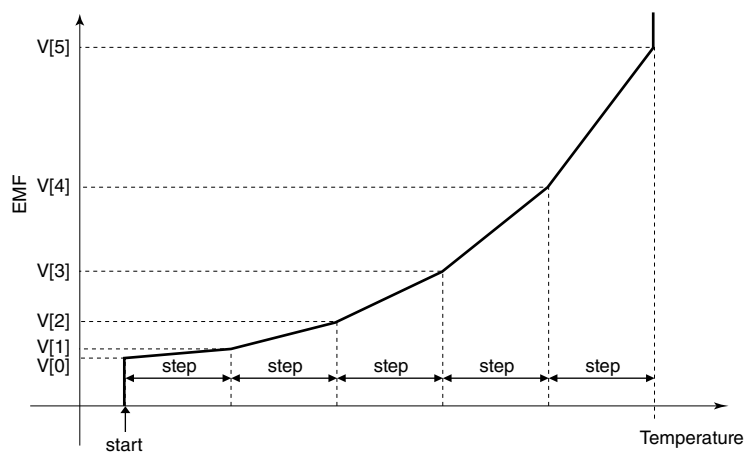
V[0] through V[299]

Specify the resistance values for each calibration point in the temperature range which is determined by Custom TC start, step and points.

Start at V[0], in consecutive, ascending order. Temperatures in descending order or mixing ascending and descending orders are not acceptable.

Temperature remains fixed at the maximum and the minimum point when an EMF out of the range is provided.

Input Type	EMF Range	Accuracy
Custom TC (0-50mV)	-5 to 50 mV	±0.01mV or ±0.075% of max. range, whichever is greater.
Custom TC (0-100mV)	-10 to 100 mV	±0.02mV or ±0.075% of max. range, whichever is greater.

4.5.2 CUSTOM RTD U **R**

Custom RTD start

Specify the minimum temperature value from -300 to 1000°C.

Custom RTD step

Specify the temperature step in which the resistance values are given in the table, from 1 to 50°C.

Custom RTD points

Specify how many calibration points are given in the table, from 2 to 300 points.

R[0] through R[299]

Specify the resistance values for each calibration point in the temperature range which is determined by Custom RTD start, step and points.

Start at V[0], in consecutive, ascending order. Temperatures in descending order or mixing ascending and descending orders are not acceptable.

Temperature remains fixed at the maximum and the minimum point when an EMF out of the range is provided.

| Input Type	Resistance Range	Accuracy
Custom RTD (0-500Ω)	0 to 500 Ω	±0.06Ω or ±0.075% of max. range, whichever is greater.
Custom RTD (0-2.5kΩ)	0 to 2.5 kΩ	±0.3Ω or ±0.075% of max. range, whichever is greater.
Custom RTD (0-5kΩ)	0 to 5 kΩ	±0.6Ω or ±0.075% of max. range, whichever is greater.
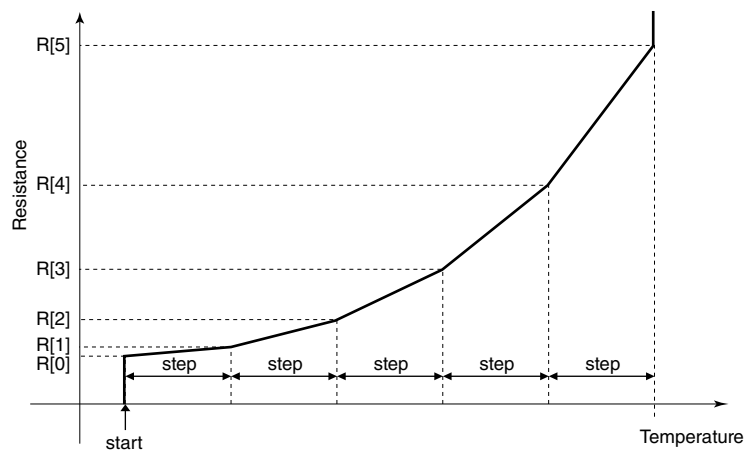
4.5.3 USER TABLE ℙ

Number of points

Specify the number of calibration points in the linearization table (2 through 101).

X[0], Y[0] ... X[100], Y[100]

Enter pairs of X (input %) and Y (output %) within the range of -15 to 115% of the full-scale. Arrange in order from the smallest X value. Non-specified Xs and Ys, i.e. the range between two calibration points are approximated by a linear line.

When the input value is out of the defined range, the closest Y value is applied.

When the calibrated output value is lower than -15% or higher than +115%, -15% and +115% is output respectively.
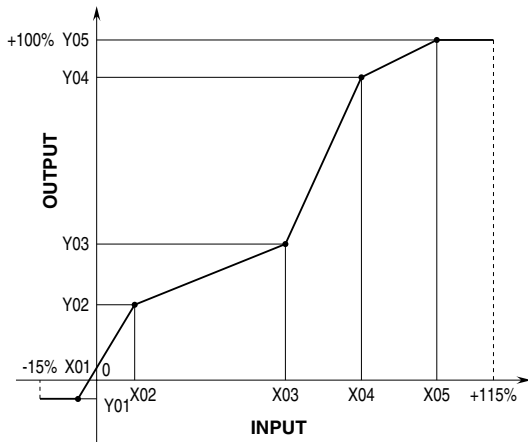
APPENDIX - 1. CUSTOM TC/RTD FORMAT

TC/RTD table data can be stored in a simple text format, created by Windows application software such as 'note pad.' This table can be imported as a predetermined linearization table.

User-specific TC/RTD data are defined in .text format with components as indicated below.

```
/* Custom table comment */

Minimum Temperature = 0.0000
Step = 1
{
      100.0000
      100.3900
      100.7800
      101.1700
      101.5600
}
```

The row starting with '/' is recognized as a comment.

The bracket ' { ' in the second row indicates the beginning of the table, while the ' } ' in the last row indicated the end.

Define the minimum temperature value in Celsius at Minimum Temperature, from -300 to 1000°C.

Specify the Temperature Step used in the table, from 1°C to 50°C.

°F or K cannot be used to define a custom table.

Describe the characteristics data within {   }. Data must be entered in mV (TC) or ohms (RTD). Max. 4 decimal places. Up to 300 points can be specified.

APPENDIX - 2. USER TABLE FORMAT

Linearization data is saved in .txt format with components as indicated below. This table can be imported as a pre-determined linearization table.

```
/* User linearization table comment */
{
        -15,   -15.0000
          0,     1.0000
         50,    49.0000
        115,   115.0000
}
```

The row starting with '/' is recognized as a comment.

The bracket ' { ' in the second row indicates the beginning of the table, while the ' } ' in the last row indicated the end.

Each row contains Xn and Yn represented in %, paired and separated by comma. The X here can only be integer, and the data must be arranged in order from the smallest Xn.

Max. 101 pairs of 'Xn, Yn' can be described.