

# **Field Communication Software CommStaff Model: CFS100**

## **Instruction Manual (PTG series Smart Pressure Transmitter 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 (this manual.)

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 PTG series Smart Pressure Transmitter with the model number pattern PTG □ 1 □.

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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.

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.

## 1-3. Supported versions

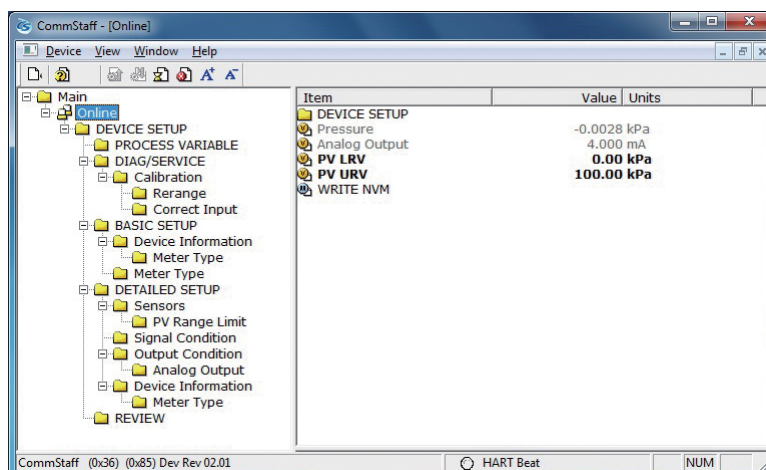
CommStaff version 1.1 is compatible with PTG models having SFN communication versions E.2 and later.

# Chapter 2. Configuration

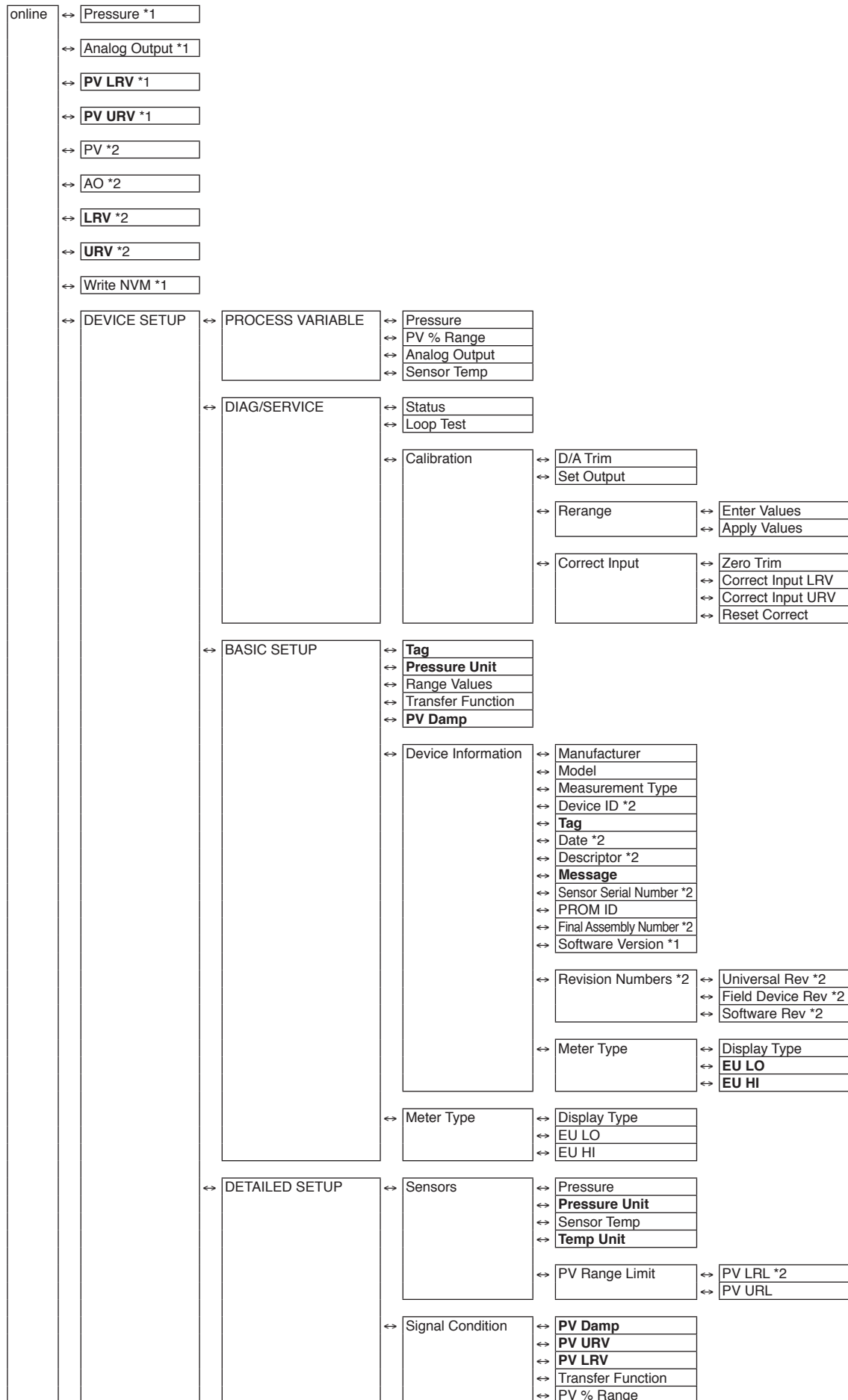
## 2-1. Menu List

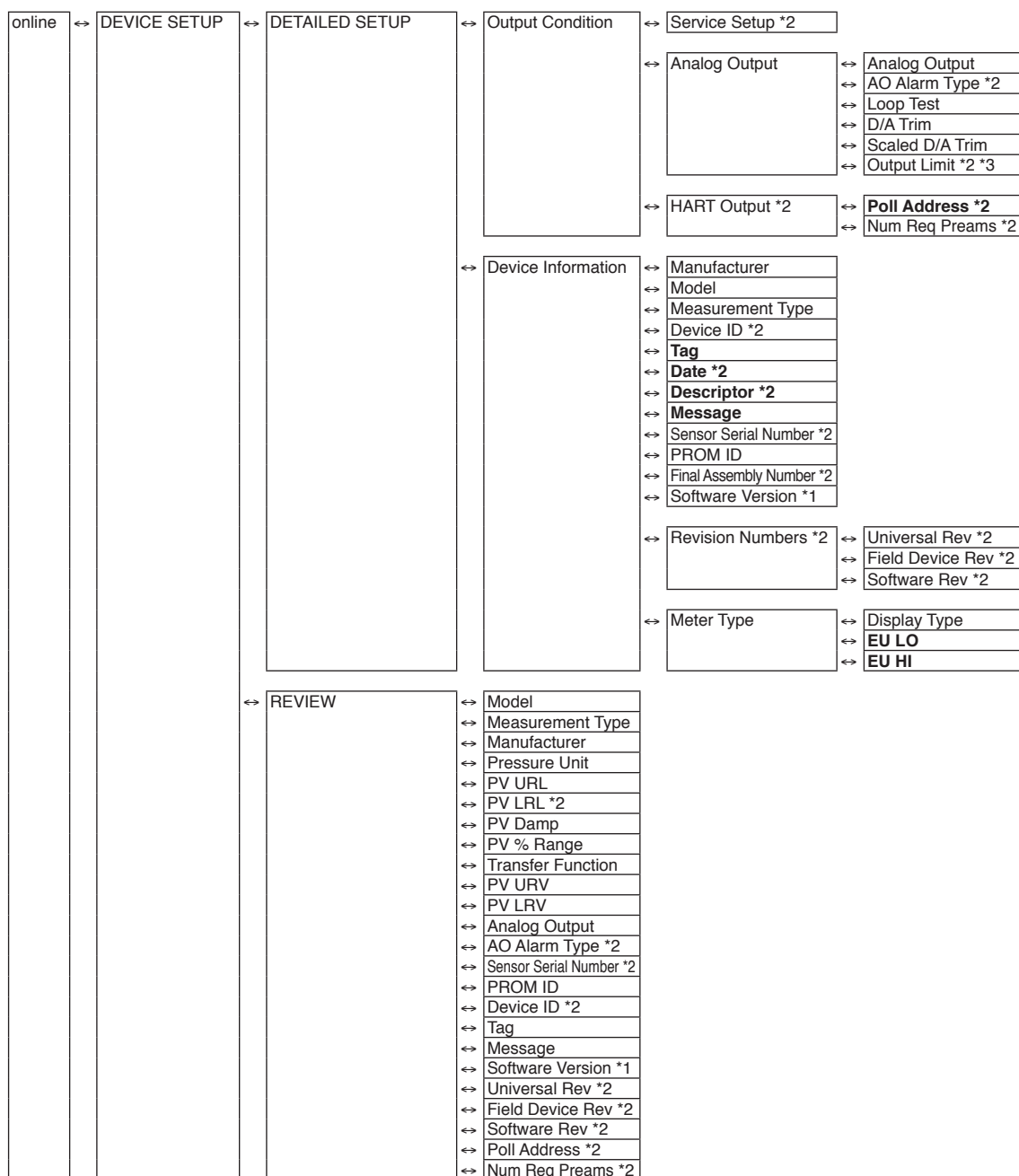
Right-clicking “Online” in the menu tree in the left pane of the CommStaff application window displays a menu. Selecting Expand on the menu displays the expanded menu tree.

Parameters displayed in gray (Pressure 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 (PV LRV and PV URV 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.





\*1 Not displayed if HART communications is selected.

\*2 Not displayed if SFN communications is selected.

\*3 Invalid menu in CommStaff.

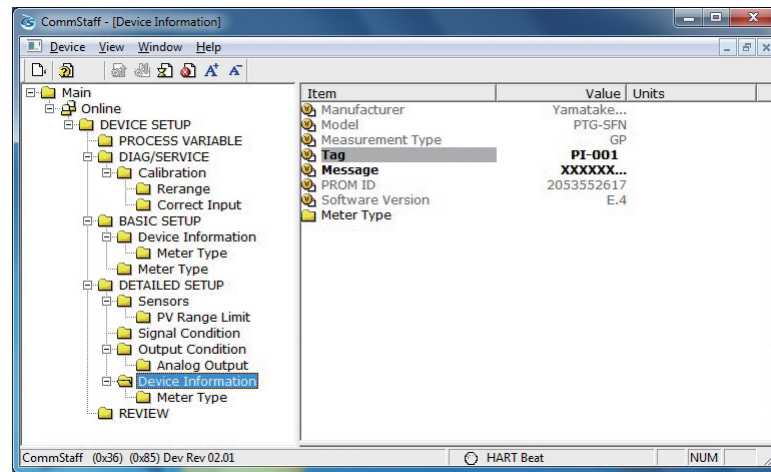
#### Setting items and references

	Task	Parameter	Section of Manual
Preparation, Adjustment"	Tag No., set or check	Tag	2.2
	Measurement range, check or change	Basic Setup	2.5
	Damping time constant, check or set	Damping	2.6
	Units of pressure, check or change	Pressure Unit	2.4
	Zero adjustment, execute	Apply value	3.2
	Loop test, execute	Loop Test	3.1
	Indicator, set	Display	2.3
Maintenance	Calibrate	Correct Input	4.2

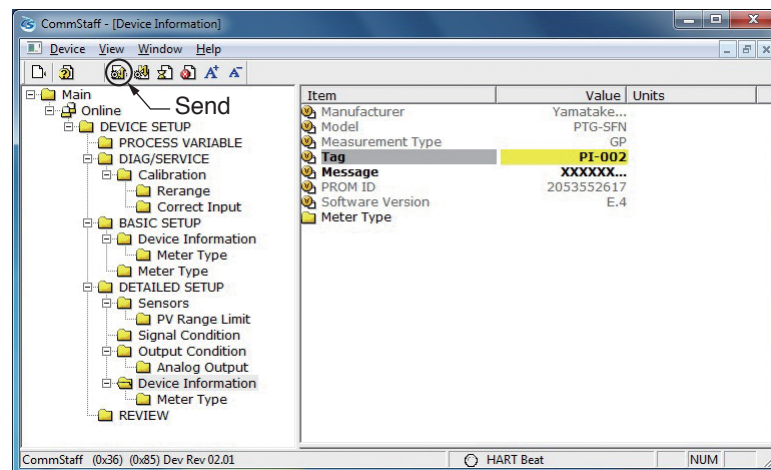


## 2-2. Tag Number Configuration

This section explains how to input or change the tag No. In the menu tree in the left pane, select DEVICE SETUP → DETAILED SETUP → Device Information → Tag.



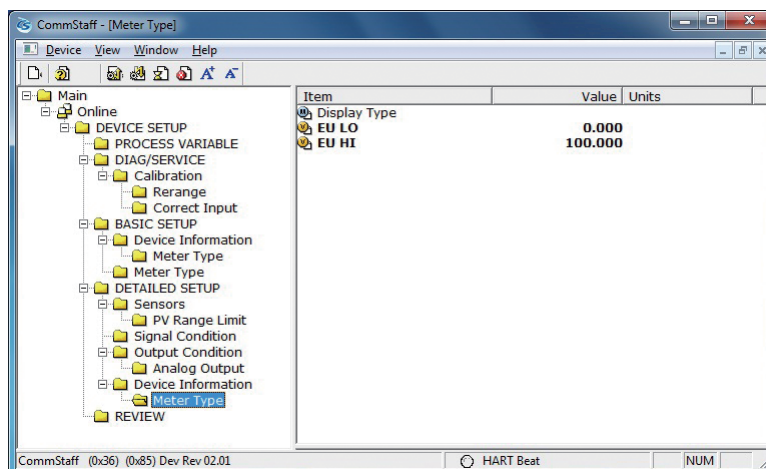
Double-clicking Tag displays the settings screen. On this screen, set the Tag and click the Set button. The tag is highlighted in yellow. Click the Send button to send the new Tag to the pressure transmitter.



## 2-3. Indicator Display Format

This section explains how to configure the indicator display format and the upper and lower limits for engineering units.

Select DEVICE SETUP → DETAILED SETUP → Device Information → Meter Type.



### 2-3-1. Display format

Mode	Description
E.UNIT (Linear)	Indicates that both the output and the displayed values are linear and equal to scale readings.
% (Linear)	Indicates that both the output and the displayed values are linear and in percent figures.

### 2-3-2. EULO/EUHI (upper and lower limits for engineering units)

This is enabled when Mode is set to E.Unit.

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.

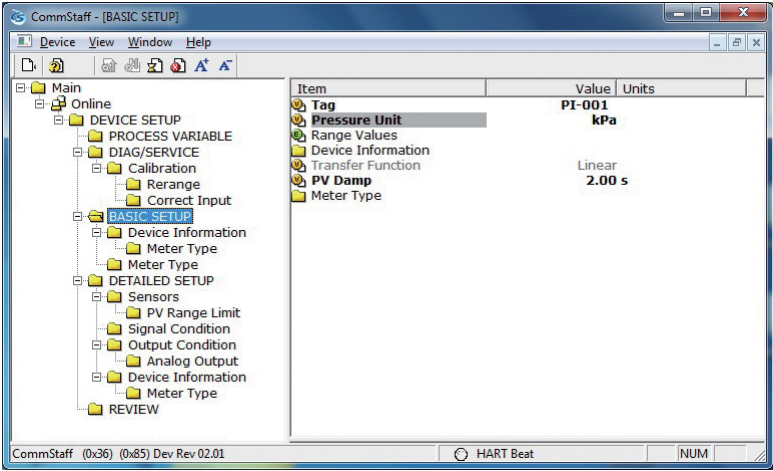
EULO : Value displayed when output is 100%.

EUHI : Value displayed when output is 0%.

## 2-4. Selecting a Unit of Pressure

This function allows you to select the measurement units for pressure used by the pressure transmitter. Although the configured units for pressure can be changed, the changed settings are not saved by the pressure transmitter. At the next reconnection, measurements are displayed in the default units for pressure, that is, kPa or MPa, not in the changed units.

Select DEVICE SETUP → BASIC SETUP → Pressure Unit.



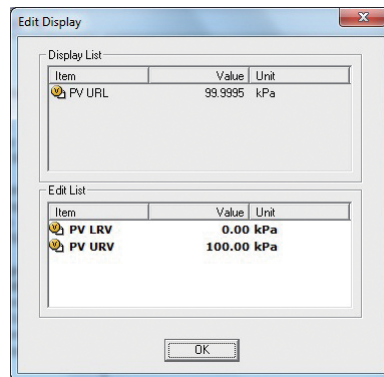
Units for pressure can be selected from the following.

Note: If the PTG SFN is used in Japan, the selected units should be part of the standard international system (SI units).

inH2O	inHg	mmH2O	mmHg	psi
bar	mbar	g/Sqcm	kg/Sqcm	Pa
kPa	MPa			

## 2-5. Measurement Range Configuration

This section explains how to configure the measurement range of the pressure transmitter. Select **DEVICE SETUP** → **BASIC SETUP** → **Range Values**.



LRV: Value at which 4 mA is output

URV: Value at which 20 mA is output

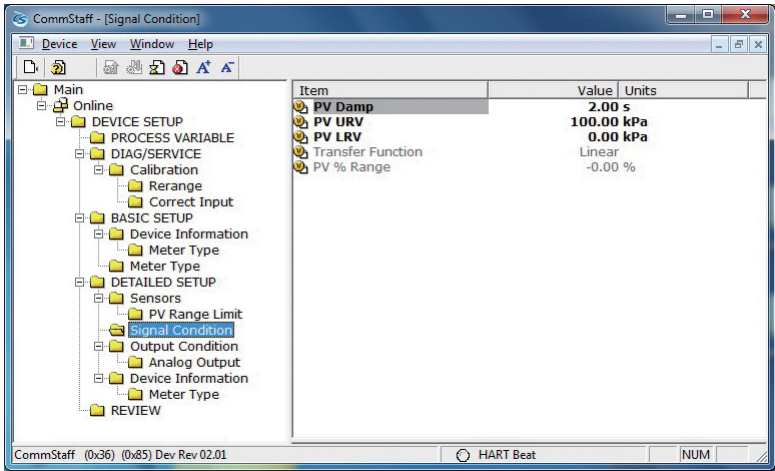
Double-clicking LRV or URV displays the settings screen. After configuring the measurement range, close the edit screen and click the Send button to send the measurement range value to the pressure transmitter. Values can be input to two decimal places.

Note: In SFC and CommPad, when the LRV is changed, the URV also changes by the same amount in order to keep SPAN unchanged. In CommStaff, when LRV is changed, URV does not change.

## 2-6. Damping Time Constant Configuration

This section explains how to configure the damping time constant.

Select DEVICE SETUP → DETAILED SETUP → Signal Condition → PV Damp.



If SFN communication is used, 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: sec.

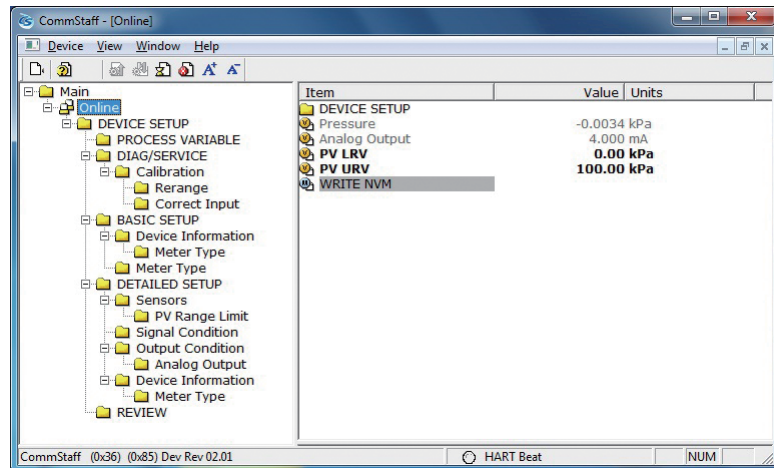
0.0
0.16
0.32
0.48
1.00
2.00
4.00
8.00
16.0
32.0

If HART communication is used, set a value in the range of 0 to 120 seconds.

## 2-7. NVM Save

The pressure transmitter saves configured data in nonvolatile memory 30 seconds after it is sent to the pressure transmitter. If the pressure 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 pressure 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 pressure transmitter power can be turned off.



## Chapter 3. Preparations and Starting Operation

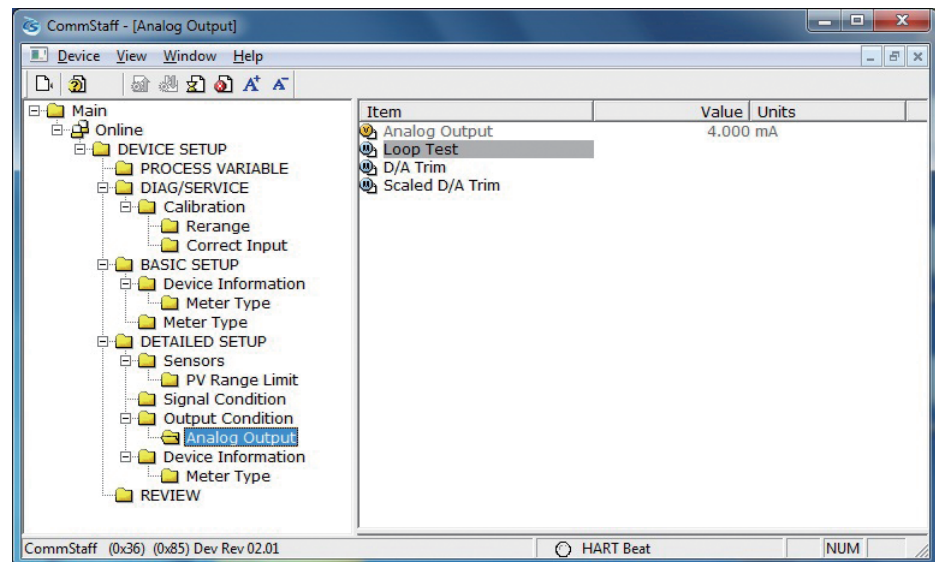
This chapter explains how to prepare for pressure transmitter operation, and provides general instructions to follow when starting pressure transmitter operation.

### 3-1. Confirmation of Output Signals (Loop Test)

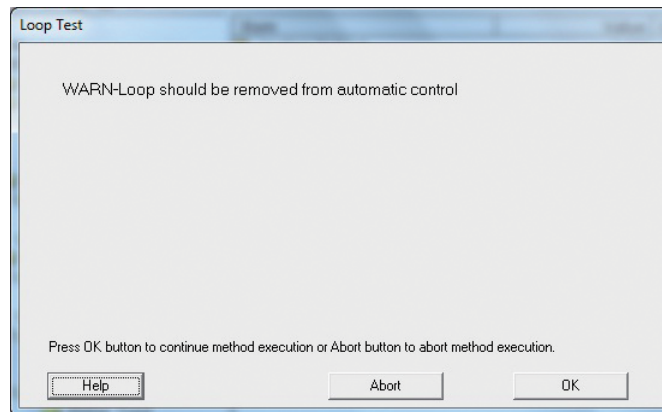
By putting the pressure transmitter in constant current mode, you can keep current outputs constant in the range of 4 - 20 mA. This section explains how to configure the constant current mode and how to return to normal output mode.

Select DEVICE SETUP → DETAILED SETUP → Output Condition → Analog Output → Loop Test.

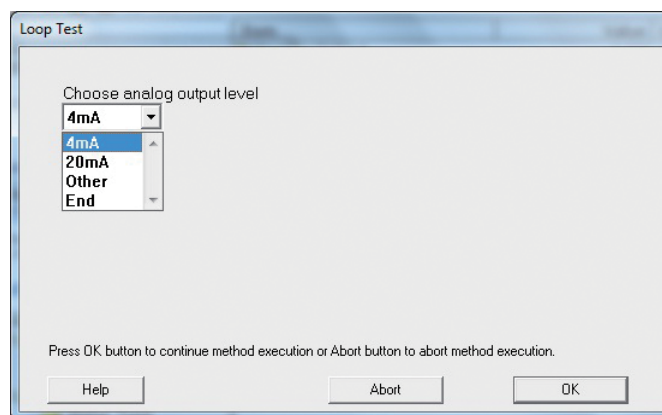
**Caution:** If this operation is performed while the pressure transmitter process is under automatic control, outputs may fluctuate, making pressure transmitter operation dangerous. Before performing this operation, make sure that you switch the process control loop to manual control.



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.



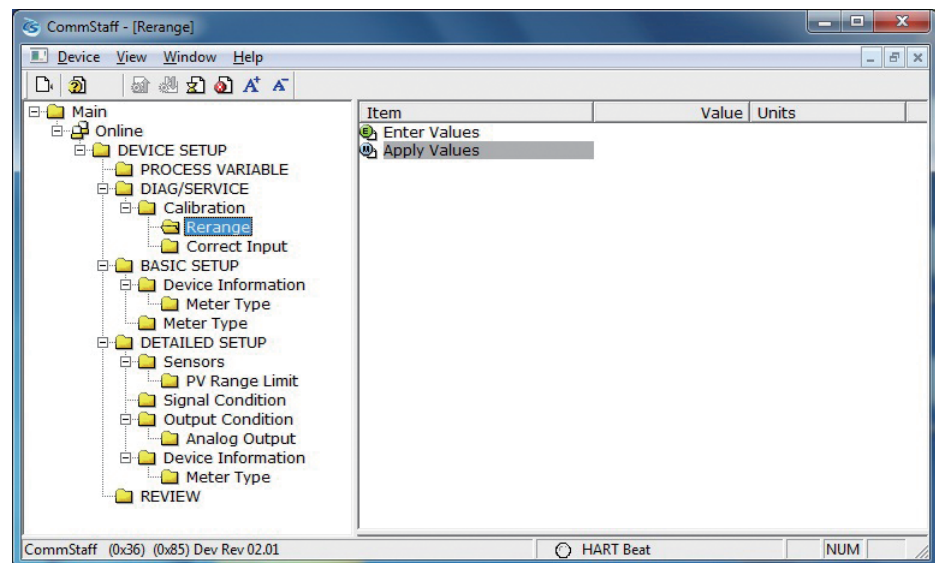
### 3-2. Range Configuration (Zero and Span Adjustments) according to Input Pressure

The range can be configured so that the current pressure input into the pressure transmitter becomes 4 mA (0%) or 20 mA (100%).

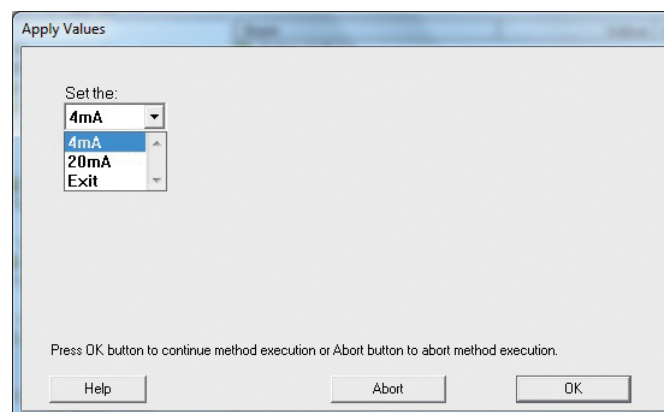
**CAUTION:** If this operation is performed while the pressure transmitter process is under automatic control, outputs may fluctuate, making pressure transmitter operation dangerous. Before performing this operation, make sure that you switch the process control loop to manual control.

The following describes how the range can be changed according to input pressure.

Select DEVICE SETUP → DIAG/SERVICE → Calibration → Rerange → Apply Values.



Double-click Apply Values, and a warning is displayed first and then the following screen.



- Select 4 mA and click OK.  
The range is reconfigured so that the current input pressure becomes the 4 mA output pressure (zero adjustment).
- Select 20 mA and click OK.  
The range is reconfigured so that the current input pressure becomes the 20 mA output pressure (span adjustment).
- Select Exit and click OK.  
This completes the configuration process.

## Chapter 4. Maintenance

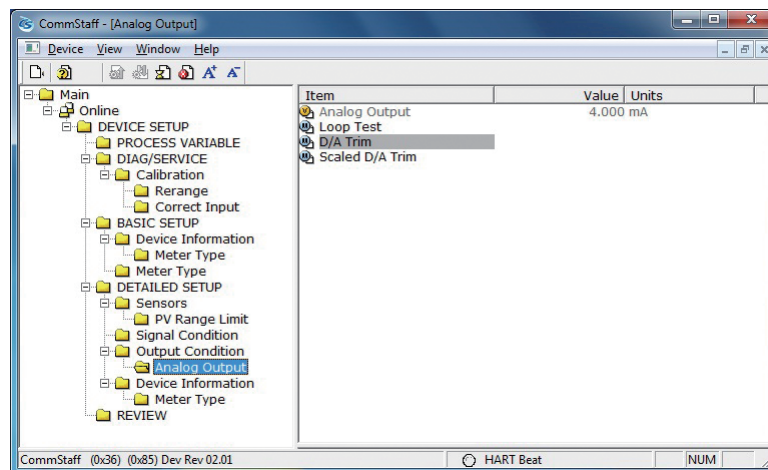
This chapter explains how to calibrate the analog signals of the pressure transmitter, how to calibrate the measurement range, and how to reset a calibrated value to the default value. It also explains how to check the pressure transmitter's self-diagnostic messages.

### 4-1. Calibration of Analog Outputs

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

Select DEVICE SETUP → DETAILED SETUP → Output Condition → Analog Output → D/A Trim.

**CAUTION:** If this operation is performed while the pressure transmitter process is under automatic control, outputs may fluctuate, making pressure transmitter operation dangerous. Before performing this operation, make sure that you switch the process control loop to manual control.



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 pressure 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 pressure transmitter.</p> <p>Fld dev output 4.000mA equal to reference meter? (is the pressure transmitter output equal to the reading on the connected ammeter?)</p> <p>If the pressure 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 pressure 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 pressure transmitter.</p> <p>Fld dev output 20.000mA equal to reference meter? (is the pressure transmitter output equal to a reading of the connected ammeter?)</p> <p>If the pressure 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>

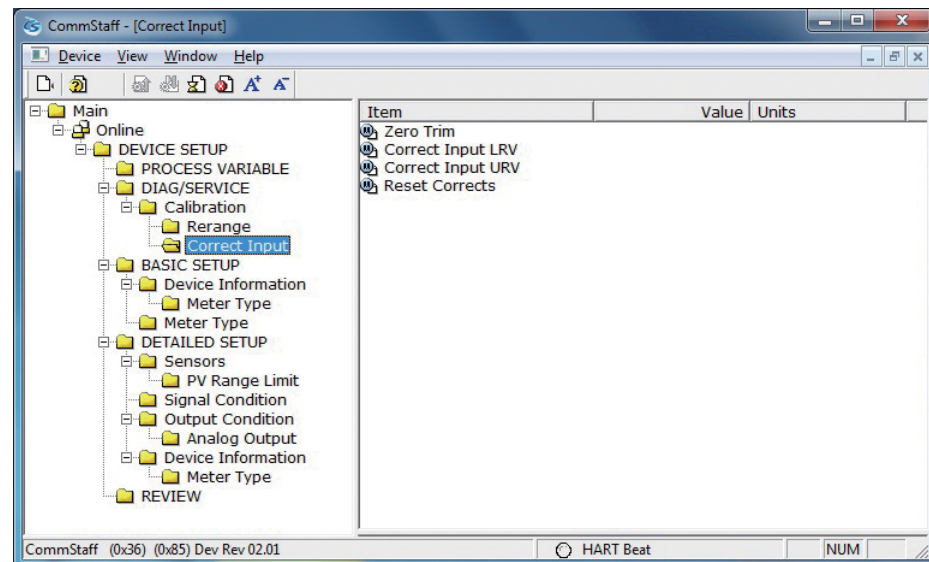
## 4-2. Measurement Range Calibration according to Actual Pressure

For the PTG series smart pressure 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 6, "Remote Communication" in CM2-PTG300-2001 for Smart Pressure Transmitter Model PTG71/72 and Chapter 6, "Description on variable range type transmitters" in CM2-PTG100-2001 for the Bravolight PTG60/70 Pressure Transmitter.

**CAUTION:** If this operation is performed while the pressure transmitter process is under automatic control, outputs may fluctuate, making pressure transmitter operation dangerous. Before performing this operation, make sure that you switch the process control loop to manual control.

Select DEVICE SETUP → DIAG/SERVICE → Calibration → Correct Input.

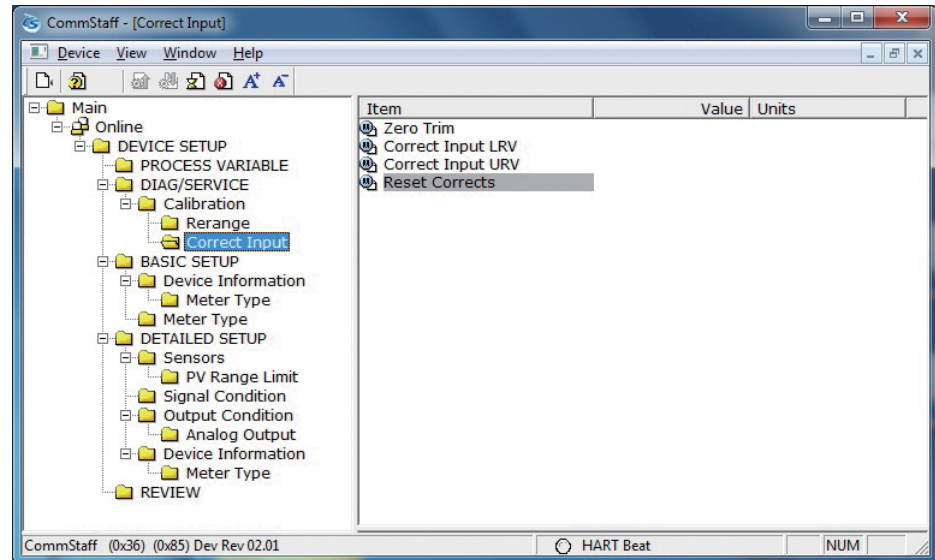


- To calibrate the LRV value, double-click Correct Input LRV. To calibrate the URV value, double-click Correct Input URV.
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, click OK.
- "Apply LRV pressure" or "Apply URV pressure" is displayed. If the value of the standard pressure generator is equal to LRV (0%) or URV (100%), click OK.
- "Press OK when pressure is stable" is displayed. After confirming that input pressure has stabilized, 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.

### 4-3. Calibrated Value Reset

This operation is for resetting the calibrated zero-span value. Since the calibrated value is deleted, you must recalibrate following the steps described in 4.2.

Select DEVICE SETUP → DIAG/SERVICE → Calibration → Correct Input → Reset Corrects.

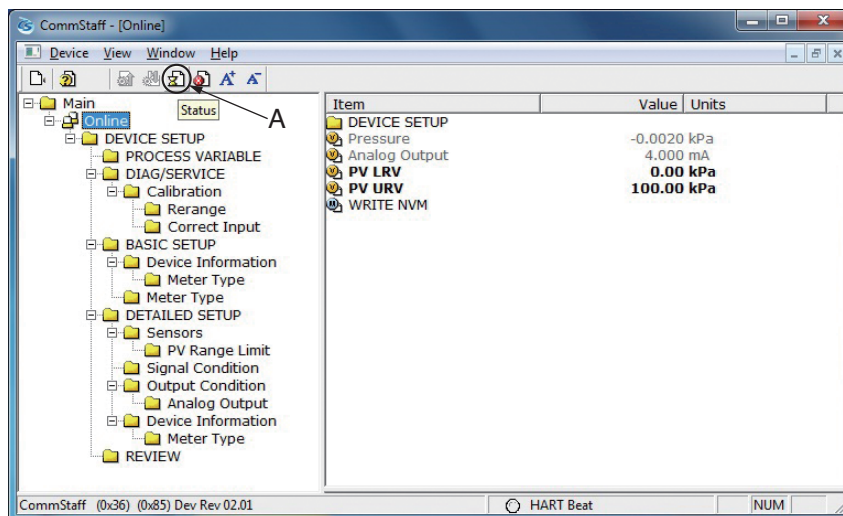


**CAUTION:** If this operation is performed while the pressure transmitter process is under automatic control, outputs may fluctuate, making pressure transmitter operation dangerous. Before performing this operation, make sure that you switch the process control loop to manual control.

- Double-click Reset Corrects. The “WARN - Loop should be removed from automatic control” message is displayed, warning that the loop should be switched from automatic control to manual mode. After switching to manual mode, click OK.
- The “About to Reset corrects” message is displayed to notify you that calibrated values will be reset. Click OK.
- After the calibrated values are reset, “Reset Corrects OK” is displayed. Click OK.
- The “Note - Loop may be returned to automatic control” message is displayed to notify you that you can now switch the loop back to automatic control. Click OK.

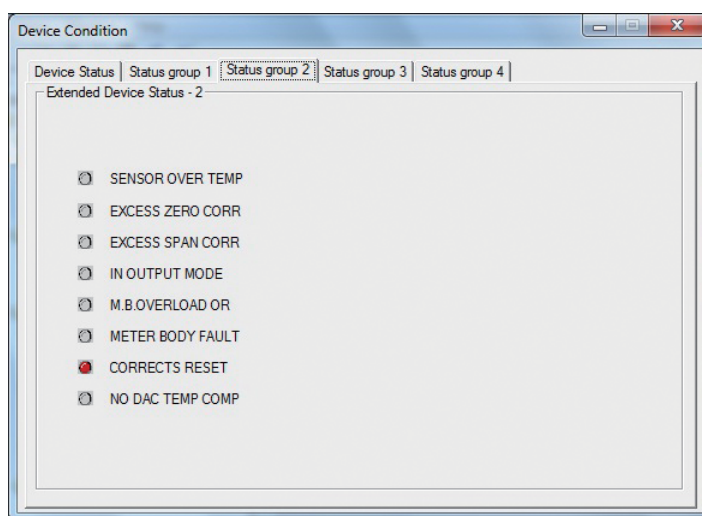
## 4-4. Checking Self-diagnostic Messages

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



For example, the button to the left of CORRECTS RESET turns red after the calibrated values are reset.

For details on self-diagnostic messages, see the user's manual for the pressure transmitter.



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