

Field Communication Software CommStaff Model: CFS100

Instruction Manual (Smart Transmitter Model JTD720A Edition)



Yamatake Corporation

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Instruction Manuals

Safety-related precautions, general operating procedures, and other general information related to CommStaff can be found in the Common Edition manual (No. CM2-CFS100-2001). For information on the operation of a device used with CommStaff, consult the manual for that particular device.

The Common Edition manual for CommStaff, as well as the manuals for individual devices, are included in electronic form (as PDF files) on the CommStaff installation CD-ROM

Devices Covered by This Manual

This manual pertains to ST3000 model JTD720A with the model number pattern JTD720A

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Chapter 1. Overview

1-1. Introduction

CommStaff is a tool for communicating with Yamatake smart field devices (DSTJ and others) that enables configuration of device settings. It is a software product that operates on Windows PCs. CommStaff communicates with Yamatake smart field devices using a USB interface connected to a Windows PC, which is then connected by communications cable to the USB port of a device.

CommStaff supports Yamatake's proprietary SFN/DE communication protocol *2 as well as the HART communication protocol.

*1. HART is a registered trademark of the HART Communication Foundation.

*2. DE output is not supported.

This manual describes how to use the model JTD720A Smart Transmitter communications version of CommStaff. For information on the specifications common to all types of devices and information on how to install CommStaff, please refer to the main CommStaff Operation Manual. *Before reading this manual, make sure to read the main CommStaff Operation Manual thoroughly.*

1-2. Important Notes

- When changing connected devices

CommStaff continues communicating with the device when displaying dynamic values, such as pressure, so that it can continuously update these values. If you remove the communications cable to change the device during this communication, an error will occur.

Exit CommStaff before detaching the communications cable from the device, and then start CommStaff again after connecting the communications cable to the new device.

- For details on common problems, refer to CM2-CFS100-2001, *Field Communication Software: CommStaff Model: CFS100 (Common Edition) User's Manual*.

1-3. Supported Versions

CommStaff version 1.1 supports the JTD720A with SFN communications version 7.8 or later.

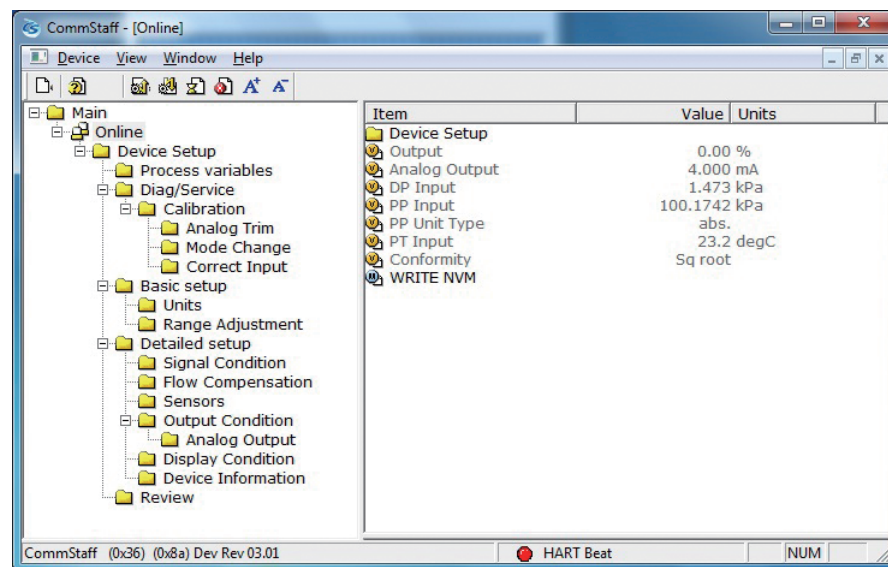
Chapter 2. Preparation before Operation

2-1. Menu List

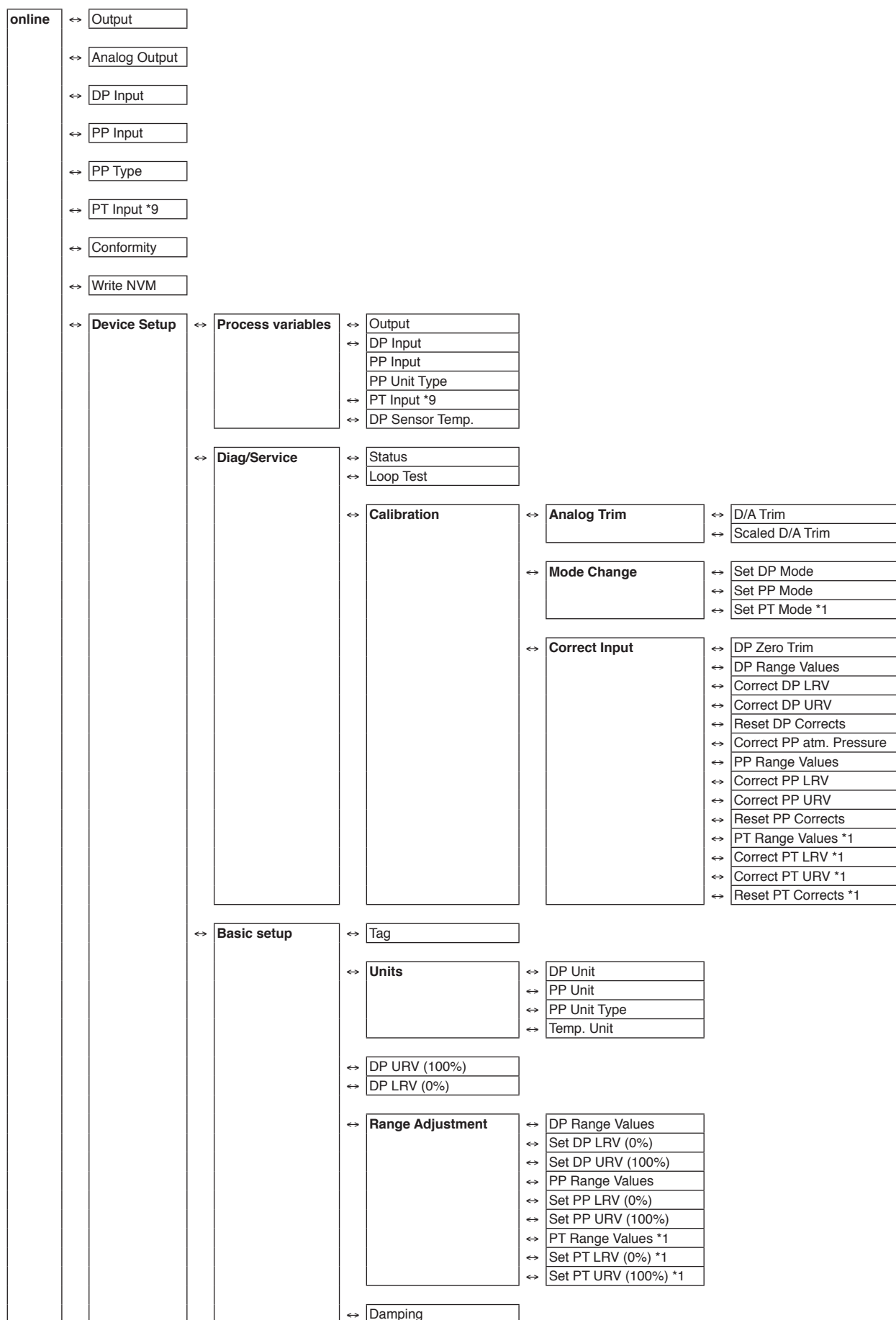
Right-clicking "Online" in the menu tree in the left pane of the CommStaff application window displays a menu. Selecting Expand on the menu displays the expanded menu tree.

Parameters displayed in gray (Output and Analog Output in the following window) in the parameter display in the right pane are parameters that cannot be changed.

Those displayed in black (WRITE NVM in the window below) are parameters that can be changed.



The following gives details of the menus displayed in the menu tree. Bold items are parameters that can be changed.



online	↔	Device Setup	↔	Detailed setup	↔	Signal Condition	↔	DP URV (100%)		
							↔	DP LRV (0%)		
							↔	Damping		
							↔	Conformity		
							↔	Dropout/Flow Mode *2		
							↔	Cutoff Value *2, *3		
						Flow Compensation	↔	Measured Gas		
							↔	Change measured gas		
							↔	Compensation Formula		
							↔	Flow Type		
							↔	Ref. PP *1, *4		
							↔	PP Unit Type *8		
							↔	PP ELV *1, *4		
							↔	Ref. PT *1, *5		
						Sensors	↔	Comp. Coef.		
							↔	Dummy input mode		
							↔	DP Input		
							↔	DP Unit		
							↔	DP URL		
							↔	PP Input		
							↔	PP Unit		
							↔	PP URL		
							↔	Probe *1		
							↔	PT Input *9		
						Output Condition	↔	Temp. Unit		
							↔	DP Sensor Temp.		
							↔	CPU Board Temp.		
						Display Condition	↔	Analog Output	↔	Analog Output
									↔	Output
									↔	F/S Dir.
									↔	Loop test
									↔	D/A Trim
									↔	Scaled D/A Trim
						Device Information	↔	Conformity		
							↔	Display Conformity *6		
							↔	Disp.Unit		
							↔	EU Units *7		
							↔	EULO *7		
							↔	EUHI *7		
						Device Information	↔	Manufacturer		
							↔	Model		
							↔	Tag		
							↔	Message		
							↔	PROM ID		
							↔	Software Version		

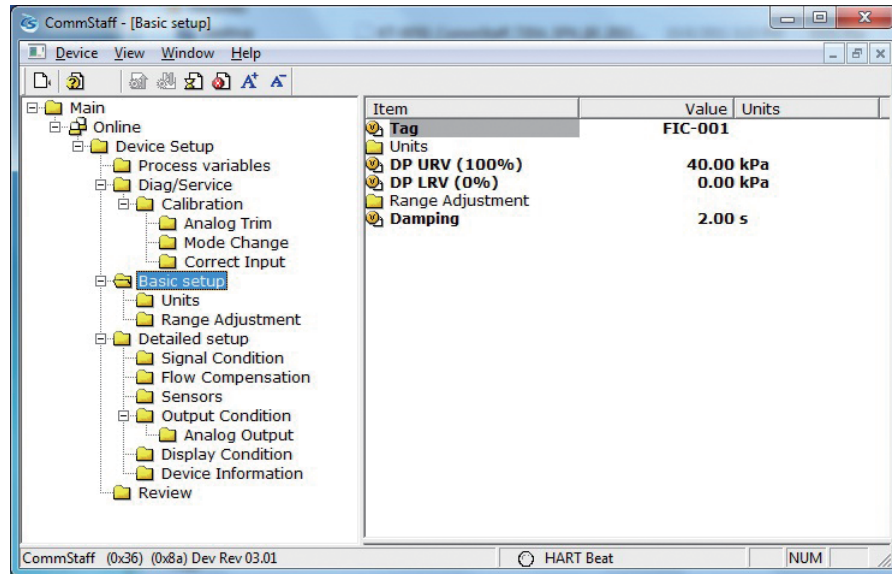
online ↔	Device Setup ↔	Review ↔	↔ Model
			↔ Manufacturer
			↔ Tag
			↔ Conformity
			↔ Dropout/Flow Mode *2
			↔ Cutoff Value *2, *3
			↔ Compensation Formula
			↔ Flow Type
			↔ PROM ID
			↔ Software Version
			↔ Damping
			↔ DP URV (100%)
			↔ DP LRV (0%)
			↔ DP Unit
			↔ Ref. PP *1, *4
			↔ PP ELV *1, *4
			↔ Ref. PT *1, *5
			↔ Display Conformity *6
			↔ Disp.Unit
			↔ EU Units *7
			↔ EULO *7
			↔ EUHI *7
			↔ F/S Dir.
			↔ Output
			↔ Comp. Coef.
			↔ DP Sensor Temp.
			↔ CPU Board Temp.
			↔ DP URL
			↔ DP Input
			↔ PP URL
			↔ PP URV (100%)
			↔ PP LRV (0%)
			↔ PP Unit
			↔ PP Unit Type
			↔ PP Input
			↔ Probe *1
			↔ PT URL *1
			↔ PT LRL *1
			↔ PT URV (100%) *1
			↔ PT LRV (0%) *1
			↔ PT Input *9

If there are multiple conditions, they all must be met for the item to be displayed.

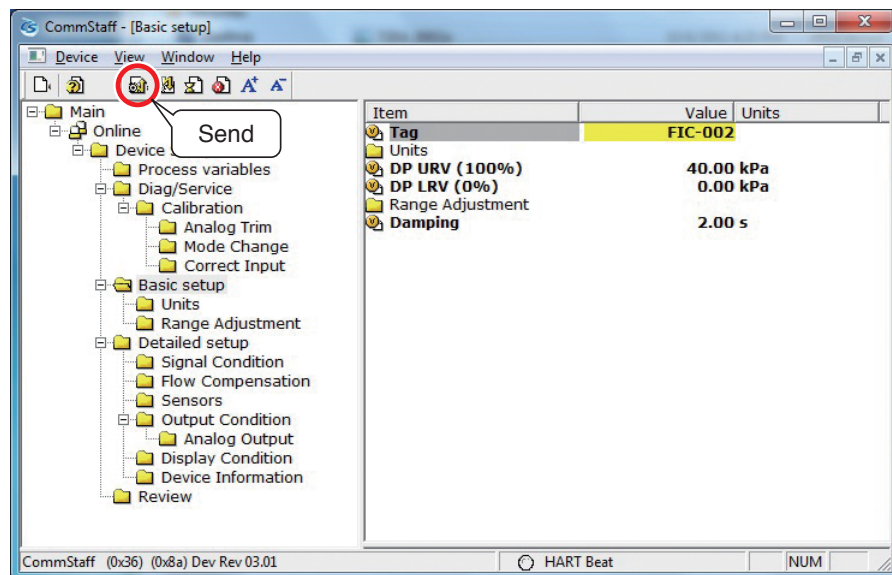
- *1 Displayed when Measured Gas is set for Ideal Gas. Not displayed when the setting is Saturated Steam.
- *2 Displayed when Conformity is set for Sq root. Not displayed when the setting is Linear.
- *3 Displayed when the Dropout/Flow Mode is set for something other than Def. (7.1% Lin.). Not displayed when it is set to Def. (7.1% Lin.)
- *4 Displayed when Compensation Formula is set for Temp.comp. or Temp. Pressure comp.
- *5 Displayed when Compensation Formula is set for Pressure comp. or Temp. Pressure comp.
- *6 Displayed when Conformity is set for Linear.
- *7 Displayed when Disp.Unit is set for Eng.Unit.
- *8 PP Unit Type in the Flow Compensation menu is displayed even through it is not required unless pressure calibration is being done.
- *9 PT Input shows the calculated saturated steam temperature when the measured gas is saturated steam.

2-2. Tag Number Configuration

This section explains how to input or change the tag No. In the menu tree in the left pane, select [Device Setup] → [Basic setup] → [Tag].



Double-clicking Tag displays the settings screen. On this screen, set the Tag and click the Set button. The tag is highlighted in yellow. Click the Send button to send the new Tag to the transmitter.

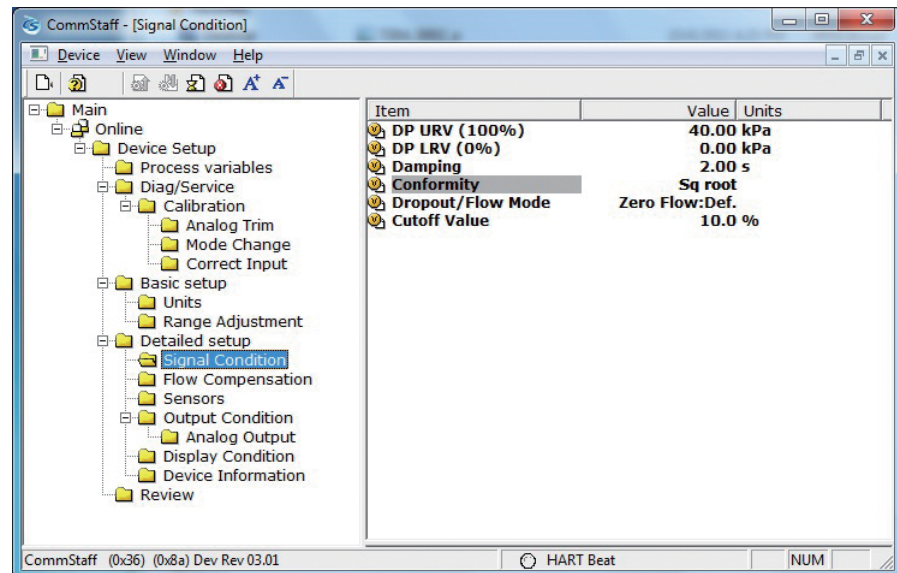


2-3. Output Format Configuration

2-3-1. Checking or setting Linear/ Sq root output

This section explains how to switch between linear and square root output.

Select [Device Setup] → [Detailed setup] → [Signal Condition] → [Conformity].



Double-clicking [Conformity] will display a dialog box for selection of one of the following items.

Linear / Sq root

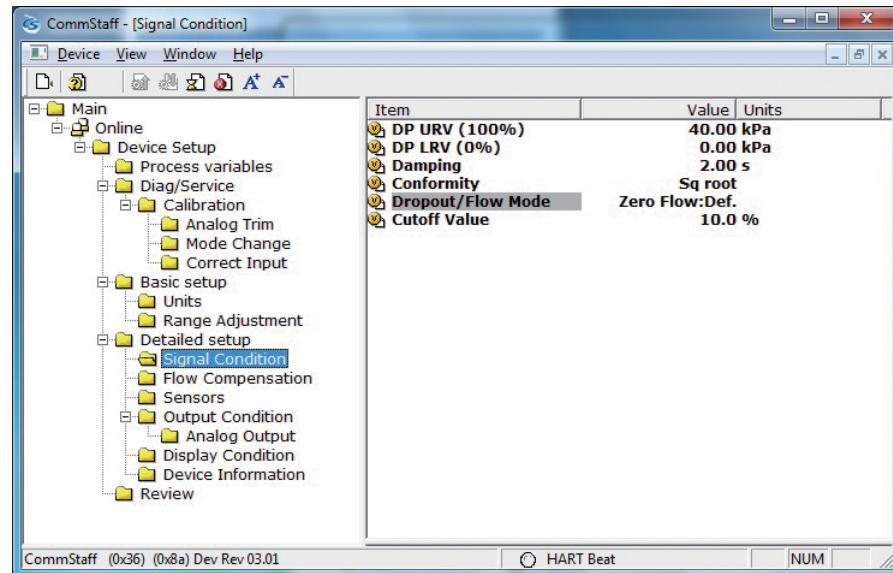
After selecting, click the <Set> button. After the dialog box closes, click the <Send> button.

2-3-2. Checking or setting the output direction (forward only, or forward and reverse)

This displays or changes the output direction when setting the square root extraction output (forward only, or forward and reverse).

This function is enabled if Conformity is set to Sq root.

Select [Device Setup] → [Detailed setup] → [Signal Condition] → [Dropout/Flow Mode].



The output direction can be selected from the following five types.

Selection options	Output direction	Output at cutoff	Low Cutoff Value
Zero Flow: Def	Forward	Zero	Any (depends on Cutoff Value setting)
Lin Flow: Def	Forward	Linear	Any (depends on Cutoff Value setting)
Zero Flow: Bi-dir.	Forward and reverse	Zero	Any (depends on Cutoff Value setting)
Lin Flow: Bi-dir.	Forward and reverse	Linear	Any (depends on Cutoff Value setting)
Def. (7.1% Lin)	Forward	Linear	7.1 % (default)

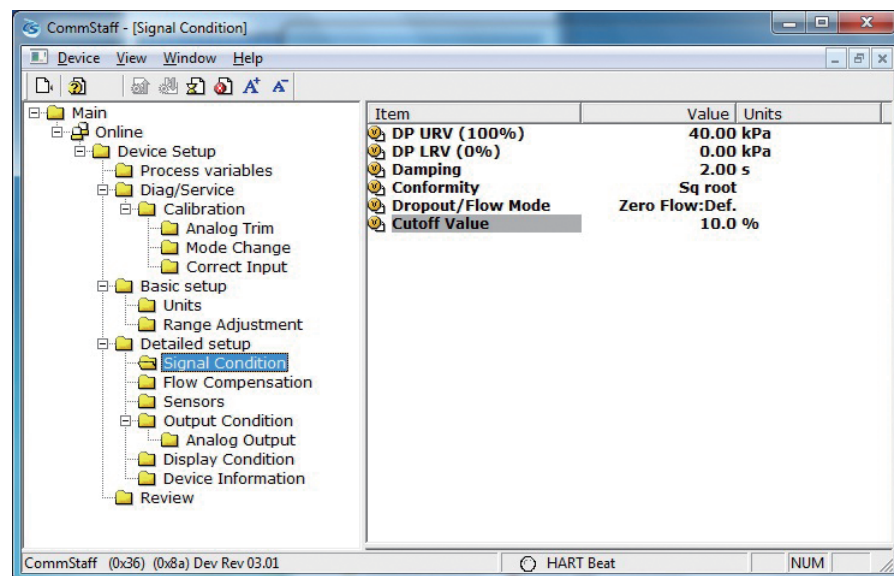
2-3-3. Checking or setting the low cutoff value

Select [Device Setup] → [Detailed setup] → [Signal Condition] → [Cutoff Value]

The low flow cutoff value is effective with the following settings.

Conformity	Sq root
Dropout/Flow Mode	Not "Def. (7.1 % Lin)"

It can be set from 0 to 20 %

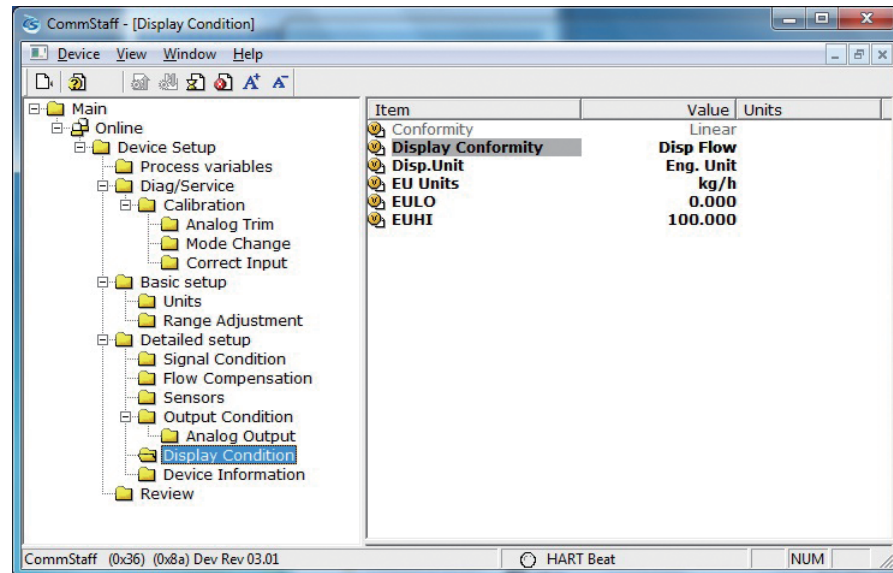


2-4. Setting the indicator

2-4-1. Checking or setting the indicator display conformity (Linear or Disp Flow)

When Conformity is set at Linear, the Display Conformity can be set at either Linear or Disp Flow.

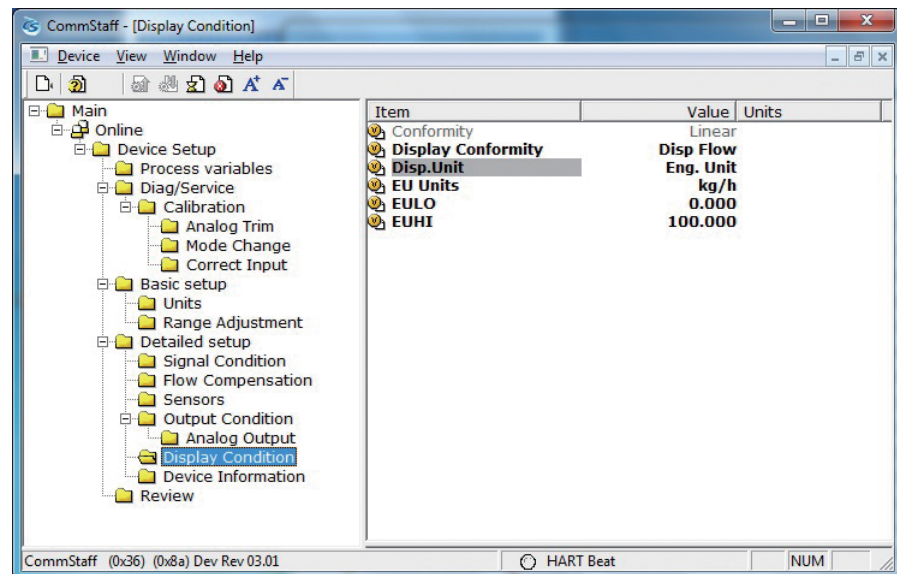
Select [Device Setup] → [Detailed setup] → [Display Condition] → [Display Conformity].



2-4-2. Checking or setting the indicator display unit

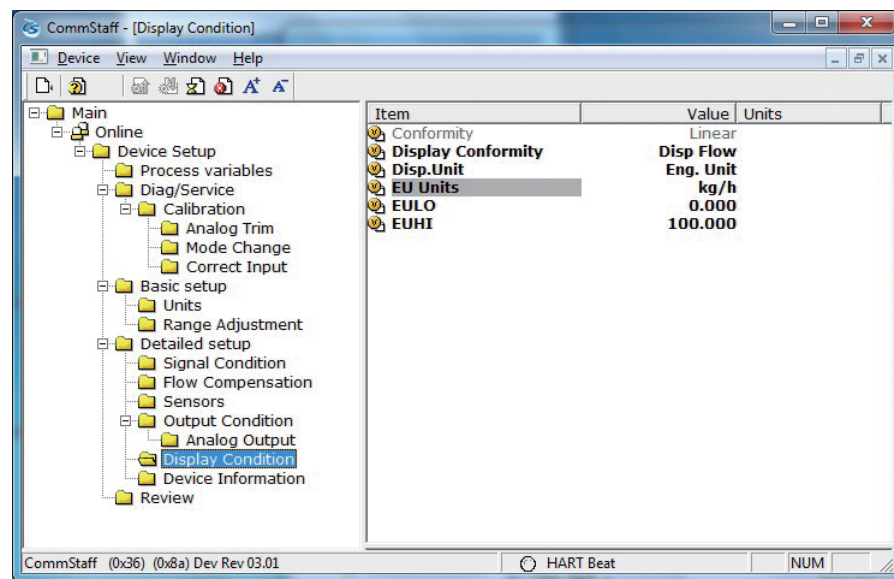
First, the display unit should be set to either % or engineering unit (Eng. Unit) under the Disp. Unit item.

Select [Device Setup] → [Detailed setup] → [Display Condition] → [Disp. Unit].



If Disp. Unit is set to Eng. Unit, next make a selection for EU Units.

Select [Device Setup] → [Detailed setup] → [Display Condition] → [EU Units].



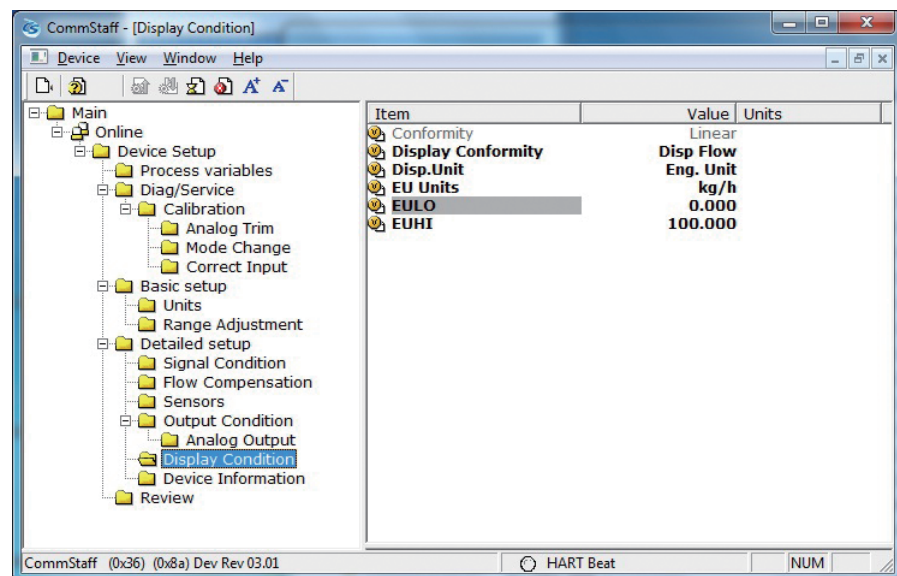
The following units are available. For use in Japan, select an SI unit

gal/s	l/s	Ft ³ /s	m ³ /s	Ft ³ /min
gal/min	l/min	IGPM	m ³ /min	cm ³ /min
m ³ /h	ImpG/h	cm ³ /h	l/h	gal/h
MilG/d	MilL/d	Ft ³ /d	m ³ /d	ImpG/d
BPD	gal/d	kgal/d	l/s	l/min
l/h	l/d	kl/s	kl/min	kl/h
kl/d	m ³ /s	m ³ /min	m ³ /h	m ³ /d
Nm ³ /s	Nm ³ /min	Nm ³ /h	Nm ³ /d	t/s
t/min	t/h	t/d	g/s	g/min
g/h	kg/s	kg/min	kg/h	kg/d
MetT/min	MetT/h	MetT/d	lb/s	lb/min
lb/h	lb/d	ShTon/m	Shton/h	ShTon/d

2-4-3. Checking or setting the lower and upper limits of indicator

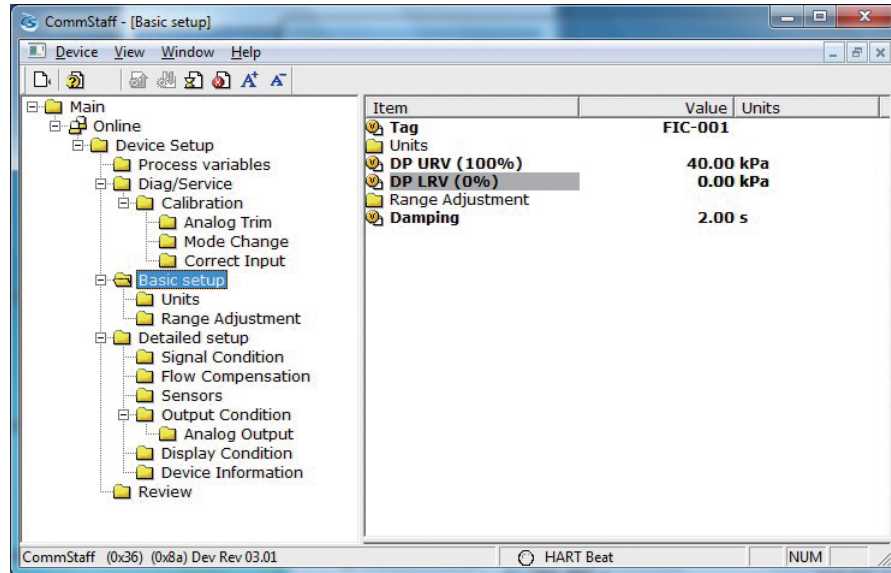
EULO and EUHI values are the upper and lower limits for engineering units (scale readings) displayed on the indicator. They are displayed in the range of -19999 to +19999.

Select [Device Setup] → [Detailed setup] → [Display Condition] → [EULO]/[EUHI].



2-5. Checking or setting the lower and upper limits of the differential pressure range

To display or change the lower and upper limits of the differential pressure range, select [Device Setup] → [Basic setup] → [DP LRV (0%)] / [DP URV (100%)].



Note: When using SFC or CommPad, if the LRV is changed, the URV will change by the same amount so that the span does not change. However, when using CommStaff, the URV does not change if the LRV is changed.

2-6. Adjustments of range

Adjust the range so that the LRV or URV is equal to the present transmitter input value.

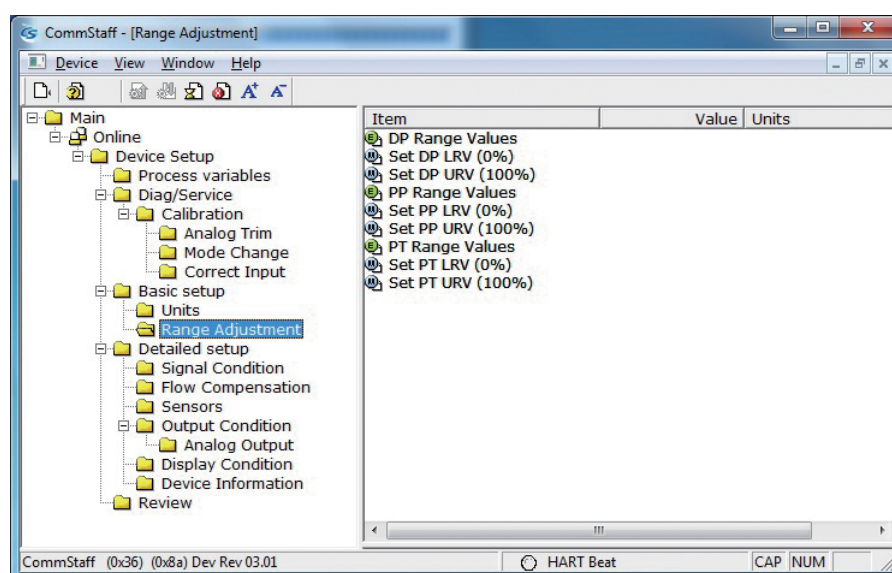
2-6-1. Adjustment of the differential pressure range

Adjust the range so that the DP LRV or DP URV is equal to the present differential input value.

CAUTION: If the transmitter's process is controlled automatically, this reset action could put the operation at risk by causing output fluctuation. Before resetting, make sure that the control loop for the process is manually controlled.

The following describes how to set the range to the differential pressure input value.

Select [Device Setup] → [Basic setup] → [Range Adjustment].



- To adjust the DP LRV value, double-click Set DP LRV (0%). To adjust the DP URV value, double-click Set DP URV (100%).
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- The question "Set DP Mode. OK?" appears in order to confirm configuration of the differential pressure mode. To set the mode, click [OK].
- Either "Set DP LRV (0%)" or "Set DP URV (100%)" is displayed. To set the range value to the present input value, click [OK].
- If the adjustment succeeds, [Set DP LRV succeeded] or [Set DP URV succeeded] will be displayed. Click [OK].
- After clearing the differential pressure mode, the "Note - Loop may be returned to automatic control" message is displayed to notify you that you can now switch back to automatic control. Click OK.

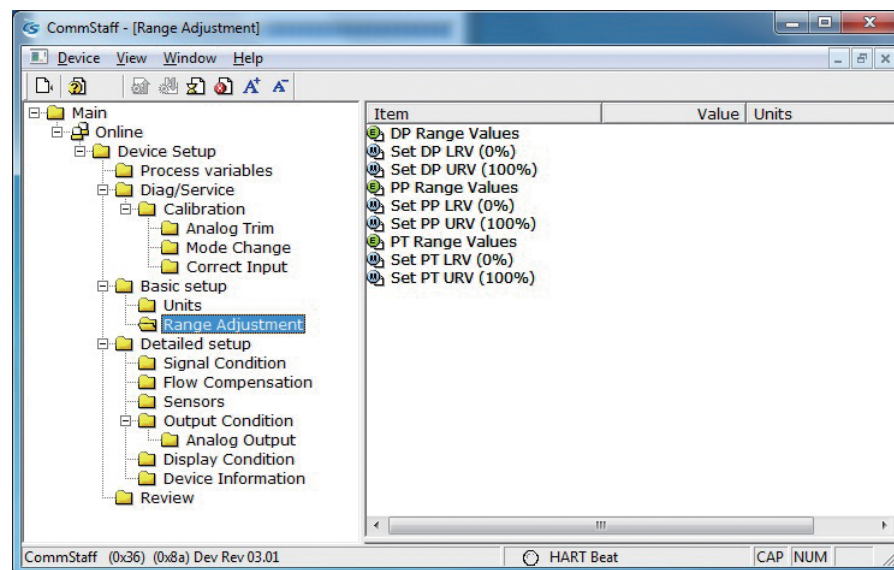
2-6-2. Adjustment of the pressure range

Adjust the range so that the PP LRV or PP URV is equal to the present pressure input value.

CAUTION: If the transmitter's process is controlled automatically, this reset action could put the operation at risk by causing output fluctuation. Before resetting, make sure that the control loop for the process is manually controlled.

The following describes how to set the range to the pressure input value.

Select [Device Setup] → [Basic setup] → [Range Adjustment].



- To adjust the PP LRV value, double-click Set PP LRV (0%). To adjust the PP URV value, double-click Set PP URV (100%).
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- The question "Set PP Mode. OK?" appears in order to confirm configuration of the pressure mode. To set the mode, click [OK].
- Either "Set PP LRV (0%)" or "Set PP URV (100%)" is displayed. To set the range value to the present input value, click [OK].
- If the adjustment succeeds, [Set PP LRV succeeded] or [Set PP URV succeeded] will be displayed. Click [OK].
- After clearing the pressure mode, the "Note - Loop may be returned to automatic control" message is displayed to notify you that you can now switch back to automatic control. Click OK.

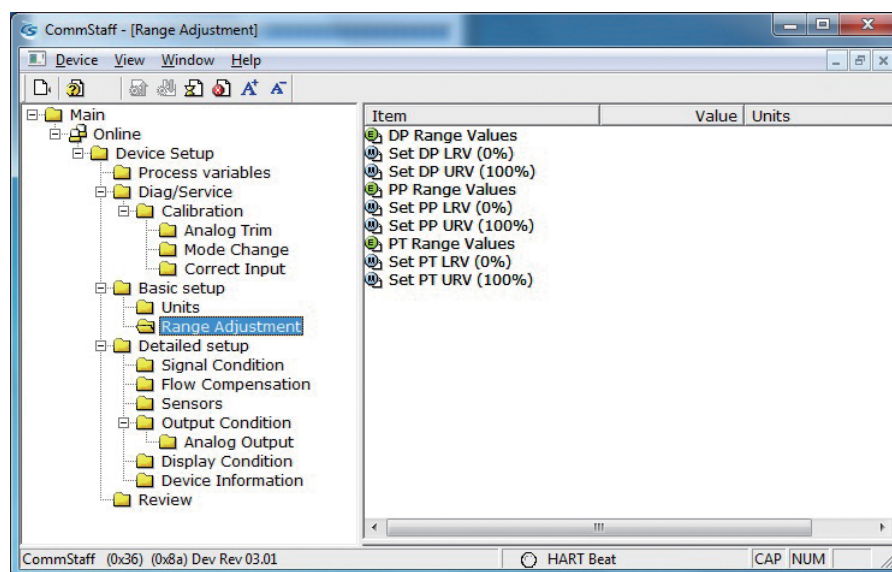
2-6-3. Adjustment of the temperature range

Adjust the range so that the PT LRV or PT URV is equal to the present temperature input value.

CAUTION: If the transmitter's process is controlled automatically, this reset action could put the operation at risk by causing output fluctuation. Before resetting, make sure that the control loop for the process is manually controlled.

The following describes how to set the range to the temperature input value.

Select [Device Setup] → [Basic setup] → [Range Adjustment].



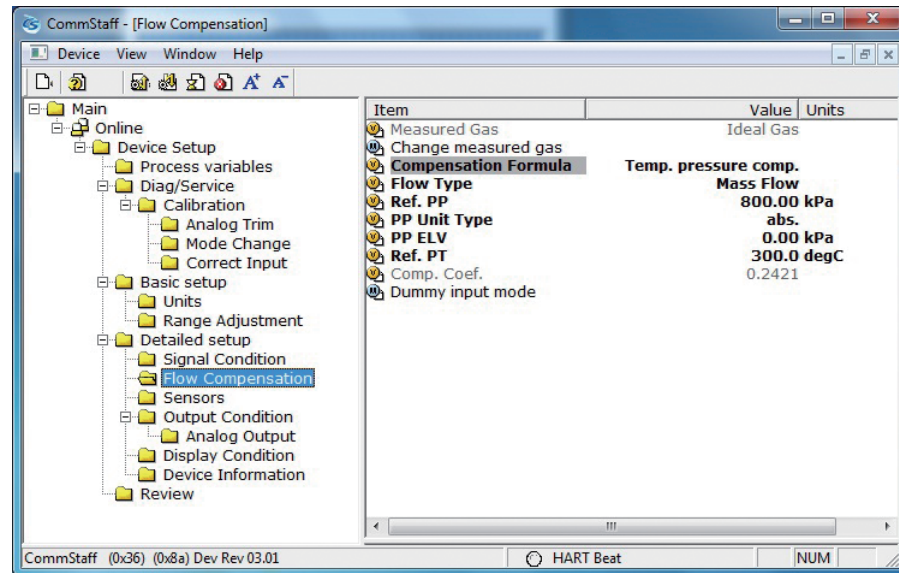
- To adjust the PT LRV value, double-click Set PT LRV (0%). To adjust the PT URV value, double-click Set PT URV (100%).
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- The question "Set PT Mode. OK?" appears in order to confirm configuration of the temperature mode. To set the mode, click [OK].
- Either "Set PT LRV (0%)" or "Set PT URV (100%)" is displayed. To set the range value to the present input value, click [OK].
- If the adjustment succeeds, [Set PT LRV succeeded] or [Set PT URV succeeded] will be displayed. Click [OK].
- After clearing the temperature mode, the "Note - Loop may be returned to automatic control" message is displayed to notify you that you can now switch back to automatic control. Click OK.

2-7. Setting the temperature-pressure correction

2-7-1. Checking or setting the formula

If the measured gas is an ideal gas, the formula can be changed, but if it is saturated steam, the formula cannot be changed.

Select [Device Setup] → [Detailed setup] → [Flow Compensation] → [Compensation Formula].



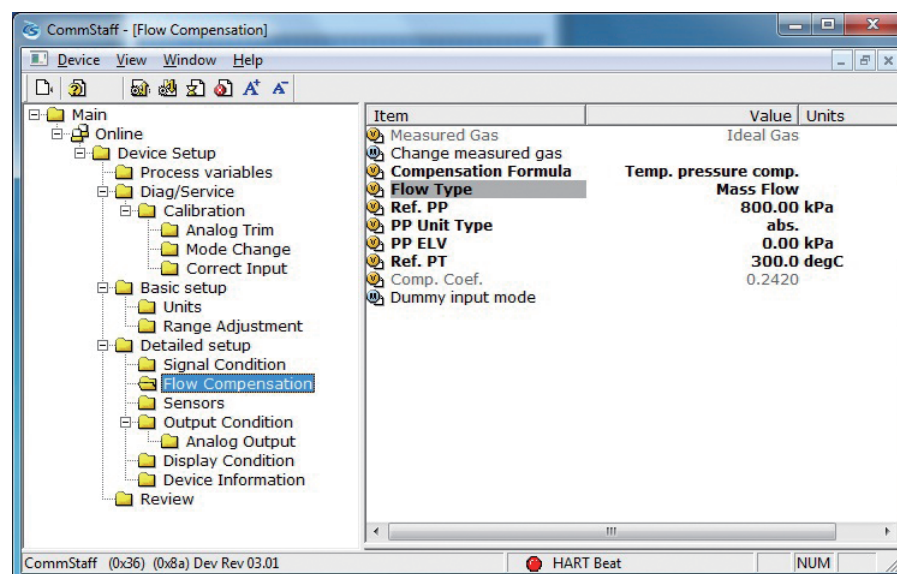
The formula can be selected from the following.

No comp	No correction
Pressure comp.	Pressure correction
Temp. comp.	Temperature correction
Temp. pressure comp.	Temperature and pressure correction

2-7-2. Checking or setting the correction type

If the measured gas is an ideal gas, the formula can be changed, but if it is saturated steam, the formula cannot be changed.

Select [Device Setup] → [Detailed setup] → [Flow Compensation] → [Flow Type].



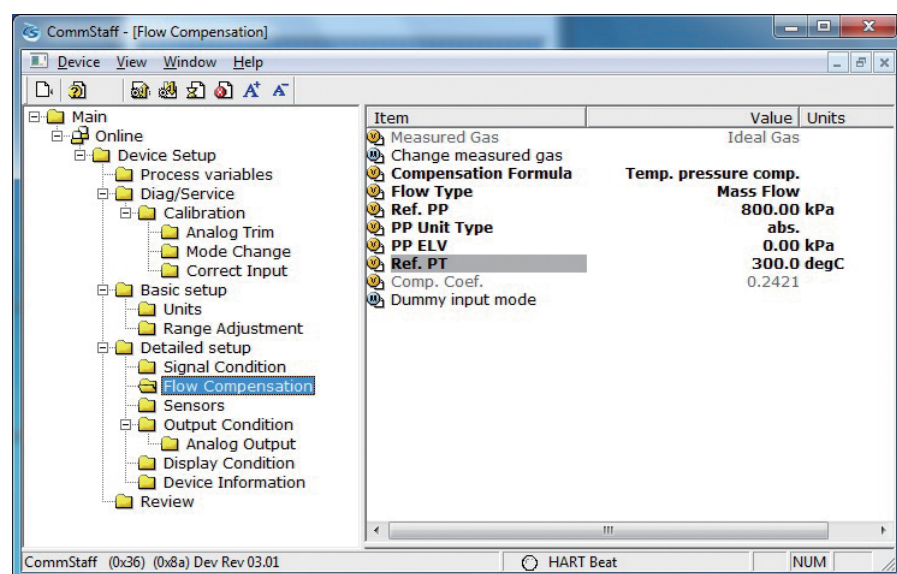
The correction type can be selected from the following.

Mass Flow
Volume Flow

2-7-3. Checking or setting the design pressure

When Compensation Formula is set at Pressure comp. or Temp. pressure comp., it is effective. It is also effective when the measured gas is set to Saturated Steam.

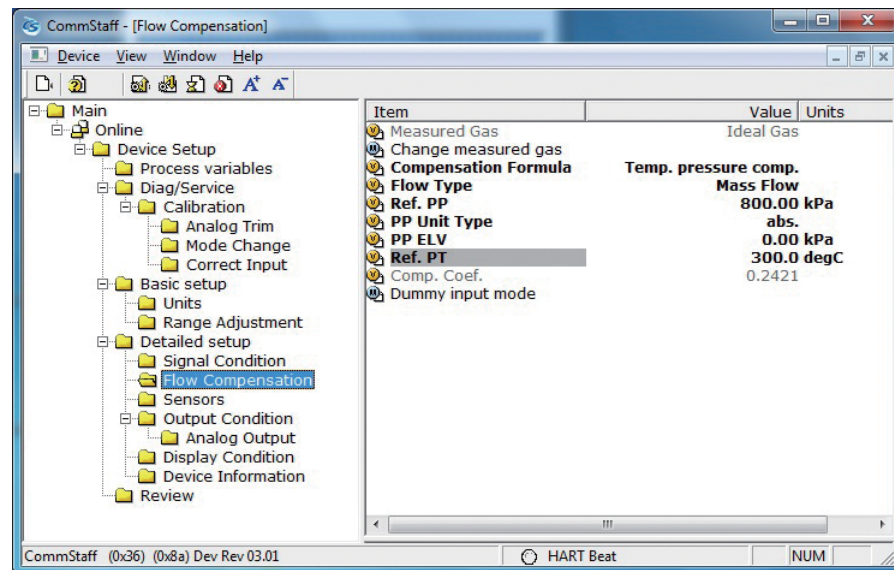
Select [Device Setup] → [Detailed setup] → [Flow Compensation] → [Ref. PP].



2-7-4. Checking or setting the design temperature

When Compensation Formula is set at Temp comp. or Temp. pressure comp., it is effective.

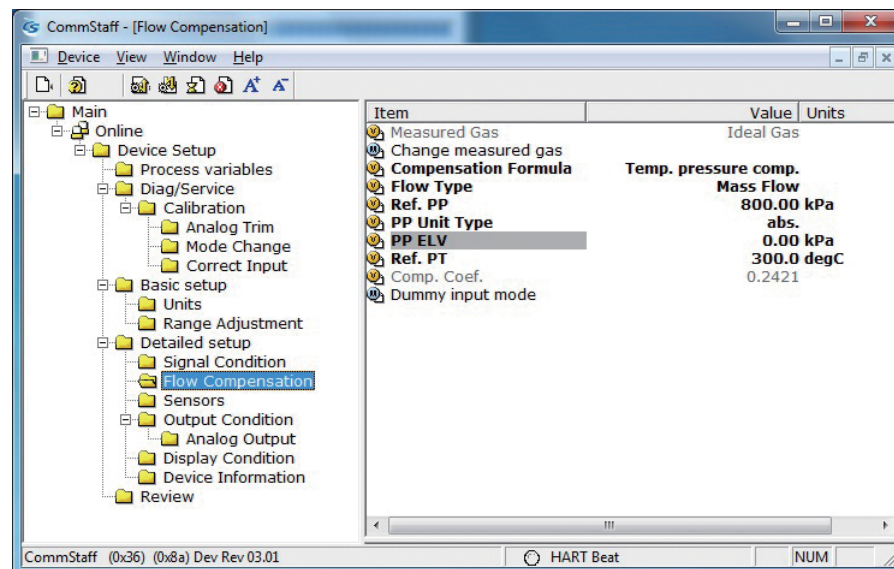
Select [Device Setup] → [Detailed setup] → [Flow Compensation] → [Ref. PT].



2-7-5. Checking or setting the static pressure elevation

When Compensation Formula is set at Pressure comp. or Temp. pressure comp., it is effective. It is also effective when the measured gas is set to Saturated Steam.

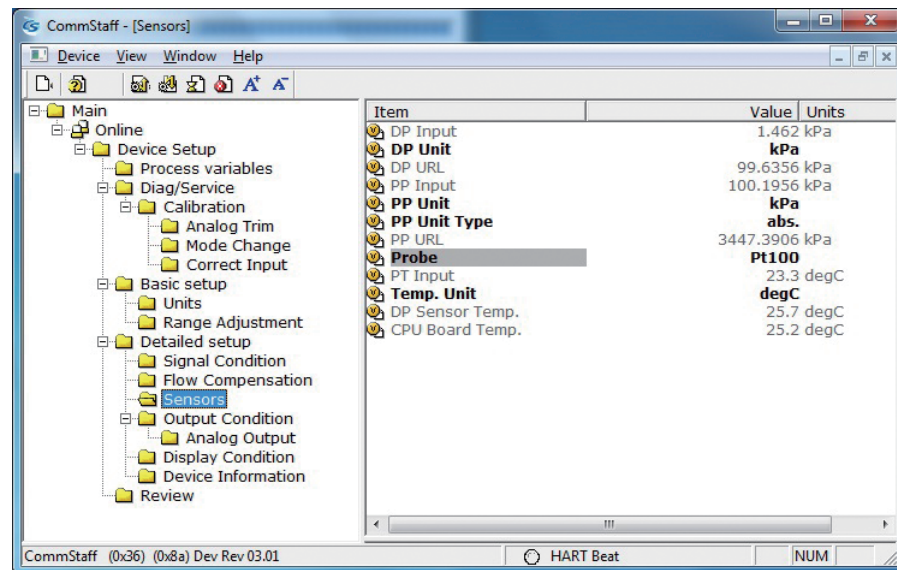
Select [Device Setup] → [Detailed setup] → [Flow Compensation] → [PP ELV].



2-7-6. Checking or setting the temperature sensor type

This setting is effective when the measured gas is an ideal gas.

Select [Device Setup] → [Detailed setup] → [Sensors] → [Probe].



The temperature sensor can be selected from the following two types.

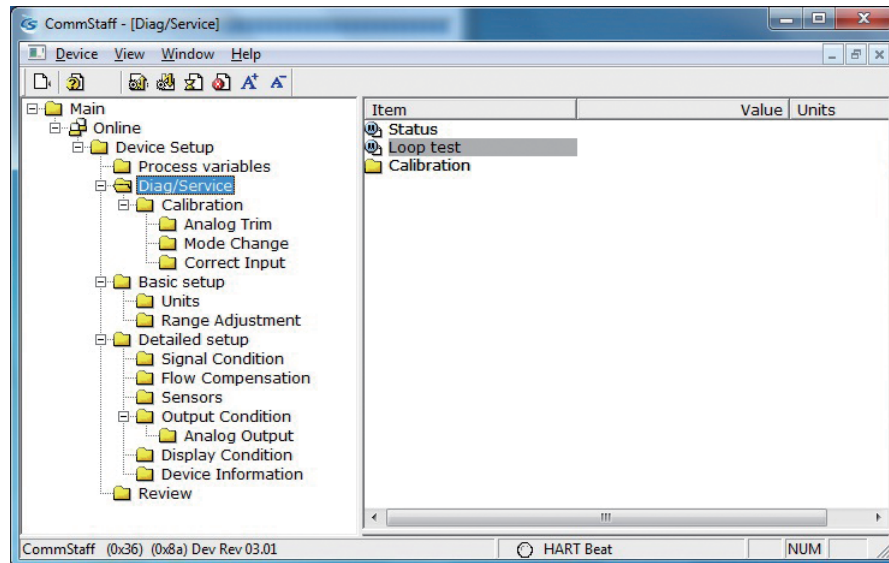
Pt100
JPt100

2-8. Conducting a loop test

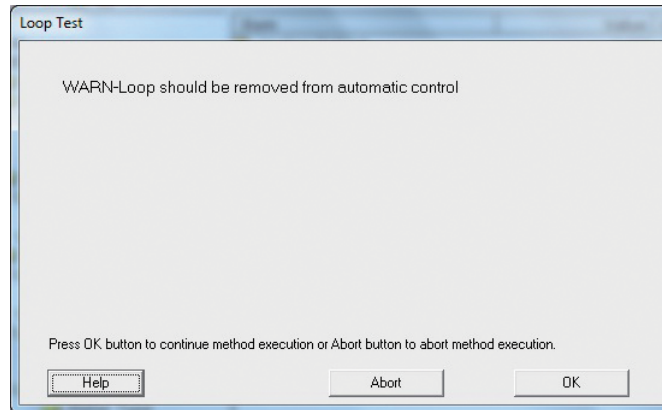
By putting the transmitter in constant current mode, you can keep current outputs constant in the range of 4 - 20 mA. This section explains how to configure the constant current mode and how to return to normal output mode.

Select [Device Setup] → [Diag/Service] → [Loop test].

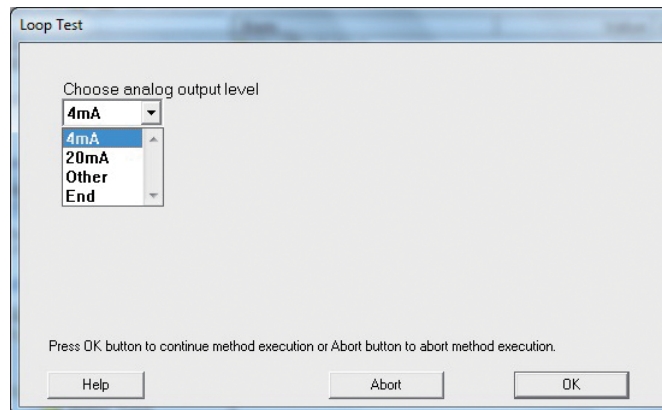
CAUTION: If the transmitter's process is controlled automatically, this reset action could put the operation at risk by causing output fluctuation. Before resetting, make sure that the control loop for the process is manually controlled.



Double-clicking Loop Test displays the following screen.



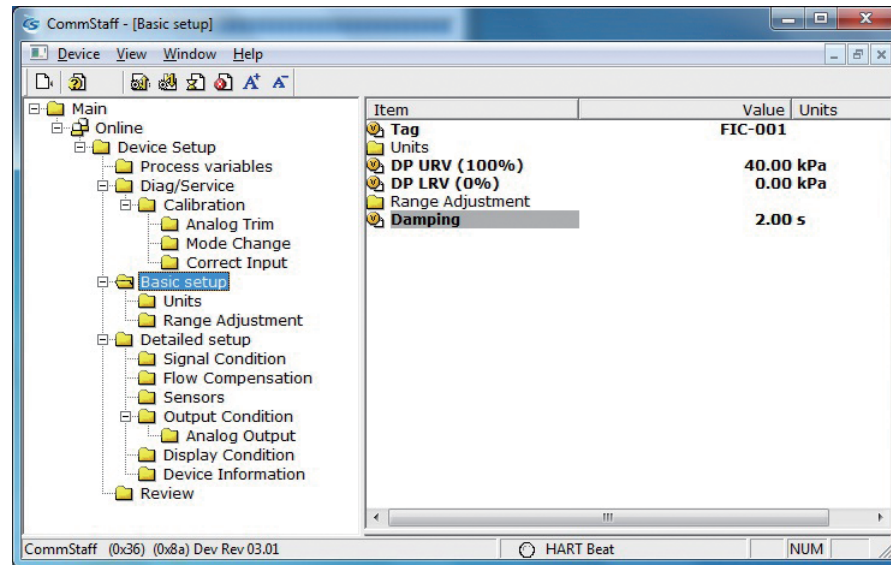
Click OK if there are no problems. The screen changes to the following.



- Select 4 mA and click OK. Output signals are kept at 4 mA (0%).
- Select 20 mA and click OK. Output signals are kept at 20 mA (100%).
- To input a different value, select Other and Click OK.
- If you select End and click OK, a message is displayed notifying you that this will return operation to normal output mode.

2-9. Damping Time Constant Configuration

This section explains how to configure the damping time constant.



The following values can be input. If a value other than the following is input, the closest value is automatically selected.

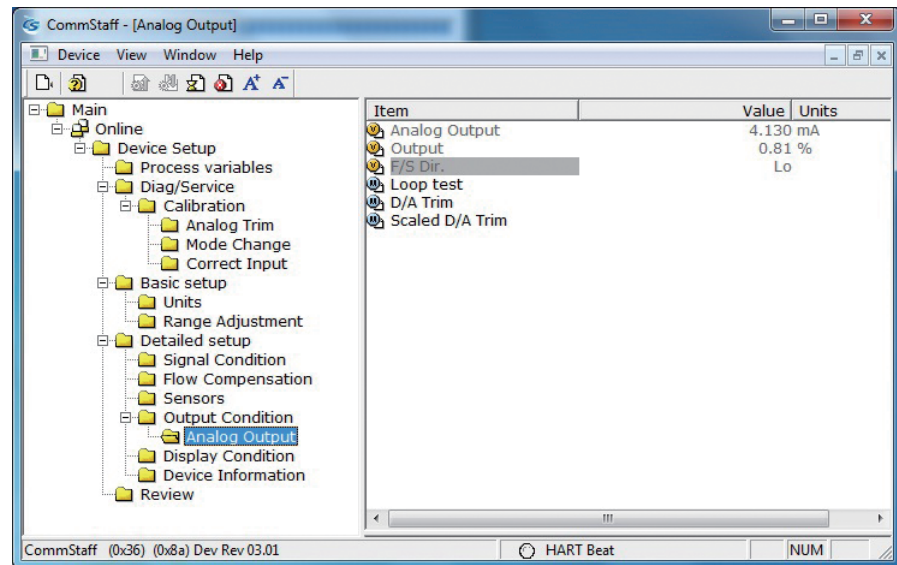
Unit:s

0.0
0.16
0.32
0.48
1.00
2.00
4.00
8.00
16.0
32.0

2-10. Checking output fail safe direction

The following tells how to check the output fail safe direction.

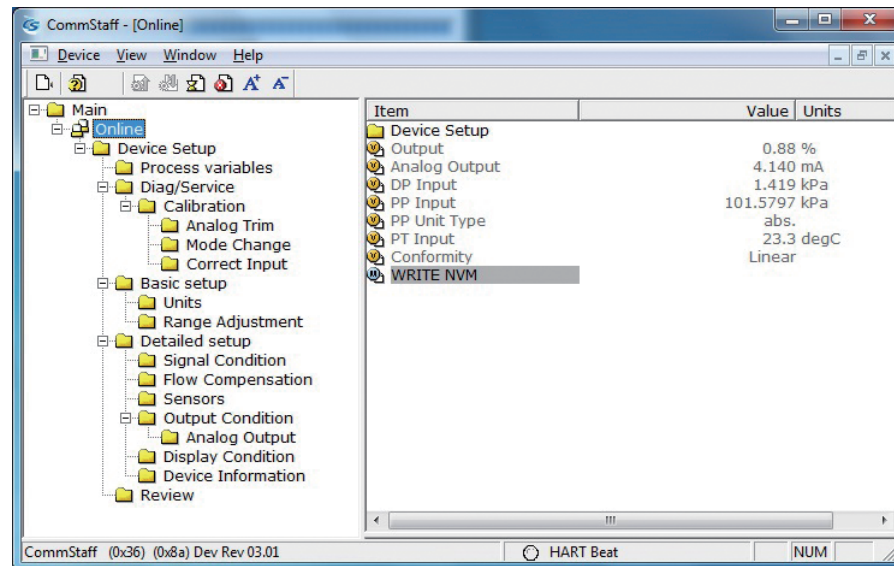
Select [Device Setup] → [Detailed setup] → [Output Condition] → [Analog Output] → [F/S Dir.].



2-11. NVM Save

The transmitter saves configured data in nonvolatile memory 30 seconds after it is sent to the transmitter. If the transmitter power is turned off in less than 30 seconds, configuration data that has been sent will be lost, and the existing saved data will remain in the transmitter. To avoid this, NVM Save can be used.

Select the "Online" menu at the top of the menu tree and execute WRITE NVM. This allows configuration data that has been sent to be saved in nonvolatile memory so that the transmitter power can be turned off.



Chapter 3. Maintenance

This section explains the general procedures for transmitter maintenance.

3-1. Calibration

3-1-1. Calibrating the differential pressure

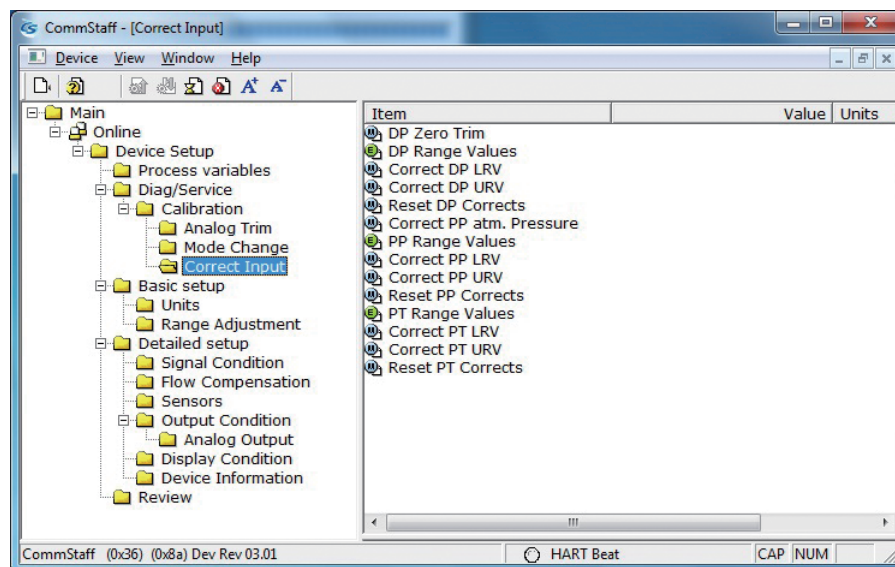
For the STD720A series smart multivariable transmitters, the measurement range must be calibrated at two points, namely the LRV (input value at 0% output) and URV (input value at 100% output).

This calibration is done when calibrating actual pressures using a standard pressure transmitter.

For further details, refer to Chapter 4, "Calibrating the Transmitter" in ST3000 Smart Multivariable Transmitter (CM2-DST720-2001).

CAUTION: If the transmitter's process is controlled automatically, this reset action could put the operation at risk by causing output fluctuation. Before resetting, make sure that the control loop for the process is manually controlled.

Select [Device Setup] → [Diag/Service] → [Calibration] → [Correct Input].



- First, double-click DP Range Values, and check the values for DP LRV and the DP URV. If a change is necessary, change the values.
- To calibrate the DP LRV value, double-click Correct DP LRV. To calibrate the DP URV value, double-click Correct Input DP URV. When changing both the DP LRV and the DP URV, be sure to do the DP LRV first.
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- A warning that this operation will affect the sensor calibration (WARN-This will affect sensor calibration) is displayed. To proceed, click [OK].

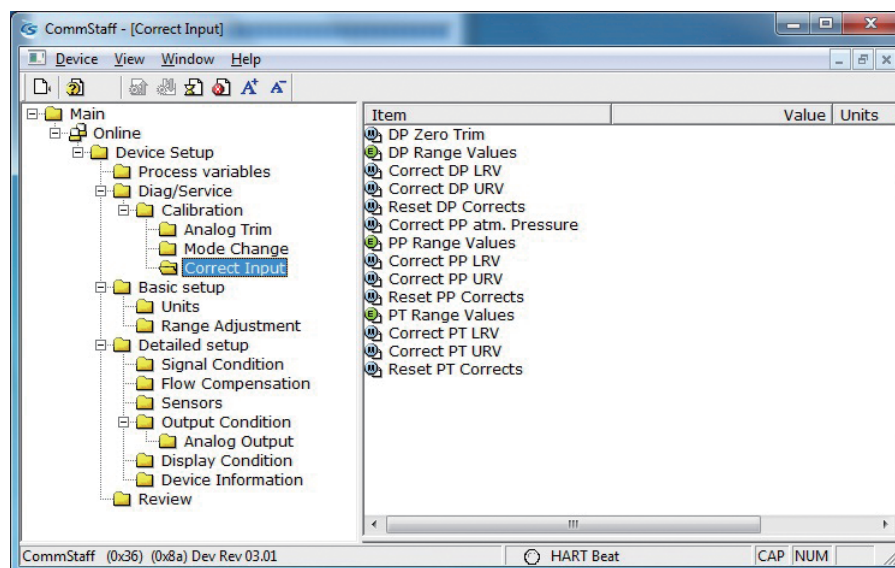
- The question "Set DP Mode. OK?" appears in order to confirm configuration of the differential pressure mode. To set the mode, click [OK].
- Either "Apply DP LRV pressure" or "Apply DP URV pressure" is displayed. If the value of the standard pressure generator is equal to DP LRV or DP URV, click OK.
- "Press OK when pressure is stable" is displayed. After confirming that input pressure has stabilized, click OK.
- If the calibration succeeds, [Correct DP LRV succeeded] or [Correct DP URV succeeded] will be displayed. Click [OK].
- After clearing the differential pressure mode, the "Note - Loop may be returned to automatic control" message is displayed to notify you that you can now switch back to automatic control. Click OK.

3-1-2. Calibrating when pressure is equalized

The calibration method when the pressure is equalized is as follows.

CAUTION: If the transmitter's process is controlled automatically, this reset action could put the operation at risk by causing output fluctuation. Before resetting, make sure that the control loop for the process is manually controlled.

Select [Device Setup] → [Diag/Service] → [Calibration] → [Correct Input].

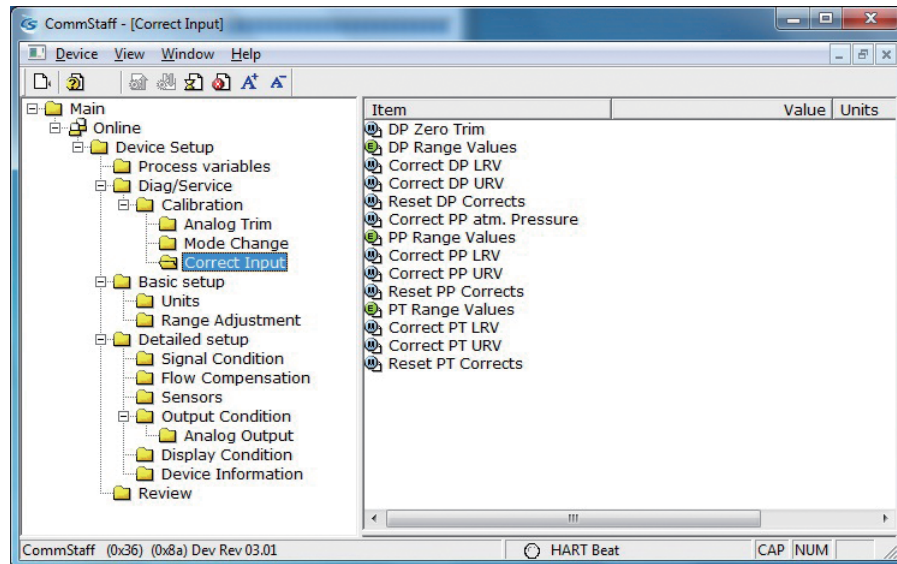


- Double-click DP Zero Trim.
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- A warning that this operation will affect the sensor calibration (WARN-This will affect sensor calibration) is displayed. To proceed, click [OK].
- The question "Set DP Mode. OK?" appears in order to confirm configuration of the differential pressure mode. To set the mode, click [OK].
- When "Apply 0 input to sensor" is displayed and the differential pressure input is equalized, click [OK].
- If the calibration succeeds, [DP zero trim succeeded] will be displayed. Click [OK].
- After clearing the differential pressure mode, the "Note - Loop may be returned to automatic control" message is displayed to notify you that you can now switch back to automatic control. Click OK.

3-1-3. Calibrating the pressure

CAUTION: If the transmitter's process is controlled automatically, this reset action could put the operation at risk by causing output fluctuation. Before resetting, make sure that the control loop for the process is manually controlled.

Select [Device Setup] → [Diag/Service] → [Calibration] → [Correct Input].



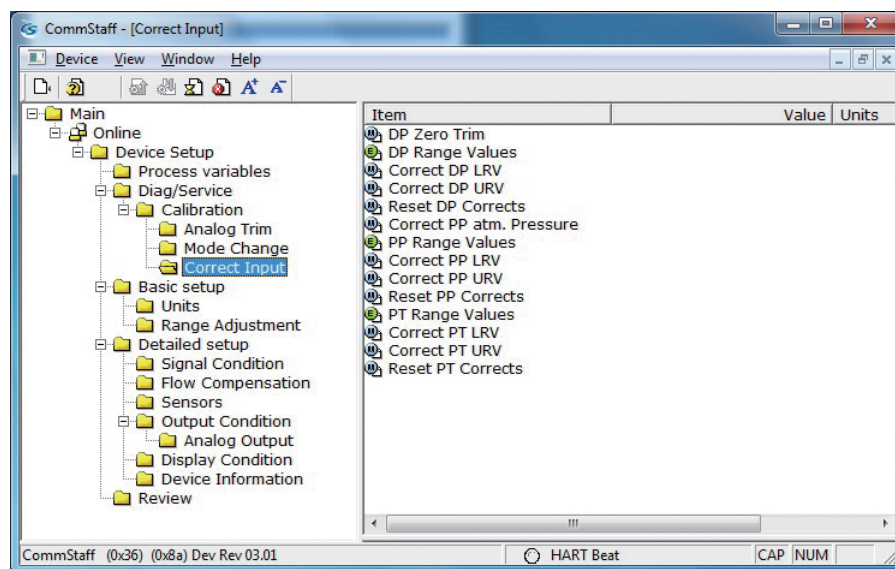
- First, double-click PP Range Values, and check the values for PP LRV and the PP URV. If a change is necessary, change the values.
- To calibrate the PP LRV value, double-click Correct Input PP LRV. To calibrate the PP URV value, double-click Correct Input PP URV. When changing both the PP LRV and the PP URV, be sure to do the PP LRV first.
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click [OK].
- A warning that this operation will affect the sensor calibration (WARN-This will affect sensor calibration) is displayed. To proceed, click [OK].
- The question "Set PP Mode. OK?" appears in order to confirm configuration of the pressure mode. To set the mode, click [OK].
- Either "Apply PP LRV pressure" or "Apply PP URV pressure" is displayed. If the value of the standard pressure generator is equal to PP LRV or PP URV, click OK.
- "Press OK when pressure is stable" is displayed. After confirming that input pressure has stabilized, click OK.
- If the calibration succeeds, [Correct PP LRV succeeded] or [Correct PP URV succeeded] will be displayed. Click [OK].
- After clearing the pressure mode, the "Note - Loop may be returned to automatic control" message is displayed to notify you that you can now switch back to automatic control. Click OK.

3-1-4. Calibrating the atmospheric pressure

Calibrate the pressure to set the pressure on the transmitter as 1 atmospheric pressure (101.3 kPa abs.)

CAUTION: If the transmitter's process is controlled automatically, this reset action could put the operation at risk by causing output fluctuation. Before resetting, make sure that the control loop for the process is manually controlled.

Select [Device Setup] → [Diag/Service] → [Calibration] → [Correct Input].

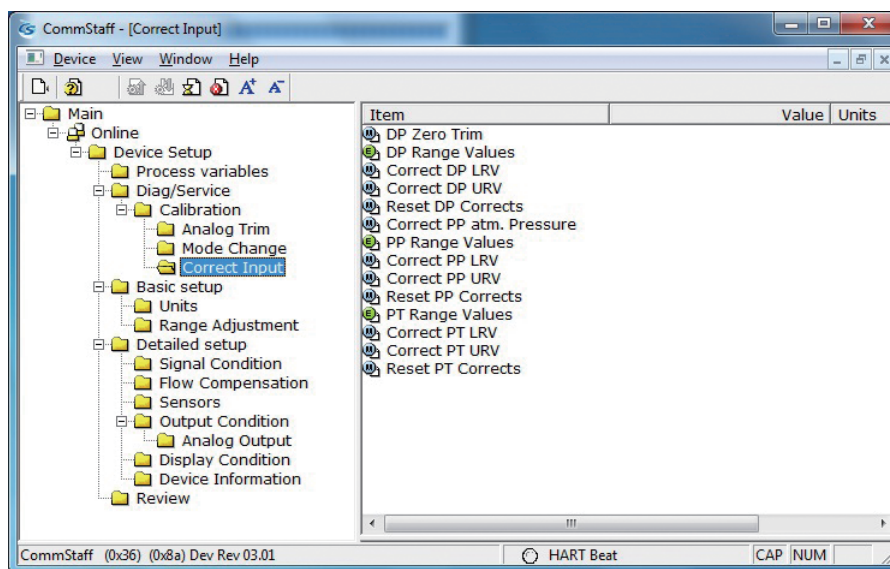


- Double-click PP atm. Pressure.
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- A warning that this operation will affect the sensor calibration (WARN-This will affect sensor calibration) is displayed. To proceed, click [OK].
- The question "Set PP Mode. OK?" appears in order to confirm configuration of the pressure mode. To set the mode, click [OK].
- "Apply 0 input to sensor" is displayed. After input the atmospheric pressure, click OK.
- "Press OK when pressure is stable" is displayed. After confirming that input pressure has stabilized, click OK.
- If the calibration succeeds, [Correct PP atm. pressure succeeded] will be displayed. Click [OK].
- After clearing the pressure mode, the "Note - Loop may be returned to automatic control" message is displayed to notify you that you can now switch back to automatic control. Click OK.

3-1-5. Calibrating a temperature

CAUTION: If the transmitter's process is controlled automatically, this reset action could put the operation at risk by causing output fluctuation. Before resetting, make sure that the control loop for the process is manually controlled.

Select [Device Setup] → [Diag/Service] → [Calibration] → [Correct Input].



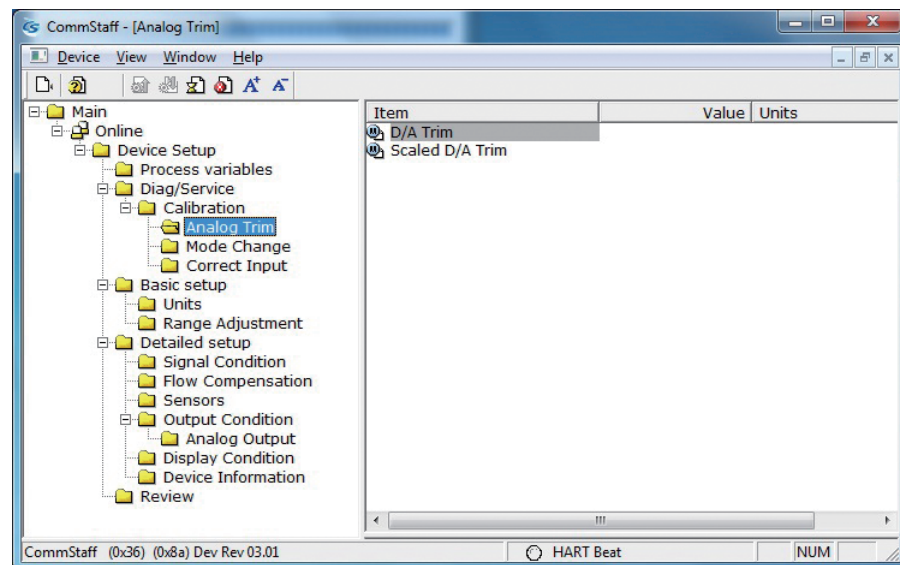
- First, double-click PT Range Values, and check the values for PT LRV and the PTURV. If a change is necessary, change the values.
- To calibrate the PT LRV value, double-click Correct Input PT LRV. To calibrate the PT URV value, double-click Correct Input PT URV. When changing both the PT LRV and the PT URV, be sure to do the PT LRV first.
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- A warning that this operation will affect the sensor calibration (WARN-This will affect sensor calibration) is displayed. To proceed, click [OK].
- The question "Set PT Mode. OK?" appears in order to confirm configuration of the pressure mode. To set the mode, click [OK].
- Either "Apply PT LRV value" or "Apply PT URV value" is displayed. If the value of the reference input temperature is equal to PT LRV or PT URV, click OK.
- "Press OK when pressure is stable" is displayed. After confirming that reference input temperature has stabilized, click OK.
- If the calibration succeeds, [Correct PT LRV succeeded] or [Correct PT URV succeeded] will be displayed. Click [OK].
- After clearing the pressure mode, the "Note - Loop may be returned to automatic control" message is displayed to notify you that you can now switch back to automatic control. Click OK.

3-1-6. Calibrating the output signal

By connecting to an ammeter and comparing the measured values, the 0% and the 100% analog outputs can be calibrated.

CAUTION: If the transmitter's process is controlled automatically, this reset action could put the operation at risk by causing output fluctuation. Before resetting, make sure that the control loop for the process is manually controlled.

Select [Device Setup] → [Diag/Service] → [Calibration] → [Correct Input].

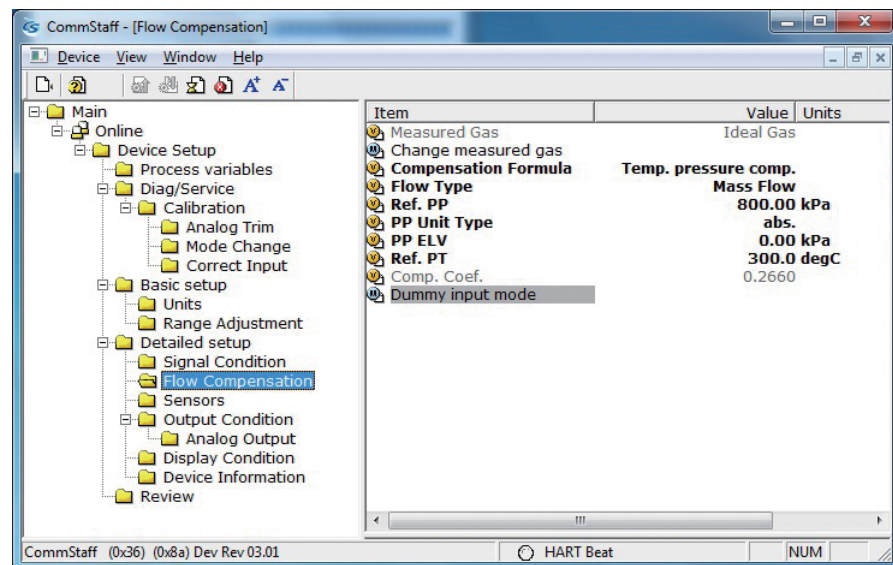


Step	Operation and indication
1	Double-click D/A Trim. WARN - Loop should be removed from automatic control A warning that the loop should be switched from automatic control to manual mode is displayed. After switching to manual mode, click OK. “Connect reference meter” is displayed. Connect the loop to an ammeter (mA) or voltmeter. (It is recommended that an ammeter or voltmeter with an accuracy of 0.03% or better be used.)
2	The following messages are displayed in the order given. Setting fld dev output to 4mA (about to set transmitter output to 4 mA) Click OK if there are no problems. Enter meter value (input the ammeter reading). Input the reading of the ammeter and click OK. This allows the adjustment command to be sent to the transmitter. Fld dev output 4.000mA equal to reference meter? (is the transmitter output equal to the reading on the connected ammeter?) If the transmitter output is not equal to the reading of the ammeter, select No and click OK. This allows the adjustment process to continue.
3	Next do the 20 mA calibration. The following messages are displayed in the order given. Setting fld dev output to 20mA (about to set transmitter output to 20 mA) Click OK if there are no problems. Enter meter value (input the ammeter reading) Input the reading of the ammeter and click OK. This allows the adjustment command to be sent to the transmitter. Fld dev output 20.000mA equal to reference meter? (is the transmitter output equal to a reading of the connected ammeter?) If the transmitter output is not equal to the reading of the ammeter, select No and click OK. This allows the adjustment process to continue. Finally, a message is displayed notifying you that this will return operation to normal measurement mode and that the 20 mA calibration process is complete.

3-2. Checking the output signal using dummy input

By setting up a dummy input, it is possible to check the output signal.

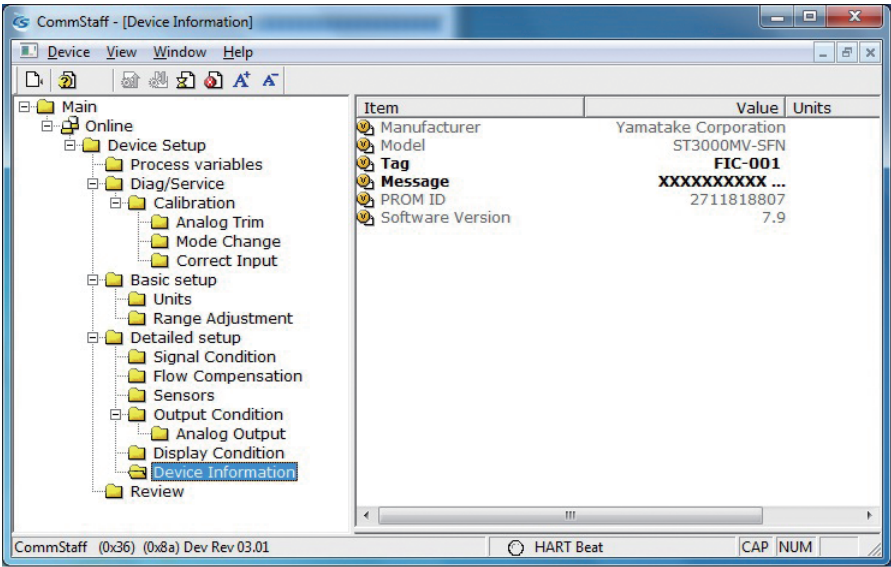
Select [Device Setup] → [Detailed setup] → [Flow Compensation] → [Dummy input mode].



- Double-click Dimmy input mode.
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- The message "Choose either real or dummy DP" is displayed. For simulated input, select Dummy DP. If dummy input is not desired, select Real DP.
- If Dummy DP was selected, the Dummy DP input screen will be displayed. Input the desired Dummy DP.
- The message "Choose either real or dummy PP" is displayed. For simulated input PP, select Dummy PP. If dummy input PP is not desired, select Real DP.
- If Dummy PP was selected, the Dummy PP input screen will be displayed. Input the desired Dummy PP.
- The message "Choose either real or dummy PT" is displayed. For simulated input PT, select Dummy PT. If dummy input PT is not desired, select Real DP.
- If Dummy PT was selected, the Dummy PT input screen will be displayed. Input the desired Dummy PT.
- The output and the Comp.Coeff values at the present settings will be displayed. To exit, click [OK].
- The "Note - Loop may be returned to automatic control" message is displayed to notify you that you can now switch back to automatic control. Click OK.

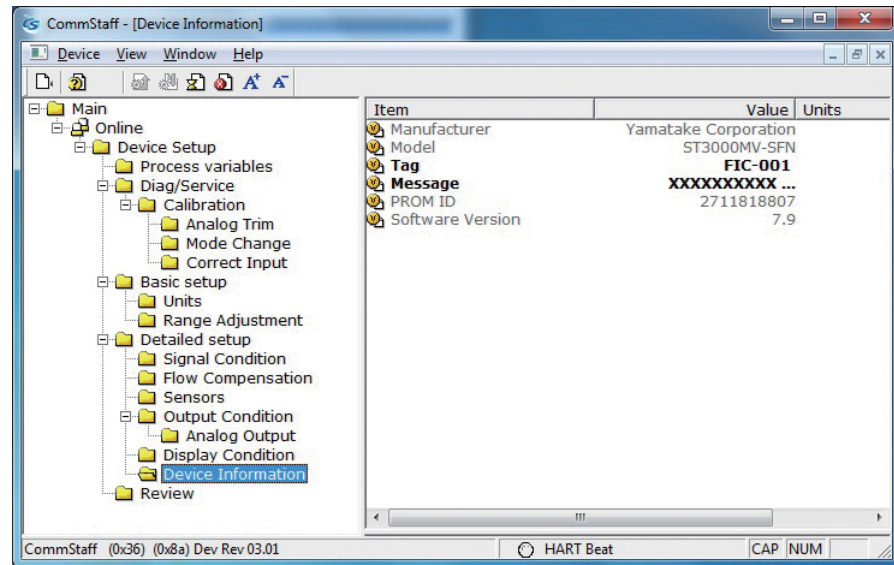
3-3. Checking the PROM ID

Select [Device Setup] → [Detailed setup] → [Device Information].



3-4. Checking the software version

Select [Device Setup] → [Detailed setup] → [Device Information].

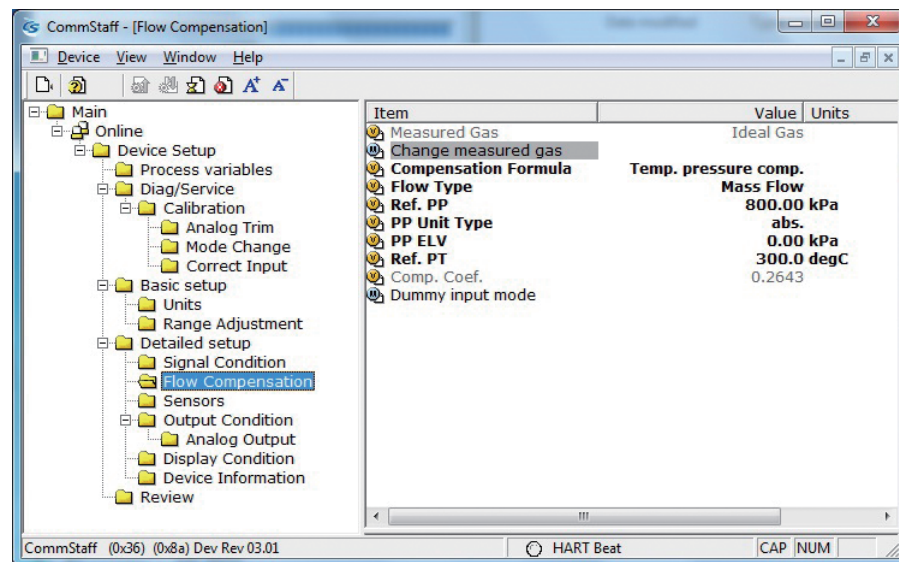


3-5. Switching the measured gas

The measured gas can be switched between Ideal Gas and Saturated Steam.

CAUTION: After switching the measured gas, temporarily turn CommStaff off. Then restart CommStaff.

Select [Device Setup] → [Detailed setup] → [Flow Compensation] → [Change measured gas].

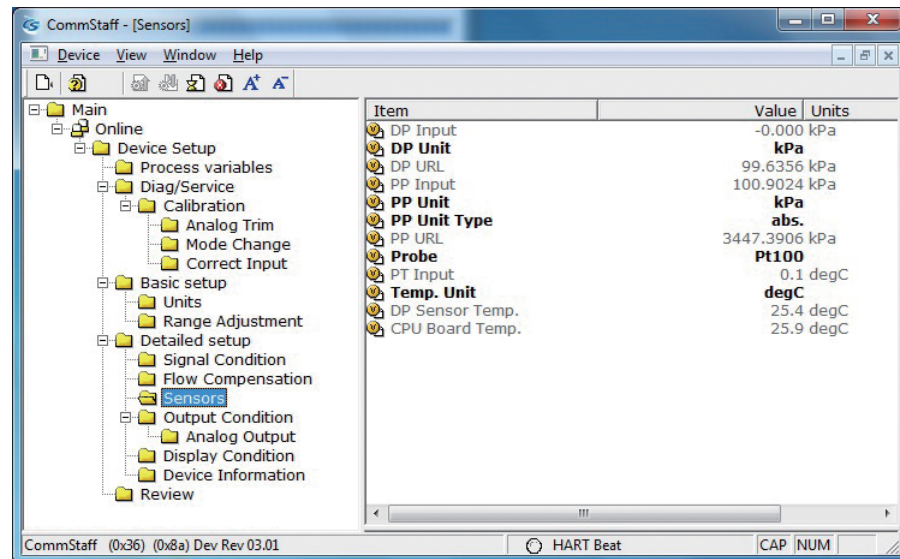


- Double-click "Change measured gas."
- After changing the measured gas, a message warning that Commstaff must be restarted is displayed (WARNING -- You must restart CommStaff after changing the measured gas type.) To proceed, click [OK].
- The selection screen for the measured gas will be displayed. Choose either Ideal Gas or Saturated Steam and click [OK].
- Another warning message will be displayed. Click [OK] to proceed.
- After the measured gas has been changed, the message "Measured gas was changed. EXIT COMMSTAFF AND RESTART COMMSTAFF" will be displayed. Click [OK], exit from CommStaff, and restart it.

3-6. Checking device temperature

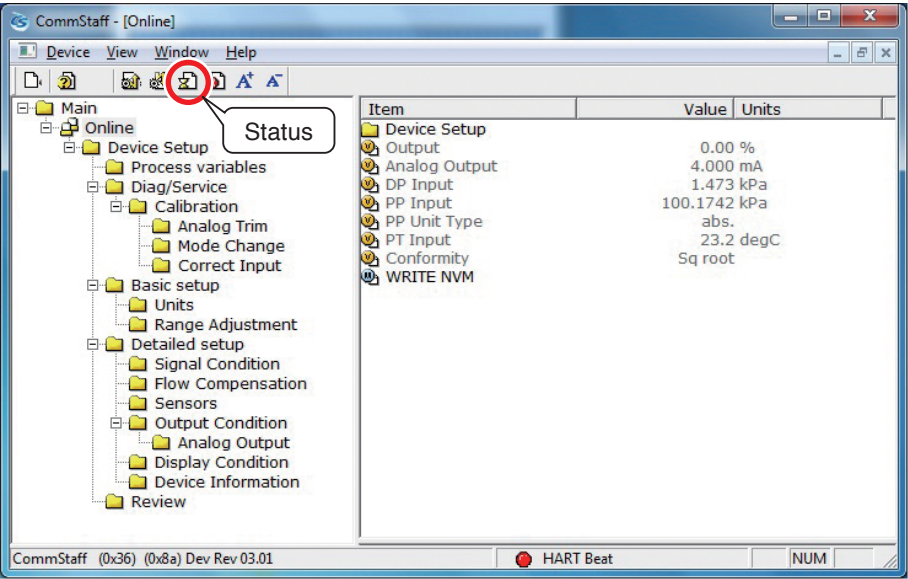
The differential pressure sensor temperature and CPU board temperature can be checked.

Select [Device Setup] → [Detailed setup] → [Sensors] → [DP Sensor Temp.] or [CPU Board Temp.].



3-7. Checking Self-diagnostic Messages

You can check self-diagnostic messages by clicking the Status icon in the below or "Device status" in the "Display" menu.



Chapter 4. Status Message

Status message	Meaning	Required action
Internal data inconsis-tency		
Invalid database	Configuration data and/or calibration data is invalid.	Tap [Exit] and try communicating again. Verify configuration data and recalibrate the device.
Critical failure		
Status 1-0	Unknown error	Contact appropriate personnel.
Chara. PROM Fault	PROM function fault	Invalid device characteristics data. Contact appropriate personnel.
Suspect Input	- Input data error - Problem with the process - Device error	Invalid sensor and/or electronics board. Contact appropriate personnel.
Status 1-3	Unknown error	Contact appropriate personnel.
NVM Fault	Electronic component failure	Bad electronics board. Contact appropriate personnel.
RAM Fault	Electronic component failure	Bad electronics board. Contact appropriate personnel.
ROM Fault	Electronic component failure	Bad electronics board. Contact appropriate personnel.
Status 1-7	Unknown error	Contact appropriate personnel.
Status 7-0	Unknown error	Contact appropriate personnel.
Status 7-1	Unknown error	Contact appropriate personnel.
PT Suspect Input	- Input data error - Problem with the process - Device error	Resistance thermometer wires may be down or connected incorrectly. If the problem persists, electronics board may be invalid. Contact appropriate personnel.
Status 7-3	Unknown error	Contact appropriate personnel.
Status 7-4	Unknown error	Contact appropriate personnel.
Status 7-5	Unknown error	Contact appropriate personnel.
Status 7-6	Unknown error	Contact appropriate personnel.
Status 7-7	Unknown error	Contact appropriate personnel.

Status message	Meaning	Required action
Non-critical status		
Excess sensor temp.	Meter body temperature is too high.	Relocate device to keep temperature within specification limits.
Excess DP Zero Correct	DP Zero correction factor is outside acceptable limits for accurate operation.	Check if the calibration value is suitable for the input pressure value. Recalibrate device.
Excess DP Span Correct	DP Span correction factor is outside acceptable limits for accurate operation.	Check if the calibration value is suitable for the input pressure value. Recalibrate device.
In Special Mode	Device is operating in DP mode, PP mode, PT mode, input mode and/or output mode.	Return to measuring mode to clear message.
DP Overload	The input pressure exceeds two times the upper range limit of the device. In such a case output is at the upper or lower limit.	Check PV value and decrease the differential pressure to within specifications.
Meter Body Fault	The input pressure exceeds two times The upper range limit of The device. Device error	Check PV value and decrease the differential pressure to within specifications.
DP Correct Reset	DP calibration data discarded.	Calibrate the zero point and span of the DP range.
Status 2-7	Unknown error	Contact appropriate personnel.
Status 3-0	Unknown error	Contact appropriate personnel.
Status 3-1	Unknown error	Contact appropriate personnel.
Status 3-2	Unknown error	Contact appropriate personnel.
Status 3-3	Unknown error	Contact appropriate personnel.
Status 3-4	Unknown error	Contact appropriate personnel.
Status 3-5	Unknown error	Contact appropriate personnel.
Status 3-6	Unknown error	Contact appropriate personnel.
Status 3-7	Unknown error	Contact appropriate personnel.
Status 4-0	Unknown error	Contact appropriate personnel.

Status message	Meaning	Required action
Non-critical status		
Excess PP Zero Correct	The PP Zero correction factor is outside the acceptable limits for accurate operation.	Check if the calibration value is suitable for the input pressure value. Recalibrate device.
Excess PP Span Correct	The PP Span correction factor is outside the acceptable limits for accurate operation.	Check if the calibration value is suitable for the input pressure value. Recalibrate device.
Status 4-3	Unknown error	Contact appropriate personnel.
PP Overload	- the Input pressure exceeds two times the upper range limit of the device. - Device error	Check PV value and decrease the static pressure to within specifications.
Status 4-5	Unknown error	Contact appropriate personnel.
PP Correct Reset	PP calibration data discarded.	Calibrate the zero point and span of the PP range.
Status 4-7	Unknown error	Contact appropriate personnel.
In DP Mode	The device is operating in differential pressure mode.	Exit DP Adjustment / DP Calibration screen to clear differential pressure mode.
In PP Mode	The device is operating in process pressure (static pressure) mode.	Exit PP Adjustment / PP Calibration screen to clear process pressure mode.
In PT Mode	The device is operating in process temperature mode.	Exit PT Adjustment / PT Calibration screen to clear process temperature mode.
Status 5-3	Unknown error	Contact appropriate personnel.
In DP Input Mode	The device is operating in differential pressure input mode.	Tap [Clear] to clear differential pressure input mode.
In PP Input Mode	The device is operating in process pressure (static pressure) input mode.	Tap [Clear] to clear process pressure (static pressure) input mode.
In PT Input Mode	The device is operating in process temperature input mode.	Tap [Clear] to clear process temperature input mode.
Status 5-7	Unknown error	Contact appropriate personnel.
Status 6-0	Unknown error	Contact appropriate personnel.
Status 6-1	Unknown error	Contact appropriate personnel.
Status 6-2	Unknown error	Contact appropriate personnel.
Status 6-3	Unknown error	Contact appropriate personnel.

Status message	Meaning	Required action
Non-critical status		
In Output Mode	The device is operating in output mode.	Tap [Clear output mode] to clear output mode.
In PP Output Mode	PV2 is operating in output mode.	Tap [Clear output mode] to clear process pressure output mode.
In PT Output Mode	PV3 is operating in output mode.	Tap [Clear output mode] to clear process temperature output mode.
Status 6-7	Unknown error	Contact appropriate personnel.
Status 8-0	Unknown error	Contact appropriate personnel.
Excess PT Zero Correct	PT Zero correction factor exceeds acceptable limits.	Check if the calibration value is suitable for the input value. Recalibrate device.
Excess PT Span Correct	PT Span correction factor exceeds acceptable limits.	Check if the calibration value is suitable for the input value. Recalibrate device.
Status 8-3	Unknown error	Contact appropriate personnel.
Out of PT Input	- process temperature Input is out of sensor range. - Device error	Temperature may exceed operating limits. Check process temperature. Or, bad resistance thermometer and/or electronics board. Contact appropriate personnel.
Status 8-5	Unknown error	Contact appropriate personnel.
PT Correct Reset	PT calibration data discarded.	Calibrate the zero point and span of the PT range.
Status 8-7	Unknown error	Contact appropriate personnel.
Status 9-0	Unknown error	Contact appropriate personnel.
Status 9-1	Unknown error	Contact appropriate personnel.
Status 9-2	Unknown error	Contact appropriate personnel.
Status 9-3	Unknown error	Contact appropriate personnel.
Status 9-4	Unknown error	Contact appropriate personnel.
Status 9-5	Unknown error	Contact appropriate personnel.
Status 9-6	Unknown error	Contact appropriate personnel.
Status 9-7	Unknown error	Contact appropriate personnel.

Document Number:	CM2-CFS100-2007
Document Name:	Field Communication Software CommStaff Model: CFS100 Instruction Manual (Smart Transmitter Model JTD720A Edition)
Date:	Nov. 2011 (initial)
Issued/Edited by:	Yamatake Corporation

Yamatake Corporation