azbil

CM2-CFN100-2009

Smart Field Communicator
CommPad
Model: CFN100

Operation Manual
(Advanced Transmitter GTX Edition)

Yamatake Corporation

NOTICE

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Chapter 1: Introduction

CommPad is a communicator used for configuration of various settings and parameters of Yamatake smart field instruments. The hardware components of CommPad are a Pocket PC (CASIO IT-10) with a communication card and communications cable.

This operation manual explains how to operate CommPad with the Smart Transmitter, one of the instruments that is compatible with CommPad. Please refer to the Common Edition of the user's manual (CM2-CFN100-2001) for instructions common to all instruments, such as how to install CommPad. Before reading the present manual, please read the Common Edition.

Please refer to the AT9000 Advanced Transmitter user's manual (CM2-GTX100-2001) for information on functions specific to the Advanced Transmitter.

Note: After starting communication with CommPad,if you adjust the zero/span point using the external zero/span adjustment function, only the data in the transmitter will be changed, leaving a data inconsistency between the transmitter and CommPad. After manual zero adjustment you must go to the Home screen and tap [Start]. This will eliminate the data inconsistency.

This manual contains instructions for the following models.

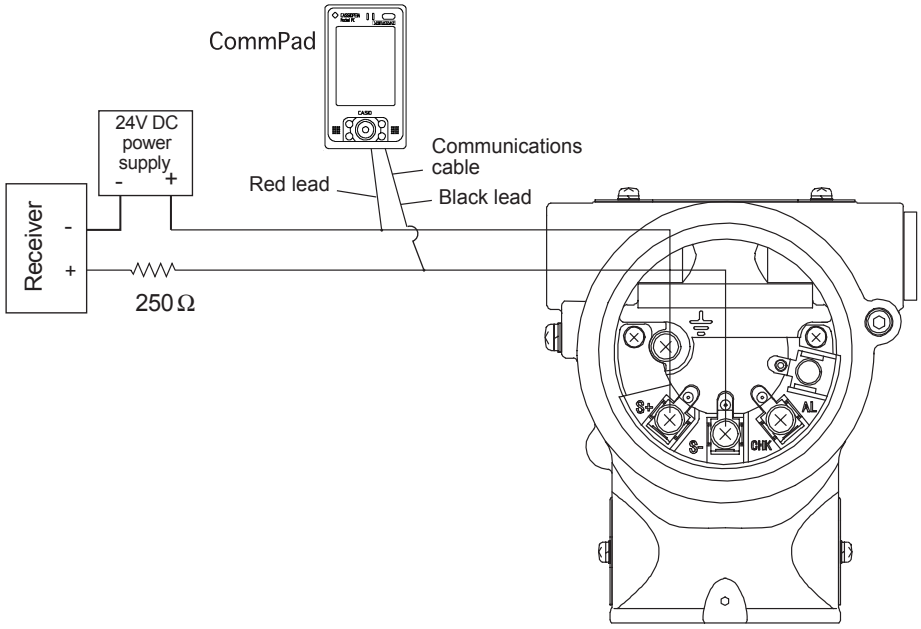
AT9000 Advanced Transmitter Model GTX.

MEMO

Chapter 2: How to Connect Your CommPad to the Smart Transmitter

Please see Fig. 2-1 for instructions on connecting CommPad.

Note: Do not connect two or more communicators (including Model SFC Smart Field Communicators) at the same time.



Note: Always connect CommPad's communications cable to the loop wiring as follows:

Always connect
Red lead: S+ terminal
Black lead: S- terminal

Fig. 2-1 Wiring for connection with Model GTX

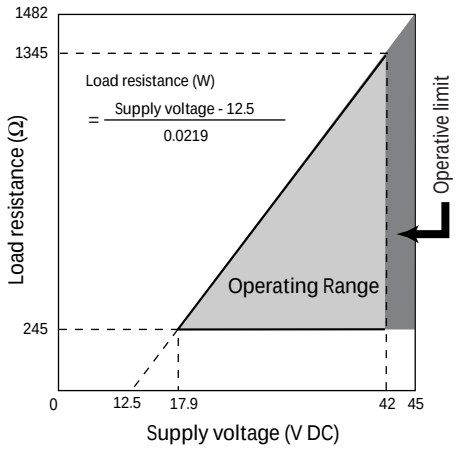
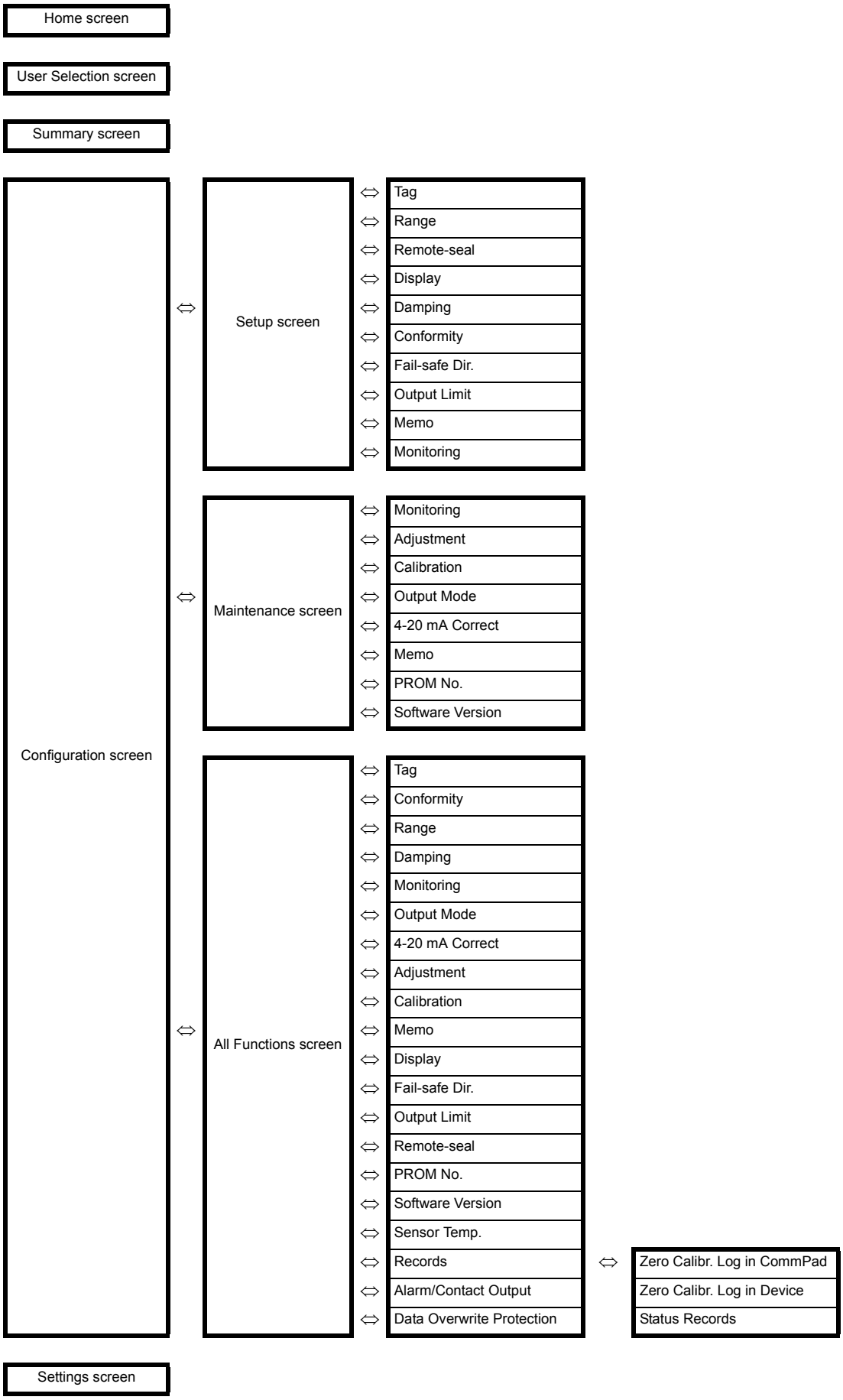


Fig. 2-2 Supply voltage vs. load resistance

MEMO

Chapter 3: Menu Structure

The menu structure of CommPad is shown on the next page. Each menu is described in detail in chapter 4, “How to Operate CommPad.”


Home screen
User Selection screen
Summary screen
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Data Overwrite Protection
Zero Calibr. Log in CommPad
Zero Calibr. Log in Device
Status Records
Settings screen

Chapter 4: How to Operate CommPad

4.1: How to Start CommPad

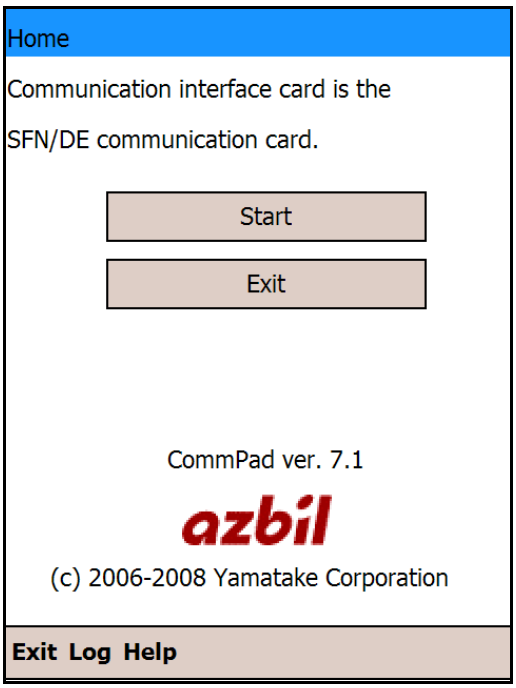
Please refer to the CommPad User's Manual (Common Edition).

4.2: Home Screen

When you start CommPad, caution messages appear. Tap [OK] and the Home screen shown below appears. For more information, please refer to the CommPad User's Manual (Common Edition). Connect the communications cable to the communication port of the instrument and tap [Start.]

⚠ Caution Make sure that the controller in the control loop is in manual mode before starting communications.

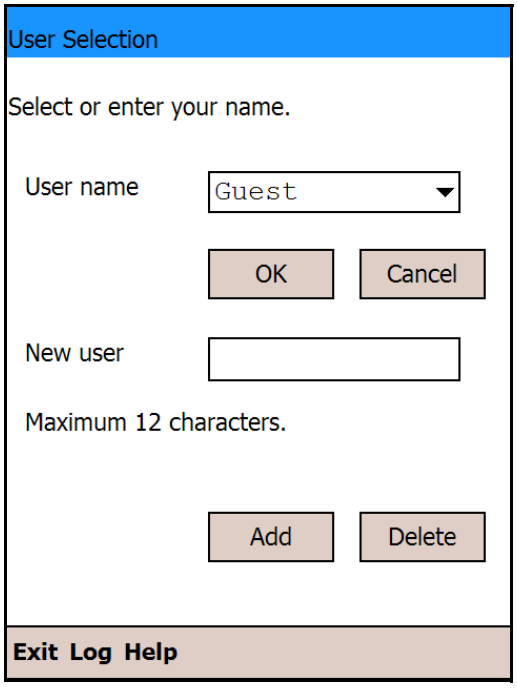
When you tap [Start], CommPad starts digital communications with the connected instrument by generating an alternating current signal (4 mA / 20 mA). Be extra careful if there is a valve in the control loop, a malfunction may result.



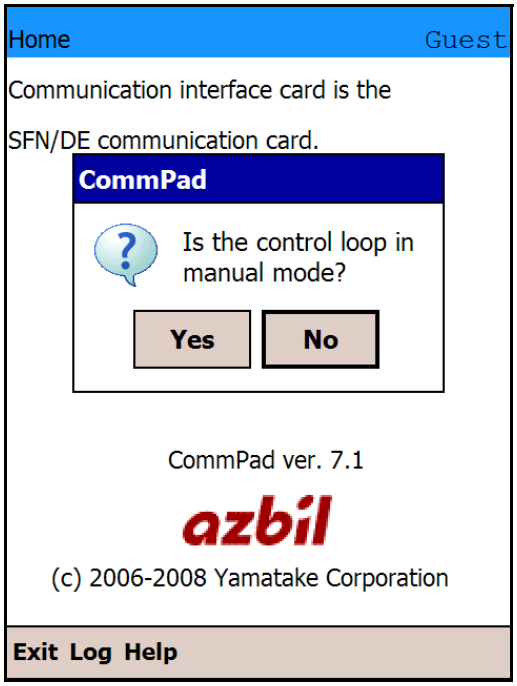
4.3: User Selection Screen

After you start CommPad, tapping [Start] shows the User Selection screen. For more information, please refer to the CommPad User's Manual (Common Edition).

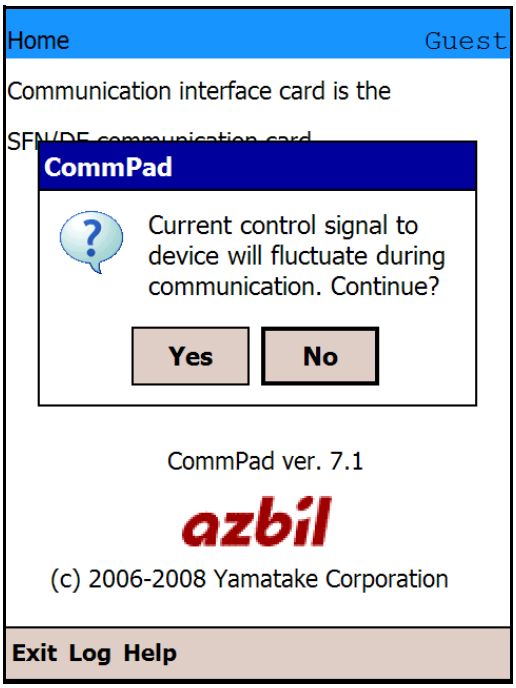
(1) Either select one of the registered user names or the default user name “Guest” and tap [OK].



(2) Make sure that the control loop is in manual mode, and then tap [Yes].



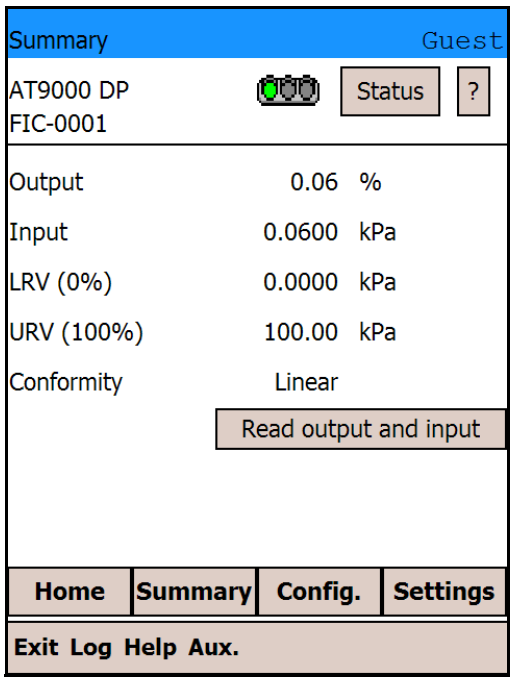
(3) Confirm that no problems will occur even if the current signal fluctuates, and tap [Yes] to start communications.



After the process is complete, the Summary screen will appear.

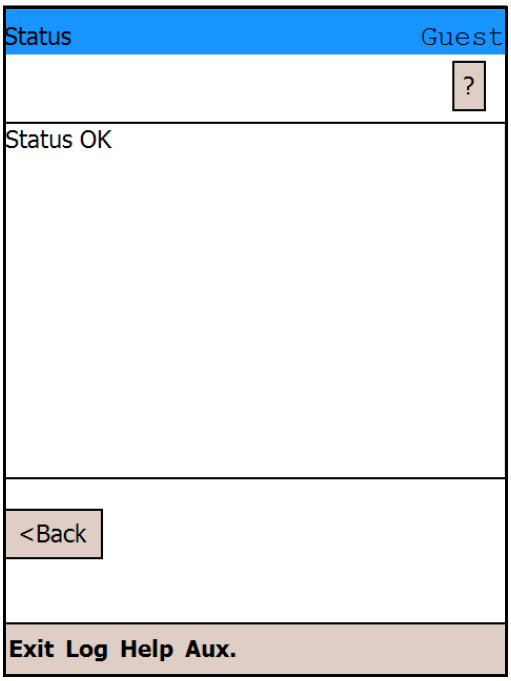
4.4: Summary Screen

The Summary display includes Output, Input, LRV, URV, and Conformity. Tapping [Read Output and Input] rereads Output and Input and updates the displays.



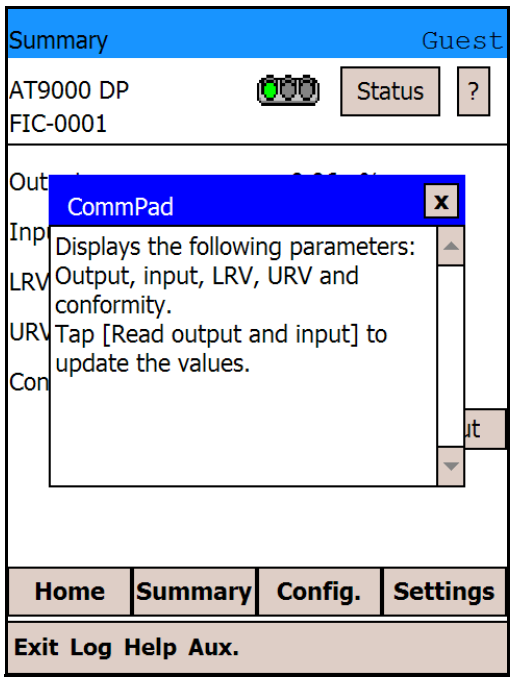
4.5: Status Screen

Tapping [Status] shows the result of self-diagnosis by the device. For more information on the messages, see chapter 6, “Troubleshooting.”



4.6: Help Screen

Tapping [?] on any screen allows you to use the help function, showing a description of the current screen.

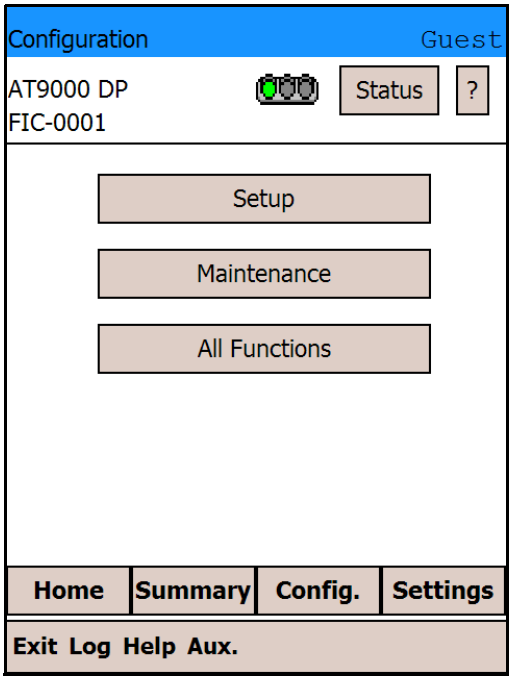


4.7: Configuration Screen

To configure the settings for the device, first tap [Configuration]. There are three lists of configurable settings:

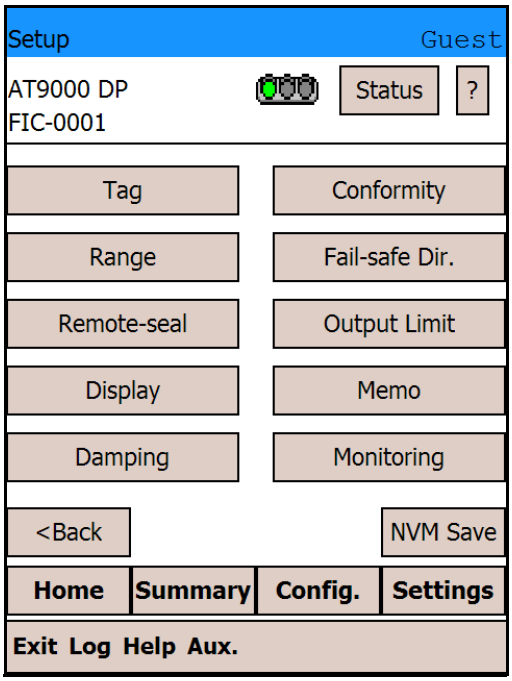
- Setup
- Maintenance
- All Functions

Tap [Setup] to display and configure functions required before operating the device.
Tap [Maintenance] to display and configure functions required for device maintenance.
Tap [All Functions] to display and configure all available functions.



4.8: Setup Screen

Tapping [Setup] on the Config. screen shows the Setup screen.



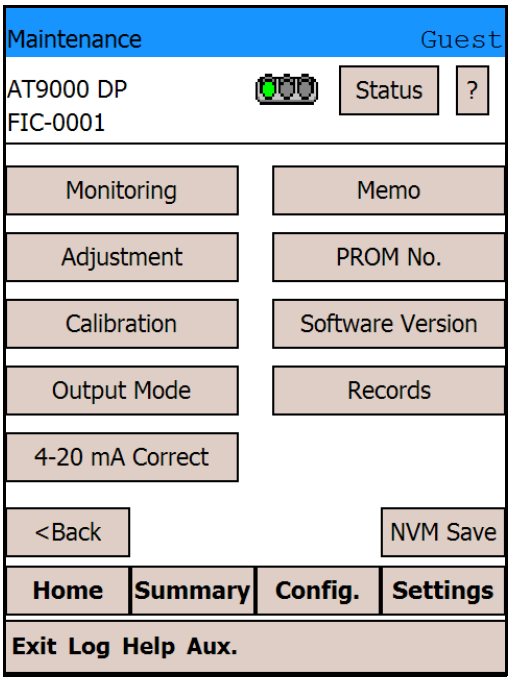
Nonfunctional buttons on the screen are displayed in gray. The following buttons are nonfunctional under the specified conditions:

[Remote-seal]

Does not function if the device is not a remote-seal model.

4.9: Maintenance Screen

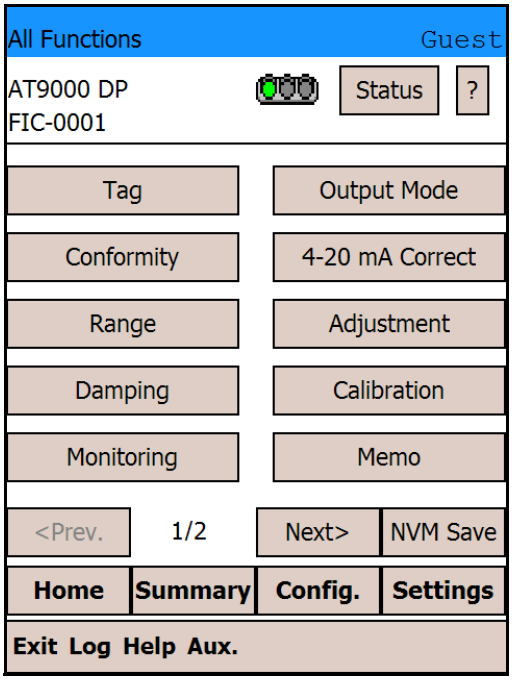
Tapping [Maintenance] on the Config. screen shows the Maintenance screen.



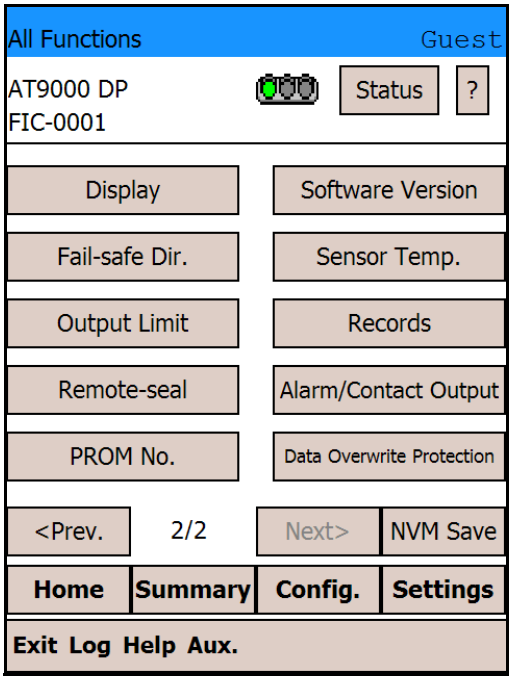
Nonfunctional buttons on the screen are displayed in gray. The following buttons are nonfunctional under the specified conditions:

4.10: All Functions Screen

Tapping [All Functions] on the Config. screen shows the All Functions screen. The All Functions screen consists of two pages. Switch between pages using [Next >] and [< Prev.].



First All Functions page



Second All Functions page

Nonfunctional buttons on the All Functions screen are displayed in gray. The following buttons are nonfunctional under the specified conditions:

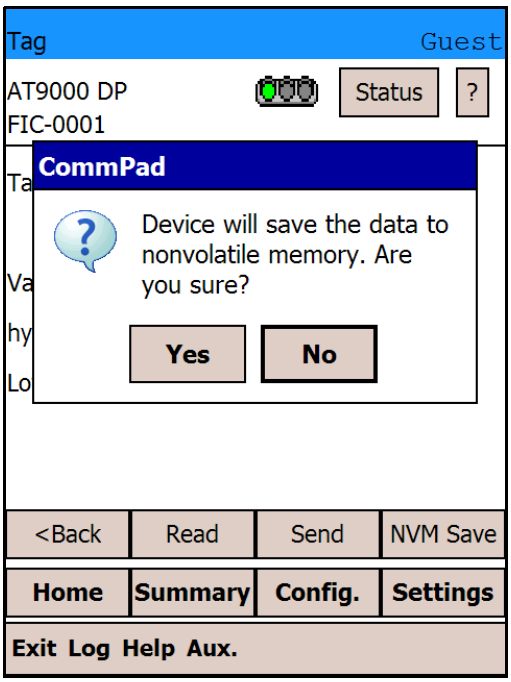
[Remote-seal]

Does not function if the device is not a remote-seal model.

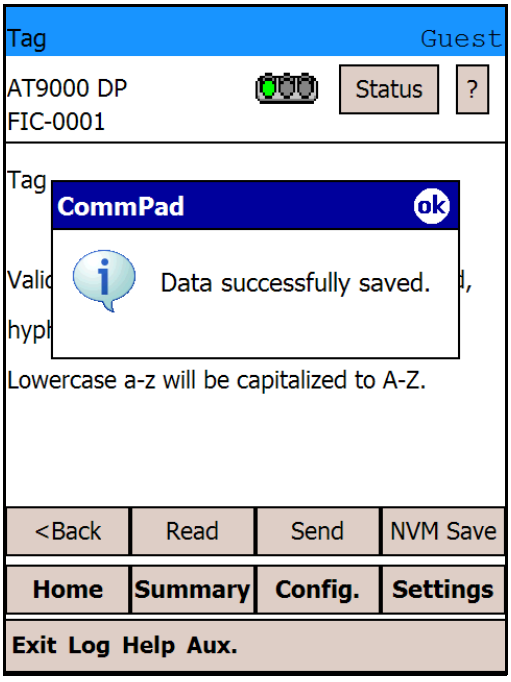
4.11: NVM Save

When you transmit changed data to the device using CommPad, the device will automatically save the data in its internal nonvolatile memory approximately 30 seconds after the transmission. If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save the changed data immediately so that it will not be lost.
NVM Save. is available for all configuration/change operations on various data. The way to use the NVM Save. function is described below. Use [NVM Save] in the same way for various settings changes we will discuss later.

(1) Tap [NVM Save] on the CommPad screen, and a confirmation message will appear. Tap [Yes].



(2) When NVM Save is finished, the confirmation message appears. Tap on [ok].

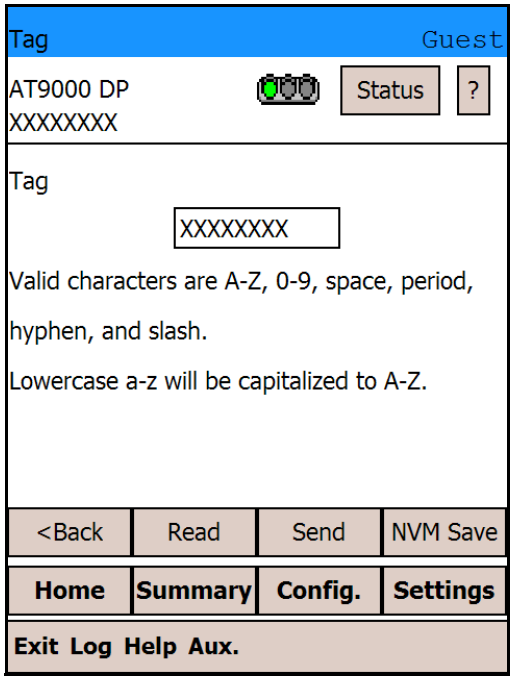


(3) NVM Save is now done.

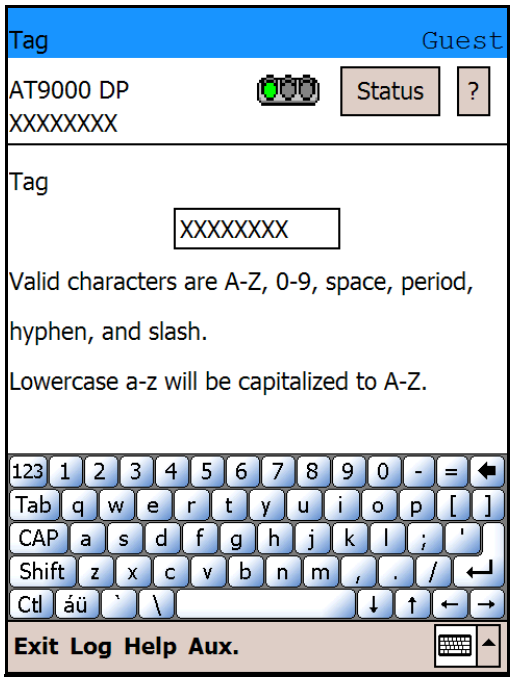
4.12: Tag

You can check and change a tags on this screen.

(1) To change a tag, tap the Tag display field.

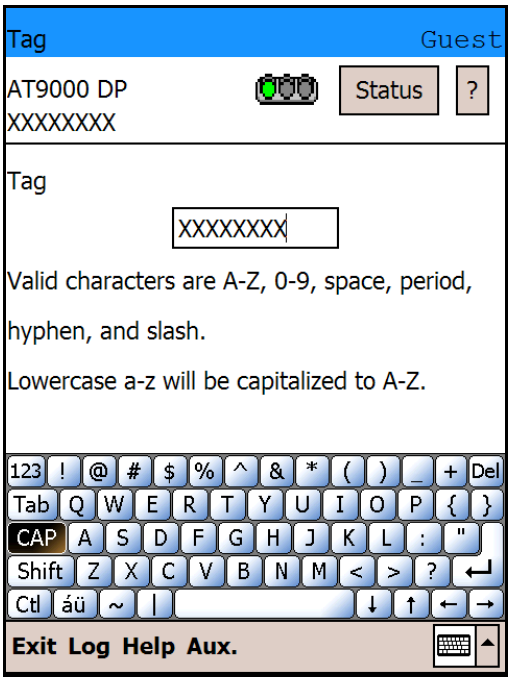


(2) Tapping the Tag display field shows the soft keyboard. Tap [CAP] to change to uppercase character mode.

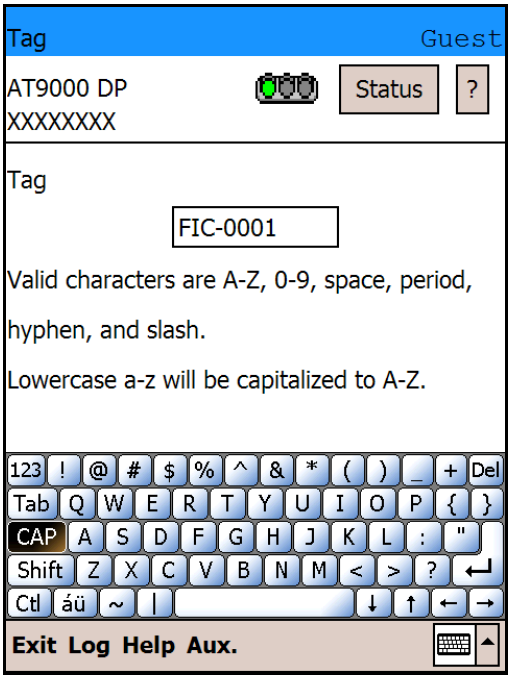


(3) Change the tag using available characters.

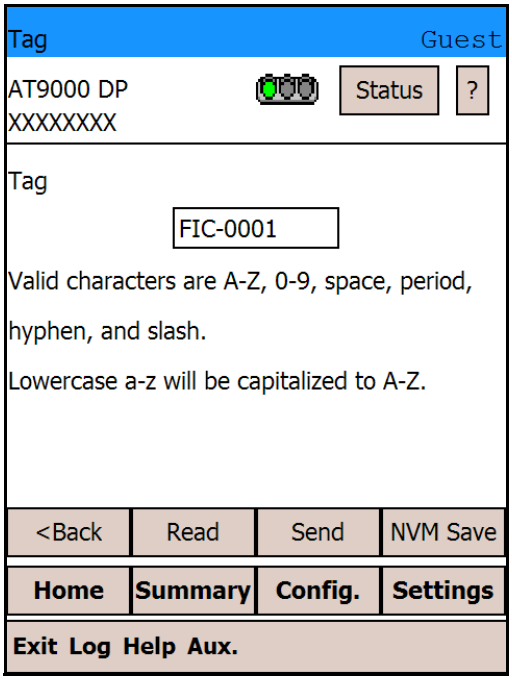
Note: You may enter lowercase alphabetic characters on the soft keyboard. They will be converted to uppercase before being sent to the device.



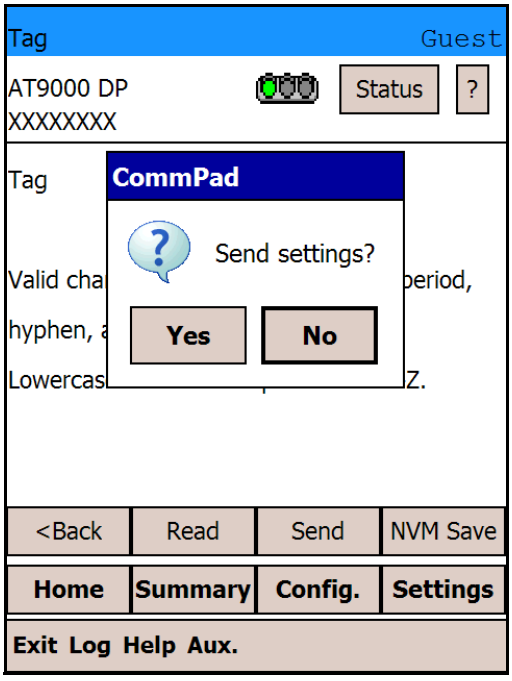
(4) Once the tag name is confirmed, tap the return/enter key (↵). The soft keyboard will disappear from the screen.



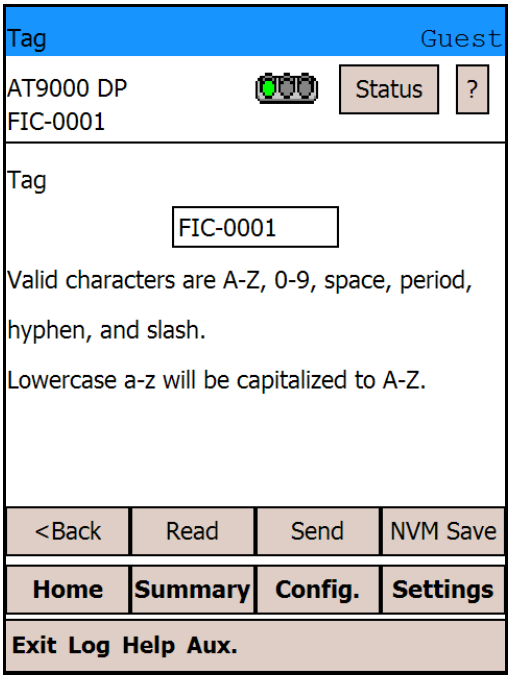
(5) Tap [Send] to transmit the changed tag to the device.



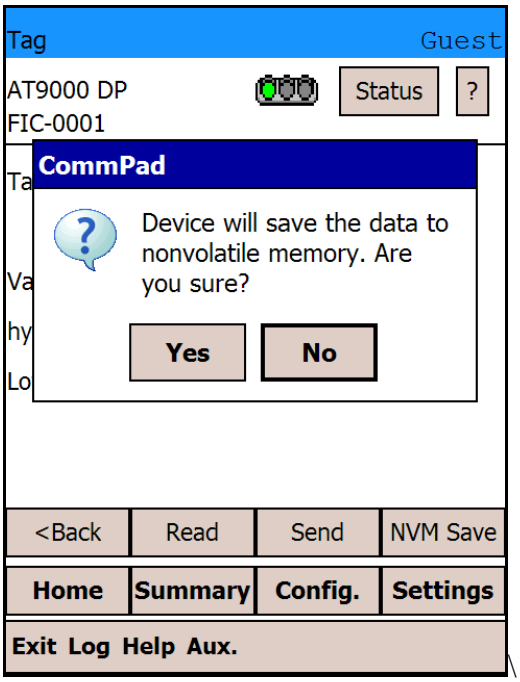
(6) A confirmation message appears. Tap [Yes].



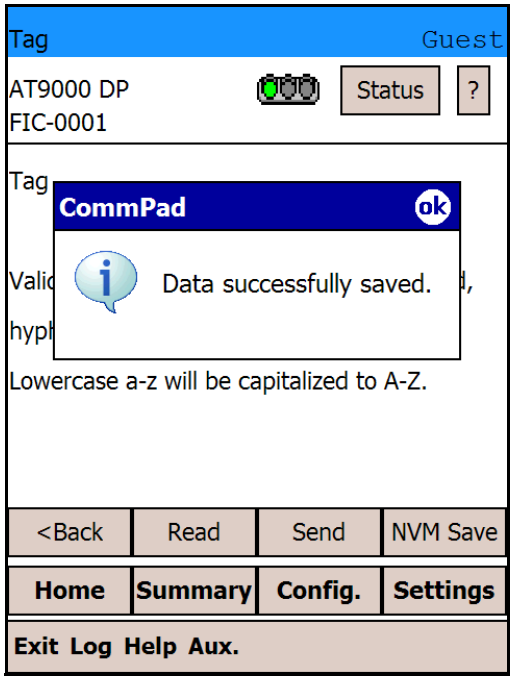
(7) When you transmit changed data to the device, the device will save the data in its internal nonvolatile memory approximately 30 seconds after the transmission. If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save the changed data immediately so that it will not be lost.



(8) Tap [NVM Save], and a confirmation message will appear. Tap [Yes].



(9) When NVM Save is finished, the confirmation message appears. Tap on [ok].



NVM Save is now done.

Each individual configuration screen basically includes [NVM Save]. If you might need to turn off the power of the device immediately after data has been changed, tap [NVM Save].

4.13: Range

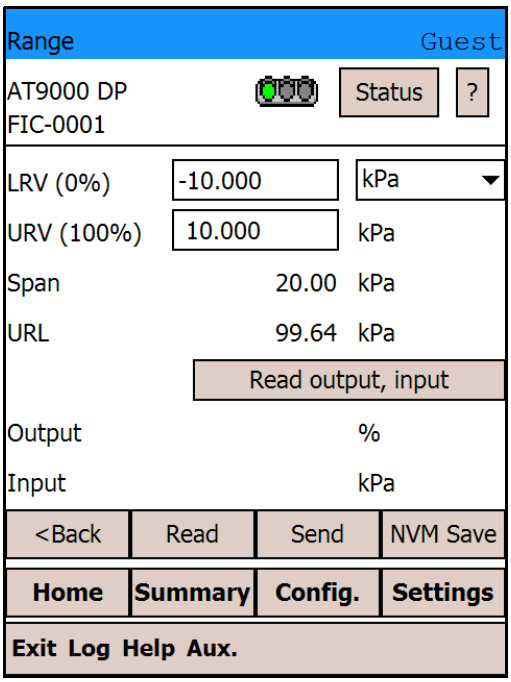
You can display and change the lower and upper range values (LRV, URV) on this screen.

LRV: The pressure corresponding to 0% output (4 mA)

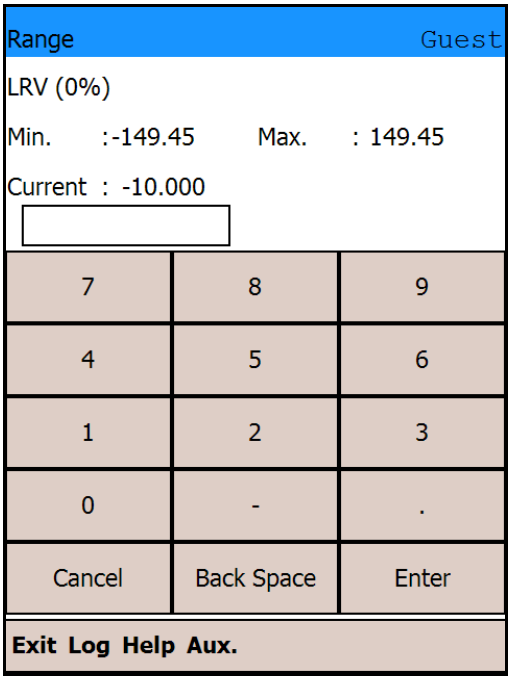
URV: The pressure corresponding to 100% output (20 mA)

If LRV is changed, URV will be changed automatically so that the span remains constant. To change both LRV and URV, change LRV first.

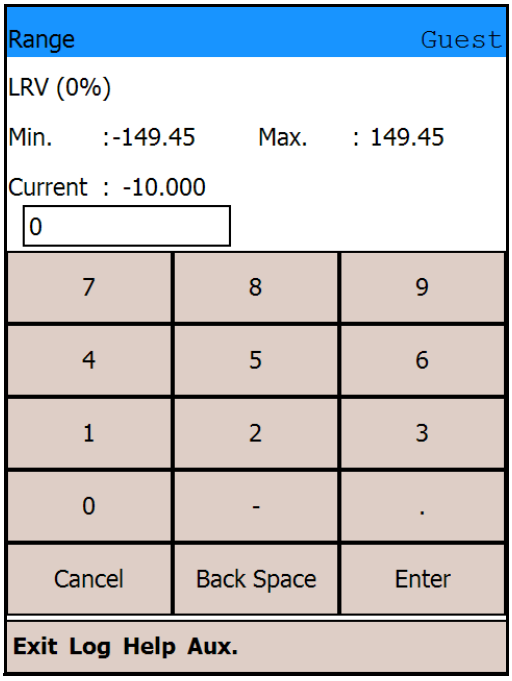
(1) Tapping the number display field of the value you want to change shows the input screen.



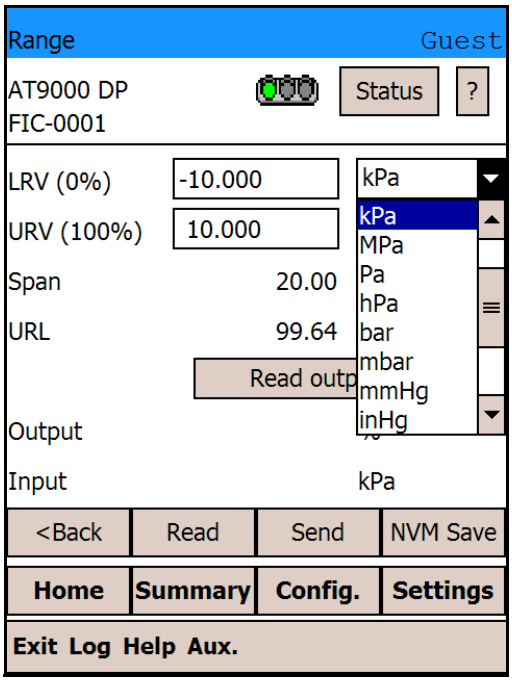
(2) Tap the input screen to enter the value. You cannot enter a value above the displayed Max. value or below the Min. value.



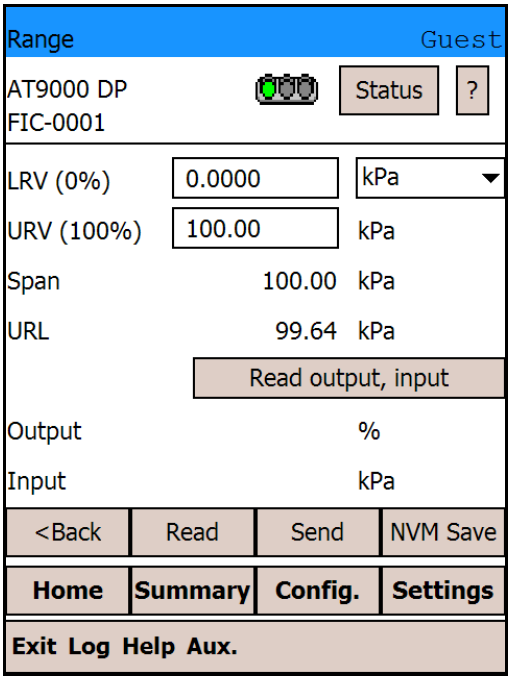
(3) After entering the value, tap [Enter].



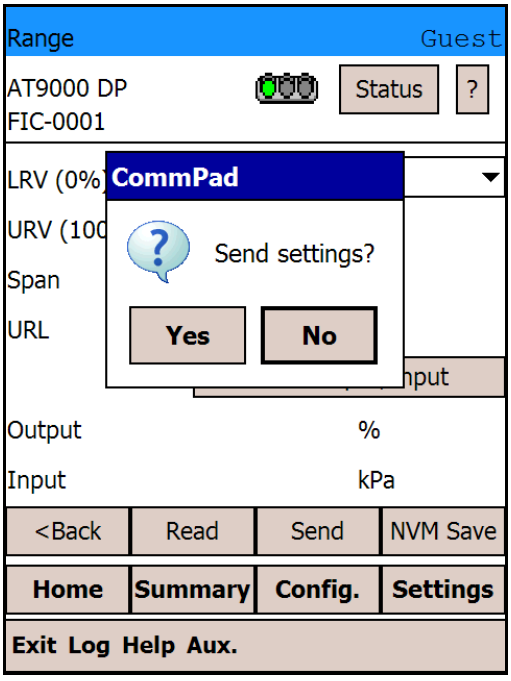
(4) Tap the drop-down menu for LRV (0%), and a list of alternative units will appear. If you want to change the display unit, tap the desired unit to select it.



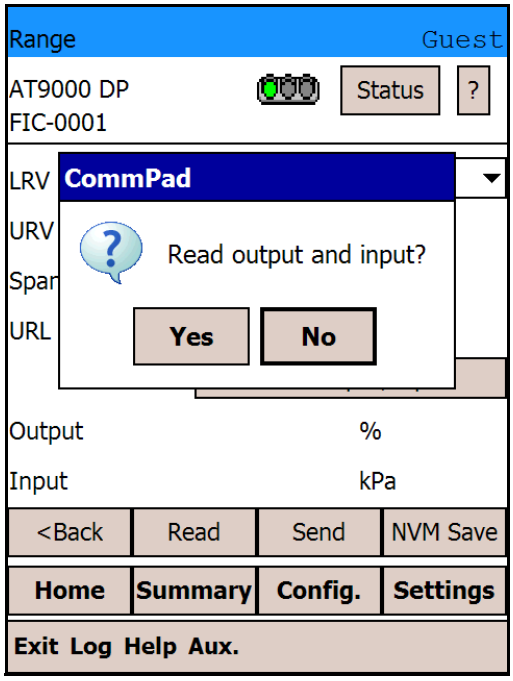
(5) To send the changed value to the device, tap [Send].



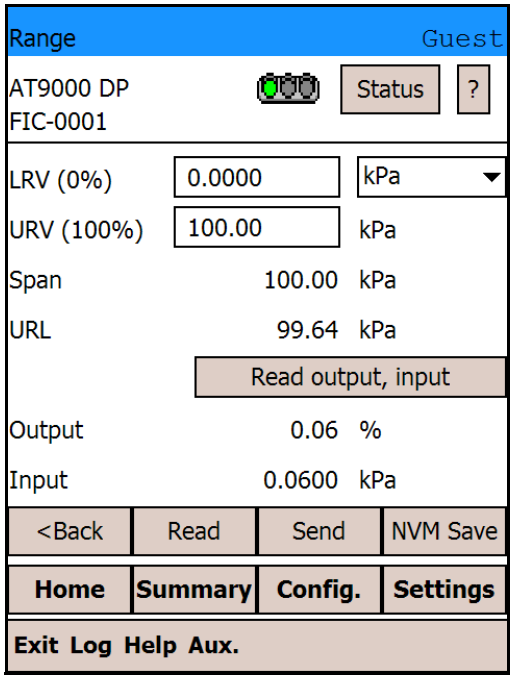
(6) A confirmation message appears. Tap [Yes].



(7) If you want to see the changed output value due to the range change, tap [Yes].



(8) The range change is now complete.



(9) Tapping [Read output, input] reads the output and input value and updates the displays.If you might need to turn off the power of the device within 30 seconds after the device of the data, tap [NVM Save] to save your changes.

4.14: Remote-seal

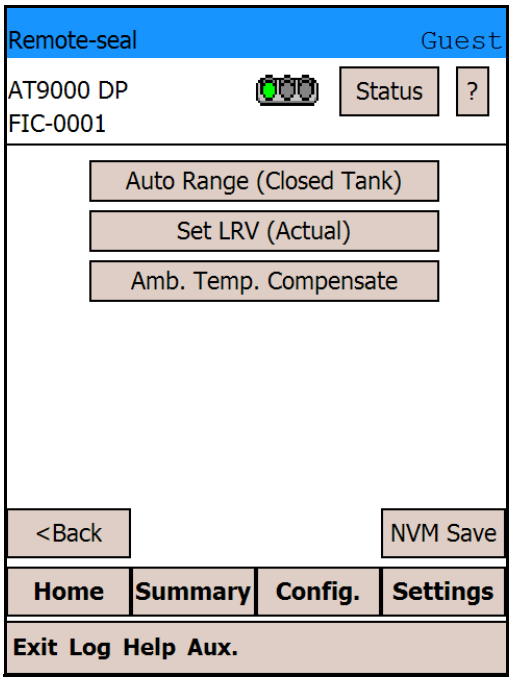
The items on this screen are used with a remote seal model Transmitter.

- [Auto Range (Closed Tank)]
  When a remote-seal model transmitter is used to measure the liquid level in a closed tank, you can calculate the range (LRV, URV) automatically by entering high pressure flange location the specific gravity of the liquid in the tank, the type of fill fluid for the transmitter, the span, the distance between the flanges, and the distance of the zero level above the lower flange.
- [Set LRV (Actual)]
  When the liquid level in a tank is given (for example, when you want to align it with a glass level gauge reading), you can adjust the range so that the given level and the transmitter output are identical.
- [Amb. Temp. Compensate]
  By entering the distance between the upper flange and the lower flange of a tank, you can compensate for the effect of the fill fluid temperature in the capillary tube of the transmitter.

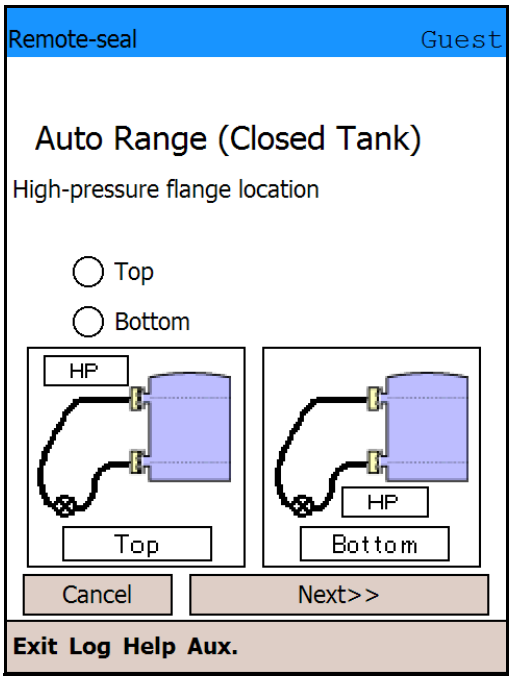
4.14.1: Auto Range (Closed Tank)

With the Auto Range function, you can calculate the range (LRV, URV) automatically by entering the specific gravity of the liquid in the tank, the type of fill fluid for the transmitter, the span, the distance between the flanges, and the distance of the zero level above the lower flange.

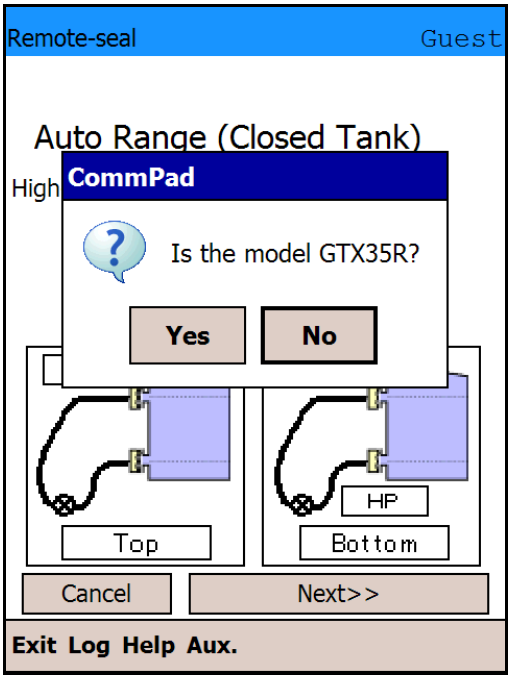
(1) Tap [Auto Range (Closed Tank)].



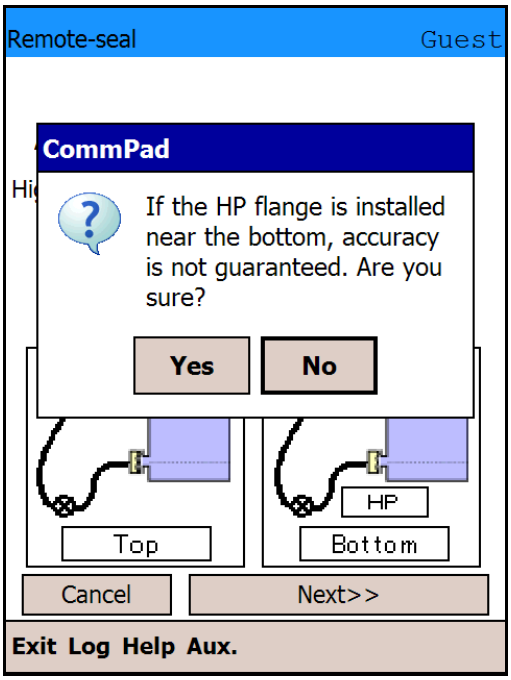
(2) Select the mounting position and tap [Next >>].



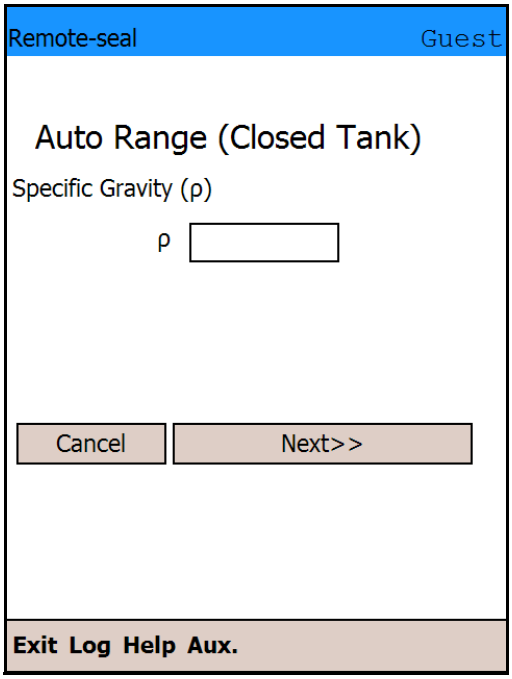
(3) If you select “Lower Side,” this message appears: “Is the model GTX35R?” Tap [Yes] or [No] as appropriate. Please tap “No” if the model is not GTR35R.



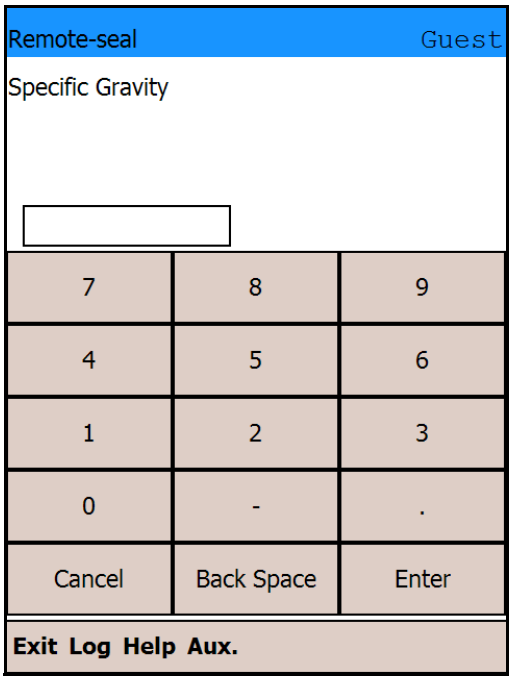
(4) If your Transmitter is not GTX35R, you cannot mount the high pressure side flange at the bottom of the tank. To continue the configuration, tap [Yes].



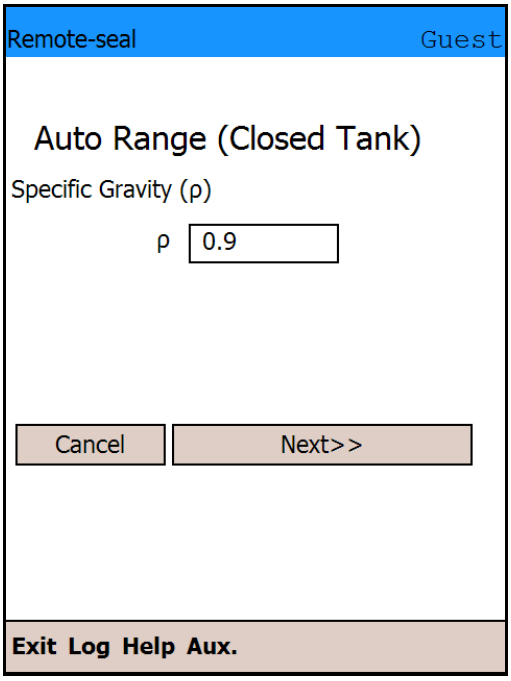
(5) The screen for entering the specific gravity (ρ) appears. Tap the number display field for ρ.



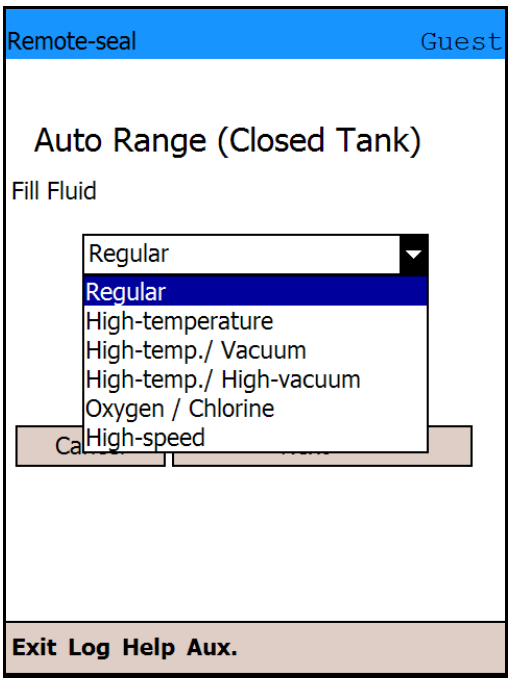
(6) The input screen for the specific gravity appears. Enter the specific gravity and tap [Enter]



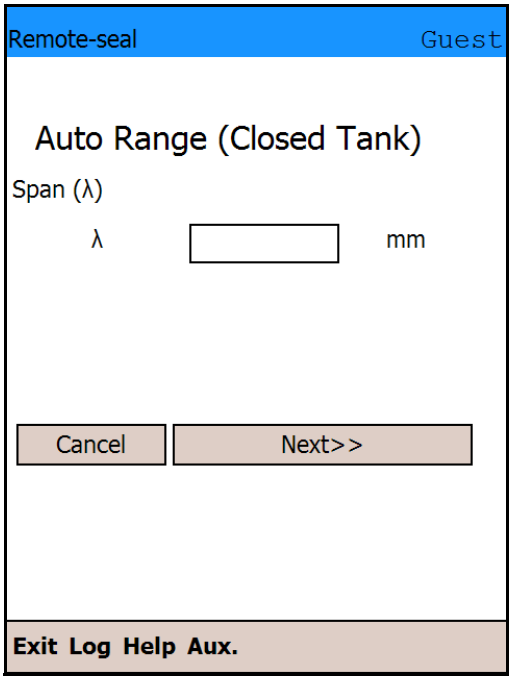
(7) After entering the value for ρ, tap [Next >>].



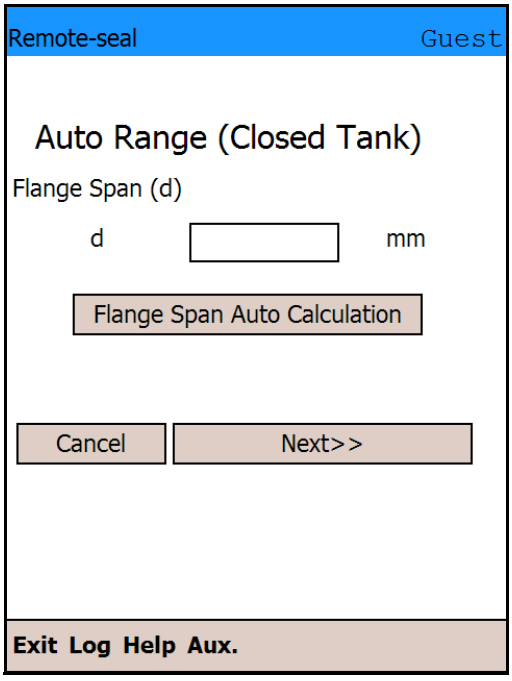
(8) The screen for selecting a fill fluid appears. Tap the fill fluid drop-down menu and select a type of fill fluid from the list. After selecting the type, tap [Next>>].



(9) Next, enter the span (λ), and tap [Next >>].



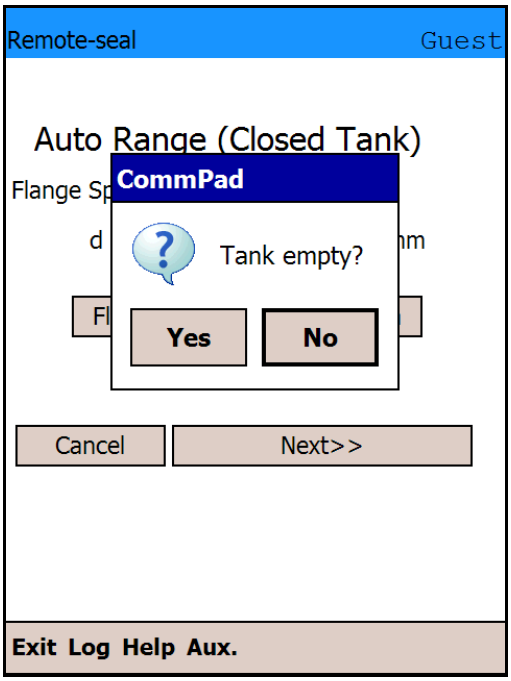
(10) Enter the distance (d) between the flanges, and tap [Next>>].



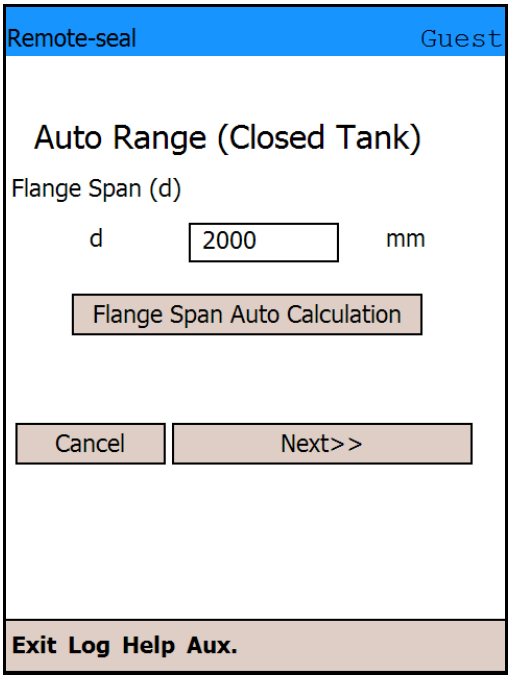
Automatic Calculation of Flange Span

When the tank is empty, the distance between the flanges can be calculated automatically. However, note that the calculated value may be different from the actual value due to mounting error. Use this value only as a guide.

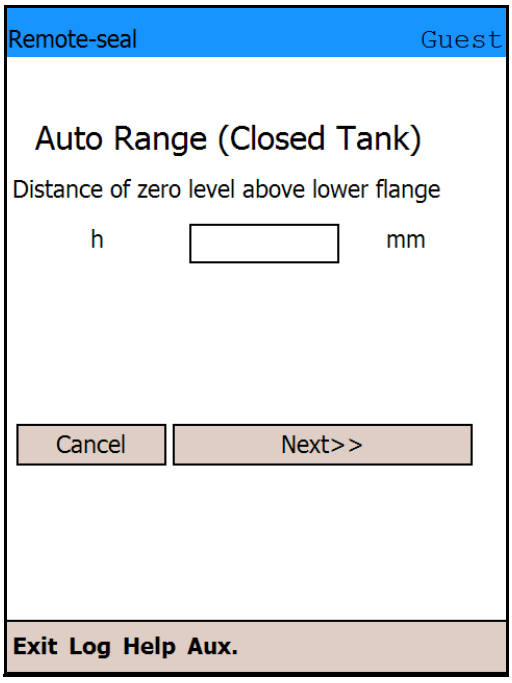
Tap [Flange Span Auto Calculation]. Make sure that the tank is empty, and tap [Yes].



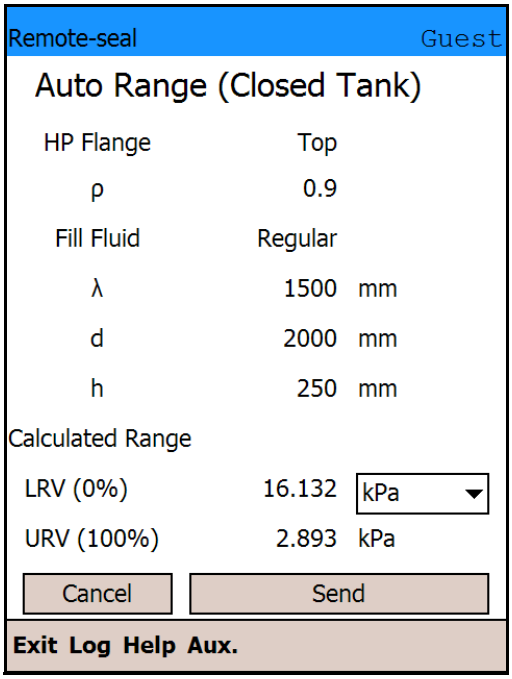
The approximate distance between the flanges will be calculated based on the current input values and the density of the fill fluid. If the value is acceptable, tap [Next>>].



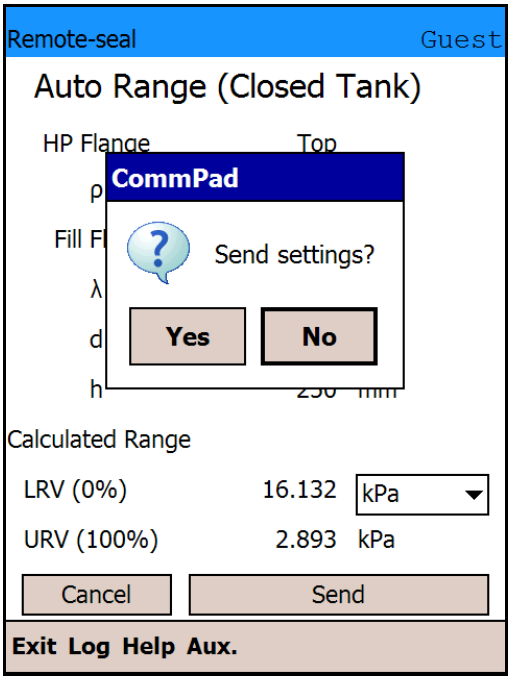
(11) Enter the distance between 0% liquid level and the lower flange, and tap [Next>>]. If 0% liquid level will come above the lower flange, enter a positive number. Otherwise, enter a negative number.



(12) The range calculated from the input values is displayed. If the value is acceptable, tap [Send].



(13) A confirmation message appears. Tap [Yes].

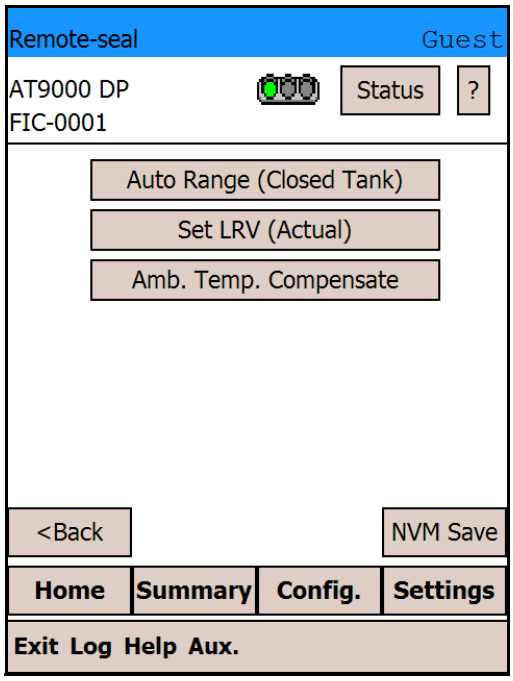


(14) The remote-seal auto range process is now complete. If you might need to turn off the power of the transmitter within 30 seconds after the transmission of the data, tap [NVM Save] to save your changes.

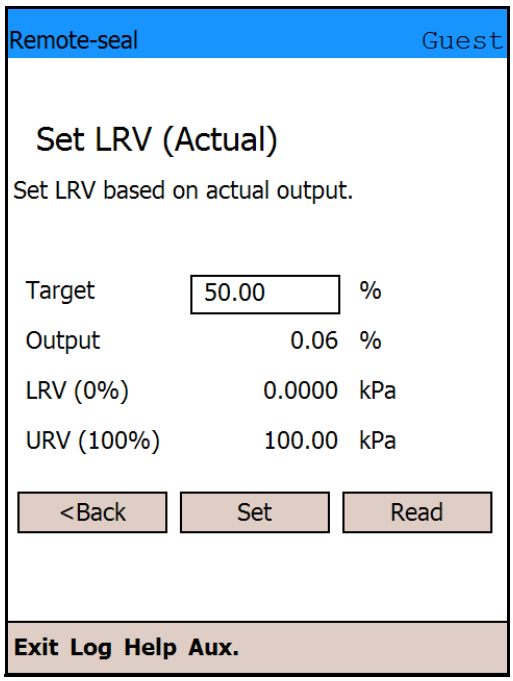
4.14.2: Set LRV (Actual)

If you want to configure the range by setting a certain output percentage as the current liquid level in the tank, use the Set LRV (Actual) function.

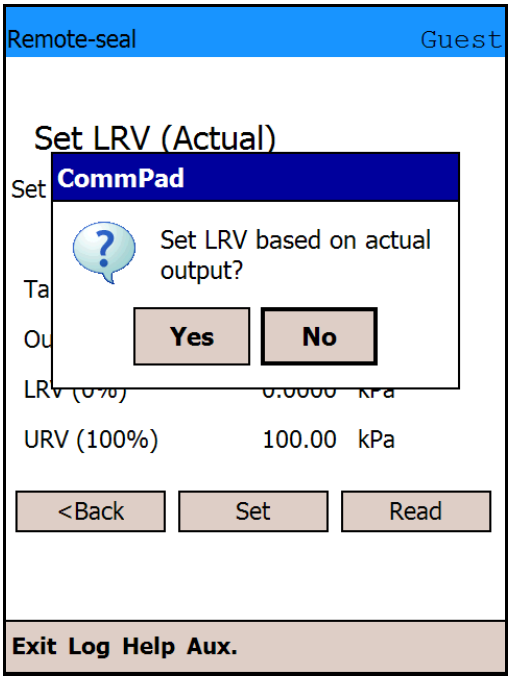
(1) Tap [Set LRV (Actual)].



(2) Tap the number display field for Target, enter the desired output value, and then tap [Set].



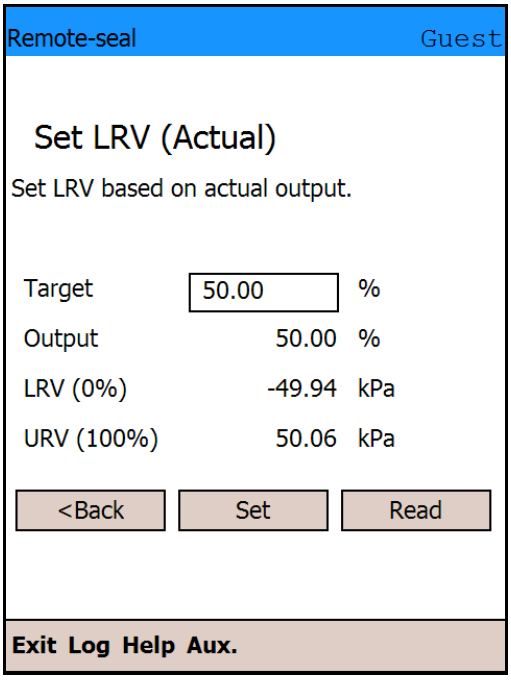
(3) A confirmation message appears. Tap [Yes].



The range changes, and the Output value becomes identical to that of Target.

Tap [Read] to reread and redisplay the Output and range values.

(4) Tap [< Back] to return to the Remote-seal screen.



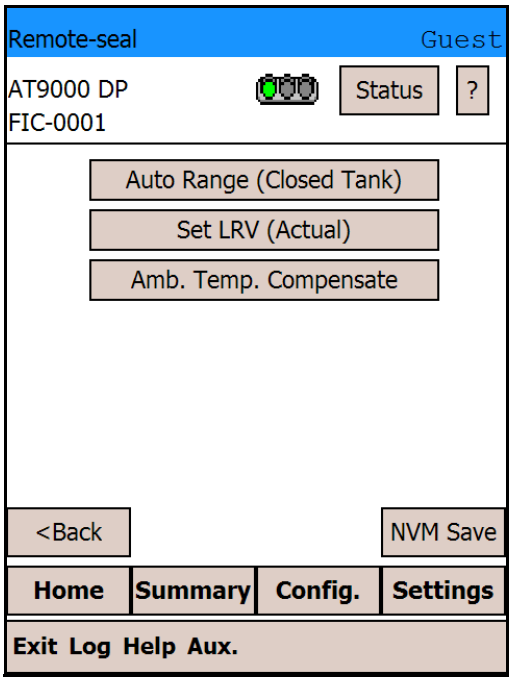
(5) LRV (Actual) is now set. If you might need to turn off the power of the transmitter within 30 seconds after the transmission of the data, tap [NVM Save]. to save your changes.

4.14.3: Amb. Temp. Compensate

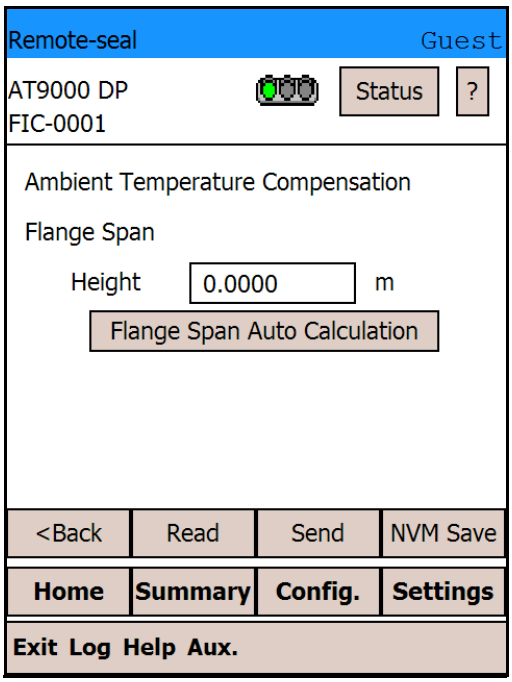
With the Amb. Temp. Compensate function, you can compensate for the measurement error due to the density change of the fill fluid, which is caused by the ambient temperature change. There are two ways to perform Amb. Temp. Compensate: when the distance between the flanges is known and when the distance between the flanges is unknown.

- When the Distance Between the Flanges Is Known

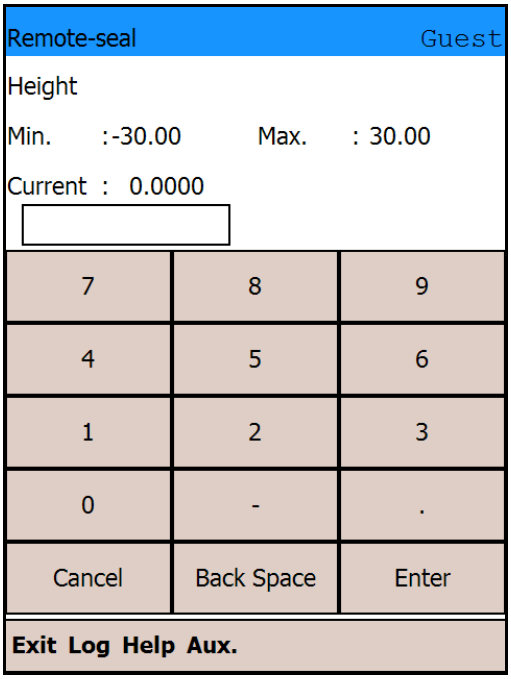
(1) Tap [Amb. Temp. Compensate].



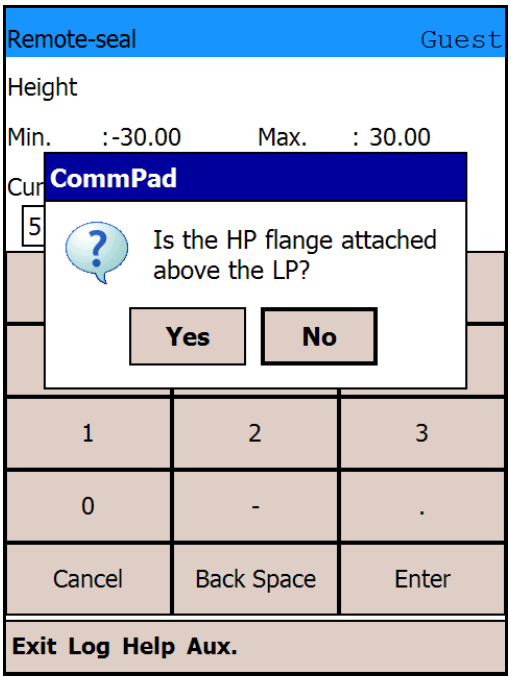
(2) The screen for entering the Flange Span appears. Tap the number display field for the Height.



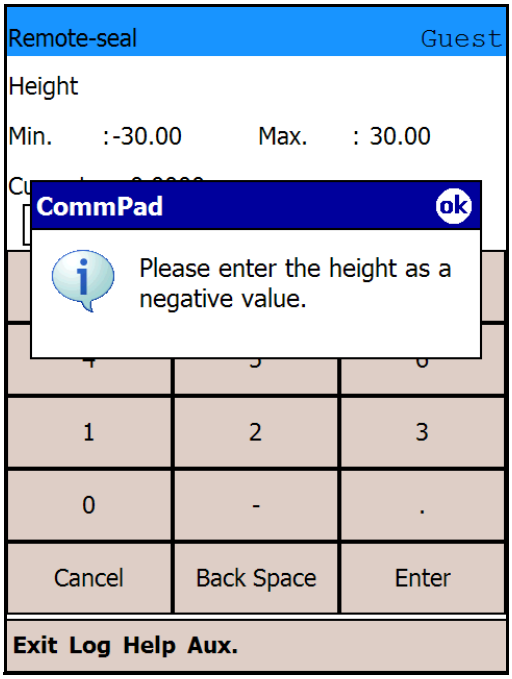
(3) Enter the distance between the flanges and tap [Enter]. If the high pressure side flange is positioned higher, enter a positive number.



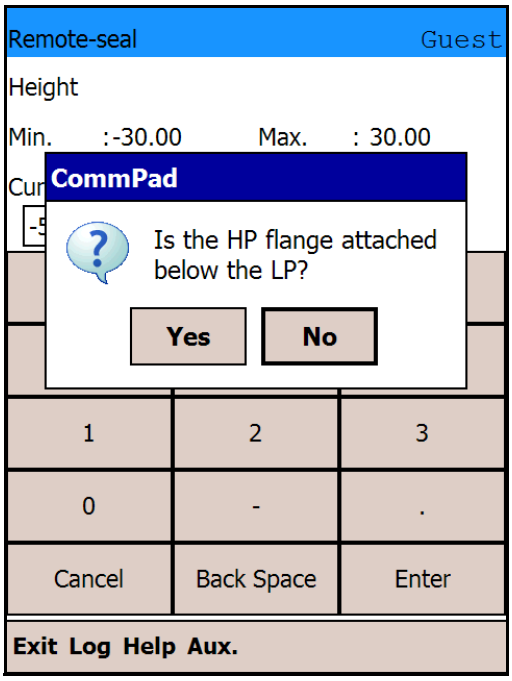
(4) If a positive number is entered, the message shown below appears. If the mounting of the flanges is correct, tap [Yes].



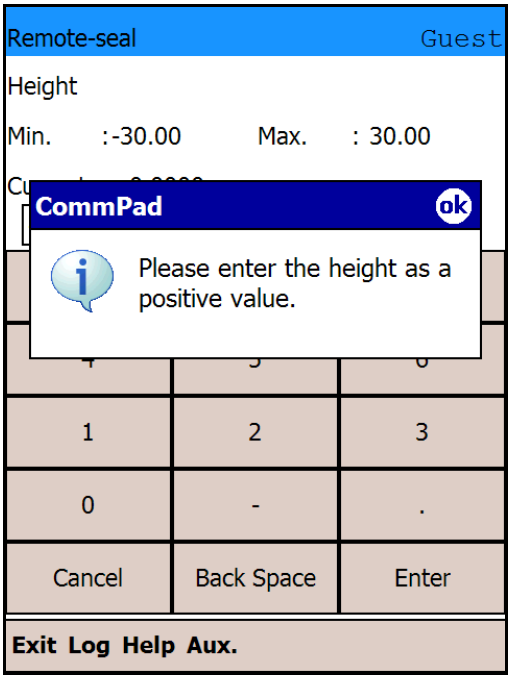
Otherwise, tap [No] and then [OK], and enter a negative number for the distance between the flanges.



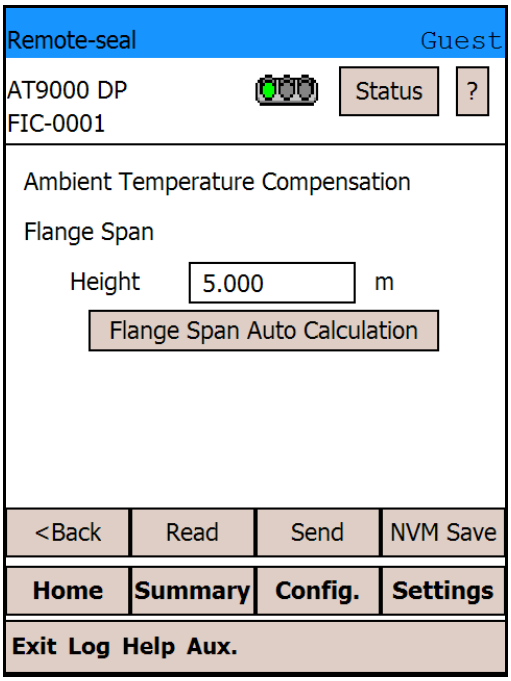
(5) If a negative number is entered, the message shown below appears. If the mounting of the flanges is correct, tap [Yes].



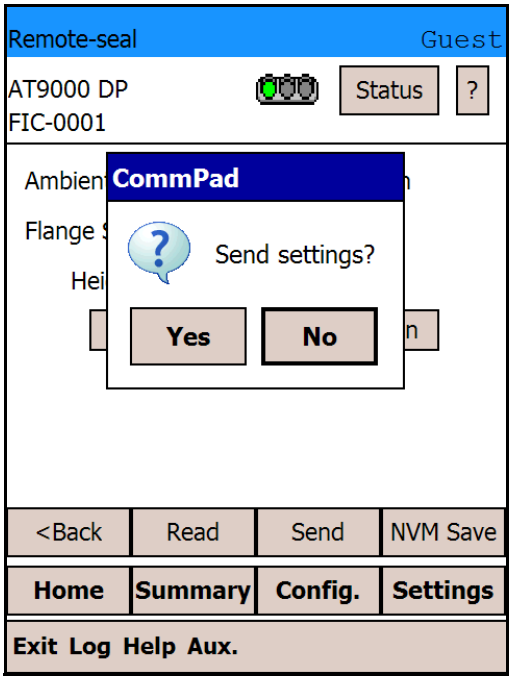
Otherwise, tap [No] and then [OK], and enter a positive number for the distance between the flanges.



(6) After entering the distance between the flanges, tap [Send].



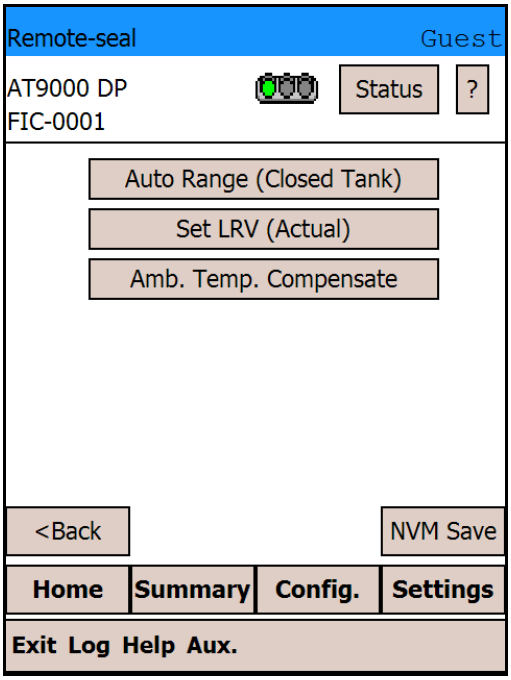
(7) A confirmation message appears. Tap [Yes].



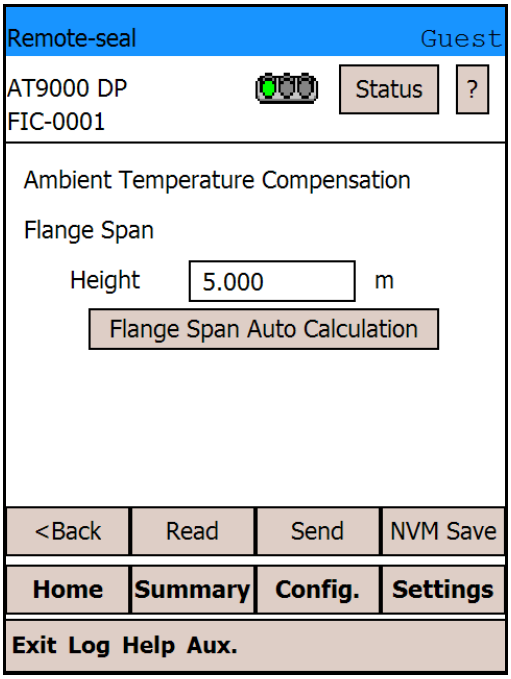
(8) The ambient temperature compensation configuration is now complete. If you might need to turn off the power of the transmitter within 30 seconds after the transmission of the data, tap [NVM Save] to save your changes.

- When the Distance Between the Flanges Is Unknown
  When the distance between the flanges is unknown, the approximate distance can be configured automatically.

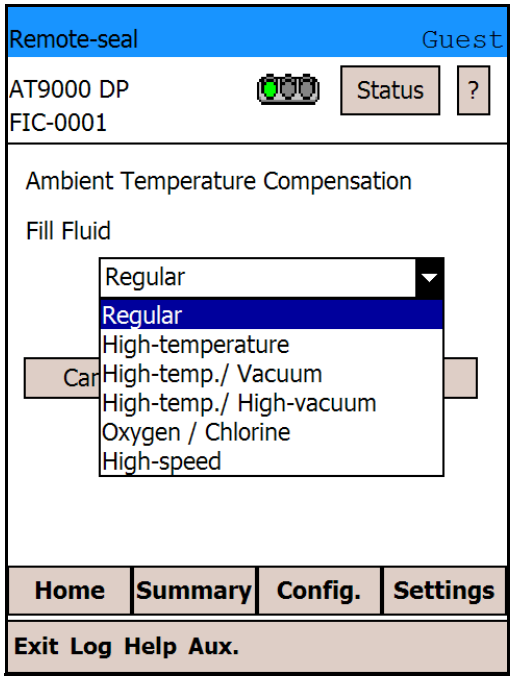
(1) Tap [Amb. Temp. Compensate].



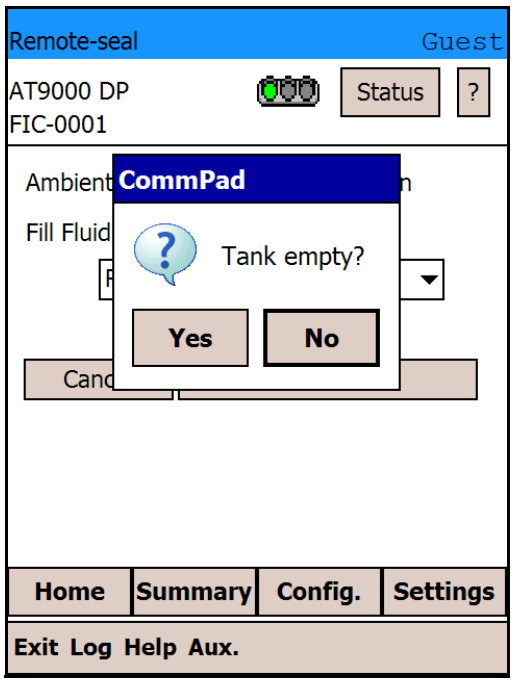
(2) Tap [Flange Span Auto Calculation].



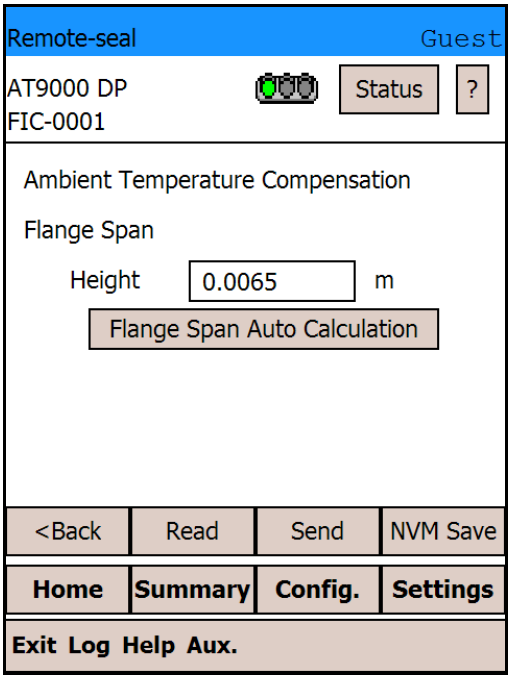
(3) Select a type of fill fluid and tap [OK].



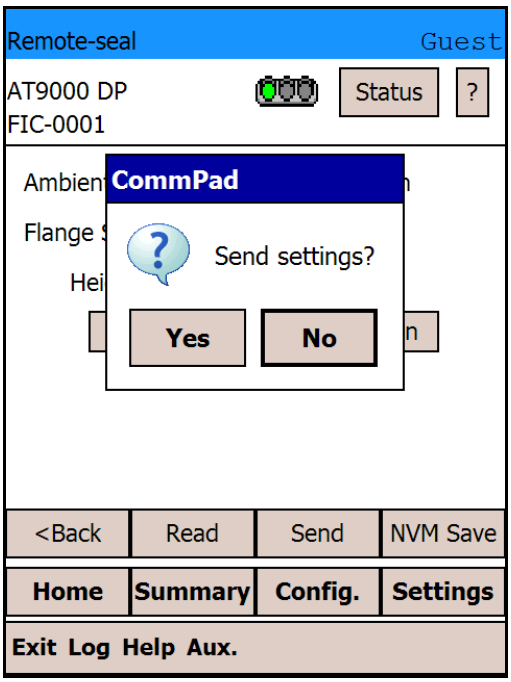
(4) The confirmation message appears. Make sure that the tank is empty, and Tap [Yes].



(5) The calculated distance between the flanges is displayed. If the value is acceptable, tap [Send].



(6) A confirmation message appears. Tap [Yes].



(7) The ambient temperature compensation configuration is now complete. If you might need to turn off the power of the transmitter within 30 seconds after the transmission of the data, tap [NVM Save] to save your changes.

4.15: Display

On this screen you can configure display format (linear or square root) and display unit (%, actual pressure, or engineering unit) for the device indicator. If you select engineering units for display, the following values need to be specified:

EULO: The value displayed on the indicator when the output of the device is 0%

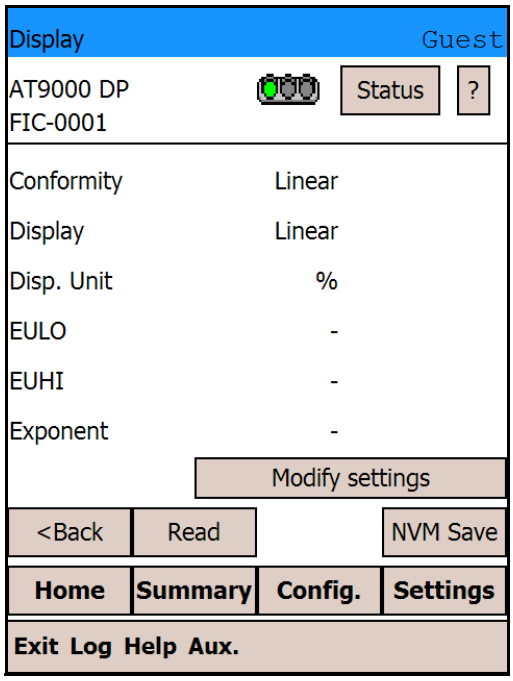
EUHI: The value displayed on the indicator when the output of the device is 100%

“Actual Pressure” displays the actual measurement value in the selected pressure unit.

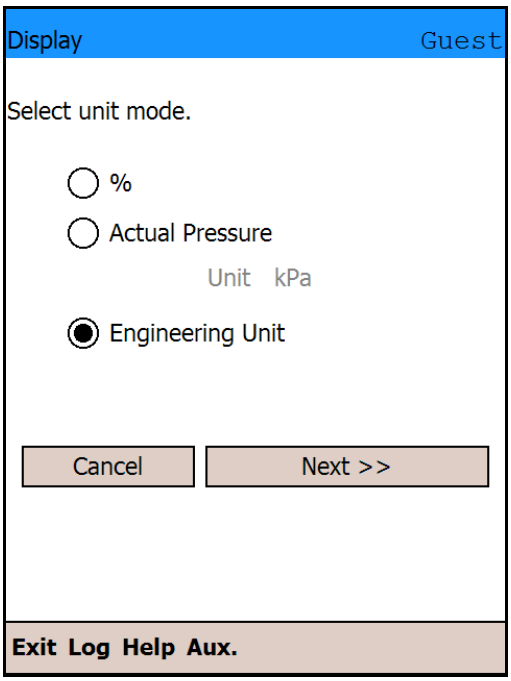
“Engineering Unit” displays the flow rate, level, or other values in the specified scale or unit.

You can also select “Engineering Unit” or the unit that the user defined arbitrarily for display.

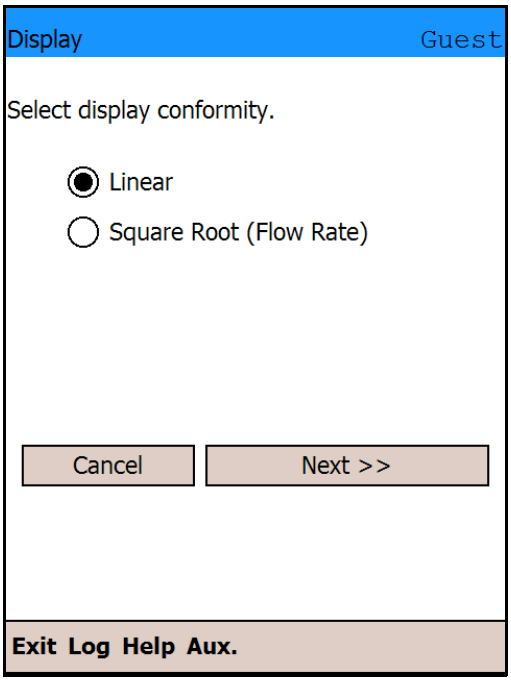
(1) To change the settings, tap [Modify settings].



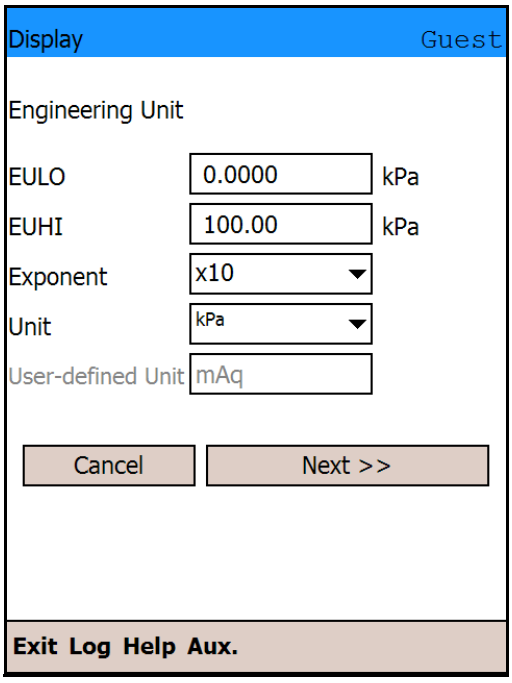
(2) Select unit mode. After selecting a unit mode, tap [Next>>].
If "Actual Pressure" is selected, or % is selected when the "Conformity" is square root, the Send screen will appear.
If % or "Actual Pressure" is selected when "Conformity" is linear, the screen to configure the display format will appear.
If "Engineering Unit" is selected when "Conformity" is square root, the screen to configure EULO and EUHI, the lower and upper limits for the engineering unit, will appear.



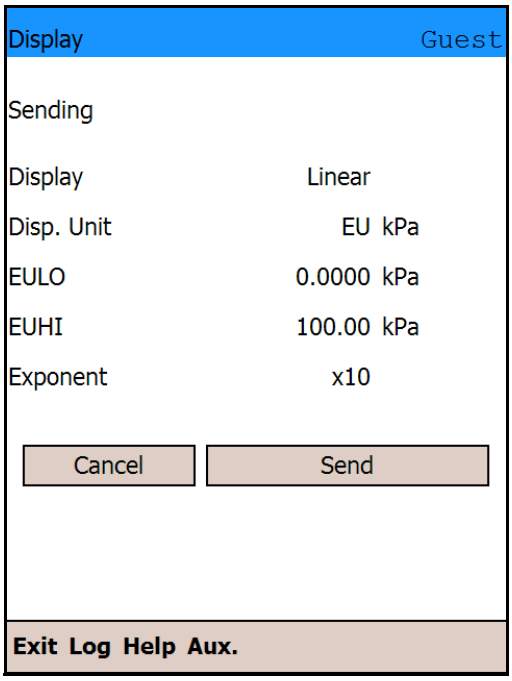
(3) Select the display conformity. "Square Root (flow Rate)" changes the display to square root (flow rate) when the Conformity is linear. After selecting a display format, tap [Next>>].
If selected unit mode is %, the send screen will appear.
If selected unit mode is "Engineering Unit", the screen to configure EULO and EUHI, the lower and upper limits for the engineering unit, will appear.



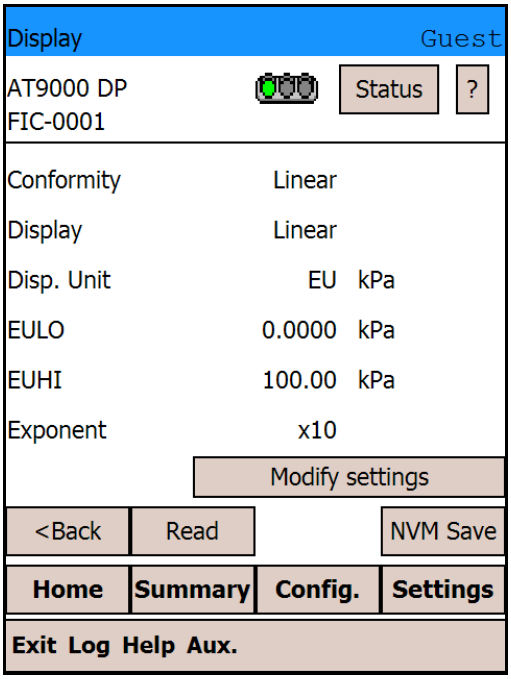
(4) Configure Engineering Unit. If you configure “User-defined Unit”, tap the drop-down menu for “Unit” and select “User define unit”. After selecting, tap [Next>>].



(5) Check the displayed values and tap [Send].



(6) The confirmation message for transmission appears. Tap [Yes]. When the transmission is completed, the initial Display screen appears again.



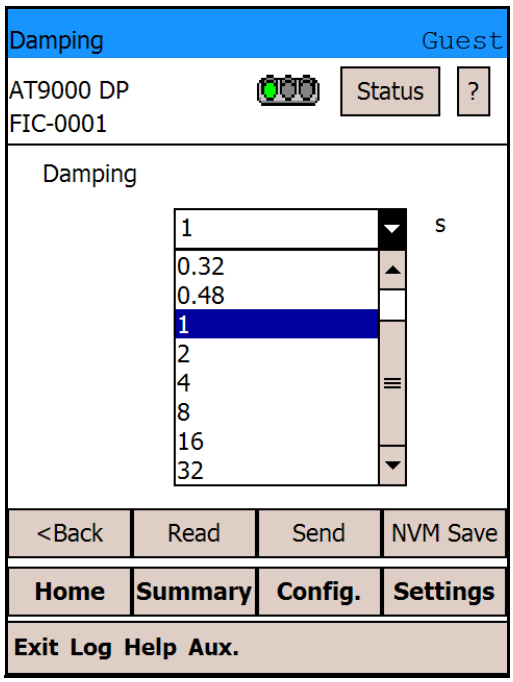
Indicator configuration is now complete. If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your changes. Tapping [Read] reads the set values and displays them again. Tapping [<Back] restores the original screen.

4.16: Damping

You can configure the damping time constant on this screen. Allowable values (in seconds) are: 0.0, 0.16, 0.32, 0.48, 1.0, 2.0, 4.0, 8.0, 16.0, and 32.0.

The current value is displayed.

(1) Tap the “Damping” drop-down menu, and a list of alternative damping time constants will appear. Select the desired value and tap [Send].



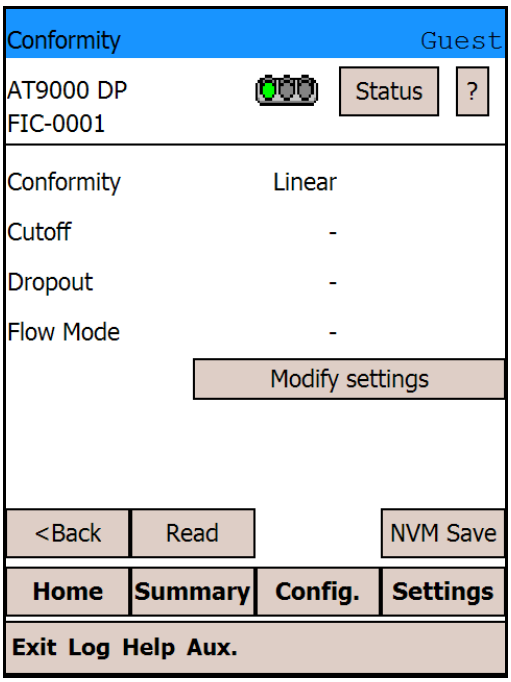
Damping time configuration is now complete. If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your change.Tapping [Read] reads the set values and displays them again. Tapping [<Back] restores the original screen.

4.17: Conformity

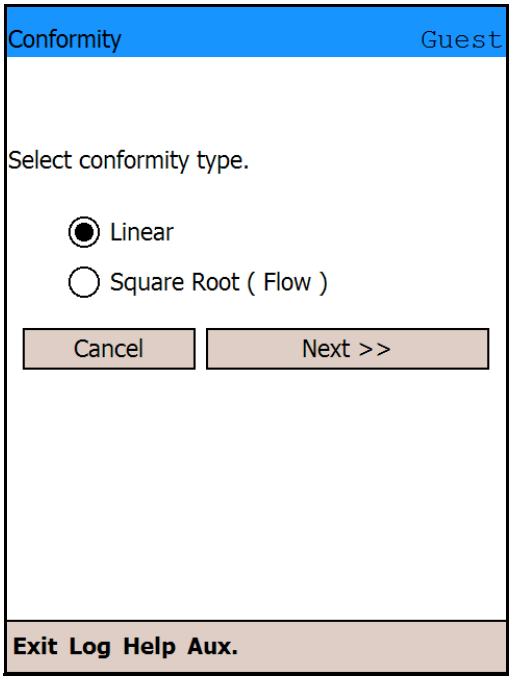
On this screen you can configure the following four items related to conformity:

- Conformity
  Select either linear or square root conformity.
- Cutoff
  Cuts the output off when the flow rate is low. Set the cutoff threshold value.
- Dropout
  Select either zero or linear output when the output is cut off.
- Flow Mode
  Select either square root extraction in the forward direction only, or in both directions.

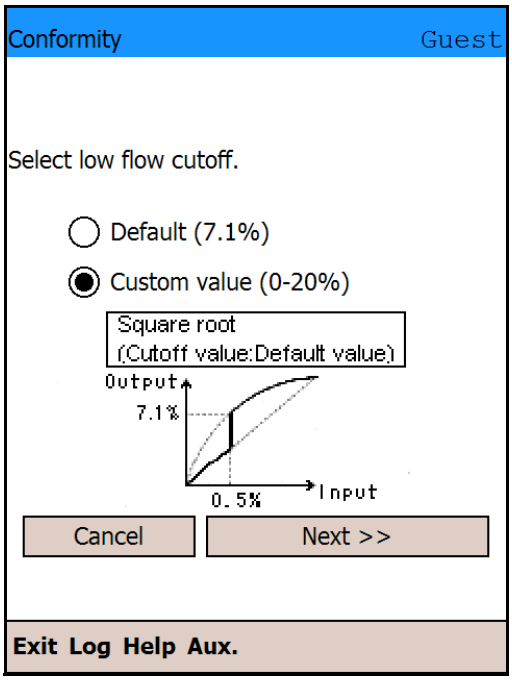
(1) To change the settings, tap [Modify settings].



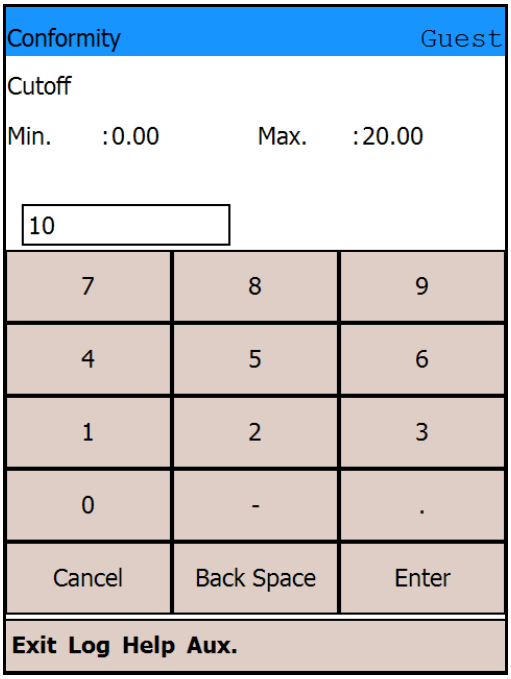
(2) Select either “Linear” or “Square Root” and tap [Next>>].



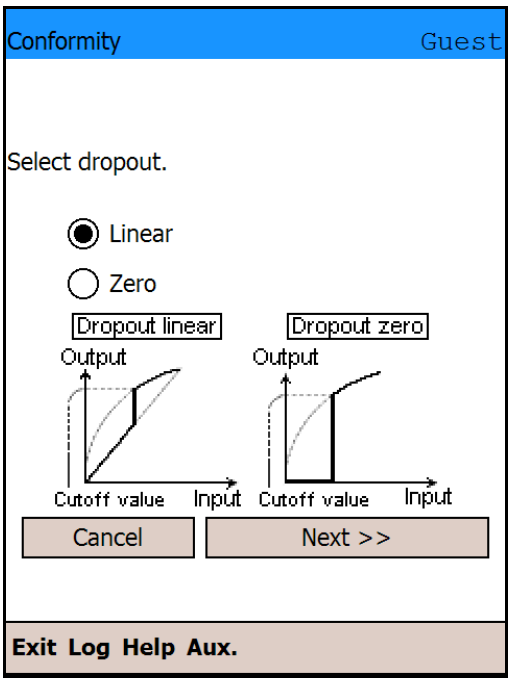
(3) If you select square root conformity, a screen for selection of low flow cutoff appears. Select either “default 7.1%” or “Custom value(0- 20%)” which allows the choice of any value between 0% and 20%.



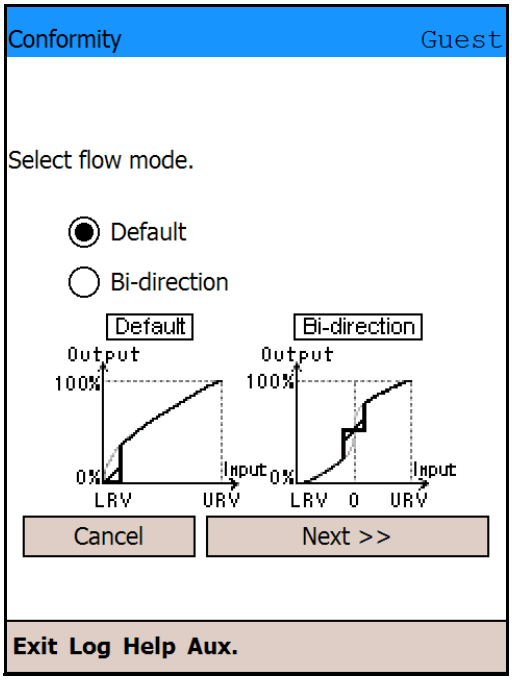
(4) If you select “Custom value” the input screen for entry of the cutoff value appears. Enter a value between 0 and 20 and tap [Enter].



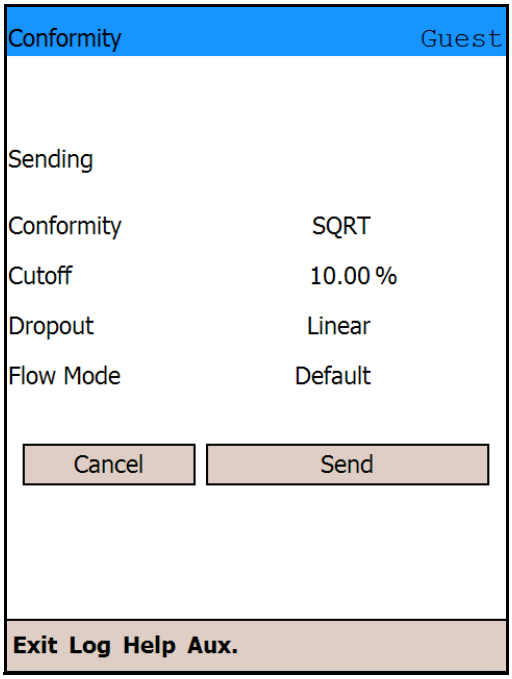
(5) Next, select a dropout format (linear or zero), and tap [Next>>].



(6) Finally, select a flow mode. Normally, you should choose “Default.”

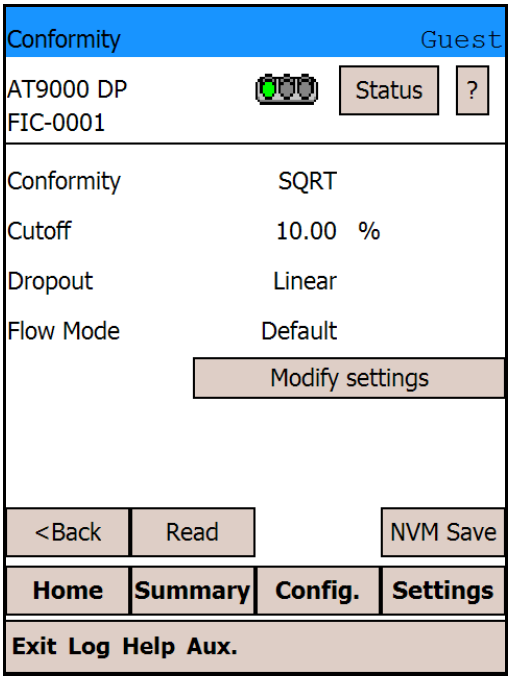


(7) The transmission screen appears. Check the values, and tap [Send].



The confirmation message for transmission appears. Tap Yes.

(8) When the transmission is completed, the initial screen appears again.



The configurations for conformity are now complete. If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your changes. Tapping [Read] reads the set values and displays them again. Tapping [<Back] restores the original screen.

4.18: Checking the Fail-safe Direction

This screen shows the output behavior if a critical failure occurs.

Upscale: Output at upper limit.
Downscale: Output at lower limit.

You cannot change the Up/Down setting.

The output standard is also displayed.

NAMUR NE43-compliant: 21 mA or higher (Up)/3.6 mA or lower (Down)

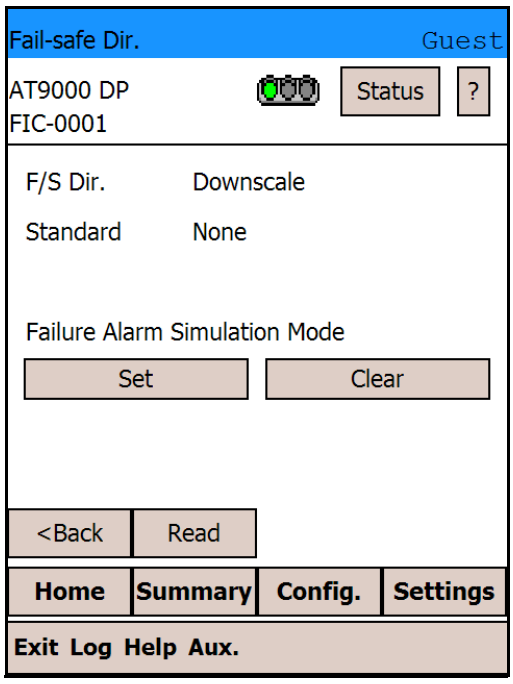
Non-NAMUR NE43-compliant: 21.6 mA or higher (Up)/3.6 mA or lower (Down)

Burnout Simulation

(1) You can simulate the output of a critical failure.

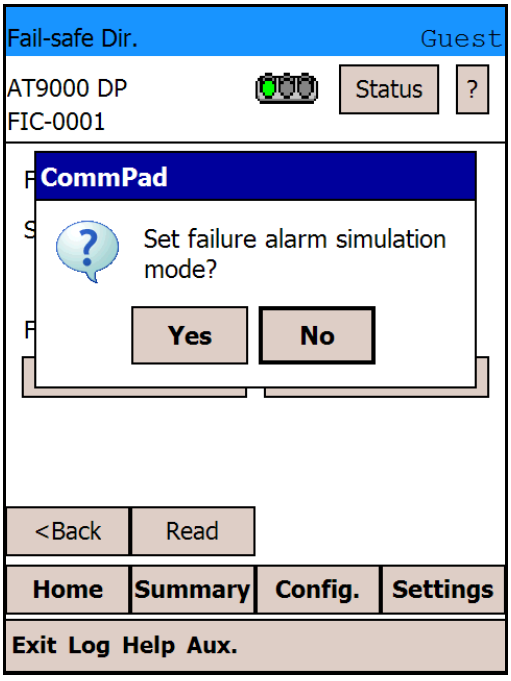
By tapping [Set], the device enters Simulation mode and the output goes beyond the upper or lower limit.

To clear this mode, tap [Clear].

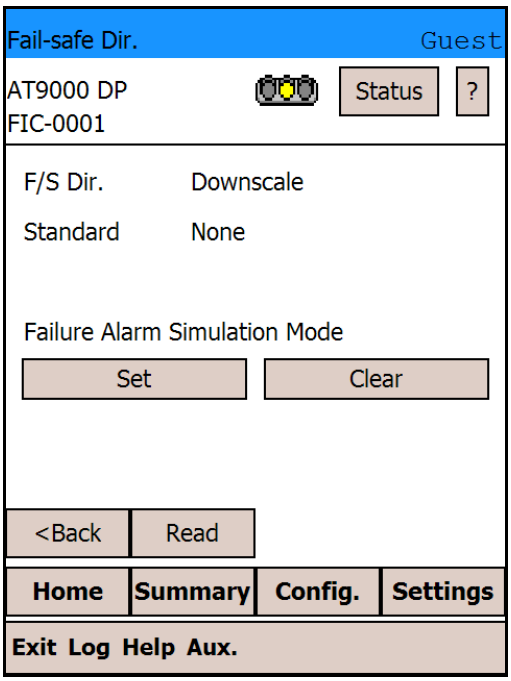


(2) To run a simulation of the occurrence of a burnout, tap the [Set] button.

A confirmation message appears. Tap [Yes].

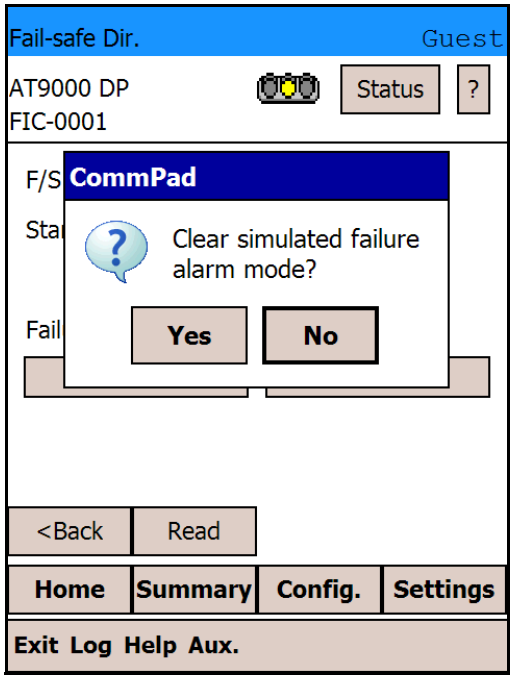


(3) The device is now in the Burnout Simulation state, and the traffic light icon changes to yellow.



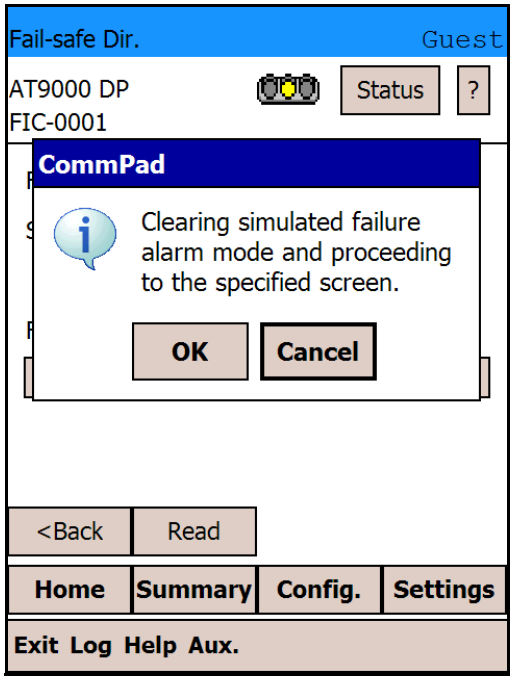
(4) To clear the Burnout Simulation, tap [Clear].

A confirmation message appears. Tap [Yes].



The Burnout Simulation is now cleared. Note that even if you do not clear the Burnout Simulation, the device will automatically clear it after approximately 10 minutes without communication.

(5) If you try to go to another screen from the Burnout Direction screen without first clearing the Burnout Simulation, the confirmation message "Clearing simulated failure alarm mode and proceeding to the specified screen." appears. Tap [OK], and the Burnout Simulation is cleared and you will go to the other screen.



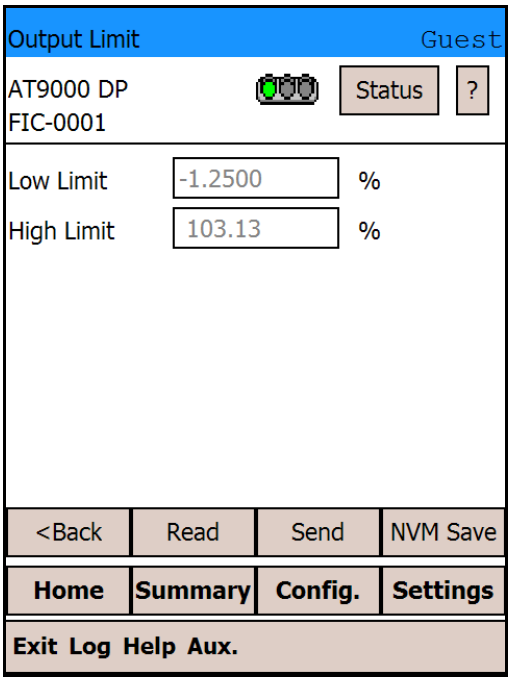
Tapping [Read] reads the set values and displays them again. Tapping [<Back] restores the original screen.

4.19: Output Limit

You can set the maximum and minimum output limits on this screen. The output will remain between the maximum and minimum values unless a burnout occurs.

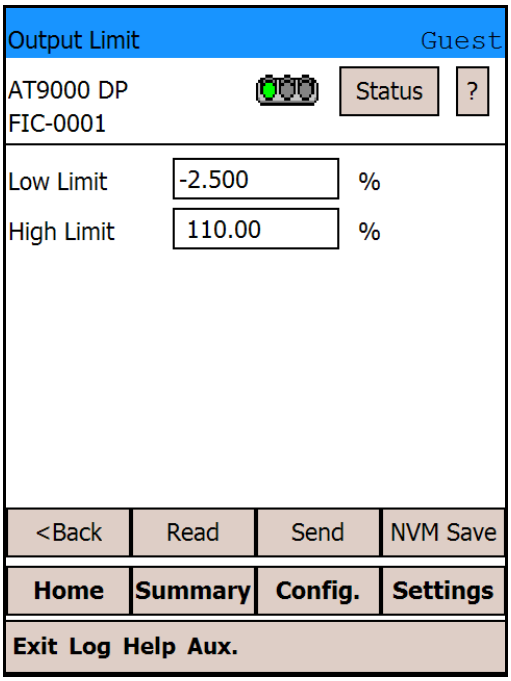
You cannot change output limits if the analog output level is compliant with NAMUR NE43.

<If the analog output level is compliant with NAMUR NE 43>

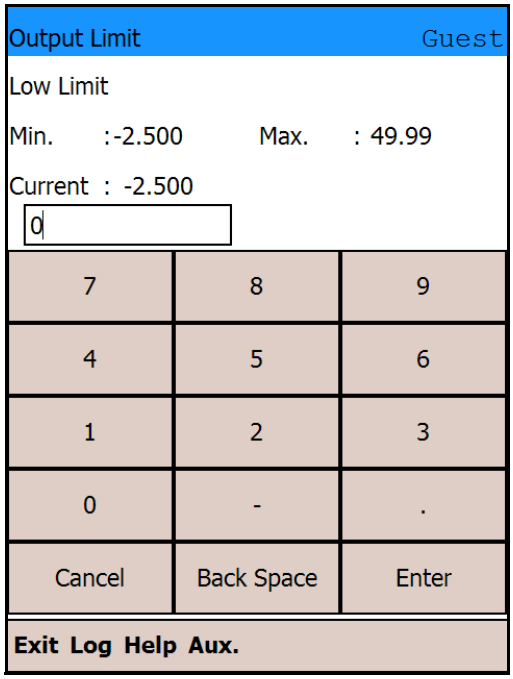


<If the analog output level is not compliant with NAMUR NE 43>

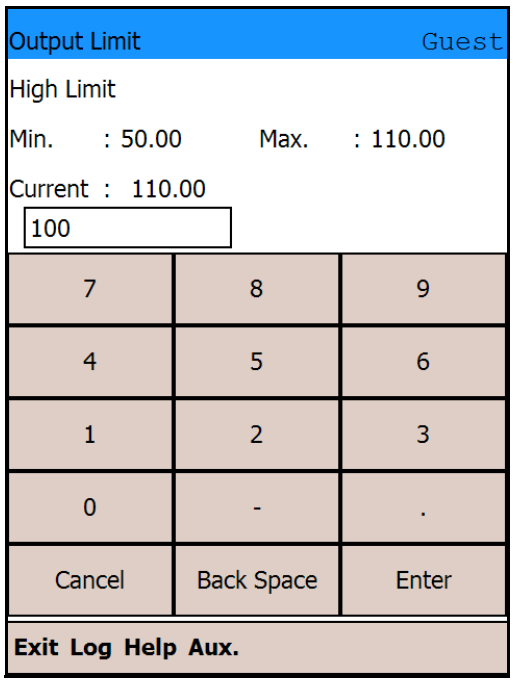
(1) To change the minimum output, tap the “Low Limit” display field.



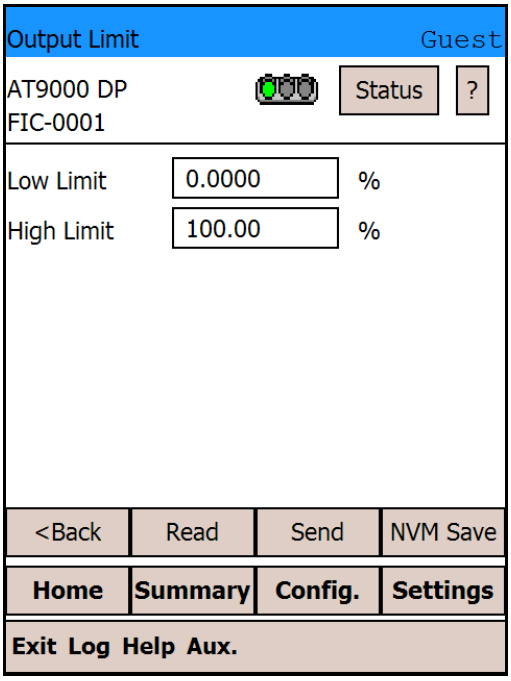
(2) The input screen for the minimum output appears. Enter a value you want to set, and tap [Enter].



(3) Similarly, enter a value you want to set for the maximum output, and tap [Enter].



(4) The values you have set appear. Tap [Send].

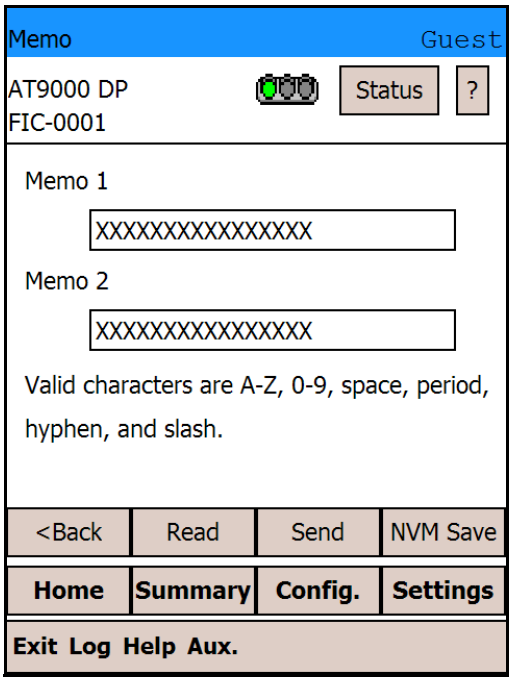


Output limit configuration is now complete. If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your changes. Tapping [Read] reads the set values and displays them again. Tapping [<Back] restores the original screen.

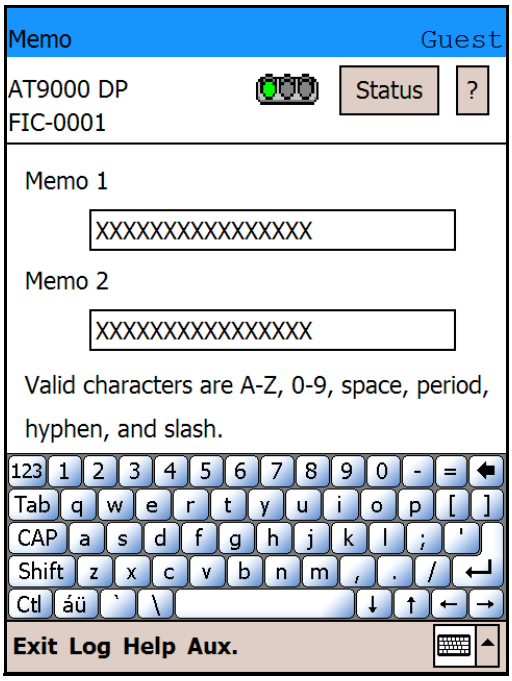
4.20: Memo

You can display and write to the built-in device Memo fields on this screen. You may enter up to 16 one-byte alphanumeric characters each in Memo 1 and Memo 2.

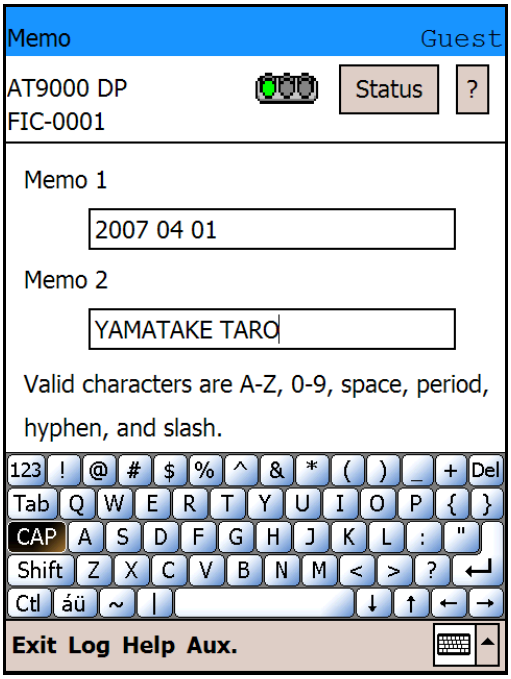
(1) Tapping either the “Memo 1" or “Memo 2" display field shows the soft keyboard.



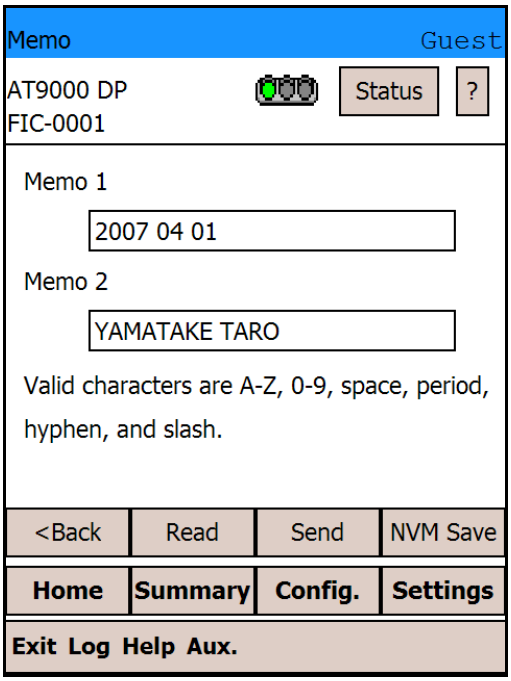
(2) Tap [CAP] to change to uppercase character mode.



(3) Enter a memo using the available characters. Once the memo is finished, tap "↵" and the soft keyboard will disappear from the screen.



(4) Tap [Send] to send the changed memos to the device.



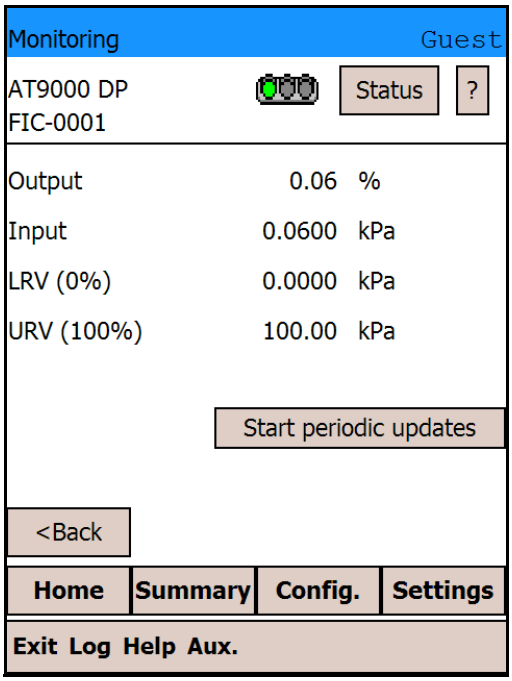
Memo creation is now complete. If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your changes. Tapping [Read] reads the set values and displays them again. Tapping [<Back] restores the original screen.

4.21: Monitoring

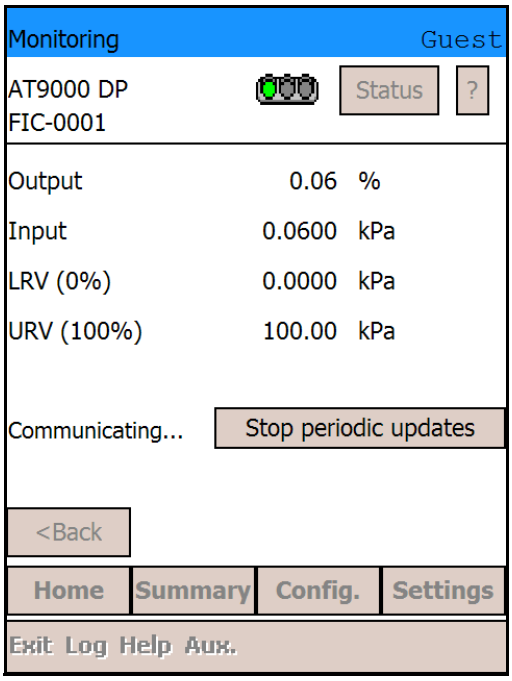
This screen displays the following parameters:

- Output
- Input
- LRV (0%)
- URV(100%)

Periodically updated Output and Input values can also be displayed. Tapping [Start periodic updates] begins automatic periodic updates of the Output and Input values. Values are updated every six seconds.



The screen shown below is displayed while periodic updating is activated. To stop periodic updating, tap [Stop periodic updates].



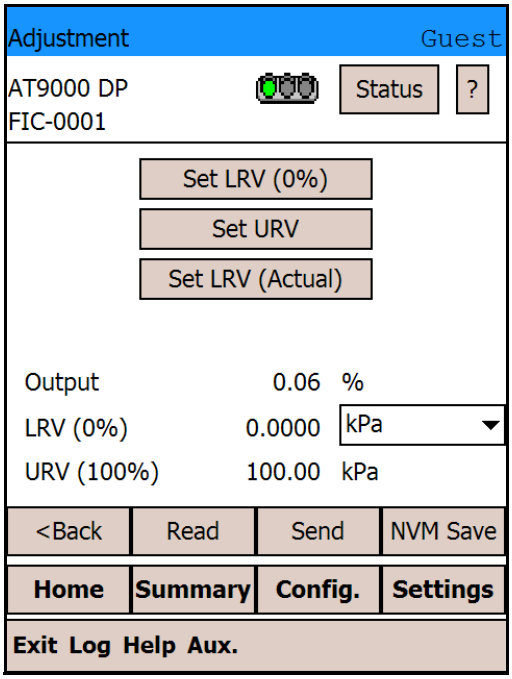
4.22: Adjustment

You can adjust the range on this screen. There are three functions:

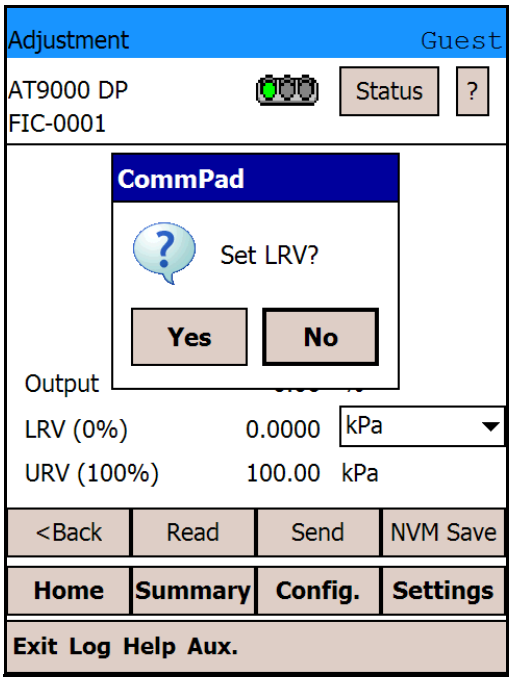
- Set LRV (0%): Sets the current input value as the lower limit of the range.
- Set URV: Sets the current input value as the upper limit of the range.
- Set LRV (Actual): Sets the current output value as the specified percentage of output.

4.22.1: Set LRV (0%)

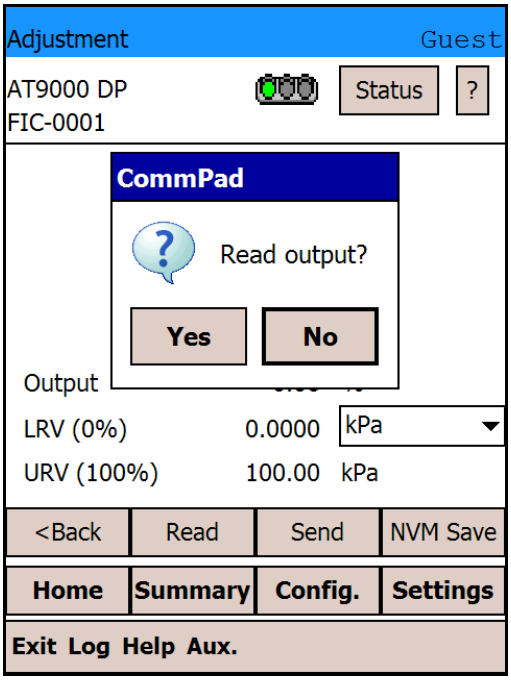
(1) To adjust LRV, tap [Set LRV (0%)].



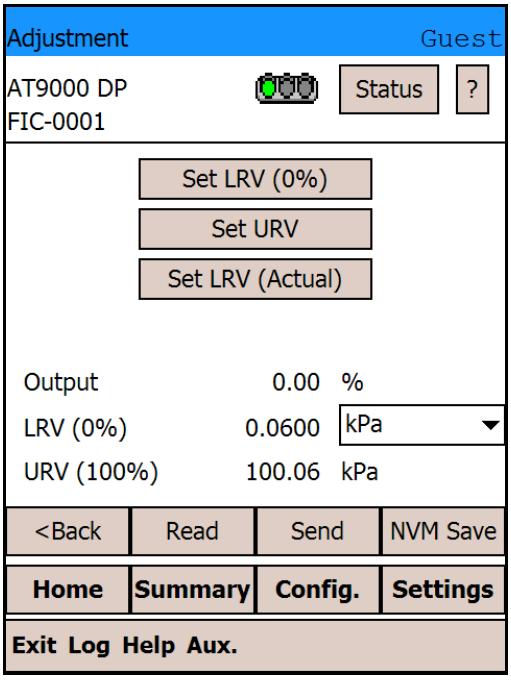
(2) A confirmation message appears. Tap [Yes].



(3) A confirmation message for rereading Output appears. Tap [Yes].



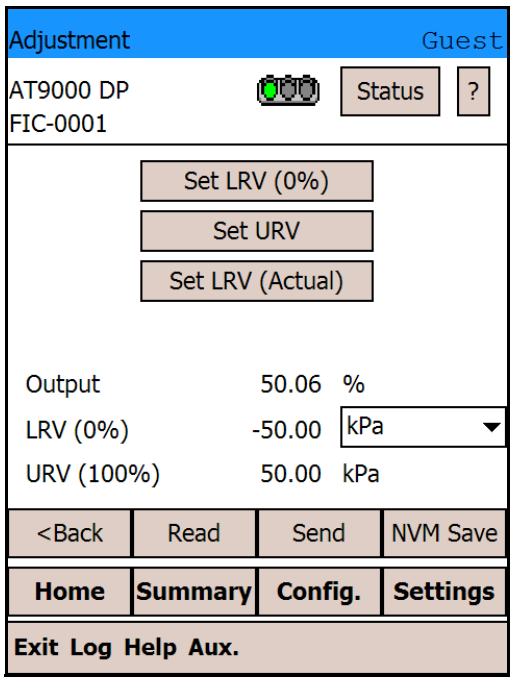
(4) LRV has now changed to the adjusted value.



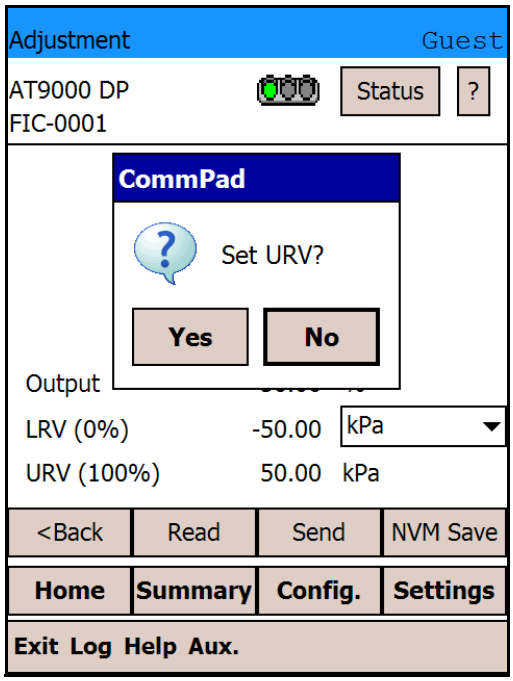
(5) LRV adjustment is now complete. If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your changes. Tapping [Read] reads the set values and displays them again. Tapping [<Back] restores the original screen.

4.22.2: URV adjustment

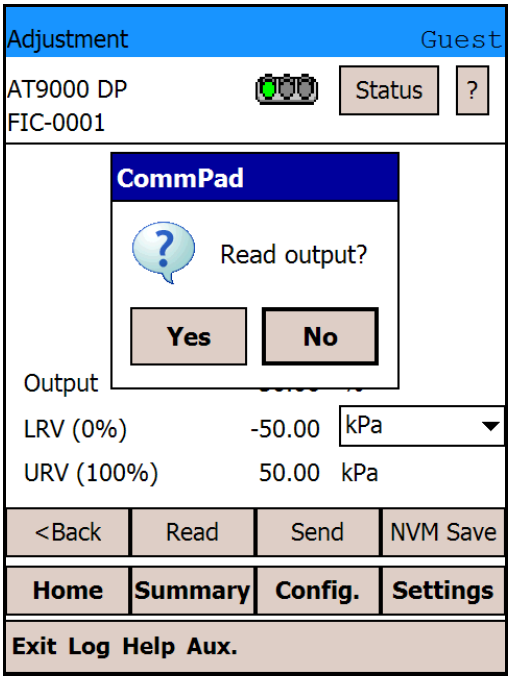
(1) To adjust URV, tap [Set URV].



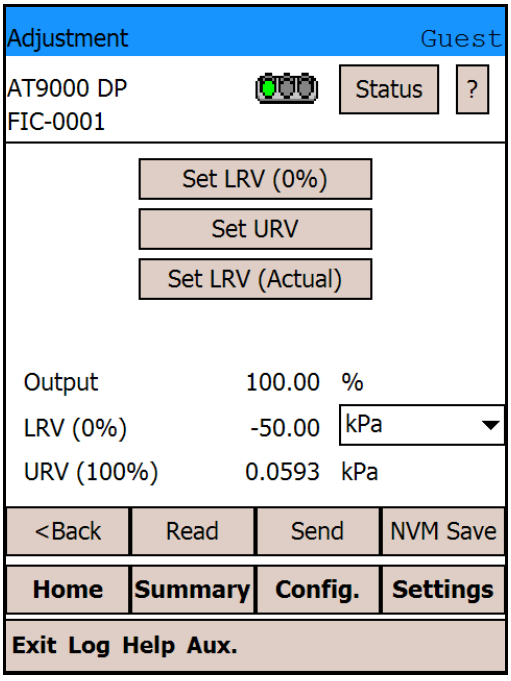
(2) A confirmation message appears. Tap [Yes].



(3) A confirmation message for rereading Output appears. Tap [Yes].



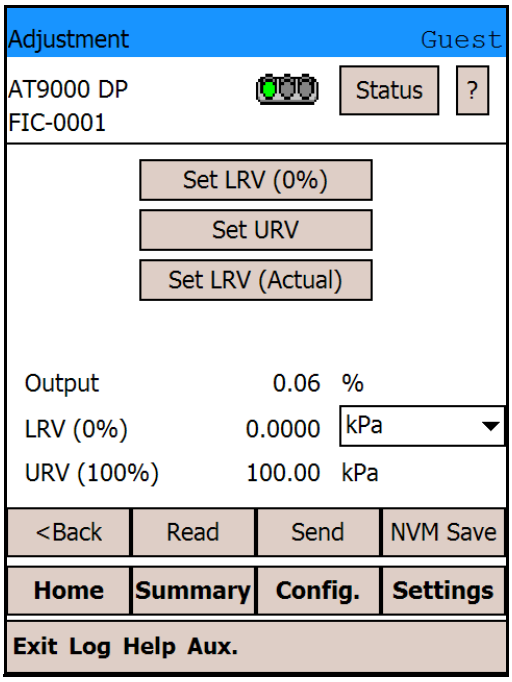
(4) URV has now changed to the adjusted value.



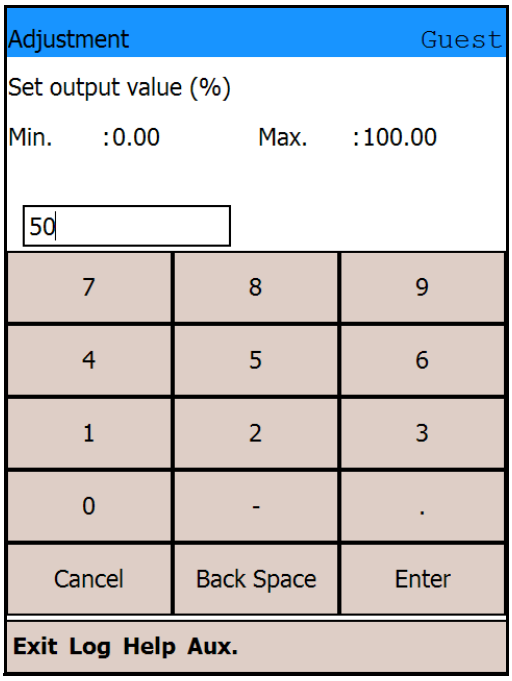
(5) URV adjustment is now complete. If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your change. Tapping [Read] reads the set values and displays them again. Tapping [<Back] restores the original screen.

4.22.3: Set LRV (Actual)

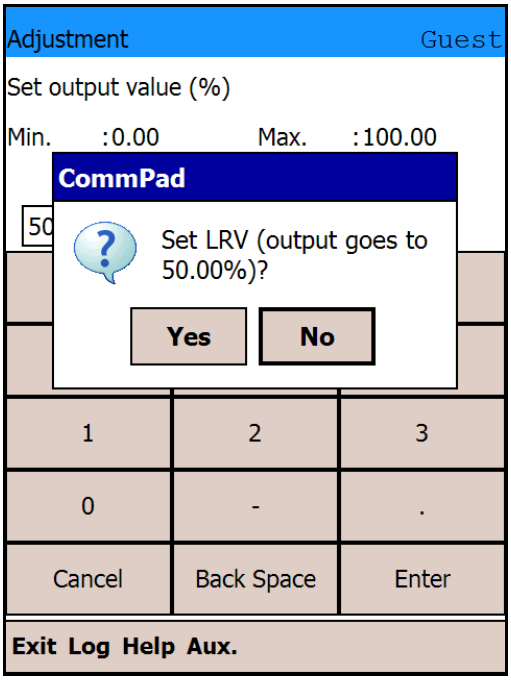
(1) To adjust the LRV so that the current sensor output level becomes a specified percentage of output, tap [Set LRV (Actual)].



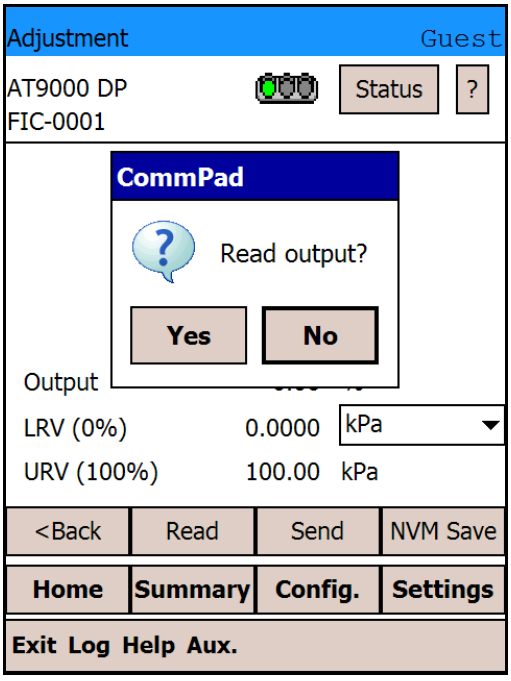
(2) Specify the desired percentage of output value, and tap [Enter].



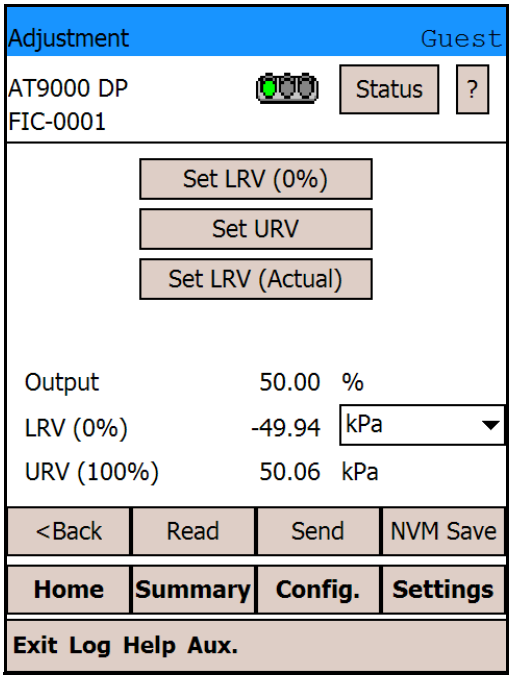
(3) A confirmation message appears. Tap [Yes].



(4) A confirmation message for rereading Output appears. Tap [Yes].



(5) The range has now been set and Output has changed approximately to the specified output value.



(6) Setting of LRV (Actual) is now complete. If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your change.Tapping [Read] reads the set values and displays them again. Tapping [<Back] restores the original screen.

4.23: Calibration

Five calibration functions are accessed from this screen.

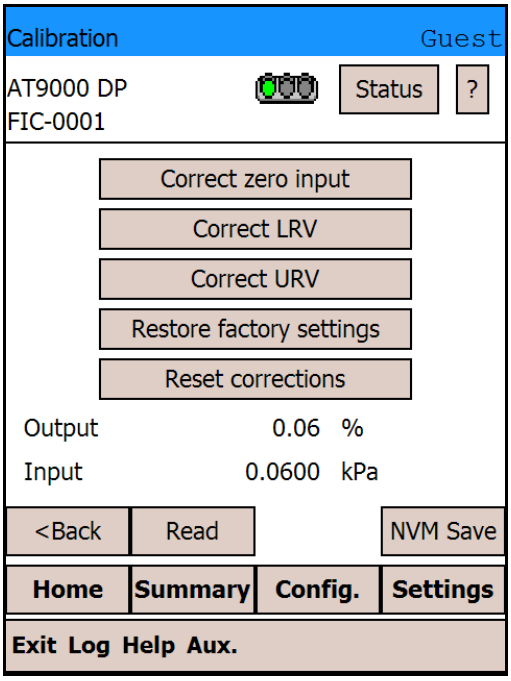
- Correct zero input: Zero point calibration
- Correct LRV: LRV calibration
- Correct URV: URV calibration
- Restore factory settings: Restoration of factory-set calibrations
- Reset corrections: Deletion of calibrations

[Restore factory settings]

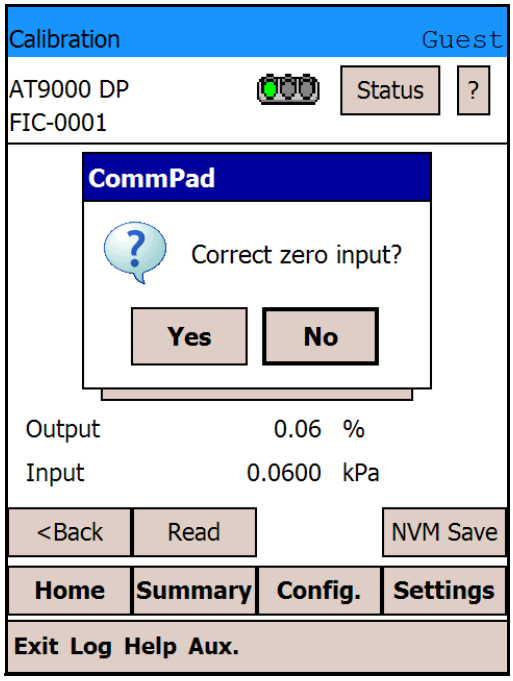
This function is not available for Series 900, so the button is grayed out and disabled. Also, if the device's software version is earlier than B.6, the button will be grayed out and disabled.

4.23.1: Correct zero input

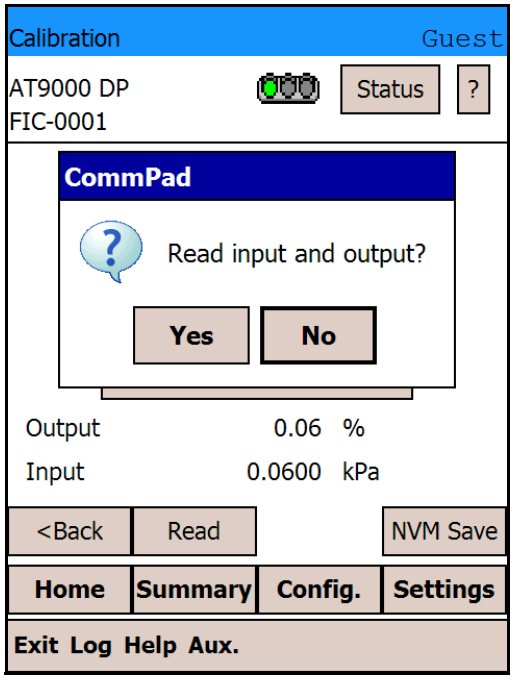
(1) For zero-point calibration, tap [Correct zero input].



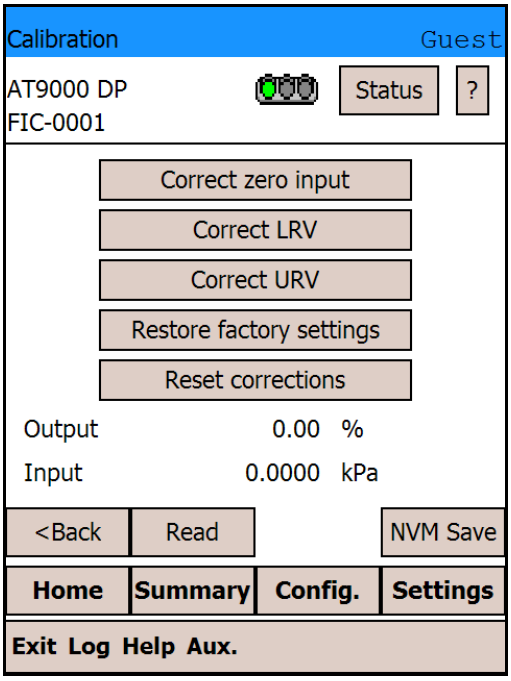
(2) A confirmation message appears. Check that the input is zero, and tap [Yes].



(3) A confirmation message for rereading Input and Output appears. Tap [Yes].



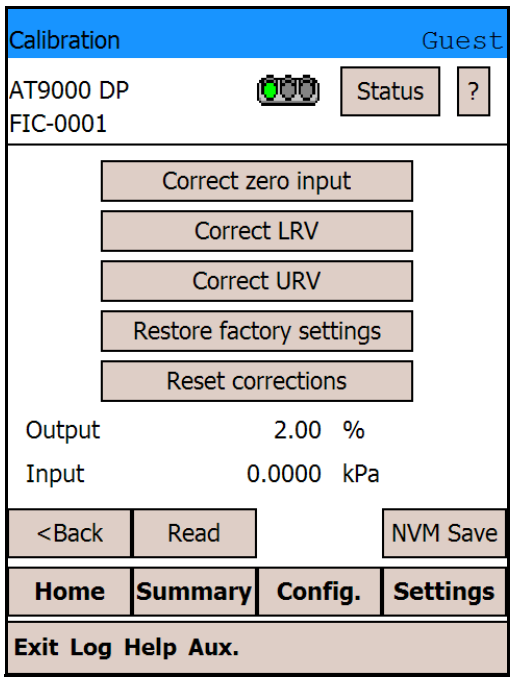
(4) Input has now changed approximately to zero as a result of the calibration.



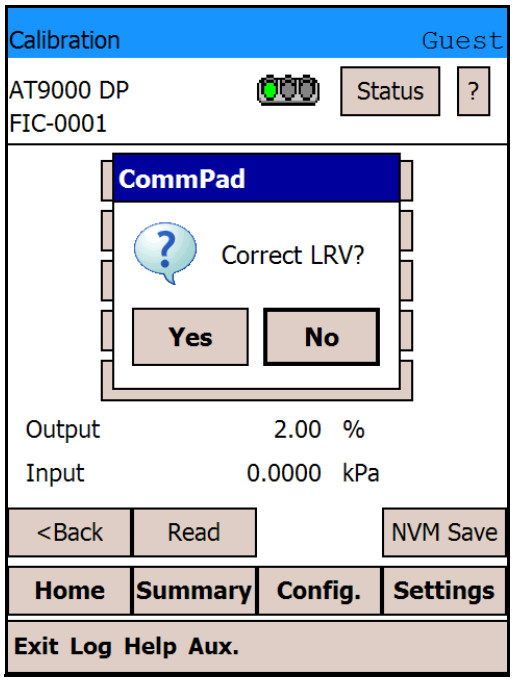
(5) Correct zero input is now complete. If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your change. Tapping [Read] reads the set values and displays them again. Tapping [<Back] restores the original screen.

4.23.2: Correct LRV

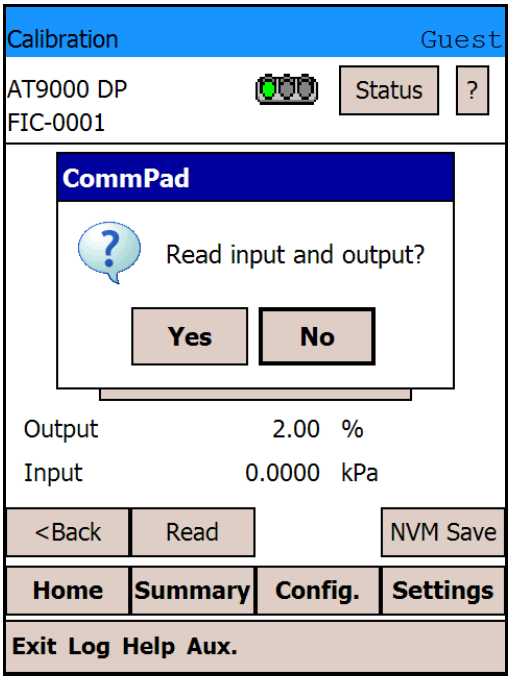
(1) For LRV calibration, tap [Correct LRV].



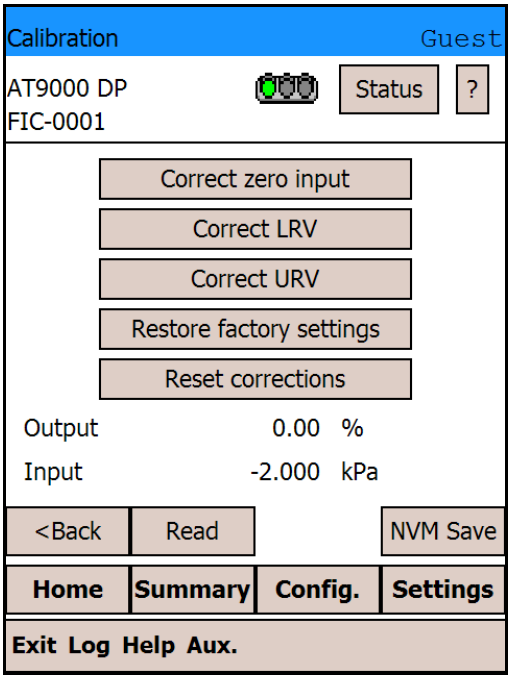
(2) A confirmation message appears. Check that Input is correct, and tap [Yes].



(3) A confirmation message for rereading Input and Output appears. Tap [Yes].



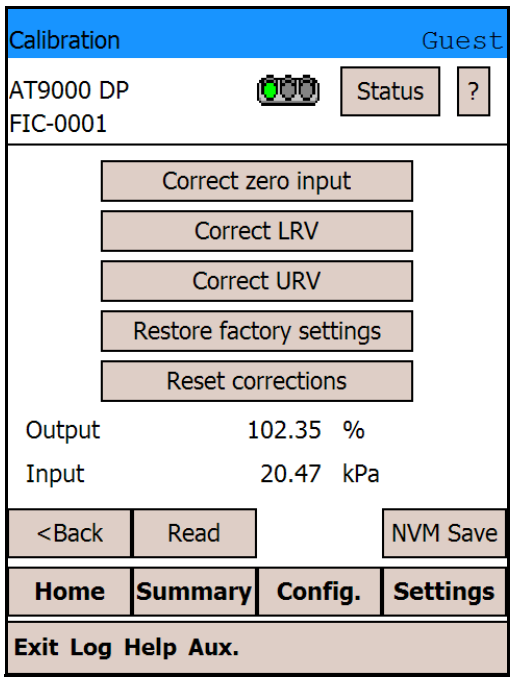
(4) Input has now changed approximately to zero as a result of the calibration.



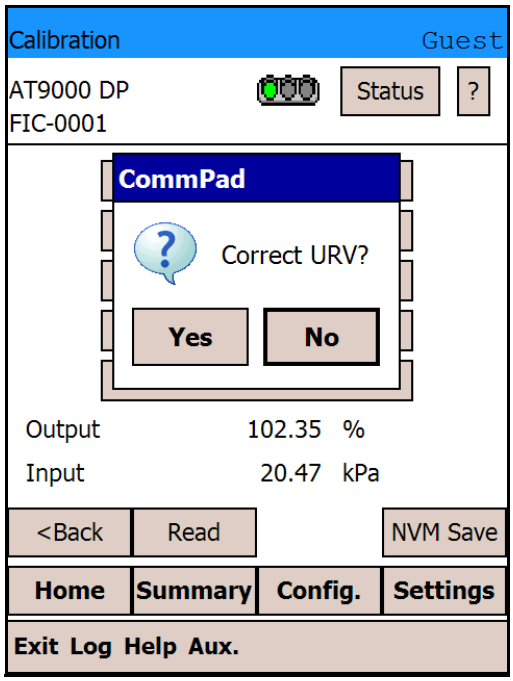
(5) Correct LRV is now complete. If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your change. Tapping [Read] reads the set values and displays them again. Tapping [<Back] restores the original screen.

4.23.3: Correct URV

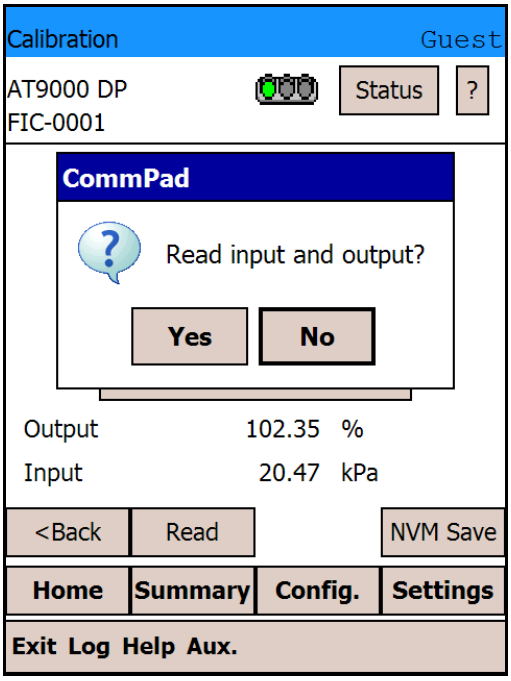
(1) For URV calibration, tap [Correct URV].



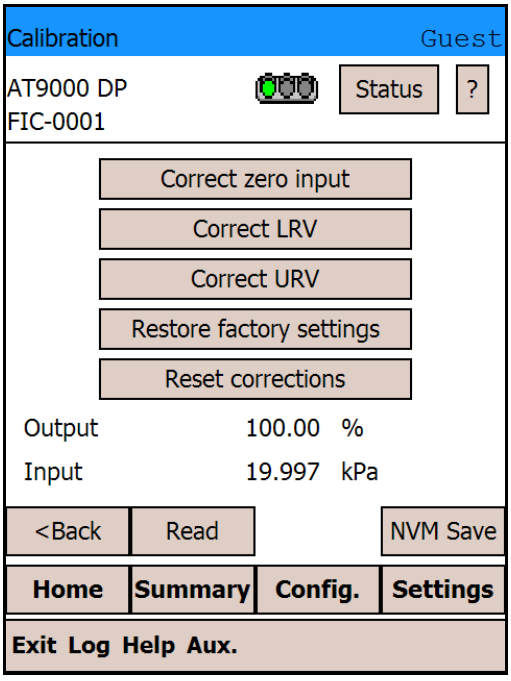
(2) A confirmation message appears. Check that Input is correct, and tap [Yes].



(3) A confirmation message for rereading Input and Output appears. Tap [Yes].



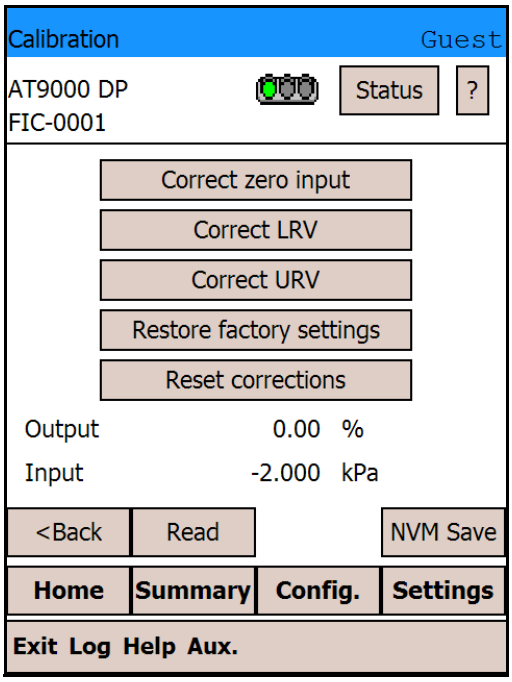
(4) Output has now changed approximately to 100% as a result of the calibration.



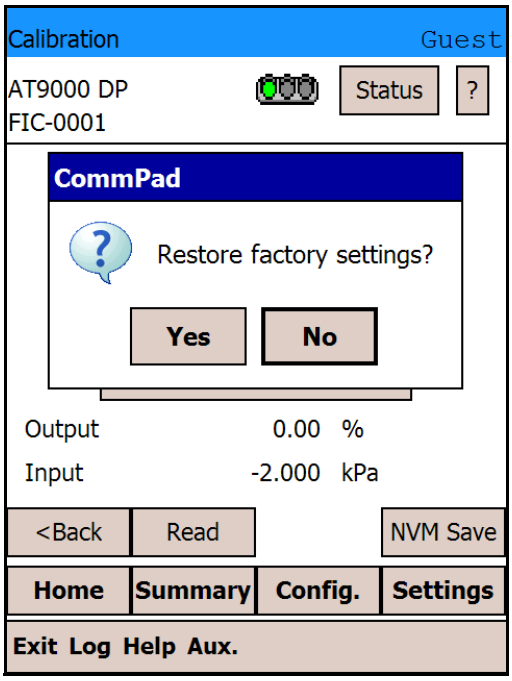
(5) Correct URV is now complete. If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your change. Tapping [Read] reads the set values and displays them again. Tapping [<Back] restores the original screen.

4.23.4: Restore factory settings

(1) To revert the calibrated data to the factory calibration settings, tap [Restore factory settings].



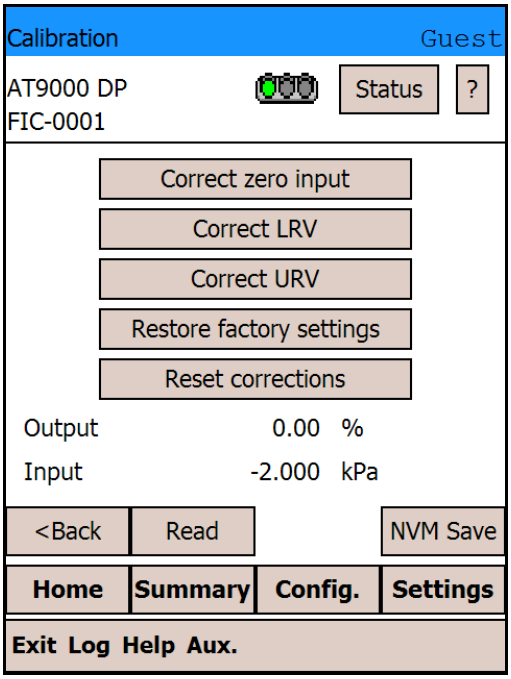
(2) A confirmation message appears. Tap [Yes].



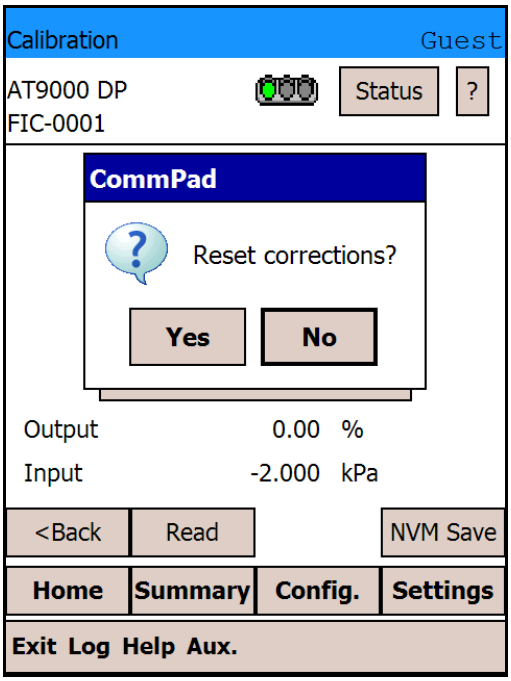
4.23.5: Reset corrections

Note: Since resetting calibrated data deletes the calibrated data stored in the device, measurements may not be correct afterwards. Be sure to re calibrate after executing Reset Corrections.

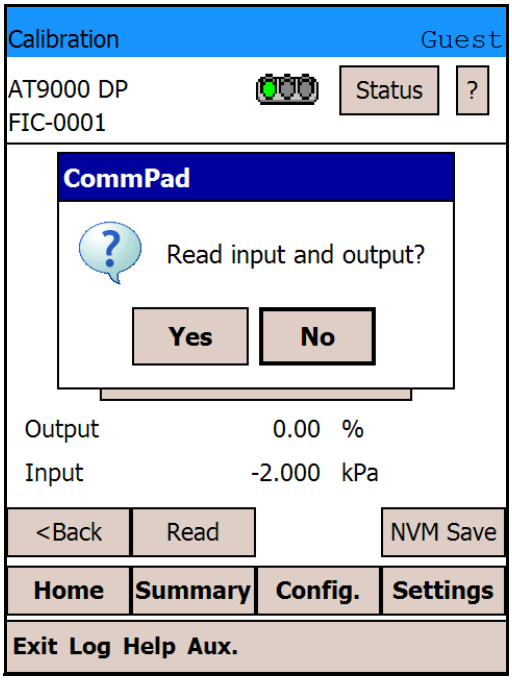
(1) To delete calibration data, tap [Reset corrections].



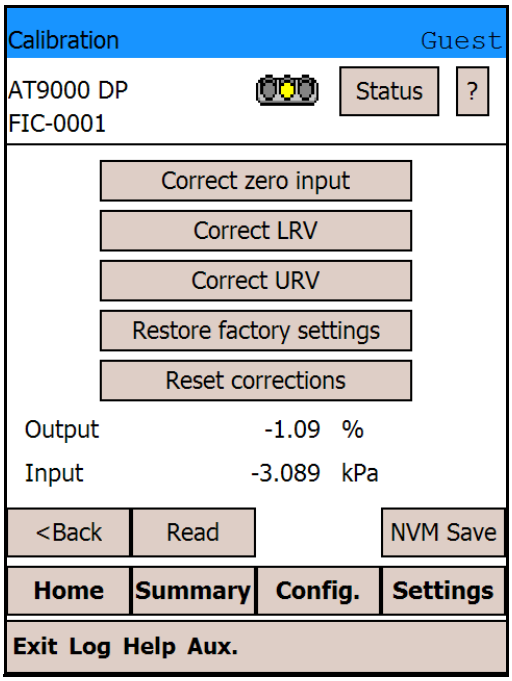
(2) A confirmation message appears. Tap [Yes].



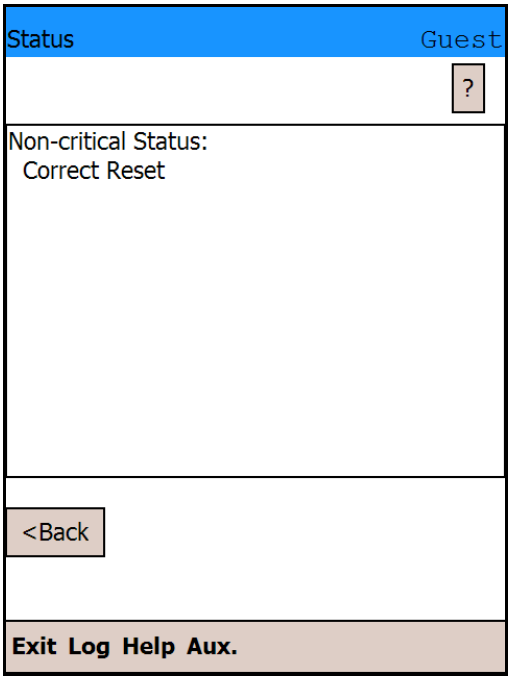
(3) A confirmation message for rereading Input and Output appears. Tap [Yes].



Note: Tapping [Reset corrections] changes the traffic light icon to yellow. Tapping [Status] will display further information.



The status is now Correct Reset.



After using the Reset Corrections function, you must always re calibrate. Executing Correct LRV (or Correct zero input) and Correct URV will cancel the Correct Reset status.

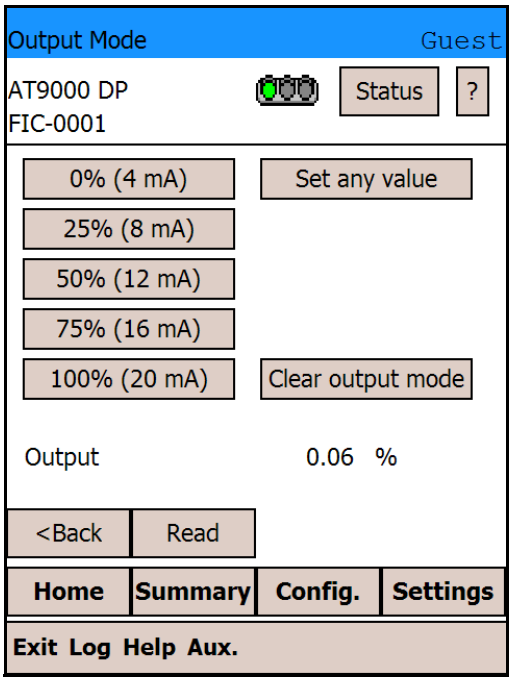
If you use Correct LRV (or Correct zero input) only, you can cancel the Correct Reset status by turning the power of the device off and then back on after using [NVM Save].

4.24: Output Mode

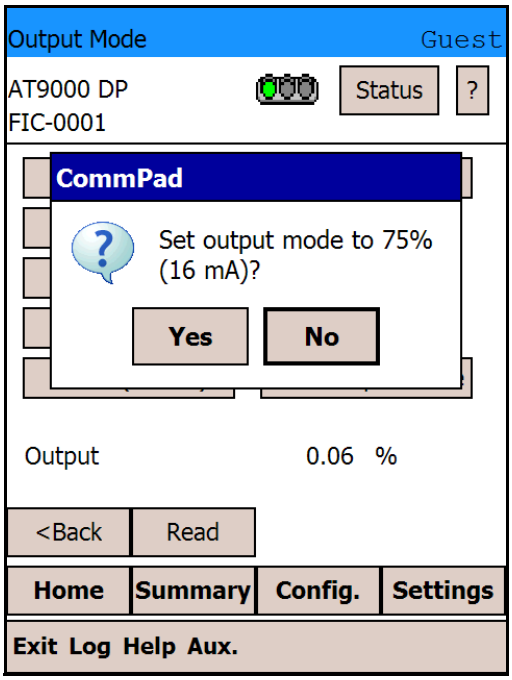
This screen is used to set and cancel output mode. There are two ways to set output mode: by selecting one of five preset values (0%, 25%, 50%, 75%, 100%) or by inputting a value of your choice.

Setting Output Mode at 75%

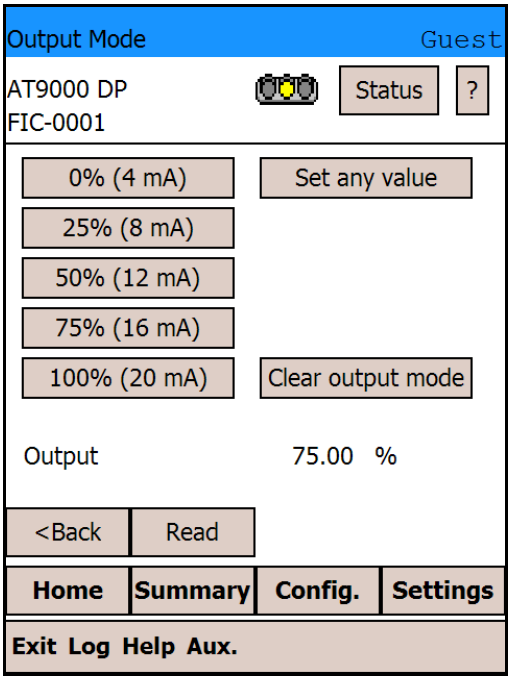
(1) To set output mode at 75%, tap [75% (16 mA)].



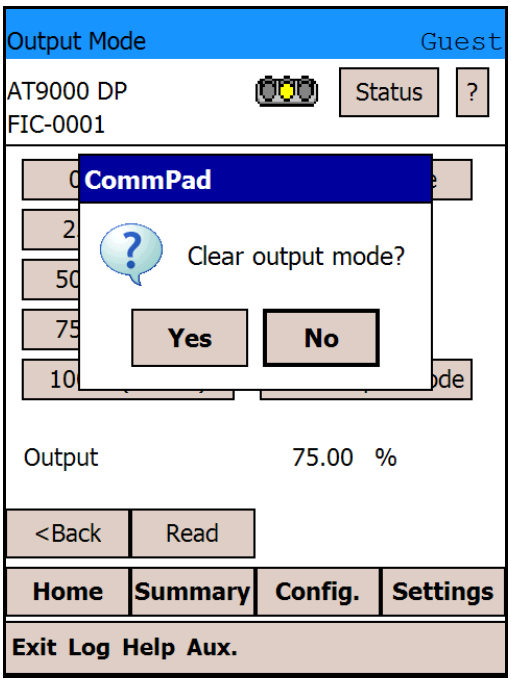
(2) A confirmation message appears. Tap [Yes].



(3) The device is now in output mode, and the traffic light icon changes to yellow.

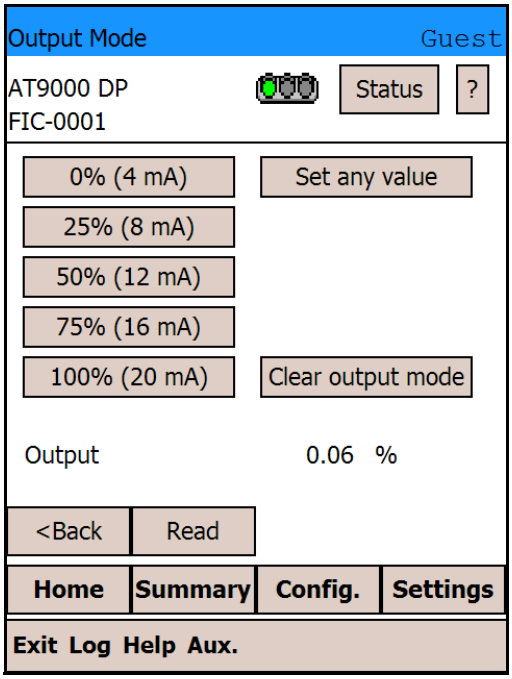


(4) To clear output mode, tap [Clear output mode]. A confirmation message appears. Tap [Yes].



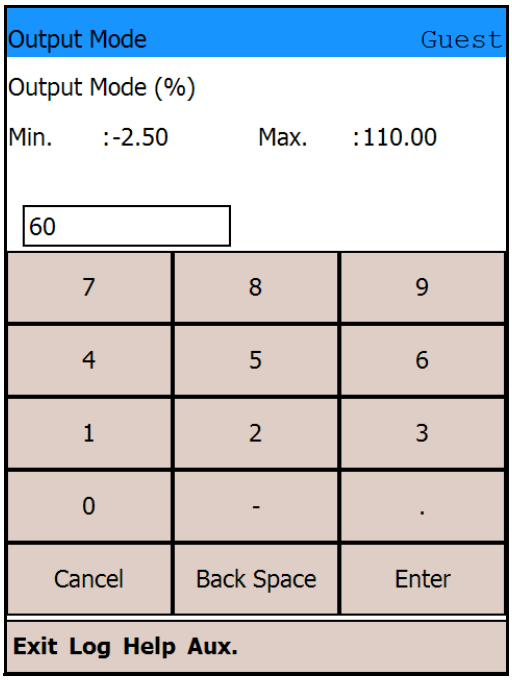
(5) Output mode is now cleared.
Note that even if you do not clear output mode, the device will automatically clear it after approximately 10 minutes without communication.

To set the Output Mode to a value of your choice, tap [Set any value].

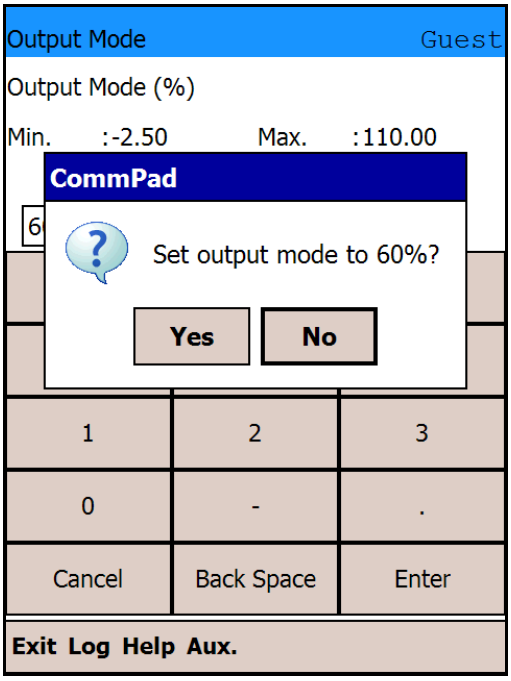


Setting a Value of Your Choice

(6) Enter a value within the valid configuration range between the displayed max. and min. values and tap [Enter]. The configuration range varies depending on how the output standard is configured.
If the analog output level is not compliant with NAMUR NE 43, [Min.] is -2.50 and [Max.] is 110.00.
If the analog output level is compliant with NAMUR NE 43, [Min.] is -1.25 and [Max.] is 103.12.

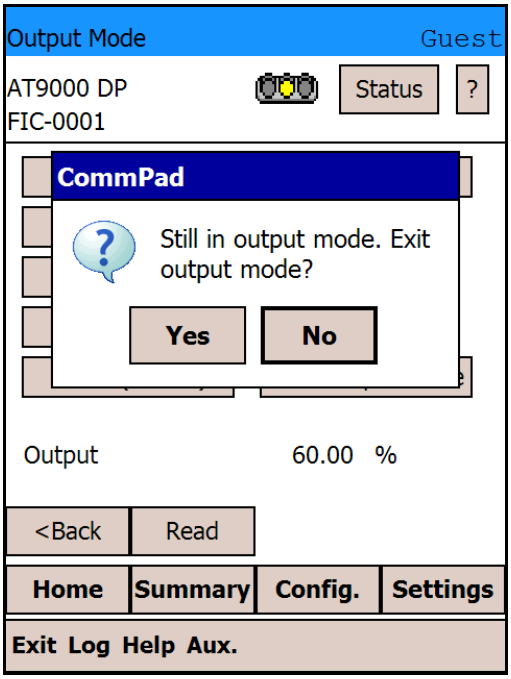


(7) A confirmation message appears. Tap [Yes].



Moving to another screen

If you try to move from the Output Mode screen to another screen without first clearing output mode, the confirmation message “Still in output mode. Exit output mode?” appears. If you want to clear output mode, tap [Yes]. If you want to move to another configuration screen without clearing output mode, tap [No].



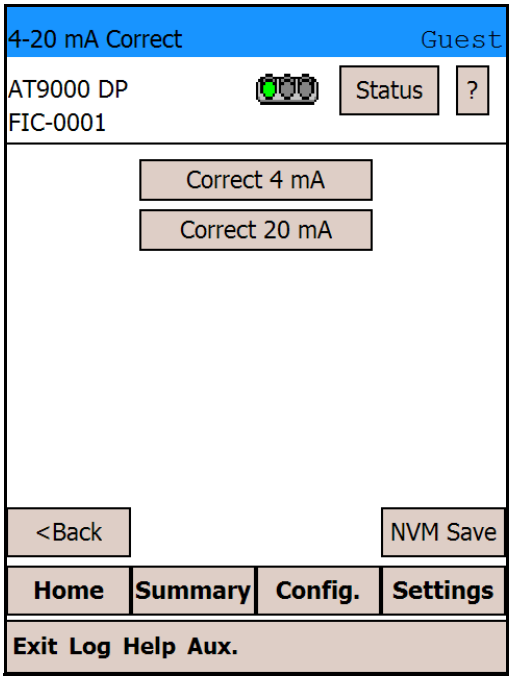
4.25: 4-20 mA Correct

This screen is for calibration of the analog output signal.

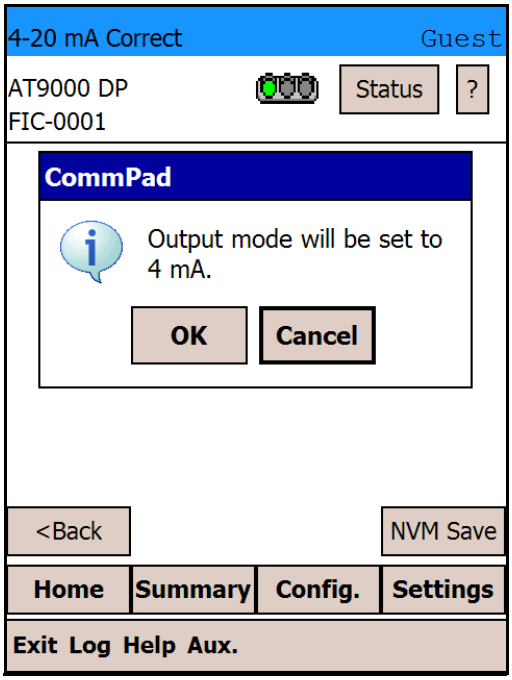
Note: Normally you do not need to calibrate the analog output signal. Do not calibrate it under normal circumstances. However, if calibration is absolutely necessary, the following items are required:

- A high-precision ammeter with an accuracy of 0.03% F.S. or higher
- A 250Ω resistor (±0.005%).

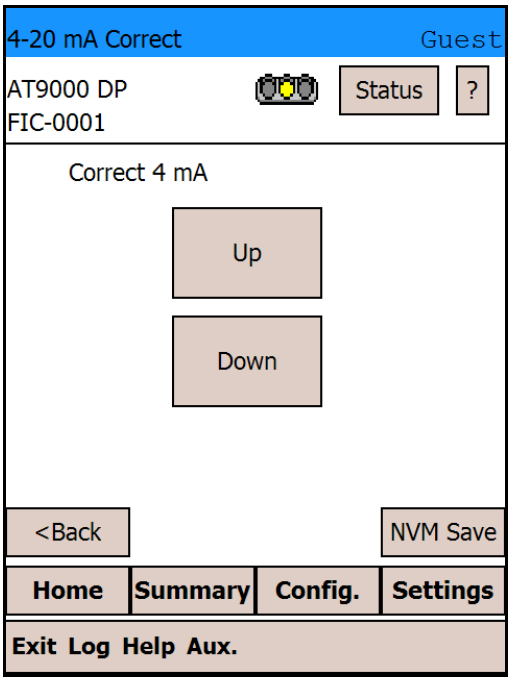
(1) For 4 mA output calibration, tap [Correct 4 mA].



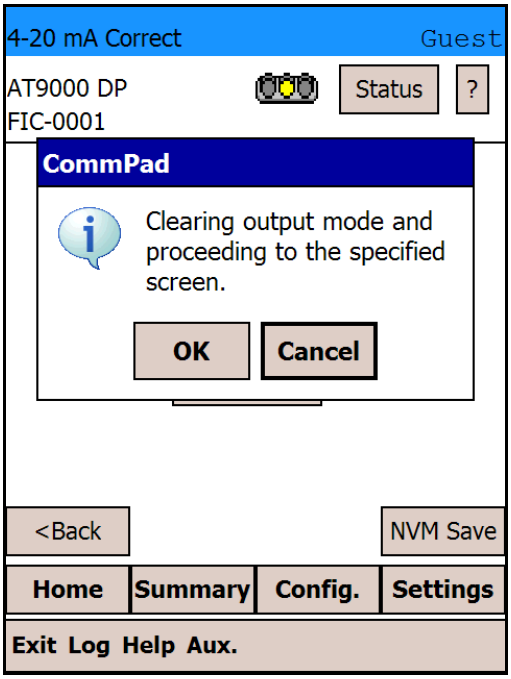
(2) Output mode will be set to 4mA, tap [OK].



(3) After the device is set to the 4 mA output mode, the “Correct 4 mA” screen appears. Read the ammeter, and if you want to increase the output signal, tap [Up]. If you want to decrease the output signal, tap [Down].



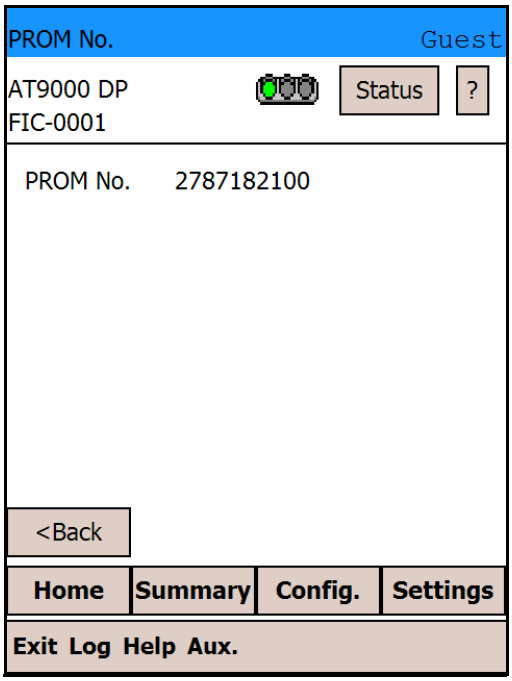
(4) Calibration of the 4mA output signal is complete.
If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your change.
Tap [< Back] to return to the initial 4-20 mA Correct screen after clearing output mode.



(5) You can do 20 mA calibration in the same way as 4 mA calibration.

4.26: PROM No.

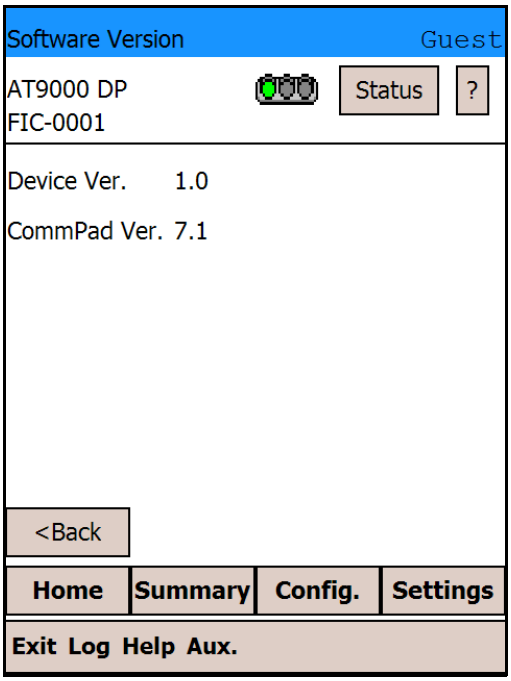
Use this screen to check the device PROM No.



Tapping [<Back] restores the original screen.

4.27: Software Version

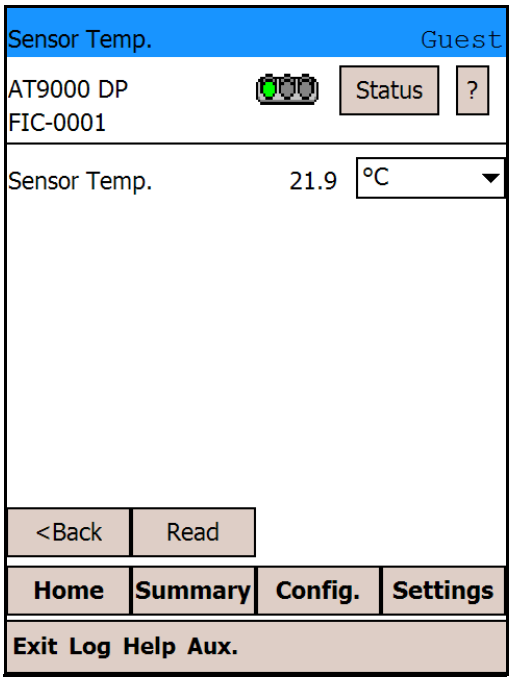
Use this screen to check the software versions of the device and of CommPad.



Tapping [<Back] restores the original screen.

4.28: Sensor Temp.

Use this screen the sensor temperature to check.



Tapping [Read] reads the sensor temperature and displays them again. Tapping [<Back] restores the original screen.

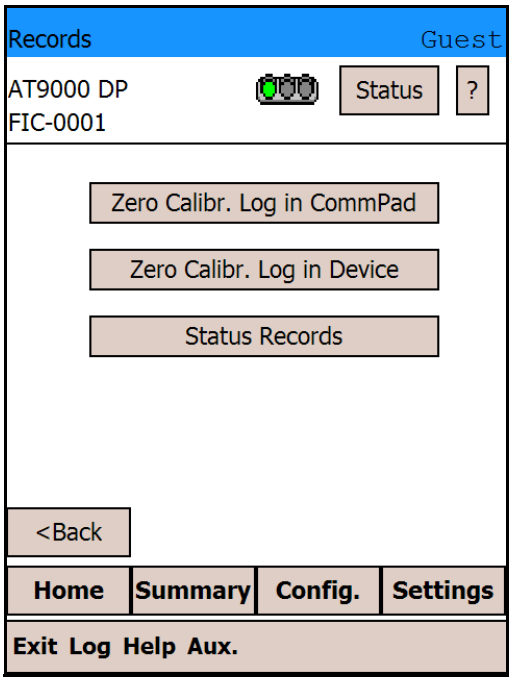
4.29: Records

You can display status records on this screen. There are three functions:

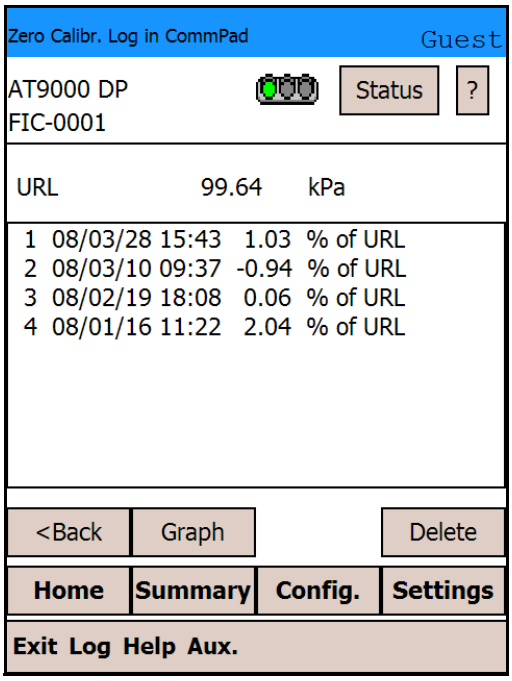
- Zero Calibr. Log in CommPad: Displays CommPad's internal zero calibration record, which is saved when zero calibration of the device is done by CommPad.
- Zero Calibr. Log in Device: Displays the zero point calibration data saved in the device.
- Status Records: Displays device status records saved in the device.

4.29.1: Zero Calibr. Log in CommPad

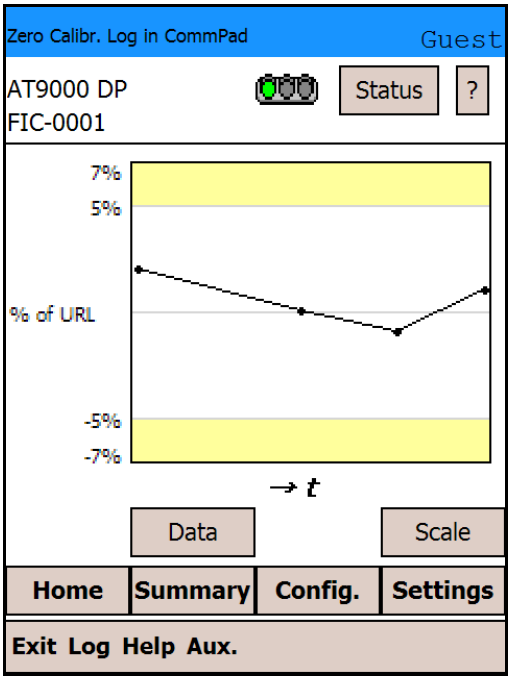
(1) To display the record of the zero calibration amounts saved in CommPad, tap [Zero Calibr. Log in CommPad].



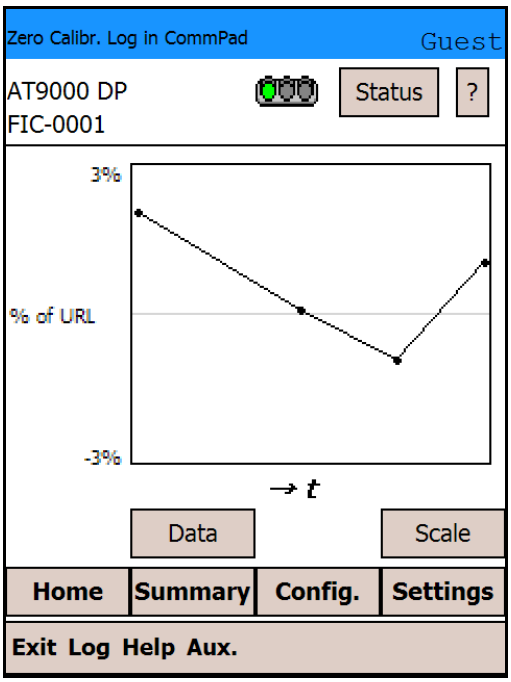
(2) Saved data appears on the screen.



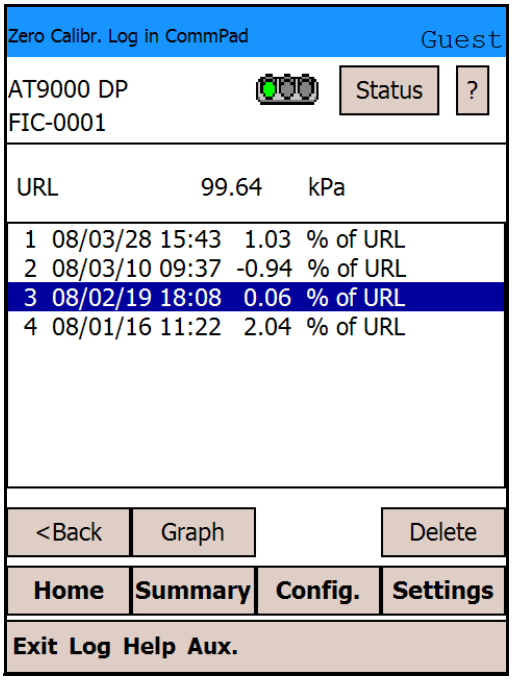
(3) To change the display to a graphical form, tap [Graph].



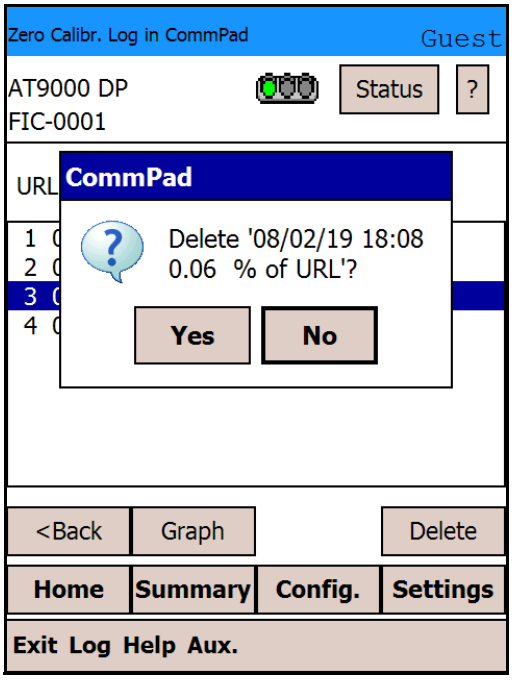
(4) Tapping [Scale] will change the scale as appropriate for the maximum value of the data.



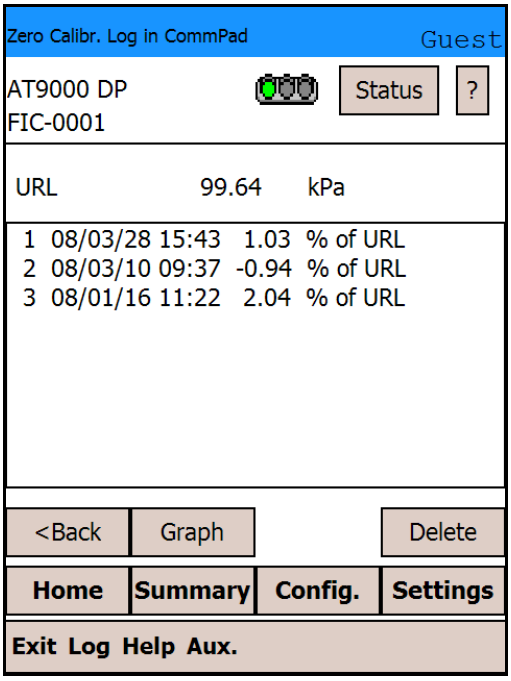
(5) To delete data, tap the unnecessary line to highlight it, and then tap [Delete].



(6) A confirmation message appears. Tap [Yes].

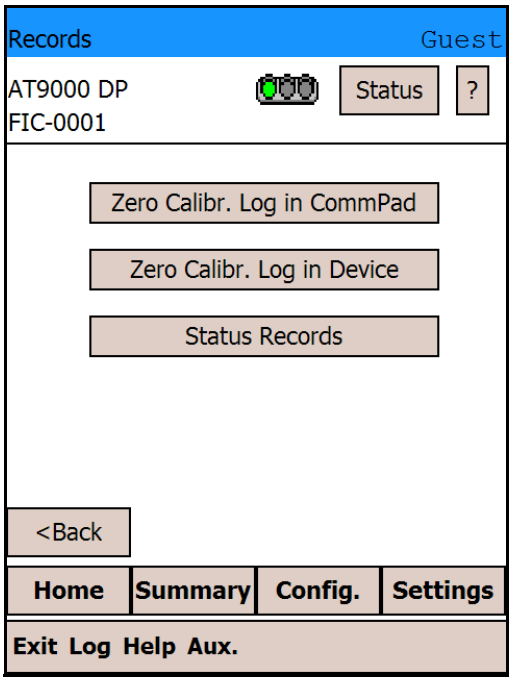


(7) The data that was highlighted is now deleted.

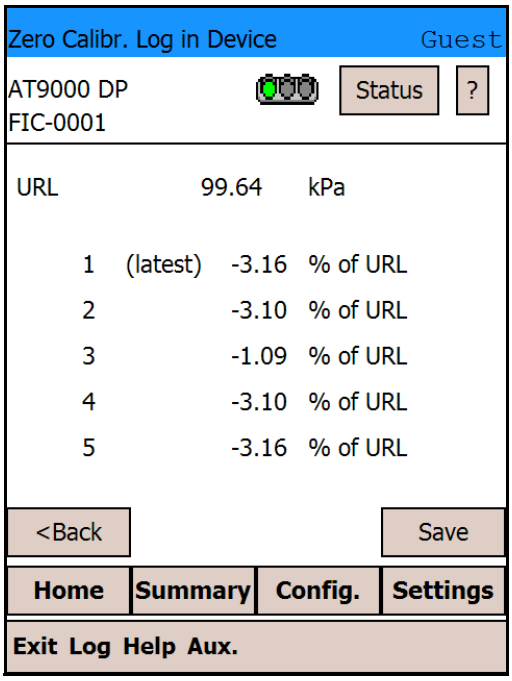


4.29.2: Zero Calibr. Log in Device

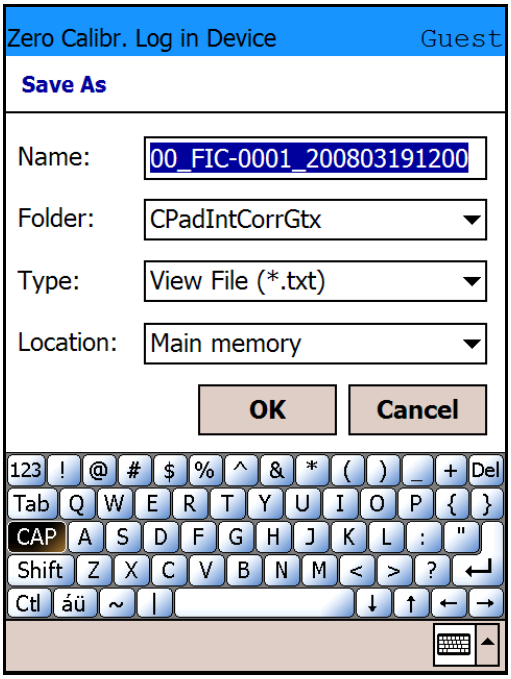
(1) To display zero calibration records saved in the device, tap [Zero Calibr. Log in Device].



(2) Up to five records are saved.



(3) By tapping [Save], you can save the displayed data to a file. The file name is supplied automatically. Tap [OK] without changing anything.



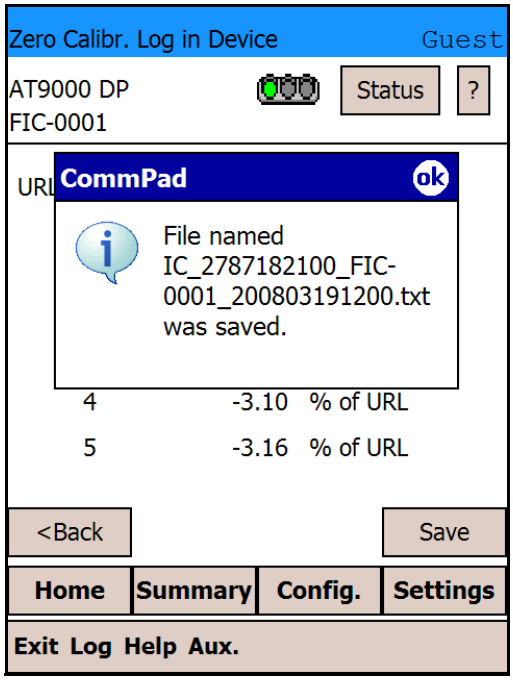
The name of the automatically-named file has the following structure:

IC_(PROMID)_(tag name)_(year/month/day/hour/minute).txt

If either of the following 2 characters that cannot be used in a Windows file name is contained in the tag name, the character(s) will be converted automatically as indicated:

Character	Replacement
. (dot)	_ (underscore)
/ (slash)	~ (tilde)

(4) Tap [ok].

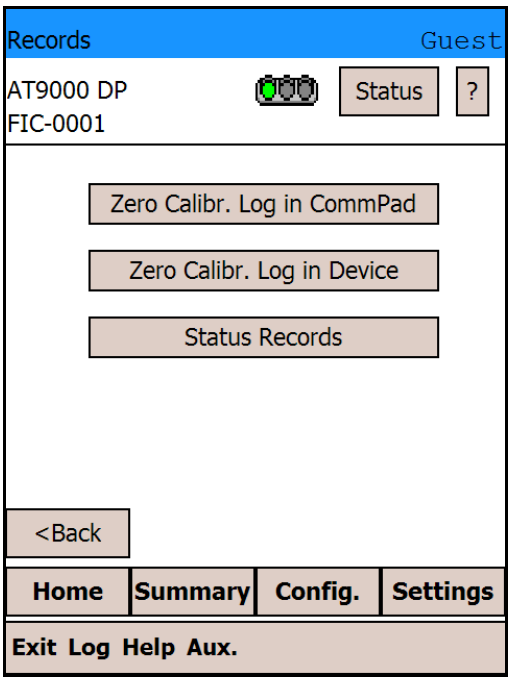


The saved file can be copied to your PC and viewed there. The file can be opened with a text editor or other software.
The data will look like the example shown below.

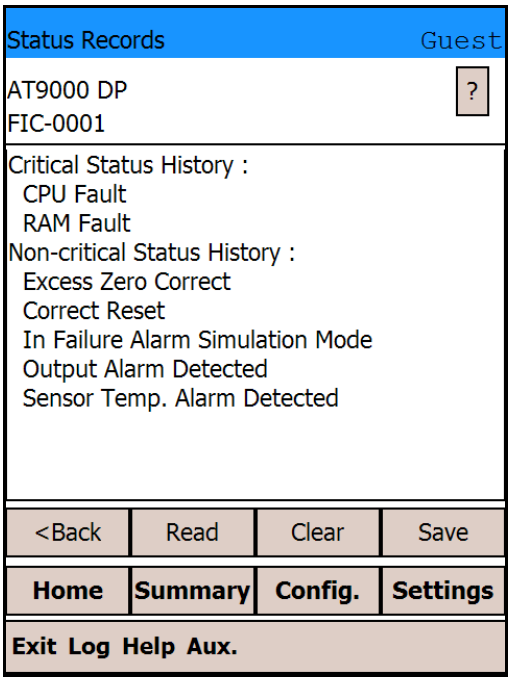
```
Zero Calibration Data in Device
2006/05/19 08:37
1(latest)   -0.21  % of URL
2           -0.21  % of URL
3           -0.23  % of URL
4           -0.23  % of URL
5           -0.22  % of URL
```

4.29.3: Status Records

(1) To display records of device status, tap [Status Records].

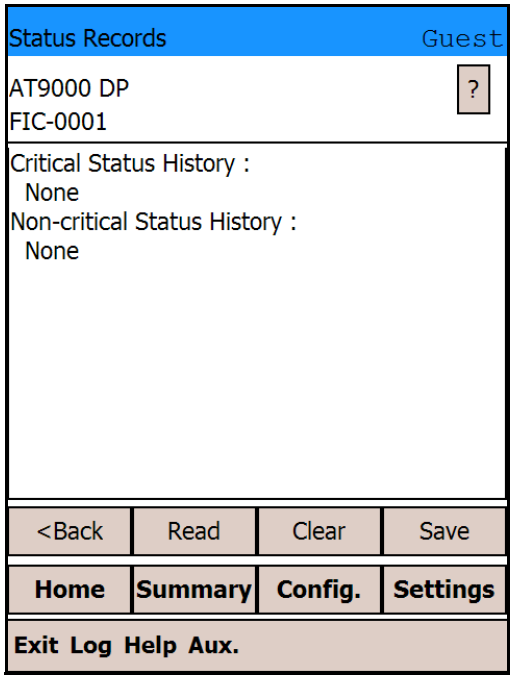


(2) The status records are displayed.

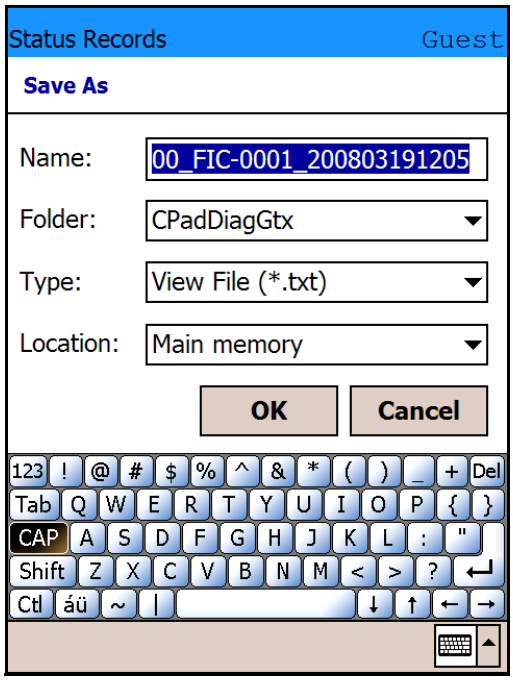


For more information on error messages, see chapter 6, “Troubleshooting.” Note that some of the troubleshooting messages listed there are not recorded as part of the status records.

(3) If no critical failure or non-critical instrument status condition has occurred, "None" appears on the screen as below.



(4) By tapping [Save], you can save the displayed data to a file. The file name is supplied automatically. Tap [OK] without changing anything.

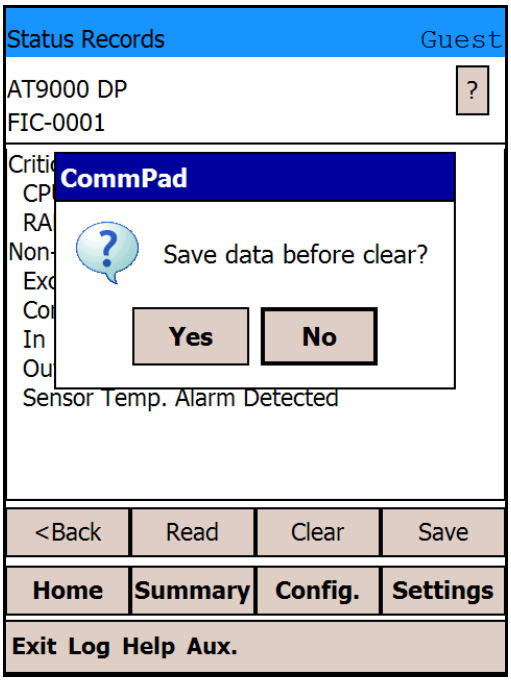


The name of the automatically-named file has the following structure:

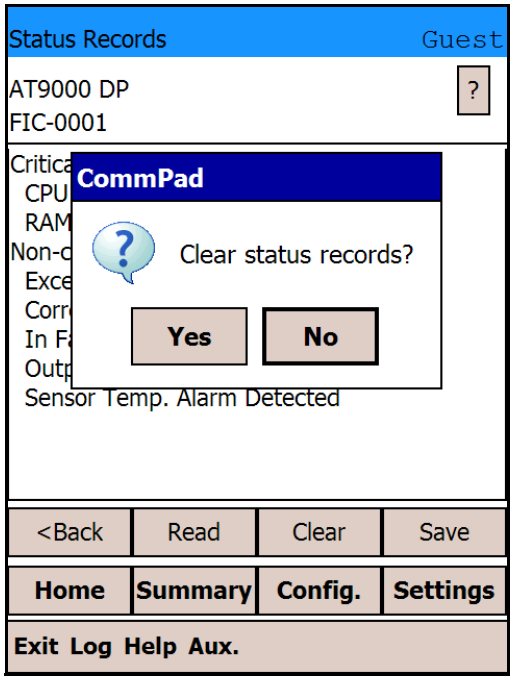
IC_(PROMID)_(tag name)_(year/month/day/hour/minute).txt
If either of the following 2 characters that cannot be used in a Windows file name is contained in the tag name, the character(s) will be converted automatically as indicated:

Character	Replacement
. (dot)	_ (underscore)
/ (slash)	~ (tilde)

(5) To clear the status record, tap [Clear]. The "Save" screen appears. If you need to save the data before clearing it, tap [Yes]. If you do not need to save the data, tap [No].



(6) A confirmation message will appear. Tap [Yes].



The saved file can be copied to your PC and viewed there. The file can be opened with a text editor or other software. The data will look like the example shown below.

```
Status Record
2006/05/19 08:38
Critical Status History:
    Chara. PROM Fault
    Suspect Input
    ROM Fault
    Invalid Database
Non-critical Status History:
    Meter Body Over Temperature
    Meter Body Overload
    Or Meter Body Fault
    Correct Reset
```

4.30: Alarm/Contact Output

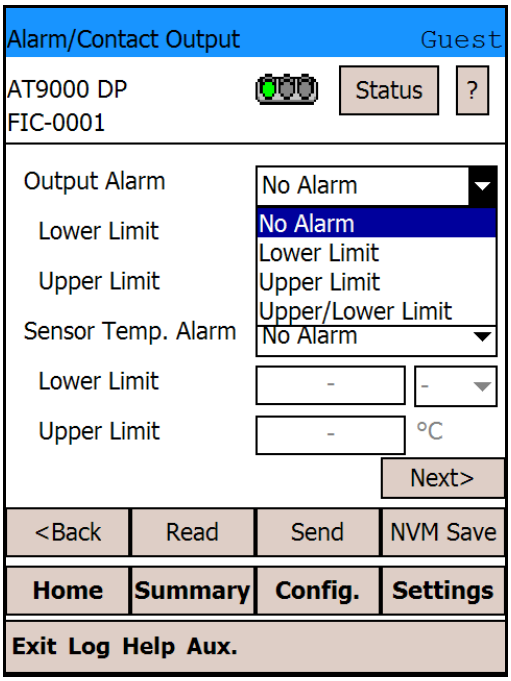
This screen is used to configure Alarm/Contact Output.

The Alarm/Contact Output screen consists of two pages. Switch between pages using the [Next >] and [< Prev.] buttons.

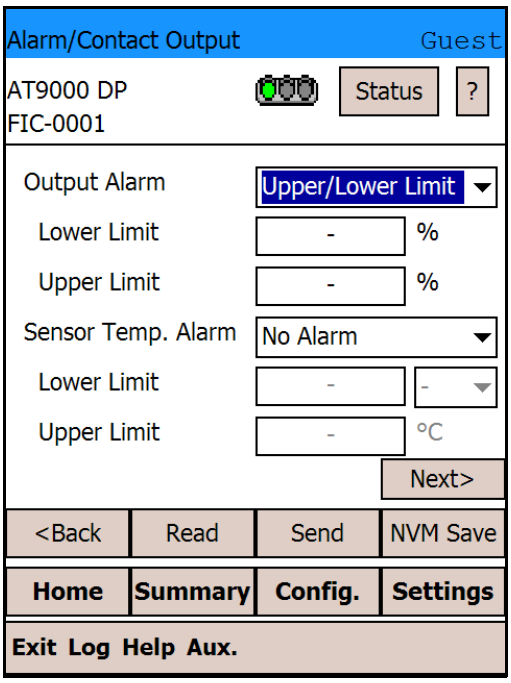
On the Alarm/Contact Output screen (first page), you can configure the alarm.

Two kinds of alarms are available: Output Alarm and Sensor Temp. Alarm. When an alarm condition is detected, it is logged in the status history of the device.

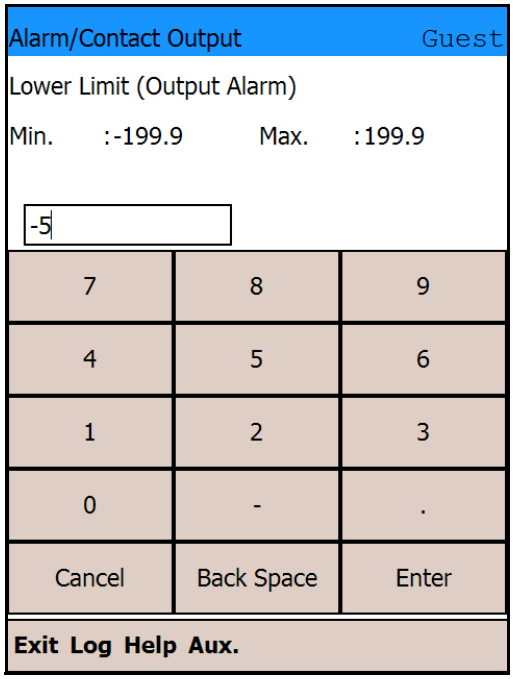
(1) Tap the “Alarm/Contact Output” drop-down menu, and a list of alternative output alarms will appear. Select the desired alarm.



(2) To change the lower limit of the output alarm, tap the “Lower Limit” display field of the Output Alarm.

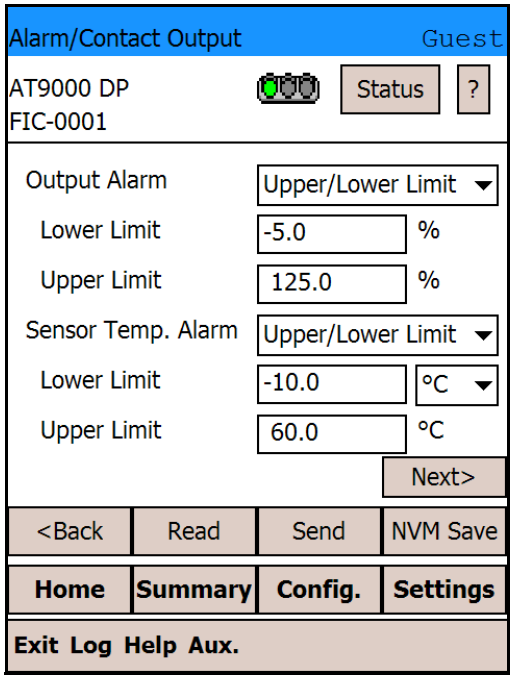


(3) The input screen for the lower limit will appear. Enter the value you want to set, and tap [Enter].



Similarly, enter the value you want to set for the upper limit of the output alarm, and tap [Enter]. Configure the Senor Temp. Alarm in the same way.

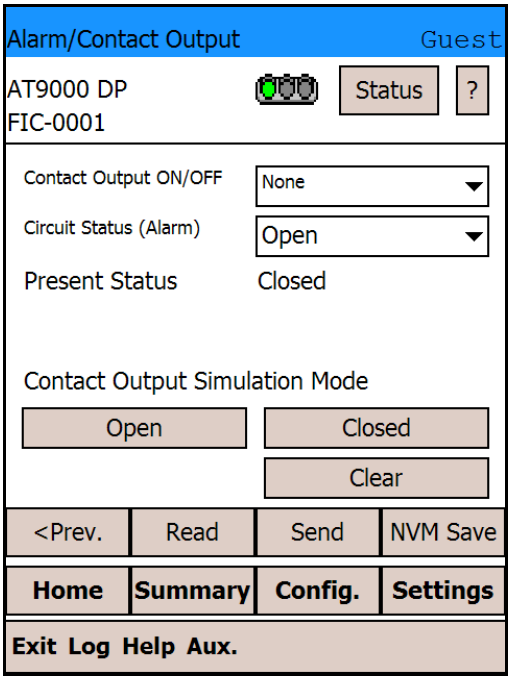
(4) Tap [Send] to transmit the set value to the device.



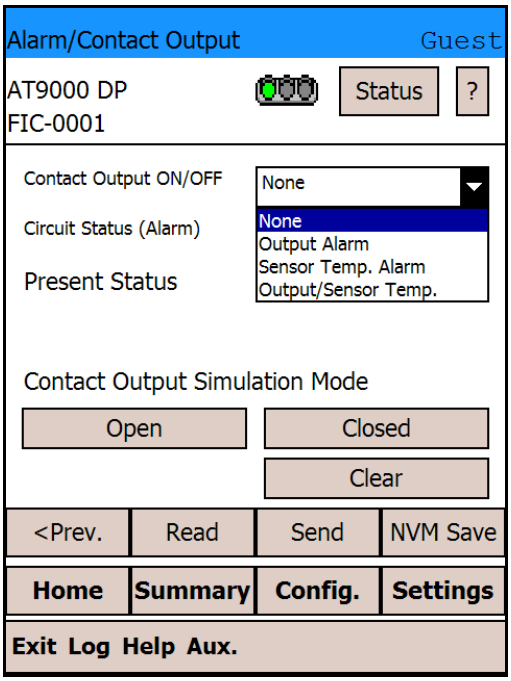
If you might have to turn off the device power within 30 seconds after the transmission of the set value, tap [NVM Save].

Tapping [Read] rereads the set value and redisplays it. Tap [Next >], and the Alarm/Contact Output screen (second page) will appear.

(5) On the Alarm/Contact Output screen (second page), you can configure and simulate the contact outputs shown below. And you can determine whether or not the contact output is upon detection of an alarm condition. Contact output can be configured to open or close the circuit upon detection of an alarm condition.

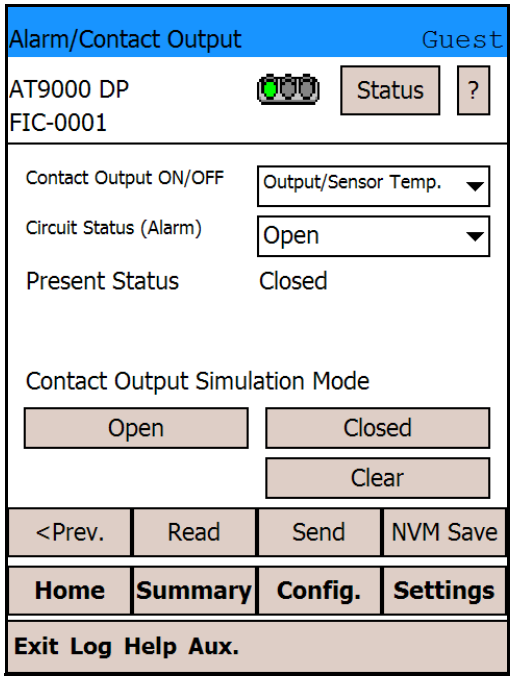


(6) Tap the "Contact Output ON/OFF" drop-down menu, and a list of alternative reflections on contact outputs will appear. Select the desired contact output.



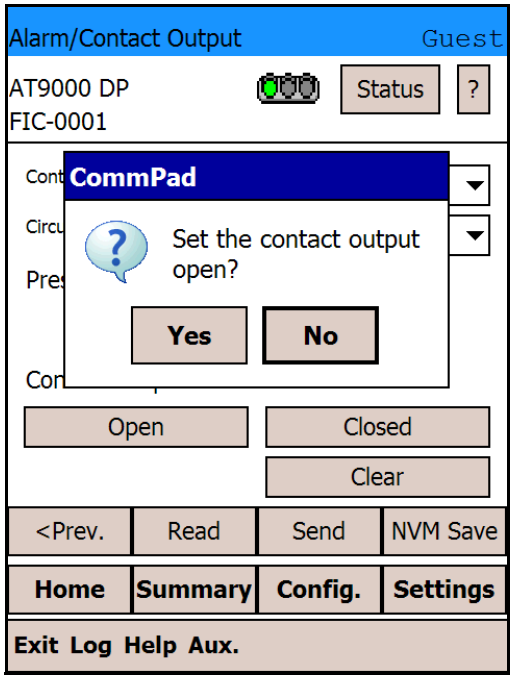
Configure the contact output upon detection of an alarm condition in the same way.

(7) Tap [Send] to transmit the set value to the device.

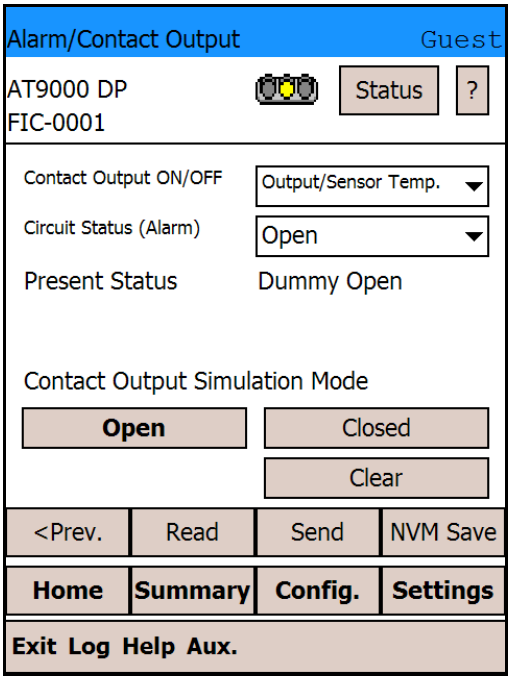


If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your changes.

(8) To set the "Contact Output" to "Open," tap [Open]. A confirmation message appears. Tap [Yes].

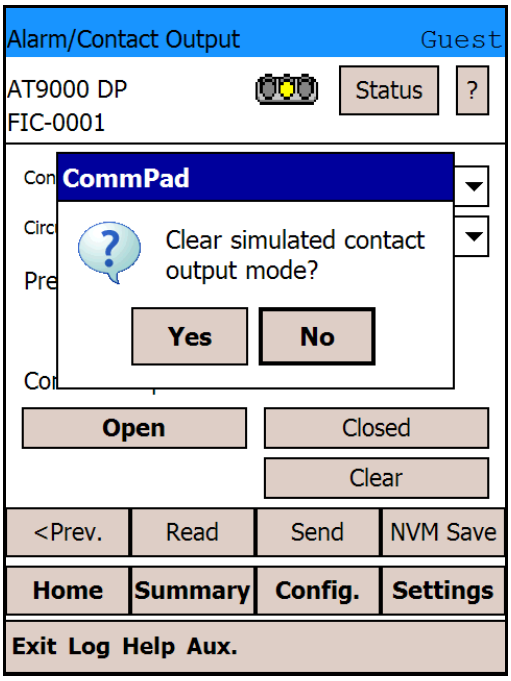


(9) The device is now in Contact Output Simulation Mode, and the traffic light icon changes to yellow.
In addition, the current status of Contact Output is displayed by the Present Status and by the thickness of the characters of the [Open] and [Close] button names too.



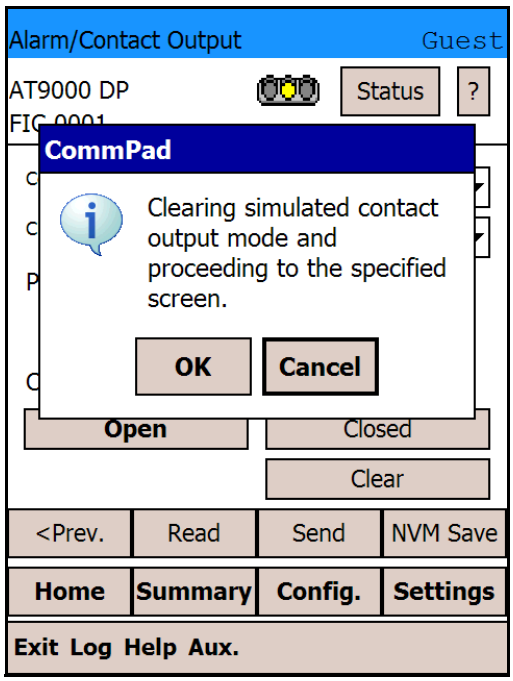
To set the "Contact Output" to "Close," use the same procedure.

(10) To clear the Contact Output Simulation Mode, tap [Clear]. A confirmation message appears. Tap [Yes].



The Contact Output Simulation Mode is now cleared. Note that even if you do not clear the Contact Output Simulation Mode, the device will automatically clear it after approximately 10 minutes without communication.

(11) If you try to move from the Alarm/Contact Output screen to another screen without first clearing the Contact Output Simulation Mode, the confirmation message "Clearing simulated contact output mode and proceeding to the specified screen." appears. Tap [OK], and the Contact Output Simulation Mode is cleared and you will move to another screen.



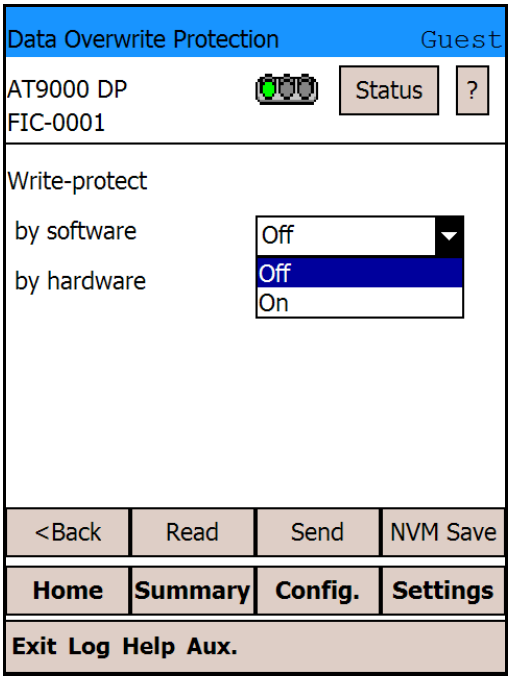
4.31: Data Overwrite Protection

This function protects the settings of the device.

If this function is enabled, the settings of the device cannot be changed.

This function is provided by the software and hardware.

The current value is displayed. Tap the “Write protect” drop-down menu, and write protect Off/On selections will appear. Select the “Off” or “On” and tap [Send].

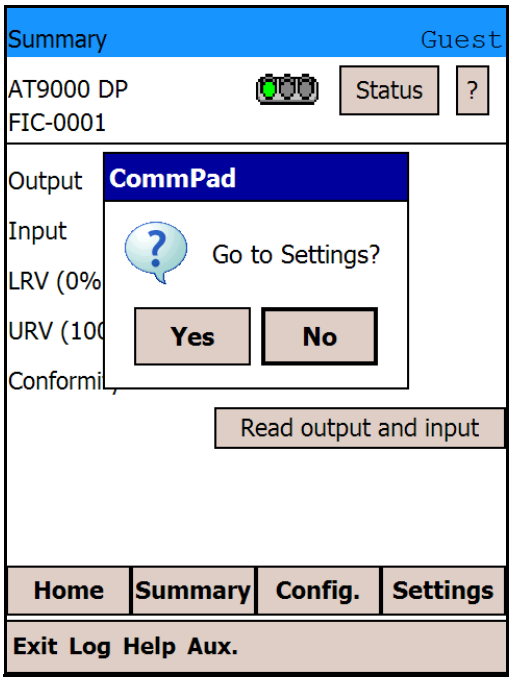


If you might need to turn off the power of the device within 30 seconds after the transmission of the data, tap [NVM Save] to save your change. Tapping [Read] reads the set values and displays them again. Tapping [<Back] restores the original screen.

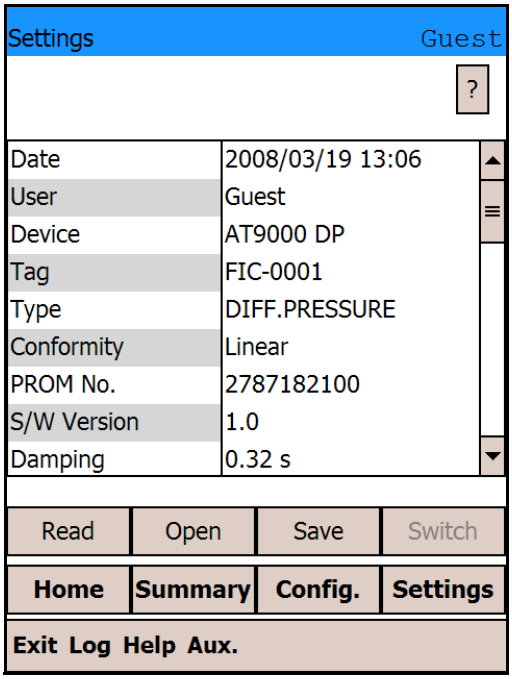
4.32: Settings screen

You can view the data list for the device on this screen. You can also save data and view previously saved data.

(1) Tap [Settings], and a confirmation message will appear. Tap [Yes].

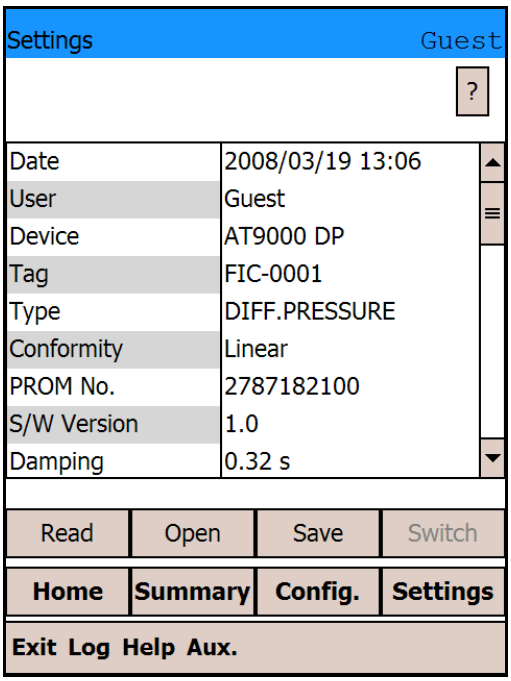


(2) After communication with the device is complete, the data is listed. Use the scroll bar on the right of the screen to scroll down and view all the data.

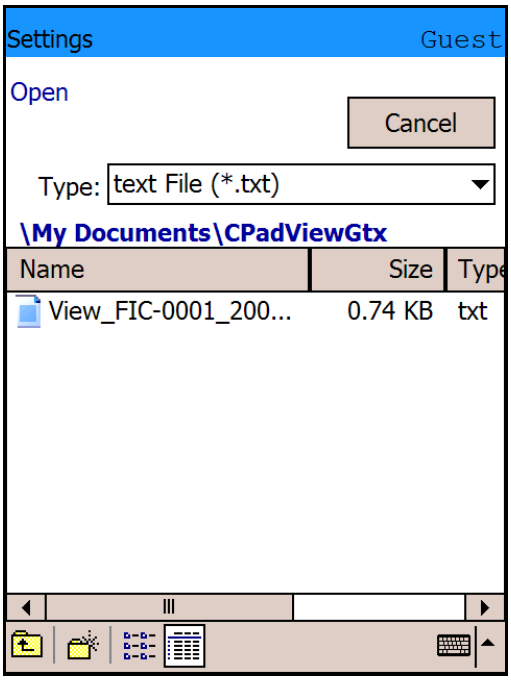


(3) You can also compare previously saved data with the latest data. For example, if you save data before performing an operation, by tapping [Open] and selecting the previously saved data, you can compare the data before and after the operation to see what has changed. Any values that have been changed are highlighted in yellow.

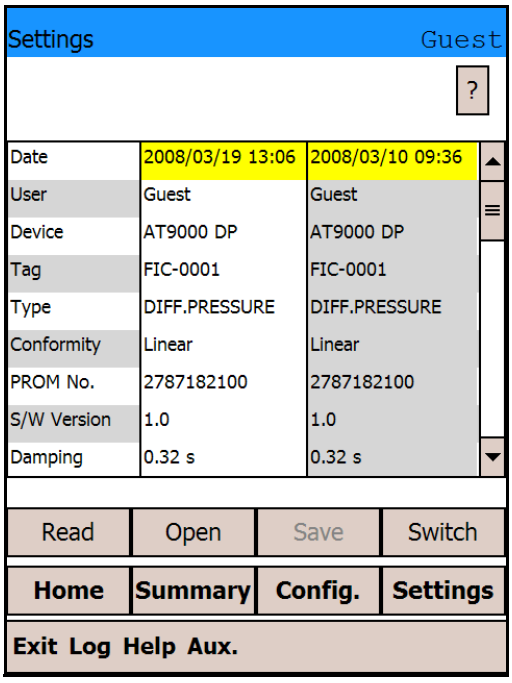
For information on how to save data, see chapter 5, “Saving Data.”
Tap [Open].



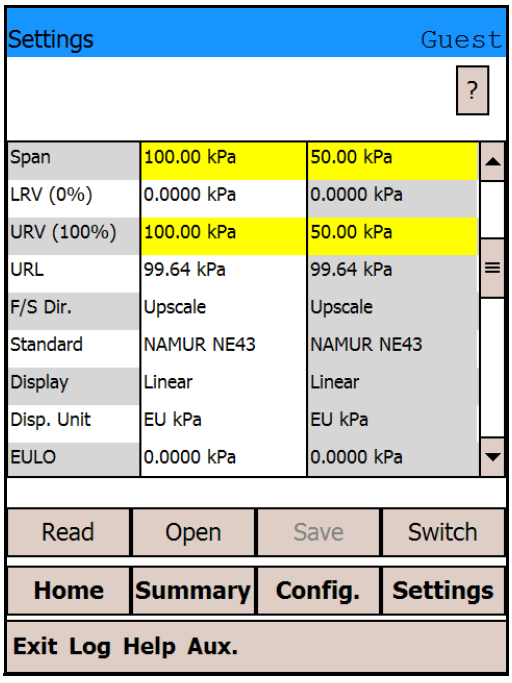
(4) The “Open” screen appears. Tap the name of the file you saved before the operation.



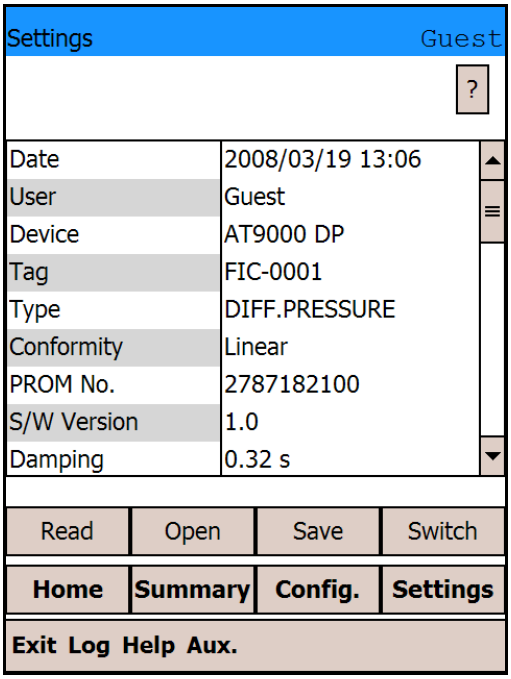
(5) The data you saved before the operation is displayed on the right side of the screen. Any values that have changed are highlighted in yellow, so they can be easily spotted.



(6) Use the scroll bar on the right of the screen to scroll down and view all the data.



(7) Tap [Switch] to switch to a screen that displays only the current values. Tap [Read] to reread and redisplay the data. For more information, please refer to the CommPad User's Manual (Common Edition).
Tap [Switch] to switch to a screen that displays only the current values. Tap [Read] to reread the displayed data and redisplay it.



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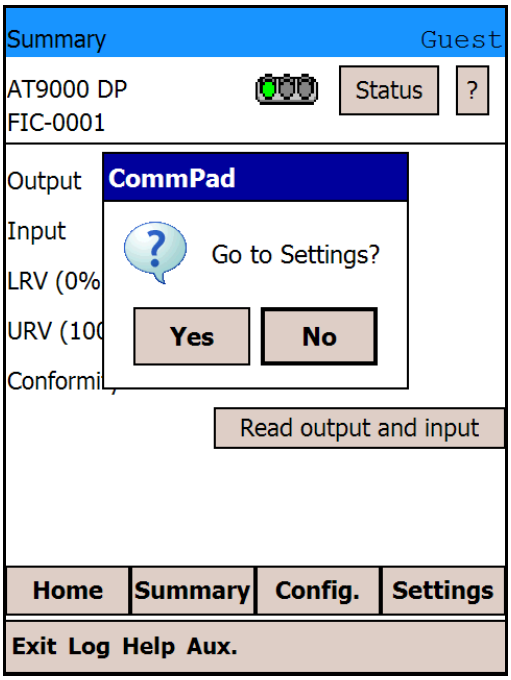
Chapter 5: Saving Data

The transmitter data loaded into CommPad can be saved in CommPad's internal memory.

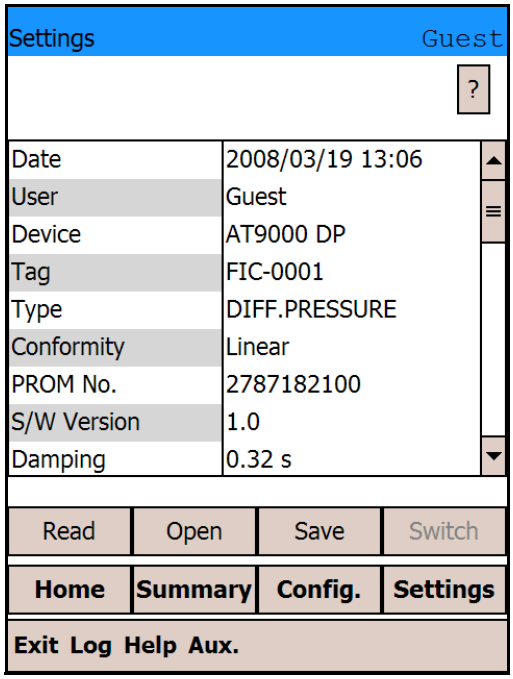
⚠ Caution Note: After starting communication with CommPad, if you adjust the zero/span point using the external zero/span adjustment function**,** only the data in the transmitter will be changed, leaving a data inconsistency between the transmitter and CommPad. After manual zero adjustment you must go to Home screen and tap [Start], to eliminate the data inconsistency.

Saving Data from the View Screen

(1) Tap [Settings], and a confirmation message will appear. Tap [Yes].

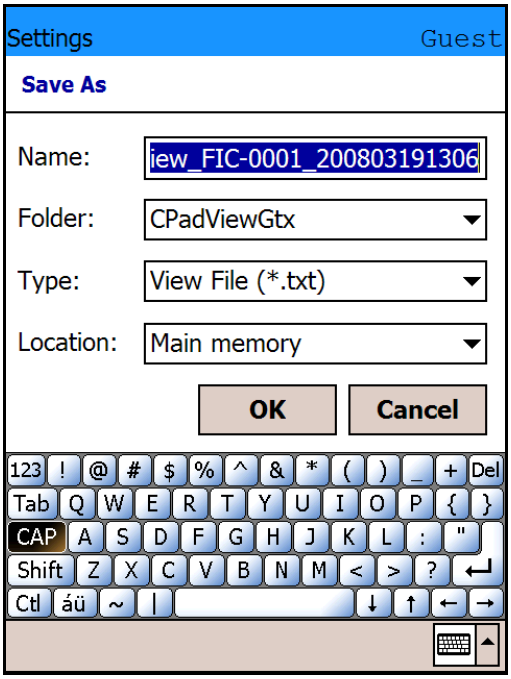


(2) After communication with the transmitter is complete, the data is listed. Use the scroll bar on the right of the screen to scroll down and view all the data.



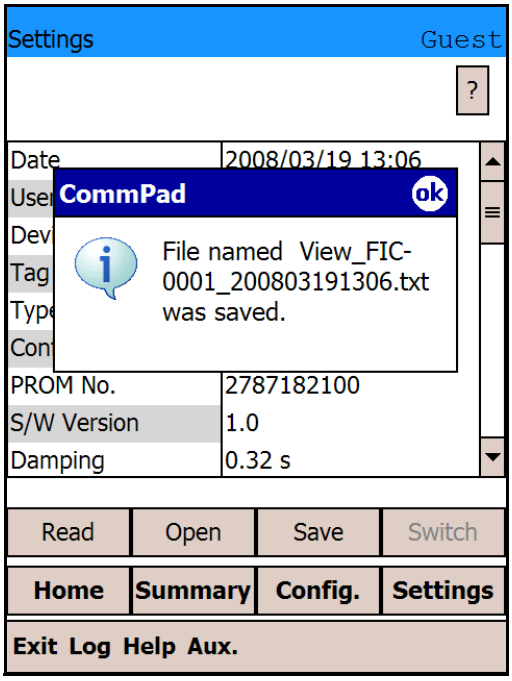
(3) By tapping [Save], you can save the displayed data to a file. The file name is supplied automatically. Tap [OK] without changing anything. The name of the automatically-named file has the following structure:
View_(tag name)_(year/month/day/hour/minute).txt
The designated folder is: CPadViewGtx

If either of the following 2 characters that cannot be used in a Windows file name is contained in the tag name, the character(s) will be converted automatically as indicated:

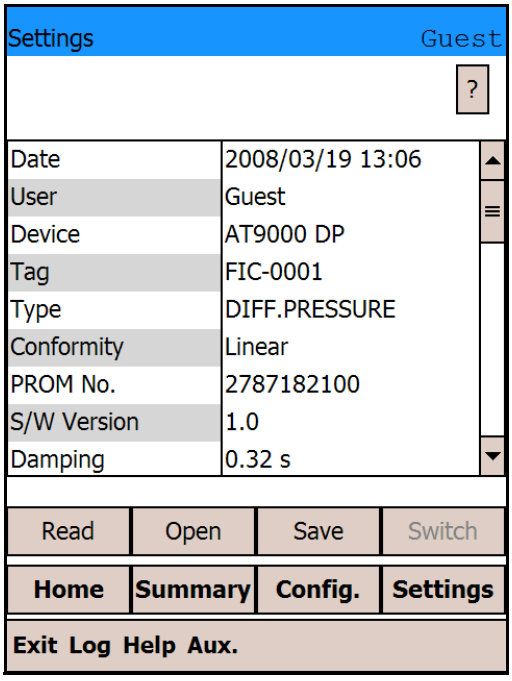


Character	Replacement
. (dot)	_ (underscore)
/ (slash)	~ (tilde)

(4) A confirmation message appears. Tap [ok].



(5) The listed data has now been saved to a file.



The saved file can be copied to your PC and viewed there. The data will look like the example shown below. Since the file is in a CSV text format, in which the item names and the values are separated by commas, you can read the file with Excel or similar software.

```
CommPad view file
Date,  2007/08/31 16:43
User,Guest
Device,AT9000 DP
Tag,FIC-0001
Type,DIFF.PRESSURE
Conformity,Linear
PROM No.,2737662307
S/W Version,1.0
Damping,1 s
Span,50.00 kPa
LRV (0%),0.0000 kPa
URV (100%),50.00 kPa
URL,100.00 kPa
F/S Dir.,Downscale
Standard,None
Display,Linear
Disp. Unit,Actual Pressure
O.L.LO,-2.500 %
O.L.HI,110.00 %
Output Alarm,Upper/Lower Limit
:
:
Present Status,Closed
Write-protect by software,Off
Write-protect by hardware,Off
Output,0.00 %
Input,0.0019 kPa
Sensor Temp.,26.1 °C
Status,Status OK
```

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Chapter 6: Troubleshooting

The following describes the meaning of the status messages and the related troubleshooting procedures.

	Status message	Meaning	Required action
Internal data inconsis-tency	Invalid database	Configuration data and/or calibration data is corrupt.	Tap [Exit] and try communicating again. Verify configuration data and recalibrate the device.
Critical status	Analog/Digital Conversion Fault	Analog/Digital convesion failure	Invalid sensor and/or electronics board. Contact appropriate personnel.
	Sensor Characteristic Data Fault	Sensor characteristic data failure	Contact appropriate personnel.
	Suspect Input	Input data error	Invalid sensor and/or electronics board. Contact appropriate personnel.
	CPU Fault	CPU operation failure	Bad electronics board. Contact appropriate personnel.
	NVM Fault	Nonvolatile memory failure	Bad electronics board. Contact appropriate personnel.
	RAM Fault	RAM failure	Bad electronics board. Contact appropriate personnel.
	ROM Fault	ROM failure	Bad electronics board. Contact appropriate personnel.
	Output Circuit Fault	Output circuit failure	Bad electronics board. Contact appropriate personnel.
Non-critical status	Meter Body Over Temperature	Meter body temperature is too high.	Reinstall the device to decrease the temperature to within specifications.
	Excess Zero Correct	The zero correction factor is outside the acceptable limits for accurate operation.	Check the input and be sure it matches the calibrated range value.
	Excess Span Correct	The span correction factor is outside the acceptable limits for accurate operation.	Check the input and be sure it matches the calibrated range value.
	In Output Mode	The device is operating in output mode.	Go to the output mode menu to clear the output mode.
	Meter Body Overload or Meter Body Fault	- The input pressure is more than two times The upper range limit for The device. - Device error.	Check the PV value and replace the device with a larger range model if necessary.
	Correct Reset	Calibration data is cleared.	Calibrate the lower and upper range values.
	External Zero/Span Adjustment Fault	External zero/span adjustment error.	Contact appropriate personnel.
	Contact Output Simulation Mode	The device is operating contact output simulation mode.	To clear contact output simulation mode, go to the alarm/contact output menu.
	Output Alarm Detected	The output is going over upper/ lower limit of output alarm.	Check the output.
	Sensor Temp. Alarm Detected	The sensor temperature is going over upper/lower limit of sensor temp. alarm.	Check the sensor temperature.

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