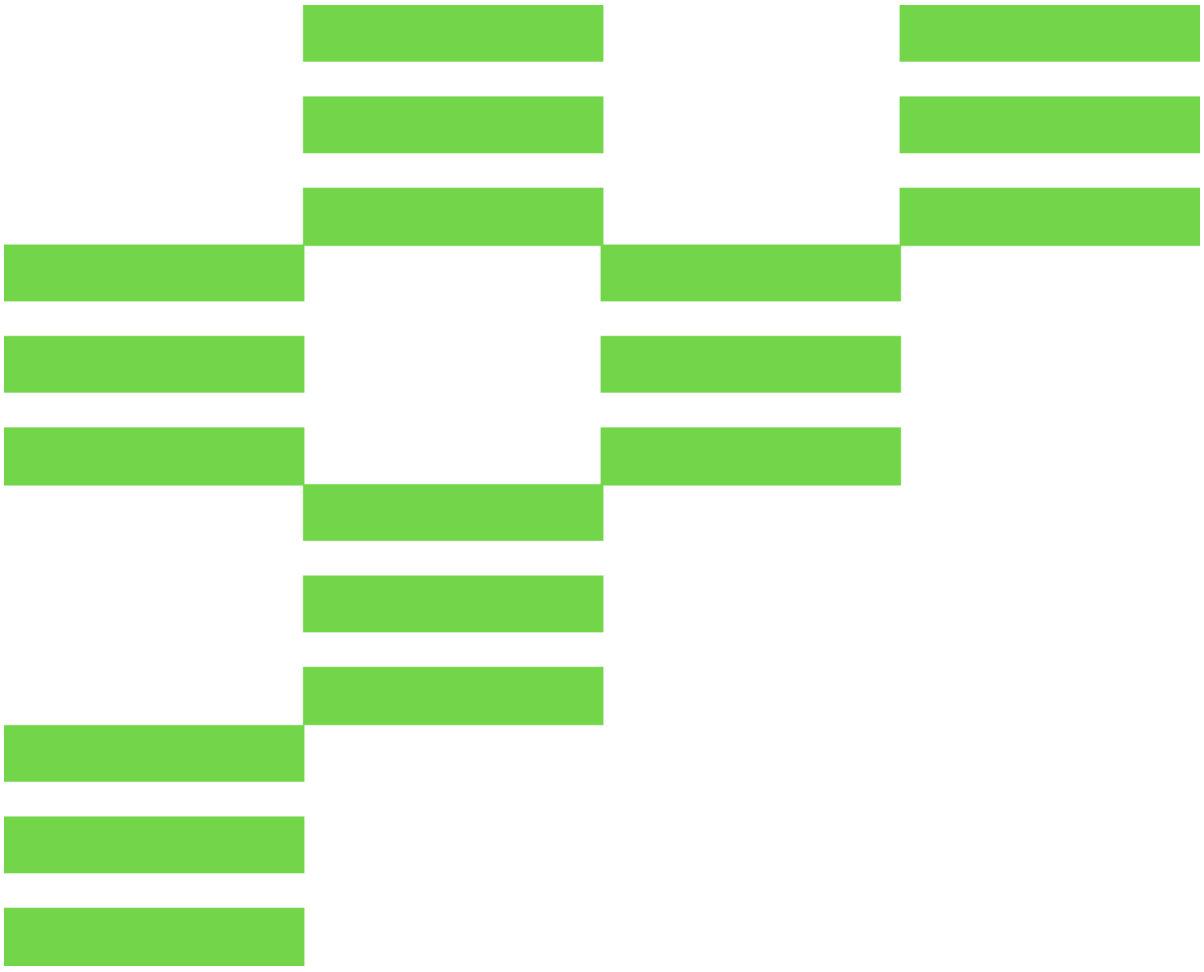
OMNI

C2, F2, R2 and T2 Meters

User Guide

WUG-10003-04



Revision history

Rev No.	Date	Description
Rev 01	30-SEP-2009	Initial Release
Rev 02	15-MAR-2016	Added revised drawings, minor additions and corrections
Rev 03	03-JUN-2020	Revisions for OMNI+ register.
Rev 04	21-APR-2021	Full OMNI+ release; updated SmartPoint module section.

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Contents

1 OMNI™ meter overview

OMNI water meters feature unrestricted sustained flow rates within their continuous operating range. The OMNI meter's Floating Ball Technology (FBT) measuring element operates virtually without friction or wear.

Each OMNI meter consists of two basic assemblies: the maincase and the measuring chamber. The measuring chamber assembly includes the "floating ball" impeller and an all electronic programmable register. The OMNI+ electronic register is a hermetically sealed register with an electronic pickup containing no mechanical gearing.

OMNI™+ register

The OMNI+ register features a programmable totalizer registration, an optional digital pulse signal (C2/F2/T2 only), AMR reading digits, and a resettable test totalizer.

The OMNI+ register is designed for a non-explosive atmosphere. Because the register is hermetically sealed, it is safe for pit environments as well as above ground settings. The tamper-proof security cover can be positioned in any of 270 degrees of rotation, with indexing points at each of the 90-degree customary register viewing positions. The OMNI+ register is IP68 rated to 2 m.

Alarms

The OMNI+ alarms alert you to a myriad of conditions including reverse flow, leak, high flow, and low battery life.

You can view alarms and event on the LCD display. Alarm state is logged hourly. You can use field tools to retrieve the alarm log. In an AMI fixed-base system, alarms and events are transmitted over FlexNet and you can user FieldLogic™ or Device Manager to troubleshoot and clear the alarms.

Data logging

The OMNI+ logs 180 days of hourly data.

Data is retrieved directly from the meter and not through the SmartPoint due to battery impact and time required to retrieve.

OMNI meter specifications

Category	Specification
Input Power	12-24 VDC ± 10%
Output Signal	Open Collector—Digital Signal
Wiring	Red = + Power Supply Voltage Green = Pulse, Switching to Ground Black = Ground (- Power Supply Voltage)
Contact Closure Duration	User selectable fixed 5, 10, 20, 50, 200, 500 ms or dynamic with a 32 ms Minimum (at 16Hz output)[1]

Category	Specification
Contact Open Duration	User selectable fixed 5, 10, 20, 50, 200, 500 ms or dynamic with a 32 ms Minimum (at 16Hz output)[2]
Duty Cycle	Approx. 50/50 ± 20% at normal flow rates
Pull-up Resistor (when required)	6000 Ohms
Pulse Cable Length	25 ft. at meter
Pulse Cable Diameter	3.6 mm
Insulation Colors	Red—12 to 24 VDC (Supply) Green—Pulse, switching to GND Black—GND
Maximum Cable Run - Meter to Instrument	1000 ft. without a repeater
Lightning Protection	Built-in lightning protection. Keep in mind that additional lightning arrestors may be needed when long cables are used to connect the register to devices which are not installed in the same building as the register. The flash of lightning is not compatible with the standards and can have greater energy than any test can simulate.

Note: There are two modes of pulse operation: Fixed and Dynamic.

For Fixed Rate, the Contact Open and Closure rate is set to the same minimum duration. The meter supports settings of 5, 10, 20, 50, 200, and 500 ms Open and Closure duration.

For Dynamic Operation, the length of the Open and Closure is based on the number of pulses to be generated in a one second period. The minimum contact closure duration is 32ms (16 Hz Output). A Maximum closed duration of 500ms (1 Hz Output) is supported.

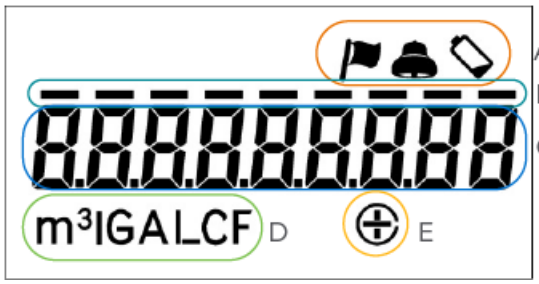
[1] With lower frequencies, the duration is longer. The duty cycle is roughly 40-60% closed/60-40% open. It depends on the frequency, and is not as important as the contact timing.

[2] With lower frequencies, the duration is longer. The duty cycle is roughly 60-40% closed/40-60% open. It depends on the frequency, and is not as important as the contact timing.

2 LCD display

The LCD is the visual reporting mechanism for the meter.

The display contains dedicated display areas for information and icons. Multiple views are available; use the lid to toggle through the various views. The first view available when opening the lid is the Segment Test view. This is visible for one second and shows all of the various display areas before flashing off.



Key:

A: Notification Icons
B: Reading Display Identifiers
C: Display Values
D: Units of Measure
E: Flow Direction

The second view is the Totalizer view, which is the main visible view when the lid is open. If the lid is left open, the display stays on in Totalizer view. If the lid remains open for one hour in any view other than the Totalizer view, the display returns to the Totalizer view. If the lid is closed and then reopened within 30 seconds, the display switches to the next view in the sequence. If the lid is closed for more than 30 seconds, the view resets and starts with the Segment Test view. The lid must be closed for two seconds to advance to the next view.

The OMNI+ supports the following views:

- Segment Test view
- Totalizer view
- Notification view (for alarms)
- Flow Rate view
- Totalizer Test view

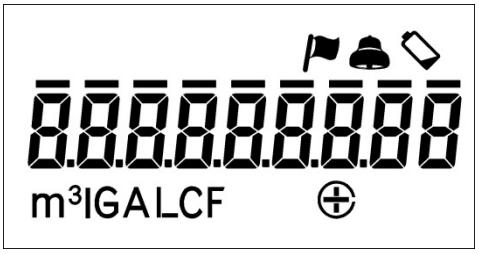
Segment Test view

The Segment Test view displays all icons to ensure they are all still operational. This view helps testers and operators troubleshoot the display to ensure parts of the display correctly display as expected and stop displaying as expected.

The Segment Test view is always available regardless of the device type or operating mode the device may support.

The segment test only flashes segments that have a use on the device. For example, if the device does not support meter size, the meter size icons do not display during the segment test for that device.

The OMNI+ does not use the meter size or radio icons. The segment test displays as follows:



Totalizer view

The accumulation displays digits and decimal points. The units of measurement display in the lower-left corner of the LCD.

The Totalizer view displays consumption values or messages, AMI/AMR digit identifier bars, the unit of measure, the flow direction, and any notification icons that are currently active.

The bars indicate which digits are reported . The units of measurement display in the lower-left corner of the LCD. The OMNI+ supports five units of measure which are displayed as:

- Gallons

  m³IGALCF
- Cubic feet

  m³IGALCF
- Cubic meters

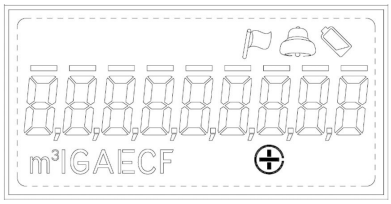
  m³IGALCF
- Imperial gallons

  m³IGALCF
- Acre feet

  m³IGALCF

Flow direction indicator

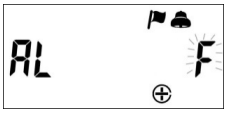
The LCD displays a flow direction indicator at the lower right. A circle containing a "+" represents a positive flow while a circle containing a "-" represents a negative flow. If no circle is present, there is no flow or the flow is so minimal it cannot be detected.



Notification view

The Notification view provides more information about any alarms or events that have been triggered. This is in addition to the bell and flag icons that display on the LCD.

The first two digits on the left in Notification view are AL, which is the indication that you are in Notification view. The remaining six digits in that line display the alphanumeric symbol for the alarm or event, with the most recent being the first one on the right and moving from right to left. Only six alarms or events can display at the same time. Active events flash.



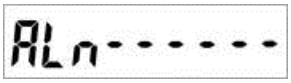
For more information on alarms and events, see Alarms and events.

Smart Mode and Normal Mode

The OMNI+ can be configured in either Smart Mode or Normal Mode.

In Smart Mode, the register read consists of the AMI/AMR reading digits, the customer ID, and any alarms present with a timestamp. In Normal Mode, the register read only has the customer ID and the AMI/AMR reading digits. In Normal Mode alarm information is still available, but only by retrieving a data log; no alarm information is passed on to an AMI system.

The third LCD digit from the left indicates the register is configured for Normal reading mode. A lowercase ‘n’ displays in the third digit from the left when the meter is configured for Normal reading mode.



If the device is reporting in any other mode other than Normal mode, such as Smart Meter mode, the third value is blank.

Notification icons

Two notification icons display in the upper-right corner of the LCD (in all views) when the applicable conditions are present.

The Bell icon represents an Active event or alarm. Active events occur when the device detects that the meter is currently in this event. As long as the meter is in this event, the bell icon remains visible. When the event ceases, the icon is no longer visible. If the active icon is visible, the operator can switch to Notification view to see which events are currently set. Additionally, the utility can use field tools to extract the events for further troubleshooting.

The Flag icon represents a recent event or alarm. Recent events indicate that an event occurred within a predetermined time frame.

Battery icon

The OMNI LCD displays a battery icon to represent battery life. This icon displays in all views when the battery is low or needs to be replaced.

The battery notification displays on the LCD when any of the following conditions are triggered:

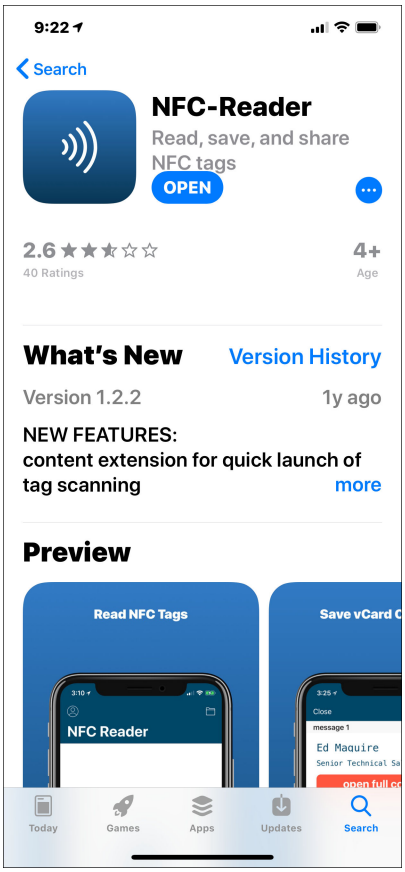
- **Near End of Life Alarm** - A near end of life notification is triggered 9.5 years from the date of installation or 10.5 years from the date of manufacture, whichever comes first. This notification remains active until the end of life alarm is triggered.
- **End of Life Alarm** - An end of life notification is triggered 10 years from date of installation or 11 years from date of manufacture, whichever comes first. The LCD indicates an end of life notification by flashing the battery icon in 0.5 sec intervals.
- **Low Battery Volts** - The low battery volts notification is triggered when the battery voltage drops due to over usage. This low voltage alarm indicates the battery will expire soon, so the device must be replaced. The LCD indicates a low battery volts notification by flashing the battery icon in 0.5 sec intervals.

Dead battery read

The Omni+ register contains a near field communications (NFC) interface. This interface can be used to retrieve a last time read from a register that has failed due to a dead battery or other reason.

The information is stored as a standard NDEF type 5 text record and can be read with any compatible NFC reader such as a mobile phone. The information in the NFC tag is updated every 15 minutes. Compatible phones include iPhone 7 or newer and most advanced Android phones.

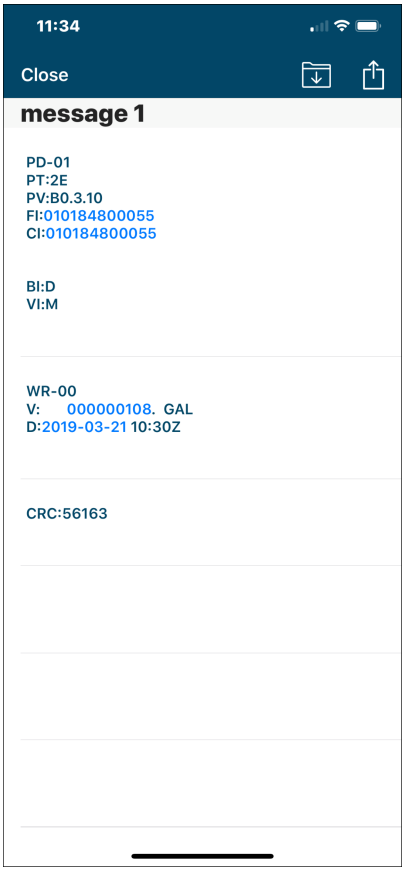
The NFC antenna is located around the perimeter of the LCD. The NFC tag can be read by placing a compatible device such as a NFC enabled iPhone or Android parallel with the register face. In addition, the device's NFC antenna must be aligned with the center of the OMNI+ LCD. The location of the NFC antenna varies by device but is typically found on the back of the device near the top or center. The following example is for iPhone.



Many Android phones have the NFC function built in and the tag can be read by simply tapping the tag. This example uses the NFC-Reader app available from the App Store but any compatible reader program will work.

After opening the application, select **Scan**.

Tap the phone against the NFC tag near the LCD. The following screen displays, showing the fields that are stored in the NFC tag.



The PV field displays the firmware version, the FI field displays the factory identification, and the CI field displays the customer identification. The latest volume reading displays in the V field and the D field displays the date and time of the last reading. The remaining fields contain diagnostic information that Sensus Technical Services may request.

3 Signal connections

The OMNI+ registers use fully solid-state electronics.

The OMNI+ C2/F2/T2 register is available with an optional programmable digital pulse signal suited for interfacing with ACT-PAK instruments and SCADA systems to achieve a 4 to 20 mA output.

The OMNI+ R2 register outputs a programmable (using a Sensus FieldLogic Communicator) register ID and AMR reading digits.

Electrical connection configuration options

The OMNI+ C2/F2/T2/R2 register is standard with AMR output wires in a variety of lengths and interfaces. The OMNI+ C2/F2/T2 register is available with an optional 25 foot long pulse wire. Splicing of these wires or connecting to these wires should be performed in accordance with standard practices depending on the environment of the application. Care must always be taken when connections are made for meters in high humidity or flooded pit settings. Maximum pulse cable length should be 1000 feet without a repeater.

The OMNI+ register can be configured in four arrangements, shown in the following illustrations.

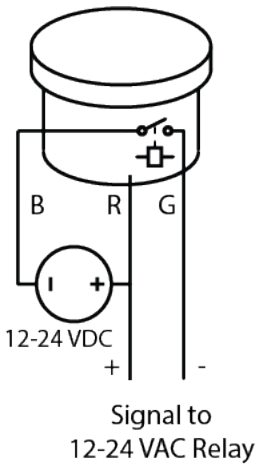


Illustration 1

Illustration 1 is used when the OMNI is connected to a PLC (e.g., in a SCADA system). The PLC should not have an internal pull-up resistor in its input circuit (no DC voltage at the instrument inputs). Usually the instrument must be isolated by having an optical isolator at its inputs.

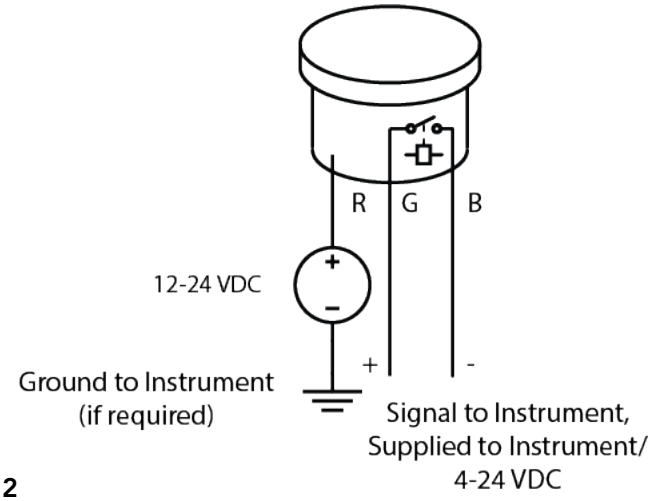


Illustration 2

Illustration 2 is used for all instruments with internal pull-up resistors. The voltage supplied by the instrument's input when not connected to any circuitry should not exceed 24 Vdc nom. and must not exceed 30 Vdc max. Otherwise, it will overload the MOSFET inside the OMNI+ register. The voltage supplied to the register is allowed to be different from the instrument's supply voltage.

Ground is common for both the OMNI+ register and instrument.

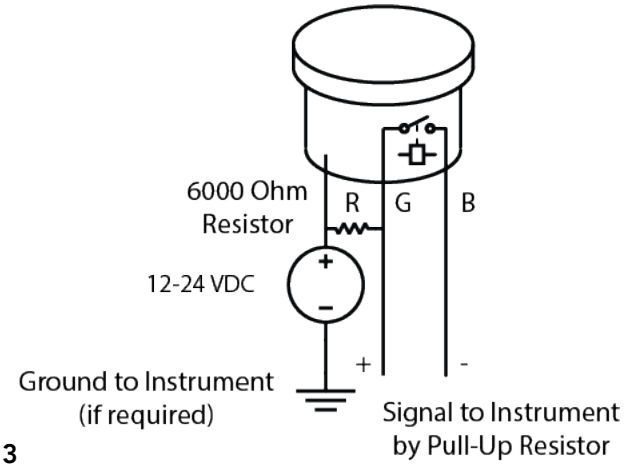


Illustration 3

Illustration 3 is used for instruments without internal pull-up resistors and without optical isolators internal to their inputs. Ground is common for both the OMNI+ register and instrument. When the OMNI's MOSFET is open (not conductive), nearly the full voltage supplied to the OMNI will occur at the instrument's input. It must be able to withstand this voltage (24 VDC in Illustration 3).

*In case the instrument's input provides optical isolation, the connection shown in Illustration 1 should be used.

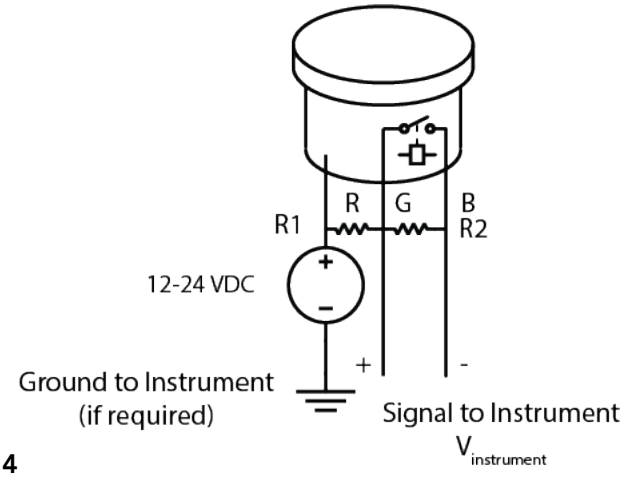


Illustration 4

R1	R2	Vinstrument
2k	2k	Vsupply/2
2k	1k	Vsupply/3
6.8k	1k	~Vsupply/8

$$Vinstrument = \frac{R2}{R1 + R2} \times Vsupply$$

The table and formula are valid under the assumption that the instrument's input resistance is higher than
50 kOhms. Otherwise, Vinstrument will be lower than shown in the table or calculated with the formula.

*If possible, the circuit of Illustration 2 should be used.

4 OMNI installation

Required tools

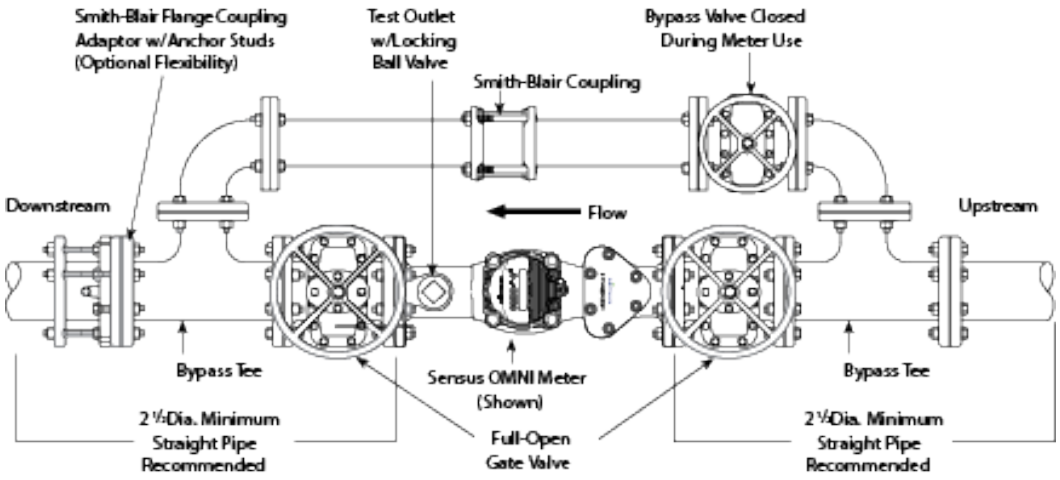
- Correct tools for the corresponding size of bolts that are used. In the case of the R2, 5/8" bolts are used for the 1-1/2" R2 and ¾" bolts are used for the 2" R2.
- Depending on the weight of the meter and the installation conditions, hosting devices may be required.

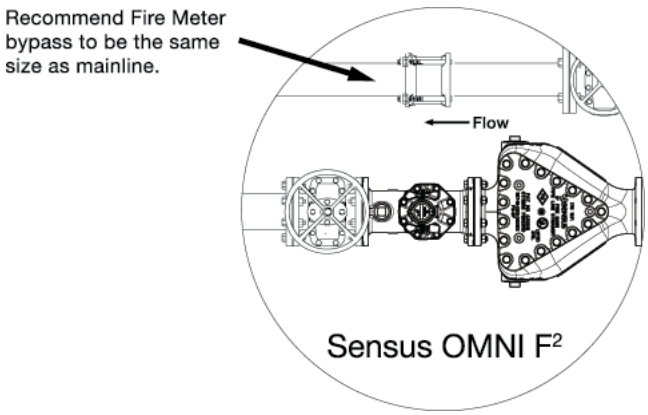
Installation factors

To ensure valid registration, proper performance, and meter longevity, the following factors should be considered when installing Sensus OMNI Meters.

1. When installing a Sensus OMNI Meter with the strainer, a minimum of 2-½ pipe diameters of straight run of pipe or equivalent full open components is required upstream and downstream of the meter or strainer flanges. Full open flow components may consist of: straight pipe, full open gate valves, bypass tees, all of the same nominal size as the meter, and concentric reducers (one nominal pipe size reduction only).
2. Gate valves located immediately upstream or downstream are acceptable, provided they are fully open during meter service and are not used to throttle flow rates through the meter.
3. Install non-concentric reducers, check valves, back flow preventers, pressure reducing valves (PRV), throttling devices, and altitude valves no closer than four pipe diameters downstream of the meter. Always avoid placing any of these devices upstream of any meter since the placement will put the meter in a low pressure zone thus possibly causing inconsistent accuracy and reduced longevity.
4. Accuracy levels may be determined by comparison accuracy testing either by using a Sensus Portable Large Meter Tester, by removing the suspect meter and testing it on a calibrated test bench, or by returning the suspect measuring chamber or complete meter to Sensus Metering for a certified accuracy test.

Note: High flow meter applications or near to open air discharge must maintain a minimum of 25 psi downstream pressure to assure accuracy and meter longevity.





5. OMNI meters can be installed vertically or rotated on the bolt pattern in any orientation. Contact Sensus with any questions.
6. No mechanical stresses should be exerted on the meter when installed in the pipeline. The pipeline flanges must align with the meter flanges, the distance between the flanges must match the meter body length, and the weight of the meter must be supported evenly. Misalignment stresses can cause the meter body or flanges to crack; thus, when the pipeline is under pressure, flooding can occur.
7. The meter must not be subjected to pressures higher than the pressure rating printed on the data sheet. Pressures higher than the pressure rating can cause leaks or burst the meter body.
8. Gaskets must not protrude into the pipeline or be misaligned.
9. The pipeline must be thoroughly flushed before installing the meter to prevent damage from debris.
10. The flow direction of the meter (indicated by the arrow on the meter body) must correspond with the flow direction in the pipeline.
11. After installation of the meter, the pipeline, strainer, and meter must be purged of air and filled with water very slowly to prevent the meter from being damaged by surges. Filling the pipe too rapidly can cause air and water surges, which can destroy the meter insert.
12. The installation site should be chosen to prevent air bubbles from collecting in the meter, and the pipeline must always be completely filled with water. Installation of a meter at the highest point in a pipeline must be avoided.
13. The manufacturer's normal flow must not be exceeded for extended periods. Applications with questionable water quality should be addressed with Sensus Engineering before meter installations.
14. The meter should be protected from stones, sand, and fibrous material.
15. The meter must be protected from pressure surges.

5 Measuring chamber

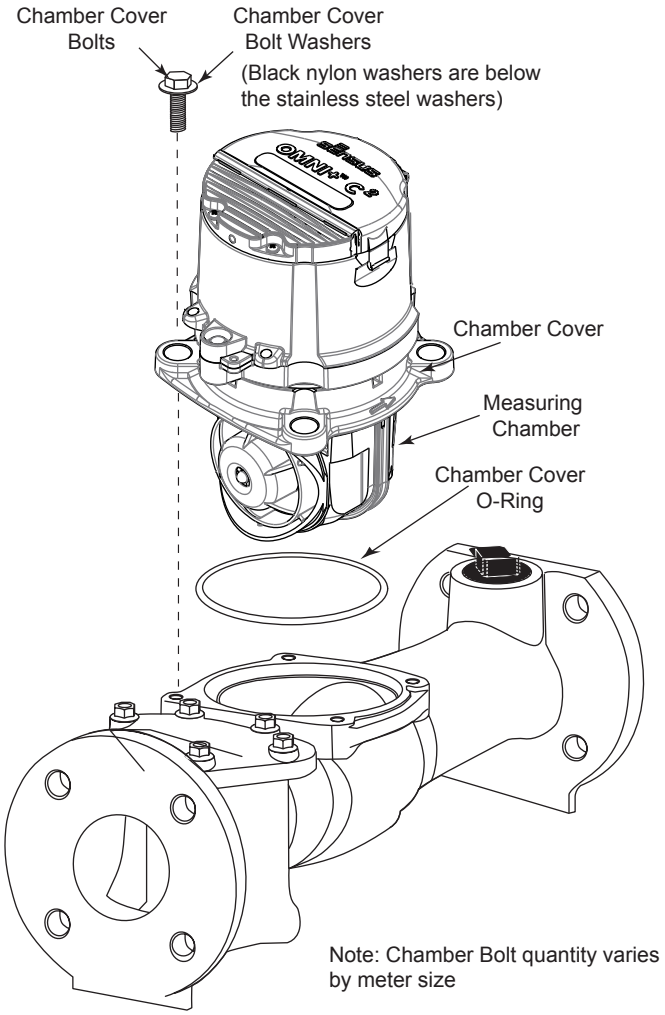
The measuring chamber can be removed and disassembled when required to do so. This section describes the steps for doing so.

Note: If the meter is under pressure, pressure must be turned off and relieved before chamber bolts are loosened or removed!

Required tools

- 2.5, 3, and 6mm hex head ball end drivers (6mm not needed for the R2)
- Sensus seal screw tool—for bonnet removal
- Open end/box wrenches as determined by size and type of OMNI meter
  - 7/16"x1/2" open end/box wrench
  - 9/16" x 5/8" open end/box wrench
  - 3/4" x 11/16" open end/box wrench
  - 15/16" open end/ box wrench
  - Assembly grease

Remove the measuring chamber



1. With the service line pressure off, loosen all chamber cover bolts.
2. Continue loosening the bolts until all bolts and washers can be removed.
3. Use a medium-size screwdriver to pry between the valve body and chamber cover at the upstream cover bolt seal wire rib until the cover raises out of the body.
4. Remove the measuring chamber and place the chamber cover O-ring in a safe, clean place.

Disassemble the measuring chamber

The following steps and accompanying illustrations explain how to disassemble the OMNI measuring chamber for part replacement.

1. Remove the bonnet seal screw (**4**) using the Sensus seal removal tool.
2. Twist the bonnet (**53 or 3**) counter-clockwise and lift it off the base.
3. Raise the register (**55 or 5**) off the base, taking care to not strain the pick-up probe wire.
4. Using your fingers (or a 7/16" wrench, if required), remove the probe retaining nut* and remove the register and probe assembly from the measuring insert. (**13**).

Note:

If the pipe pressure is not relieved yet, water will spray out when the retaining nut is two turns from complete removal.

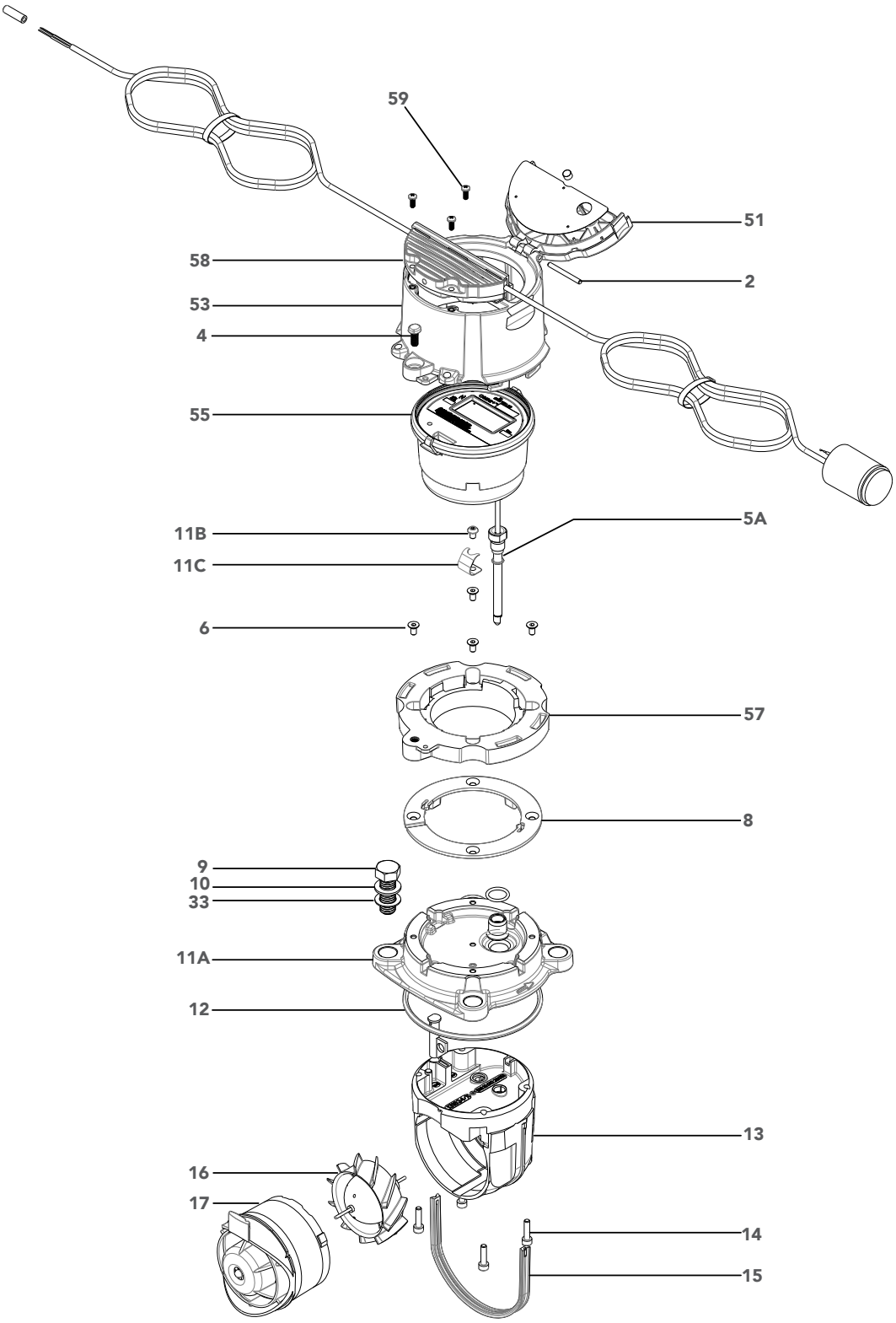
When re-installing, use fingers only and check for leaks before installing the bonnet.

5. Place the register assembly in a safe place.
6. Remove the bonnet retaining ring (**57 or 7**) by removing the four allen head countersink screws (**3**).
7. Remove the four allen head screws (**14**) from the measuring insert (**13**).
8. Pull the measuring insert (**13**) away from the chamber cover (**11A**).
9. Twist the inlet flow straightener balance plate (**17**) counter-clockwise, then pull it straight out of the measuring insert housing.

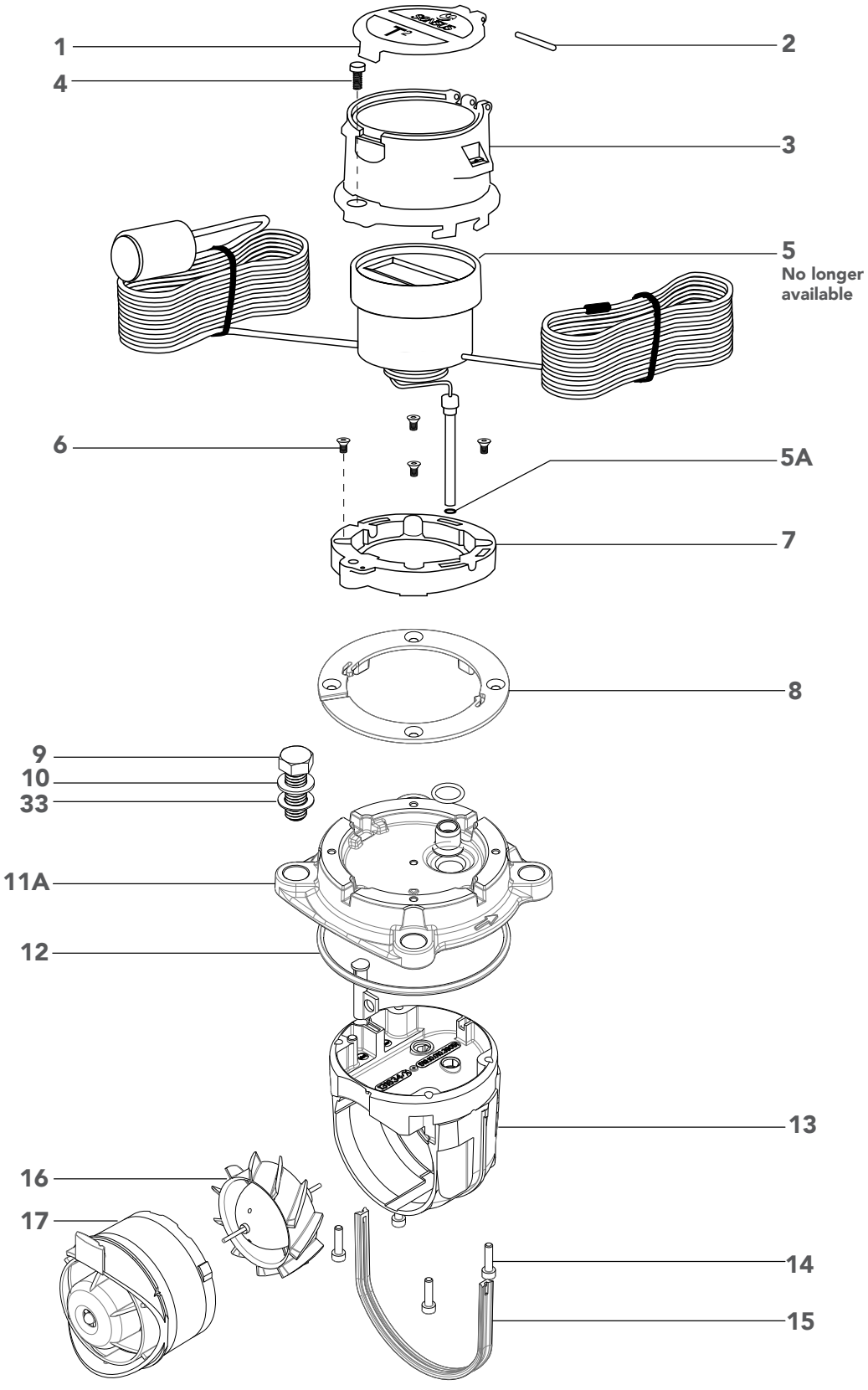
Note: Take care to slowly separate the two housings or the rotor will fall out of the measuring insert and will be damaged.
Do not remove the chamber seal gasket (**12**). It is factory glued in place for ease of chamber installation. If a replacement gasket is required, you must use a waterproof glue to attach it to the chamber.

10. Remove the rotor (**16**) from the measuring insert by slowly pulling it out of the housing.
11. Inspect and replace any damaged parts.
12. For re-assembly, reverse this procedure.

OMNI+ register



Original OMNI register



Exchange the measuring insert

1. Before the installation of a replacement measuring insert, the inside surface of the body, especially the seating areas of the O-ring, must be checked for damage. If damaged, a new O-ring must be used.
2. The O-ring and the lip seal must be lubricated with grease approved for use with potable water before installation in to the meter body.
3. To avoid damaging the O-ring when installing a meter insert, the O-ring must first be fitted onto the cover flange and then pushed into the meter body. If the O-ring is fitted into the body first, it can be pinched when fitting the meter inset and cause leaks.
4. When installing the measuring insert into the meter body, make sure that the direction of the arrow on the head flange aligns with the arrow on the meter body.
5. The screws fixing the measuring insert in the body shall be screwed hand tight and then tightened crosswise to the torque specification in the following table with the correct-sized tool.

Torque Specifications

OMNI Meter Type & Size	Chamber Cover Bolts (ft-lbs)	Strainer Cover Bolts (ft-lbs)	Test Port Plug (ft-lbs)	Test Port Cover Bolts - R2 only (ft-lbs)
1.5"-2" C2, T2, R2	30-35	25-40	15-20	12-15
3" C2, T2	30-35	25-40	15-20	N/A
3" H2, V2	25-30	20-35	N/A	N/A
4" C2, T2	30-35	30-45	15-20	N/A
4" F2	30-35	180-200	15-20	N/A
6" C2, T2	35-45	30-45	15-20	N/A
6" F2	35-45	180-200	15-20	N/A
8" C2, T2	35-45	30-45	15-20	N/A
8" F2	35-45	180-200	15-20	N/A
10" C2, T2	35-45	90-100	15-20	N/A
10" F2	35-45	180-200	15-20	N/A

6 Two-way SmartPoint modules

This section describes how to use FieldLogic Tools to activate, deactivate, configure, and view the parameter settings of a two-way SmartPoint module. It also covers how to enable an unused port.

Activate two-way SmartPoint modules

Note: If the configuration's GPS source is set to Required for all SmartPoints and the field device has no GPS fix, the SmartPoint will not be activated. See the FieldLogic Tools Installation Guide for more details.

1. Power on the field device.
2. Power on the CommandLink (CL) and place it in the proper position in relation to the SmartPoint module. This position depends on whether you are activating a Pit unit or Non-Pit unit.

   Note: Make sure the white square on the CL is lined up on the register side.

3. For Non-Pit Units (510M): Position the CL's antenna area on the left side of the unit with the battery door of the CL facing away from the SmartPoint module. Then secure it with the strap, if possible. If the left side of the unit is obstructed, place the CL as close to the mark on the adapter housing as possible.

510M/P series

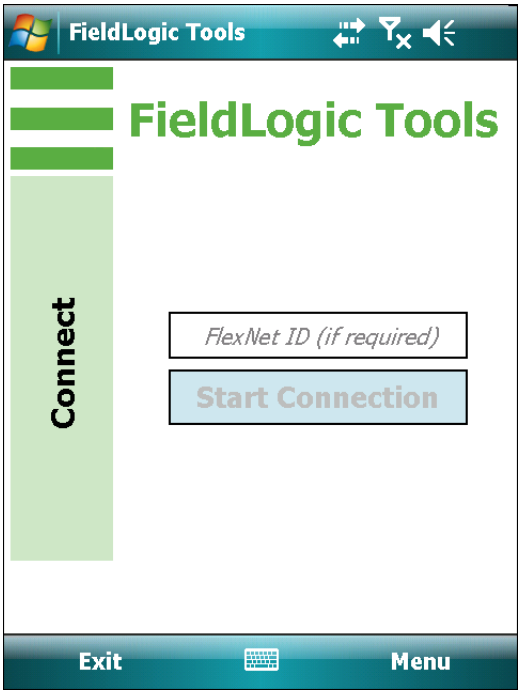
   Note: The label of the CommandLink should be touching the unit, and the CommandLink's power button should be visible while viewing the front of the unit.

4. For Pit Units (520M): Remove and flip over the pit lid so that the unit is upside-down. Position the CommandLink's Antenna area on the unit's bottom side. Then secure it with the strap, if possible.


520M/P series

   Note: The battery door of the CommandLink should be facing away from the unit, and the label of the CommandLink should be touching the bottom of the unit.

5. Start the FieldLogic Tools application.



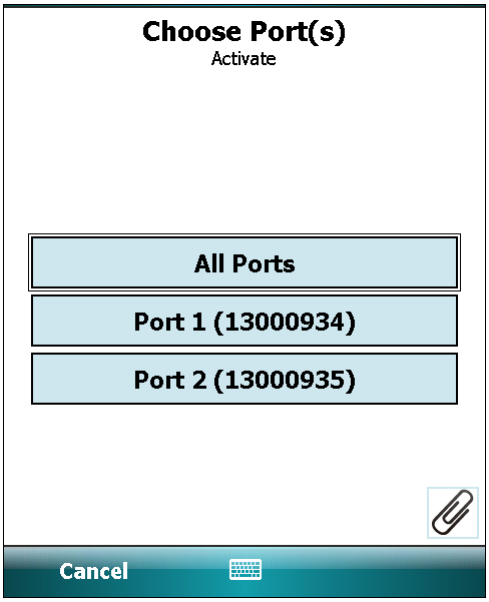
6. From the Connect screen, enter the FlexNet ID of the SmartPoint module (using the keypad or bar code scanner,) and select **Start Connection**.
7. Check the CL's LEDs. Be sure the blue LNK LED is illuminated, indicating a Bluetooth connection between the field device and CL.
8. FieldLogic Tools attempts to communicate with the SmartPoint module (via the CL) to determine the current state of the SmartPoint module.

   After connecting, FieldLogic Tools displays the Product Summary screen.

   Note:

   If there is a problem making a connection to the SmartPoint module, an error message displays.

9. Select **Activate**.
10. If activating a dual port SmartPoint module, the Choose Port(s) screen displays. Select a port (Port 1 or Port 2) or select **All Ports** to activate both ports.



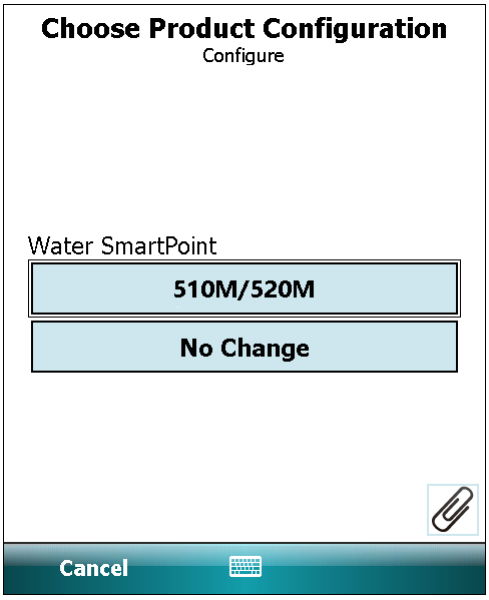
11. If prompted, select the applicable product configuration.
12. If activating a pit unit, you are prompted to complete the physical installation.
13. Remove the CommandLink from the bottom of the SmartPoint module.

    Important: Return the pit lid and attached SmartPoint module to its final position over the meter pit to ensure that FlexNet settings are properly configured.

14. Place the CommandLink within 20 feet of the pit lid to complete activation or configuration. Do not place the CommandLink on the SmartPoint module's pit lid housing or on the pit lid.
15. Select **OK**.

    Note: For non-pit units, there is no need to reposition the SmartPoint module because it is in its final position.

16. If the GPS source is set to **Required for all SmartPoints** and FieldLogic does not have a valid GPS fix, an activation error displays. Select **OK** to return to the Product Summary screen.
17. If prompted, select the button corresponding with your desired product configuration.



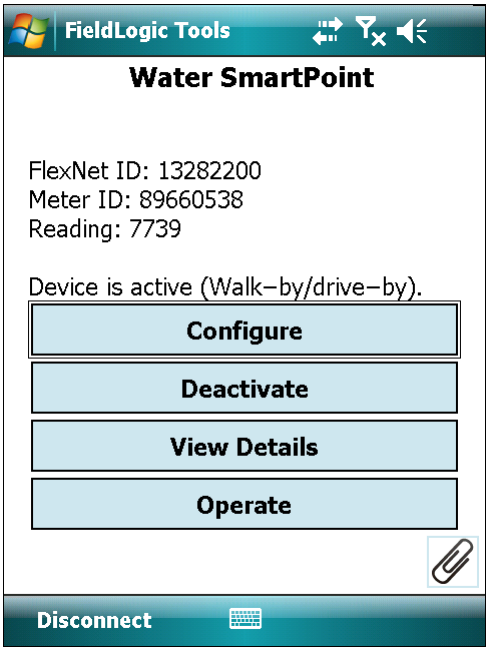
Note: The product configuration names listed will vary depending on the product configuration in use. You should ask your supervisor (or Sensus representative) for guidance on the applicable product configuration to choose.

Note: If no matching configurations are present, an error displays. Select **OK** to return to the Product Summary screen. Contact your supervisor to obtain the applicable product configuration.

18. The activation process begins. After successful activation, the Activate Success confirmation message displays.

    Note: During the activation process, setup and binding messages are sent to the Base Station.

19. Select **OK** to return to the Product Summary screen. After the SmartPoint module is activated, this screen displays additional options and information.

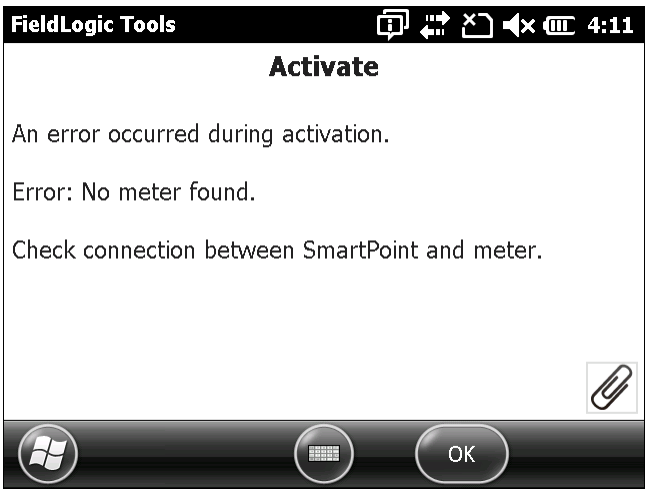


FieldLogic errors

This section describes some of the most common errors that you may encounter while using FieldLogic Tools and suggests possible corrective actions.

Activation errors

If SmartPoint module activation fails, FieldLogic Tools may display an error message.



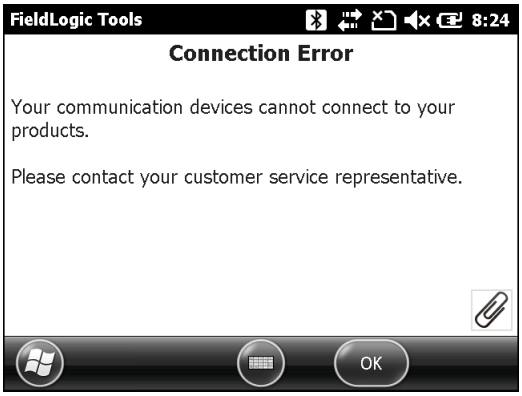
The following table lists common activation errors along with possible causes and corrective actions.

Common Activation Errors

Error Message	Possible Cause	Corrective Action
Communication failure: SmartPoint did not respond, Verify communication device is within range of SmartPoint and try again.	Network traffic may be high, or there is some form of RF interference.	Remove the interference.
	For battery powered devices, communication may have been lost.	Disconnect and try to connect again.
	Communication device is out of range.	Verify that communication device is within range of SmartPoint module and reposition if necessary.
	SmartPoint module is busy. (Note: This can occur if you have been performing multiple activates and/or deactivates of the same SmartPoint module in rapid succession.)	Disconnect. Wait several minutes and re-Connect.
Settings are not as expected, <config. settings> do not match expected values.	The product configuration is not applicable for the SmartPoint module. For example, attempting to apply the sample rate to **Once per 15 minutes** to a SmartPoint module that only supports **Once per hour** will indicate that the sample rate could not be set to the desired value.	Verify that you are using a product configuration that is applicable for the SmartPoint module. If product configuration is applicable, it may be corrupt. Contact Sensus for a new product configuration. For one-way devices, there was a communication error. Retry the activation.
Unable to activate without a valid GPS position.	FieldLogic does not have a GPS fix from the handheld device's internal GPS.	Verify that handheld device's internal GPS is set up properly. Choose a GPS setting that does not depend on having a valid GPS lock.
Unable to activate, SmartPoint has a hardware problem: <problem description>	There is hardware-related issue that requires special attention. For example, the SmartPoint module's battery level may be too low.	Contact your Sensus customer service representative.
SmartPoint Busy Please try again in a few minutes.	You have performed multiple activations and/or deactivations of the same SmartPoint module in rapid succession.	Disconnect, wait several minutes, and reconnect.

Communication errors

If there is a problem detecting or communicating with the SmartPoint Module, FieldLogic Tools may display an error message like the one shown below.



The following table lists common communication errors along with their possible cause and corrective action.

Common Communication Errors

Error Message	Possible Cause	Corrective Action
Communication device error Verify the communication device is powered on, and the application's communication device options are correct.	CommandLink is not powered on.	Verify that CommandLink is powered on and fully charged.
	Problem with CommandLink's COM port selection or Bluetooth pairing.	Verify the communication device configuration -- including Bluetooth pairing (if applicable) and COM port selection.
Your communication device cannot connect to your products, Please contact your customer service representative.	Incorrect communication device selected for the SmartPoint Module.	Verify that CommandLink is selected for the communication device.
Product with ID <ID #> found, but unable to maintain communication. Verify CommandLink positioning.	FieldLogic Tools received at least one message from the specified SmartPoint Module. But SmartPoint Module did not respond to subsequent queries.	Verify CommandLink positioning.
	Possible RF interference with handheld device's messaging.	Remove RF interference.
	SmartPoint Module is busy.	Wait and try again.
	SmartPoint Module is too far away from the CommandLink.	Move CommandLink closer to the SmartPoint Module.
No product with ID <ID #> found. Verify product ID, communication device positioning, and network parameters.	Incorrect FlexNet ID was entered.	Enter the correct FlexNet ID.
	Trying to perform a long-range audit on a SmartPoint Module that is in FB-MoM mode.	Place the CommandLink next to the SmartPoint Module and perform a physical contact audit instead.
	CommandLink may be in wrong position for ASK communication.	Correct the position of the CommandLink and try to connect to the SmartPoint Module again.
	Possible RF interference with handheld device's messaging.	Remove RF interference.

Error Message	Possible Cause	Corrective Action
No product found. Verify communication device positioning, and network parameters.	CommandLink may be in wrong position for ASK communication.	Correct the position of the CommandLink and try to connect to the SmartPoint Module again.
	Possible RF interference with handheld device's messaging.	Remove RF interference.
	Network parameters may not match that of the SmartPoint module.	Get the correct network parameters from Sensus.
No Response From SmartPoint. Check your mag loop position and try again.	CommandLink's Mag Loop is not properly positioned on the meter/ SmartPoint module.	Check the documentation for your specific meter/SmartPoint Module to identify the applicable Mag Loop location.
Communication device error. Verify the communication device is powered on, and the application's communication device options are correct.	FieldLogic's communication device settings may not be properly set.	Verify the communication device options are correct.
	Communication device may not be powered on or connected.	Verify that the communication device is connected and powered on.

Other errors

The following table lists other errors along with their possible cause and corrective action.

Other Errors

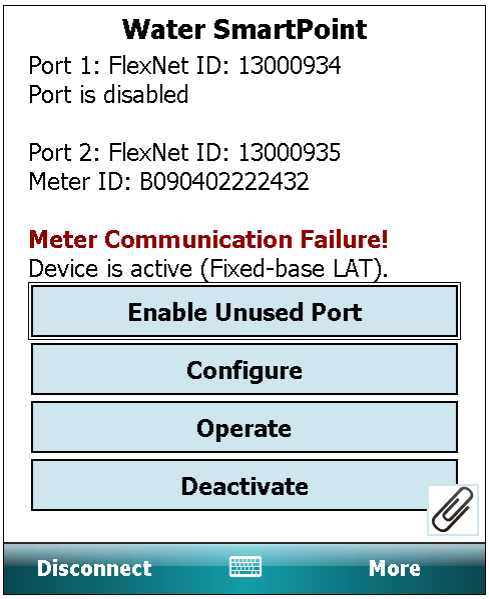
Error Message	Possible Cause	Corrective Action
Less than <amount> MB of storage space available. You must free storage space.	Meter Exchange: Insufficient space available on the handheld device to take pictures of new and old meters.	Free up additional space.
There is less than <amount> MB of storage space available. Please free storage space.	Meter Exchange: Free space on the handheld device is almost too low to safely take pictures of new and old meters.	Free up additional space.
Utility Code Mismatch This SmartPoint may be configured for use by another utility company. SmartPoint utility code: <code> Your utility code: <code> Are you sure this is your SmartPoint?	SmartPoint module may be in use by a different utility. Incorrect network parameters file may have been imported.	Get the applicable network parameters file or product configuration from your Sensus customer service representative.
Unlock The operation has timed-out. (Note: While performing the temporary Unlock operation, FieldLogic did not receive a response from the gas SmartPoint.)	Network traffic may be high, or there is some form of RF interference.	Remove the interference. Try to unlock the SmartPoint module again.
	Communication device is out of range.	Verify that communication device is within range of SmartPoint module and reposition if necessary. Try to unlock the SmartPoint module again.

Error Message	Possible Cause	Corrective Action
SmartPoint Locked SmartPoint must be unlocked to continue.	You tried to perform an operation on a locked gas SmartPoint module.	First initiate a temporary unlock window. Then try performing the operation again.
Product with ID <ID #> found, but unable to establish connection because the product is encrypted and no encryption keys were found.	You are attempting to connect to an encrypted SmartPoint module, and either no encryption keys reside on the handheld device or the encryption keys have expired.	Import a new field encryption keyfile containing valid encryption keys.
Product with ID <ID #> found, but unable to establish connection due to incorrect encryption keys or time sync.	You are attempting to connect to an encrypted SmartPoint module, and either the encryption keys are incorrect or the time sync is incorrect.	Import a new field encryption keyfile containing valid encryption keys. Verify that you have correct time sync.
Your CommandLink does not support encryption.	You are attempting to connect to an encrypted SmartPoint module using a CL that doesn't support encryption.	Use a CL that supports encryption.

Enable an unused port

This section describes how to use FieldLogic Tools to enable an unused port on a dual port water SmartPoint module.

1. Be sure to physically connect the second water register to the unused port of the dual port SmartPoint module.
2. From the Product Summary screen, select **Enable Unused Port**.



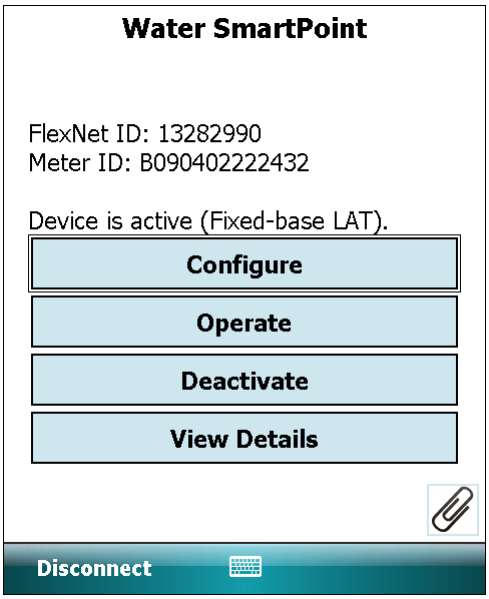
After port is successfully enabled, a confirmation displays.

Change two-way SmartPoint module configuration

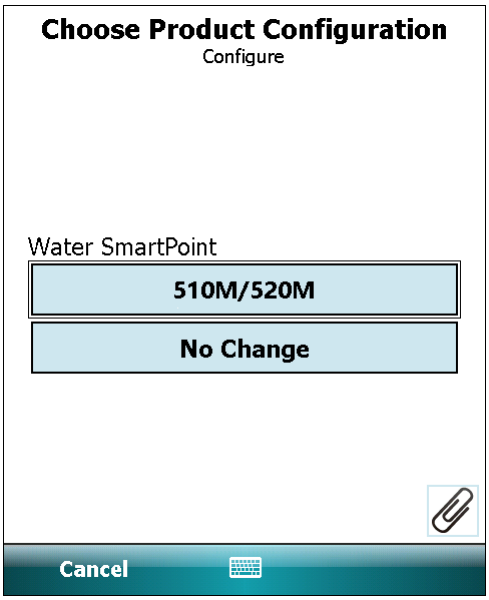
This section describes how to use FieldLogic Tools to change the configuration parameters of a two-way SmartPoint module.

Note: Be sure to first select the correct product configuration containing the modified configuration parameters at activation start. See the *FieldLogic Tools Installation Guide*.

1. From the Product Summary screen, select **Configure**.

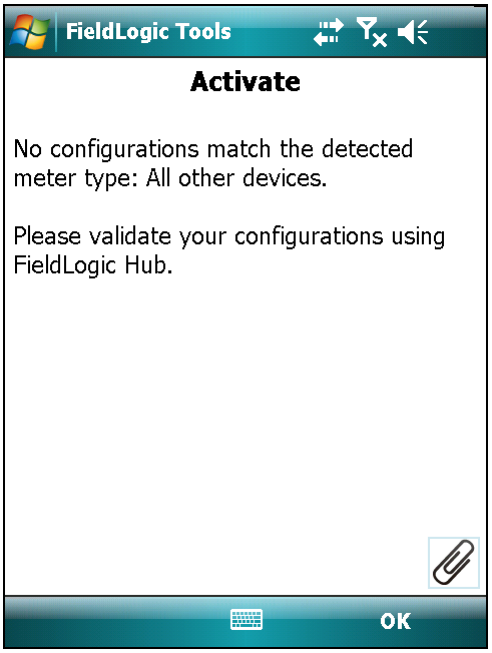


2. From the Choose Product Configuration screen, select the button corresponding with the applicable product configuration.



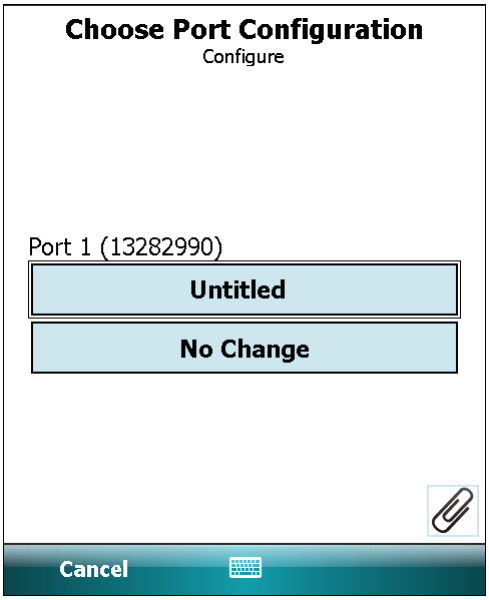
Note: The product configuration names listed vary depending on the product configuration in use. You should ask your supervisor (or Sensus representative) for guidance on the applicable product configuration to choose.

Note: If no matching configurations are present, an error displays. Select **OK** to return to the Product Summary screen.



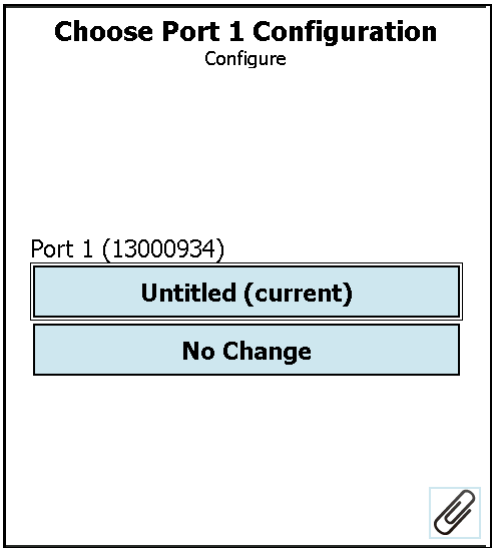
Contact your supervisor to obtain the applicable product configuration.

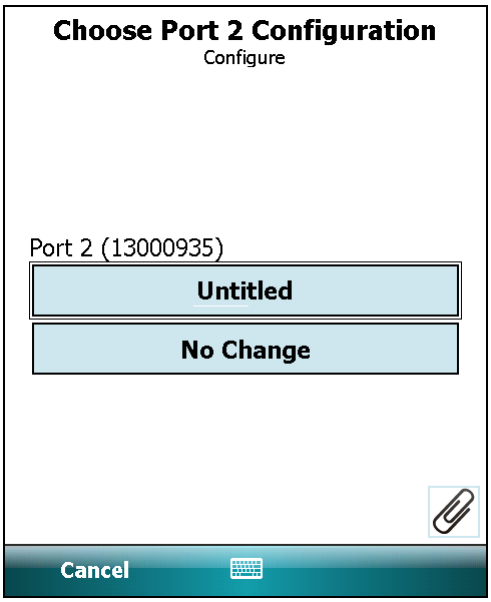
3. The Choose Port Configuration screen displays. Select the button corresponding with your applicable port configuration.



Note: The port configuration names listed will vary depending on the product configuration in use. You should ask your supervisor (or Sensus representative) for guidance on the applicable port configuration to choose.

4. Similarly, if configuring a dual port SmartPoint module (with BOTH ports enabled), you are prompted to select a configuration for each port by the Choose Port 1 Configuration and Choose Port 2 Configuration screens.





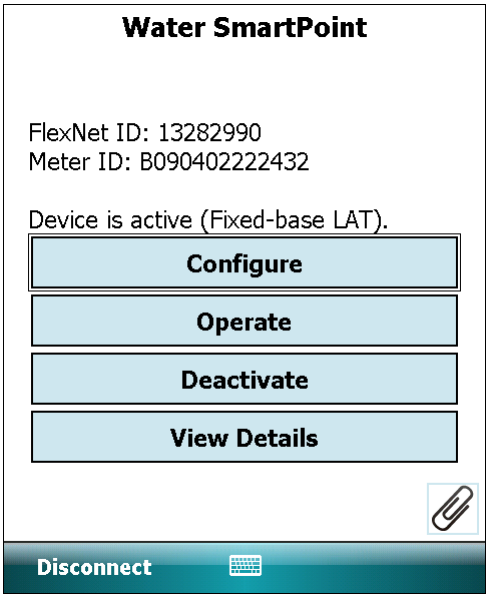
In each case, select the button corresponding with your desired port configuration to initiate the configuration process.

5. After successful configuration, a success confirmation displays. Select **OK** to return to the Product Summary screen.

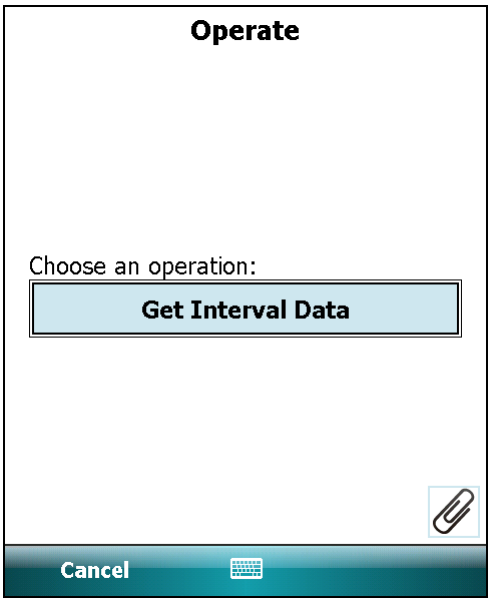
Get interval data from two-way SmartPoint modules

This section describes how to use FieldLogic Tools to retrieve interval data from a two-way SmartPoint module.

1. From the Product Summary screen, select **Operate**.



2. From the Operate screen, select **Get Interval Data**.



Note: For dual port SmartPoint modules, the Get Interval Data screen will display port options. Select the port for which you want to retrieve interval data.

3. When prompted, enter the number range of interval data to retrieve and select **Next**.

   During the interval data retrieval process, FieldLogic Tools automatically creates an interval data file (.ivd) that is stored on the field device in the \My Documents \Sensus FieldLogic directory. However, the interval data file cannot be viewed on the field device.

   After the interval data is retrieved, a confirmation displays.

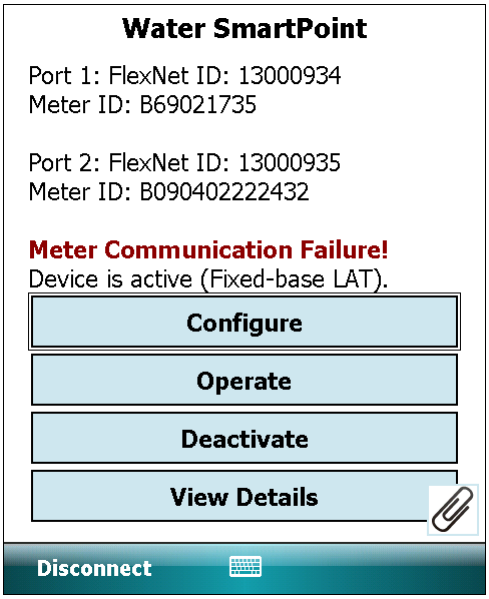
4. Select **OK** to return to the Product Summary screen.

View two-way SmartPoint module details

This section describes how to view (that is, audit) the status, various configuration parameters, and network settings of a SmartPoint module.

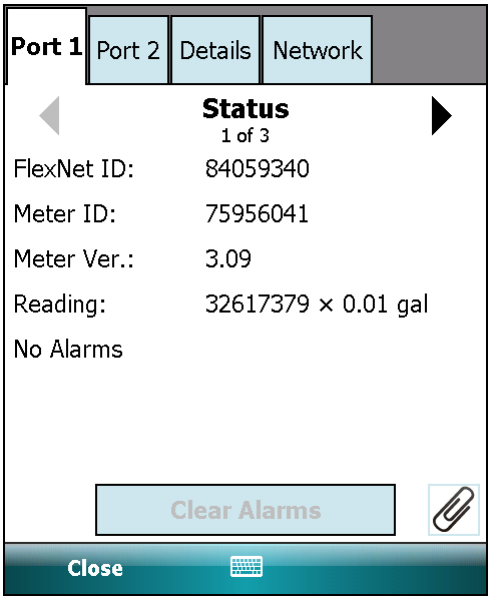
Note: The parameter setting fields are read-only; displaying the settings that are stored in the SmartPoint module. To modify these settings requires configuring the SmartPoint module with a different product configuration.

1. From the Product Summary screen, select **View Details**.

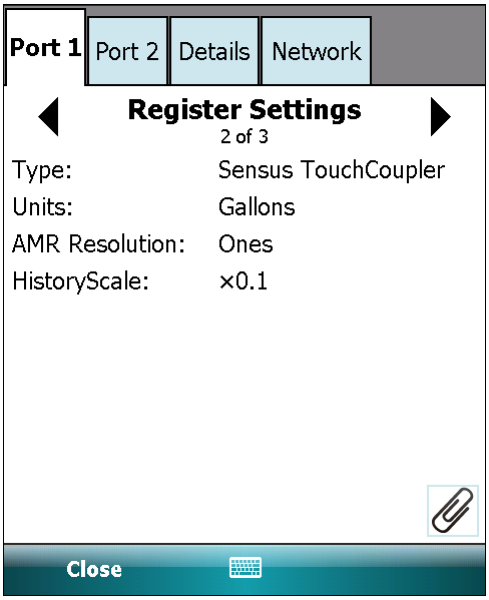


The Port 1 tab (default) and Port 2 tab (if dual port) report identical information that is divided into 3 pages: Status, Register Settings, Alarm Settings. Select the right and left arrows to navigate between these pages.

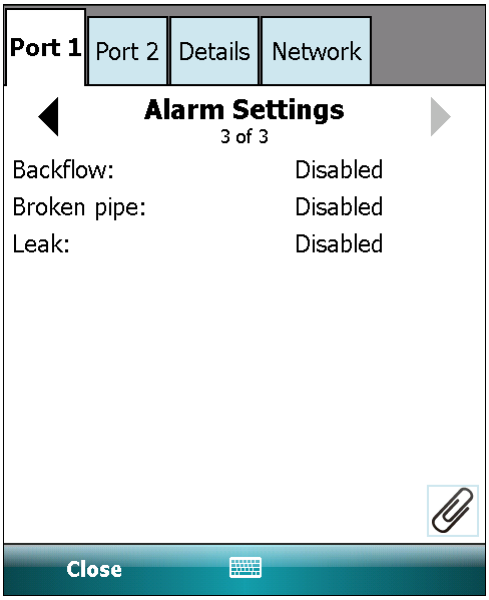
The Status page (default) displays FlexNet ID, Meter ID, Meter Version, and Reading information. Also, any alarms that have been detected on the SmartPoint module are reported on this page (in bold, red text). If there are no alarms, the No Alarms message displays instead.



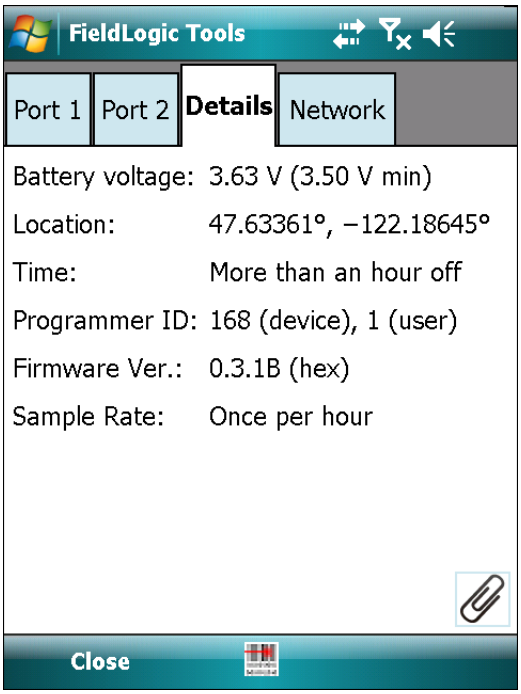
The Register Settings page displays the settings for the register type, units, AMR resolution, and history scale.



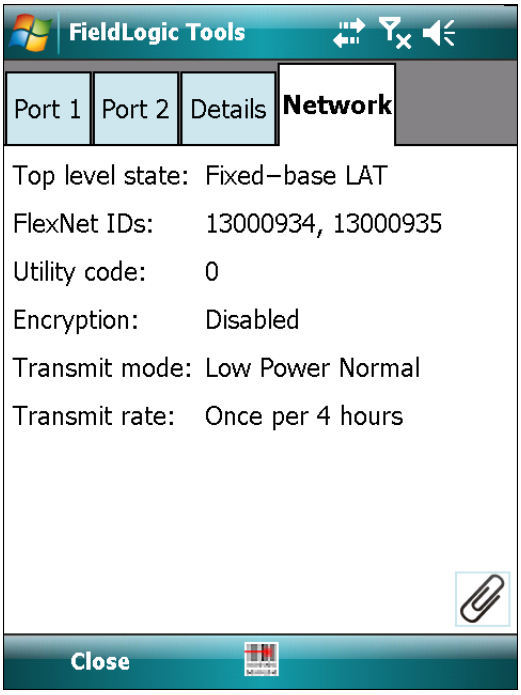
The Alarm Settings page displays backflow, broken pipe and leak detection threshold settings.



2. Select the **Details** tab to view SmartPoint module information such as battery voltage, GPS coordinates, Time Correctness, and sample rate.



3. Select the **Network** tab to view network-specific information such as FlexNet IDs, utility code, and encryption status.

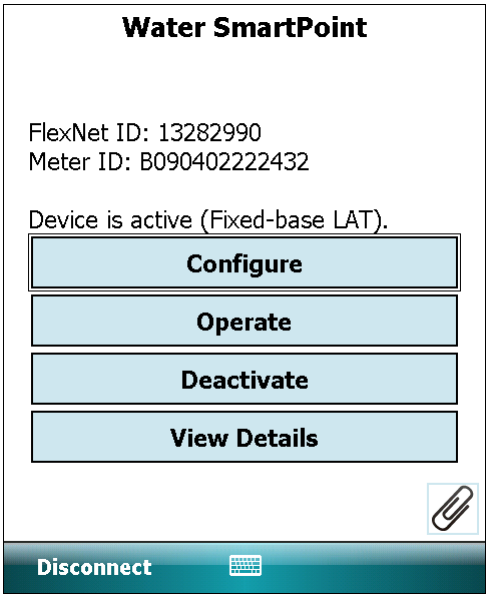


4. Select **Close** to return to the Product Summary screen.

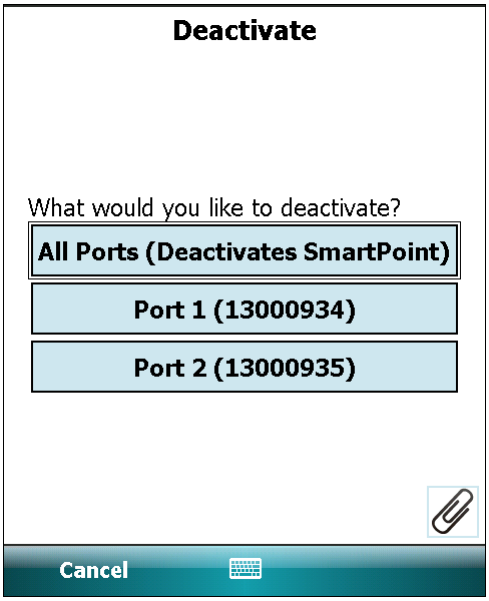
Deactivate a two-way SmartPoint module

This section describes how to use FieldLogic Tools to deactivate an activated two-way SmartPoint module.

1. From the Connect screen, enter the FlexNet ID of the SmartPoint module (using the keypad or bar code scanner,) and select **Start Connection**.
2. The Product Summary screen displays. Select **Deactivate**



If deactivating a dual port SmartPoint module that has both ports enabled, you are prompted to choose one or both ports.



If you choose to deactivate only one of the ports, the port is deactivated, and a success message displays.

If you select All Ports, the deactivation process continues as described in the next step.

3. For single port SmartPoint modules or dual port SmartPoint modules that have only one port enabled, the deactivation confirmation prompt displays. Select **Yes** to proceed.
   When deactivation is complete, a success message displays.
4. Select **OK** to return to the Device Summary screen.