

Field Communication Software

Model: CFS100

Instruction Manual

(Smart Transmitter 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 differential pressure transmitters

- ST3000 Ace Smart Transmitter Electronic Differential Pressure Transmitter

Model Nos.: JT_9 _ _
ST_9 _ _

- Does not support multiplexed communication types or field bus communication types.

- Former DSTJ3000 Smart Transmitter differential pressure transmitters

Model Nos: JT_2 _ _
JT_8 _ _

- Does not support multiplexed communication types or field bus communication types..
- Does not support JTD520/720 models.

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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.

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 smart transmitter functions and method of connection, refer to manual No. CM2-DST800-2001, ST3000 Ace Smart Transmitter Electronic Differential Pressure / Pressure transmitter Model: JTD, JTG, JTA, JTC, JTE, JTH, JTS 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.

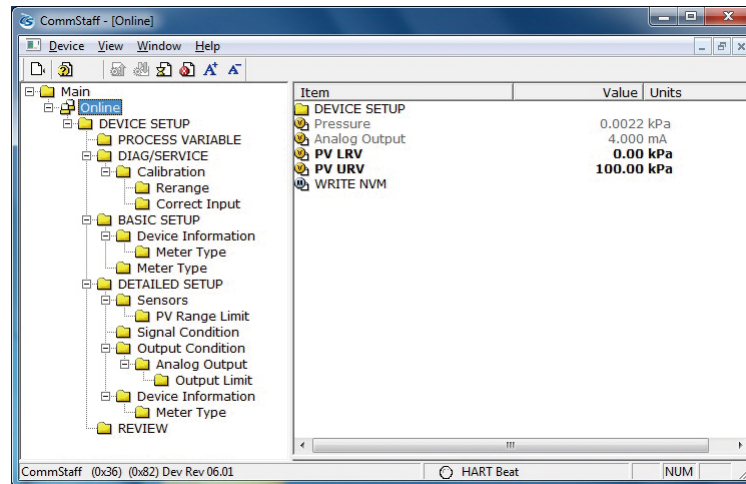
Exit CommStaff before detaching the communications cable from the device, and then start CommStaff again after connecting the communications cable to the new device.
- * The use of SFN communication changes the transmission signal, so be sure to switch the process control loop to manual mode beforehand.
- * 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 (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.



Bold items are parameters that can be changed.





| | | | |
|--|--|----------|---------------------------|
| | | ← REVIEW | ↔ Model |
| | | | ↔ Measurement Type |
| | | | ↔ Manufacturer |
| | | | ↔ Pressure Unit |
| | | | ↔ PV URL |
| | | | ↔ PV LRL *2 |
| | | | ↔ PV Damp |
| | | | ↔ PV % Range |
| | | | ↔ Transfer Function |
| | | | ↔ PV URV |
| | | | ↔ PV LRV |
| | | | ↔ Analog Output *12 |
| | | | ↔ AO Alarm Type *12 |
| | | | ↔ Fail Safe Direction *13 |
| | | | ↔ Sensor Serial Number *2 |
| | | | ↔ PROM ID |
| | | | ↔ Device ID *2 |
| | | | ↔ Tag |
| | | | ↔ Message *11 |
| | | | ↔ Software Version *1 |
| | | | ↔ Universal Rev *2 |
| | | | ↔ Field Device Rev *2 |
| | | | ↔ Software Rev *2 |
| | | | ↔ Poll Address *2 |
| | | | ↔ Num Req Preams *2 |
| | | | ↔ DE FS Mode *13 |
| | | | ↔ DE Format *13 |
| | | | ↔ DE PV type *13 |

*1 Not displayed if HART communications is selected.

*2 Not displayed if SFN or DE communication is selected.

*3 Valid when Transfer Function is set to Sq root. (Displayed.)

*4 Valid when Cutoff mode is not set to DEFAULT. (Displayed.)

*5 Valid if a JTE model is connected. (Displayed.)

*6 Displays the burnout direction.

*7 Valid when the burnout direction upper limit or lower limit is selected. (Displayed.)

*8 Not displayed if the transmitter version is one of the following: 1.0–3.F, 9.0–9.F, A.0–A.F, B.1.

*9 Not displayed if the transmitter version is one of the following: 1.0–3.F, 9.0–9.F, A.0–A.F

*10 Not displayed if the transmitter version is one of the following: 1.0–3.1, 9.0

*11 Not displayed if the transmitter version is one of the following: 1.0–2.F, 9.0

*12 Not displayed if DE communication is selected.

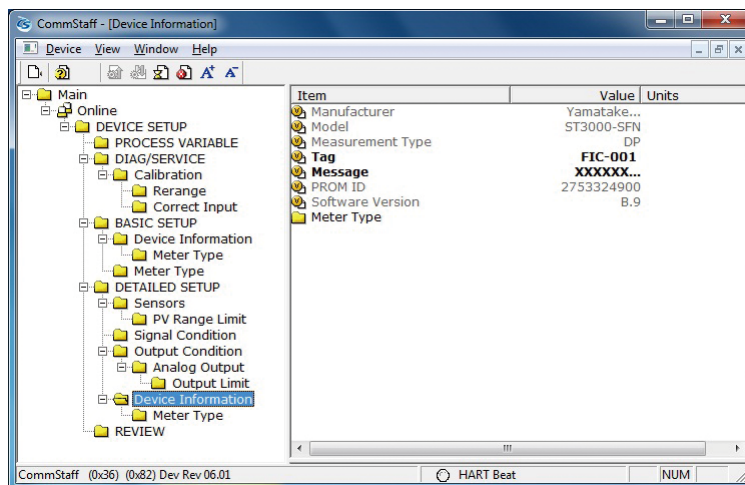
*13 Valid (displayed) if DE communication is selected.

Setting items and references

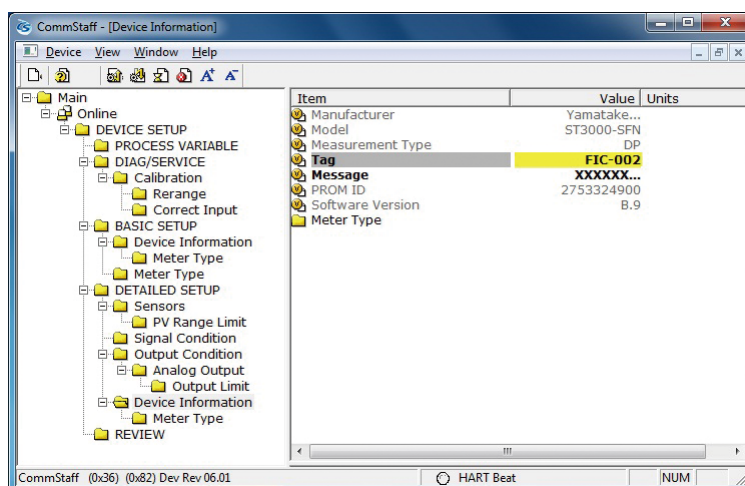
| | Task | Parameter | Section of Manual |
|--------------------------|--|-------------------|-------------------|
| Preparation, Adjustment" | Tag No., set or check | Tag | 2.2 |
| | Measurement range, check or change | Basic Setup | 2.7 |
| | Linear/square root output signal, check or set | Transfer Function | 2.3 |
| | Output limit (saturation point), check or set | Output Limit | 2.10 |
| | Damping time constant, check or set | Damping | 2.9 |
| | Units of pressure, check or change | Pressure Unit | 2.6 |
| | Zero adjustment, execute | Apply value | 3.2 |
| | Loop test, execute | Loop Test | 3.1 |
| | Indicator, set | Display | 2.4 |
| 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.



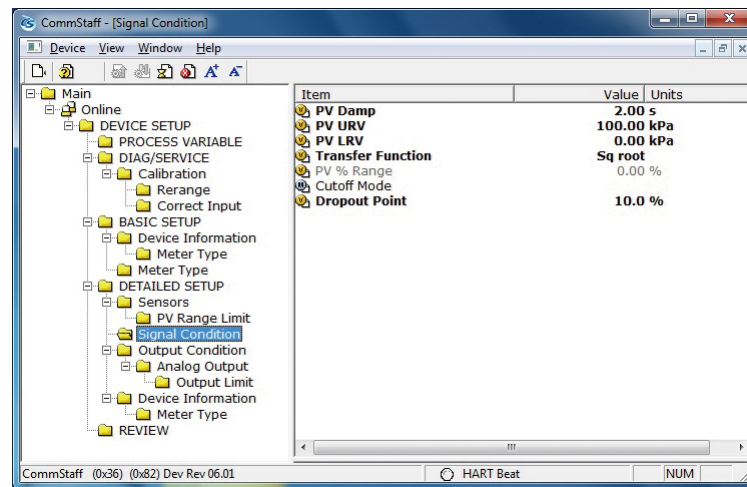
Double-clicking Tag displays the settings screen. On this screen, set the Tag and click the Set button. The tag is highlighted in yellow. Click the Send button to send the new Tag to the transmitter.



2-3. Output Format Configuration

This section explains how to switch between linear and square root output. This menu is useful for when communicating with a differential pressure transmitter.

Select DEVICE SETUP → DETAILED SETUP → Signal Condition → Transfer Function.



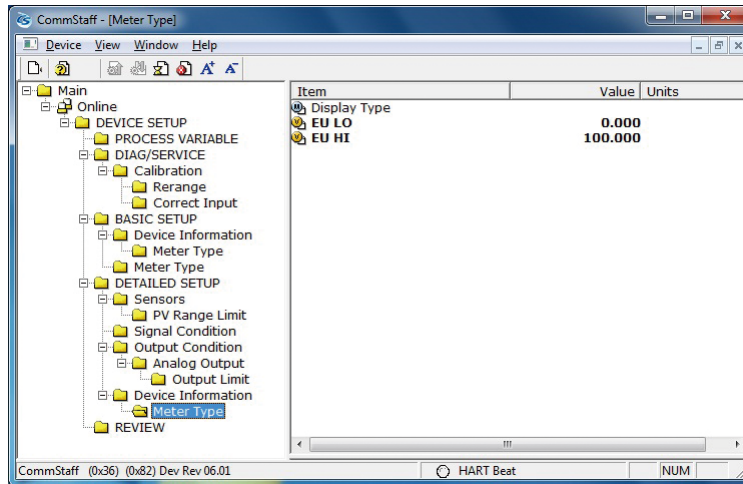
Linear: Linear output

Sq root: Square root output

2-4. 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.



2-4-1. 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. |
| E.UNIT (Dsp Flow) | Indicates that linear output values and displayed square root values are equal to scale readings. |
| % (Dsp Flow) | Indicates that linear output values and displayed square root values are in percent figures. |

2-4-2. 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 0%.

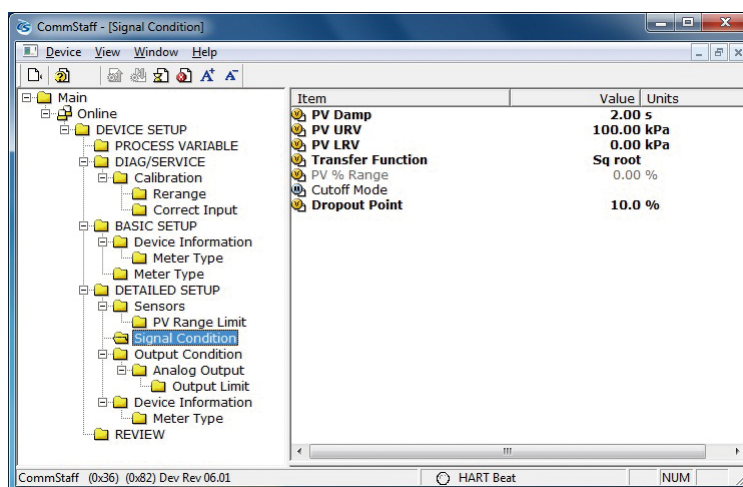
EUHI : Value displayed when output is 100%.

2-5. Low Cutoff Value/Dropout

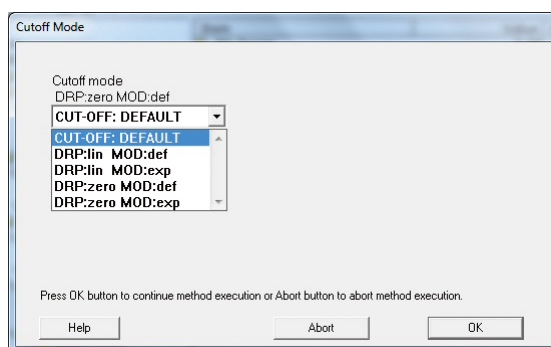
This section explains how to configure the low cutoff value.

This function is enabled only when square root (Sq root) is selected as the output format.

Select DEVICE SETUP → DETAILED SETUP → Signal Condition → Cutoff Mode.



Double-clicking Cutoff Mode displays the settings screen.



DRP: Dropout type (Linear/Zero)

Linear: If the flow rate (%) is set at the dropout point or below, the output changes to linear output.

Zero: If the flow rate (%) is set at the dropout point or below, the output changes to 0 %.

MOD: flow mode (Default: forward direction/Expand: both directions)

Default: Square root extraction output in the forward direction only. Use if there is flow in only 1 direction.

Expand: Square root extraction output in both directions. Use if there is flow in both the forward and reverse directions.

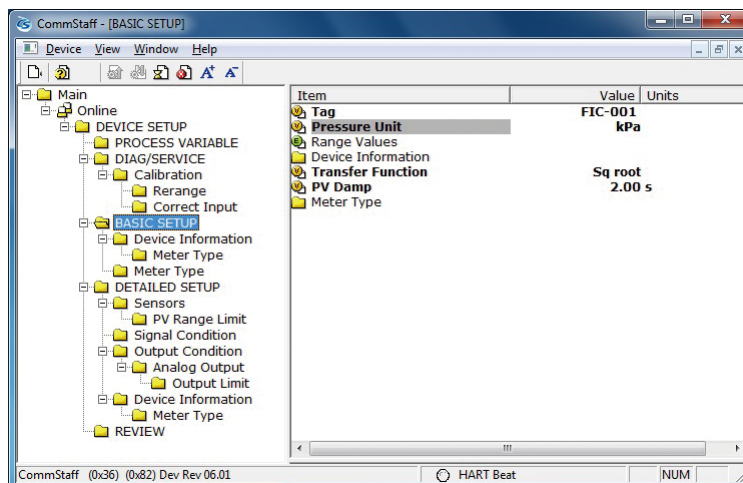
To configure a dropout value, double-click Dropout Point.

| | |
|-------------------|--|
| CUT-OFF: DEFAULT | The default values for cutoff are as follows. Dropout Point: 7.1 %, Dropout Type: linear, Flow Mode: Default. |
| DRP: lin MOD:exp | Dropout Type: Linear, Flow Mode: Forward direction. |
| DRP: lin MOD:exp | Dropout Type: Linear, Flow Mode: Both direction. |
| DRP: zero MOD:exp | Dropout Type: Zero, Flow Mode: Forward direction. |
| DRP: zero MOD:exp | Dropout Type: Linear, Flow Mode: Both direction. |

2-6. Selecting a Unit of Pressure

This function allows you to select the measurement units for pressure used by the transmitter. Although the configured units for pressure can be changed, the changed settings are not saved by the 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.



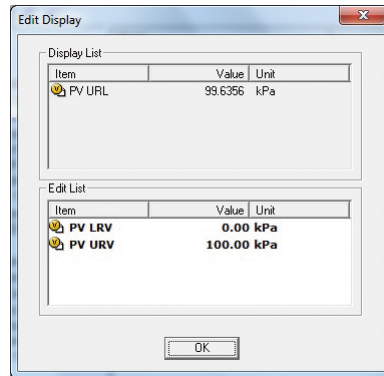
Units for pressure can be selected from the following.

Note: If the ST3000 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 | | | |

2-7. Measurement Range Configuration

This section explains how to configure the measurement range of the 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 transmitter. Values can be input to two decimal places.

Note: In SFC and CommPad, when the LRV (Lower Range Value (0%)) is changed, the URV (Upper Range Value (100%)) also changes by the same amount in order to keep SPAN unchanged. In CommStaff, when Lower Range Value (0%) is changed, Upper Range Value (100%) does not change.

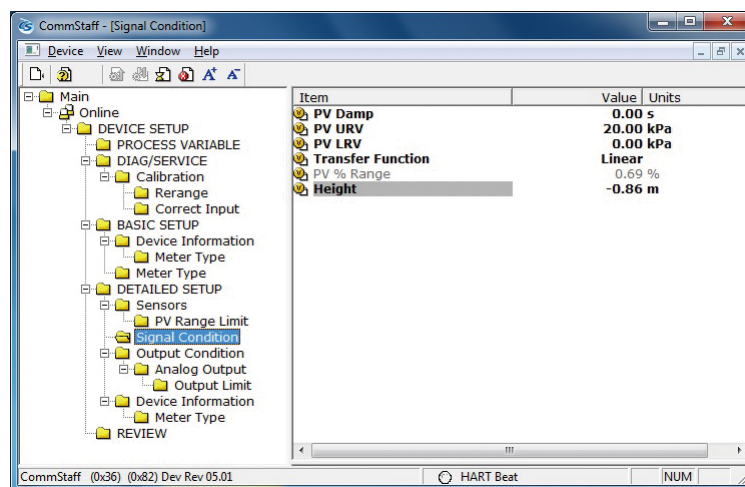
2-8. Function for Adjusting the Temperature of a Sealed Liquid

This function is valid only when a JTE model is connected. If a model other than JTE is connected, the menu is not displayed.

For remote seal pressure transmitters, this is Azbil Corporation's original correction function for minimizing the size of zero point shifts caused by density change in a sealed liquid. Specifically, a temperature sensor on the transmitter measures the ambient temperature, and on this basis the density is corrected.

For this function to be enabled, the height between flanges of the tank on which the transmitter is mounted must be specified.

Select DEVICE SETUP → DETAILED SETUP → Signal Condition → Height.

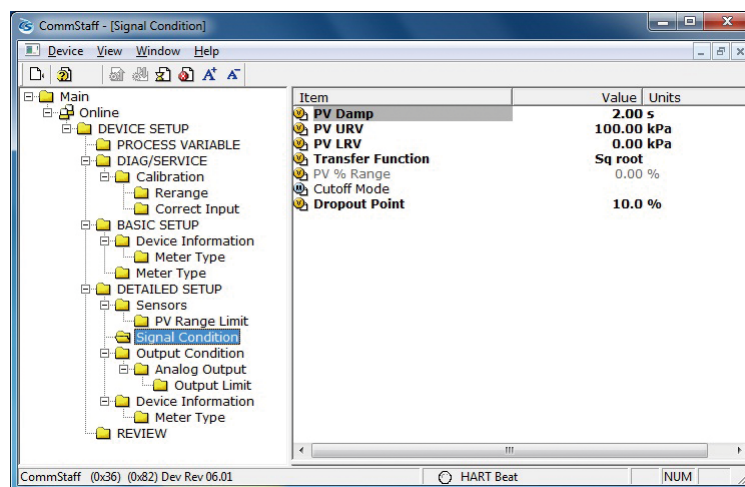


Input the height difference between the flanges in meters. If this function is not enabled, "0.00 m" is displayed.

2-9. 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 |

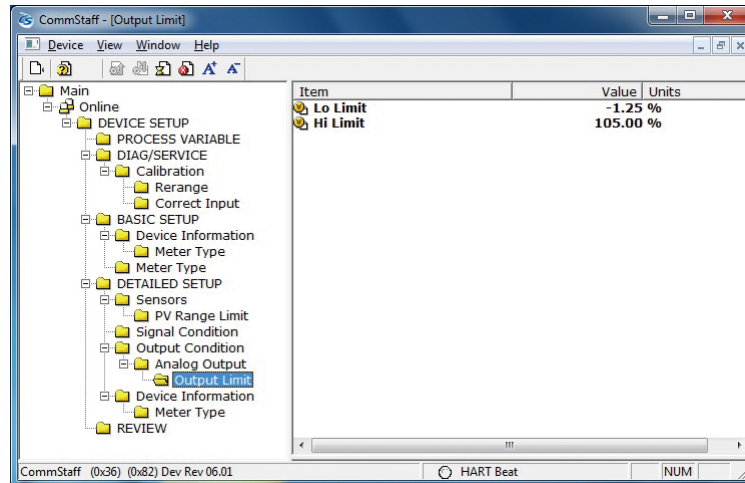
If HART communication is used, set a value in the range of 0 to 120 seconds.

2-10. Output Limit (Output Saturation Point) Configuration

Output limit is enabled only when Burnout is upward or downward. It is disabled if a non-burnout transmitter is used.

The output limit configuration is for specifying the saturation point for output current under normal conditions.

Select DEVICE SETUP → DETAILED SETUP → Output Condition → Analog Output → Output Limit.



The following are the ranges of possible values.

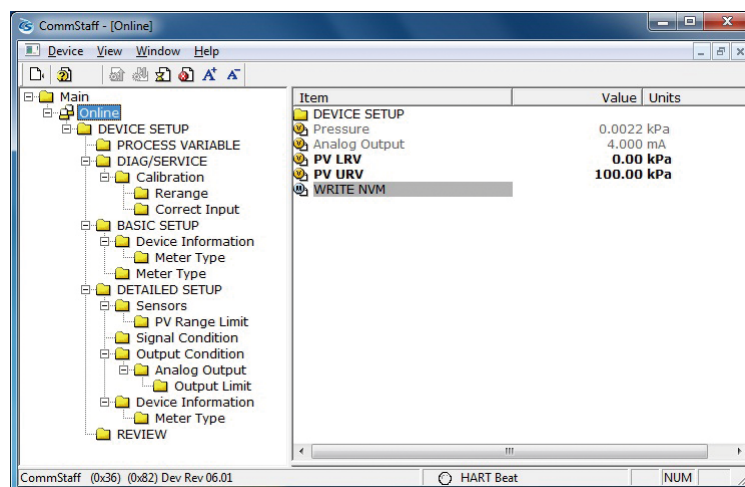
Lo Limit: -5.00 to +49.99 % (SFN transmitter), -1.25% to 49.99% (HART transmitter)

Hi Limit: 50.00 to 105.00 %

2-11. NVM Save

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

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



Chapter 3. Preparations and Starting Operation

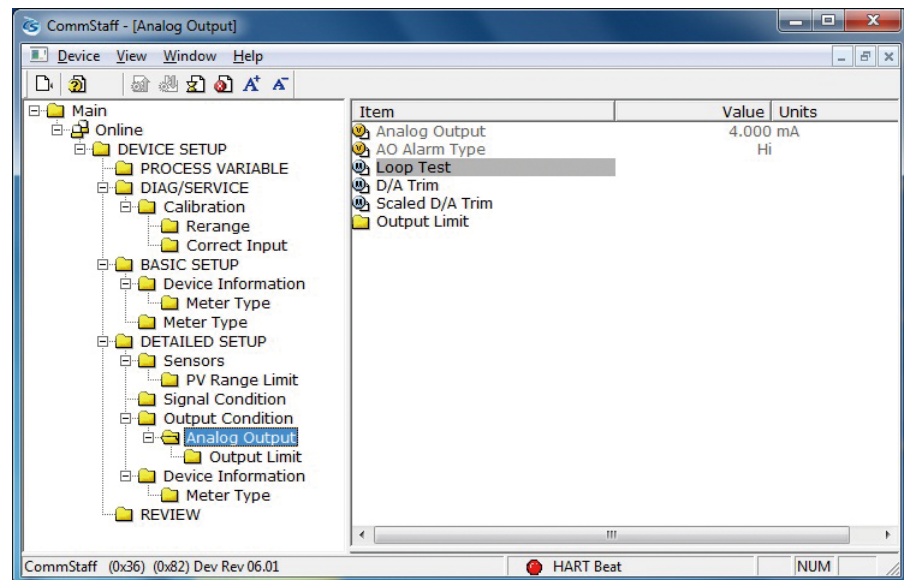
This chapter explains how to prepare for transmitter operation, and provides general instructions to follow when starting transmitter operation.

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

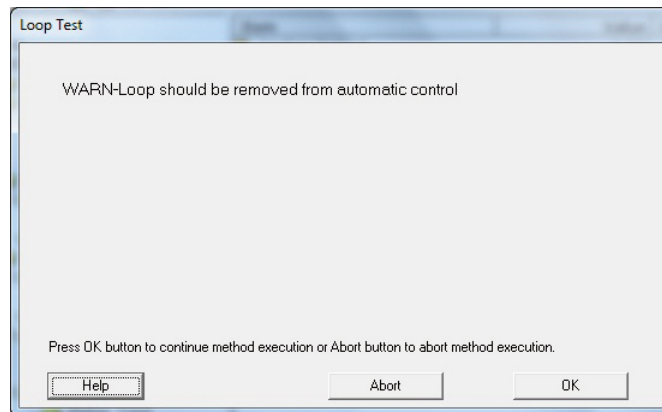
By putting the transmitter in constant current mode, you can keep current outputs constant in the range of 4 - 20 mA. This section explains how to configure the constant current mode and how to return to normal output mode.

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

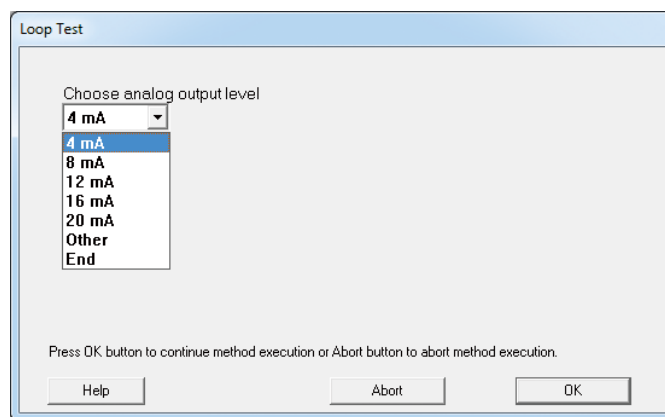
Caution: If this operation is performed while the transmitter process is under automatic control, outputs may fluctuate, making transmitter operation dangerous. Before performing this operation, make sure that you switch the process control loop to manual control.



Double-clicking Loop Test displays the following screen.



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



- SFN communication
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.
- HART communication
Select 4 mA and click OK. Output signals will be fixed at 4 mA (0%).
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.

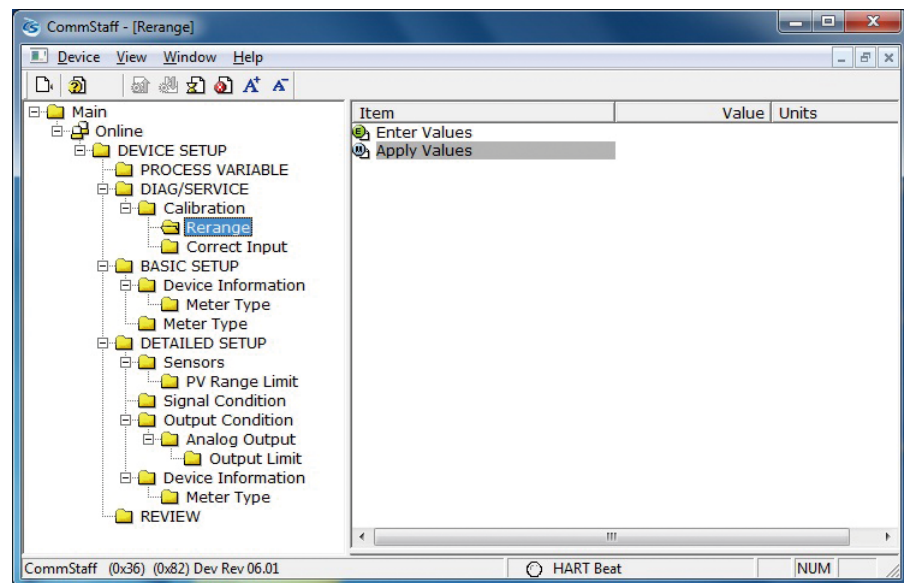
3-2. Range Configuration (Zero and Span Adjustments) according to Input Pressure

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

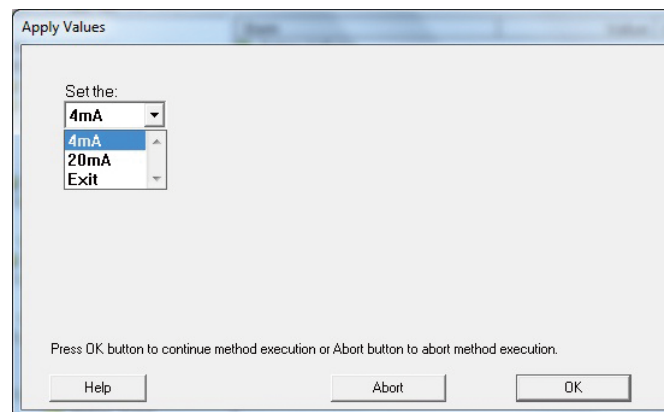
CAUTION: If this operation is performed while the transmitter process is under automatic control, outputs may fluctuate, making transmitter operation dangerous. Before performing this operation, make sure that you switch the process control loop to manual control.

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

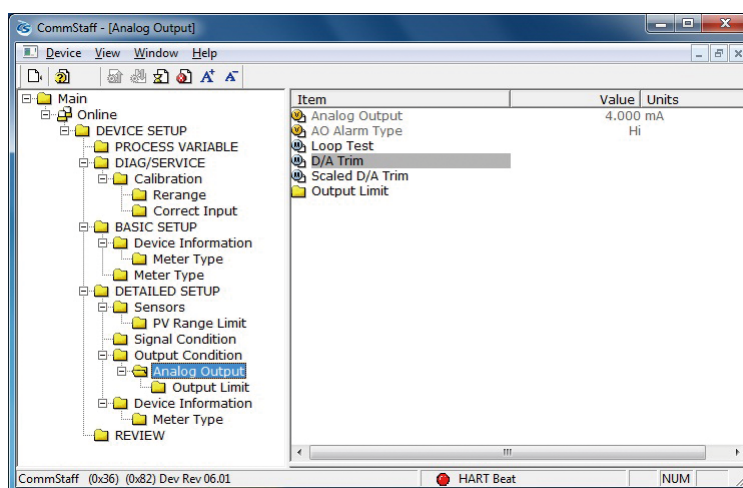
This chapter explains how to calibrate the analog signals of the transmitter, how to calibrate the measurement range, and how to reset a calibrated value to the default value. It also explains how to check the transmitter's self-diagnostic messages.

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 transmitter process is under automatic control, outputs may fluctuate, making 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 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> |

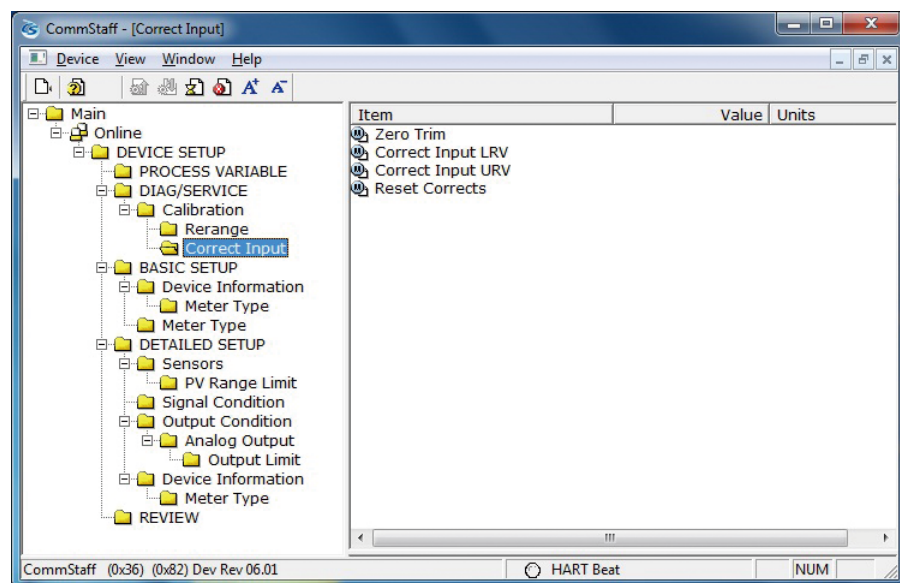
4-2. Measurement Range Calibration according to Actual Pressure

For the DSTJ3000 series differential pressure and 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 5, “Maintenance and Troubleshooting” in DSTJ3000 Ace Series Smart Transmitter (CM2-DST800-2001).

CAUTION: If this operation is performed while the transmitter process is under automatic control, outputs may fluctuate, making 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.

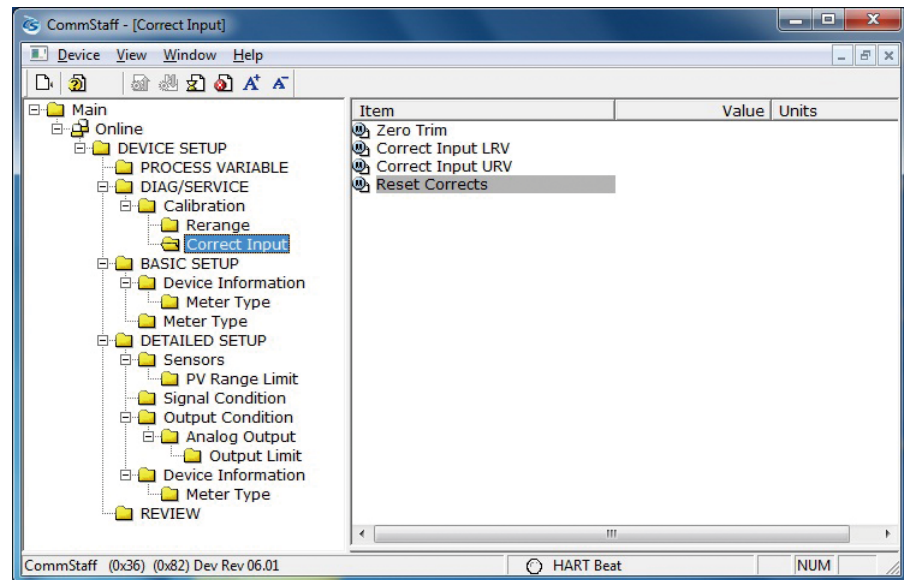


- To calibrate the LRV value, double-click Correct Input LRV. To calibrate the URV value, double-click Correct Input URV.
- A warning that the loop should be switched from automatic control to manual mode is displayed (WARN - Loop should be removed from automatic control). After switching to manual mode, 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.

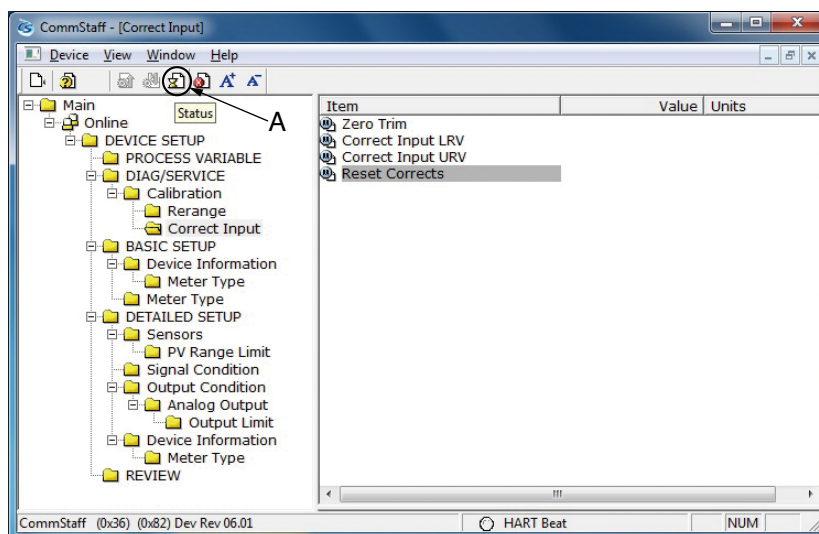


CAUTION: If this operation is performed while the transmitter process is under automatic control, outputs may fluctuate, making transmitter operation dangerous. Before performing this operation, make sure that you switch the process control loop to manual control.

- 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.

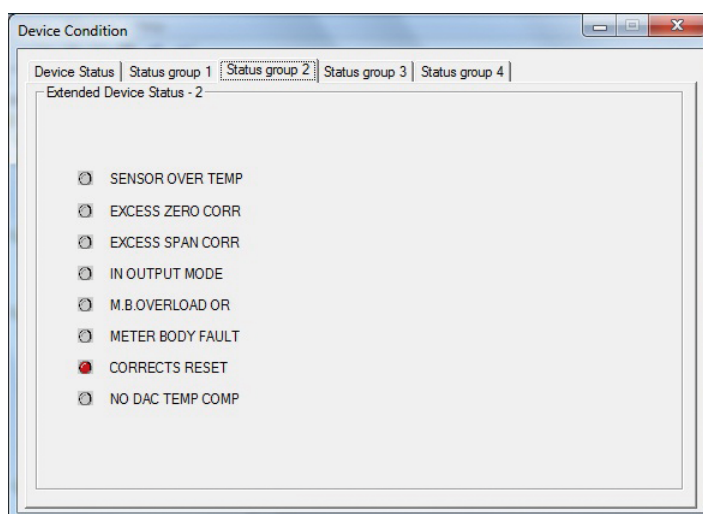
4-4. Checking Self-diagnostic Messages

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.

There are 4 status groups. The self-diagnosis details are shown for each group.



The following gives details of the information on self-diagnosis.

| | Status message | Meaning |
|---------------------|---|--|
| Critical | Invalid Database | Configuration data and/or calibration data is corrupt |
| | Chara. PROM Fault | PROM function fault |
| | Suspect Input | · Input data error · Problem in the process · Transmitter fault |
| | MDU/DAC Fault | Electronic parts fault |
| | NVM Fault | Electronic parts fault |
| | RAM Fault | Electronic parts fault |
| | ROM Fault | Electronic parts fault |
| Non-critical status | Meter Body Over Temperature | Meter body temperature is too high. |
| | Excess Zero Correct | The Zero correction factor is outside the acceptable limits for accurate operation. |
| | Excess Span Correct | The Span correction factor is outside the acceptable limits for accurate operation. |
| | Meter Body Overload or Meter Body Fault | · the Input pressure exceeds two times the upper range limit of the transmitter · the Transmitter fault |
| | Correct Reset | Calibration data is initialized. |
| | External Switch Fault | External switch fault |

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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| Document Name: | Field Communication Software Model: CFS100 Instruction Manual (Smart Transmitter Edition) |

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