

# **Field Communication Software Model: CFS100**

## **Instruction Manual (STEAMcube Steam Flow Meter Edition)**



Azbil Corporation

## NOTICE

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### Instruction Manuals

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

The Common Edition manual for Model CFS100, 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

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# Chapter 1. Overview

## 1-1. Introduction

Model CFS100 (CommStaff) is a tool for communicating with Azbil Corporation's 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 Azbil Corporation's 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 Azbil Corporation's proprietary SFN/DE communication protocol as well as the HART communication protocol.

\* HART is a registered trademark of the FieldComm Group.

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 Model CFS100 Operation Manual. *Before reading this manual, make sure to read the main Model CFS100 Operation Manual thoroughly.*

For information on STEAMcube Steam Flow Meter functions and method of connection, refer to manual No. CM2-MVC300-2001, Steam Flow Meter STEAMcube Model: MVC30/MVC31 User's Manual

## 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.

\* The use of SFN communication changes the transmission signal, so be sure to switch the process control loop to manual mode beforehand.

\* For known troubleshooting issues, refer to section 7.4 of CM2-CFS100-2001, the common edition manual.

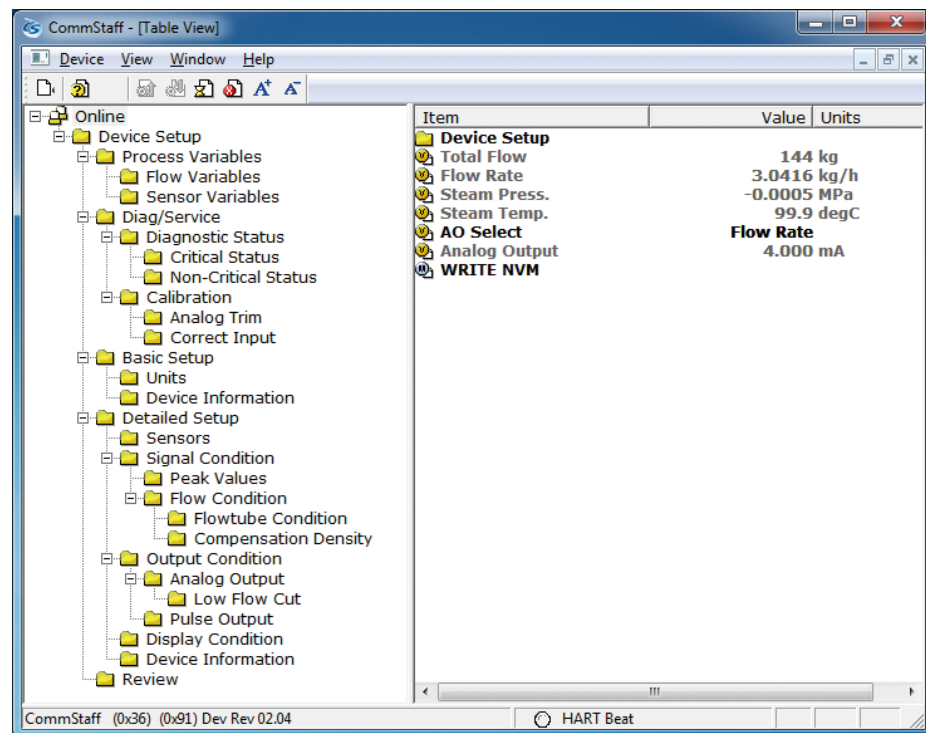
# Chapter 2. Configuration

## 2-1. Menu List

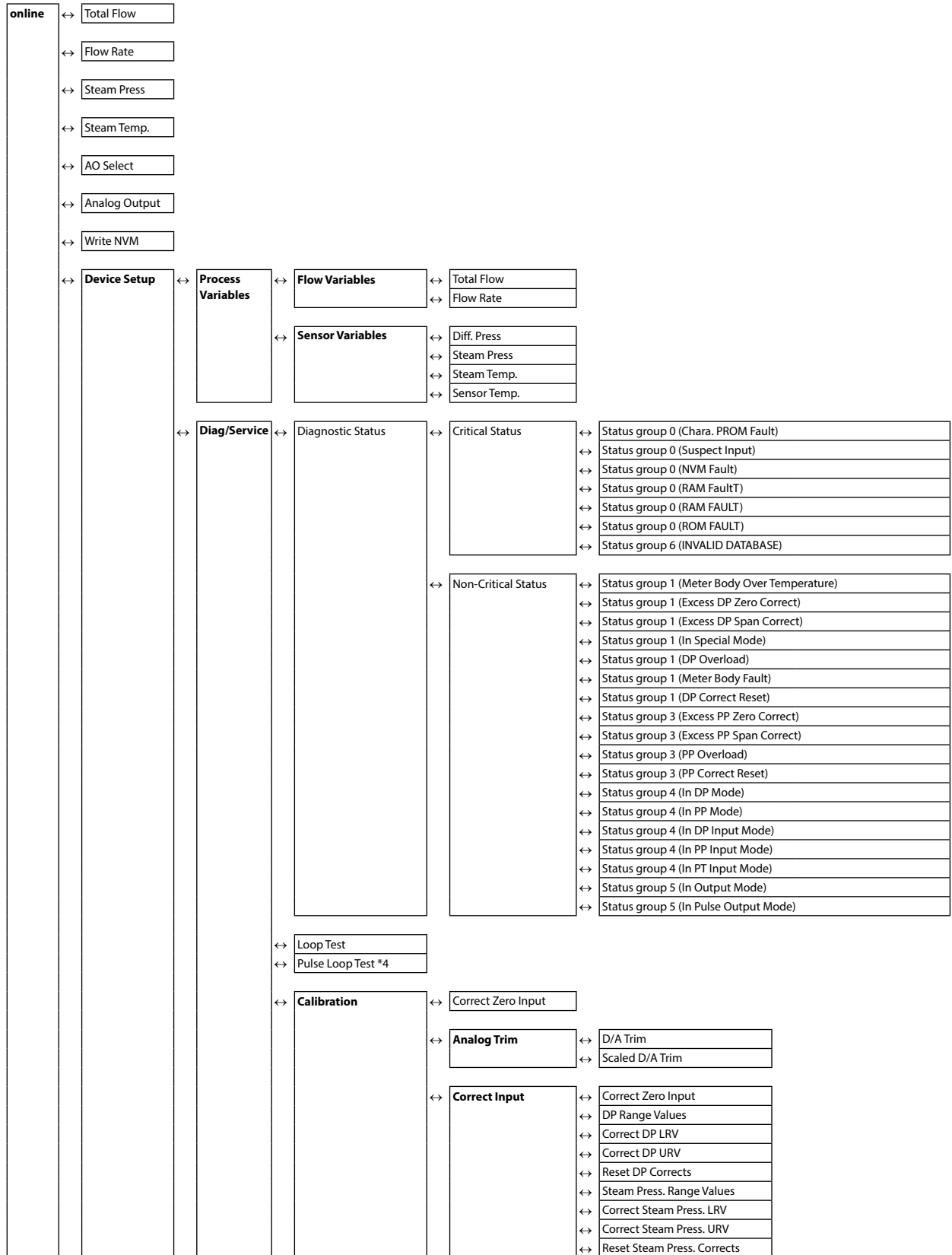
Right-clicking “Online” in the menu tree in the left pane of the CommStaff application window displays a menu. Selecting Expand on the menu displays the expanded menu tree.

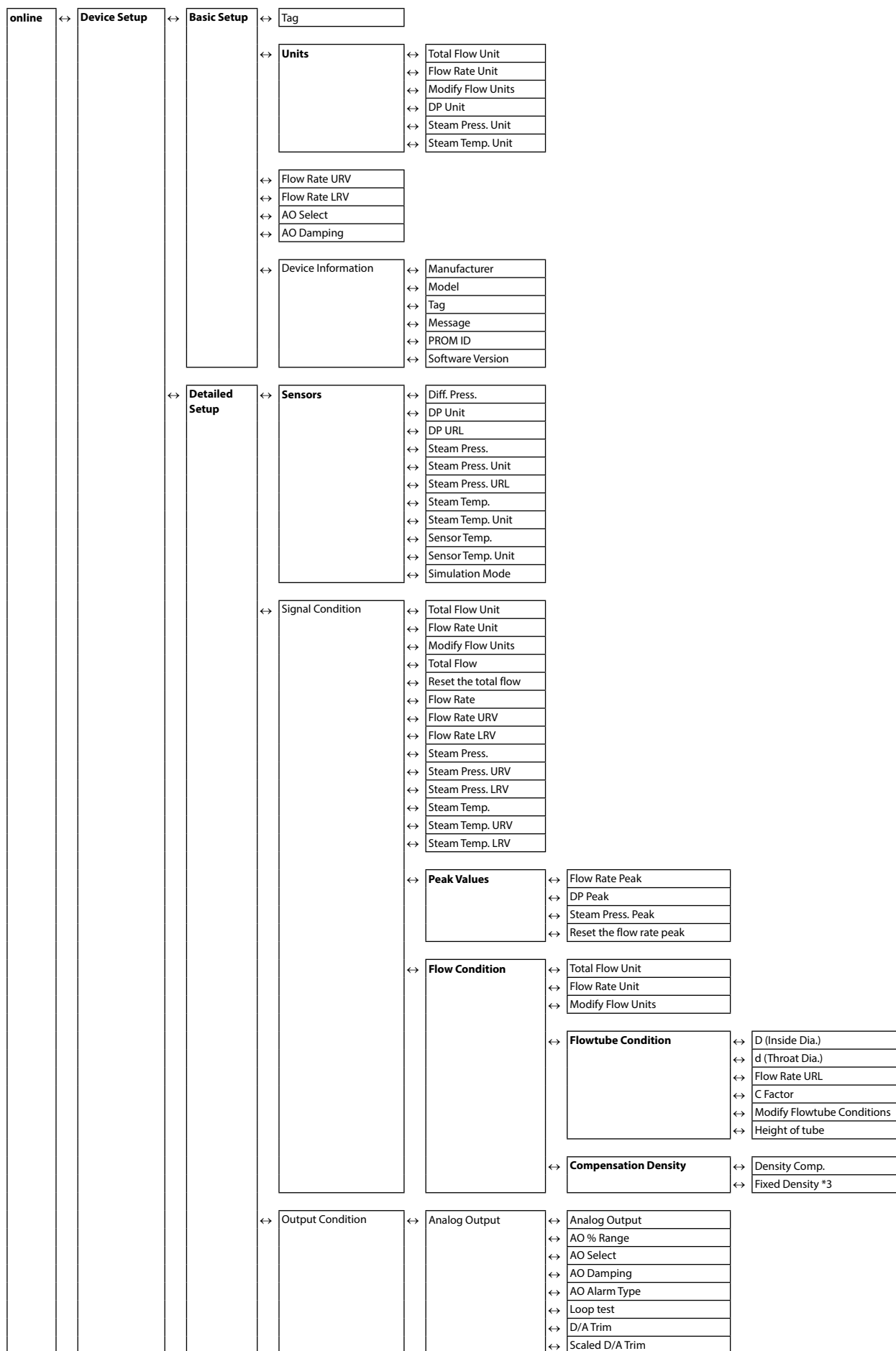
Parameters displayed in gray (Total Flow and Flow Rate in the following window) in the parameter display in the right pane are parameters that cannot be changed.

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



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





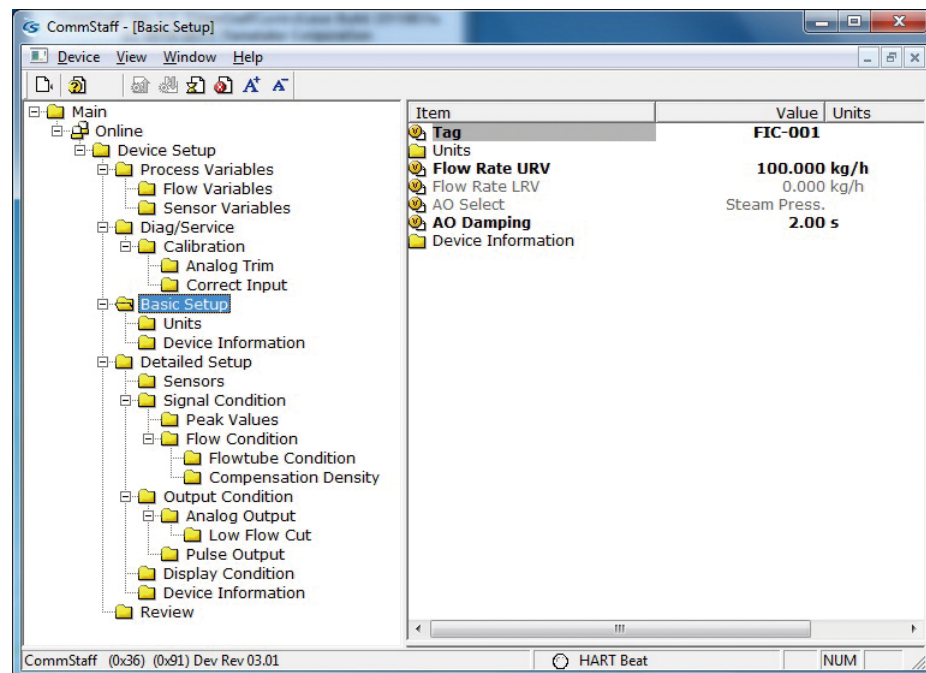
The diagram illustrates the 32-bit I/O configuration for the 3200 Series, organized into four main sections: **online**, **Device Setup**, **Review**, and a large **Review** section at the bottom.

- online**: Contains a single block for **Flow Rate Cutoff**, which is connected to **SP Cutoff Function \*5**, **SP Cutoff Value \*1 \*5**, **DP Cutoff Function**, and **DP Cutoff Value \*2**.
- Device Setup**: Contains three main blocks:
  - Output Condition**: Connected to **Analog Output** and **Low Flow Cut**.
  - Analog Output**: Connected to **Pulse Output** and **Low Flow Cut**.
  - Low Flow Cut**: Connected to **Pulse Weight**, **Pulse Weight Unit**, **Pulse Width**, **Modify Pulse Settings**, **Pulse Alarm Type**, and **Pulse Loop Test \*4**.
- Review**: Contains two main blocks:
  - Display Condition**: Connected to **Main Display** and **Subdisplay**.
  - Device Information**: Connected to **Manufacturer**, **Model**, **Tag**, **Message**, **PROM ID**, and **Software Version**.
- Review** (Large Section): A long list of parameters, each connected to a corresponding block in the **Device Setup** or **Review** sections:
  - 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 \*5, SP Cutoff Value \*1 \*5, 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, and Steam Temp. LRV.

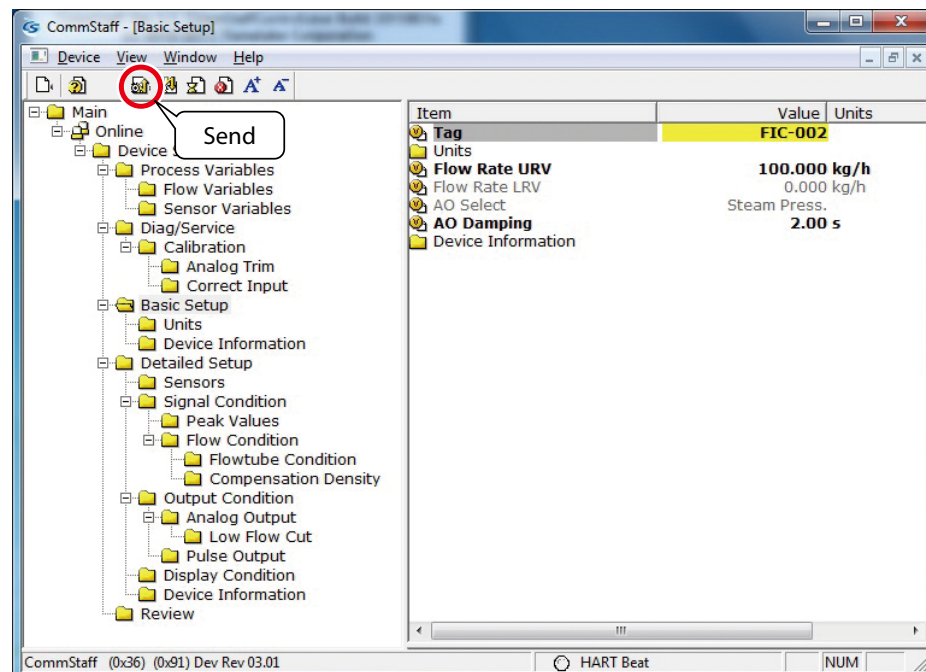
\*1 Displayed when SP Cutoff Function is set for ON.

## 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].



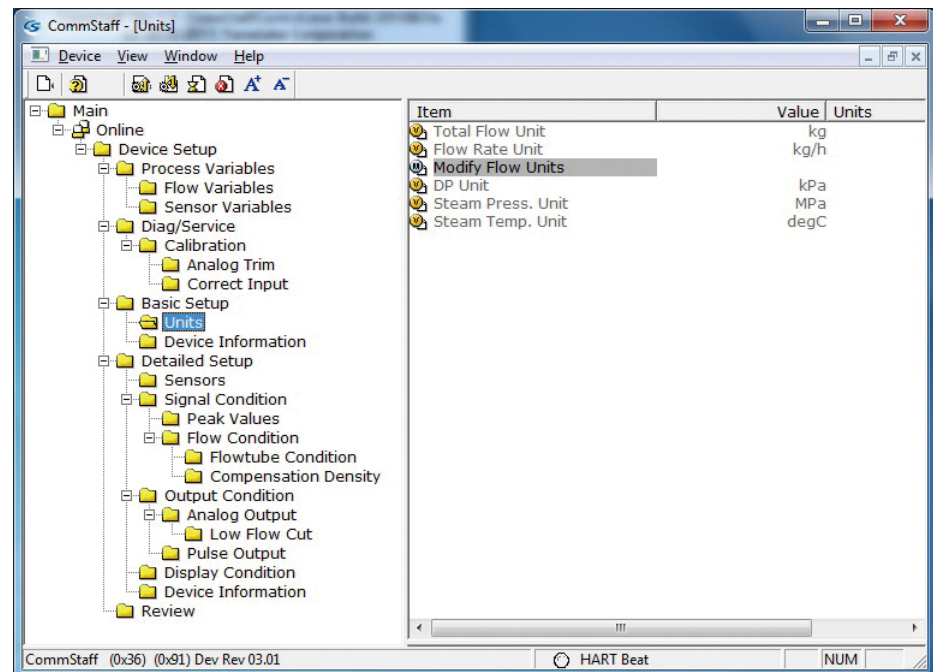
Double-clicking Tag displays the settings screen. On this screen, set the Tag and click the Set button. The tag is highlighted in yellow. Click the Send button to send the new Tag to the transmitter.



## 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].



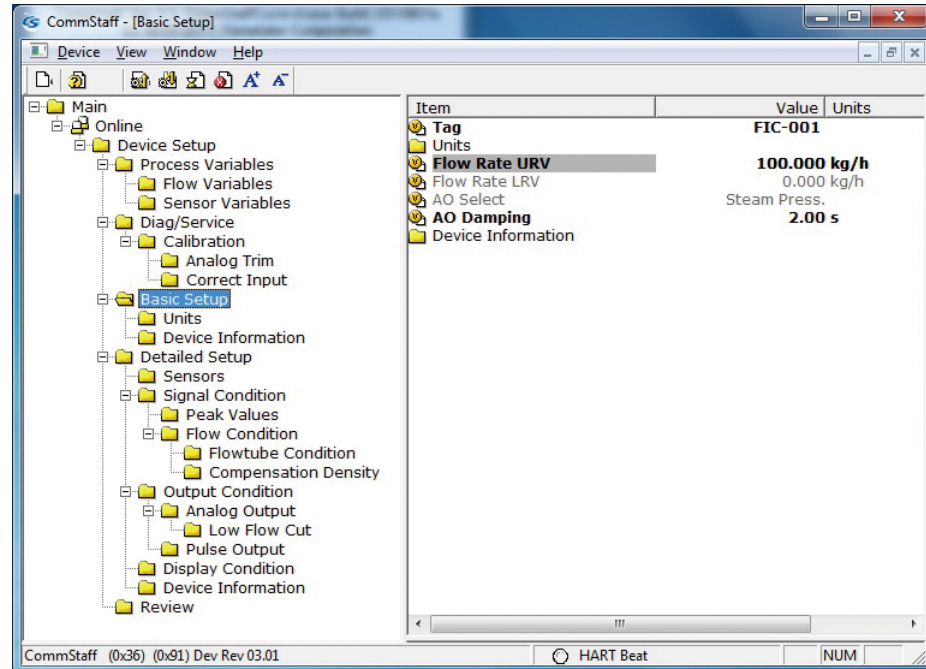
- A message, “WARN - Loop should be removed from automatic control.” appears. Click OK.
- Select the total flow unit from among l, m3, kg, and t. After selecting, click OK.
- Candidates for the flow rate unit are displayed according to the selected total flow unit. Select one and click OK.
- After the 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].

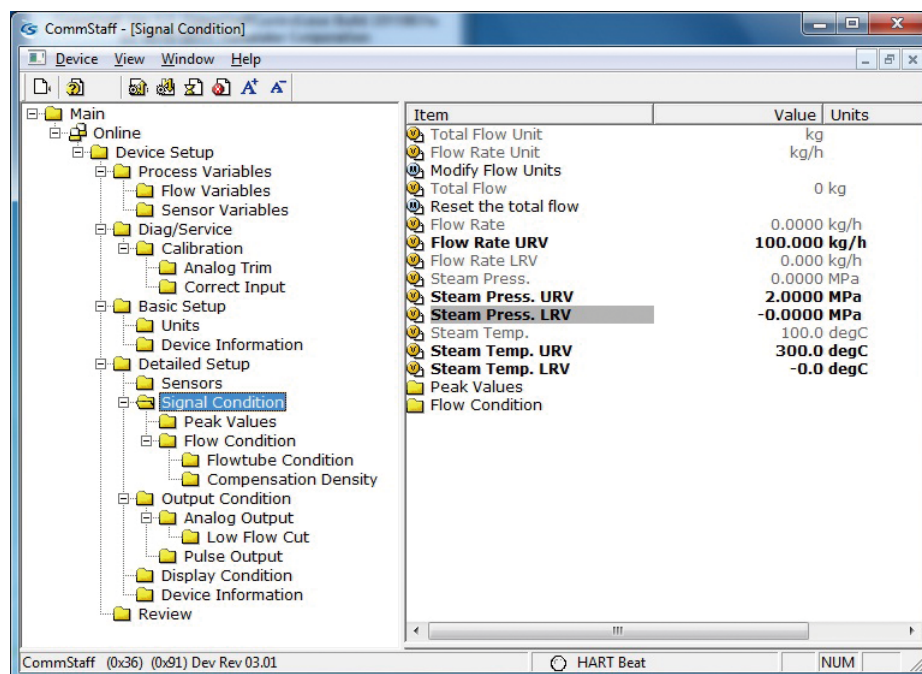




## 2-4-2. Pressure range setting

This section tells how to configure the pressure range.

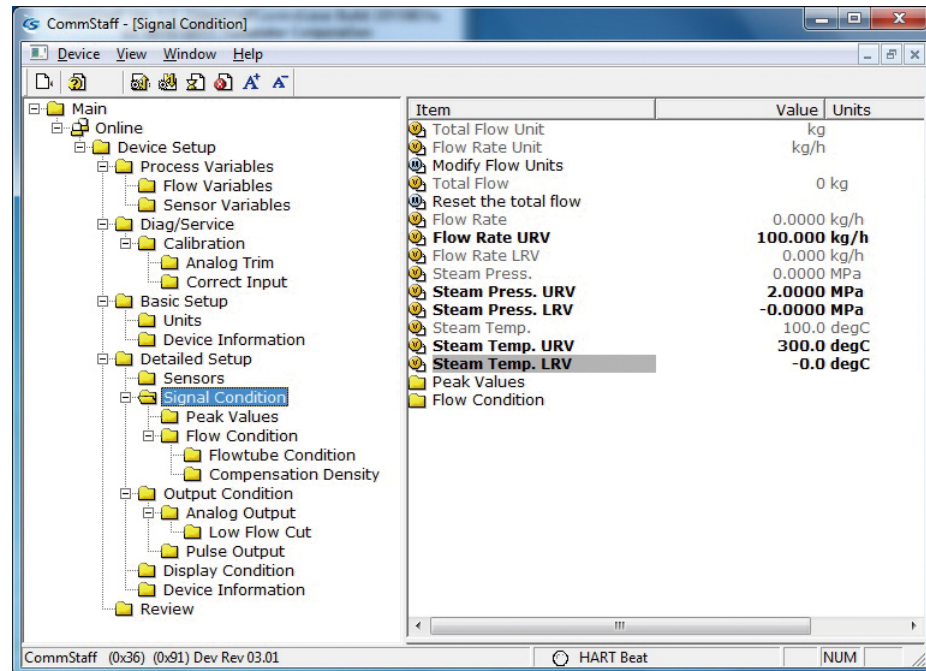
Select [Device Setup] → [Detailed Setup] → [Signal Condition] → [Steam Press. LRV] or [Steam Press. URV].



### 2-4-3. Temperature range setting

This section tells how to configure the temperature range.

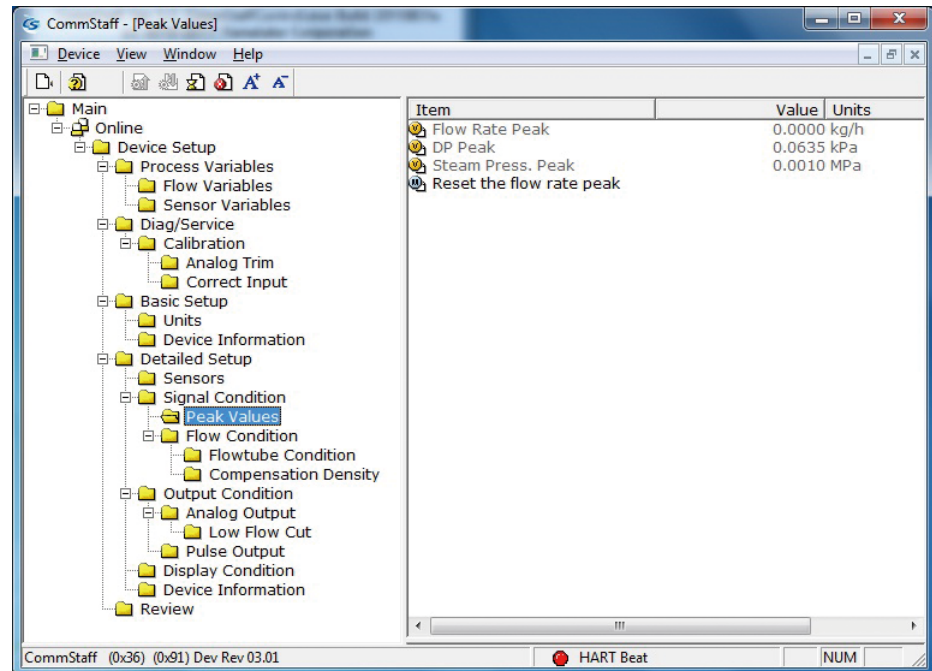
Select [Device Setup] → [Detailed Setup] → [Signal Condition] → [Steam Temp. LRV] or [Steam Temp. URV].



## 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.

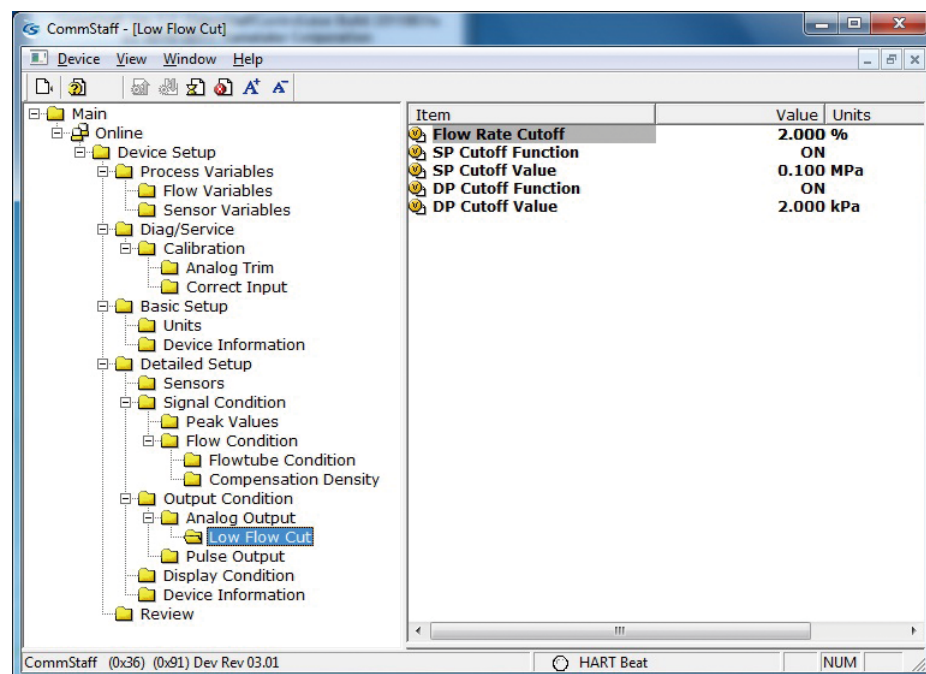
- Low flow rate cutoff point (Flow Rate Cutoff)
- Static pressure cutoff (SP Cutoff)
- Differential pressure cutoff (DP Cutoff)

### 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 %.



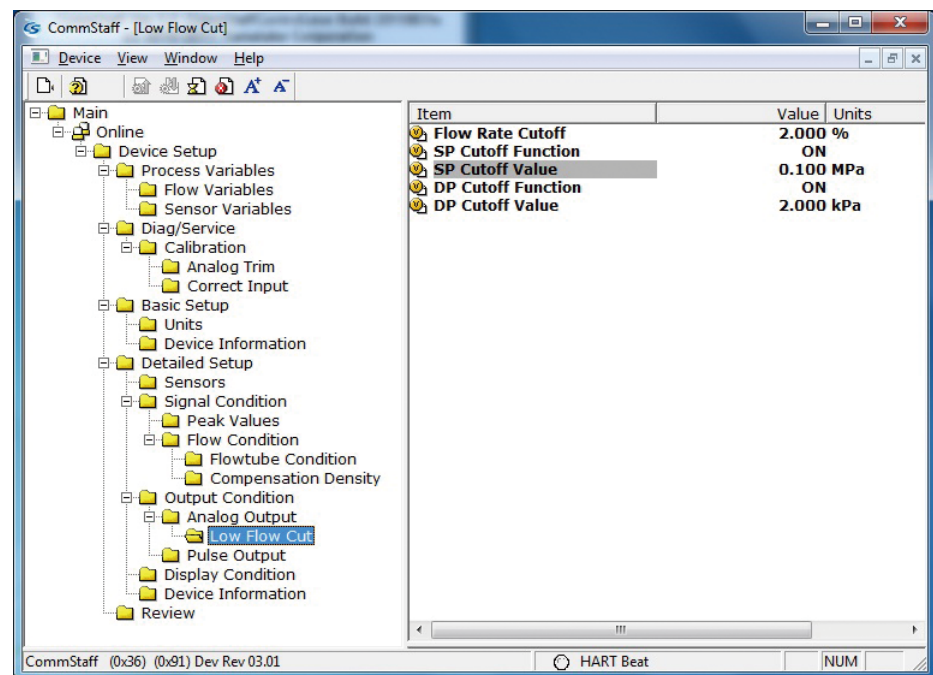
## 2-5-2. Static pressure cutoff setting

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].



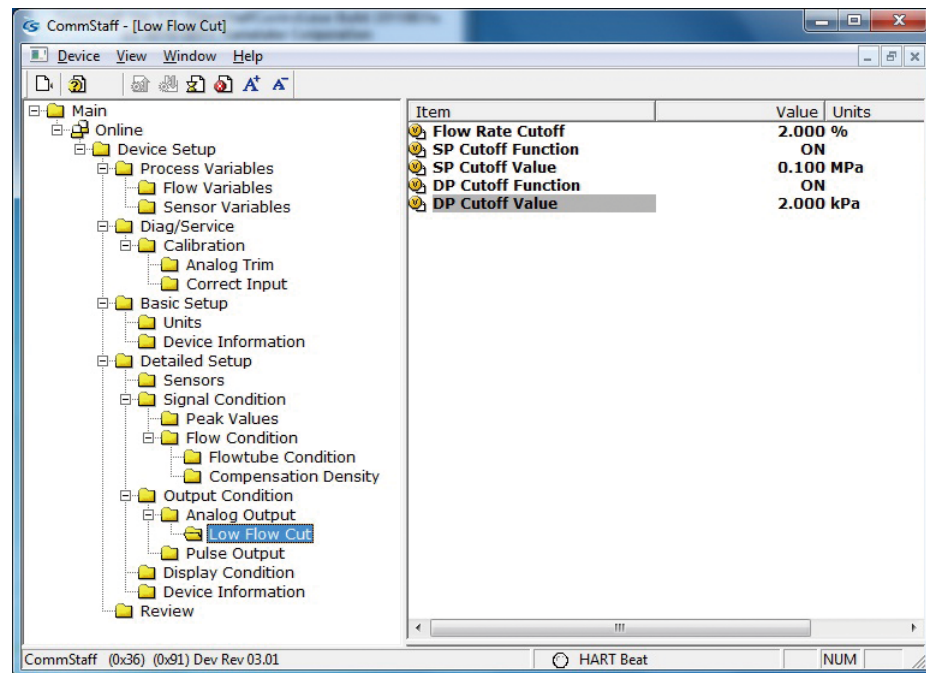
### 2-5-3. Differential pressure cutoff setting

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.

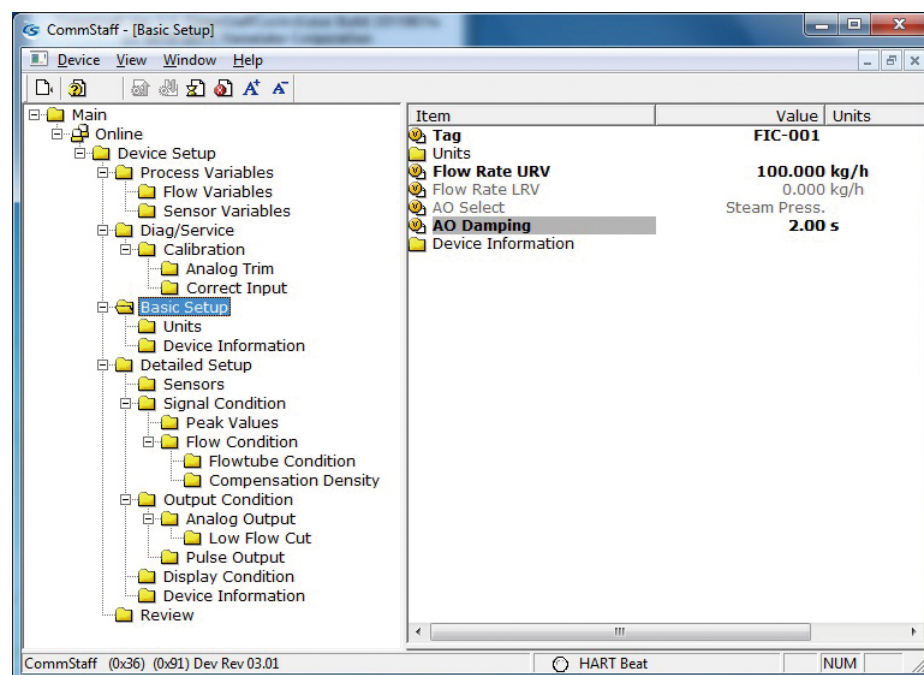
Select [Device Setup] → [Detailed Setup] → [Output Condition] → [Analog Output] → [Low Flow Cut] → [DP Cutoff Value].



## 2-6. Damping Time Constant Configuration

This section explains how to configure the damping time constant.

Select [Device Setup] → [Basic setup] → [AO Damping].



Set a value in the range of 0 to 32 seconds.

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

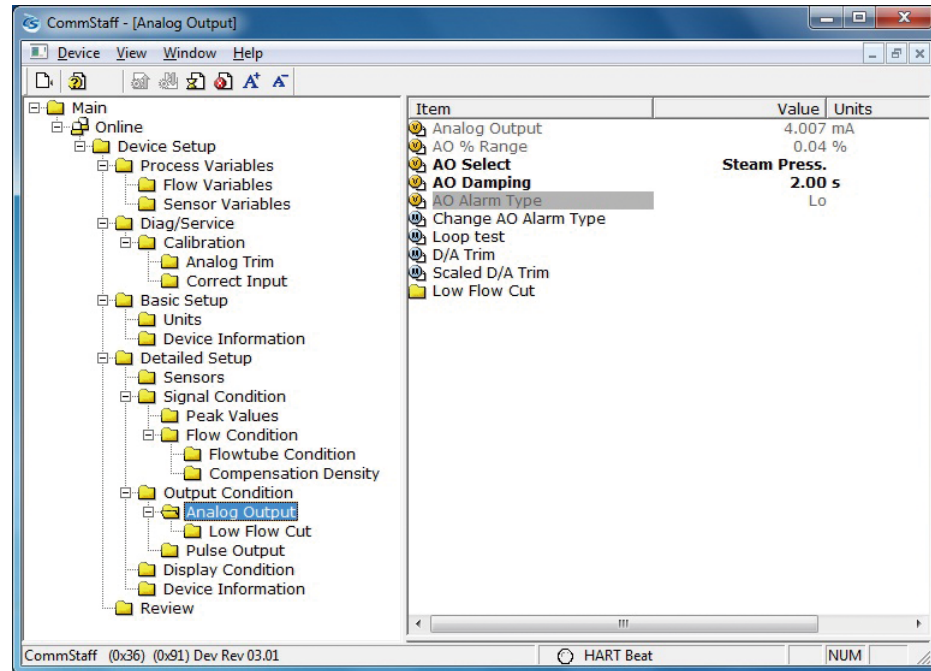
Unit:s

0.0
2.00
4.00
8.00
16.0
32.0

## 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] → [Change AO Alarm Type].

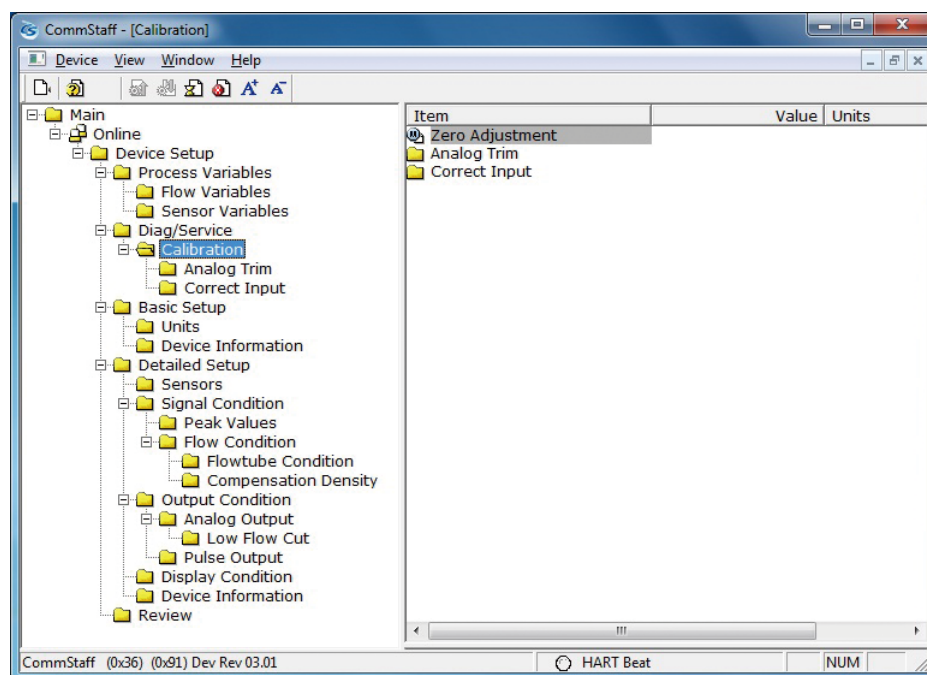
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- Select Hi, Lo, or None and click OK.
- After configuration is complete, the message “Note -- Loop may be 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].

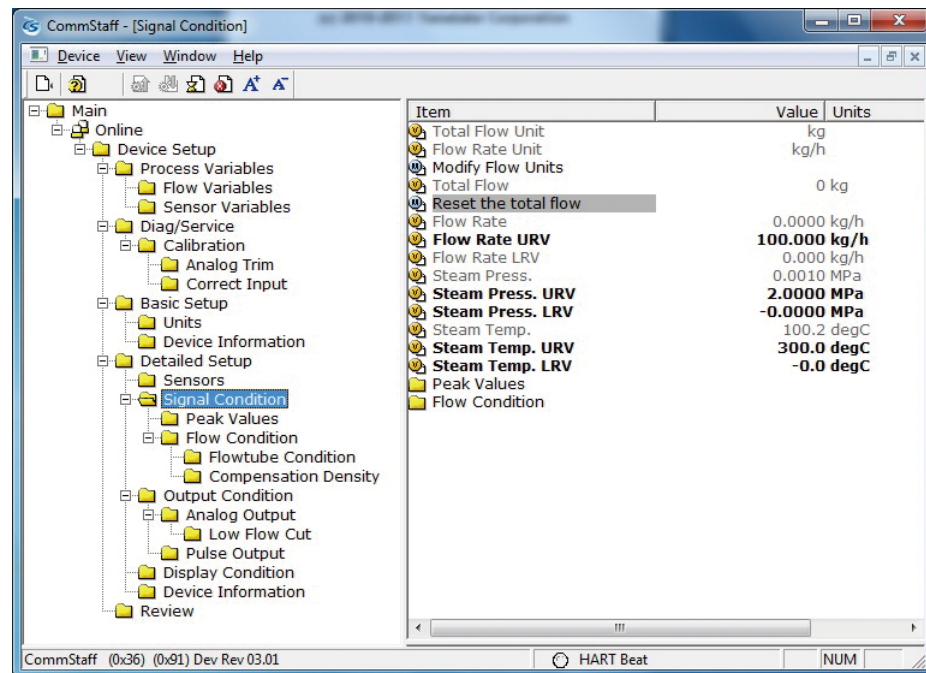


- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- A warning that this operation will affect the sensor calibration (WARN-This will affect sensor calibration) 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.

## 2-9. Total flow reset

This section tells how to reset the total flow count to 0.

Select [Device Setup] → [Detailed Setup] → [Signal Condition] → [Reset the total flow].

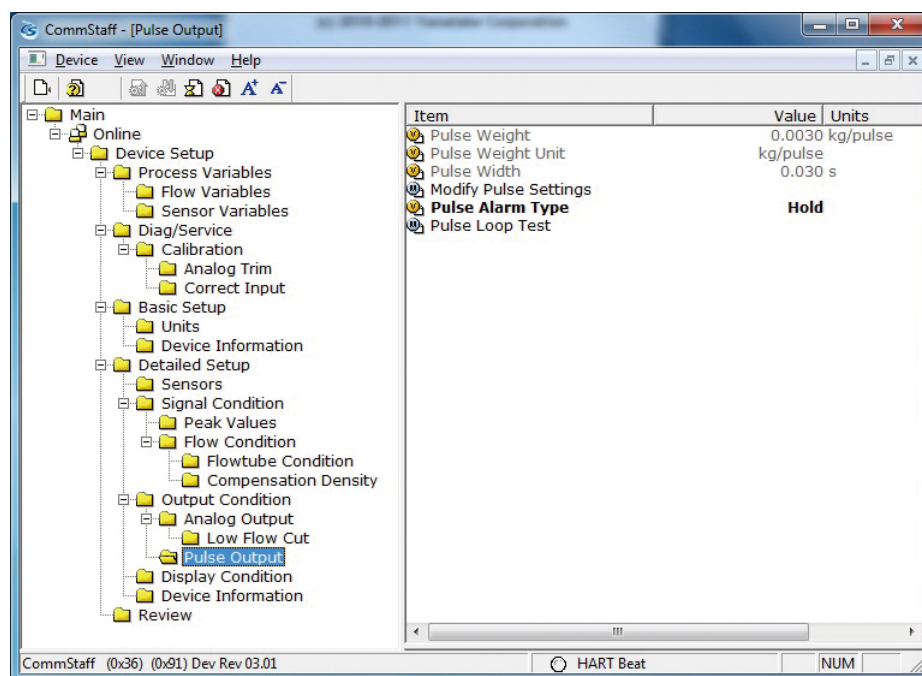


- When the message “Reset the total flow?” appears, to reset, click OK.
- If the total flow was successfully reset, the message “Reset the total flow succeeded” appears. Click OK.

## 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.



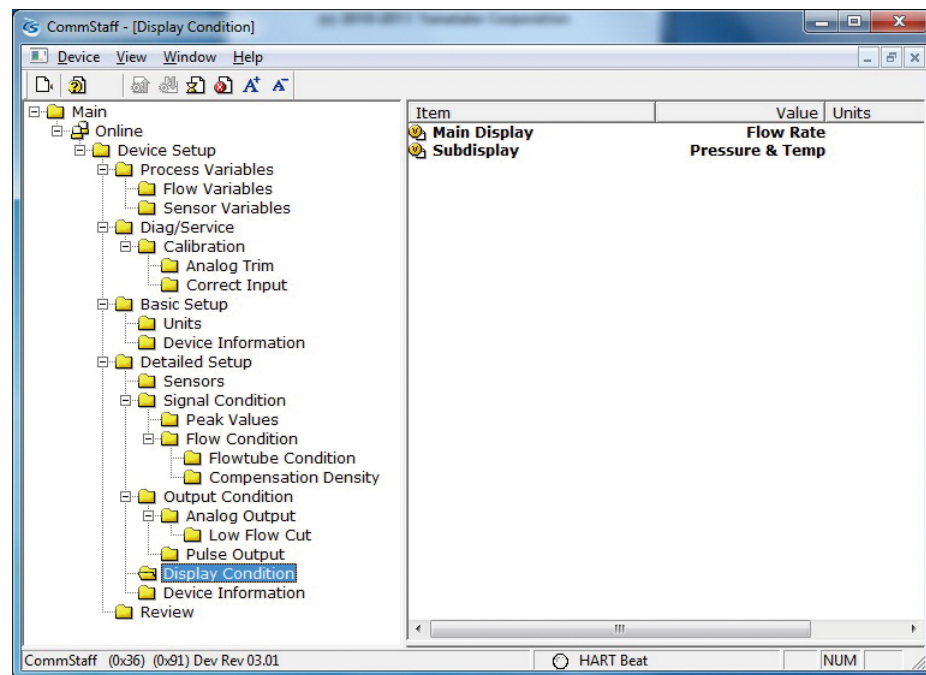
- To change the Pulse Weight and Pulse Width, select [Modify Pulse Settings].
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- When the Pulse Weight input 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.

## 2-11. Display setup

Select [Device Setup] → [Detailed Setup] → [Display Condition] → [Main Display] or [Subdisplay].



The Main Display can be selected to show either Total Flow or Flow Rate.

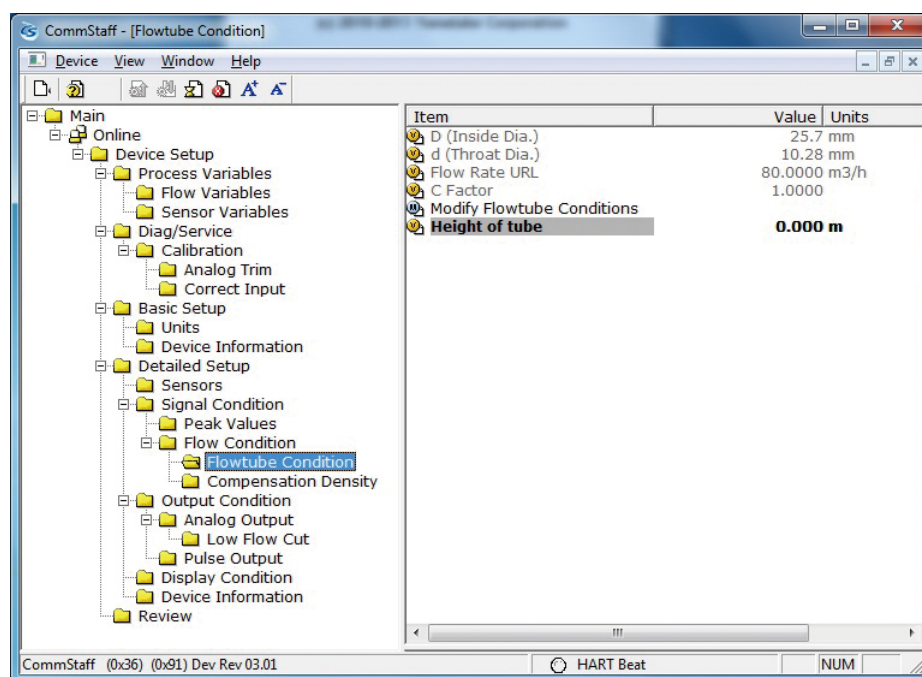
The Subdisplay can be selected from Total Flow, Flow Rate, and Pressure & Temp.

## 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].

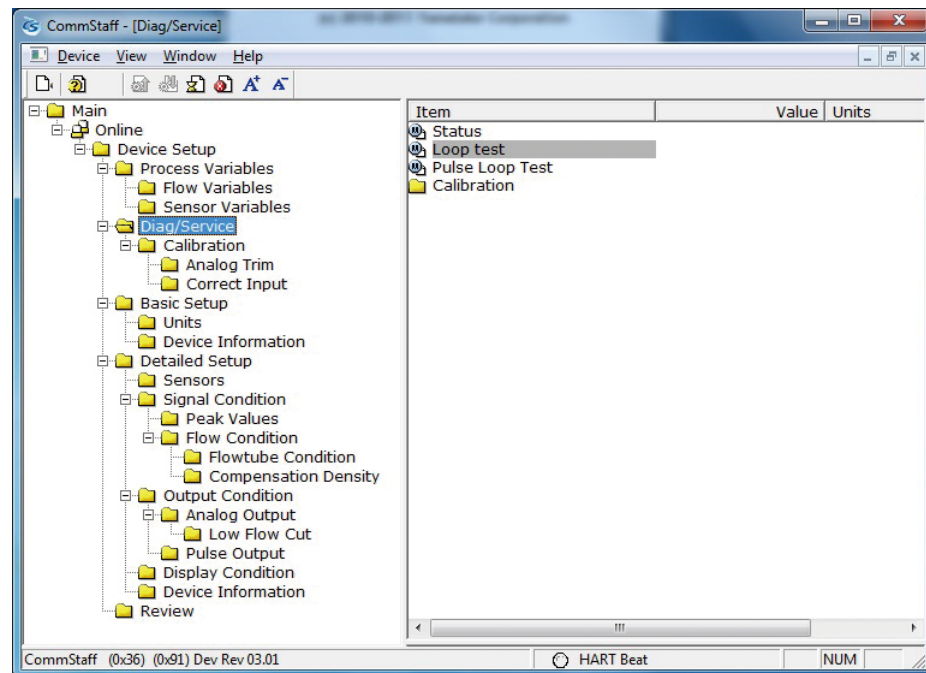


## 2-13. Constant current output

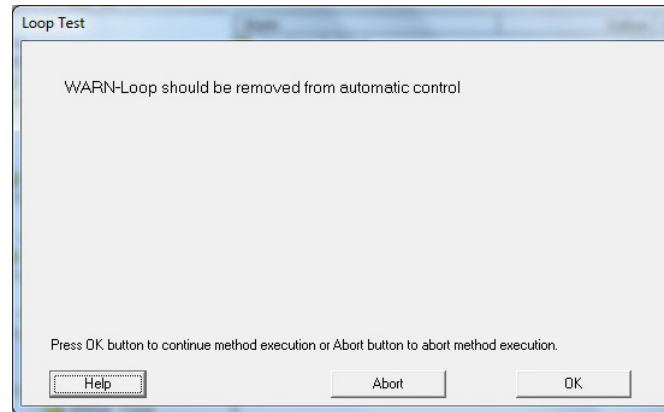
By putting the transmitter in constant current mode, you can keep current outputs constant in the range of 4 - 20 mA. This section explains how to configure the constant current mode and how to return to normal output mode.

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

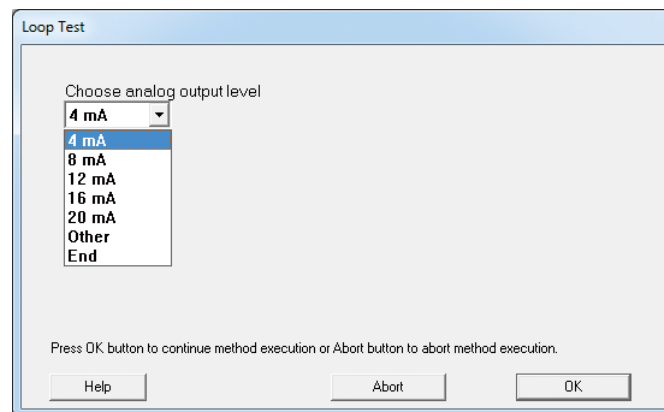
**CAUTION:** If the transmitter's process is controlled automatically, this reset action could put the operation at risk by causing output fluctuation. Before resetting, make sure that the control loop for the process is manually controlled.



Double-clicking Loop Test displays the following screen.



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



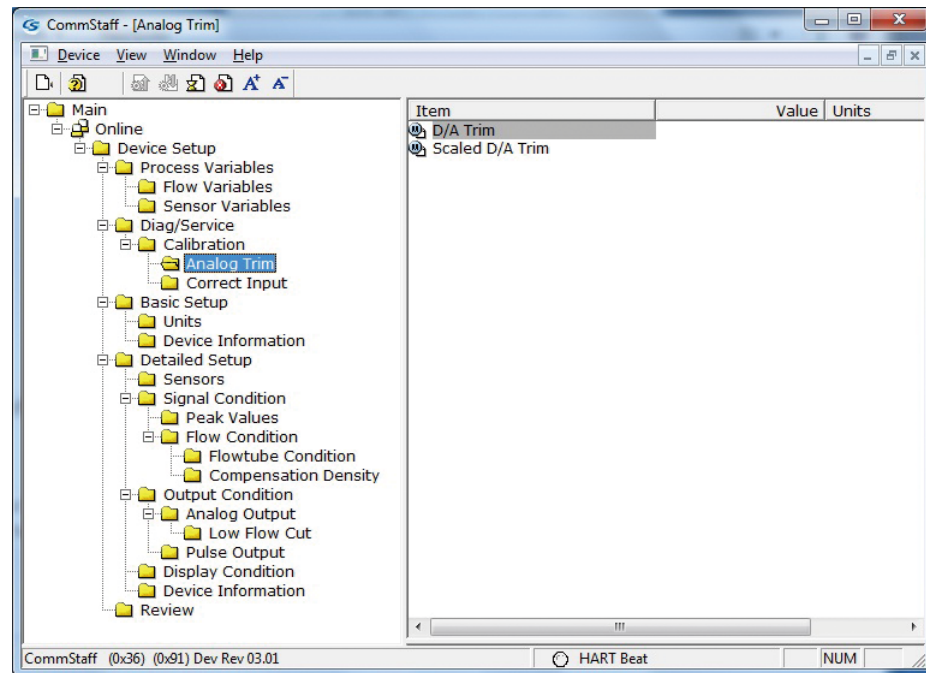
- Select 4 mA and click OK. Output signals will be fixed at 4 mA (0%).
- Select 8 mA and click OK. Output signals will be fixed at 8 mA (25%).
- Select 12 mA and click OK. Output signals will be fixed at 12 mA (50%).
- Select 16 mA and click OK. Output signals will be fixed at 16 mA (75%).
- Select 20 mA and click OK. Output signals will be fixed 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 normal output mode will resume.

## 2-14. Calibration of output current

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

Select [Device Setup] → [Diag/Service] → [Calibration] → [Analog Trim] → [D/A Trim].

**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.



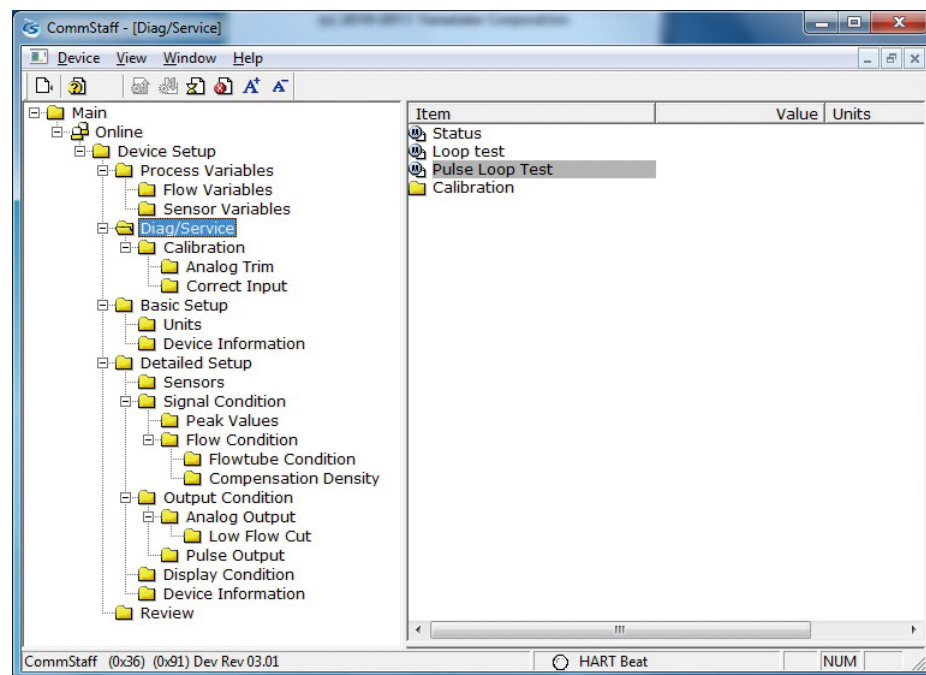


Step	Operation and indication
1	<p>Double-click D/A Trim.</p> <p>WARN - Loop should be removed from automatic control</p> <p>A warning that the loop should be switched from automatic control to manual mode is displayed. After switching to manual mode, click OK.</p> <p>“Connect reference meter” is displayed. 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)</p> <p>Click OK if there are no problems.</p> <p>Enter meter value (input the ammeter reading).</p> <p>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?)</p> <p>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.</p> <p>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)</p> <p>Click OK if there are no problems.</p> <p>Enter meter value (input the ammeter reading)</p> <p>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?)</p> <p>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 7 following items and click OK.

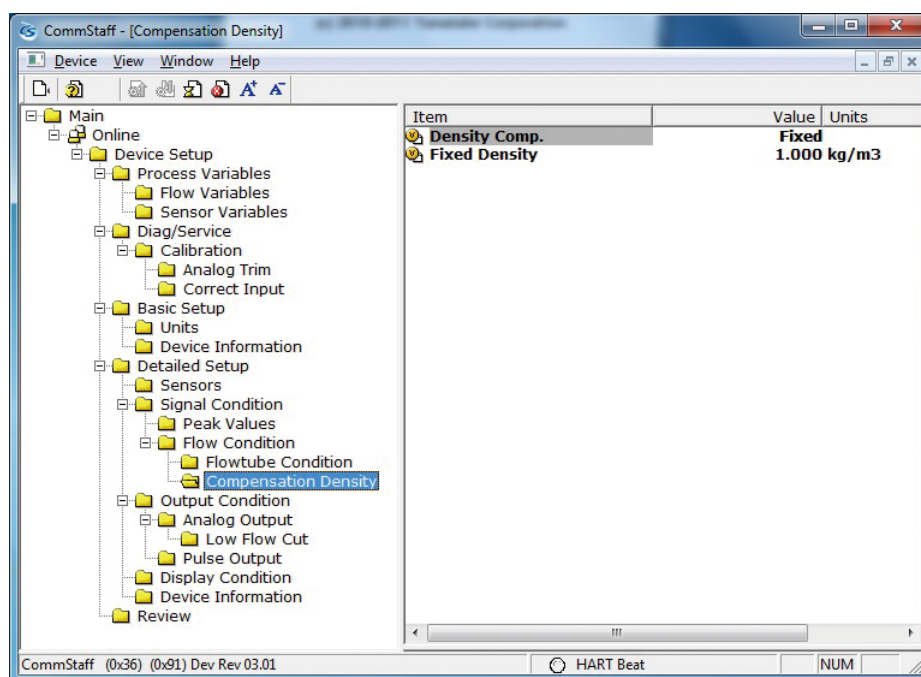
0%	Sets 0 % constant pulse output.
25%	Sets 25 % constant pulse output.
50%	Sets 50 % constant pulse output.
75%	Sets 75 % constant pulse output.
100%	Sets 100 % constant pulse output.
Other	Sets the desired constant pulse.
End	Cancels constant pulse output and aborts processing.

## 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

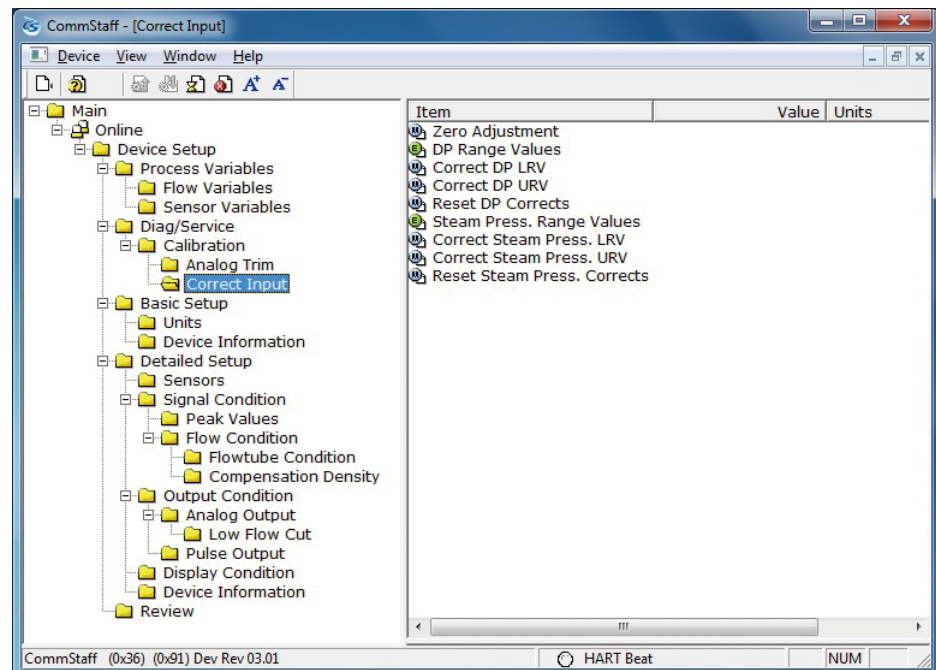
This section tells how to calibrate differential pressure sensors and pressure sensors.

### 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].



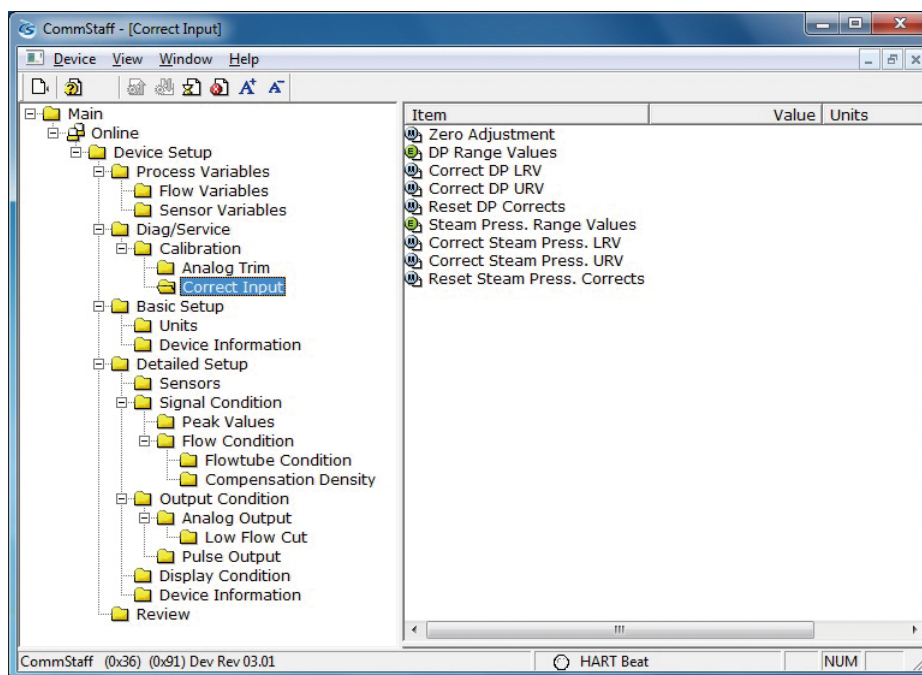
- First, double-click DP Range Values, and check the values for DP LRV and the DP URV. If a change is necessary, change the values.
- To calibrate the DP LRV value, double-click Correct DP LRV. To calibrate the DP URV value, double-click Correct Input DP URV. When changing both the DP LRV and the DP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

## 2-17-2. 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].



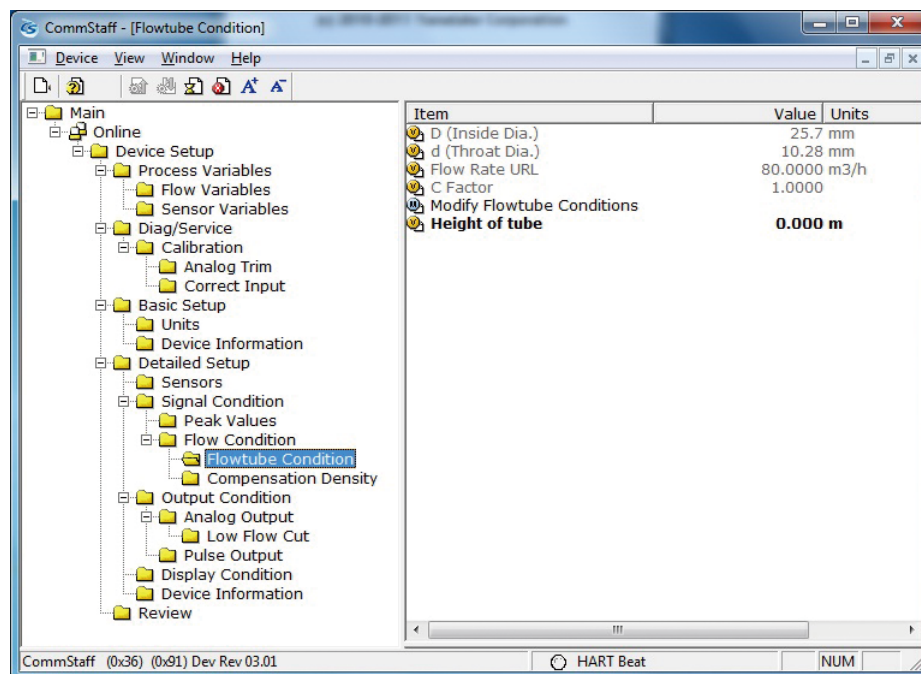
- First, double-click Steam Press.Range Values, and check the values for Steam Press.LRV and the Steam Press.URV. If a change is necessary, change the values.
- To calibrate the Steam Press.LRV value, double-click Correct Input Steam Press.LRV. To calibrate the Steam Press.URV value, double-click Correct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

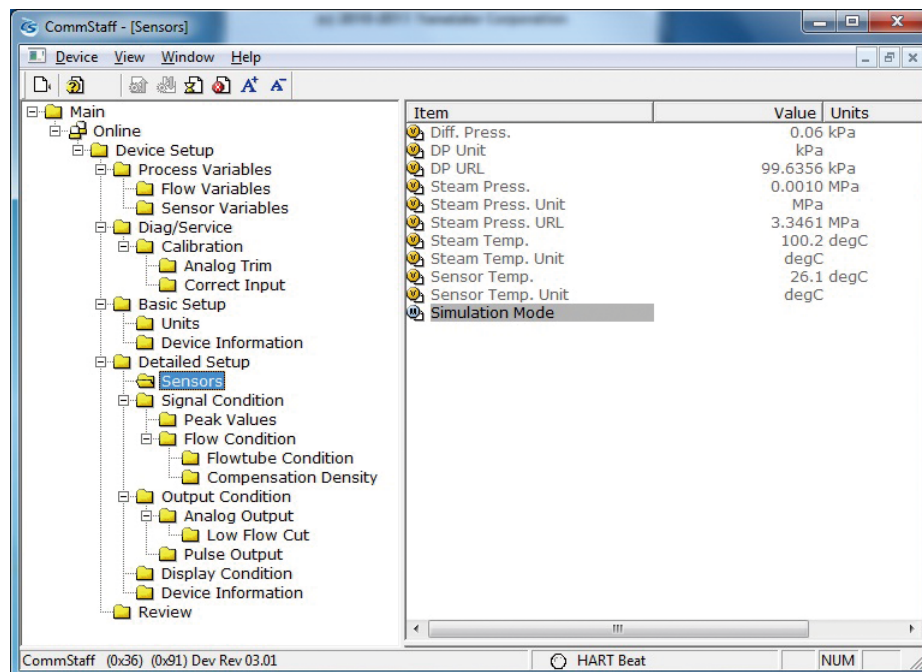


## 2-19. Flow simulation

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].



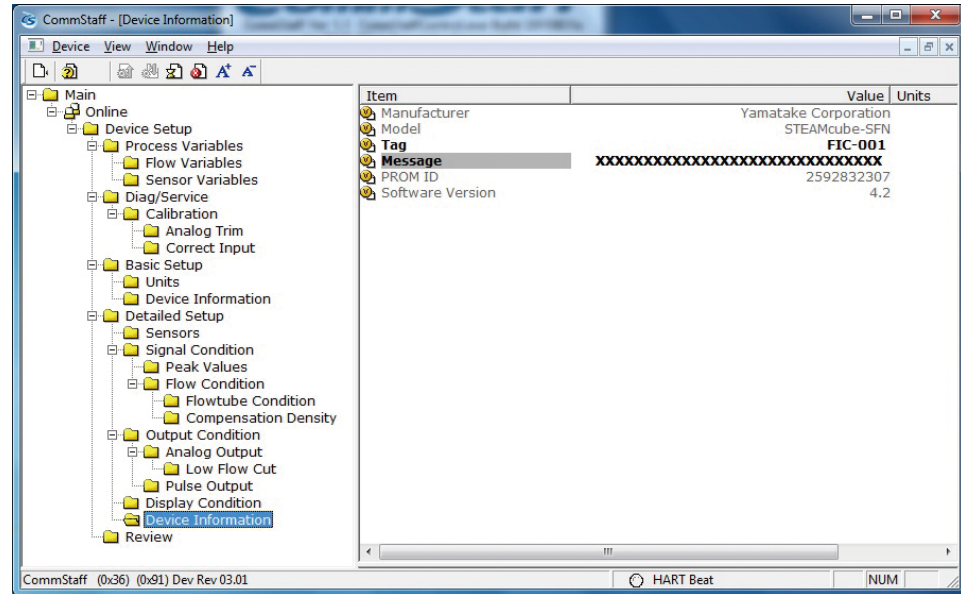
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- When “Enter dummy DP value” is displayed, input the dummy value for differential pressure and click OK.
- 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.

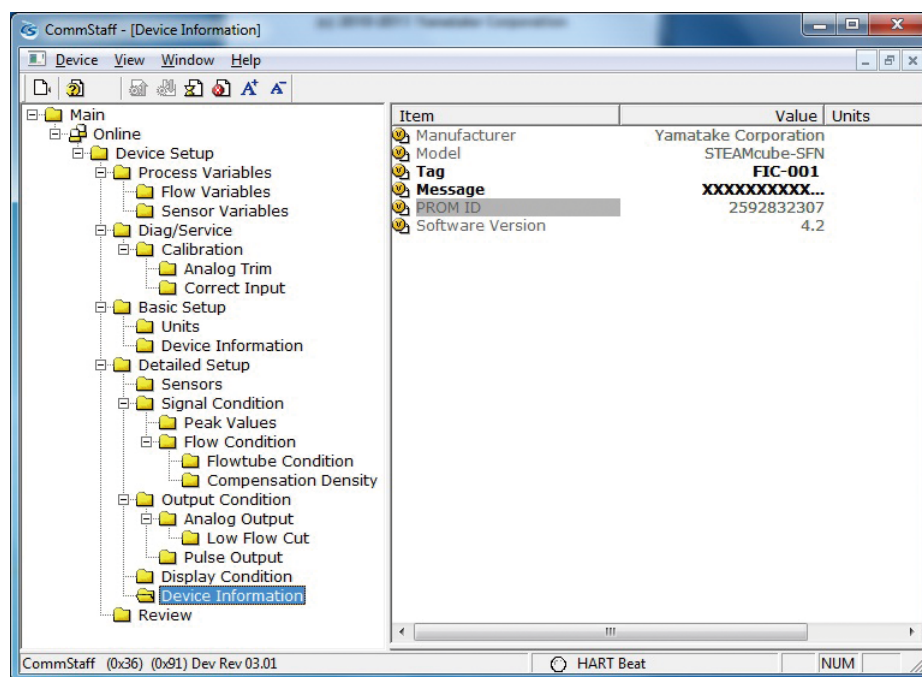
Select [Device Setup] → [Detailed Setup] → [Device Information] → [Message].



## 2-21. PROM ID

The following shows how to check the PROM ID.

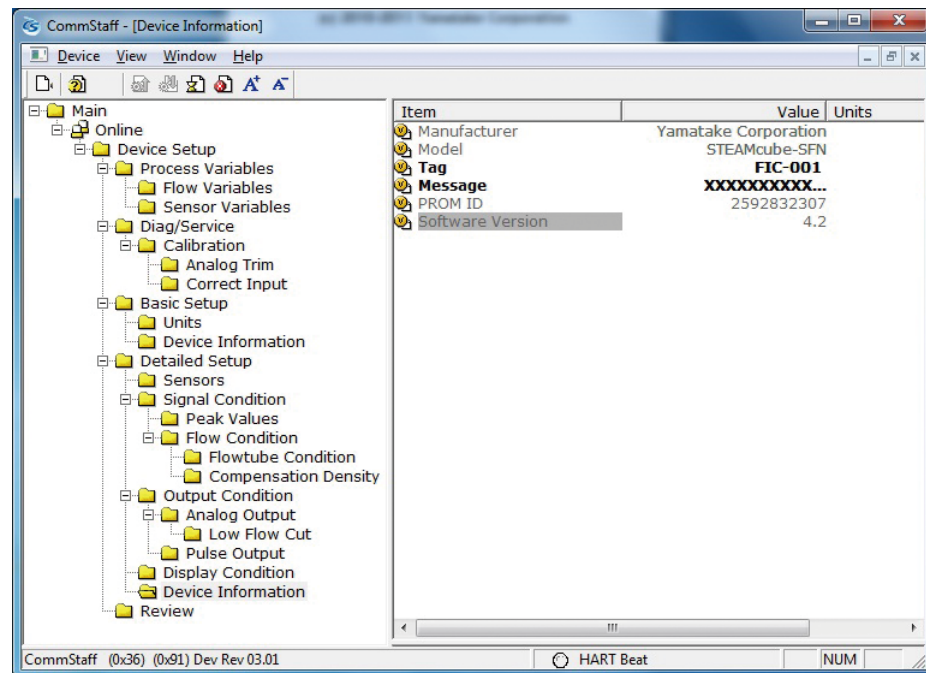
Select [Device Setup] → [Detailed Setup] → [Device Information] → [PROM ID].



## 2-22. Software version

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

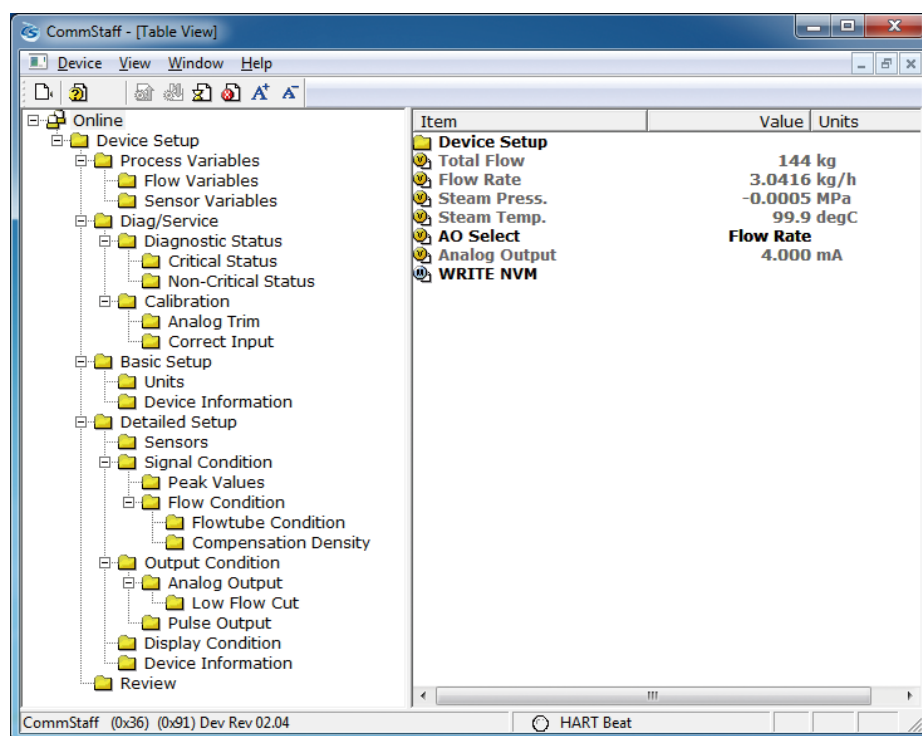
Select [Device Setup] → [Detailed Setup] → [Device Information] → [Software Version].



## 2-23. NVM Save

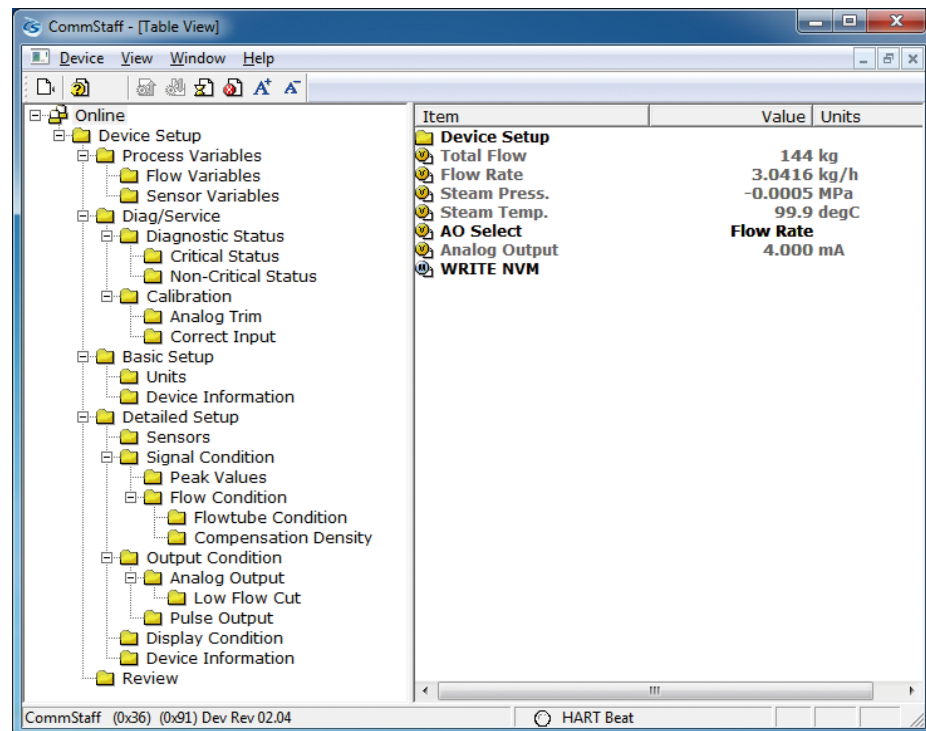
The transmitter saves configured data in nonvolatile memory 30 seconds after it is sent to the transmitter. If the transmitter power is turned off in less than 30 seconds, configuration data that has been sent will be lost, and the existing saved data will remain in the transmitter. To avoid this, NVM 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. 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	<ul style="list-style-type: none"> <li>- Input data error</li> <li>- Problem with the process</li> <li>- Device error</li> </ul>	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	<ul style="list-style-type: none"> <li>- The input differential pressure exceeds two times the upper range limit of the device.</li> <li>- Device error</li> </ul>	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	<ul style="list-style-type: none"> <li>- The input static pressure exceeds two times the upper range limit of the device.</li> <li>- Device error</li> </ul>	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.





# Terms and Conditions

We would like to express our appreciation for your purchase and use of Azbil Corporation's products.

You are required to acknowledge and agree upon the following terms and conditions for your purchase of Azbil Corporation's products (system products, field instruments, control valves, and control products), unless otherwise stated in any separate document, including, without limitation, estimation sheets, written agreements, catalogs, specifications and instruction manuals.

## 1. Warranty period and warranty scope

### 1.1 Warranty period

Azbil Corporation's products shall be warranted for one (1) year from the date of your purchase of the said products or the delivery of the said products to a place designated by you.

### 1.2 Warranty scope

In the event that Azbil Corporation's product has any failure attributable to azbil during the aforementioned warranty period, Azbil Corporation shall, without charge, deliver a replacement for the said product to the place where you purchased, or repair the said product and deliver it to the aforementioned place. Notwithstanding the foregoing, any failure falling under one of the following shall not be covered under this warranty:

- (1) Failure caused by your improper use of azbil product (noncompliance with conditions, environment of use, precautions, etc. set forth in catalogs, specifications, instruction manuals, etc.);
- (2) Failure caused for other reasons than Azbil Corporation's product;
- (3) Failure caused by any modification or repair made by any person other than Azbil Corporation or Azbil Corporation's subcontractors;
- (4) Failure caused by your use of Azbil Corporation's product in a manner not conforming to the intended usage of that product;
- (5) Failure that the state-of-the-art at the time of Azbil Corporation's shipment did not allow Azbil Corporation to predict; or
- (6) Failure that arose from any reason not attributable to Azbil Corporation, including, without limitation, acts of God, disasters, and actions taken by a third party.

Please note that the term "warranty" as used herein refers to equipment-only-warranty, and Azbil Corporation shall not be liable for any damages, including direct, indirect, special, incidental or consequential damages in connection with or arising out of Azbil Corporation's products.

## 2. Ascertainment of suitability

You are required to ascertain the suitability of Azbil Corporation's product in case of your use of the same with your machinery, equipment, etc. (hereinafter referred to as "Equipment") on your own responsibility, taking the following matters into consideration:

- (1) Regulations and standards or laws that your Equipment is to comply with.
- (2) Examples of application described in any documents provided by Azbil Corporation are for your reference purpose only, and you are required to check the functions and safety of your Equipment prior to your use.
- (3) Measures to be taken to secure the required level of the reliability and safety of your Equipment in your use

Although azbil is constantly making efforts to improve the quality and reliability of Azbil Corporation's products, there exists a possibility that parts and machinery may break down. You are required to provide your Equipment with safety design such as fool-proof design,\*1 and fail-safe design\*2 (anti-flame propagation design, etc.), whereby preventing any occurrence of physical injuries, fires, significant damage, and so forth. Furthermore, fault avoidance,\*3 fault tolerance,\*4 or the like should be incorporated so that the said Equipment can satisfy the level of reliability and safety required for your use.

\*1. A design that is safe even if the user makes an error.

\*2. A design that is safe even if the device fails.

\*3. Avoidance of device failure by using highly reliable components, etc.

\*4. The use of redundancy.

## 3. Precautions and restrictions on application

### 3.1 Restrictions on application

Please follow the table below for use in nuclear power or radiation-related equipment.

	Nuclear power quality*5 required	Nuclear power quality*5 not required
Within a radiation controlled area*6	Cannot be used (except for limit switches for nuclear power*7)	Cannot be used (except for limit switches for nuclear power*7)
Outside a radiation controlled area*6	Cannot be used (except for limit switches for nuclear power*7)	Can be used

\*5. Nuclear power quality: compliance with JEAG 4121 required

\*6. Radiation controlled area: an area governed by the requirements of article 3 of "Rules on the Prevention of Harm from Ionizing Radiation," article 2 2 4 of "Regulations on Installation and Operation of Nuclear Reactors for Practical Power Generation," article 4 of "Determining the Quantity, etc., of Radiation-Emitting Isotopes," etc.

\*7. Limit switch for nuclear power: a limit switch designed, manufactured and sold according to IEEE 382 and JEAG 4121.

Any Azbil Corporation's products shall not be used for/with medical equipment.

The products are for industrial use. Do not allow general consumers to install or use any Azbil Corporation's product. However, azbil products can be incorporated into products used by general consumers. If you intend to use a product for that purpose, please contact one of our sales representatives.

### 3.2 Precautions on application

you are required to conduct a consultation with our sales representative and understand detail specifications, cautions for operation, and so forth by reference to catalogs, specifications, instruction manual, etc. in case that you intend to use azbil product for any purposes specified in (1) through (6) below. Moreover, you are required to provide your Equipment with fool-proof design, fail-safe design, anti-flame propagation design, fault avoidance, fault tolerance, and other kinds of protection/safety circuit design on your own responsibility to ensure reliability and safety, whereby preventing problems caused by failure or nonconformity.

- (1) For use under such conditions or in such environments as not stated in technical documents, including catalogs, specification, and instruction manuals
- (2) For use of specific purposes, such as:
  - \* Nuclear energy/radiation related facilities  
[When used outside a radiation controlled area and where nuclear power quality is not required]  
[When the limit switch for nuclear power is used]
  - \* Machinery or equipment for space/sea bottom
  - \* Transportation equipment  
[Railway, aircraft, vessels, vehicle equipment, etc.]
  - \* Antidisaster/crime-prevention equipment
  - \* Burning appliances
  - \* Electrothermal equipment
  - \* Amusement facilities
  - \* Facilities/applications associated directly with billing
- (3) Supply systems such as electricity/gas/water supply systems, large-scale communication systems, and traffic/air traffic control systems requiring high reliability
- (4) Facilities that are to comply with regulations of governmental/public agencies or specific industries
- (5) Machinery or equipment that may affect human lives, human bodies or properties
- (6) Other machinery or equipment equivalent to those set forth in items (1) to (5) above which require high reliability and safety

#### 4. Precautions against long-term use

Use of Azbil Corporation's products, including switches, which contain electronic components, over a prolonged period may degrade insulation or increase contact-resistance and may result in heat generation or any other similar problem causing such product or switch to develop safety hazards such as smoking, ignition, and electrification. Although acceleration of the above situation varies depending on the conditions or environment of use of the products, you are required not to use any Azbil Corporation's products for a period exceeding ten (10) years unless otherwise stated in specifications or instruction manuals.

#### 5. Recommendation for renewal

Mechanical components, such as relays and switches, used for Azbil Corporation's products will reach the end of their life due to wear by repetitious open/close operations.

In addition, electronic components such as electrolytic capacitors will reach the end of their life due to aged deterioration based on the conditions or environment in which such electronic components are used. Although acceleration of the above situation varies depending on the conditions or environment of use, the number of open/close operations of relays, etc. as prescribed in specifications or instruction manuals, or depending on the design margin of your machine or equipment, you are required to renew any Azbil Corporation's products every 5 to 10 years unless otherwise specified in specifications or instruction manuals. System products, field instruments (sensors such as pressure/flow/level sensors, regulating valves, etc.) will reach the end of their life due to aged deterioration of parts. For those parts that will reach the end of their life due to aged deterioration, recommended replacement cycles are prescribed. You are required to replace parts based on such recommended replacement cycles.

#### 6. Other precautions

Prior to your use of Azbil Corporation's products, you are required to understand and comply with specifications (e.g., conditions and environment of use), precautions, warnings/cautions/notices as set forth in the technical documents prepared for individual Azbil Corporation's products, such as catalogs, specifications, and instruction manuals to ensure the quality, reliability, and safety of those products.

#### 7. Changes to specifications

Please note that the descriptions contained in any documents provided by azbil are subject to change without notice for improvement or for any other reason. For inquiries or information on specifications as you may need to check, please contact our branch offices or sales offices, or your local sales agents.

#### 8. Discontinuance of the supply of products/parts

Please note that the production of any Azbil Corporation's product may be discontinued without notice. After manufacturing is discontinued, we may not be able to provide replacement products even within the warranty period.

For repairable products, we will, in principle, undertake repairs for five (5) years after the discontinuance of those products. In some cases, however, we cannot undertake such repairs for reasons, such as the absence of repair parts. For system products, field instruments, we may not be able to undertake parts replacement for similar reasons.

#### 9. Scope of services

Prices of Azbil Corporation's products do not include any charges for services such as engineer dispatch service. Accordingly, a separate fee will be charged in any of the following cases:

- (1) Installation, adjustment, guidance, and attendance at a test run
- (2) Maintenance, inspection, adjustment, and repair
- (3) Technical guidance and technical education
- (4) Special test or special inspection of a product under the conditions specified by you

Please note that we cannot provide any services as set forth above in a nuclear energy controlled area (radiation controlled area) or at a place where the level of exposure to radiation is equivalent to that in a nuclear energy controlled area.



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