

**AT9000 Advanced Transmitter
Supplement Manual for
HART[®] Communication Option**

NOTICE

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About This Publication

This manual is intended as a detailed “how to” reference for operating Azbil Corporation's AT9000 Advanced Transmitters with HART® communication option. It is based on using the HART® Communicator as the operator interface for the transmitter.

Note that this manual does not include a detailed reference for installing, piping the transmitter or detail operations of the HART® Communicator. Refer the user's manuals of AT9000 Advanced Transmitters (CM2-GTX100-2001) and the HART® Communicator.

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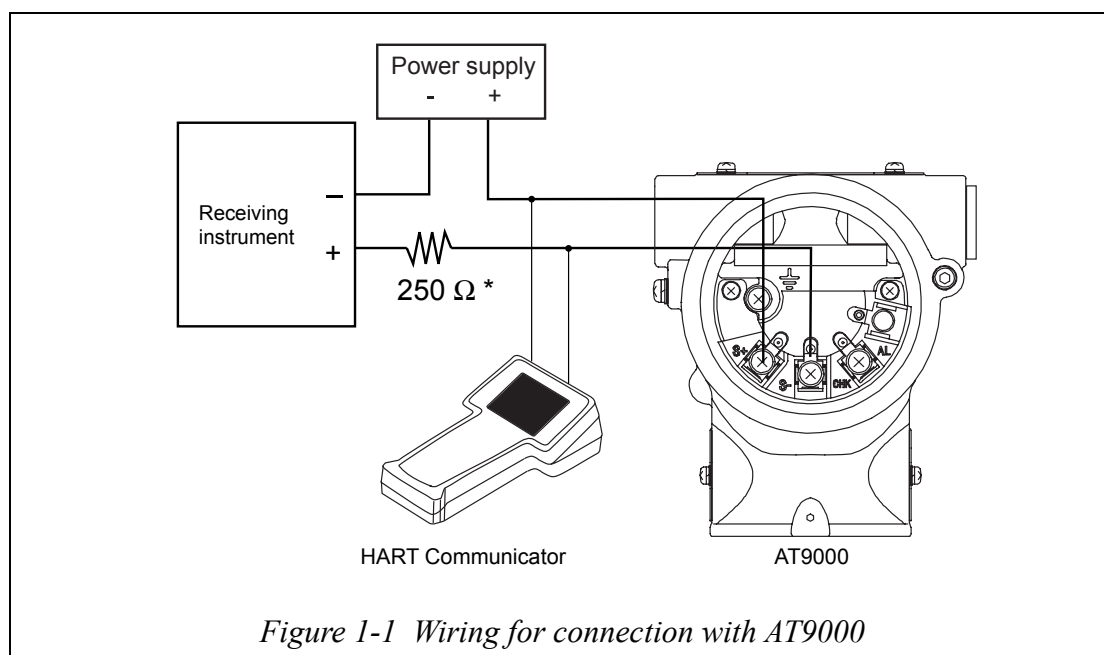
Chapter 1 : Starting Communications

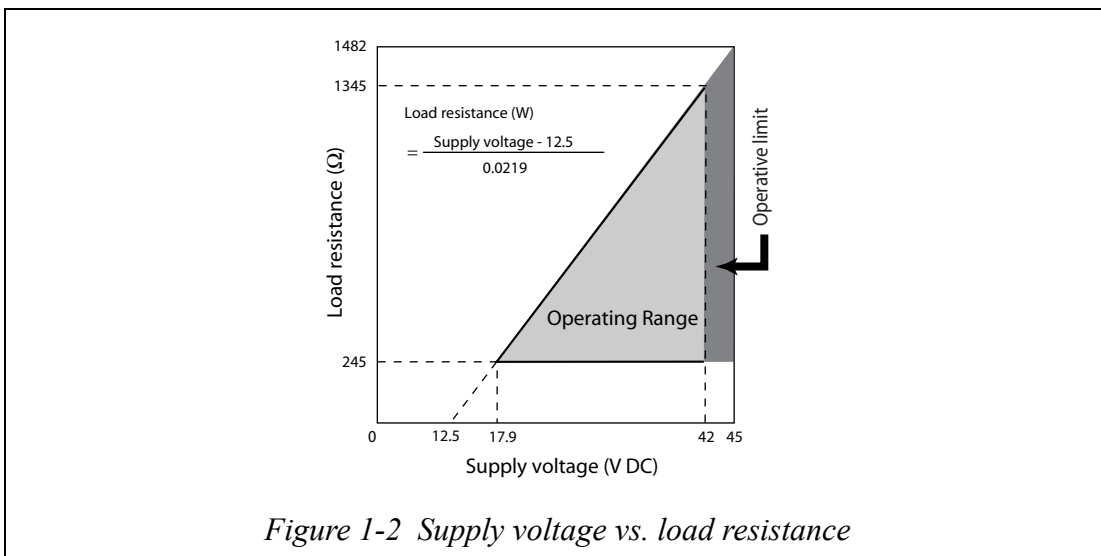
Instructions for connecting HART® Communicator to this transmitter.

Basic instructions for Key-pad operation.

1.1 : Connecting communicator

You connect the communicator directly to signal terminals on the transmitter's terminal block or at any location in the 4 to 20 mA loop. (Polarity of the communicator connection does not matter)









Do not hook up the HART® Communicator to the bilingual AT9000 in “DE Enable” while the control loop is in the automatic mode.

When the HART® communicator is hooked up to the bilingual AT9000 in “DE Enable”, the transmitter output might trip due to the rush current generated by the big capacitance in the HART® communicator.






1.2 : HART® communicator keyboard



1.3 : Symbols on communicator screen

- 
 Flashing heart icon in the upper right corner indicates that the transmitter and communicator are communicating.
- 
 This left arrow symbol indicates that the left arrow on the keypad brings you back to previous menu.
- 
 These arrows indicate there is more column to scroll though, using the indicated arrow on the keypad.
- 
 This terminate icon in the upper right corner of the touch screen is used to end the application.

1.4 : Key Operation

- 
Arrow keys
 Pressing the arrow keys selects the menu items in the menu structure. Pressing the right arrow (?) key returns to the previous menu.
- 
Tab key
 Pressing the Tab key selects the next menu item from those available.
- 
Enter key
 Pressing the Enter key executes the item selected (highlighted) by pressing the Tab key.
- 
Alphanumeric keys
 These keys are used to key in characters such as letters, numbers, and punctuation. Numeric mode or alphanumeric mode can be selected for data entry and option selection. For certain applications, the mode will be automatically selected.
 In alphanumeric mode, pressing an alphanumeric key several times quickly displays the corresponding letter or number. To key in “Z,” for example, quickly press the “9” key 4 times in a row.
- 
Function key
 The select functions for key entry can be used by pressing the Function key. The select functions are indicated in gray at the upper portion of each key.
 When the Function key is enabled, the Multifunction LED flashes orange and then an indicator appears on the “Soft Input Panel (SIP).” Pressing the key again disables this function.

The ON/OFF key has been pressed long enough to turn on the power.

Multifunction LED

Status

The green LED is on.

The power is ON.

The green LED is flashing.

Power saving mode is ON, display is OFF.

The green and orange LEDs are on

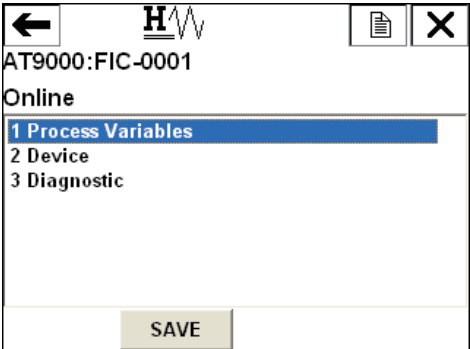
The Function key is enabled.

The green and orange LEDs are flashing.

The ON/OFF key has been pressed long enough to turn on the power.

1.5 : Establishing communications


This procedure starts communications between the transmitter and the communicator:

STEP	Action and/or Description
1	<p>Turn on communicator. The communicator runs a self-test check then determines if it is connected to a transmitter.</p> <p>After a while, the “375 Main Menu” screen will appear. Select “HART Application” and then press the right arrow (→) key.</p>
2	<p>When communication is correctly established, the communicator will automatically proceed to step 3.</p> <p>If a message “(No. Device Found)” appears on the communicator, select “2 Online” and then press the right arrow (→) key. If “(No. Device Found)” is still displayed, check the following items.</p> <ul style="list-style-type: none"> • Loop resistance: Is there a minimum of 250 Ω resistance between the communicator and the power supply? • Power supply: Is power applied? Is there greater than 11 volts at the transmitter? <p>Correct any problems, and try communicating again. If the message, or any other error message, appears again, refer to user’s manual of AT9000 Advanced Transmitter (CM2-GTX100-2001 “Chapter 7: Maintenance and Troubleshooting”).</p>
3	<p>When the “Online” display - shown below - appears, you have established communication with the transmitter.</p> <div style="text-align: center;">  </div> <p>The flashing heart icon in the upper right corner indicates the communicator and the transmitter are communicating.</p>

1.6 : Checking basic data

This procedure checks the transmitter's factory-set configuration parameters:

STEP	Action and/or Description
1	From the “Online” menu, enter “Device setup” by pressing the right arrow (→) key on the communicator keypad.
2	Press the down arrow (↓) key to scroll down to menu-item “5 Review”.
3	Press PREV and/or NEXT to scroll through the configuration data including: <ul style="list-style-type: none"> • Model • Measurement Type • Transfer Function • Cutoff Mode • Height • PROM No. • Software Rev • Damping • Lower Range Value (0%) • Upper Range Value (100%) • Upper Range Limit • Fail Safe Direction • Display Mode • Disp. Unit • User Unit • EULO (0%) • EUHI (100%) • Exponent • Output Low Limit • Output High Limit • Output Alarm • Lower Output Alarm • Upper Output Alarm • Sensor Temp. Alarm • Lower Sensor Temp. Alarm • Upper Sensor Temp. Alarm • Contact Output ON/OFF • Alarm Status • Contact Output Mode • Contact Output Status • Output • Pressure • Sensor Temp.

STEP	Action and/or Description
4	Press left arrow to go back to the “Device” menu
5	Tap the  icon in the upper right corner of the touch screen to finish the communication. “HART Application” is finished and back to “375 Main Menu.”

Chapter 2 : Configuration

This section introduces you configuration of AT3000 with HART® option using the HART® Communicator.

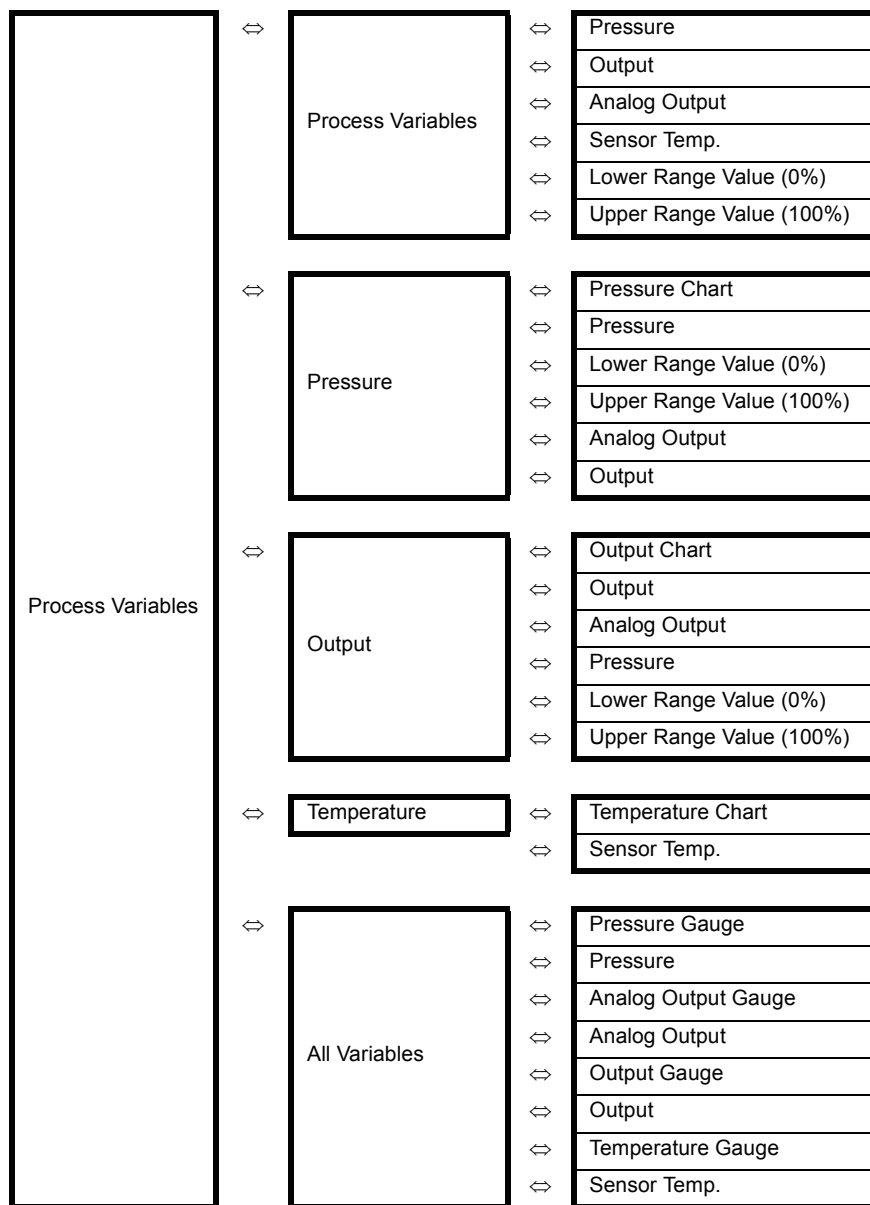
This section also provides an overview of the HART® Communicator, including menus and keyboards.

2.1 : Top menu

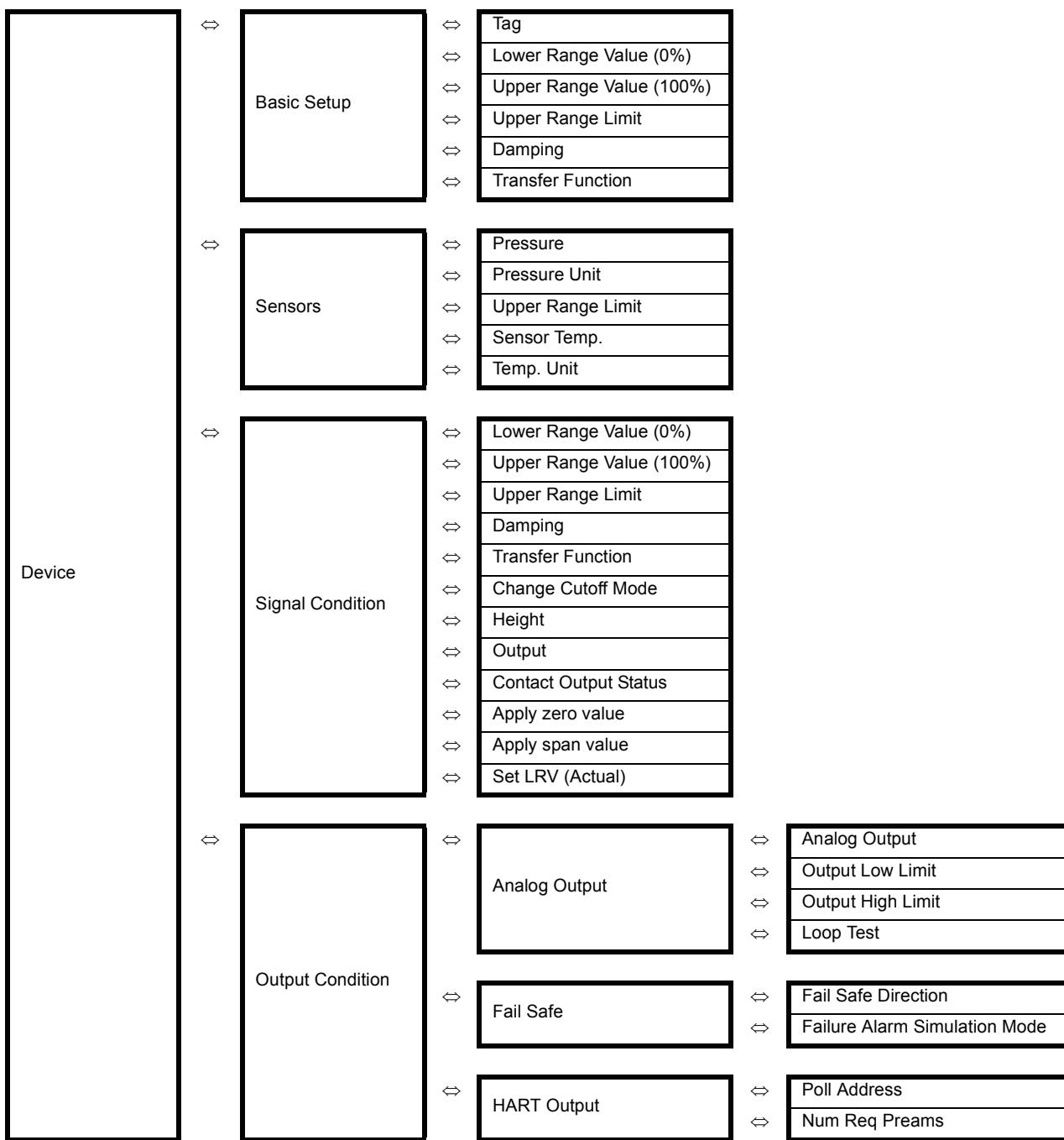
The “Top menu” consists of 3 items.

1. Process Variables
2. Device
3. Diagnostic

2.2 : Process Variables menu summary

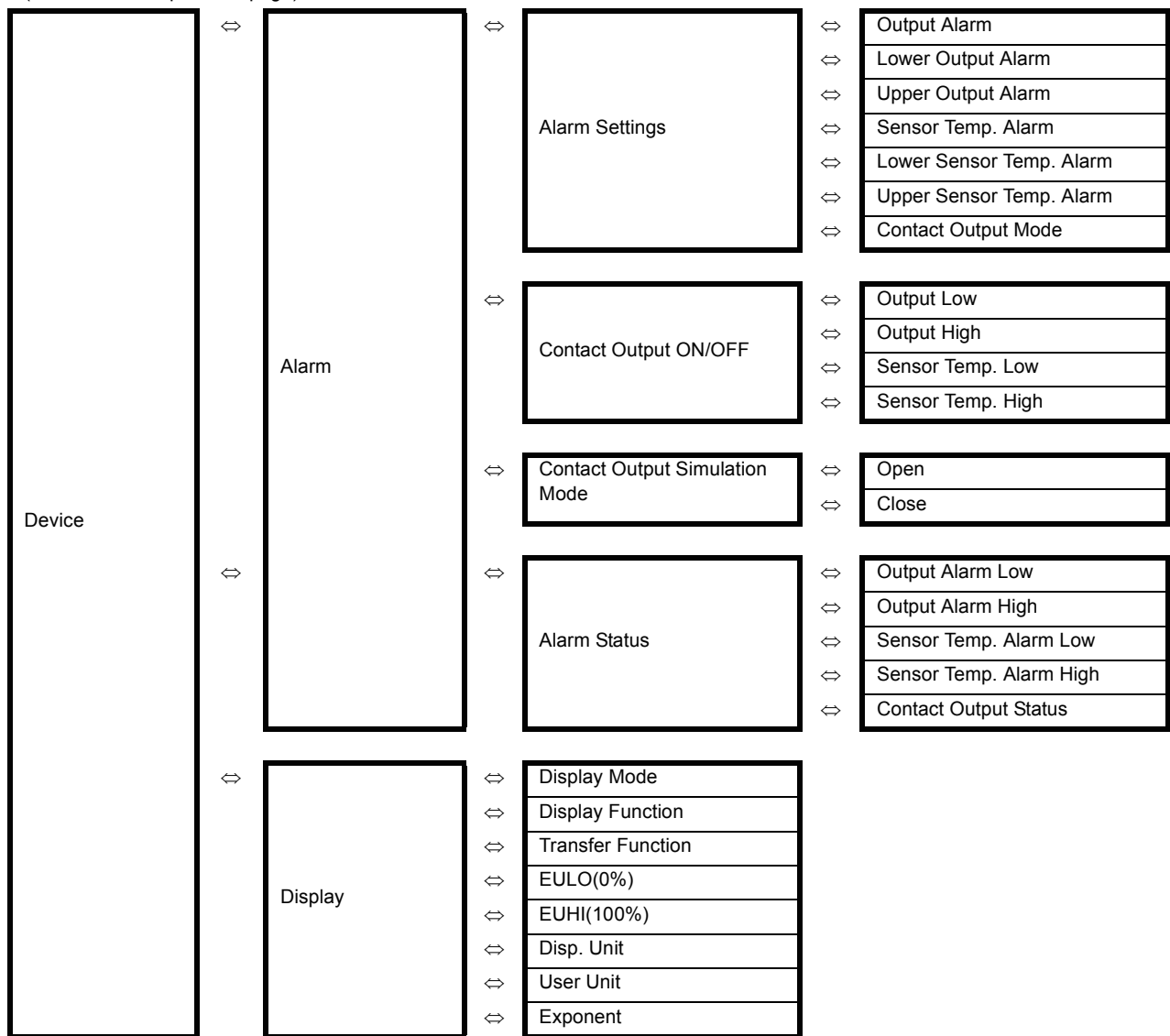


2.3 : Device menu summary



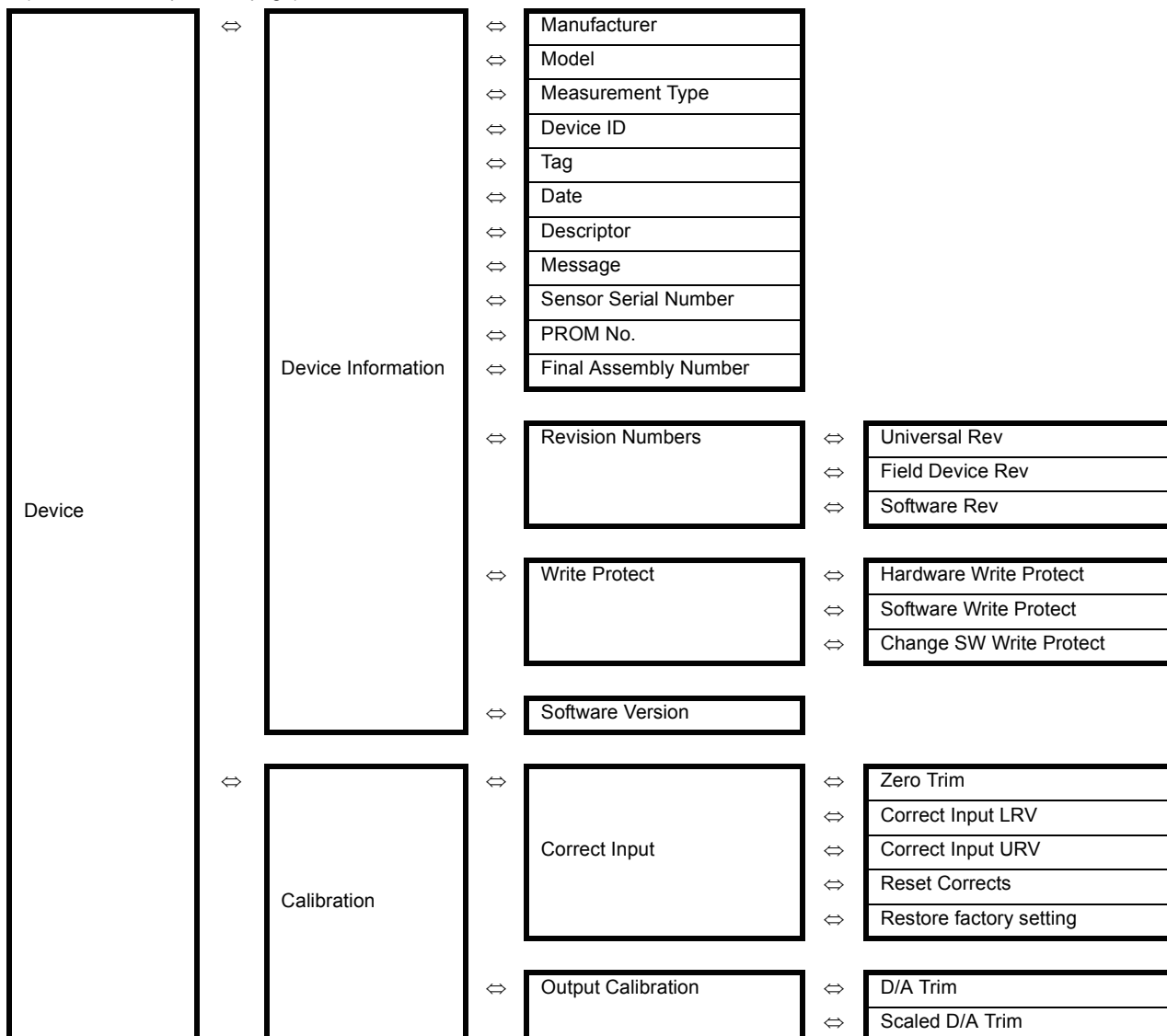
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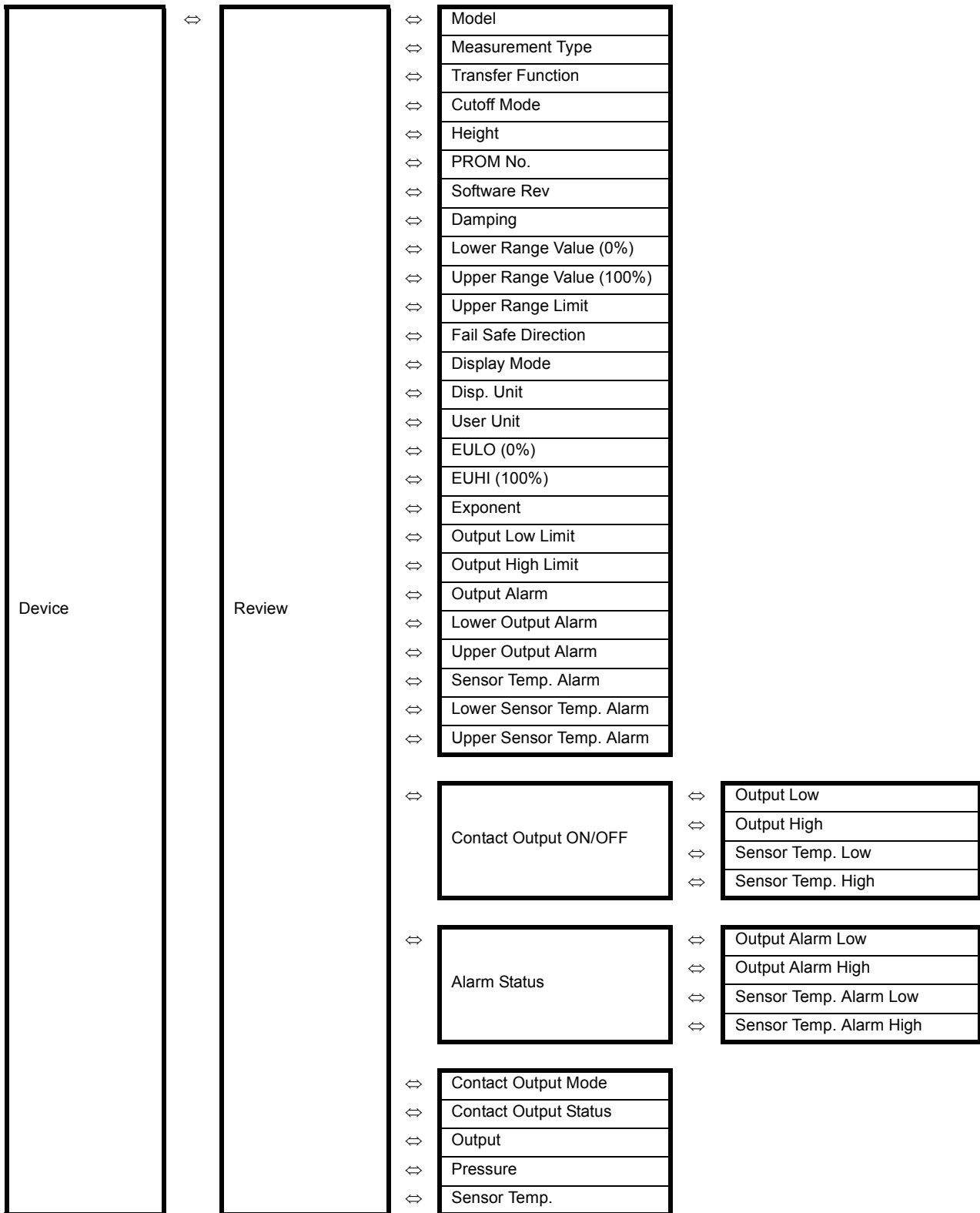
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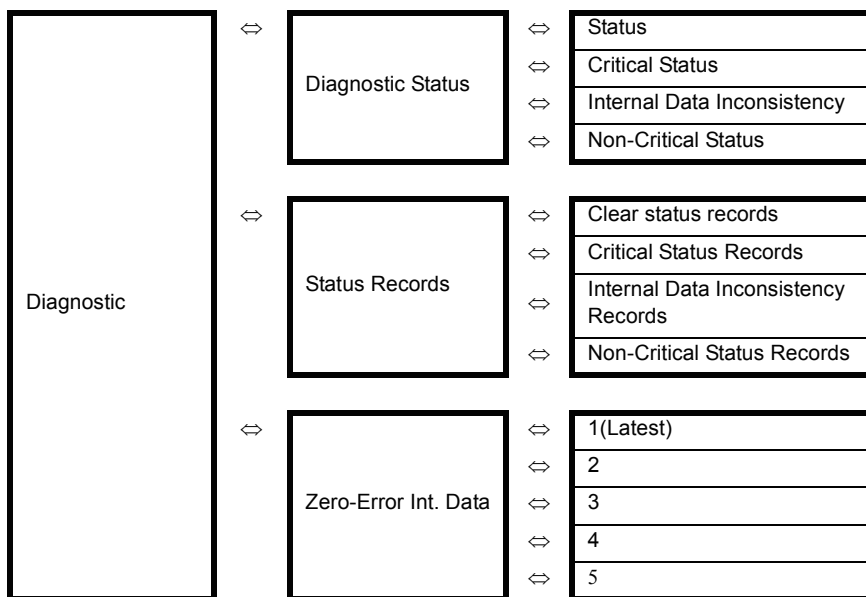


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2.4 : Diagnostic menu summary



Note

Chapter 3 : Start-up and Operation

This section identifies how to access typical data associated with the start-up and the operation of AT9000 with HART® communication option. It includes the procedure for running an analog output check

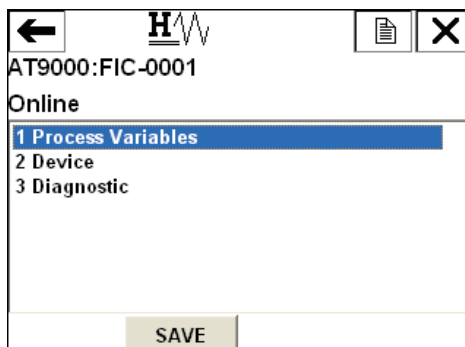
Index

	Items	HART parameters	Sections
Preparation and adjustment	Checking the list of set values	Review	1.6 : Checking basic data
	Checking and setting the TAG NO.	TAG	3.2.7: Device > Device information
	Checking the current input and output values	Pressure, Output	3.1.1: Process Variables > Process Variables
	Checking and changing the setting range	Lower Range Value Upper Range Value	3.2.1: Device > Basic Setup
	Checking and setting the linear and square-root outputs	Transfer Function	3.2.1: Device > Basic Setup
	Checking and setting the damping time constants	Damping	3.2.1: Device > Basic Setup
	Checking and setting the pressure unit	Pressure Unit	3.2.2: Device > Sensors
	Performing zero adjustment	Apply zero value	3.2.3: Device > Sensors
	Checking the output direction when an error occurs	Fail Sage Direction	3.2.4: Device > Output Condition
	Performing a loop test	Loop Test	3.2.4: Device > Output Condition
	Checking and changing the alarm settings	Alarm Settings	3.2.5: Device > Alarm
	Checking the alarm status	Alarm Status	3.2.5: Device > Alarm
	Checking and changing the settings of the contact outputs	Contact Output ON/OFF	3.2.5: Device > Alarm
	Setting the indicator	Display	3.2.6: Device > Display
Maintenance	Performing calibration	Correct Input	3.2.8: Device > Calibration
	Resetting the calibrated values to factory settings	Restore factory setting	3.2.8: Device > Calibration
	Checking the self-diagnostic messages	Diagnostic Status	3.3.1: Diagnostic > Diagnostic Status
	Checking the error records	Status Records	3.3.2: Diagnostic > Status Records

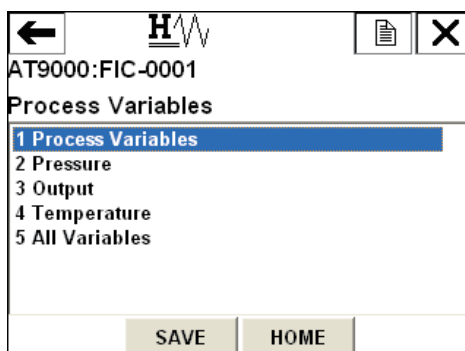
Please use this index to find the information you need.

3.1 : Process Variables

To check PV values, etc., enter the “Process Variables” menu.
Select “Process Variables” from the top menu.

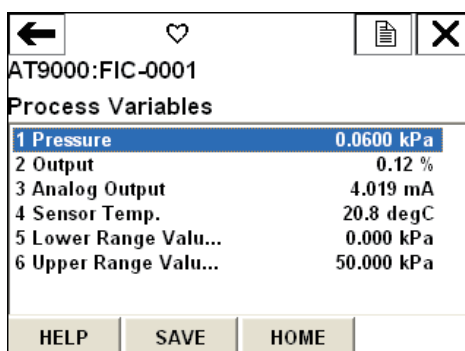


On the “Process Variables” menu, the settings for 5 items can be checked.



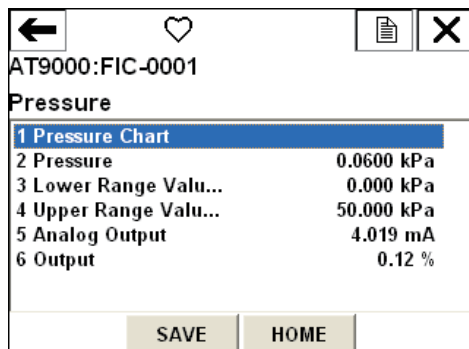
3.1.1: Process Variables > Process Variables

If “Process Variables” is selected from the “Process Variables” menu, the settings for 6 items can be checked.

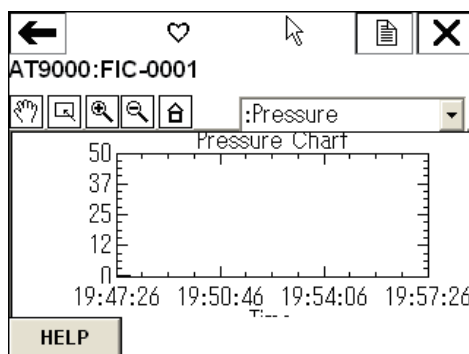


3.1.2: Process Variables > Pressure

If “Pressure” is selected from the “Pressure Variables” menu, the settings for 6 items can be checked.



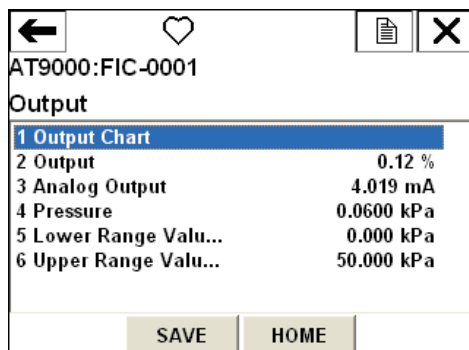
Selecting “Pressure Chart” will display the chart.



~Note This chart can be displayed in case 375 communicator is licensed for “Graphics”.

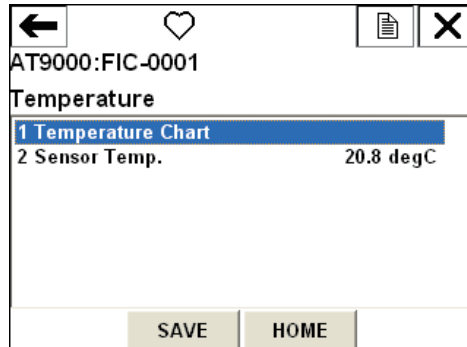
3.1.3: Process Variables > Output

If “Output” is selected from the “Process Variables” menu, the settings for 6 items can be checked.



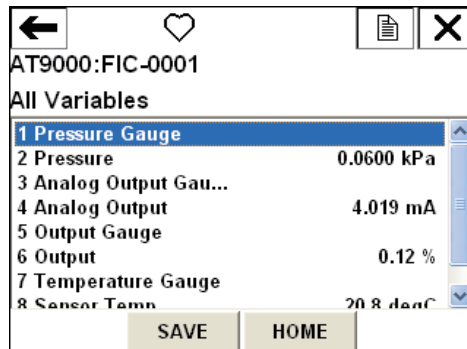
3.1.4: Process Variables > Temperature

If “Temperature” is selected from the “Process Variables” menu, the settings for 2 items can be checked.

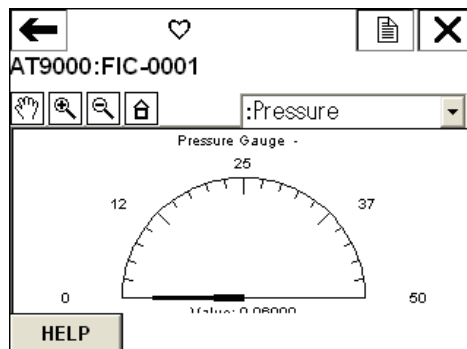


3.1.5: Process Variables > All Variables

If “All Variables” is selected from the “Process Variables” menu, the settings for 8 items can be checked. The eighth item is “Sensor Temperature”.



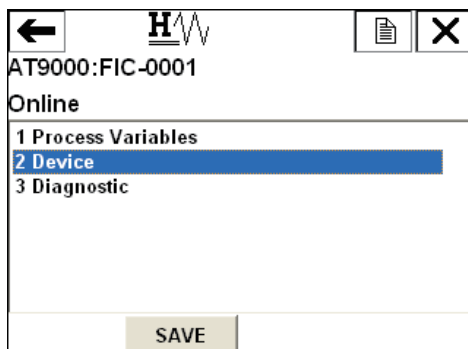
Selecting “Pressure Gauge”, “Analog Output Gauge”, “Output Gauge”, or “Temperature Gauge” will display the corresponding value (analog display).



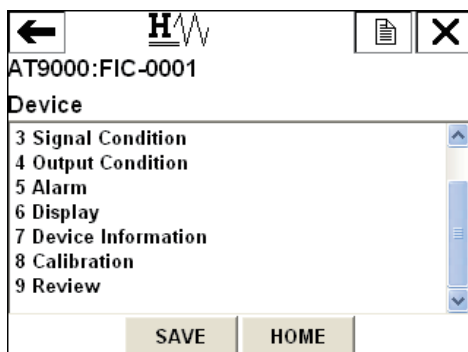
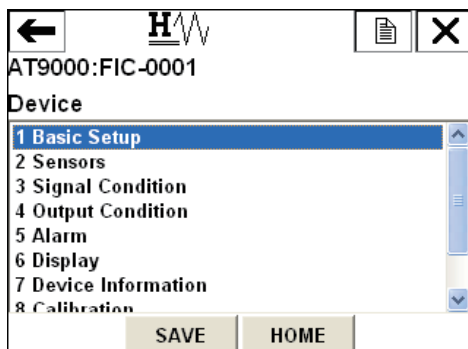
~Note This graph can be displayed in case 375 communicator is licensed for “Graphics”.

3.2 : Device

To set the device, enter the “Device” menu.
Select “Device” from the top menu.

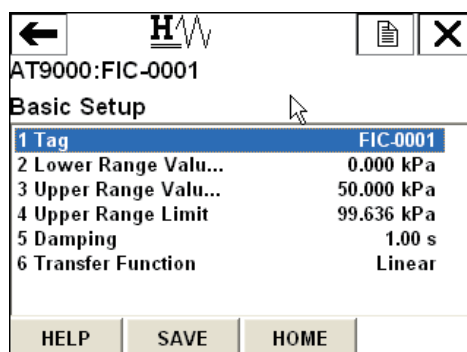


The “Device” menu consists of 9 menu items.

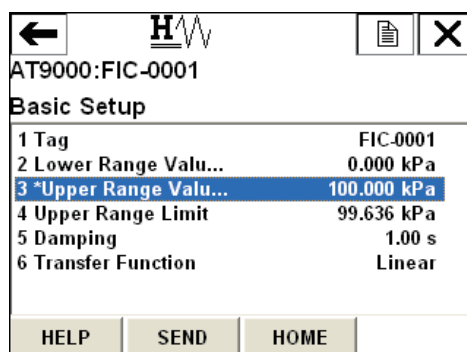


3.2.1: Device > Basic Setup

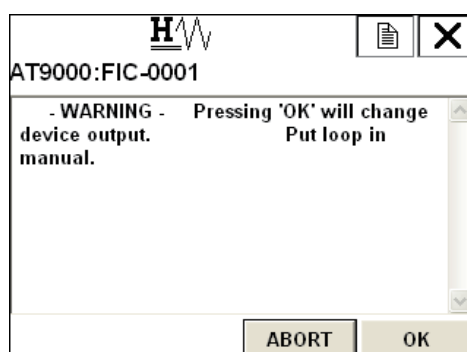
On the “Basic Setup” screen, the settings for 6 items can be checked and changed.



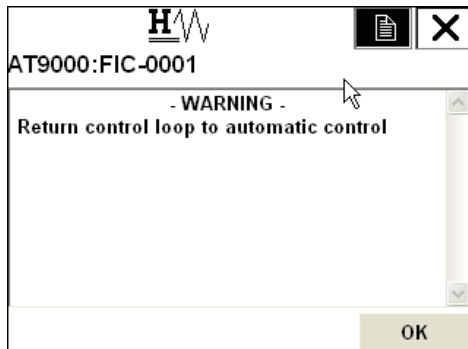
To change the settings, select an item you want to change. The changed item will be indicated by an asterisk (*). The “SEND” button will appear in the lower part of the screen. To transmit the setting information to the device and determine the change, tap this button.



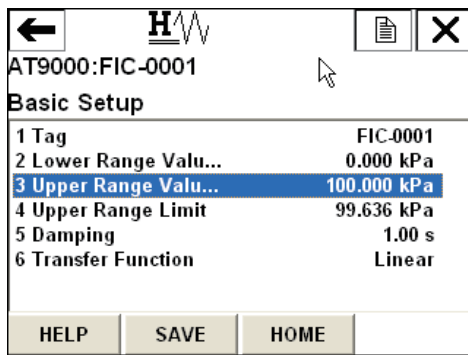
When you tap the “SEND” button, the following confirmation screen will appear. Tap “OK” if it is correct.



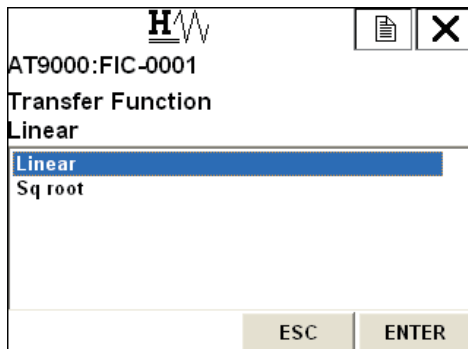
After the transmission is completed, the following WARNING screen will appear. Follow the instruction and then tap “OK”.



When the transmission is successfully completed, the asterisk will disappear.

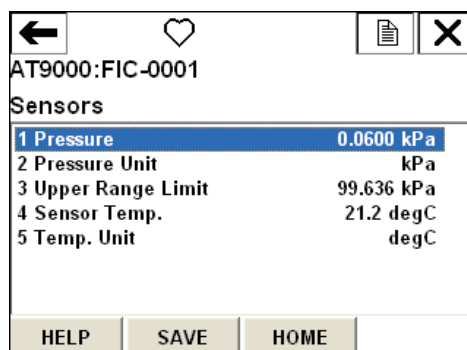


For “Transfer Function”, you may select “Linear” or “Square Root”.

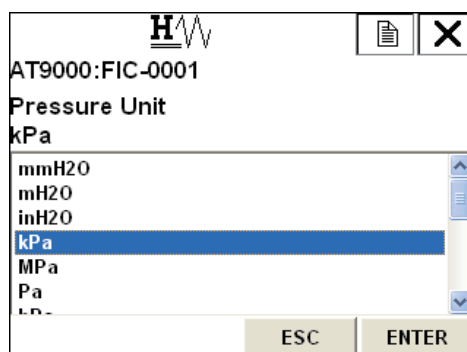


3.2.2: Device > Sensors

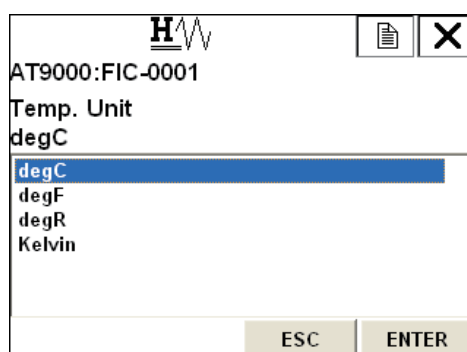
On the “Sensors” screen, the settings for 5 items can be checked, and the settings for “Pressure Unit” and “Temp. Unit” can be changed.



On the “Pressure Unit” screen, you may select the unit from 16 units [mmH2O, mH2O, inH2O, kPa, MPa, hPa, Pa, bar, mbar, mmHg, inHg, g/cm2, kg/cm2, atm, Torr, and psi].

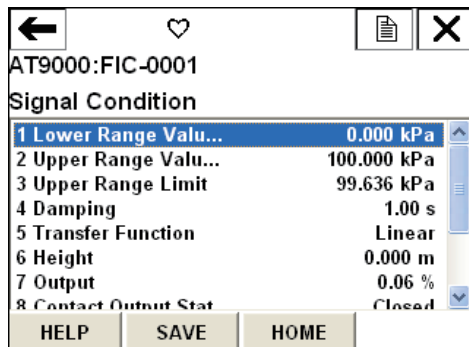


On the “Temp. Unit” screen, you may select the unit from 4 units [degC, degF, degR, and Kelvin].

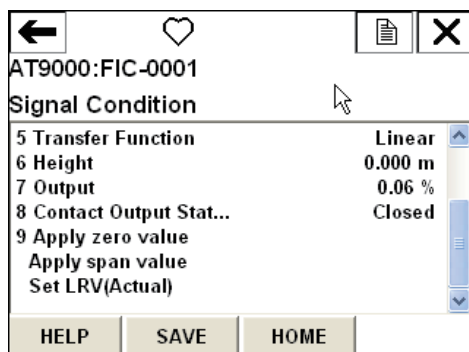


3.2.3: Device > Sensors

On the “Signal Condition” screen, the settings for 11 items can be checked or changed. The sixth item “Height” will appear only when a remote-sealed type transmitter is used.

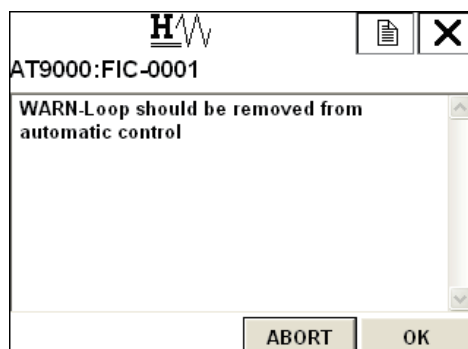


On the “Basic Setup” screen, the settings for 6 items can be checked and changed.

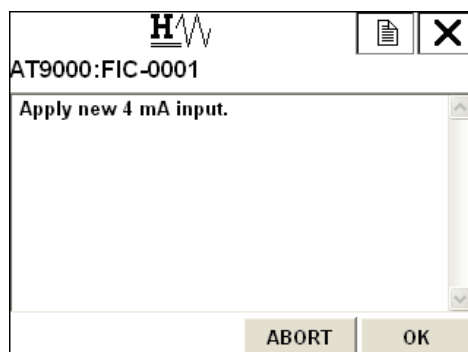


Device > Signal Condition > Apply zero value

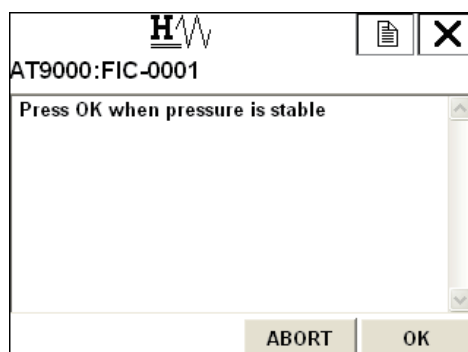
The “Apply zero value” function is used to set the current input value to LRV. When you tap “Apply zero value”, the following WARNING message will appear. Tap “OK” if you want to continue.



Key in the pressure value equivalent to 4 mA and then tap “OK”.



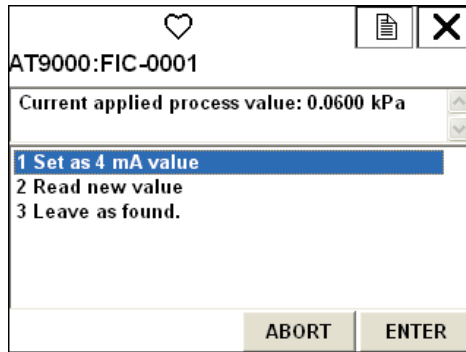
When the pressure becomes stable, tap “OK”.



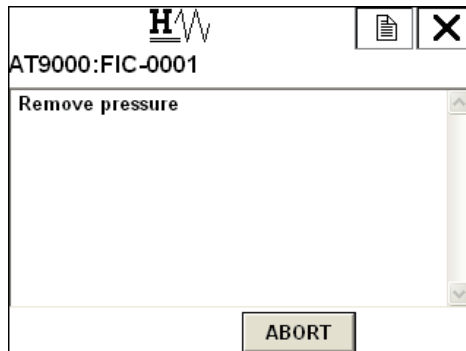
The current input value will be displayed. If it is correct, select “Set as 4 mA value” and then tap “ENTER”.

If you want to change the input value, change the value. Then, select “Read new value” and tap “ENTER” to check the new input value.

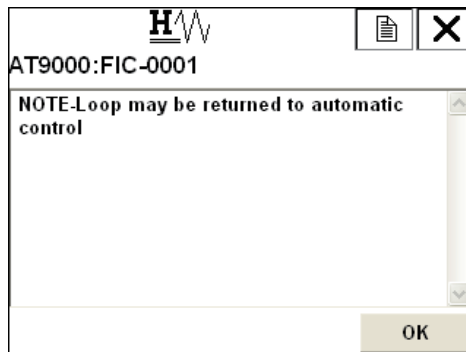
To exit, select “Leave as found” and then tap “ENTER”.



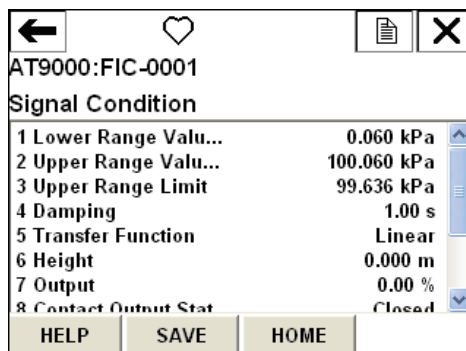
Select “Set as 4 mA value” and then tap “ENTER”. The following message will be displayed for a few seconds.



After that, the following NOTE will appear. After confirmation, tap “OK”.



“Lower Range Value (0%)” will be the current input value, and “Output” will be 0%.

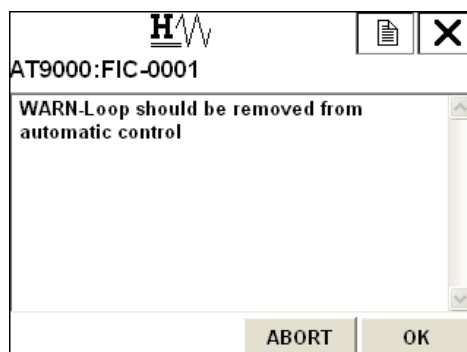


Device > Signal Condition > Apply span value

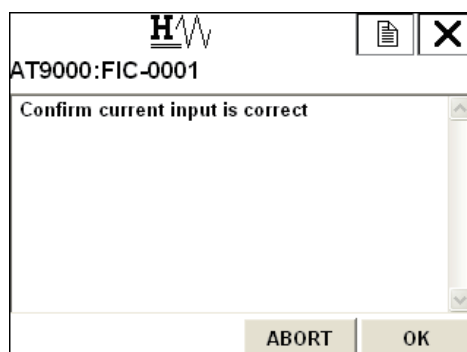
The “Apply span value” function is used to set the current input value to URV. The same procedure as the “Apply zero value” function applies, except that the input pressure is set to a value equivalent to 20 mA.

Device > Signal Condition > Set LRV (Actual)

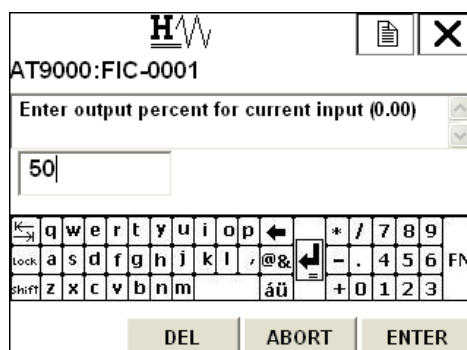
The “Set LRV (Actual)” function is used to set LRV so that the current output value will be the desired value without changing the “span”. Tapping “Set LRV (Actual)” will display the following WARNING message. After confirmation, tap “OK”.



The following confirmation message will appear. After confirmation, tap “OK”.



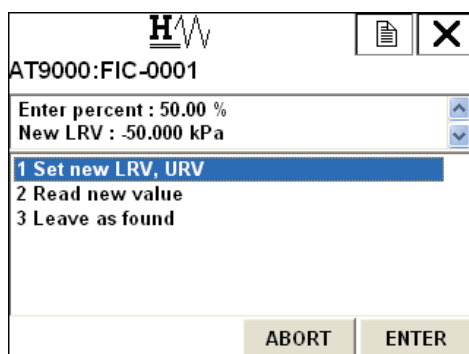
Key in the desired Output value and then tap “ENTER”.



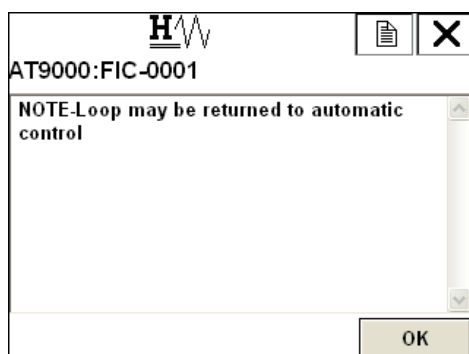
The confirmation screen will appear. Tap “ENTER” if it is correct.

If you want to change the input value and recalculate “New LRV”, select “Read new value” and then tap “Enter”.

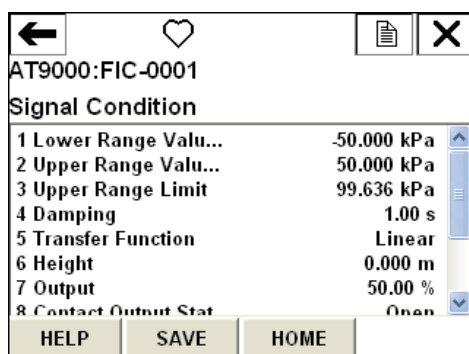
To exit, select “Leave as found” and then tap “ENTER”.



The following NOTE will appear. After confirmation, tap “OK”.

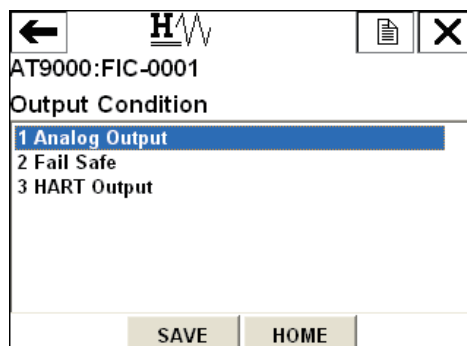


It can be confirmed that the settings for “Lower Range Value (0%)” and “Upper Range Value (100%)” have changed and that “Output” is the designated value.



3.2.4: Device > Output Condition

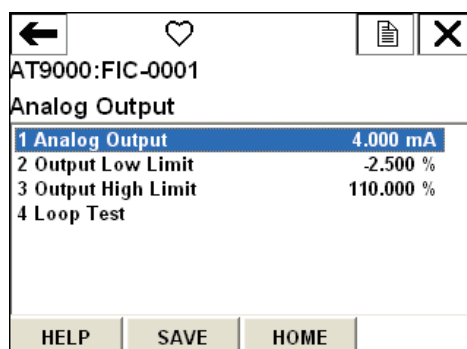
On the “Output Condition” screen, the setting for “Analog Output” can be checked and changed, the setting for “Fail Safe” can be checked, and the setting for “HART Output” can be checked and changed..



Device > Output Condition > Analog Output

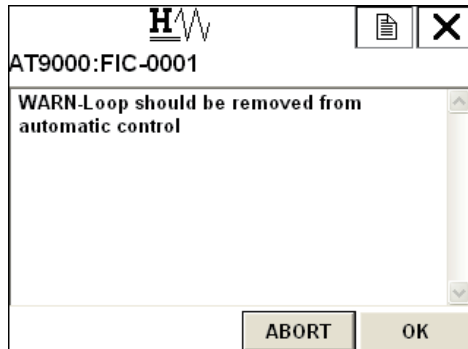
The “Analog Output” menu consists of 4 menu items.

The “Analog Output” value can be checked, the output limit can be set, and the constant current output can be set.



Device > Output Condition > Analog Output > Loop Test

Tapping “Loop Test” will display the following WARNING screen. After confirmation, tap “OK”.

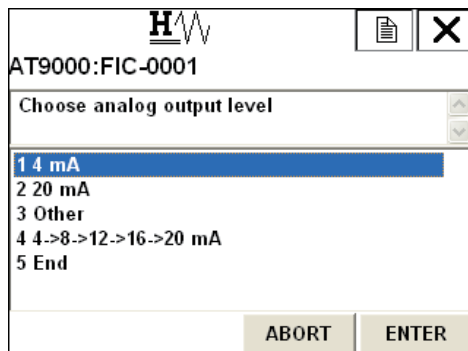


Select the desired output value and then tap “ENTER”.

To manually key in a value, select “Other”.

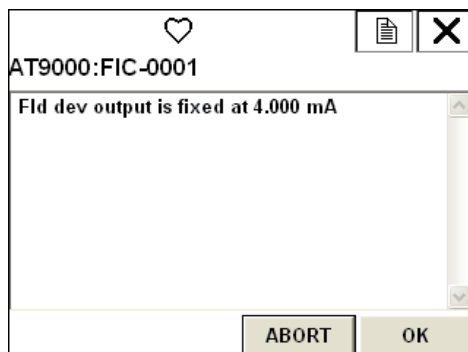
If “4 -> 8-> 12 -> 20 mA” is selected, the value will change in this order.

To exit this screen, select “END” and tap “ENTER”. At this time, constant-current source mode will be disabled.

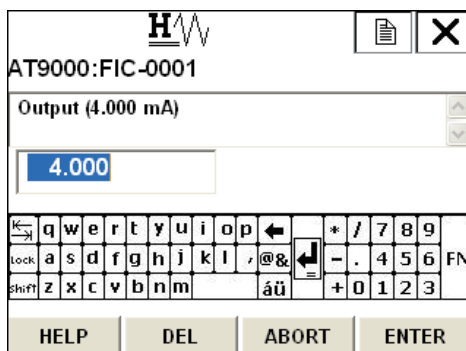


If “4 mA” is selected and “ENTER” is tapped, 4 mA constant-current source mode is entered. The following screen will appear.

To return to the previous screen, tap “OK”.

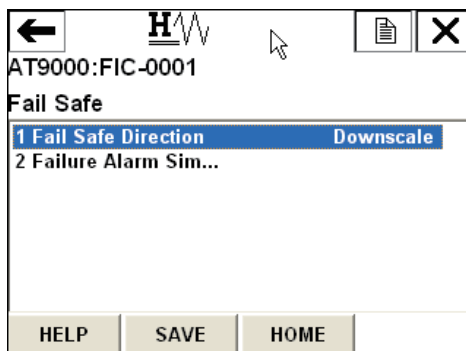


If “Other” is selected and “ENTER” is tapped, the following entry screen will appear. Key in the desired output value and tap “ENTER”.



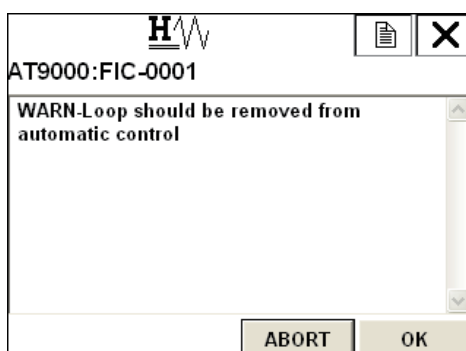
Device > Output Condition > Fail Safe

The setting for “Fail Safe Direction” can be checked and “Failure Alarm Simulation” can be executed.

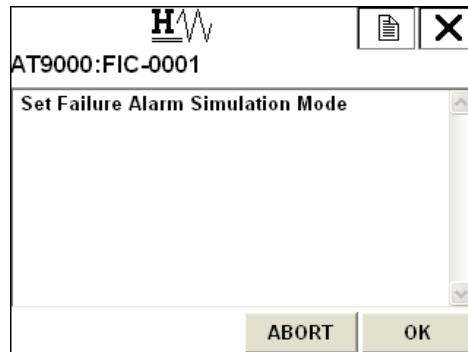


The “Fail Safe Simulation” function is used to simulate “Fail Safe” operation.

Tapping “Fail Safe Simulation” will display the following WARNING screen. After confirmation, tap “OK”.



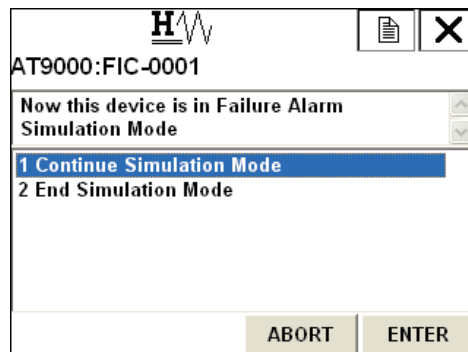
The following screen will appear. Tapping “OK” will execute simulated “Fail Safe” operation.



During “Fail Safe Simulation”, the following screen is shown.

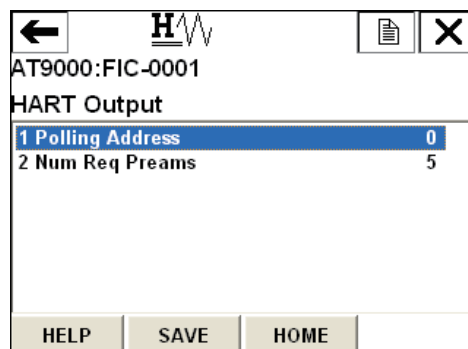
Wait about 10 minutes, and “Fail Safe Simulation Mode” will be automatically disabled. To enter “Fail Safe Simulation Mode” again, select “Continue Simulation Mode”, and then tap “ENTER”.

To exit, select “End Simulation Mode”, and then tap “ENTER”.



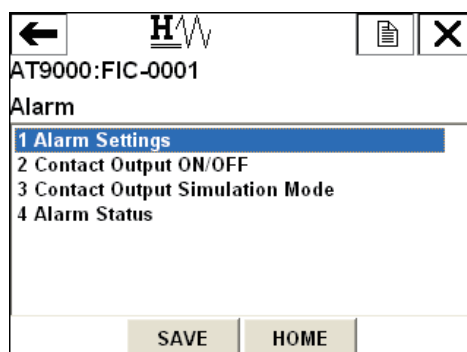
Device > Output Condition > HART Output

On the “HART Output” screen, “Polling Address” can be set and the setting for “Number of Request Preambles” can be checked.



3.2.5: Device > Alarm

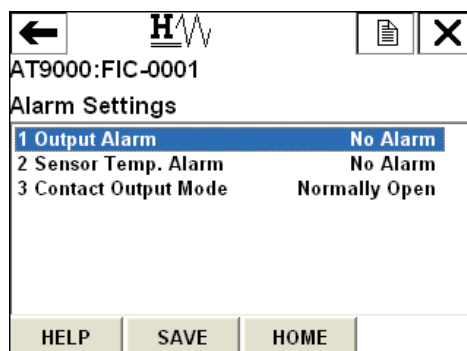
The “Alarm” menu consists of 4 menu items.



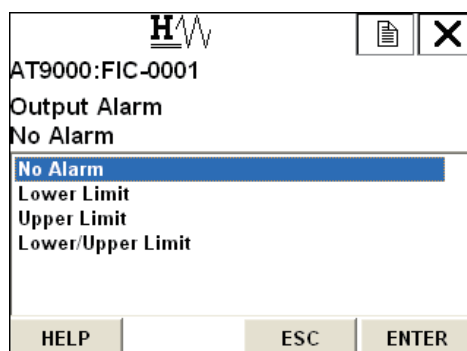
Device > Alarm > Alarm Settings

On the “Alarm Settings” menu, “Output Alarm”, “Sensor Temperature Alarm”, and “Contact Output Mode” can be set.

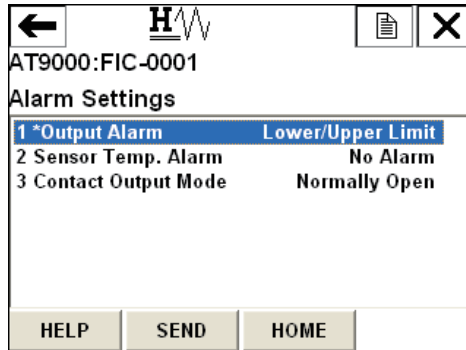
To enable “Output Alarm”, tap “Output Alarm”.



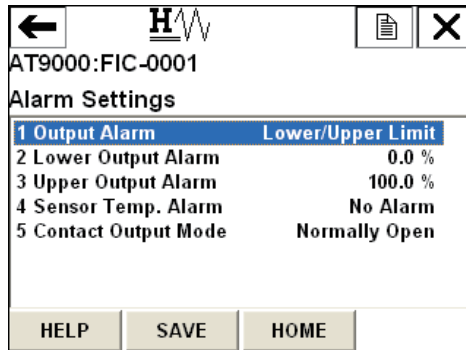
Tapping “Output Alarm” will display the following screen. Select an item you want to set. If you want to set “Lower Limit” only, select “Lower Limit” and tap “ENTER”. If you want to set “Upper Limit” only, select “Upper Limit” and tap “ENTER”. If you want to set both “Lower Limit” and “Upper Limit”, select “Lower/Upper Limit” and tap “ENTER”.



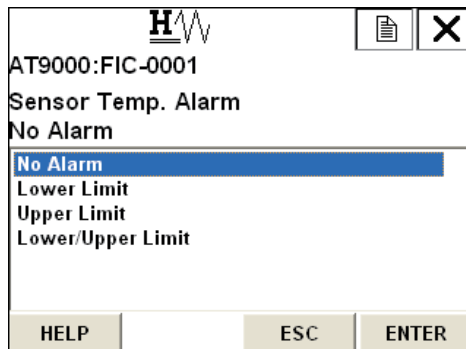
After changing the setting, tap “SEND” to transmit the setting information. After that, the limit value can be set.



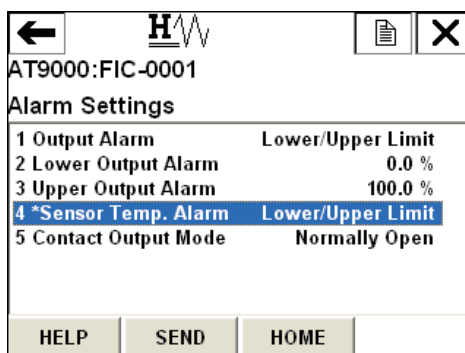
The alarm values that can be changed, “Lower Output Alarm” or/and “Upper Output Alarm”, will be displayed. If you want to change any of these values, tap the item you want to change, change the setting, and then transmit the setting information.



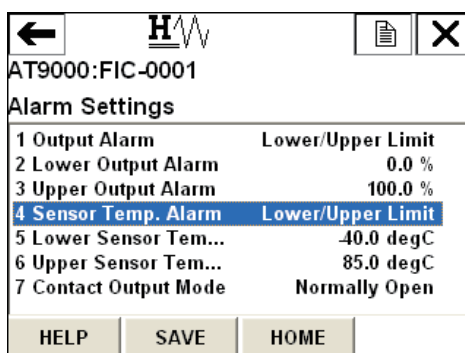
The settings for “Sensor Temperature Alarm” can be changed in the same manner.



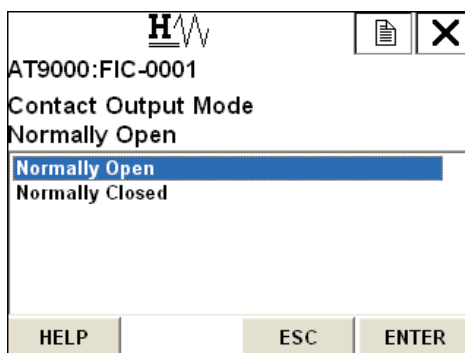
After the setting information is transmitted, values that can be set will be indicated...



After the setting information is transmitted, the following screen will appear.

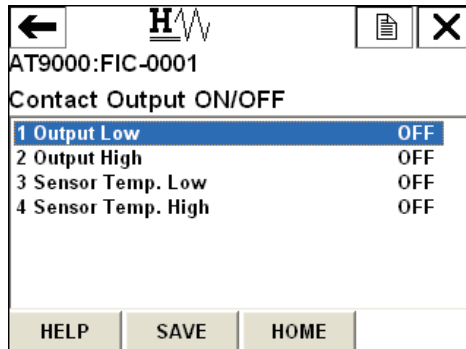


Tapping “Contact Output Mode” selects “Normally Open” or “Normally Close”.



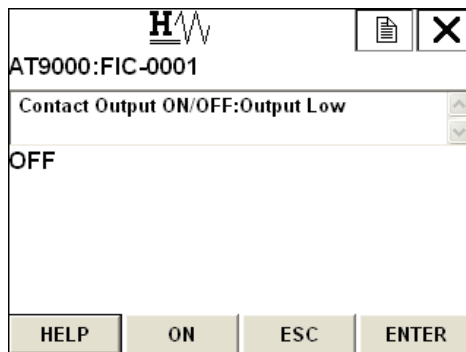
Device > Alarm > Contact Output ON/OFF

On the “Contact Output ON/OFF” screen, the alarm for “Contact Output” can be selected...

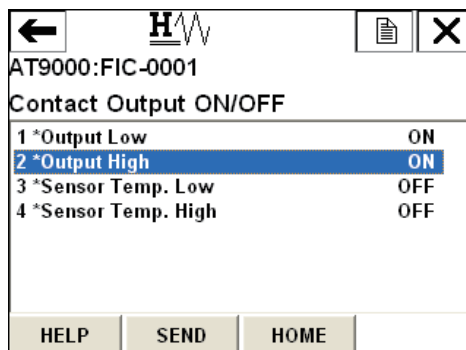


Tapping the item you want to change will display the following screen. To change the setting to ON, tap the “ON” button located at the lower part of the screen, and then tap “ENTER”.

To return to the previous screen without changing the setting, tap the “ESC” button.

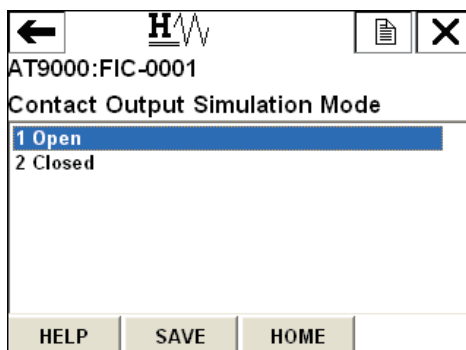


To transmit the setting information, tap “SEND” on this screen.

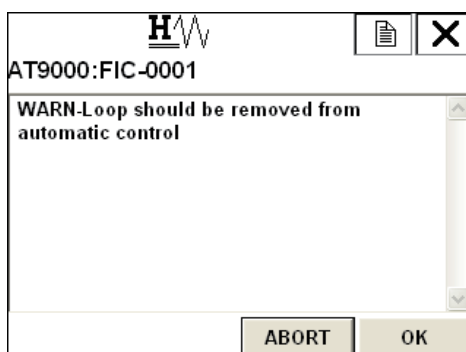


Device > Alarm > Contact Output Simulation Mode

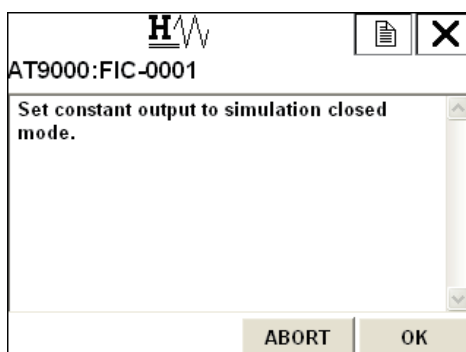
On the “Contact Output Simulation Mode” screen, “Contact Output” can be set to “Open” or “Close” in a simulated (forcible) manner.



Tapping “Open” or “Close” will display the following WARNING screen. After confirmation, tap “OK”.

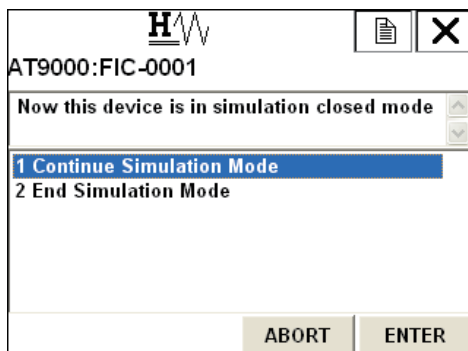


The following confirmation screen will appear. Tap “OK” if you want to execute the simulation.



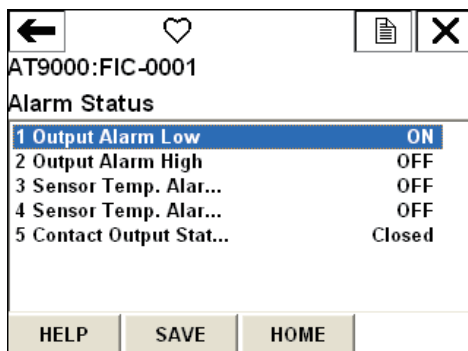
During simulation mode, the following screen will appear. If the screen is left unchanged, simulation mode will be automatically disabled after about 10 minutes. To enter simulation mode again, select “Continue Simulation Mode”, and then tap “ENTER”.

To exit simulation mode, select “End Simulation Mode”, and then tap “ENTER”.



Device > Alarm > Alarm Status

On the “Alarm Status” screen, the status of the Alarm settings and “Contact Output” can be checked.

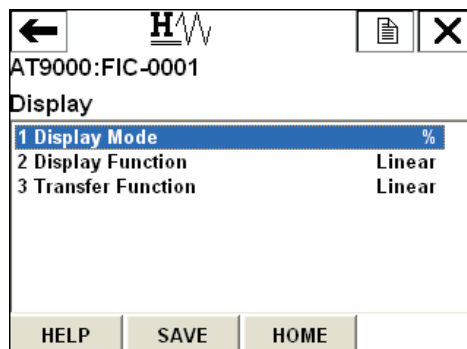


3.2.6: Device > Display

The settings for “Display” can be checked and changed.

The menu items displayed differ depending on the setting of “Display Mode”.

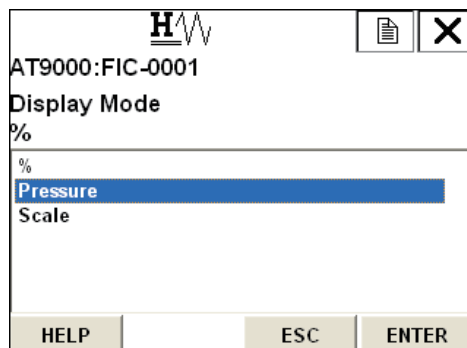
When “Display Mode” is “%”.



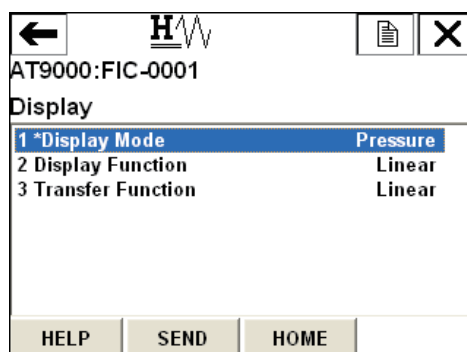
If “Display Function” is set to “Square Root”, the square root of the output linear is extracted. The “Disp $\sqrt{\quad}$ ” segment will be displayed on the LCD.

Tapping “Display Mode” will display the following setting screen.

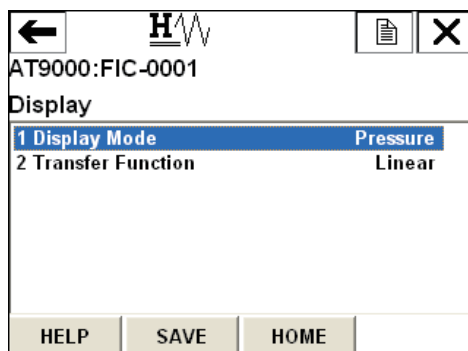
Select the item you want to set and tap “ENTER”.



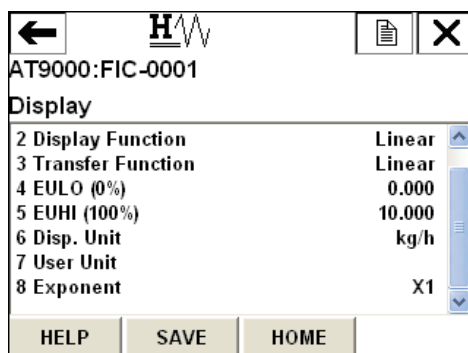
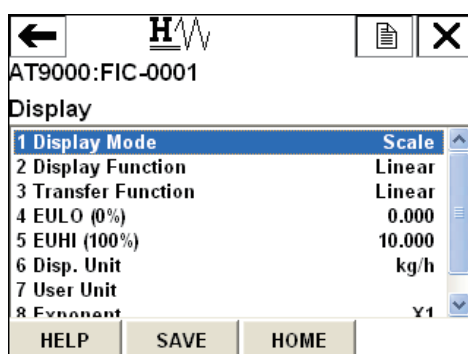
The changed item will be indicated by an asterisk (*). Tap “SEND” to transmit the setting information.



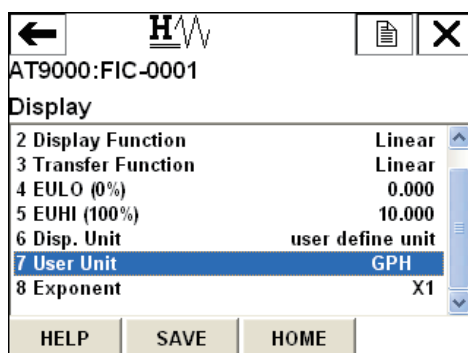
When “Display Mode” is set in “Pressure”, only “Transfer Function” can be set.



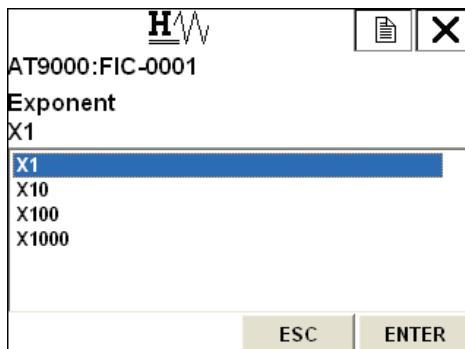
When “Display Mode” is set in “Scale”, more items can be set.



To use a unit not registered in “Disp. Unit” and optionally set in “User Unit”, set “Disp. Unit” to “user define unit”.

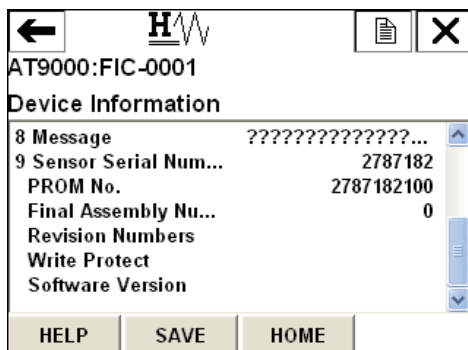
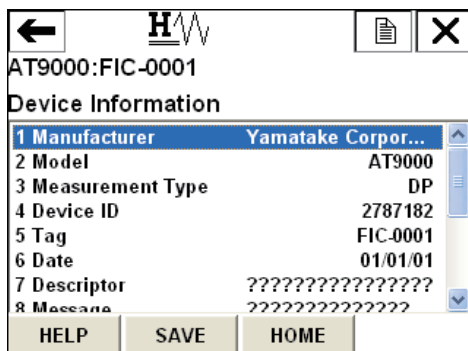


“X10”, “X100”, or “X1000” can be displayed by setting “Exponent”. “X1”, if selected, is not displayed.

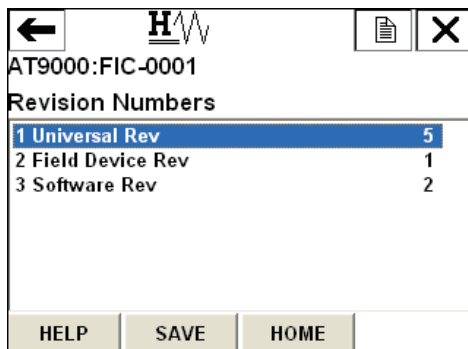


3.2.7: Device > Device information

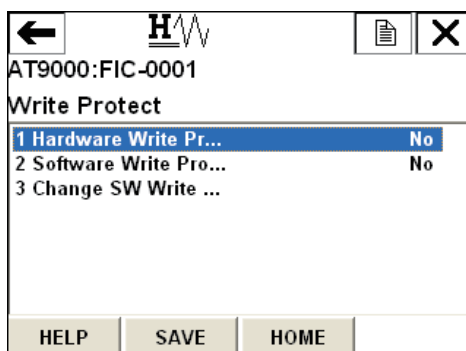
On the “Device Information” screen, the following items can be checked and changed.



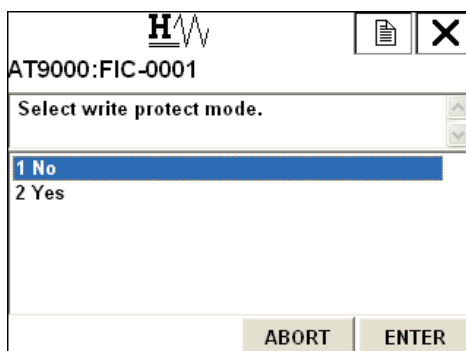
On the “Revision Number” screen, the following items can be checked.



On the “Write Protect” screen, the status of “Hardware Write Protect” and “Software Write Protect” can be checked, and the setting for “Software Write Protect” can be changed.

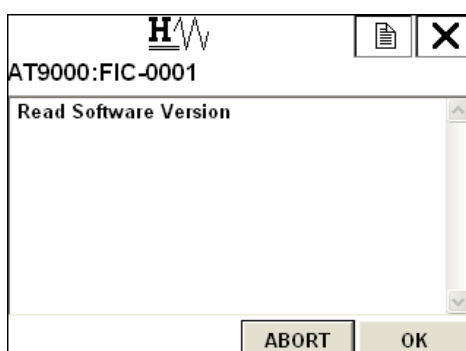


On the “Change SW Write Protect” screen, “Yes” or “No” can be selected.

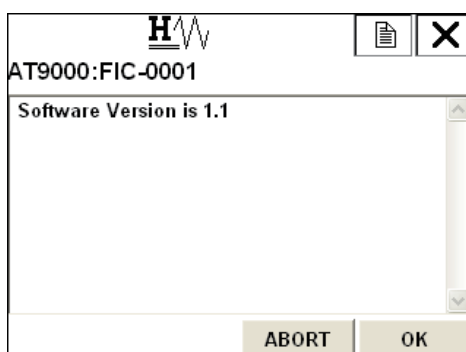


On the “Software Version” screen, the Software Version can be checked.

Tapping “Software Version” will display the following screen. Tap “OK” to execute it.

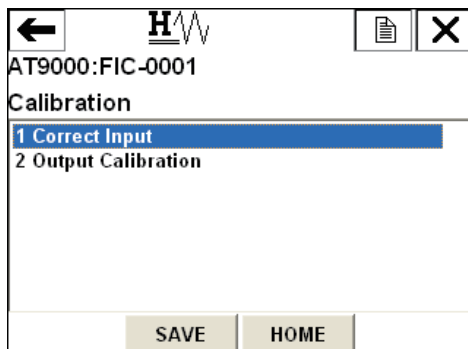


The Software Version will appear. To return the previous screen, tap “OK”.



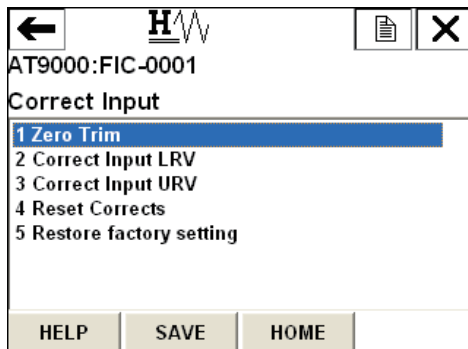
3.2.8: Device > Calibration

The “Calibration” menu consists of 2 menu items, “Correct Input” and “Output Calibration”.



Device > Calibration > Correct Input

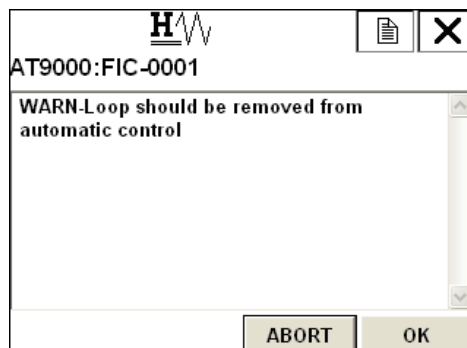
The “Correct Input” menu consists of 5 menu items.



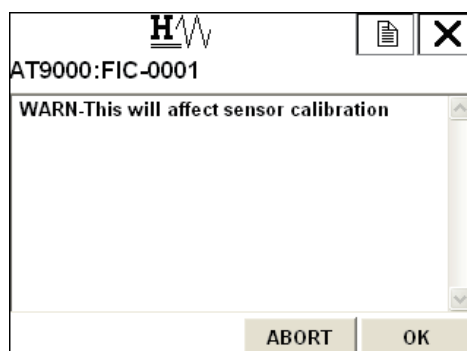
Device > Calibration > Correct Input > Zero Trim

The “Zero Trim” function is used to calibrate zero point.

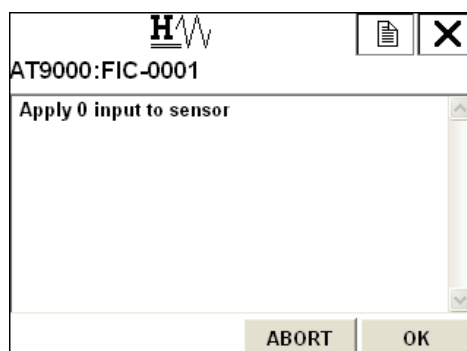
Tapping “Zero Trim” will display the following WARNING screen. After confirming the setting, tap “OK”.



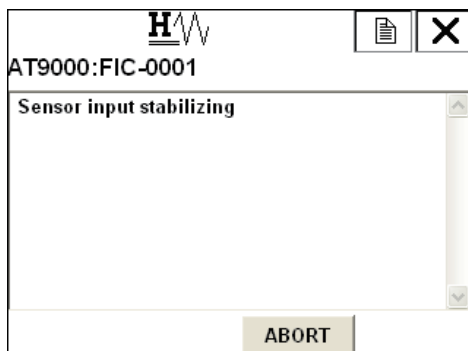
The following WARNING screen will appear. Tap “OK” if there is no problem.



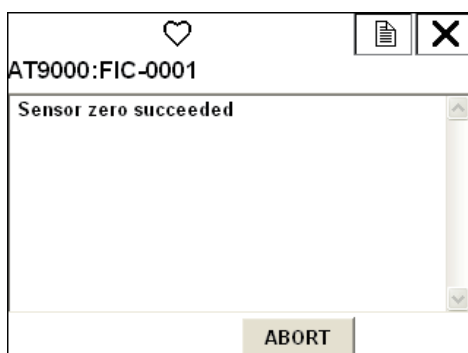
Key in “0” for the sensor, and then tap “OK”.



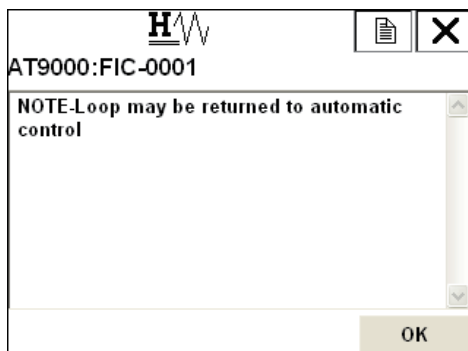
After the following screen is displayed for a while, the next screen will appear.



After the following screen is displayed for a while, the next screen will appear.



The “NOTE” screen will appear. After confirmation, tap “OK”. The procedure for “Zero Trim” is completed.



Device > Calibration > Correct Input > Correct Input LRV

The “Correct Input LRV” function is used to perform calibration by entering the same value as LRV. The basic procedure is the same as that for “Zero Trim”.

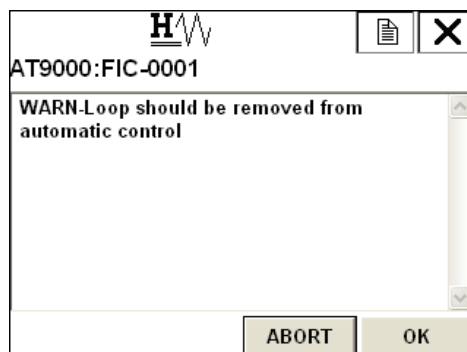
Device > Calibration > Correct Input > Correct Input URV

The “Correct Input URV” function is used to perform calibration by entering the same value as URV. The basic procedure is the same as that for “Zero Trim”.

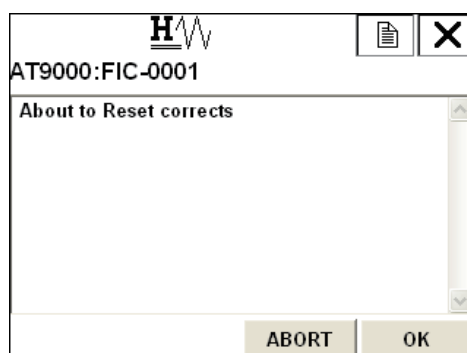
Device > Calibration > Correct Input > Correct Resets

The “Reset Corrects” function is used to reset the calibrated values to the default values.

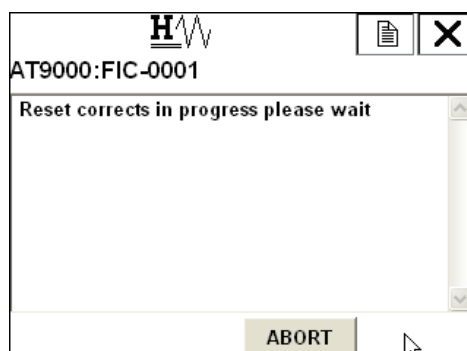
Tapping “Reset Corrects” will display the following WARNING screen. After confirmation, tap “OK”.



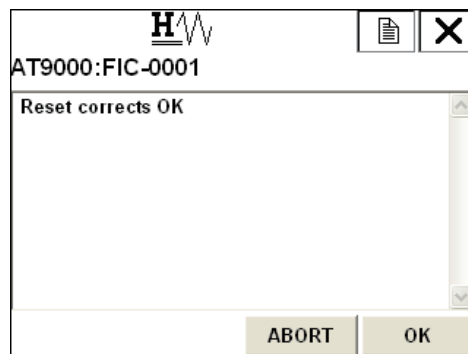
Tap “OK” to execute “Reset Corrects”.



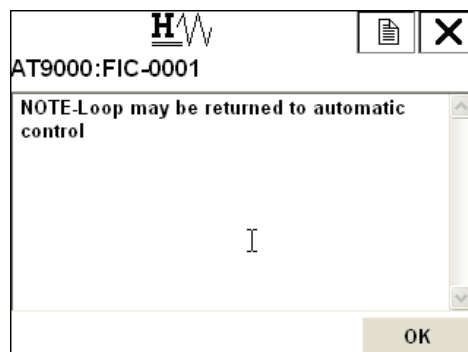
After the following screen is displayed for a while, the next screen will appear.



“Reset Corrects” is completed. Tap “OK”.



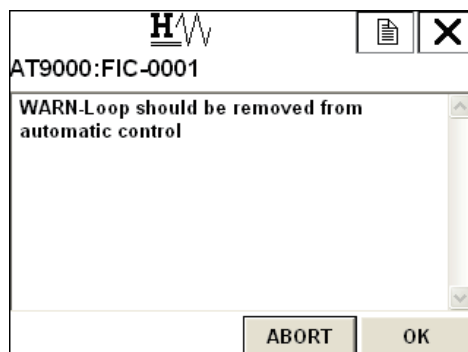
The following NOTE screen will appear. After confirmation, tap “OK”. The procedure for “Reset Corrects” is completed.



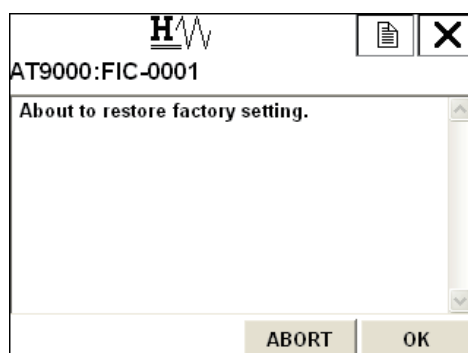
Device > Calibration > Correct Input > Reset factory setting

The “Restore factory setting” function is used to reset the calibrated values to the factory settings.

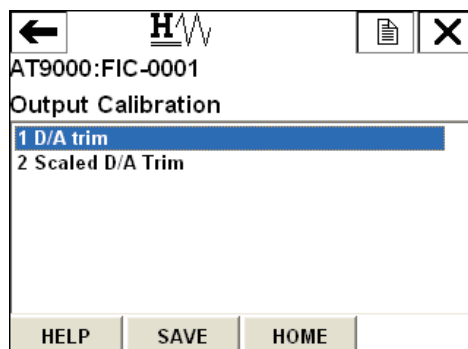
Tapping “Restore factory setting” will display the following WARNING screen. After confirmation, tap “OK”.



Tap “OK” to execute “Restore factory setting”.

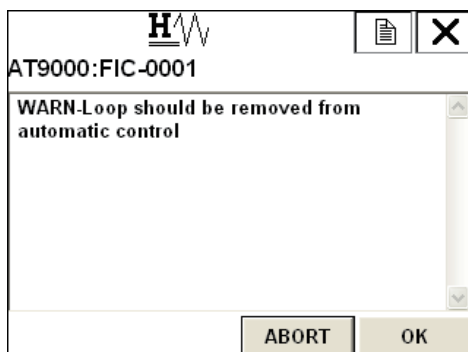
**Device > Calibration > Output Calibration**

The “Output Calibration” menu consists of 2 menu items.

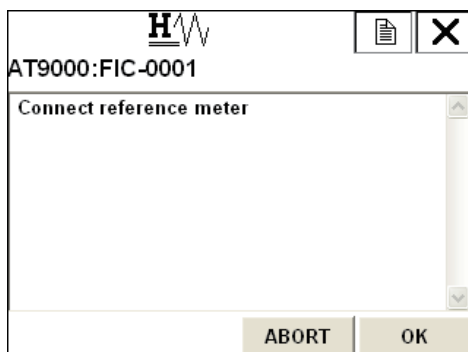


Device > Calibration > Output Calibration > D/A trim

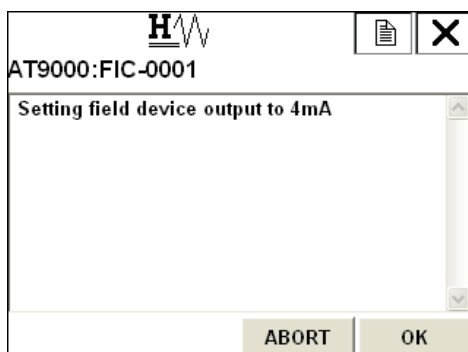
The “D/A trim” function is used to calibrate 4 mA and 20 mA outputs. Tapping “D/A trim” will display the following WARNING screen. After confirmation, tap “OK”.



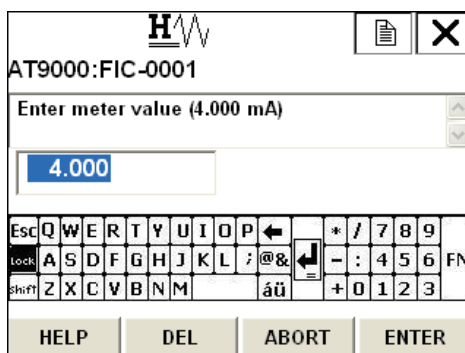
Connect the reference meter and then tap “OK”.



The device is set to 4 mA output. Tap “OK” if there is no problem.

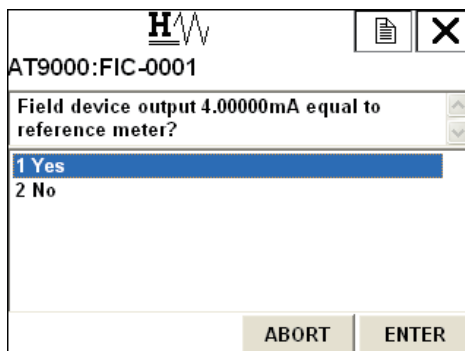


Key in the value indicated by the reference meter and then tap “ENTER”.

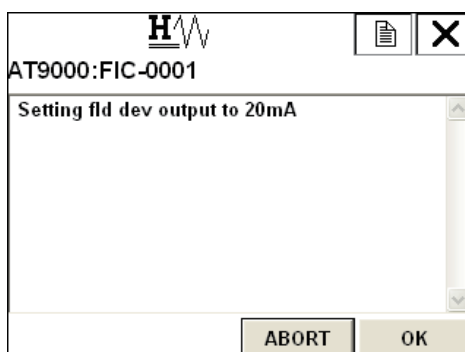


When the value indicated by the reference meter becomes 4 mA, select “Yes” and then tap “ENTER” to complete the procedure.

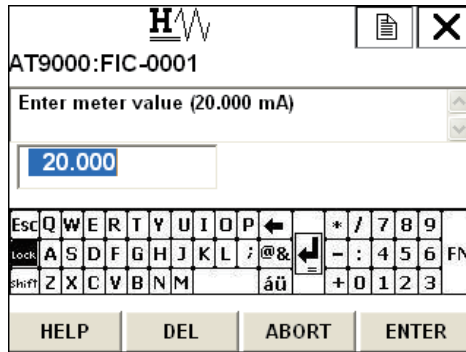
If the value does not become 4 mA, select “No” and then tap “ENTER” to repeat the procedure.



Next, perform adjustment for 20 mA. Tap “OK” if there is no problem.

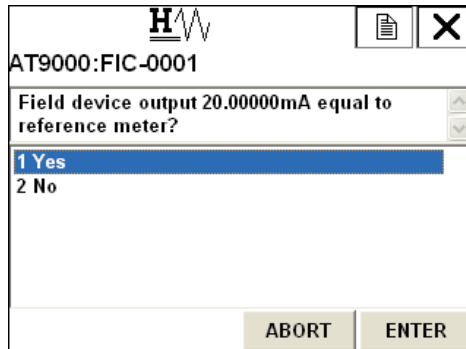


Key in the value indicated by the reference meter and then tap “ENTER”.

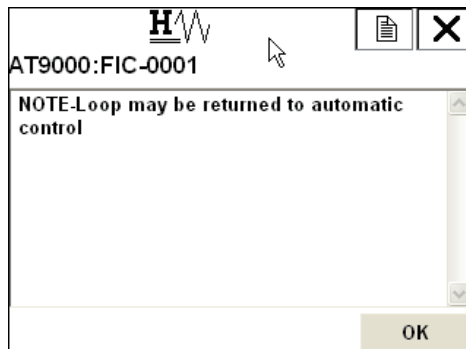


When the value indicated by the reference meter becomes 20 mA, select “Yes” and then tap “ENTER” to complete the procedure.

If the value does not become 20 mA, select “No” and then tap “ENTER” to repeat the procedure.



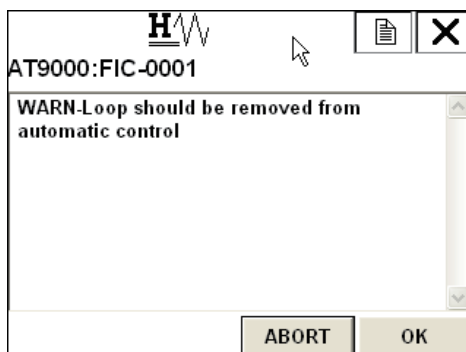
When all the procedures are completed, the following NOTE screen will appear. After confirmation, tap “OK”.



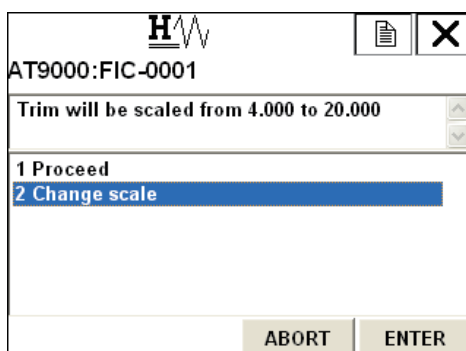
Device > Calibration > Output Calibration > Scaled D/A Trim

The “Scaled D/A Trim” function is used to calibrate 4 mA and 20 mA outputs using other units such as 1 V and 5 V.

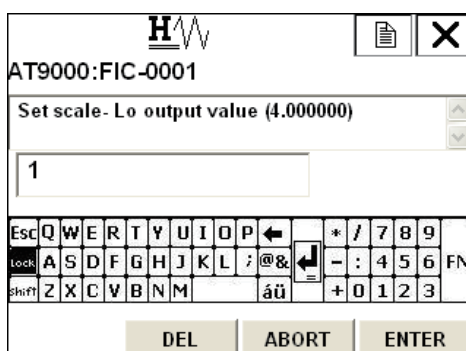
Tapping “Scaled D/A Trim” will display the following WARNING screen. After confirmation, tap “OK”.



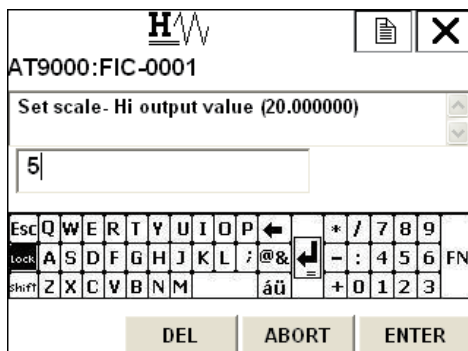
To perform adjustment with 1_5 V, select “Change scale” and then tap “ENTER” to change the scale.



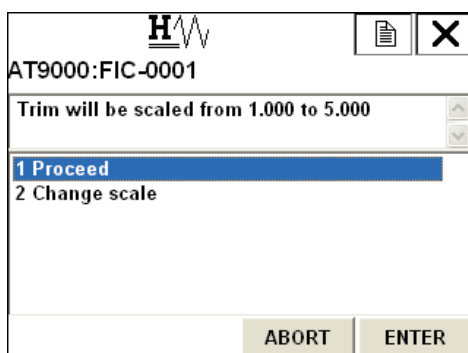
Key in “Lo output value” and then tap “ENTER”.



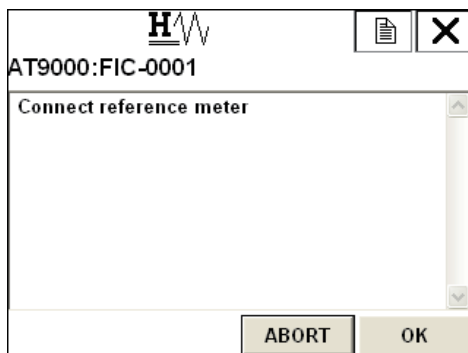
Next, key in “Hi output value” and then tap “ENTER”.



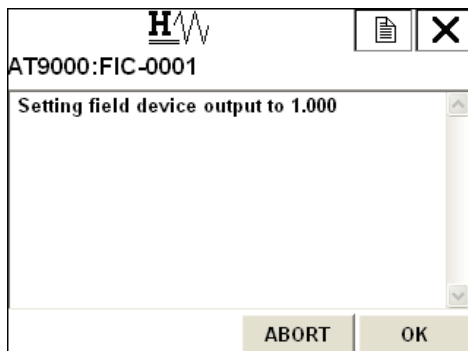
Check that the scale has changed. Then, select “Proceed” and tap “ENTER”.



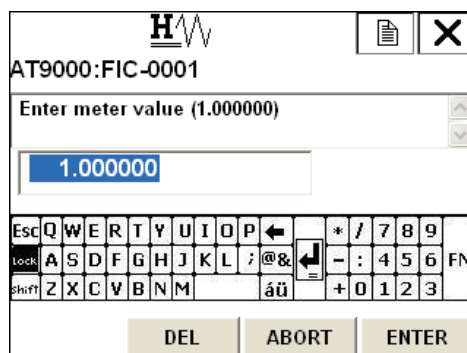
Connect the reference meter and then tap “OK”.



Set the reference meter to 4 mA output. Tap “OK” if there is no problem.

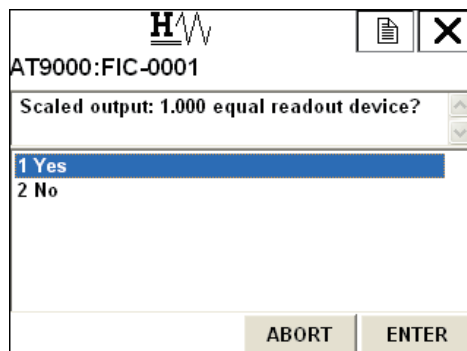


Key in the value indicated by the reference meter and then tap “ENTER”.

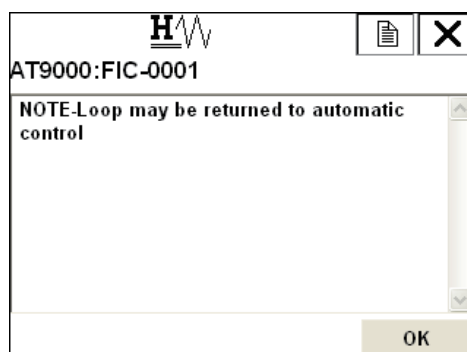


When the value indicated by the reference meter becomes the set value, select “Yes” and then tap “ENTER” to complete the procedure.

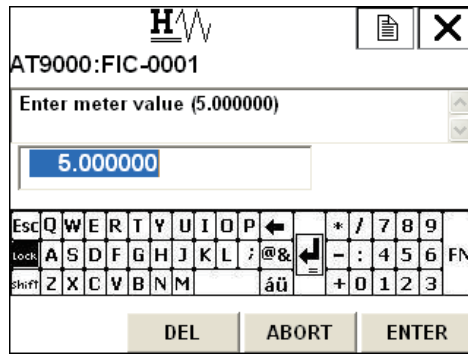
If the value does not become the set value, select “No” and then tap “ENTER” to repeat the procedure.



Next, perform adjustment for 20 mA. Tap “OK” if there is no problem.

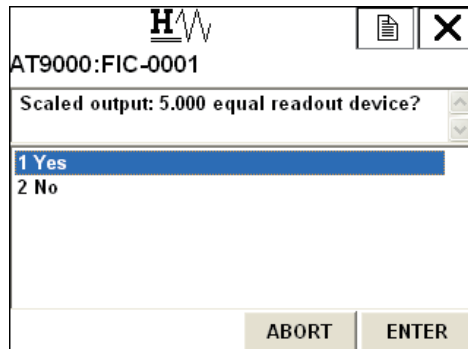


Key in the value indicated by the reference meter and then tap “ENTER”.

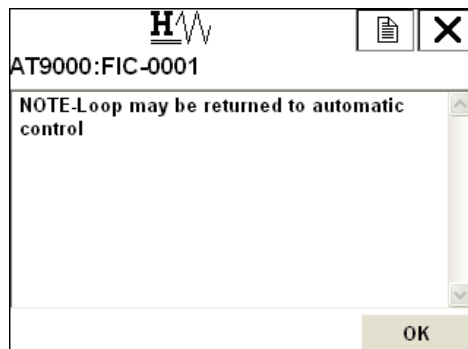


When the value indicated by the reference meter becomes the set value, select “Yes” and then tap “ENTER” to complete the procedure.

If the value does not become the set value, select “No” and then tap “ENTER” to repeat the procedure.

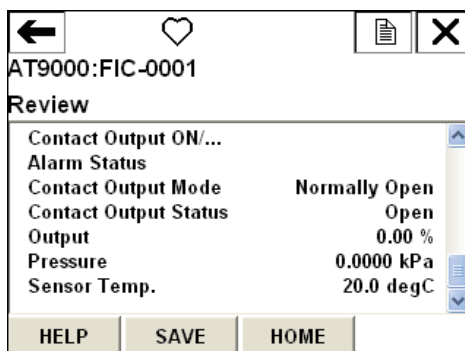
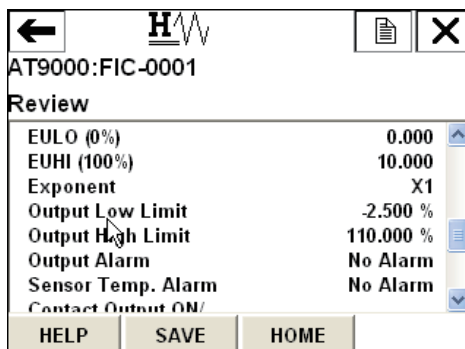
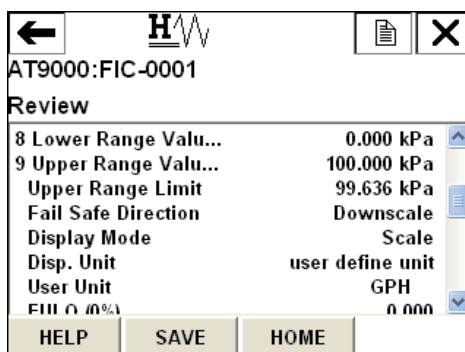
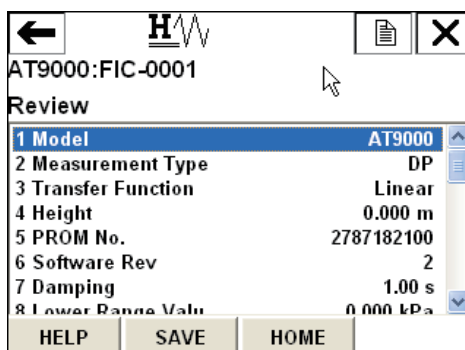


After constant-current source mode is disabled, the following NOTE screen will appear. After confirmation, tap “OK”. All the procedures are completed.



3.2.9: Device > Review

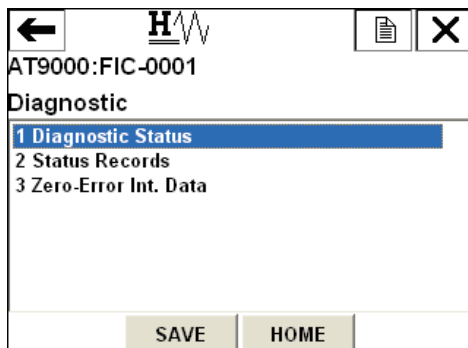
On the “Review” screen, the major settings can be displayed. These settings cannot be changed on this screen.



3.3 : Diagnostic

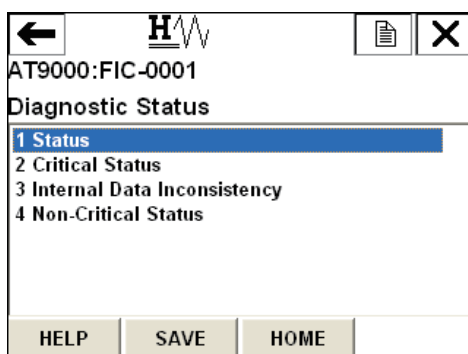
On the “Diagnostic” screen, the self-diagnostic results are displayed.

“Diagnostic” consists of 3 menu items.



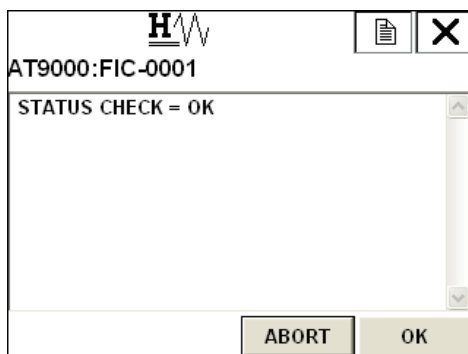
3.3.1: Diagnostic > Diagnostic Status

On the “Diagnostic Status” screen, the current diagnostic results of the device can be checked.



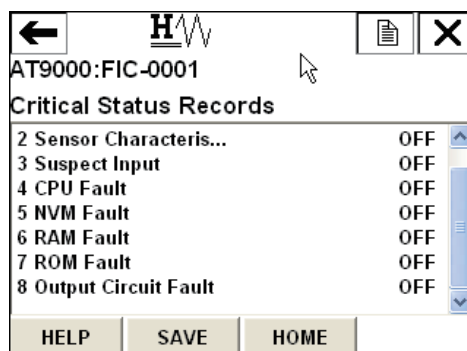
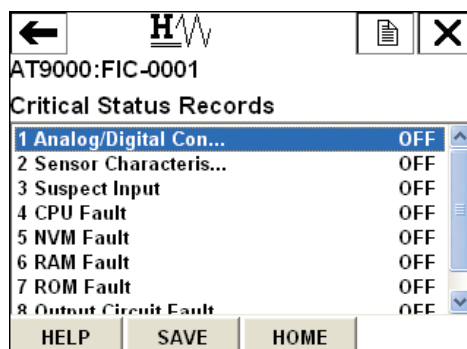
Diagnostic > Diagnostic Status > Status

On the “Status” screen, the diagnostic results currently generated are displayed.



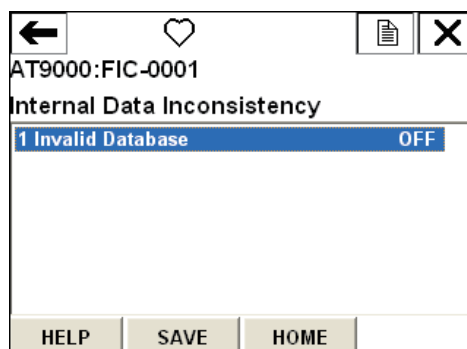
Diagnostic > Diagnostic Status > Critical Status

On the “Critical Status” screen, all the “Critical Status” items are displayed. If such status occurs, “ON” is displayed. If not, “OFF” is displayed.



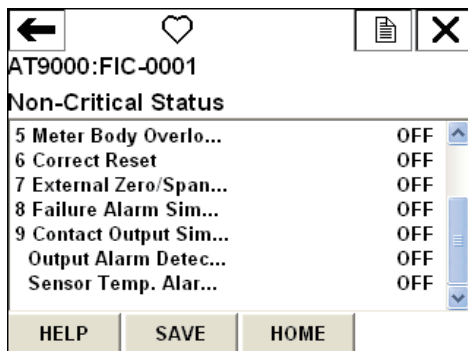
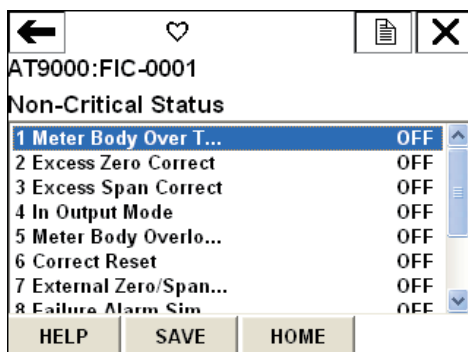
Diagnostic > Diagnostic Status > Internal Data Inconsistency

On the “Internal Data Inconsistency” screen, “Invalid Database” is displayed. If there is any “Invalid Database”, “ON” is displayed. If not, “OFF” is displayed.



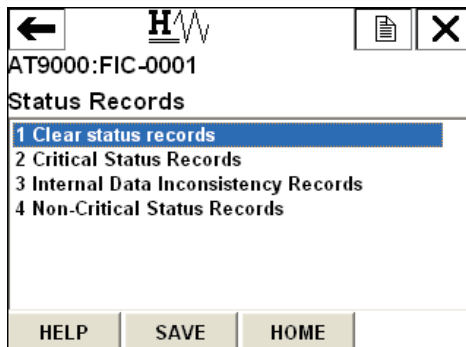
Diagnostic > Diagnostic Status > Non-Critical Status

On the “Non-Critical Status” screen, all the “Non-Critical Status” items are displayed. If such status occurs, “ON” is displayed. If not, “OFF” is displayed.



3.3.2: Diagnostic > Status Records

The “Status Records” function is used to store generated self-diagnostic results. This function allows you to check temporary phenomena even after they have been removed.

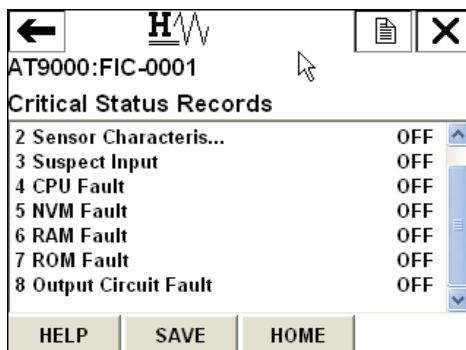
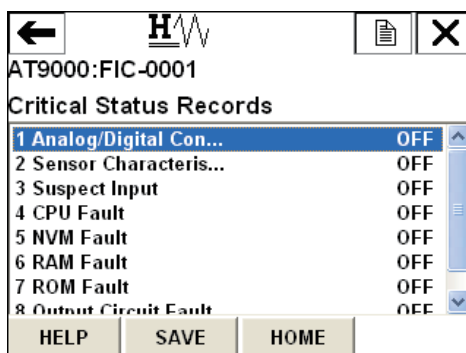


Diagnostic > Status Records > Clear status records

This function is used to clear the stored self-diagnostic results.

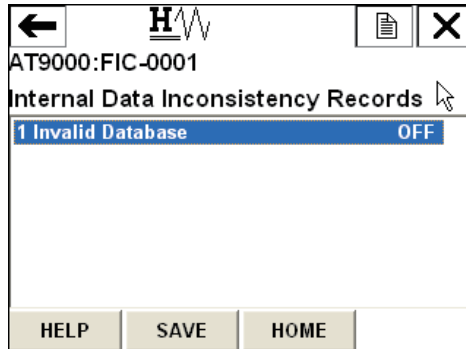
Diagnostic > Status Records > Critical Status Records

On the “Critical Status Records” screen, all “Critical Status” items are displayed. If there is any occurrence record, “ON” is displayed. If not, “OFF” is displayed.



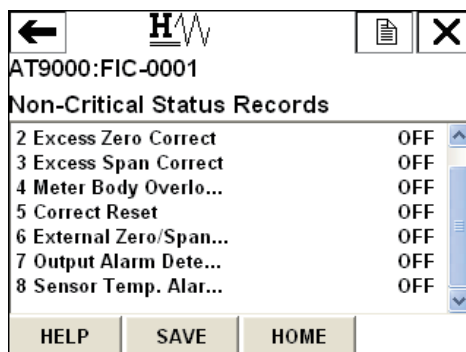
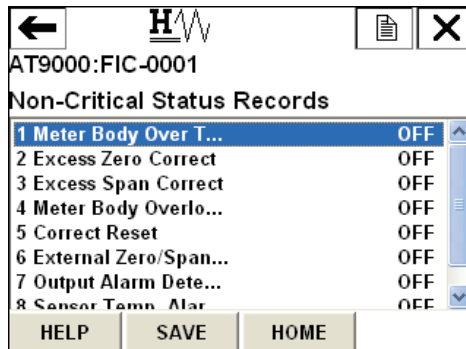
Diagnostic > Status Records > Internal Data Inconsistency Records

On the “Internal Data Inconsistency Records” screen, all “Invalid Database” items are displayed. If there is any occurrence record, “ON” is displayed. If not, “OFF” is displayed.



Diagnostic > Status Records > Non-Critical Status Records

On the “Non-Critical Status Records” screen, all “Non-Critical Status” items are displayed. If there is any occurrence record, “ON” is displayed. If not, “OFF” is displayed.



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