

**Field Communication Software
CommStaff
Model: CFS100
Instruction Manual
(STEAMcube Steam Flow Meter Edition)**



Yamatake Corporation

NOTICE

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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 STEAMcube Steam Flow Meter with the model number pattern MVC30/31/32/33A

CONTENTS

Chapter 1. Overview	1
1-1. Introduction	1
1-2. Important Notes	1
1-3. Supported Versions	1
Chapter 2. Configuration	2
2-1. Menu List	2
2-2. Tag Number Configuration	6
2-3. Total Flow Unit Setting	7
2-4. Range Setting	8
2-4-1. Flow rate range setting	8
2-4-2. Pressure range setting	9
2-4-3. Temperature range setting	10
2-4-4. Peak value display	11
2-5. Low Flow Cutoff Setting	12
2-5-1. Low flow rate cutoff point Setting	12
2-5-2. Static pressure cutoff setting	13
2-5-3. Differential pressure cutoff setting	14
2-6. Damping Time Constant Configuration	15
2-7. Checking and setting up the burnout direction	16
2-8. Zero point adjustment	17
2-9. Total flow reset	18
2-10. Checking and changing the pulse settings	19
2-11. Display setup	20
2-12. Height setting	21
2-13. Constant current output	22
2-14. Calibration of output current	24
2-15. Constant pulse output	26
2-16. Density compensation	27
2-17. Calibration	28
2-17-1. Different pressure calibration	28
2-17-2. Calibrating the pressure	29
2-18. Setting the indicator	31
2-19. Flow simulation	32
2-20. Memo	33
2-21. PROM ID	34
2-22. Software version	35
Chapter 3. Checking Self-diagnostic Messages	36
Chapter 4. Status Message	37

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 STEAMcube(tm) Steam Flow Meter 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 STEAMcube(tm) Steam Flow Meter with SFN communications version 4.0 or later.

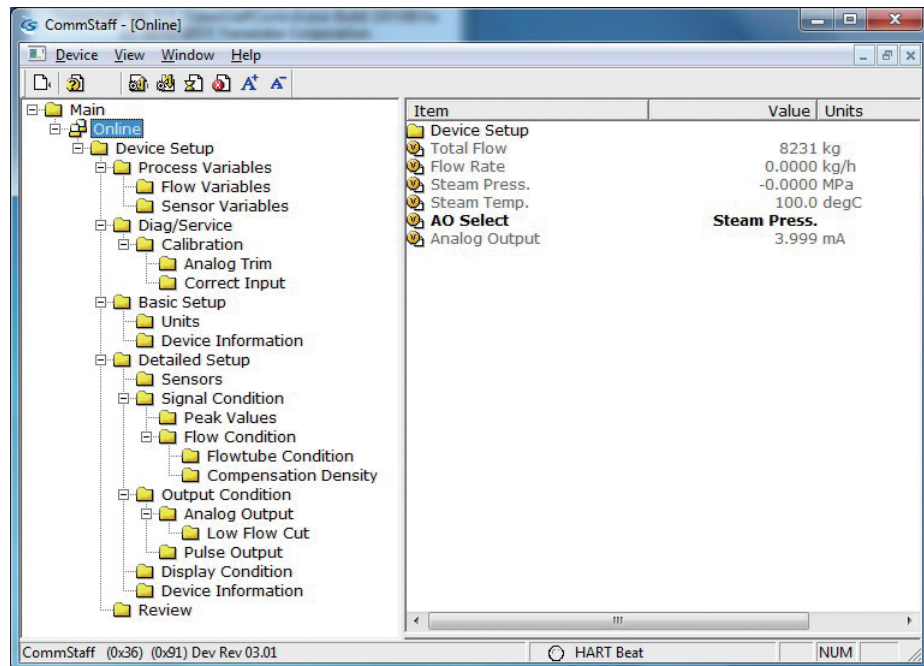
Chapter 2. Configuration

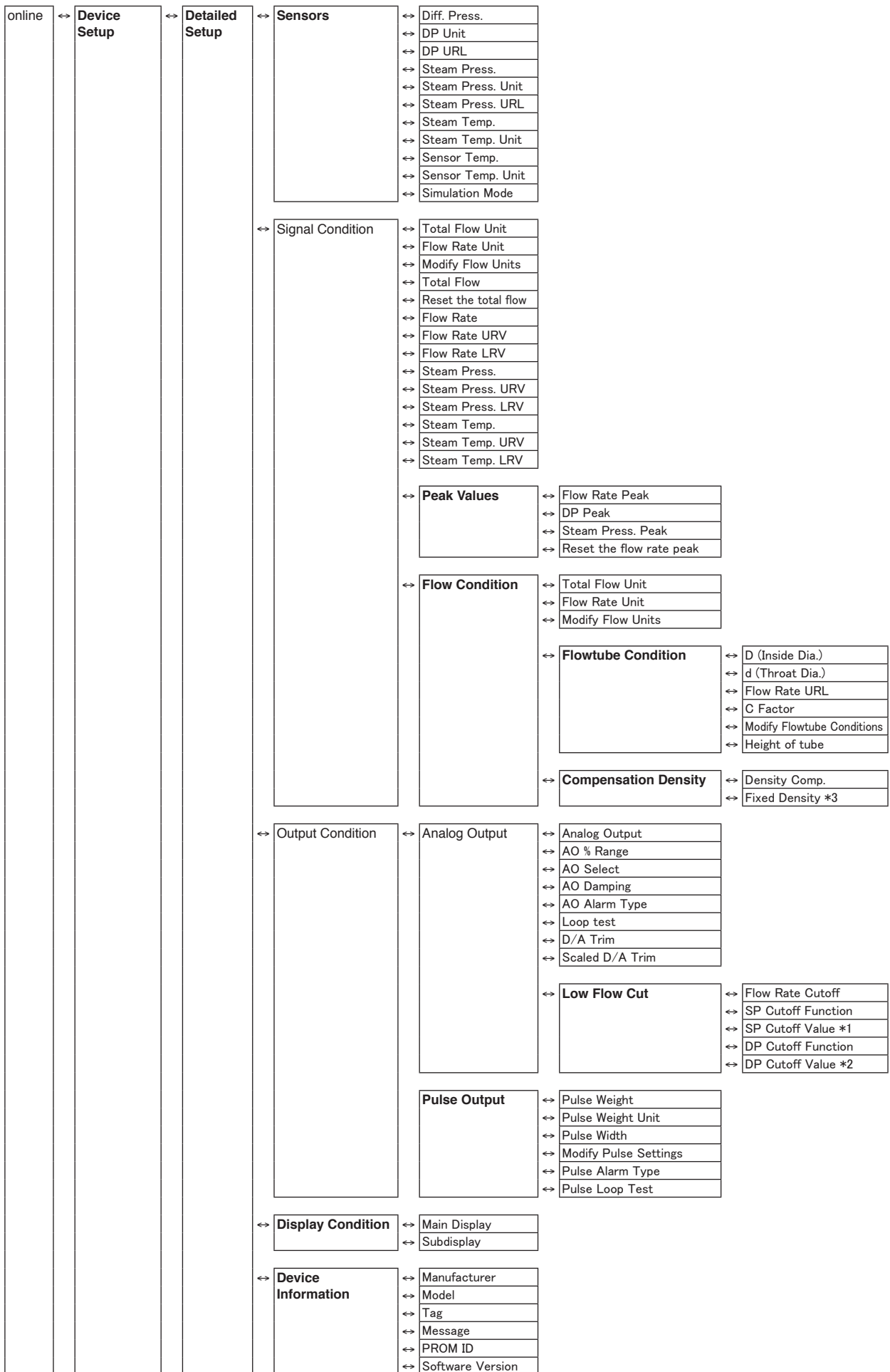
2-1. Menu List

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 (Total Flow and Flow Rate in the following window) in the parameter display in the right pane are parameters that cannot be changed.

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





online	↔	Device Setup	↔	Review	↔	Model
	↔		↔		↔	Manufacturer
	↔		↔		↔	Tag
	↔		↔		↔	Flow Rate Unit
	↔		↔		↔	Flow Rate URL
	↔		↔		↔	Flow Rate URV
	↔		↔		↔	Flow Rate LRV
	↔		↔		↔	AO Select
	↔		↔		↔	AO Damping
	↔		↔		↔	AO % Range
	↔		↔		↔	Analog Output
	↔		↔		↔	AO Alarm Type
	↔		↔		↔	PROM ID
	↔		↔		↔	Message
	↔		↔		↔	Software Version
	↔		↔		↔	Flow Rate Cutoff
	↔		↔		↔	SP Cutoff Function
	↔		↔		↔	SP Cutoff Value *1
	↔		↔		↔	DP Cutoff Function
	↔		↔		↔	DP Cutoff Value *2
	↔		↔		↔	Main Display
	↔		↔		↔	Subdisplay
	↔		↔		↔	Pulse Weight
	↔		↔		↔	Pulse Weight Unit
	↔		↔		↔	Pulse Width
	↔		↔		↔	Pulse Alarm Type
	↔		↔		↔	Density Comp.
	↔		↔		↔	Fixed Density *3
	↔		↔		↔	D (Inside Dia.)
	↔		↔		↔	d (Throat Dia.)
	↔		↔		↔	C Factor
	↔		↔		↔	Height of tube
	↔		↔		↔	Total Flow
	↔		↔		↔	Flow Rate
↔	↔	↔	Steam Temp.			
↔	↔	↔	Sensor Temp.			
↔	↔	↔	Flow Rate Peak			
↔	↔	↔	DP Peak			
↔	↔	↔	Steam Press. Peak			
↔	↔	↔	DP URV			
↔	↔	↔	DP LRV			
↔	↔	↔	Diff. Press.			
↔	↔	↔	Steam Press. URV			
↔	↔	↔	Steam Press. LRV			
↔	↔	↔	Steam Press.			
↔	↔	↔	Steam Temp. URV			
↔	↔	↔	Steam Temp. LRV			

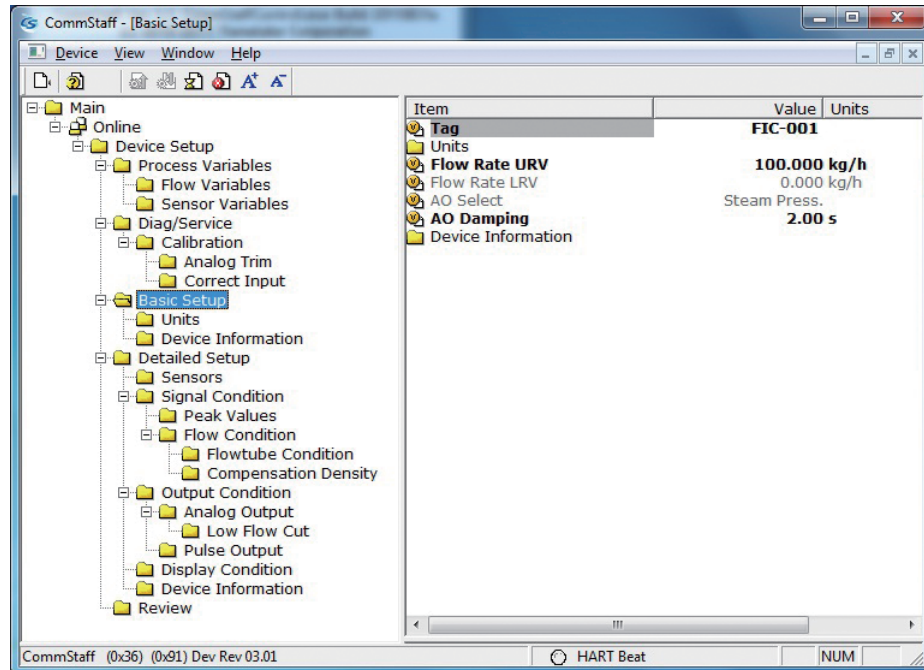
*1 Displayed when SP Cutoff Function is set for ON.

*2 Displayed when DP Cutoff Function is set for ON.

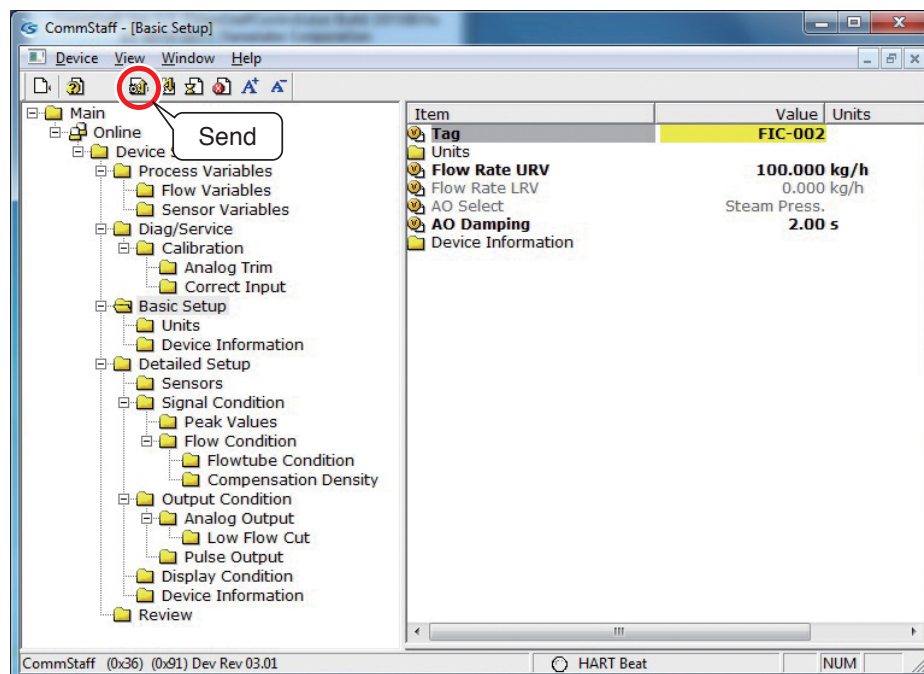
*3 Displayed when Density Comp. is set for Fixed.

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].



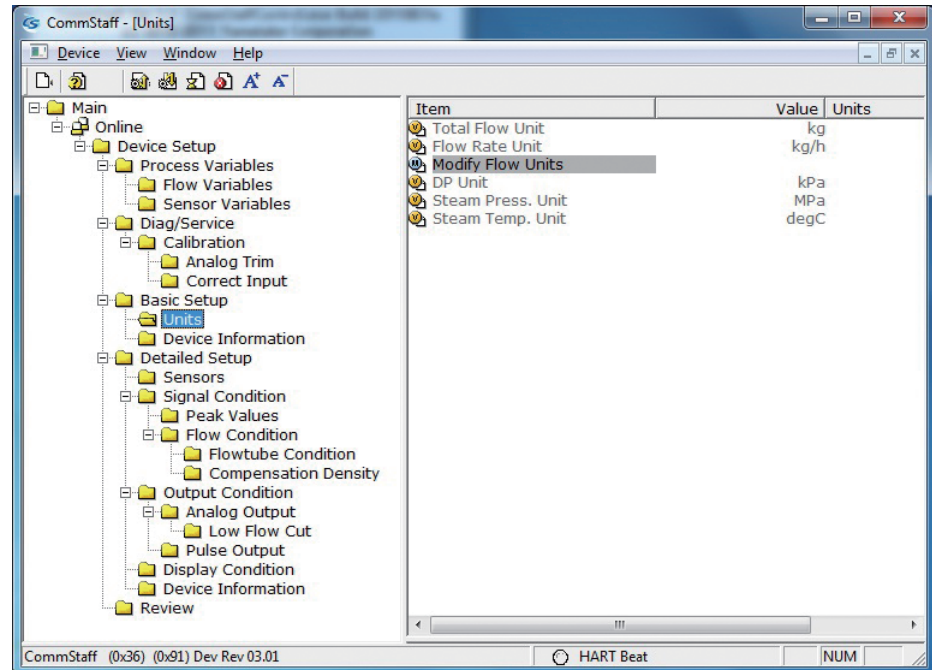
Double-clicking Tag displays the settings screen. On this screen, set the Tag and click the Set button. The tag is highlighted in yellow. Click the Send button to send the new Tag to the transmitter.



2-3. Total Flow Unit Setting

The unit used to express the total flow can be selected from the mass flow units kg and t, or from the volumetric flow units l and m3. The flow rate unit can be set so that it is determined by the total flow unit.

Select [Device Setup] → [Basic Setup] → [Units] → [Modify Flow Units].



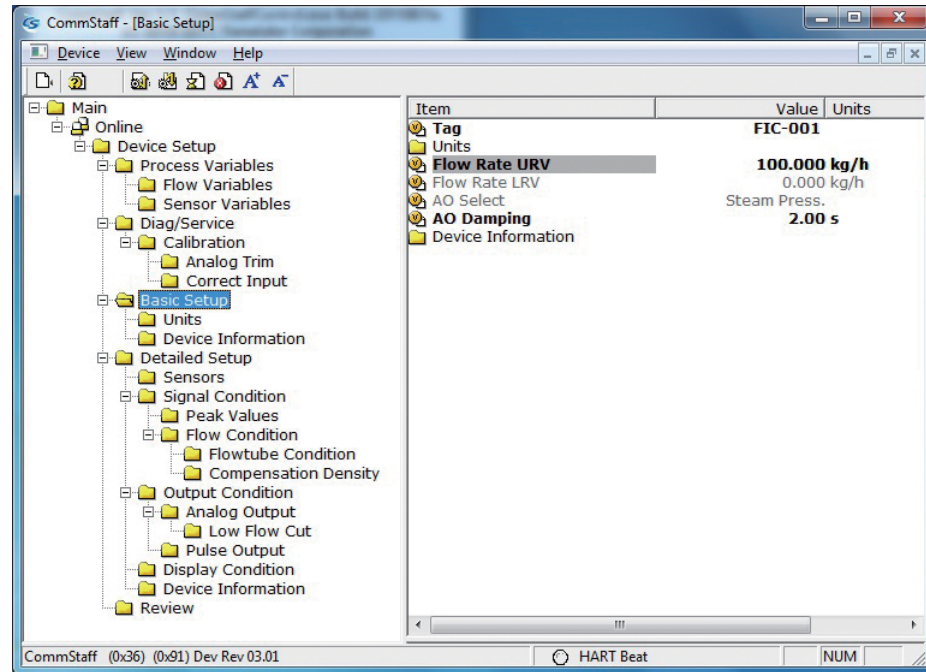
- A message, "WARN - Loop should be removed from automatic control." appears. Click OK.
- Select the total flow unit from among l, m3, kg, and t. After selecting, click OK.
- Candidates for the flow rate unit are displayed according to the selected total flow unit. Select one and click OK.
- After the changed unit is sent, a message, "Note -- Loop may be returned to automatic control" appears. Click OK.

2-4. Range Setting

2-4-1. Flow rate range setting

This section tells how to configure the flow rate range.

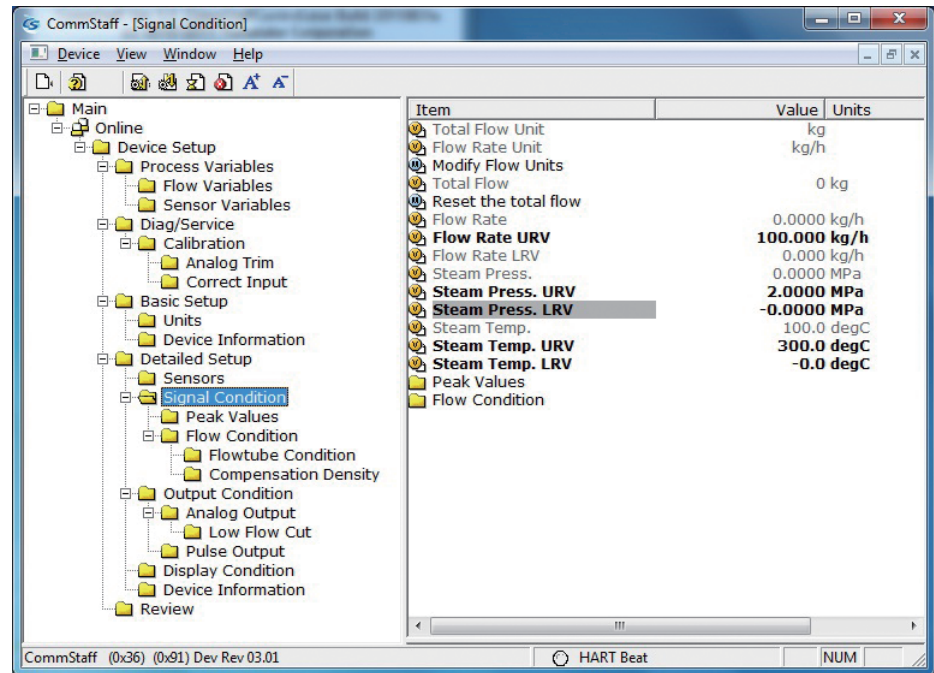
Select [Device Setup] → [Basic Setup] → [Flow Rate URV].



2-4-2. Pressure range setting

This section tells how to configure the pressure range.

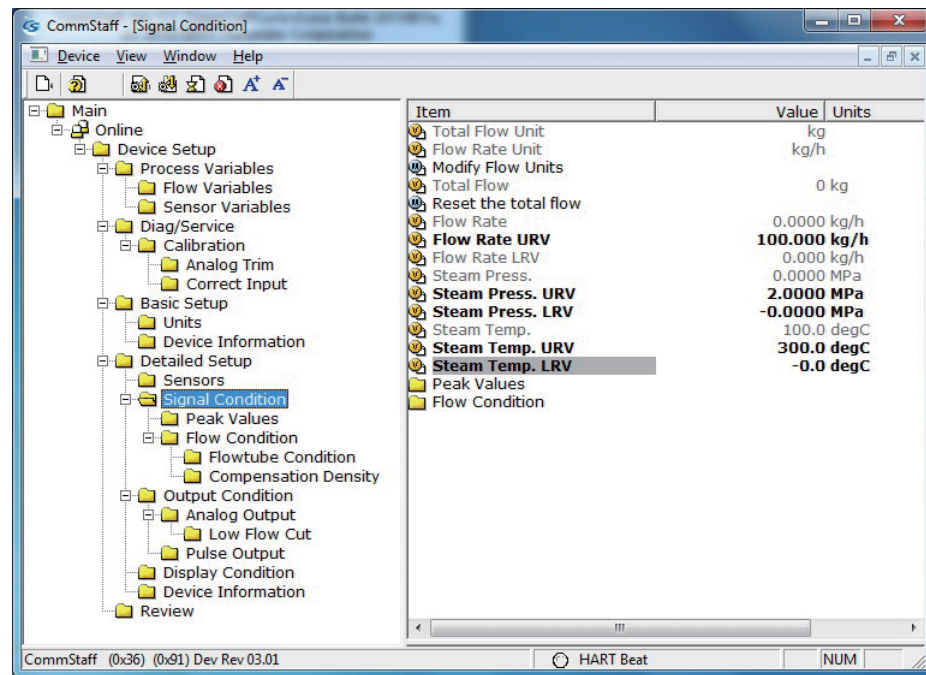
Select [Device Setup] → [Detailed Setup] → [Signal Condition] → [Steam Press. LRV] or [Steam Press. URV].



2-4-3. Temperature range setting

This section tells how to configure the temperature range.

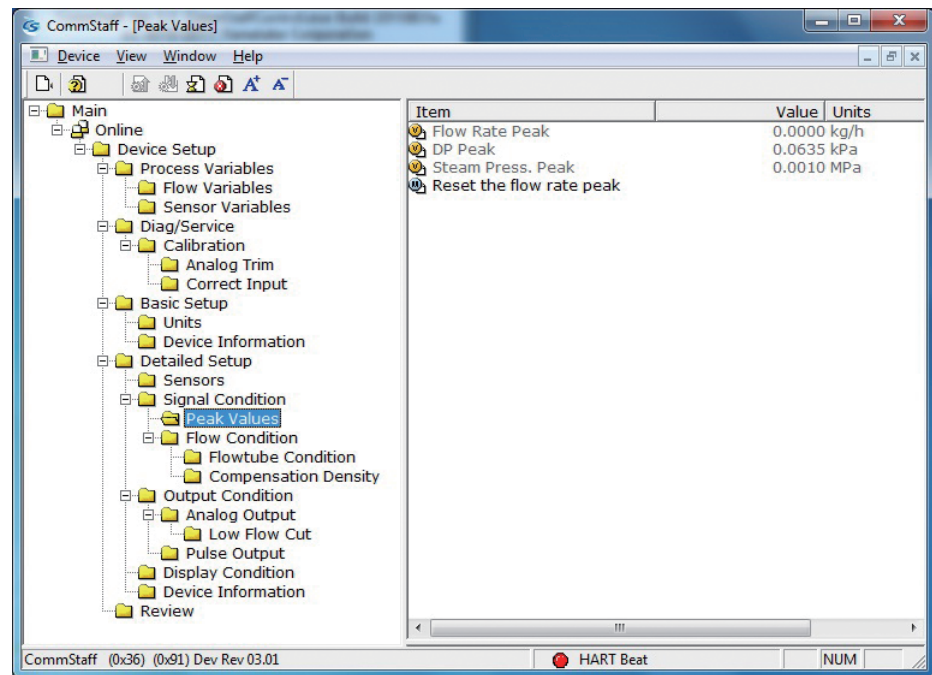
Select [Device Setup] → [Detailed Setup] → [Signal Condition] → [Steam Temp. LRV] or [Steam Temp. URV].



2-4-4. Peak value display

The method of displaying peak values (Flow Rate Peak, DP Peak, and Steam Press. Peak) is shown below.

Select [Device Setup] → [Detailed Setup] → [Signal Condition] → [Peak Values].



To reset Flow Rate Peak to 0, select [Reset the flow rate peak].

DP Peak and Steam Press. Peak can be reset by turning off the power to STEAMcube.

2-5. Low Flow Cutoff Setting

STEAMcube has 3 low flow cutoff functions as follows.

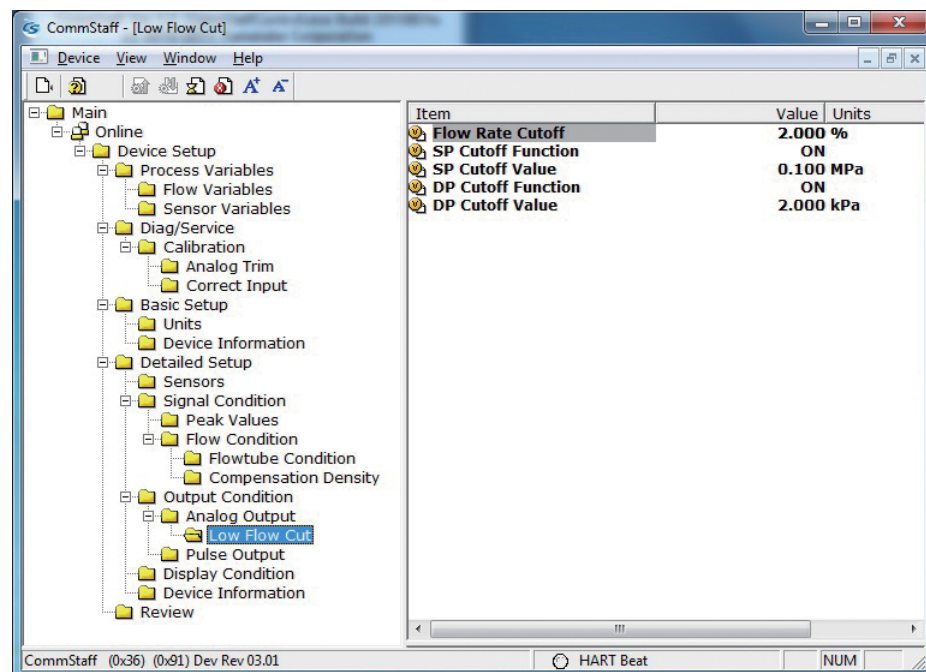
- Low flow rate cutoff point (Flow Rate Cutoff)
- Static pressure cutoff (SP Cutoff)
- Differential pressure cutoff (DP Cutoff)

2-5-1. Low flow rate cutoff point Setting

This section tells how to configure the low flow range cutoff point.

Select [Device Setup] → [Detailed Setup] → [Output Condition] → [Analog Output] → [Low Flow Cut] → [Flow Rate Cutoff].

It can be set from 0 to 30 %.



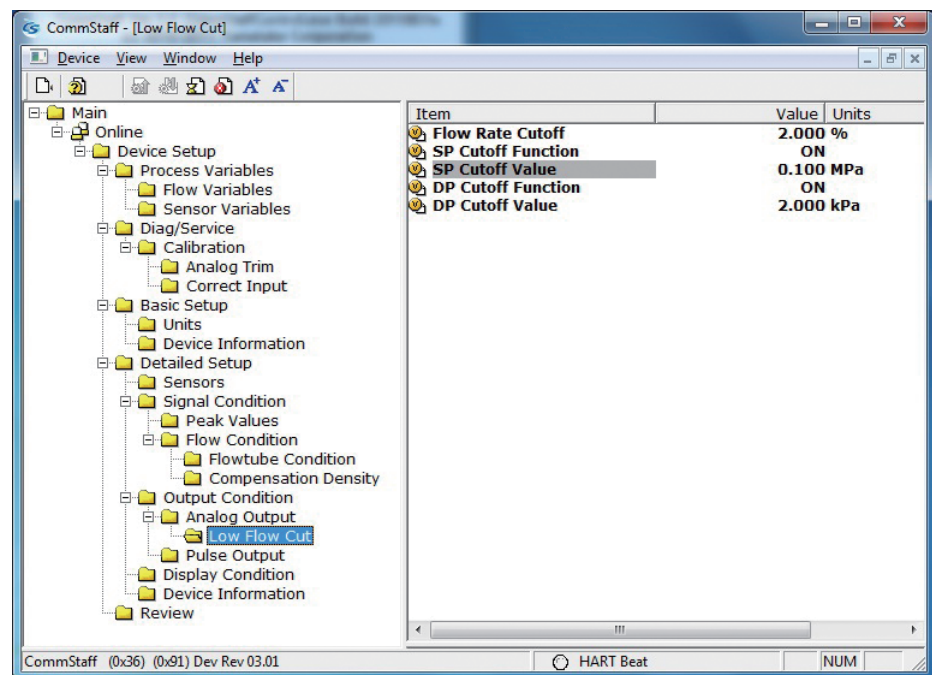
2-5-2. Static pressure cutoff setting

This section tells how to set the static pressure cutoff function ON/OFF and how to set the static pressure cutoff value.

To turn the static pressure cutoff function ON/OFF, select [Device Setup] → [Detailed Setup] → [Output Condition] → [Analog Output] → [Low Flow Cut] → [SP Cutoff Function].

The SP Cutoff Value can be configured if the SP Cutoff Function is set to ON.

Select [Device Setup] → [Detailed Setup] → [Output Condition] → [Analog Output] → [Low Flow Cut] → [SP Cutoff Value].



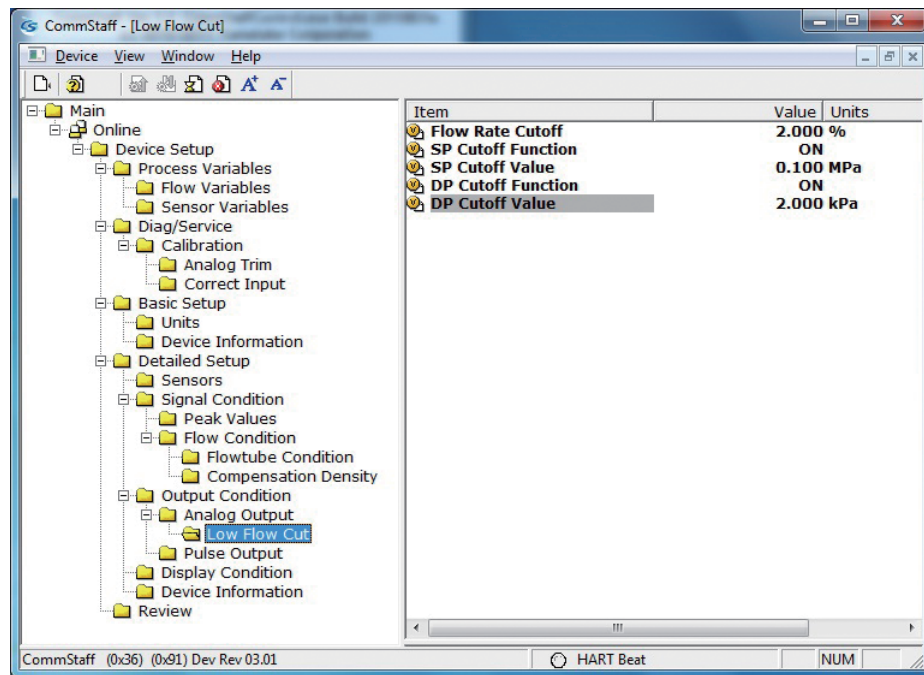
2-5-3. Differential pressure cutoff setting

This section tells how to set the differential pressure cutoff function ON/OFF and how to set the differential pressure cutoff value.

To turn the differential pressure cutoff function ON/OFF, select [Device Setup] → [Detailed Setup] → [Output Condition] → [Analog Output] → [Low Flow Cut] → [DP Cutoff Function].

The DP Cutoff Value can be configured if the DP Cutoff Function is set to ON.

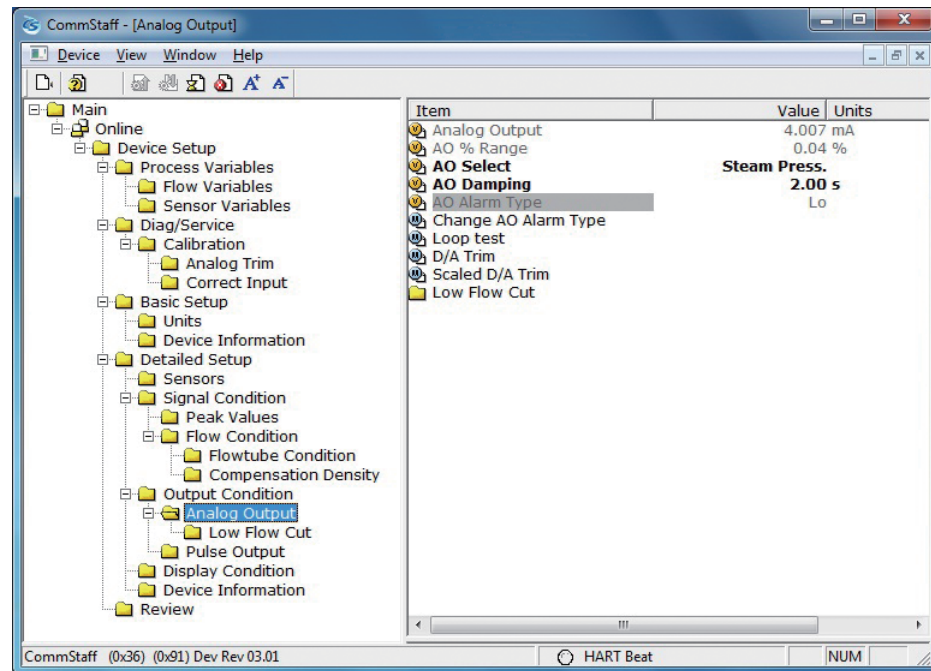
Select [Device Setup] → [Detailed Setup] → [Output Condition] → [Analog Output] → [Low Flow Cut] → [DP Cutoff Value].



2-7. Checking and setting up the burnout direction

This section explains how to check the burnout direction.

Select [Device Setup] → [Detailed Setup] → [Output Condition] → [Analog Output] → [AO Alarm Type].



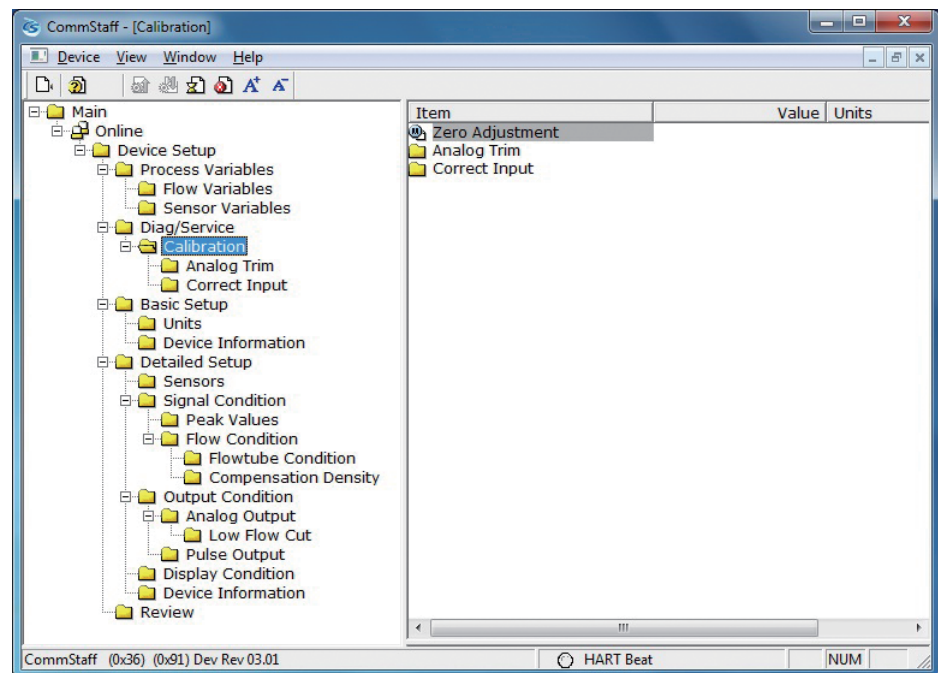
To change the direction of burnout, select [Device Setup] → [Detailed Setup] → [Output Condition] → [Analog Output] → [AO Alarm Type].

- 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.
- Select Hi, Lo, or None and click OK.
- After configuration is complete, the message "Note -- Loop may be returned to automatic control" appears. Click OK.

2-8. Zero point adjustment

This section explains how to adjust the zero point.

Select [Device Setup] → [Diag/Service] → [Calibration] → [Zero Adjustment].

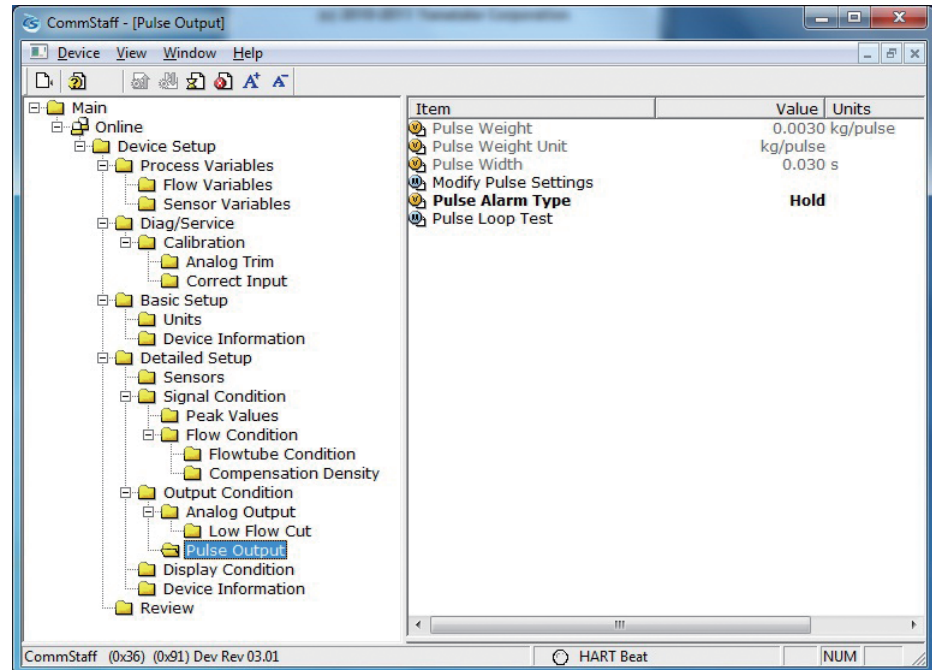


- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- A warning that this operation will affect the sensor calibration (WARN-This will affect sensor calibration) is displayed. To proceed, click [OK].
- When "Apply 0 input to sensor" appears, make sure the rate of flow is zero and click OK.
- If adjustment of the zero point was successful, the message "Zero adjustment succeeded" appears. Click OK.
- After the changed unit is sent, a message, "Note -- Loop may be returned to automatic control" appears. Click OK.

2-10. Checking and changing the pulse settings

This section tells how to check and change the pulse settings.

To check the pulse settings, select [Device Setup] → [Detailed Setup] → [Output Condition] → [Pulse Output]. The settings for Pulse Weight, Pulse Width, and Pulse Alarm Type can be checked.



- To change the Pulse Weight and Pulse Width, select [Modify Pulse Settings].
- 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.
- When the Pulse Weight input window appears, input a value and click OK.
- The Pulse Width is automatically calculated and displayed according to the Pulse Weight that was input. If there is no problem with the value, click OK.
- When "Apply 0 input to sensor" appears, make sure the rate of flow is zero and click OK.
- If the settings were successfully changed, "Modify pulse settings succeeded" appears. Click [OK].
- After the changed unit is sent, a message, "Note -- Loop may be returned to automatic control" appears. Click OK.

To change the Pulse Alarm Type, select [Pulse Alarm Type].

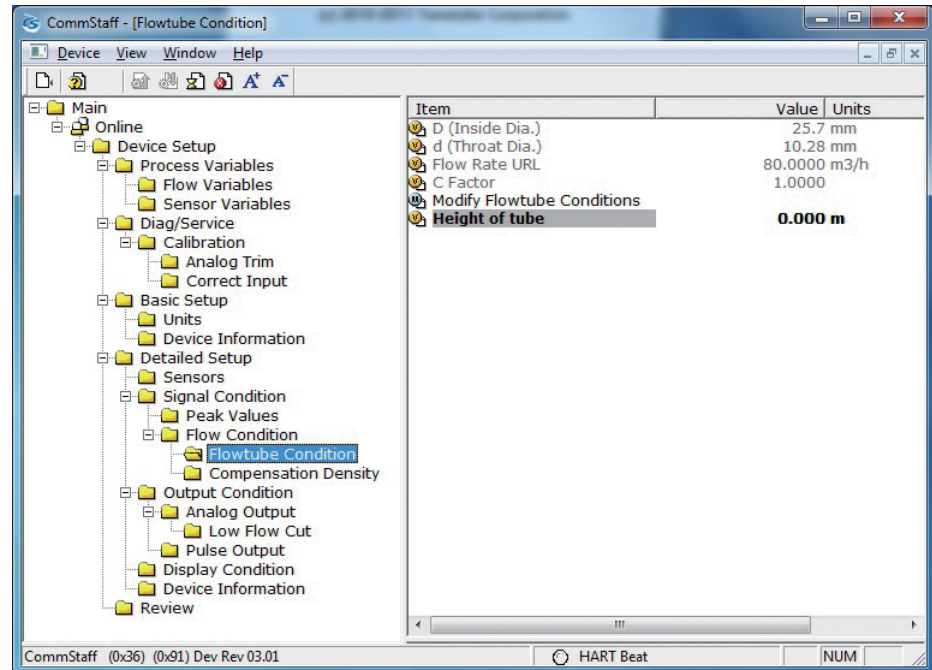
Low or Hold can be selected.

2-12. Height setting

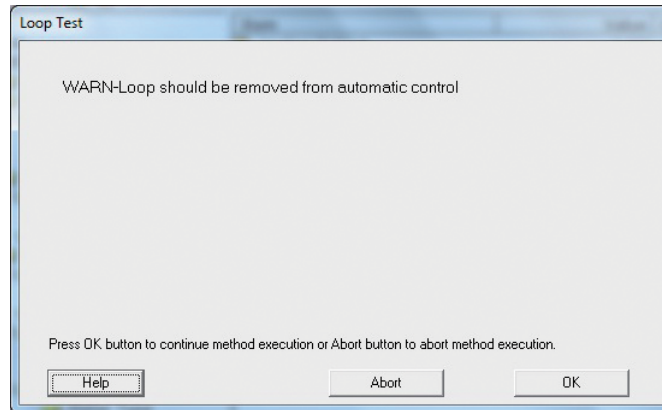
For remote detectors, this section explains how to set the difference in height between the converter and detector.

If the detector is higher than the converter, input a positive value. If the detector is lower, input a negative value. For integrated detectors, set to 0 m.

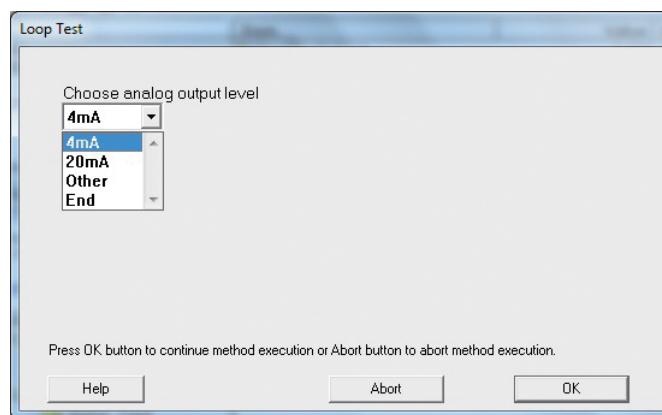
Select [Device Setup] → [Detailed Setup] → [Signal Condition] → [Flow Condition] → [Flowtube Condition] → [Height of tube].



Double-clicking Loop Test displays the following screen.



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



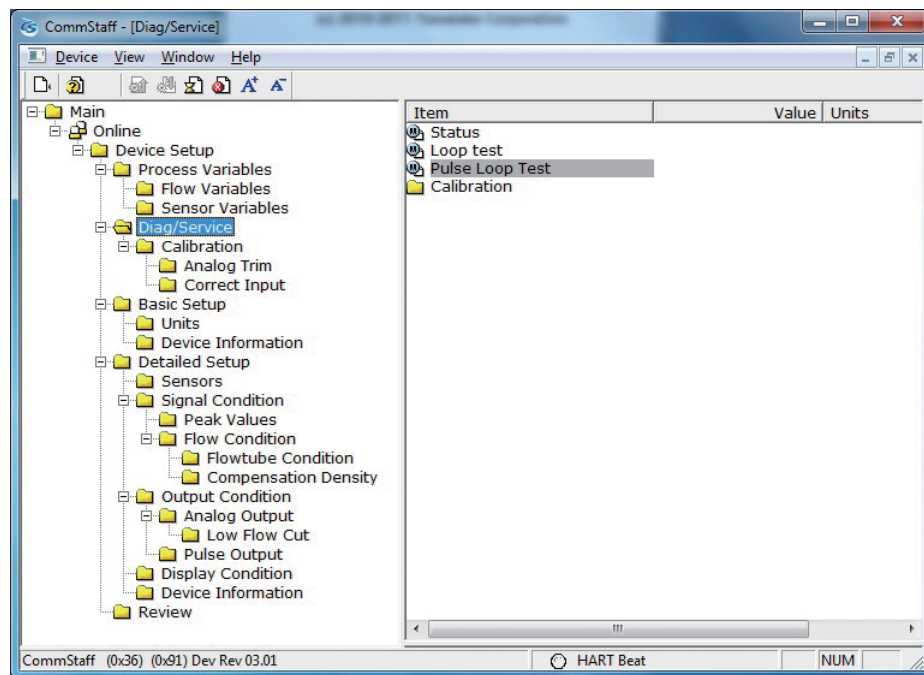
- Select 4 mA and click OK. Output signals are kept at 4 mA (0%).
- Select 20 mA and click OK. Output signals are kept at 20 mA (100%).
- To input a different value, select Other and Click OK.
- If you select End and click OK, a message is displayed notifying you that this will return operation to normal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

Step	Operation and indication
1	<p>Double-click D/A Trim.</p> <p>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.</p> <p>“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.)</p>
2	<p>The following messages are displayed in the order given.</p> <p>Setting fld dev output to 4mA (about to set transmitter output to 4 mA) Click OK if there are no problems.</p> <p>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.</p> <p>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.</p>
3	<p>Next do the 20 mA calibration. The following messages are displayed in the order given.</p> <p>Setting fld dev output to 20mA (about to set transmitter output to 20 mA) Click OK if there are no problems.</p> <p>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.</p> <p>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.</p> <p>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.</p>

2-15. Constant pulse output

Setting and turning off constant pulse output is explained below.

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



- 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.
- Select the desired operation from the 4 following items and click OK.

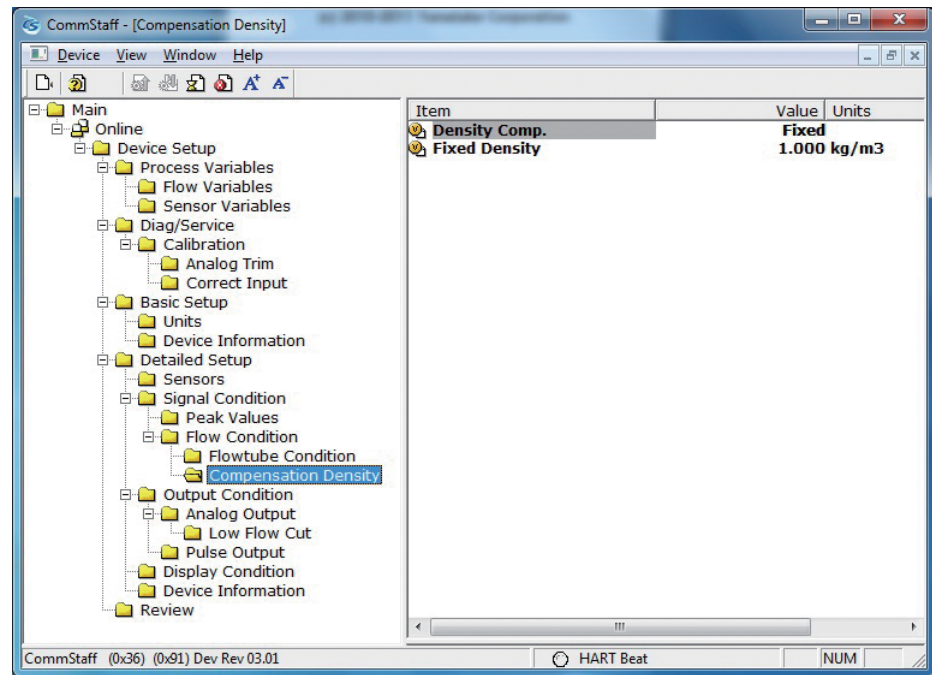
0%	Sets 0 % constant pulse output.
100%	Sets 100 % constant pulse output.
Other	Sets the desired constant pulse.
End	Cancels constant pulse output and aborts processing.

2-16. Density compensation

Setup of the density compensation method is explained in this section

Standard (Auto)	Based on input from the pressure sensor, density compensation and flow rate calculation are done automatically.
Fixed density (Fixed)	The flow rate is calculated using a fixed density.

Select [Device Setup] → [Detailed Setup] → [Signal Condition] → [Flow Condition] → [Compensation Density] → [Density Comp.].



To keep the density setting at a fixed value, set [Fixed Density].

2-17. Calibration

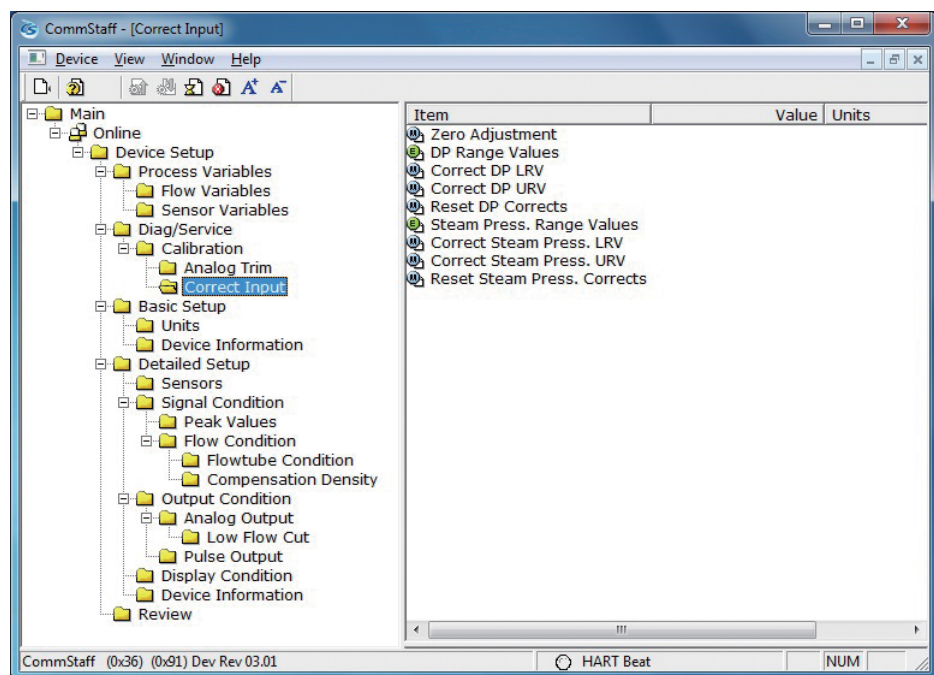
This section tells how to calibrate differential pressure sensors and pressure sensors.

2-17-1. Different pressure calibration

The method of calibrating differential pressure sensors is shown below.

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].

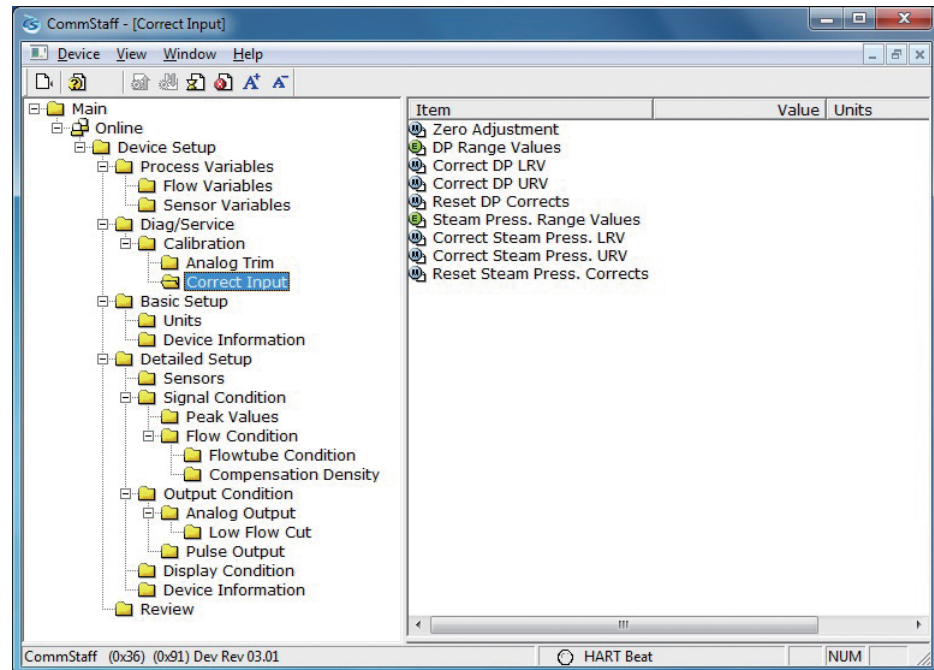


- First, double-click DP Range Values, and check the values for DP LRV and the DP URV. If a change is necessary, change the values.
- To calibrate the DP LRV value, double-click Correct DP LRV. To calibrate the DP URV value, double-click Correct Input DP URV. When changing both the DP LRV and the DP 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.

2-17-2. 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].



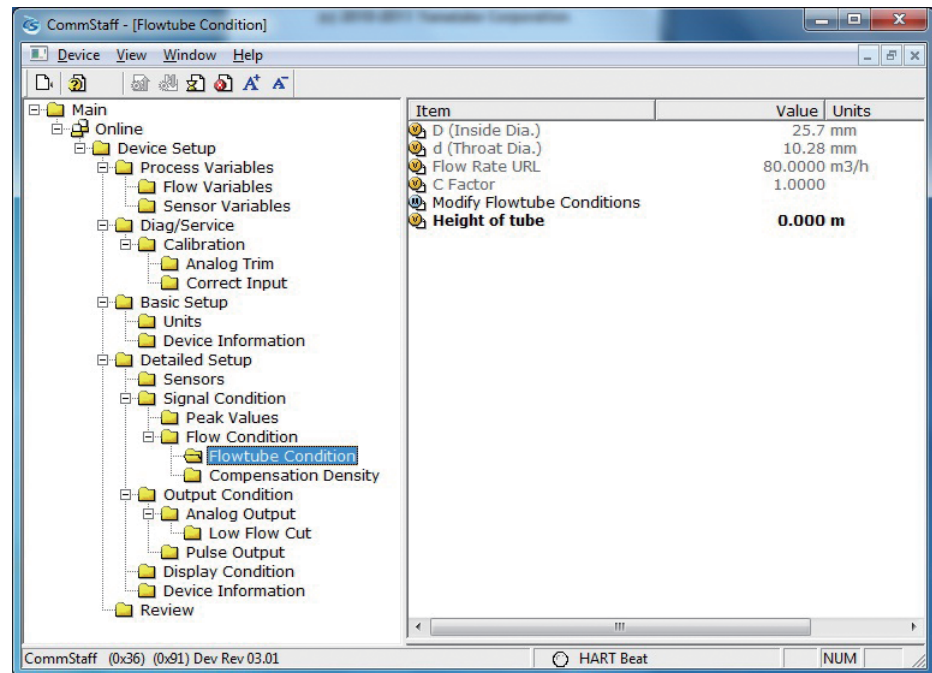
- First, double-click Steam Press.Range Values, and check the values for Steam Press. LRV and the Steam Press.URV. If a change is necessary, change the values.
- To calibrate the Steam Press.LRV value, double-click Correct Input Steam Press.LRV. To calibrate the Steam Press.URV value, double-click Correct Input Steam Press.URV. When changing both the Steam Press.LRV and the Steam Press.URV, be sure to do the Steam Press.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 Steam Press.Mode. OK?" appears in order to confirm configuration of the pressure mode. To set the mode, click [OK].
- Either "Apply Steam Press.LRV pressure" or "Apply Steam Press.URV pressure" is displayed. If the value of the standard pressure generator is equal to Steam Press.LRV or Steam Press.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 Steam Press.LRV succeeded] or [Correct Steam Press.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.

2-18. Setting the indicator

Instructions for checking and configuring detector information are given below.

Select [Device Setup] → [Detailed Setup] → [Signal Condition] → [Flow Condition] → [Flowtube Condition].



To change the value of any of the 4 parameters below, select [Modify Flowtube Conditions].

D (Inside Dia.)
d (Throat Dia.)
Flow Rate URL
C Factor

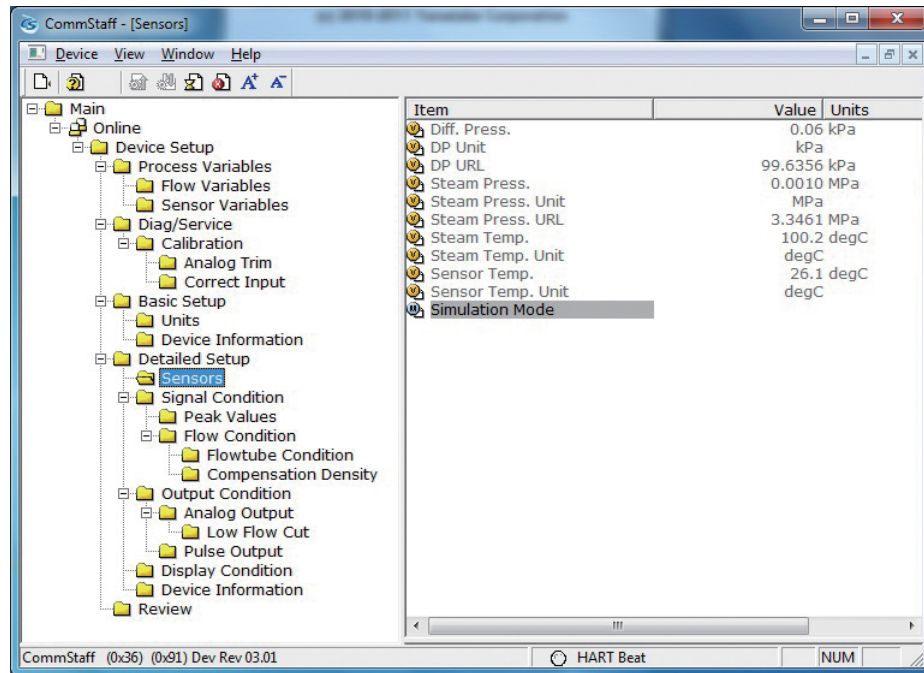
CAUTION: Since changing the value of any of these 4 parameters affects the flow output, usually they should not be changed. If any change is needed due to detector replacement, contact the azbil Group. If the unit is a high-accuracy model of STEAMcube, the D and d parameters are actual measured values that vary depending on each individual STEAMcube unit.

2-19. Flow simulation

This section explains how to simulate flow output using dummy values for pressure and differential pressure.

CAUTION: If the instantaneous flow rate calculated by the flow simulation function is larger than the maximum previously measured value, it will be stored as the peak value.

Select [Device Setup] → [Detailed Setup] → [Sensors] → [Simulation Mode].



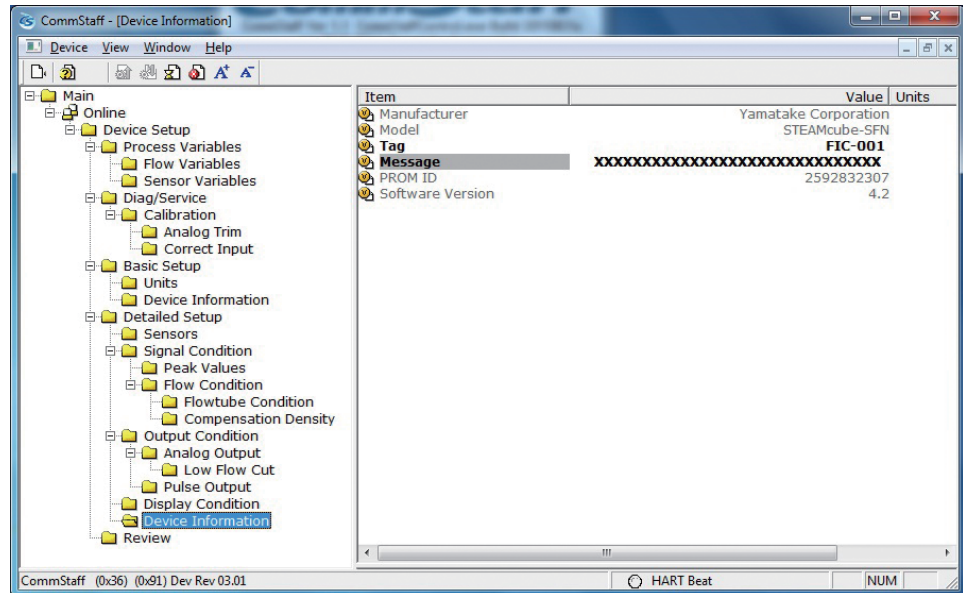
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- When "Enter dummy DP value" is displayed, input the dummy value for differential pressure and click OK.
- When "Enter dummy Steam Pressure value" is displayed, input the dummy pressure value and click OK.
- Simulation mode starts and the calculated steam temperature (Steam Temp) and flow rate (Flow Rate) are displayed. To end simulation mode, click OK.
- After ending simulation mode, a message, "Note -- Loop may be returned to automatic control." appears. Click OK.

2-20. Memo

A memo stored within the device can be set and displayed.

The maximum length is 32 alphanumeric characters.

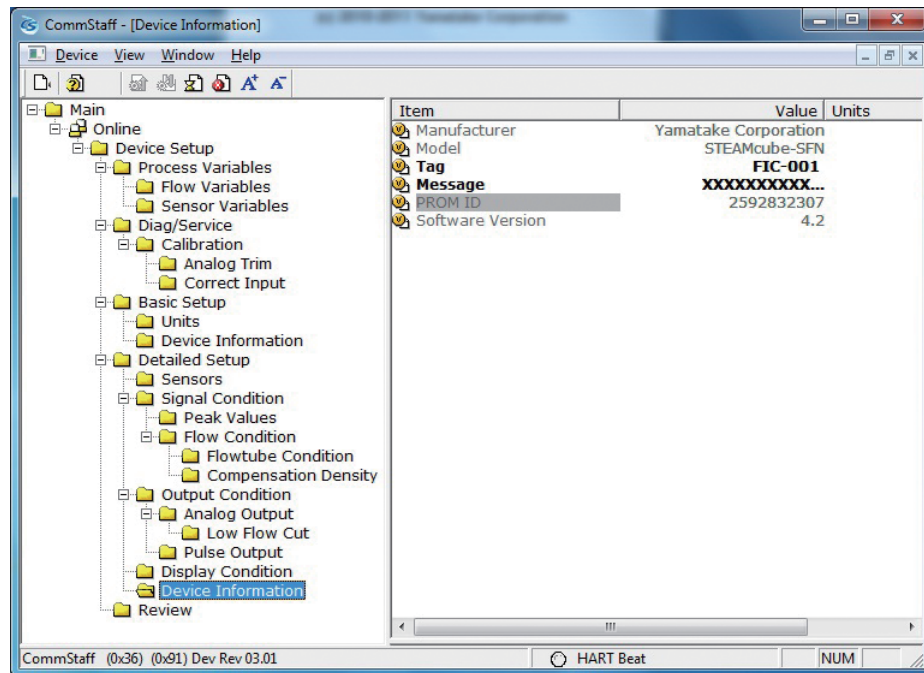
Select [Device Setup] → [Detailed Setup] → [Device Information] → [Message].



2-21. PROM ID

The following shows how to check the PROM ID.

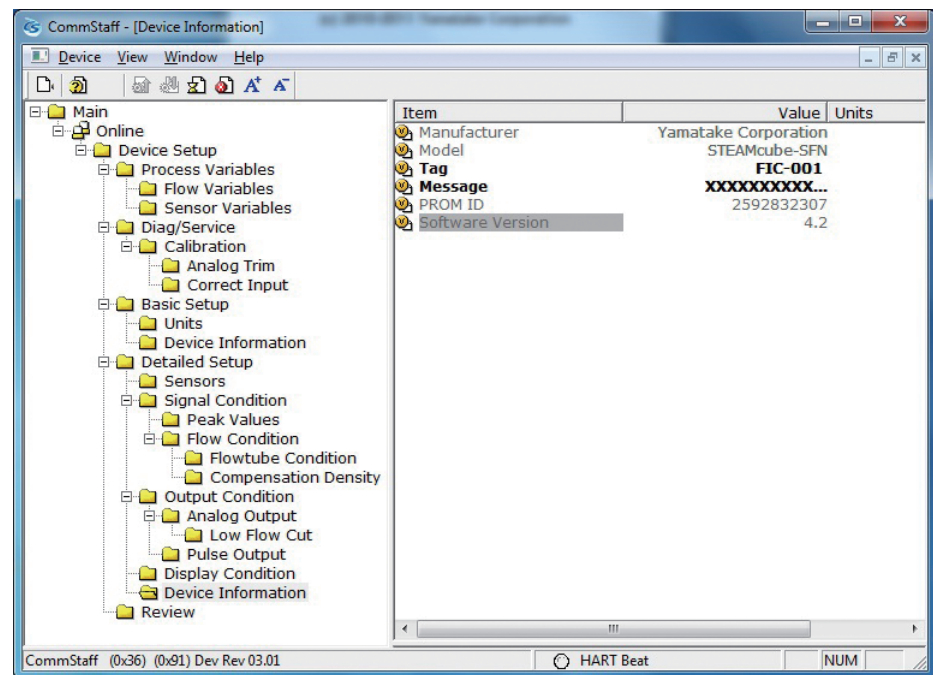
Select [Device Setup] → [Detailed Setup] → [Device Information] → [PROM ID].



2-22. Software version

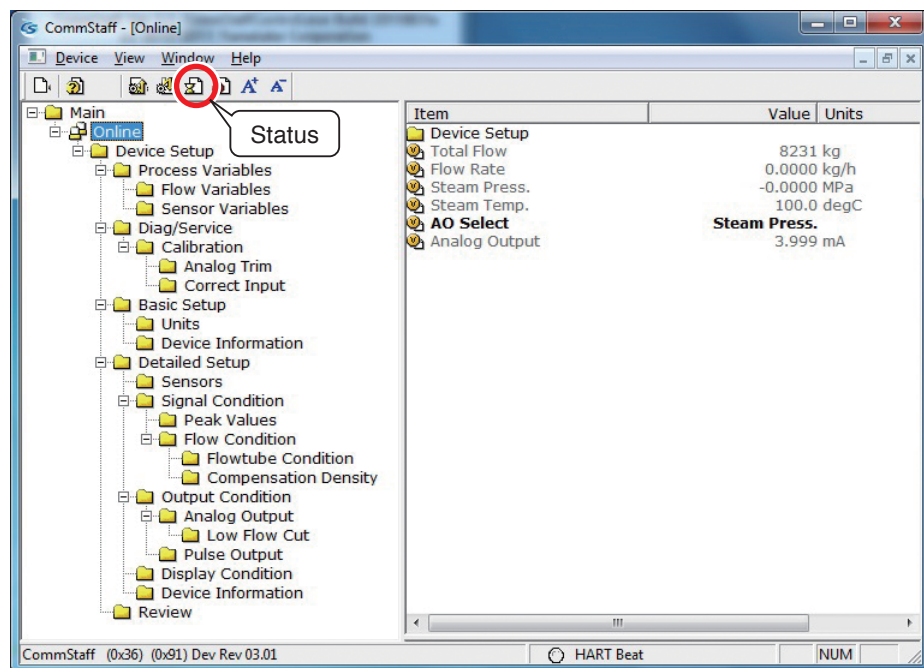
The software version of the device can be displayed as shown below.

Select [Device Setup] → [Detailed Setup] → [Device Information] → [Software Version].



Chapter 3. 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 inconsistency		
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		
Chara. PROM Faul	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.
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.
Device status		
Meter Body Over Temperature	Meter body temperature is too high.	Reinstall the device to decrease the temperature to within specifications.
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, Simulation mode, Output mode and/or Pulse output mode.	Return to measuring mode to clear message..
DP Overload	The input differential pressure exceeds operating limits. In such a case output is at the upper or lower limit.	Check whether or not the flow rate is within specifications
Meter Body Fault	- The input differential pressure exceeds two times the upper range limit of the device. - Device error	Check whether or not the flow rate is within specifications.
DP Correct Reset	DP calibration data discarded.	Calibrate the zero point and span on the DP calibration screen.
Excess PP Zero 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.
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.
PP Overload	- The input static pressure exceeds two times the upper range limit of the device. - Device error	Check whether or not the static pressure is within specifications.

PP Correct Reset	PP calibration data discarded.	Calibrate the zero point and span on the PP calibration screen.
In DP Mode	The device is operating in differential pressure mode.	Exit DP Calibration screen to clear differential pressure mode.
In PP Mode	The device is operating in process pressure (static pressure) mode.	Exit PP Calibration screen to clear process pressure mode.
In DP Input Mode	The device is operating in DP simulation mode.	Tap [Clear] to exit DP simulation mode.
In PP Input Mode	The device is operating in PP simulation mode.	Tap [Clear] to exit PP simulation mode.
In Output Mode	The device is operating in output mode.	Tap [Clear output mode] to clear output mode.
In Pulse Output Mode	The device is operating in pulse output mode.	Tap [Clear output mode] to clear pulse output mode.

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