EXTREME ENVIRONMENTS. EXTREMELY SIMPLE.

SDI-PT

SDI-12 Pressure Transducer

User Manual

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Chapter 1 GENERAL

1.1 GENERAL DESCRIPTION

The FTS SDI-PT Pressure Transducer is designed for fresh water level measurements. Typical applications include lakes, streams, wells, agricultural water level/flow, and tanks.

A vent tube incorporated in the cable vents the sensor diaphragm to the atmosphere. This eliminates the need to compensate for changes in barometric pressure. Care must be given to prevent the vent tube from being pinched or crushed which can result in erroneous readings. Ensure the cable is free from obstructions and kinks.

To prevent water vapor from entering the inner cavity of the sensor, the vent tube opening terminates inside a desiccated vent tube enclosure. Moisture inside the vent tube can cause erroneous data and damage to the sensor.

WARNING! The sensor could be damaged if encased in frozen liquid.

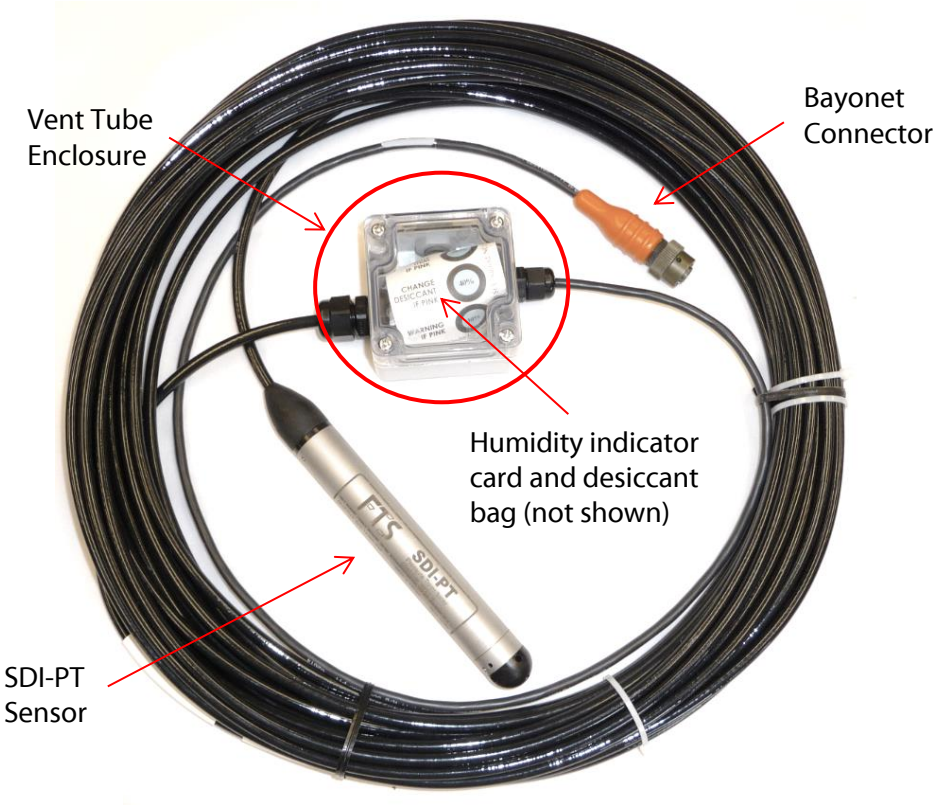
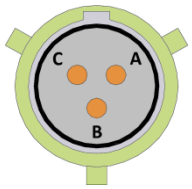


Figure 1-1: FTS SDI-PT Sensor

1.2 CONNECTION

The SDI-PT can be supplied with or without a connector. Cable wire colour coding and FTS standard connector[1] pinouts are shown in the table and diagram below:

Wire colour	Pin[1]	Function
• Red	• A	• +12 V DC power supply
• White	• B	• Data
• Black	• C	• Ground



If the SDI-PT is supplied without a connector, the user is responsible for connecting the sensor to the data collection platform. Users can attach their own connector, connect the cable via a terminal strip, or wire it directly to device electronics.

1.3 OPERATION

The FTS SDI-PT is an SDI-12 device and is powered by the +12 V DC power supply on the SDI-12 bus. For details on the SDI commands used by the sensor, see Chapter 2 - SDI Commands**Error! Reference ource not found.**.

1.4 CONFIGURATION

The FTS SDI-PT is shipped with default address zero (0). If more than one SDI-12 sensor is on the same bus it may be necessary to change the address. Refer to Chapter 4 for instructions on the command used to set the sensor's address.

1.5 CALIBRATION AND MAINTENANCE

Every visit make a visual inspection of the wiring and physical conditions looking for damage to the sensor and cable or sensor blockages. Check the vent tube enclosure humidity monitor card to determine if the desiccant requires changing. Verify that the air inlet is free from debris.

The sensor should be returned for periodic maintenance every 2-3 years as per OEM manual[2]. Periodic re-calibration should not be required.

Please contact FTS technical support (see manual front pages) if the unit ceases to operate properly.

1.5.1 Changing the Desiccant[3]

When the humidity monitor card indicates reaches a 40% level of humidity, the desiccant must be changed. In order to do so the vent tube enclosure must be opened using a Phillips or slot screwdriver. Only do this in a clean, dry environment.

[1] Waterproof military-style bayonet connector 851-06JC8-3AP50; FTS part number 520-83AP; compatible with FTS Axiom Dataloggers.
[2] Campbell Scientific CS451/CS456 Submersible Pressure Transducer Operation Manual Section 8.2
[3] FTS part numbers: 2 g desiccant bag 11438 and Humidity Indicator Card 11672

Replace the desiccant bag and place a new humidity monitor card on top of the wiring, ensuring the 40% section of the humidity level indicator is visible. Replace the screws and hand tighten.

Chapter 2 INSTALLATION

2.1 PRIOR TO INSTALLATION

Prior to installing, inspect the SDI-PT and its cable for damage. The cable should not have any kinks or cuts as these can render the vent tube useless. Ensure the humidity monitor card in the vent enclosure box indicates low humidity levels. If not, replace the desiccant and card (see section 1.5.1)

Select a location where the stream bed and banks are stable and are free from elements which may damage the cable (sharp protuberances, crushing hazards etc.). Ideally, there should be a solid structure to which the cable and sensor can be secured (ie: bridge footing or dam face). If the site does not have a structure which can be used, feeding the sensor and cable through PVC piping to deploy it not only protects the sensor and cable from debris, but it also provides a secure method of anchoring the sensor.

2.2 HANDLING THE CABLE AND SENSOR

When working with the cable do not pull, twist, crimp or crush it as this can damage the pressure tube. The cable can also be damaged by abrasion, rodents, and sharp objects so ensure it is positioned away from potential hazards and securely attached to prevent abrasion.

If the sensor is suspended, to prevent cable strain and stretch use split mesh cable grips. This is especially important to relieve strain at the attachment point between the cable and the sensor.

Figure 2-1: Split Mesh Cable Grip Example

Do not drop the SDI-PT, allow it to strike a hard surface forcefully, or allow it to “free fall” as this may damage the sensor.

2.3 MOUNTING THE SENSOR

Install the SDI-PT at a fixed depth. Ensure the placement is such that potential water pressure will never exceed the sensor's pressure range, 2 times the pressure range (see Chapter 5 - Technical Specifications).

For best results the SDI-PT should be mounted vertically below the lowest expected water stage. If not mounted vertically, there will be an offset error which must be corrected calculating and applying an offset.

Air bubbles may become trapped between the pressure plate and the water surface, causing small offset errors until the bubbles dissolve. Bubbles can be dispersed by gently rotating or shaking the transducer.

2.4 SECURING THE SENSOR AND CABLE

The sensor and cable should be secured to a solid and stable surface in order to maintain the desired depth and to minimize cable damage due to abrasion. The transducer body can be fastened using cable ties or tape.

Route the cable safely to the Datalogger.

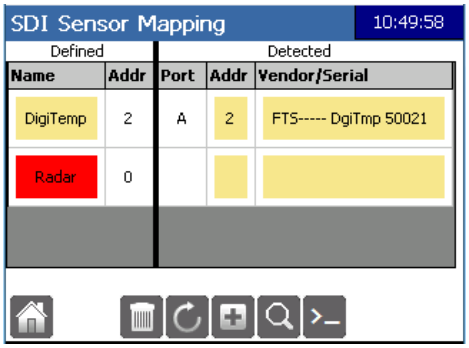
Chapter 3 QUICK SETUP GUIDE

Once the SDI-PT is attached to one of the SDI ports on the Datalogger, it must be mapped to the Datalogger and configured for use. This chapter will take you through the basic steps to do so. A detailed explanation of these features can be found in the Axiom Operator's Manual.

3.1 MAPPING THE SDI-PT – INITIAL

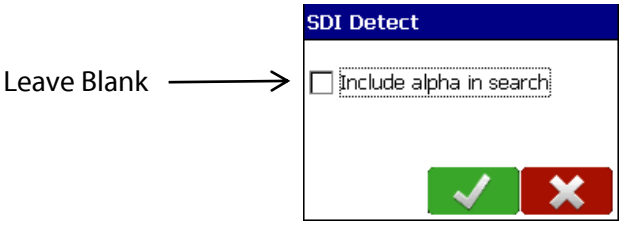
1) From the Home screen on the Datalogger, select the SDI 12 icon 

2) The SDI Sensor Mapping screen will be displayed. Note that the SDI-PT sensor does not appear.

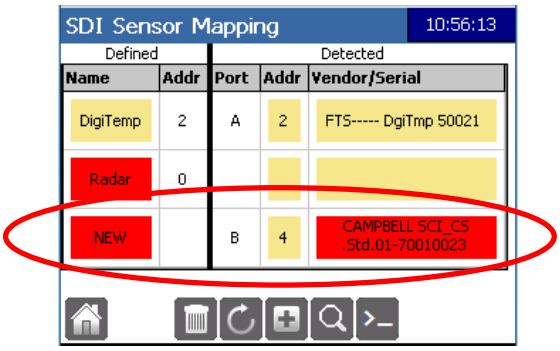


3) Press Detect  .

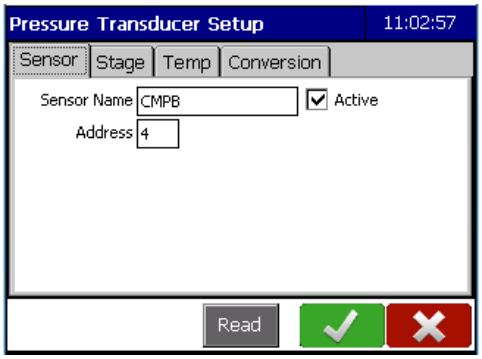
4) The **SDI Detect** dialog box appears. Select **OK.**



5) The SDI-PT is listed as NEW and the vendor is listed as Campbell SCI-CS followed by its serial number. Press on the NEW box. There will be a slight delay.

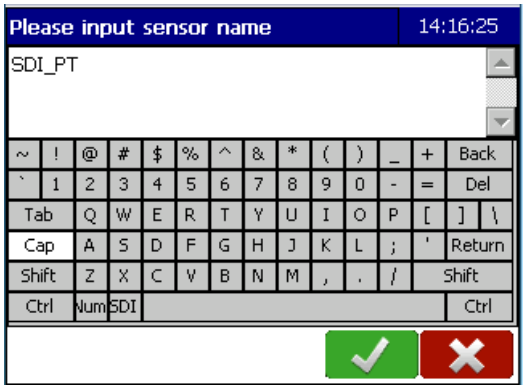


6) The Pressure Transducer Setup screen will appear with the default Sensor Name. You can now set up the SDI-PT.



3.2 CONFIGURING THE SDI-PT

The Sensor name and address are filled in. The name can be changed if desired by tapping on the box and using the keyboard, **OK**.



3.2.1 STAGE TAB

Fields are populated with the default settings. Customize as required or leave at default settings.

NOTE: An Interval MUST be set to complete setup.

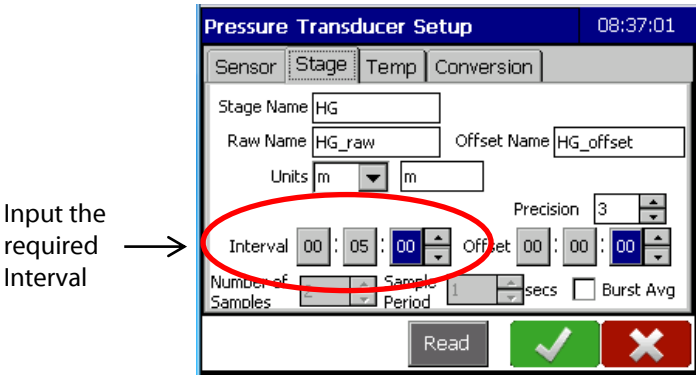


Figure 3-1: Stage Tab

Stage Name: Specifies the variable for the stage value returned by the sensor.

Raw Name This is the distance from the sensor's depth to the surface. The combination of the raw measurement plus the offset should equal the actual depth. The default name is HGS_Raw which can be changed if desired.

Offset Name: This is the depth below the sensor's position. The combination of the raw measurement plus the offset should equal the actual depth. The default name is HGS_Raw which can be changed if desired

Precision: Specifies the precision (number of decimal places) in the stage value to be used in computations and displays.

Units (dropdown): Specifies the units in which the sensor returns the stage values

Units (textbox): Specifies the units label used in displays of the stage values. The input unit must be the equivalent of the units in the drop down menu. Note that no conversion will take place so selecting ft from the drop down menu and inputting m (metres) as the display unit, will result in a measurement of 3 ft being displayed as 3 m.

Interval: Specifies how often the stage readings are made.

Offset: Specifies the schedule of when the measurement command will be sent based on time after midnight. If readings are desired for a specific interval, the offset should be set just prior to that time based on the measurement time returned from the **Read** button plus 2 seconds padding to ensure all measurements are taken and logged. If no offset is input the measurement command will be given in accordance with the interval time and the actual readings will be taken and logged after that time in accordance with the time needed to read the measurement.

Example: The amount of time the sensor will take to make the measurement can be found by pressing the "read" button (see example at Figure 3-2). Using the example of 3 seconds, an Interval of 15 minutes, and an Offset of 00:14:55, the measurement command is sent at 00:14:55. It takes three seconds to return a value, plus the added 2 second padding to ensure the returned

values are available at the fifteen minute mark. Subsequent measurement commands will be sent at 00:29:55, 00:44:55, etc.

> IMPORTANT! When determining Offset times, take into consideration the time it takes to read the measurements, log the measurements, any processes or calculations which need those values to run, and the time required to submit data into the buffer prior to transmission (typically 2 minutes prior to transmission). If several sensors are running on the same bus, this also increases the read and logging time. For complex setups, FTS Service and Support should be contacted to ensure all required data is being transmitted as necessary.

Burst Avg: This activates the burst averaging feature for stage values. A burst average is formed at each measurement event by collecting the indicated **Number of Samples** at intervals specified by **Sample Period**, and taking the average.

Number of Samples and **Sample Period** control burst averaging. They are enabled only when **Burst Avg** is selected.

Read: The read button appears on all tabs when in Edit mode and will trigger a sensor reading (sends the "M" Command). It will return the length of time taken for a measurement to take place and the data points returned. A list of fields returned with the associated "M" command can be found in Chapter 4.

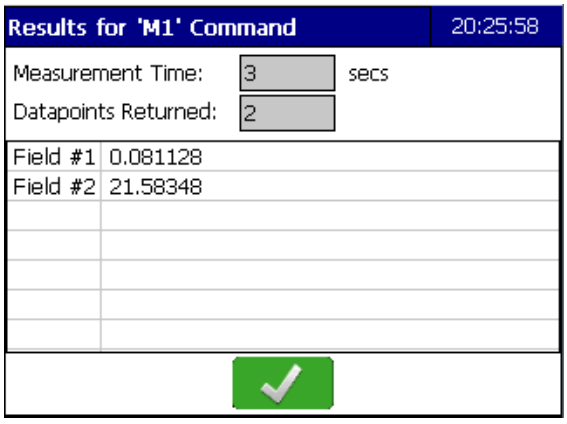


Figure 3-2: "Read" Example

3.2.2 Temp (Temperature) Tab

The **Temp** tab allows the user to specify an auxiliary water temperature measurement. . If no temperature measurement is desired, **Temp Name** should be blank.

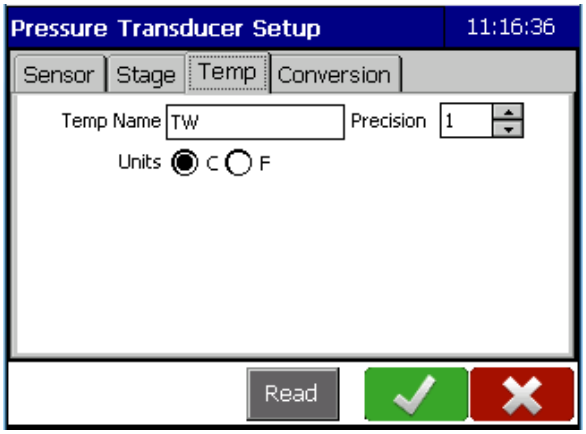


Figure 3-3: Temp Tab

Temp Name: Specifies the variable name for the temperature value.

Precision: Specifies the precision (number of decimal places) in the temperature value to be used in computations and displays.

Units (radio buttons): Select Celsius (C) or Fahrenheit(F).

3.2.3 Conversion Tab

This is the equation used to convert measured water pressure to estimated water depth. This is the value given to the Raw Name measurement variable defined on the **Stage** tab.

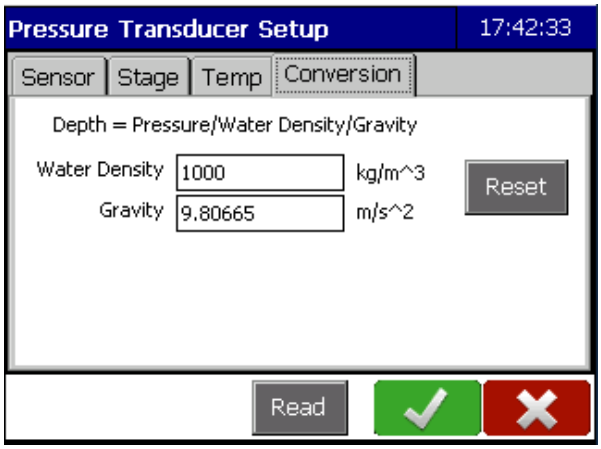
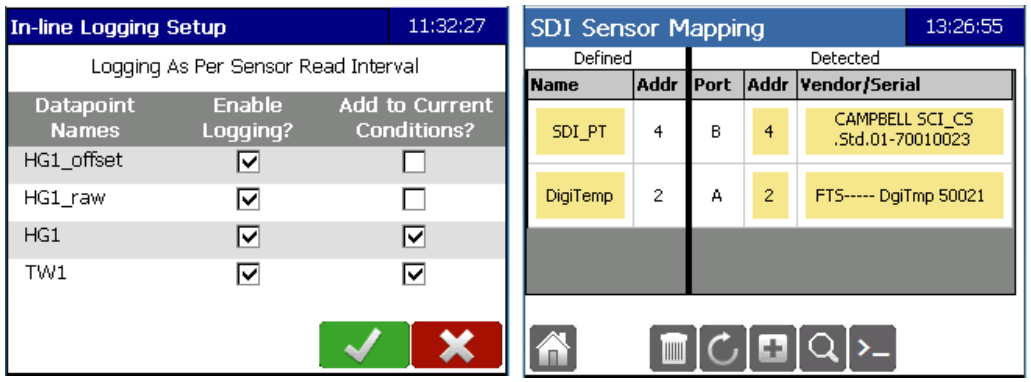


Figure 3-4: Conversion Tab

Reset resets the parameters on this screen to the default values.

Read: When pressed, the sensor will take a reading.

Once all fields for the tabs screens have been setup, select **OK**. If In-line Logging has been enabled on the Datalogger, the In-line Logging Setup screen will appear as shown in Figure 3-5. Go to Section 2.3. If In-line Logging has not been enabled you will be returned to the Sensor Mapping screen as shown in Figure 3-5. Go to Section 2.4.



In-line Logging Setup screen Sensor Mapping Screen

Figure 3-5: Setting up Logging

3.3 SETTING UP IN-LINE LOGGING

For In-line Logging, select Edit and toggle the checkboxes for desired logging options. Select **OK.**

You will be returned to the SDI Sensor Mapping screen indicating that the sensor is mapped (all boxes are beige).

Note that the example shows the name that was entered under the Sensor Setup: Sensor tab

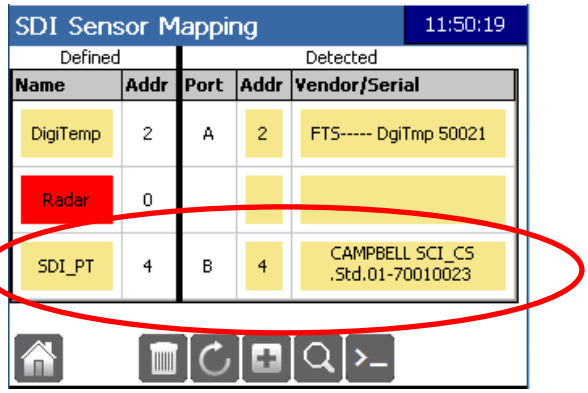
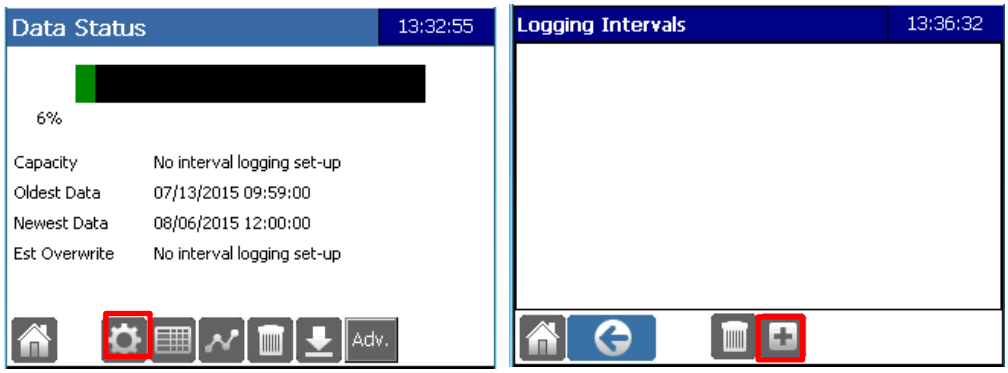


Figure 3-6: Sensor is mapped

3.4 SETTING UP LOGGING – IN-LINE LOGGING NOT ENABLED

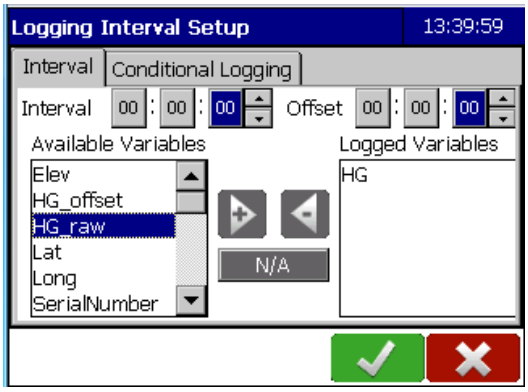
From the Home menu, select the Data icon to display the Data Status screen.

1) Select the Setup cog and then press **Add**.

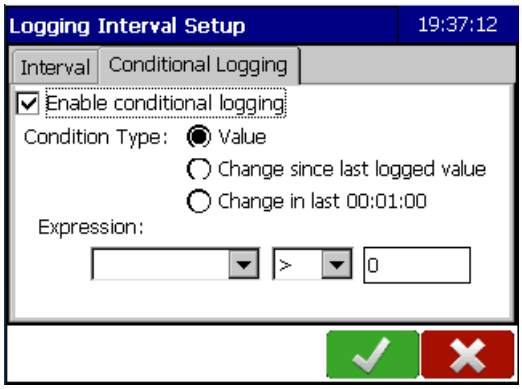


2) Input the logging interval time and an offset time (if desired).

3) Move the desired Variables from the Available Variable column to the Logged Variable column.



4) Conditional Logging is an optional feature. If the defined conditions are met, the variables in the Logged Variables column will be logged when the defined conditions are met. Ensure the Enable Conditional logging checkbox is toggled and use the radial buttons and drop down menus to define the condition.



3.5 SETTING THE STAGE VALUES

From the **SDI Sensor Mapping** screen, press on the SDI_PT icon to display the SDI_PT Sensor Screen. Note that the icon and Sensor Screen will be named in accordance with the name provided in the Sensor Setup screen for the Sensor name. This manual uses the name SDI_PT in the examples.

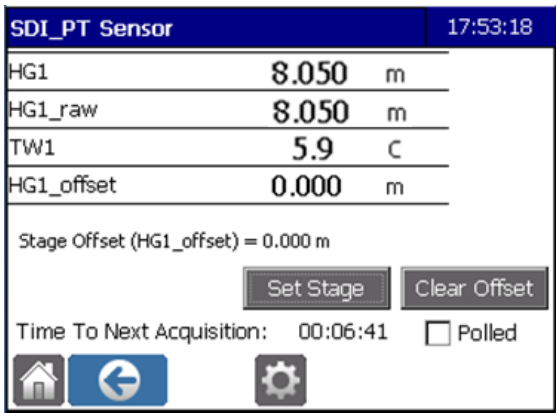


Figure 3-7: Configured SDI-PT Screen

Once the sensor has been configured and is operating, the **Set Stage** and **Clear Offset** buttons can be used. They are present only if a stage variable has been configured on the **Stage** tab. There are two methods available for setting the stage offset in the Datalogger depending on if the staff gauge reading is known or not. If it is known use the **Set Stage** button. If it is not known, use the **Polled** feature.

Set Stage: Use this to match the current sensor reading to the site's staff gauge.

Clear Offset: Use this to clear a previously set water level offset.

3.5.1 SET STAGE VALUES – STAFF GAUGE READING KNOWN

If the staff gauge reading is known, press **Set Stage**, enter the staff gauge value, and confirm the changes.

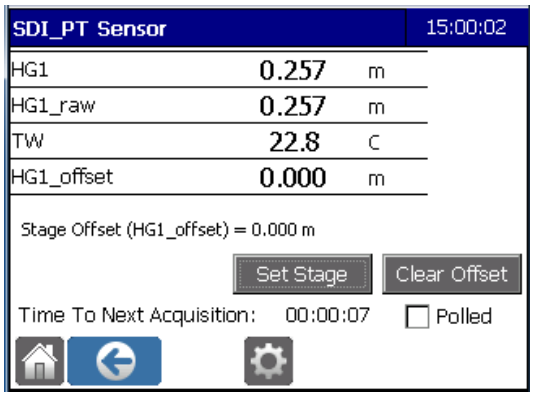


Figure 3-8: Set Stage

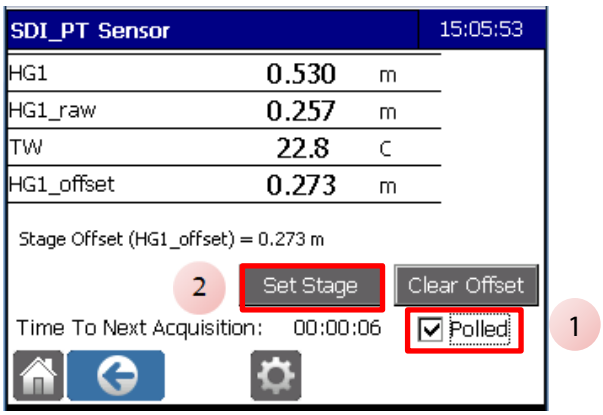
The Datalogger calculates the appropriate stage offset from the current stage sensor reading.

3.5.2 Set Stage Values – Staff Gauge Reading Unknown (Polling)

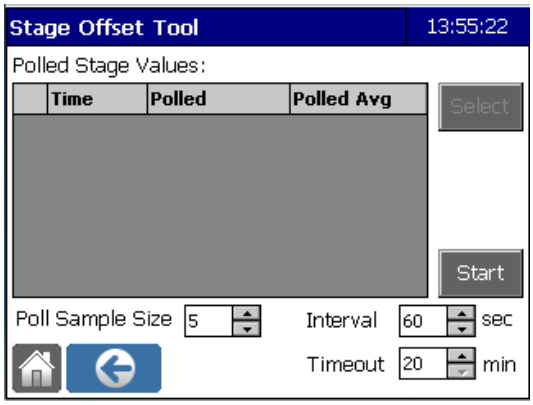
Polling begins a series of sensor readings while the user checks the staff gauge reading, which is then compared against the polled readings. Any data collected during the polling will not be recorded by the Datalogger nor will it affect Stage Setup values.

To set up polling follow these steps:

1. Tap the **Polled** box, then select **Set Stage**.

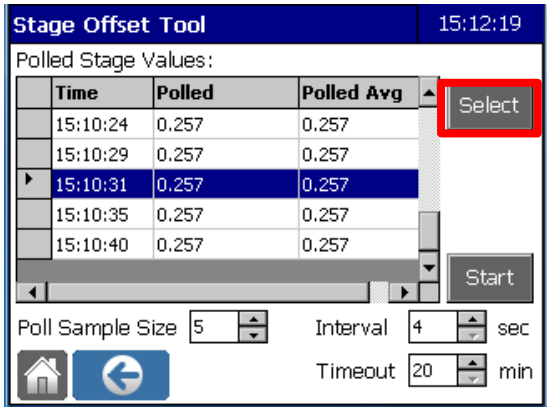


2. The **Stage Offset Tool** screen is displayed. Enter the desired **Interval** and **Timeout** times, Interval being the polling interval and Timeout being the period of time over which polling will take place. The **Poll Sample Size** refers to how many readings will be averaged per interval.

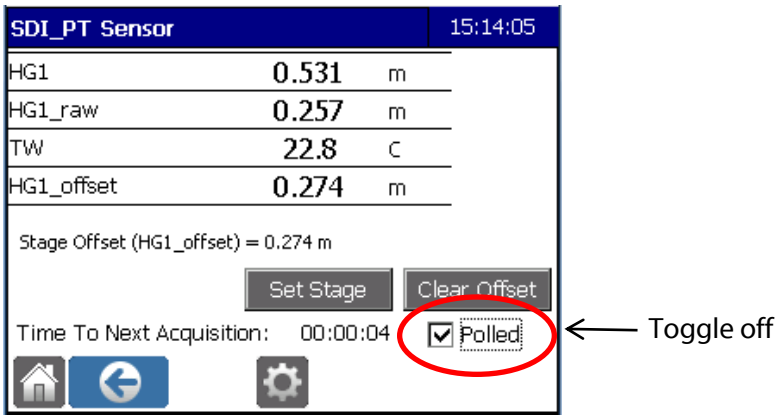


3. Synchronize your timepiece to the Datalogger and select **Start**.

4. Go read the staff gauge. Note the time and the Staff Gauge value. When you return to the Datalogger select STOP, scroll through the stage sensor readings and tap on the time that corresponds to your reading of the staff gauge. Press **Select**.



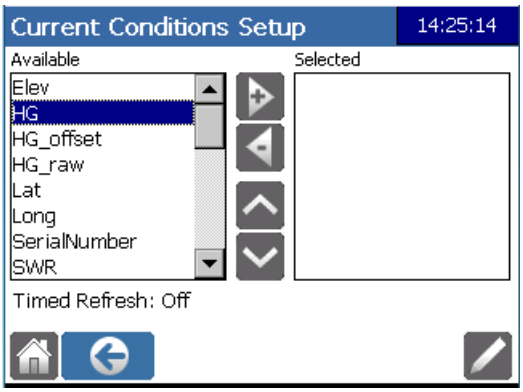
5. The **Enter Staff Gauge Value** screen appears. Enter the observed value and confirm. The new Stage Offset will be calculated.



6. Return to the **Sensor** screen and toggle off the **Polled** box.

3.6 SETTING CURRENT CONDITIONS

If you want any SDI-PT variables to be displayed in Current Conditions, from the Home menu select the Current Conditions icon, then the Setup cog. Select and move the desired variables to the Selected column.



Chapter 4 SDI COMMANDS

4.1 NOTATION FOR SDI COMMANDS[4]

SDI commands are strings of characters sent to the SDI sensor by a data logger, data collection platform or other SDI-12 master. The sensor takes action based on the command that was sent (ie. starting a measurement) and then replies to the command with a string of characters. In this document we use different typefaces to specify the different parts of an SDI command and sensor reply as shown in the following table.

Item	Meaning	Text representation
Sensor Address	The sensor address. First character of a command* and a response. Valid values 0-9, a-z, A-Z.	**a**
Command literal	Part of a command that must be reproduced literally as it appears;	**X**
Command parameter	Part of a command that must be filled in with an appropriate value.	***xxx***
Optional parameter	Part of a command that can be omitted if not needed. The brackets [,] are not included in the command.	*[xxx]*
Floating point number	Number representing a measurement value or command parameter. If a command parameter it will be bolded italic and may be marked as optional.	*u.uuuuu*, ***u.uuuuu*** *or* ***[u.uuuuu]***
Replies	As above but not bolded	
Command Terminator	The last character of a command	**!**

* except the address query

The first character of all commands and responses is always a device address. The last character of a command is the "!" character. The "!" can only be in a command as the command terminator.

Note that as cable length increases, so do noise levels which can interfere with the digital measurement communications between the sensor and the Datalogger. Significant noise levels can result in excessive SDI-12 retries, incorrect data, or even no response. SDI-12 commands (like *a*MC!) which add a CRC[5] can greatly improve incorrect data issues.

[4] All SDI-12 commands are in accordance with *"SDI-12 A Serial-Digital Interface Standard for Microprocessor-Based Sensors Version 1.3"*. For a complete explanation of SDI commands and protocols refer to: http://www.sdi-12.org/specification.php

[5] Cyclic Redundancy Check – an error detecting code used to detect accidental changes to raw data.

4.2 USING SDI COMMANDS WITH AXIOM DATALOGGERS

To use SDI Commands, the Datalogger must be in Transparent Mode. From the SDI 12 icon press the Transparent icon.

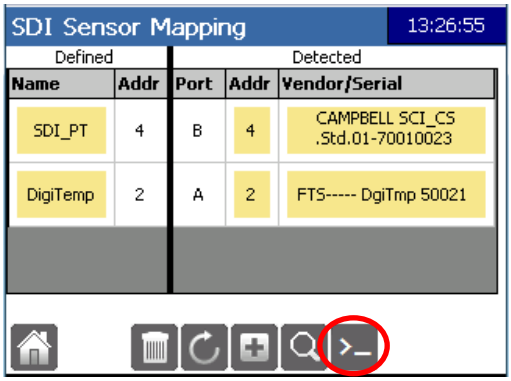


Figure 4-1: Entering Transparent Mode

Use the drop down menu to select the port to which the SDI-PT is attached (B in the example).

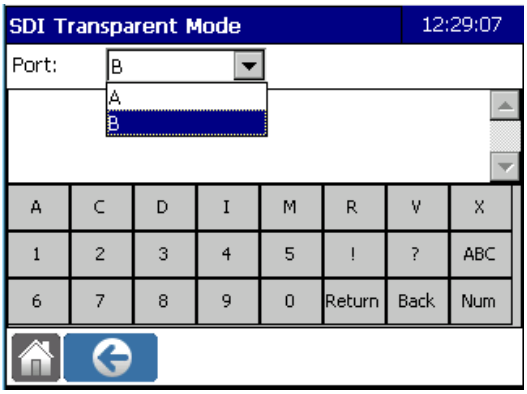


Figure 4-2: Transparent Mode

Use the keyboard to enter commands.

> **WARNING:** When you send an SDI command which configures a device, you are circumventing the Datalogger's user interface and the Datalogger does not know about the changed configuration. The new configuration is not reflected in the UI and the Datalogger continues to function as if the previous configuration is still in force.

4.3 BASIC SDI-12 COMMANDS

The SDI-PT supports the following measurement commands in which the *a* represents the sensor address. The formats and responses will be explained in detail in the following sections:

Command	Format
Acknowledge Active	a!
Send Identification	aI!
Change Address	aAb!
Address Query	?!
Start Measurement	aM!
Send Data	aD0! ... aD9!
Additional Measurements	aM1! ... aM9!
Start Verification	aV!

4.4 GENERAL SDI COMMANDS

General SDI commands are used for housekeeping issues such as device address configuration, device identification and confirmation of device communications. General SDI-12 version 1.3 commands are as follows

4.4.1 ACKNOWLEDGE ACTIVE

This command queries whether a sensor is present on the SDI bus at the specified address.

	String	Note
Cmd	a!	request the device at address **a** to confirm it is active
Resp	a	a device is present at address **a**

4.4.2 SEND IDENTIFICATION

This command is used to query sensors for their SDI-12 compatibility level, model number, and firmware version number.

	String	Note
Cmd	aI!	
Resp	accccccccccccmmmmmvvvvvxxxx	**a** - the sensor address **cccccccc** - vendor identification, usually a company **mmmmm** - the sensor model number **vvvvv** - the sensor version **xxxx** –up to 13 characters, used for a serial number

4.4.3 CHANGE ADDRESS

This command changes a sensor's SDI address.

	String	Note
Cmd	**aAb!**	***a*** = current address ***b*** = new address
Resp	**b**	response confirms new address

4.4.4 ADDRESS QUERY

This command requests the address of the SDI sensor.

	String	Note
Cmd	**?!**	request the (single) device on this bus to report its address
Resp	***a***	the address of the device NOTE: only one SDI device should be connected to the bus when using this command; problems arise when several devices respond on the same bus

4.5 SDI MEASUREMENT AND DATA COMMANDS

SDI data commands request data from the sensor. Besides the Start Measurement Command, the SDI-PT has several additional measurement commands which can be issued:

4.5.1 START MEASUREMENT

This command is used to trigger a measurement on the addressed sensor. The sensor will not return data, instead the sensor will return the duration of the measurement as well as the number of data points returned by the measurement. The data is read using a subsequent Request Data command.

	String	Note	
Cmd	**aM!**	start a measurement on sensor at the address indicated	
Resp	**attt2**	**a**	SDI address
		ttt	measurement delay until data is ready in seconds
		2	the SDI-PT returns two measurements: • Presure/Level • Temperature

4.5.2 ADDITIONAL MEASUREMENT COMMANDS

The SDI-PT can provide different types of measurements using additional measurement commands. These commands have the same format as the **aM!** Command. See the following table for the specific additional measurement commands and the values returned.

Additional Measurement Commands		
SDI-12 Command	**Command Function**	**Values Returned**
*a*M1!	PSIG, °C	Pressure, Temperature
*a*M2!	PSIG, °F	Pressure, Temperature
*a*M3!	kPa, °C	Pressure, Temperature
*a*M4!	kPa, °F	Pressure, Temperature
*a*M5!	Sensor's serial number	Serial Number
*a*M6!	Ohms, ohms, C	ΔR, Rb, Temperature
*a*M7!	Configured settings (provides data in less than 0.8 seconds)	Pressure/Level
*a*M8!	Configured settings (provides average of data based on user selected samples)	Pressure/Level, Temperature

4.5.3 SEND DATA

This command requests the data generated by the preceding Measurement (**M**) command. A send data command is issued automatically by the data logger after measurement commands. However, when in transparent mode, the user must enter this command. An **aD0!** command is always the first command sent to retrieve the data. If additional data needs to be read, then an **aD1!** command is sent, then and **aD2!** etc., up to **aD8!** as required to retrieve all data.

	String	**Note**
Cmd	**aD0!**	request data from previous measurement command
Resp	**a±u.uu±u.uu**	**a** sensor address **±u.uu** pressure/level measurement **±u.uu** temperature measurement.

4.5.4 ADDITIONAL SEND DATA COMMANDS

The following table shows the values returned for subsequent send data commands. Note that the sensor will only return the sensor address if the preceding equivalent measurement command was not given (i.e.: aD5! Must be preceded by aM5!).

Additional Measurement Commands		
SDI-12 Command	**Command Function**	**Values Returned**
*aD*1!	PSIG, °C	Pressure, Temperature
*aD*2!	PSIG, °F	Pressure, Temperature
*aD*3!	kPa, °C	Pressure, Temperature
*aD*4!	kPa, °F	Pressure, Temperature
*aD*5!	Sensor's serial number	Serial Number
*aD*6!	Ohms, ohms, C	ΔR, Rb, Temperature
*aD*7!	Configured settings (provides data in less than 0.8 seconds)	Pressure/Level
*aD*8!	Configured settings (provides average of data based on user selected samples)	Pressure/Level, Temperature

4.5.5 START VERIFICATION

This command tells the sensor to return a verification in response to a subsequent D command.

	String	**Note**
Cmd	**aV!**	start verification on sensor at address **a**
Resp	**attt4**	**a** device SDI address **ttt** measurement delay (until data is ready; seconds) 4 number of points returned • Temperature • Pressure Configuration • Multiplier • Offset Need

Temperature Values are: 0 = degrees C and 1 = degrees F

Pressure Configuration values: 0=PSIg, 1= kPa, 2=bar, 3=Feet,4=meter, 5=Inch and 6=Millimeter

4.6 EXTENDED SDI-12 COMMANDS[6]

Extended SDI-12 Commands are available to configure data output and sample number.

1) the temperature units (Celsius or Fahrenheit);

2) the pressure/level units (psig, KPa, bar, feet, metre, inches, or millimetre); and

3) the sample number (and integration time) for each measurement.

To determine the sensor configuration, use the **aV!** command (see section 4.5.5).

[6] Extended commands can be used in CS450 models with version number 4 or higher or all CS451 models

4.6.1 Configuring Data Output

The extended command to configure data output units is:

*a*XCONFIG1=tt,pp,mmm.mm,000.00! in which:

a = the sensor's address
tt=temperature units
pp=measurement unit
mmm.mm=multiplier (slope)
000.00=offset

Temperature (tt) entries are:	Pressure/level (pp) entries are:
0=Celsius	0=psig
1=Fahrenheit	1=kPa
	2=Bar
	3=feet
	4=metre
	5=inch
	6=millimetre

If level units are selected, they will represent the level of fresh water. The multiplier (slope) and offset will be applied to the pressure/level value to correct for relative density of water. Only the **aM!, aM7!** and **aM8!** commands will output the results obtained when a multiplier and offset are applied.

4.6.2 Configuring Sample Numbers

The number of samples measured will be averaged to obtain the final output value. This value only applies to the ***a*M8!** command.

The extended command to configure the number of samples taken is:

*a*XCONFIG2=nnn! in which:

a = the sensor's address
nnn=the number of samples to be taken

The final output value is an average of the number of samples taken and will only apply to the **aM8!** command. The integration time will change dependent upon the number of samples taken. The integration time can be calculated using:

The number of samples taken + 2 = integration time in seconds

Chapter 5 TECHNICAL SPECIFICATIONS

PHYSICAL

Materials: Nose Cone: Delrin
Body: 316L Stainless Steel
Cable: Hytrel Jacket, 26 AWG

Dimensions: Length: 213 mm
Diameter: 21.3 mm
Weight: 0.17kg + 0.421 kg/m of cable

Cable: Length: 19.8 m (65 ft) (standard)
137 m (450 ft) (maximum)
Weight: 0.421 kg/m of cable

Pressure Fitting ¼"NPS

DATA/POWER

Output SDI-12(version 1.3) 1200 Baud

Power Requirements: 6 to 18 volts D.C.

Power Consumption: Quiescent current: < 50 µA
Measurement/Communication Current: 8 mA for 1 second measurement
Maximum Peak Current: 40 mA

Measurement Time: Less than 1.5 seconds

Measurement Ranges:

Pressure (PSIG)	Pressure (kPa)	Fresh water depth
≤ 2.9	≤ 20	≤ 2.0 m (6.7 ft)
≤ 7.25	≤ 50	≤ 5.1 m (16.7 ft)
≤ 14.5	≤ 100	≤ 10.2 (33.4 ft)
≤ 29	≤ 200	≤ 20.4 m (67 ft)
≤ 72.5	≤ 500	≤ 50.9 m (167 ft)
≤ 145	≤ 1000	≤ 102 m (334.5 ft)

Resolution: 0.0035% FS

Overpressure: 2x pressure range

Accuracy: ±0.1% FS TEB (standard version)

TEMPERATURE

Temperature Accuracy: ±0.2°C

Compensated Temperature: 0 to 60°C

Operating Temperature: 0 to 60°C

Storage Temperature: -10 to 80°C

DOCUMENT REVISION HISTORY

Revision	Date	Description
1	18 Nov 2015	Original