VC Quick Start Guide

SATRON INSTRUMENTS INC

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Introduction

VCT & VC Multichannel Transmitter

The VCT family of transmitters utilize the latest LED based strobe techniques using multi-frequency light measurement. The VCT measures Consistency in the 0 to 12%CS range. The VC multichannel measures Consistency on channel one and one of the following measurements on channel two: Ash, Brightness, Freeness, Kappa, Fiber Length or Shives Content.

The Remote Display Unit (RDU) provides a local display of the measured values and serves also as a simple menu-driven calibration and troubleshooting interface.

The RDU includes two analog 4-20 mA outputs, 3 dry contact binary inputs and 3 contact outputs.

Process Measurement Techniques

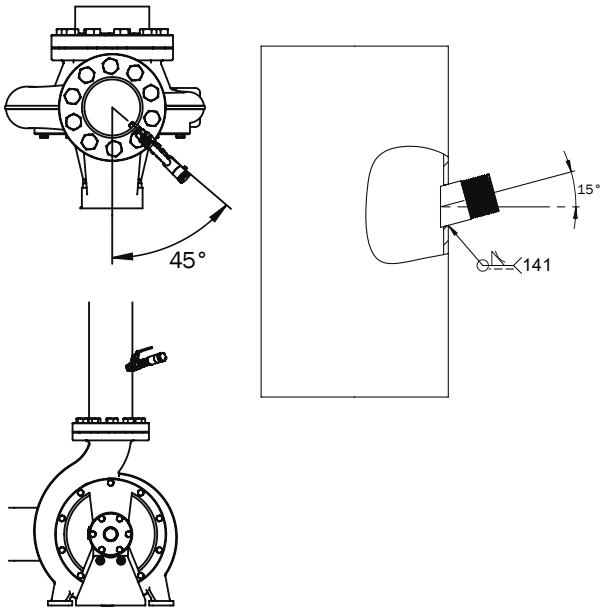
The VC family of transmitters measures process parameters by transmitting multichannel strobes of light into the pulp and measuring the back-scatter characteristics. These measurement values are calibrated by sampling and laboratory analysis of process and the measurement accuracy is determined by the accuracy of the laboratory analysis results.

Since the calibration is dependent on sampling and analysis, it is imperative that the sampling techniques described in the Calibration section are carefully followed.

Installation

Transmitter Installation

The location of the transmitter should be on the high-pressure discharge of the pump in the turbulent flow. The optimal location is on a 45-degree angle off the centerline of the discharge.



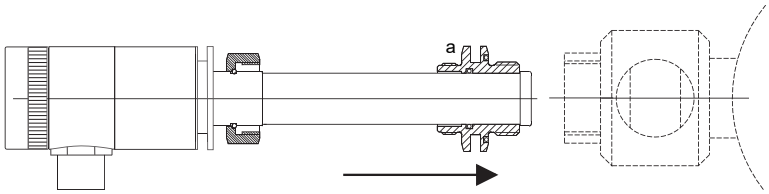
Drill a 34 mm diameter hole at 15°angle into the pipe so that the nipple inserts through the pipe wall. After welding, ensure that nothing (welding slag) obstructs the insertion path through the pipe.

Attach the isolation ball valve to the coupling. Once this is complete and the valve closed, the process can be restarted.

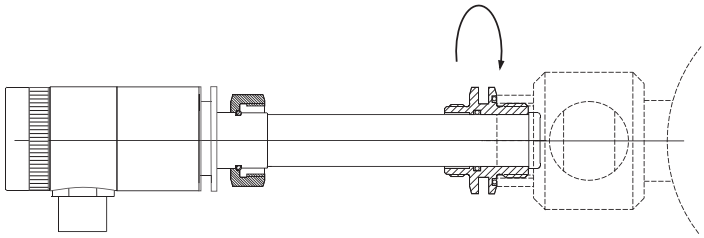
Important: while the process is down, attach the ball valve and check that the transmitter will insert fully into the pipe and can be locked in the place with the locking nut.

Mounting the Transmitter

To mount the transmitter, insert the screw fitting on the end of the transmitter into the ball valve and tighten the screw fitting (a).

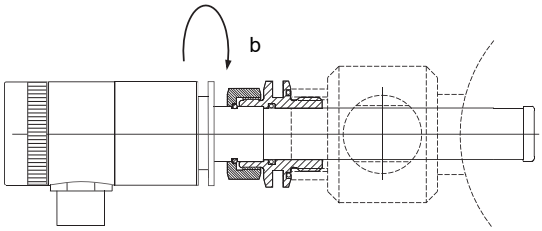


Open the ball valve and push the transmitter through the valve and lock in place with the locking nut (b). In some cases, under higher pressure applications, the insertion tool may be required. (Insertion tool is optional and is not included with the purchase of the transmitter).



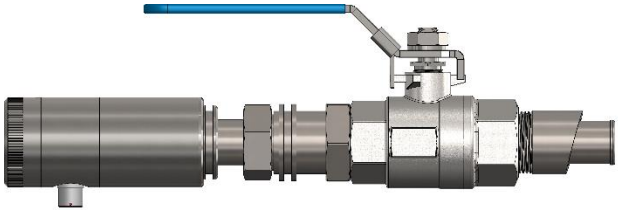
To remove the transmitter, reverse the above steps.

Warning: When removing the transmitter, do not loosen screw fitting (a) unless the ball valve is closed!

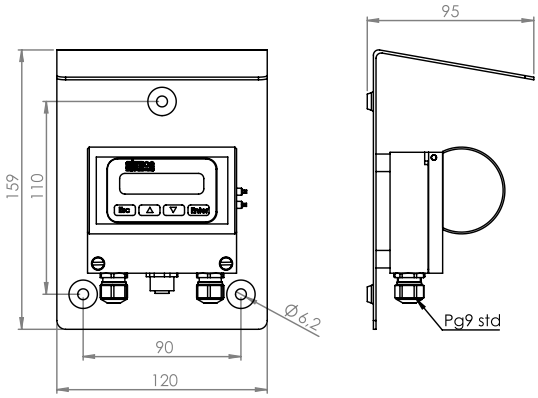


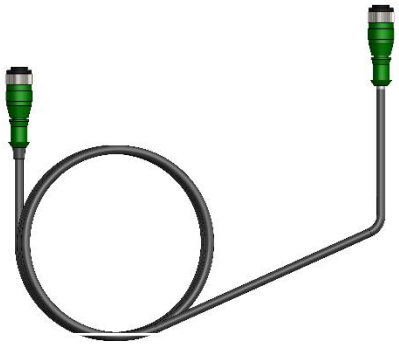
Electrical Connections

This figure shows a combination of many of the components of the VC family. An order will contain a combination of these components along with any additional components associated with special orders.



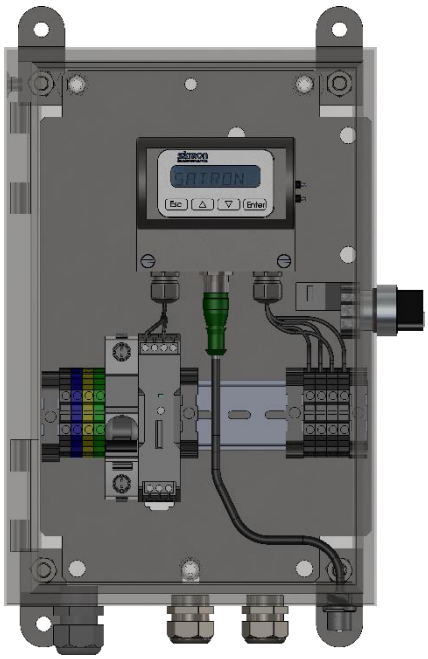
Transmitter





Connection cable for RDU (15m)

Remote Display (RDU)



Connection Box (K)

Supply voltage to the transmitter is 24 Vdc and requires up to 200 mA current. It is recommended that a shielded twisted-pair cable is used as a signal cable.

The signal cable should not be installed near high- voltage cables, large motors or frequency converters.

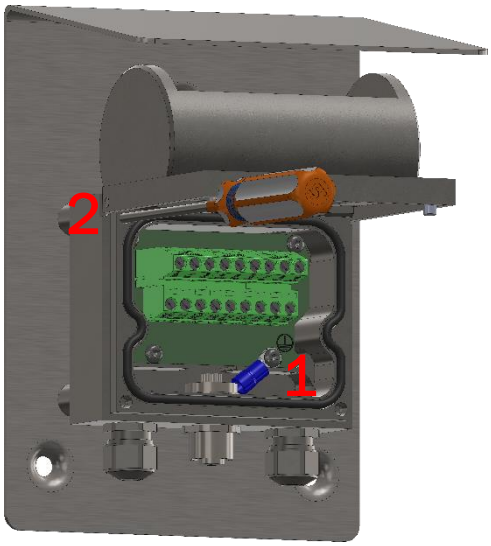
The shield of the cable should be grounded at the end of the power supply or in accordance with the recommendations of the manufacturer of the control system used and the regional electrical code. At the RDU end there's a dedicated screw for connecting the cable shield (1).

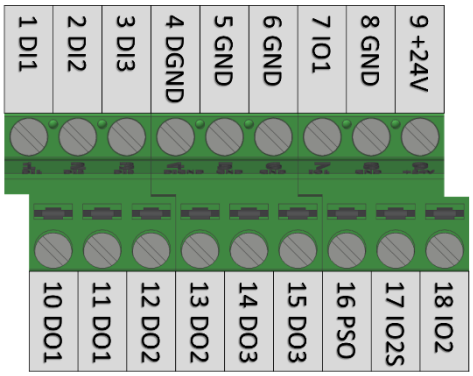
The Satron VCT transmitter remote display unit (RDU) can be provided with a wall box which can have a 20 m cable between the transmitter and the sensor unit. Inside the RDU, there is a terminal for up to 3 binary Inputs (DI1, DI2, DI3). 3 relay outputs (DO1, DO2, DO3) and 2 analog 4-20 mA output signals (IO1, IO2).

The signal cable between the RDU and transmitter should not be installed near high-voltage cables, large motors or frequency converters.

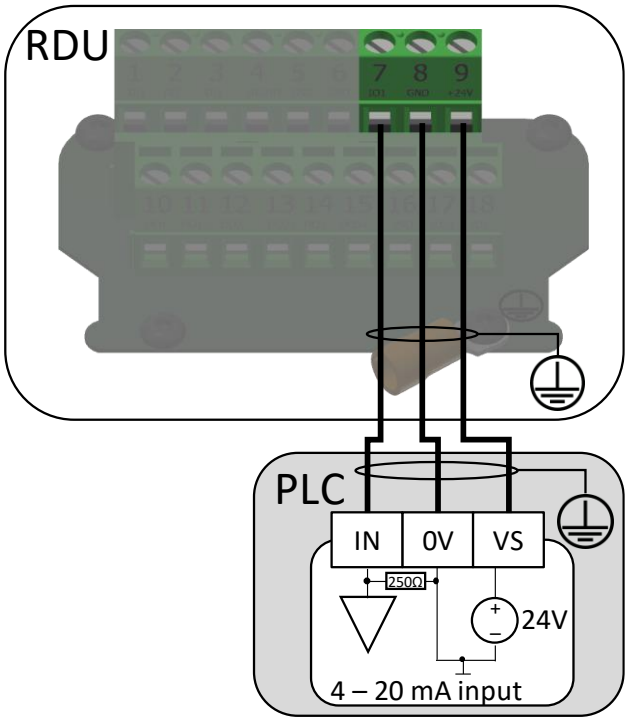
The wiring connections to the RDU are shown below.

Hint: Under the cover of the RDU there's a small hole in the upper left corner (2), where you can insert a screwdriver to support the cover while making the wiring connections.

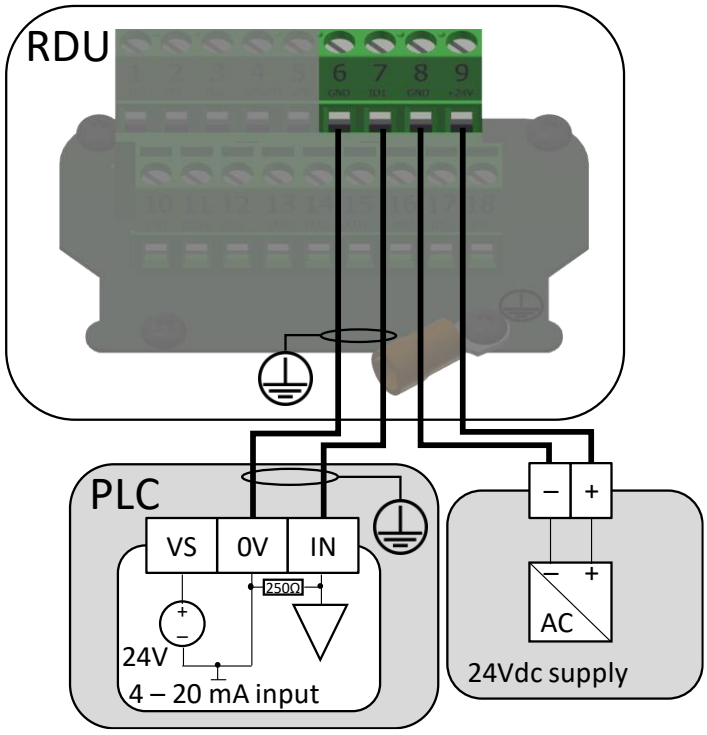




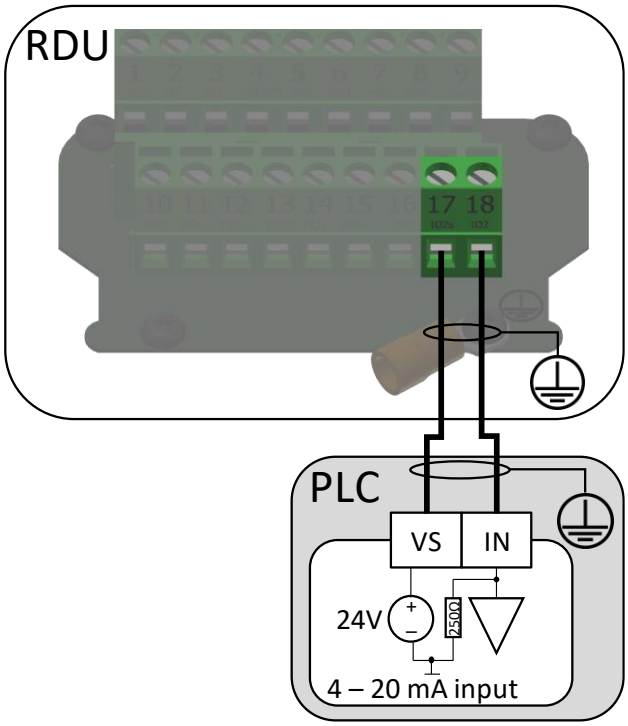
First mA loop (IO1) connection (3-wire)



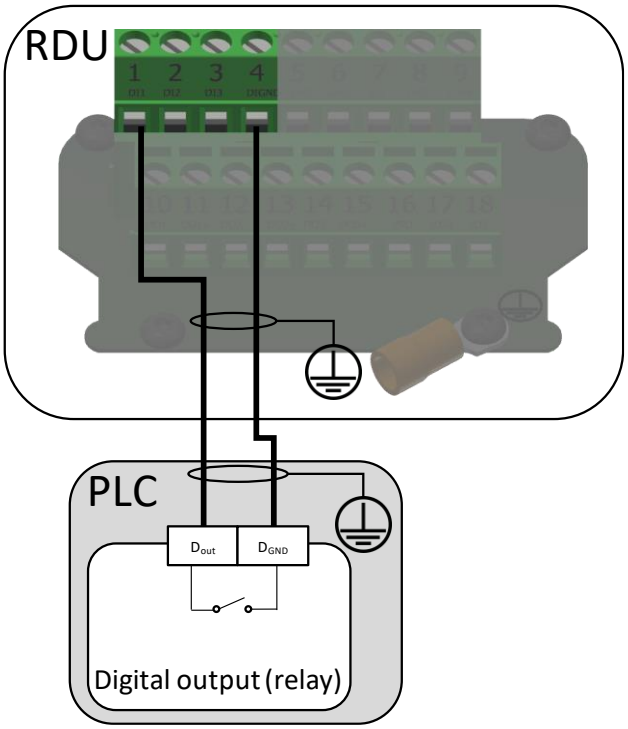
First mA loop (IO1) connection with external power supply



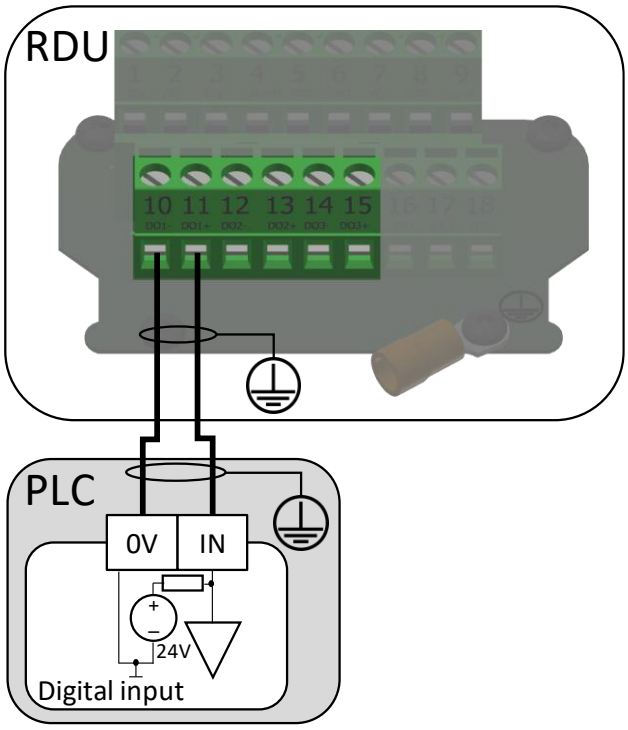
Second mA (IO2) loop connection (2-wire)



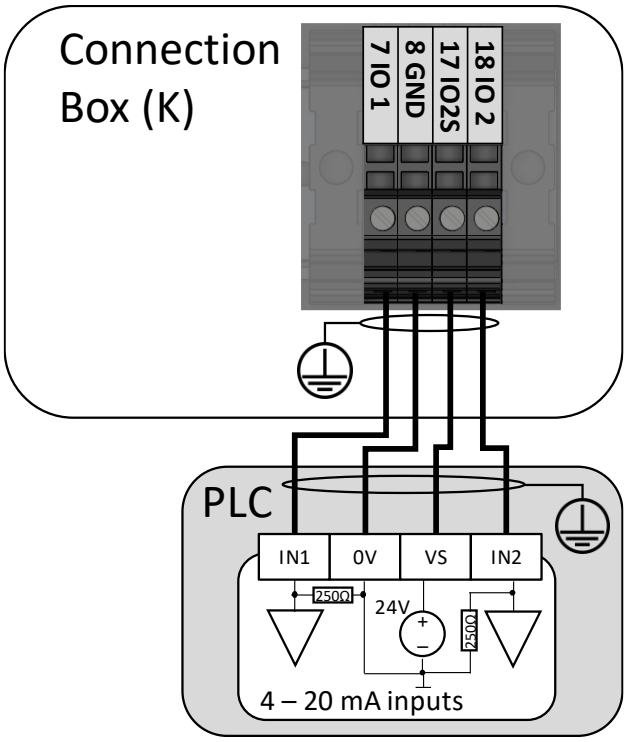
Digital input



Digital output



Device enclosure (K) connection to PLC



Initial Set-up

The initial set-up consists of three steps.

1. Set the Date and Time
2. Set the operating range for Consistency (IO1).
3. If a Sampling Switch was not purchased and a user supplied Switch is not being added, skip this step. If a user supplied Sampling Switch is added, you must configure the Sample Digital Input (DI1).

The Satron RDU is the local interface and consists of a liquid crystal display (LCD) and operating keys.

The RDU is able of displaying live operating conditions, perform diagnostic tests, view device information and set configuration parameters for proper operation.

The 8-character LCD with backlight displays information with letters and numbers.

The operating keys (Esc, Up, Down and Enter) allow the navigation through the menus and allow the modification of the display parameters:

- Press ENTER to accept a configuration, move to a lower menu level, accept a command or enter a setting or parameter value into the transmitter memory.
- Use the UP arrow to move to a higher menu level or to increase a parameter value.
- Use the DOWN arrow to move lower in a menu level or to decrease a parameter value.
- Press ESC to move back towards the top of the main menu or to cancel the current action.

Setting the Date and Time

It is very important to set the correct date and time in the transmitter. The date and time are used to time stamp the samples extracted from the process and to mark the diagnostic events that may occur during transmitter operation.

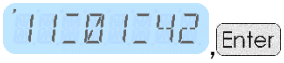
The time and date values are set through the Configuration Menu/System Configuration Submenu.

1.06 %CS, Esc	Starting at the default PV display value; Press the ESC button.
CONFIGUR, Enter	Press the ENTER button to enter the Configuration sub-menu.
△, ▽	Use the UP/DOWN arrows to move within the Configuration sub-menus.
SYSTCONF, Enter	When the System Configuration sub-menu appears in the display, press the ENTER button.
△, ▽	Use the UP/DOWN arrows to move within the System Configuration sub-menu.
CLOCK, Enter	When the Clock sub-menu appears in the display, press the ENTER button.
△, ▽	Use the UP/DOWN arrows to move within the Clock sub-menu.
SET, Enter	When the Set menu item appears in the display, press the ENTER button.

△, ▽, Enter

The date sub-menu will appear first and is in the format of DDMMYYYY. Use the UP/DOWN arrows to set the day. then press ENTER to move to the month. Use the UP/DOWN arrows to set the month, then press ENTER to move to the year. Use the UP/DOWN arrows to set the year. Press ENTER to move to the Time.

△, ▽, Enter



The time sub-menu will appear in the format HH-MM-SS. Use the UP/DOWN arrows to set the hour, then press ENTER to move to the minutes. Use the UP/DOWN arrows to set the minutes, then press ENTER to move to the seconds. Use the UP/DOWN arrows to set the seconds if desired and press ENTER or simply press ENTER to accept the seconds as they appear.

Esc, Esc, Esc

The Clock sub-menu will appear in the display. Press the ESC button until the PV reading in the main menu is displayed.

Setting the Range for IO1

By default. the factory setting for the range is 4 mA = 0%CS and 20 mA = 7%Cs. However, this is configurable to match the operating range of the specific application for this example, the range will be changed to 2%CS to 4%CS.

Starting at the default PV display value; Press the ESC button.

Press the ENTER button to enter the Configuration sub-menu.

△, ▽

Use the UP/DOWN arrows to move within the Configuration sub-menus.

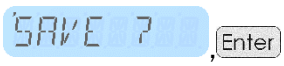
When the MA Output sub-menu appears, press the ENTER key and MA 1 ? text will appear in the display.

Select MA 1 pressing ENTER key and lower range value (LRV) menu item will appear.

Press the ENTER button to display the current LRV.

△, ▽, Enter

Use the UP/DOWN arrows to place the decimal separator in the proper location and press ENTER. A separator will appear to Indicate the digit that will be modified. Use the UP/DOWN arrows to change the number and press ENTER. The separator will move to the right position. Press ENTER until the right-hand digit is indicated and press ENTER one more time.



When SAVE? appears in the display, press ENTER to accept or ESC to exit without saving.

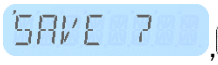
Use the DOWN arrow to move to the upper range value (URV).

Press the ENTER button to display the current URV.

△, ▽, Enter

Use the UP/DOWN arrows to place the decimal separator in the proper location and press ENTER. A separator will appear to indicate the digit that will be modified. Use the UP/DOWN arrows to change the number and press ENTER. The separator will move to the right position. Press ENTER until the right-hand digit is indicated and press ENTER one more time.

Enter



Enter

When SAVE? appears in the display, press ENTER to accept or ESC to exit without saving.

Esc, Esc, Esc

Press the Esc button until the PV reading in the main menu is displayed.

Setting the Range for IO2 (VCT)

Esc

Starting at the default PV display value; Press the ESC button.

Enter

Press the ENTER button to enter the Configuration sub-menu.

△, ▽

Use the UP/DOWN arrows to move within the Configuration sub-menus.

Enter

When the I/O CONF sub-menu appears, press the ENTER key to enter the submenu.

△, ▽

Use the UP/DOWN arrows to move within the I/O CONF sub-menu.

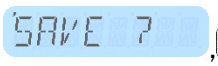
Enter

When IO2 menu item appears, press ENTER key and IO2 source (IO2 SRC) menu item will appear.

△, ▽

Use UP/DOWN arrows to select source for IO2, when item MA appears, press ENTER to select.

Enter



Enter

When SAVE? appears in the display, press ENTER to accept or ESC to exit without saving. After pressing ENTER you will return to I/O CONF submenu.

△, ▽

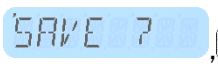
Within I/O CONF menu use UP/DOWN arrows to find IO2 lower range setting. When IO2 LRV menu item appears, press ENTER.

Enter

△, ▽, Enter

Use the UP/DOWN arrows to place the decimal separator in the proper location and press ENTER. A separator will appear to Indicate the digit that will be modified. Use the UP/DOWN arrows to change the number and press ENTER. The separator will move to the right position. Press ENTER until the right-hand digit is indicated and press ENTER one more time.

Enter



Enter

When SAVE? appears in the display, press ENTER to accept or ESC to exit without saving. After pressing ENTER you will return to I/O CONF submenu.

△, ▽

Within I/O CONF menu use UP/DOWN arrows to find IO2 upper range setting. When IO2 URV menu item appears, press ENTER.

Enter

△, ▽, Enter

Use the UP/DOWN arrows to place the decimal separator in the proper location and press ENTER. A separator will appear to indicate the digit that will be modified. Use the UP/DOWN arrows to change the number and press ENTER. The separator will move to the right position. Press ENTER until the right-hand digit is indicated and press ENTER one more time.

When SAVE? appears in the display, press ENTER to accept or ESC to exit without saving.

Esc, Esc, Esc, Esc

Press the Esc button until the PV reading in the main menu is displayed.

Setting the Range for IO2 (VC Multichannel)

Starting at the default PV display value; Press the ESC button.

Press the ENTER button to enter the Configuration sub-menu.

△, ▽

Use the UP/DOWN arrows to move within the Configuration sub-menus.

When the MA Output sub-menu appears, press the ENTER key and MA 1 ? menu item will appear in the display.

△, ▽

Use the UP/DOWN arrows to move within the MAOUTPUT sub-menu.

When MA 2 ? menu item appears, press ENTER key and lower range value (LRV) menu item will appear.

Press the ENTER button to display the current LRV.

△, ▽, Enter

Use the UP/DOWN arrows to place the decimal separator in the proper location and press ENTER. A separator will appear to Indicate the digit that will be modified. Use the UP/DOWN arrows to change the number and press ENTER. The separator will move to the right position. Press ENTER until the right-hand digit is indicated and press ENTER one more time.

When SAVE? appears in the display, press ENTER to accept or ESC to exit without saving.

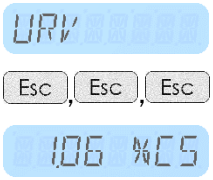
Use the DOWN arrow to move to the upper range value (URV).

Press the ENTER button to display the current URV.

△, ▽, Enter

Use the UP/DOWN arrows to place the decimal separator in the proper location and press ENTER. A separator will appear to indicate the digit that will be modified. Use the UP/DOWN arrows to change the number and press ENTER. The separator will move to the right position. Press ENTER until the right-hand digit is indicated and press ENTER one more time.

When SAVE? appears in the display, press ENTER to accept or ESC to exit without saving.



Press the Esc button until the PV reading in the main menu is displayed.

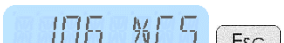
Installing a Sample Toggle Switch Unless Supplied by Satron.

An external Sample Toggle Switch simplifies the automatic collection of transmitter readings when a sample is being collected. It is simple on/off operation so that when the switch is on, the transmitter readings are averaged until the switch is toggled off. When toggled off, the data collected during the sample period is time stamped and stored as an event in the transmitter memory.

If the unit purchased has a Sample Toggle Switch attached, skip this section. If a Sample Toggle Switch is being added follow these steps.

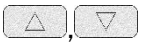
Connect a toggle switch to the first digital input (DI1) as shown in the wring schematic in the normally open position so that when the switch is toggled on, the contact is closed.

The DI1 input is then configured as follows:



Starting at the default PV display value; Press the ESC button.

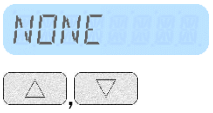
Press the ENTER button to enter the Configuration sub-menu.



Use the UP/DOWN arrows to move within the Configuration sub-menus.

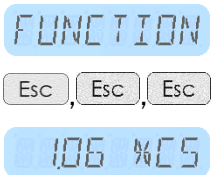
When the I/O CONF sub-menu appears, press the ENTER button and the first digital input (DI1) will appear in the display.

Press the ENTER button to enter the DI1 sub-menu. Press the ENTER button again and to enter FUNCTION sub-menu.



NONE item will appear. Use the UP/DOWN arrows to move to the SAMPLE selection item. Press the ENTER button to make the selection.

When SAVE? appears in the display, press Enter to accept or Esc to exit without saving.



The display will return to the FUNCTION sub-menu item. Press the Esc button until the PV reading in the main menu is displayed.

Sample Data Collection

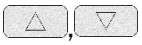
The key to a good regression analysis is the correct time correlation of the transmitter measurement values and the lab sample. To ensure an accurate time correlation, one of two procedures needs to be followed:

1. Sample data collection at the RDU
2. Sample data collection using a Sample Toggle Switch

Sample Data Collection at the RDU

To ensure an accurate time correlation, use the following procedure using the Remote Display Unit (RDU):

Starting at the default PV display value; Press the ESC button.



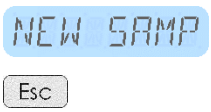
Use the UP/DOWN arrows to move to the New Sample sub-menu and press ENTER.

The START? appears in the display. When you are ready to collect the sample press the ENTER Key.

The display will blink the Sampling message during the sampling period. Collect the sample as quickly as possible and after the sample is complete, press the ENTER key. The sample time stamp, average, min and max values will scroll across the display.

The SAVE? will appear in the display. Press the ENTER key to store the event or ESC to cancel.

An OK message and the Sample Number will appear. Record the Sample number, time stamp and Average value as a reference. Internally the sample number is automatically incremented by the transmitter each time a new sample is saved.



The display will automatically return to the New Sample sub-menu. Press the ESC key until the PV reading in the main menu is displayed. After the lab testing is completed, record the lab data with the appropriate Sample Number and time stamp in an Excel spreadsheet.

Sample Data Collection Using a Sampling Switch

This is best performed by two people. When the sample person is ready to take a sample, the other person activates the switch by moving it to the sampling position. The Remote Display Unit (RDU) inside the enclosure will flash “SAMPLING”. The person operating the sample valve then extracts the sample from the process into a container. After the sample has filled the container the switch person turns the switch immediately back to its original position trying to time the switch movement with the close of the sample valve. The RDU will display the sample number (SAMPL 01) and a message that the sample was “OK”.

It is important to make the sampling time as short as possible because the transmitter is averaging all the readings while the switch is activated. After the sample is complete, mark with the date/time and the sample number that appears to the RDU window. Also mark the primary reason for the sample. For example, if the transmitter measures both consistency and kappa, note that sample 2 was for consistency and samples 3 through 6 are for kappa etc.

Consider setting up a spreadsheet for recording the lab values. The key is recording the correct time for the sample. When the sample data is extracted from the .sif file (see Creating a .sif File section) the samples numbers do not appear, therefore the date and time are used to correlate the lab data to the internally stored averages.

In some cases, the same sample may be used for consistency and a complex variable. Enter both lab values with the same time stamp in the Excel spreadsheet.

This spreadsheet along with the sif-file that is extracted from the transmitter should be sent to Satron for analysis. Satron will send back the calibration coefficients to insert into the VC multichannel for this application.

Data Collection and Data Retrieval

The mill's standard for collecting consistency samples should be enough. The TAPPI T 240 standard is a good reference.

Note: The sample extraction location should be located as close as possible to the transmitter for the best results. Normally located 0,5 meters downstream of the transmitter.

The first component to accurately calibrate the transmitter is to employ consistent sampling and laboratory techniques. It is valuable if the sampling can be scheduled so that the same person collects and tests the samples during the data gathering period (consistency). This minimizes sample variability.

The second component to successful data collection is the accurate time correlation between when the sample is taken, and the internal raw readings made by the transmitter. It is recommended that two people work together to collect the samples. One person is the sampler/tester that will physically collect the sample and the second person is at the RDU (or Sampling switch) to initiate the transmitter data collection period and time stamp the sampling and meter readings made while the sample is extracted.

Consistency Calibration

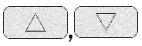
There are two methods to perform successful consistency calibration via RDU (these methods automatically store new consistency parameters to current recipe):

1. One-point/offset method to match probe to current sample
2. Two-point sampling method for calculating offset and gain

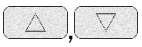
Entering Laboratory Values to the Transmitter

In order to utilize calibration functions in the transmitter, the corresponding laboratory values for samples need to be entered into the transmitter. Use the following procedure to enter the laboratory values:

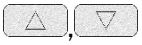
Starting at the default PV display value; Press the ESC button.



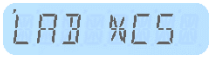
Use the UP/DOWN arrows to move to the Calibration sub-menu and press ENTER.



Use the UP/DOWN arrows to move to the Samples sub-menu and press ENTER.



Use the UP/DOWN arrows to move to the corresponding sample and press ENTER.



The LAB %CS will shortly appear in the display followed by the PV text. Press the ENTER key to enter the laboratory values for the consistency.

Use the UP/DOWN arrows to place the decimal separator in the proper location and press ENTER. A separator will appear to Indicate the digit that will be modified. Use the UP/DOWN arrows to change the number and press ENTER. The separator will move to the right position. Press ENTER until the right-hand digit is indicated and press ENTER one more time.

When SAVE? appears in the display, press ENTER to accept or ESC to exit without saving.

OK
SAMPL 01

Esc, Esc, Esc

1.06 %CS

An OK message will appear in and the display will automatically return to the Sample sub-menu. Press the ESC key until the PV reading in the main menu is displayed.

One Point with an Offset Correction

Use the following procedure to calibrate consistency with one sample point (you can also use the water point stored in the transmitter as the first sample point):

1.06 %CS, Esc

Starting at the default PV display value; Press the ESC button.

△, ▽

Use the UP/DOWN arrows to move to the Calibration sub-menu and press ENTER.

CALIBRAT, Enter

△, ▽

Use the UP/DOWN arrows to move to the Calibrate sub-menu and press ENTER.

CALIBRAT, Enter

△, ▽

Transmitter asks you to enter first calibration data point. Use the UP/DOWN arrows to move to the corresponding sample and press ENTER.

SAMPL 01, Enter

OK

An OK message shortly appears in the display followed by the request to enter next data point and next sample item will appear in the display. Press the ESC button to skip and perform one-point calibration.

SAMPLH2O, Esc

SAVE ?, Enter

New gain and offset values will scroll through the display. When SAVE? appears in the display, press ENTER to accept or ESC to exit without saving.

OK
CALIBRAT

Esc, Esc

0.99 %CS

An OK message will appear in and the display will automatically return to the Calibrate sub-menu. Press the ESC key until the PV reading in the main menu is displayed

Two-point Sampling Method for Calculating Offset and Gain

Use the following procedure to calibrate the consistency measurement with two sample points (you can also use the water point stored in the transmitter as the first sample point):

1.06 %CS, Esc

Starting at the default PV display value; Press the ESC button.

△, ▽

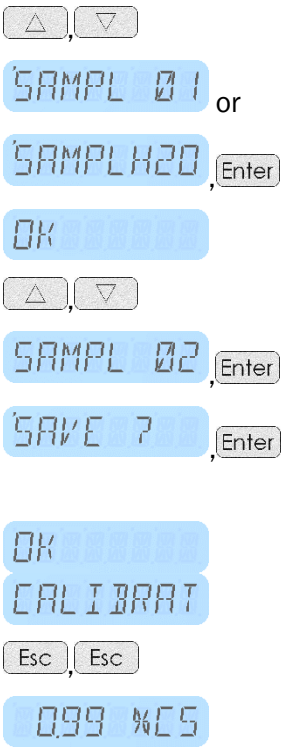
Use the UP/DOWN arrows to move to the Calibration sub-menu and press ENTER.

CALIBRAT, Enter

△, ▽

Use the UP/DOWN arrows to move to the Calibrate sub-menu and press ENTER.

CALIBRAT, Enter



Transmitter asks you to enter first calibration data point. Use the UP/DOWN arrows to move to the corresponding sample and press ENTER. You can also use the water point stored inside the transmitter as the first calibration point (SAMPLH2O).

An OK message shortly appears in the display followed by the request to enter next data point and next sample item will appear in the display. Use UP/DOWN arrows to select second calibration point and press the ENTER.

New gain and offset values will scroll through the display. When SAVE? appears in the display, press ENTER to accept or ESC to exit without saving.

An OK message will appear in and the display will automatically return to the Calibrate sub-menu. Press the ESC key until the PV reading in the main menu is displayed

Sampling for VC Multichannel: An Advanced Calibration

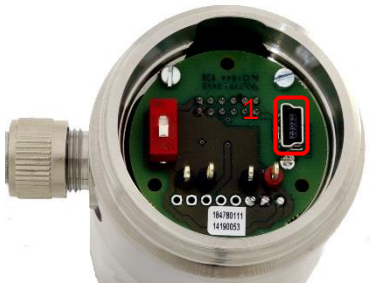
Unlike consistency, the best calibration of the VC multichannel requires much more complex analysis and close coordination of transmitter information to the exact time that the sample is extracted from the process. There are two output channels in the VC multichannel, one for Consistency of the stock and the other for the specific parameter being measured. Kappa, Ash, Freeness. Brightness etc. must be carefully determined in the laboratory and the results correlated to the transmitters measured variables. The result is that the parameters measured and displayed on the second channel are non-linear in nature and the calibration is significantly more complex to accomplish. Therefore, more process analysis data is needed to complete these calibrations. It is recommended that twenty-five to thirty samples and lab analyses must be collected for the calibration purposes.

The same range of operation applies; the samples need to cover at least fifty percent of the operating range of the variable. The same two-person data collection procedure should be followed. The key to accurate results is to correctly record the date and time stamp when the sample is taken. The external sampling switch helps to improve the accuracy of the sampling and time stamping that is necessary for good results.

Once the data is collected, a multi-variable polynomial regression analysis is performed to determine the unique calibration curve for each application. The transmitter uses a linear equation in three variables as the calibration curve for the application.

Creating the .sif - File

The SILogAdvisor software provided by Satron Instruments is used to create the .sif (Satron Information File) file. This software is downloaded from the Satron website and installed on a laptop that can be connected to the mini USB connector inside the transmitter cap (1). See the instructions in the Satron Operating Manual to locate, download and install this software. The manual also includes instructions for using all features of the software.



Connect a USB cable (Standard-A and Mini-B connectors, *this cable is not provided with the transmitter*) to the connector under the transmitter cover using the Mini-B plug end and the Standard-A end to an USB port on the laptop.

Start the SILogAdvisor application on the laptop.

After the opening window appears, verify the port connection. If the Port window appears blank, click the DOWN arrow and select the COMx-port that is connected to the Satron transmitter. Click the CONNECT button in the Connection dialog.

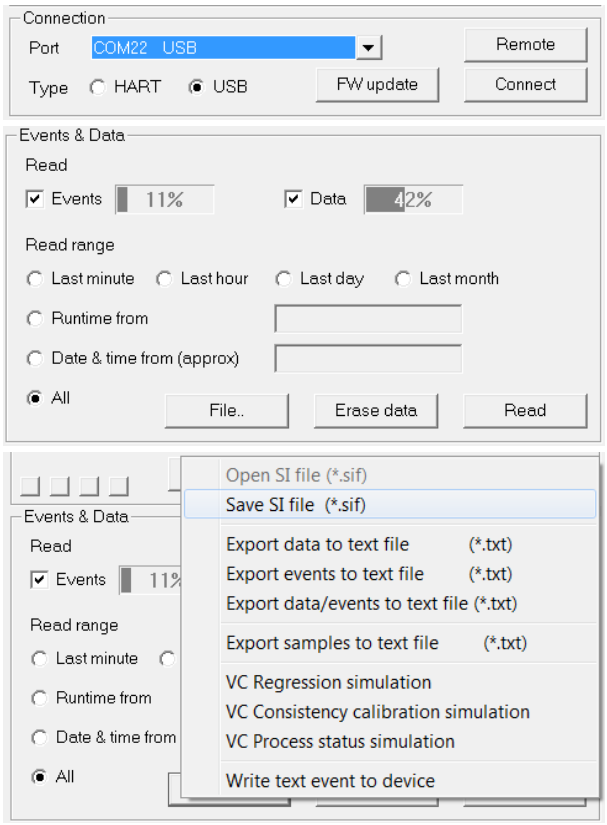
A connection will be established to the transmitter and the buttons in the Events & Data dialog box will become active.

Select the All option button and click the Read button.

The data will be downloaded from the transmitter to the SILogAdvisor. This may take some time. While data is being read, the File and Erase data buttons are deactivated and the Read button changes to Cancel. When the data download is complete, the File and Erase data buttons will become active again and the Read button will replace the Cancel button. This is the indication that the download is complete.

Click the File button and select the “Save SI file (*.sif)”. Give the file a name and select a location on the laptop to save the data.

This file along with any other related data files (i.e. lab data results) are essential information for technical support of the VC product.

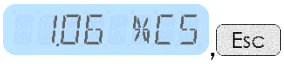


Entering Tuning Constants Manually into the Transmitter

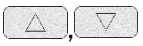
There are separate methods for entering tuning constants. Tuning PV for consistency (IO1) are entered using the RDU. Tuning for the second variable (PV2) is recommended to enter using the SILogAdvisor laptop Interface.

Entering Consistency Tuning Parameters

Once the gain and offset parameters are known, enter them into the transmitter at the RDU panel as shown below:

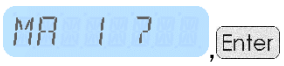


Starting at the default PV display value; Press the ESC button.



Use the UP/DOWN arrows to move to the Calibration sub-menu and press ENTER button and the RECIPE sub-menu Will appear.

Press ENTER to enter the sub-menu.



The MA 1? menu Item will appear Press ENTER and the OFFSET sub-menu will appear.

Press ENTER to enter the OFFSET sub-menu.

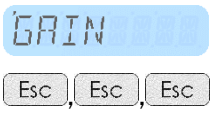
Use the UP/DOWN arrows to place the decimal separator in the proper location and press ENTER. Note: the first digit on the left can be set to a (-) sign so remember to account for this when entering the decimal. A separator will appear to indicate the digit that will be modified. Use the UP/DOWN arrows to change the number and press ENTER. The separator will move right to the next position. After entering the offset, if any zeros are left in the display press ENTER until the item right-hand is indicated and press ENTER one more time. The SAVE? item will appear.

Press ENTER to save the value or ESC to cancel out of the operation. The OFFSET sub-menu item will reappear.

Press the DOWN arrow to move down the menu to the GAIN sub-menu and press ENTER to enter the GAIN sub-menu.

Use the UP/DOWN arrows to place the decimal separator in the proper location and press ENTER. A separator will appear to indicate the digit that will be modified. Use the UP/DOWN arrows to change the number and press ENTER. The separator will move right to the next position. After entering the gain, if any zeros are left in the display press ENTER until the right-hand digit is indicated and press ENTER one more time. The SAVE? Item will appear.

Press ENTER to save the value or Esc to cancel out of the operation. The GAIN sub-menu Item will reappear.



Press the Esc key until the PV reading in the main menu is displayed.

Entering Consistency Tuning Parameters with SILogAdvisor

It is also possible to enter the consistency tuning parameter to the transmitter using the SILogAdvisor software.

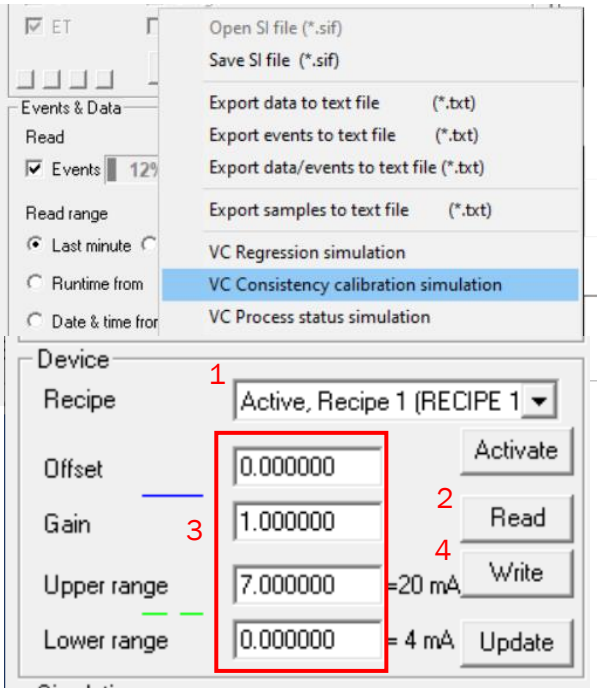
First attach the laptop to the transmitter, start the SILogAdvisor software and connect as directed previously.

Click the File - drop down button and select “VC Consistency calibration simulation” from the menu.

On the device section of the VC Consistency calibration simulation window, you can select recipe to edited from drop down menu (1) and retrieve the current gain and offset values from the transmitter by clicking the Read button (2). Values for the gain and offset together with URV and LRV values can be typed into the corresponding input windows (3). Values will be stored into the transmitter by clicking the “Write” button (4).

A write warning will appear and simply click “Yes”.

After the operation is complete, a successful write message will appear. Click “OK”.



Entering Lab Data and Calculating Consistency Parameters with SILogAdvisor

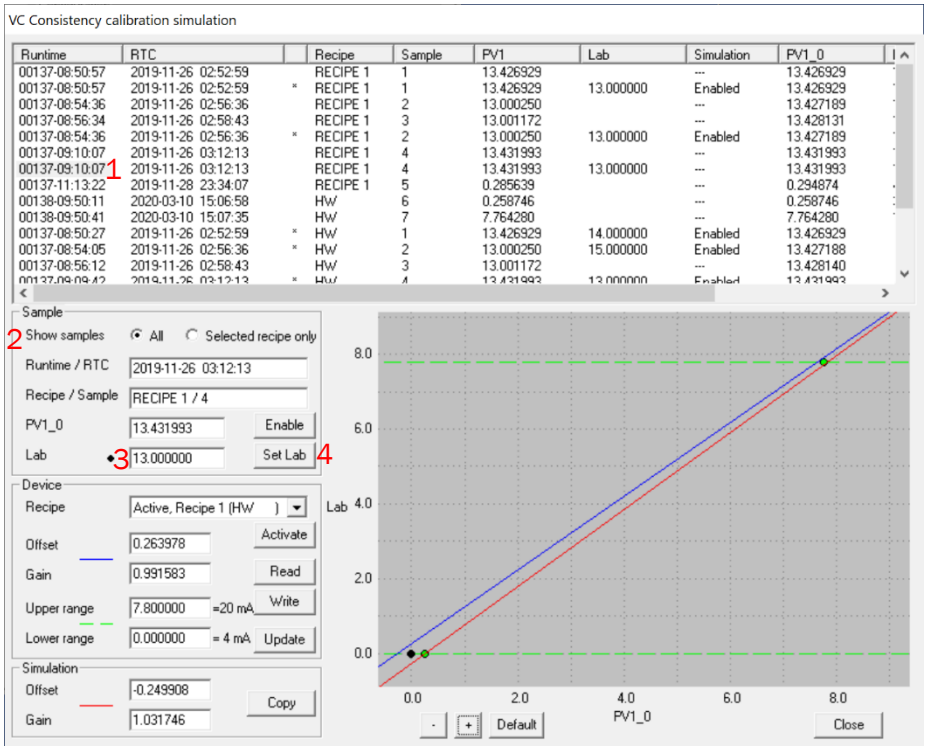
First attach the laptop to the transmitter, start the SILogAdvisor software and connect as directed previously.

Read event data from the transmitter as described in the chapter “Creating the .sif – File”. You may skip this step if you have only few sample points in the transmitter: 10 latest samples are stored in the EEPROM memory of transmitter, and those are automatically retrieved on the next step.

Enter “VC Consistency calibration simulation” window from “File” drop down menu (see previous chapter).

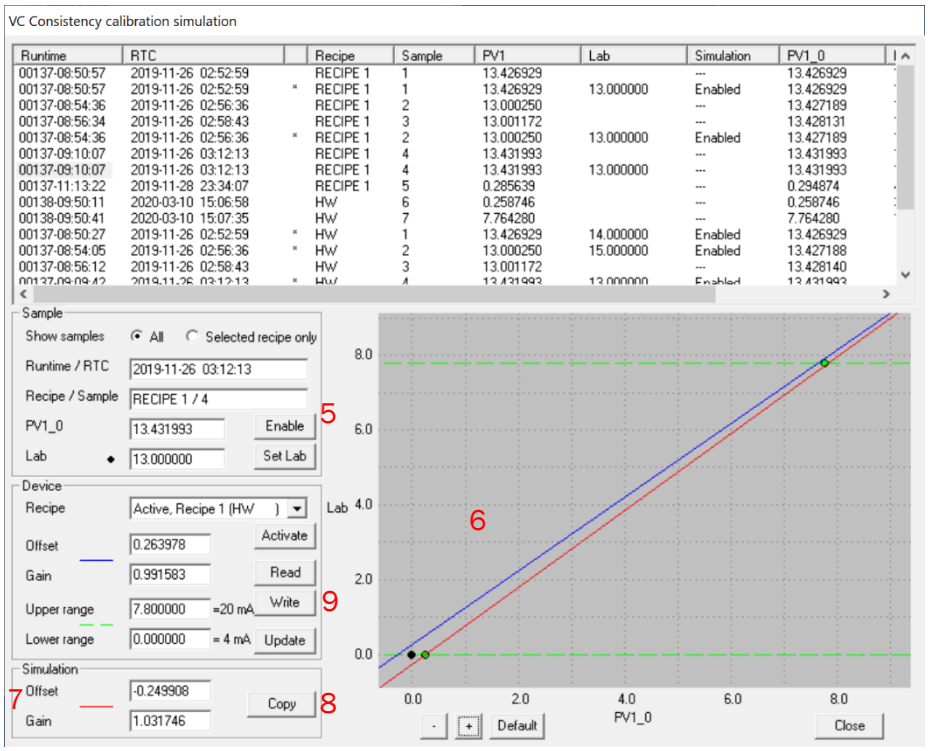
Entering Lab Data

To enter laboratory value, click first column (Runtime) (1) on the sample line you want to edit. Information of the sample will appear on the “Sample” section of the window (2). Type in the laboratory value into the “Lab” input window (3) and press “Set Lab” button (4). If the selected sample is in the EEPROM memory of the transmitter, software will automatically ask if you want to store the value to the transmitter. If you click “Yes”, lab value will be stored into the transmitter and pressing “No” will use the value only in the SILogAdvisor software. If the sample is in the Event memory of the transmitter, lab value is only used in the software and storing it into the transmitter is not possible.



Calculating Consistency Parameters

After the lab value is set for a sample, it can be active as a sample to be used to calculate consistency parameters by clicking “Enable” button (5). With same button you can also remove sample from calculation (text on the button will change to “Disable” when sample is enabled). On the graph (6) you can see all the samples which have lab value: green ones are enabled for the calculation and black ones disabled. The blue line is the line defined by the current consistency parameters on the selected recipe and line is the fitted line for the selected sample points. Corresponding consistency parameters (Offset and Gain) are visible on the “Simulation” section of the window (7). If you want to store these values to transmitter, press “Copy” button (8), check that correct recipe is selected and click “Write” button (9). A write warning will appear and simply click “Yes”.

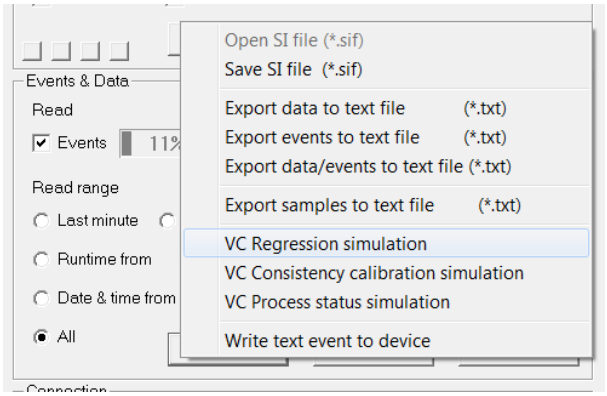


Entering the Second Channel Calibration Values

The calibration constants for the second channel form a linear equation in three variables. Rather than entering the constants individually at the RDU, they can be entered all at once using the SILogAdvisor software.

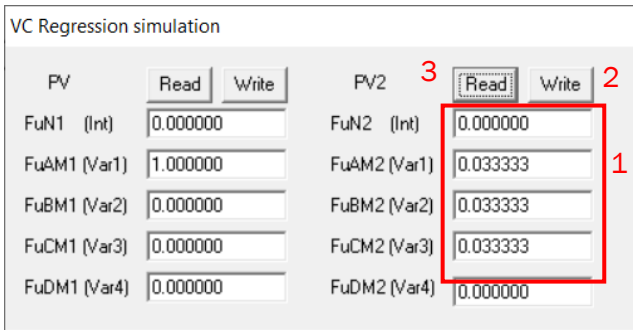
Attach the laptop to the transmitter and connect as directed previously.

Click the “File” drop down button and select “VC Regression Simulation” at the bottom of the menu.

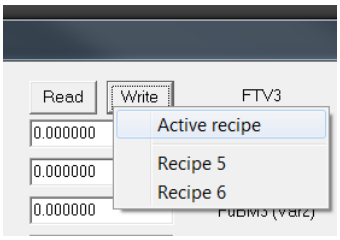


The VC Regression simulation window will open. There are three channels for entering parameters. PV is for channel one (IO1). *Note: it is only active when channel one has been configured as a second variable*. When IO1 is consistency, these parameters should not be changed - the gain and offset must be entered from the RDU or using SILogAdvisor as described in previous chapter.

PV2 is channel two (IO2) and FTV3 is reserved for a future channel and is presently inactive. Also. In PV and PV2, the variables with a “D” in the name are associated with the future capability and are currently inactive.



The constants are typed into the windows associated with FuN2 (intercept) and the three measurement components (FuAM2, FuBM2 and FuCM2) (1). Once the values are entered in the input windows, click the "Write" button (2) above the PV2 column and select the recipe where store coefficients. A write warning will appear and simply click "Yes".



After the operation is complete, a successful write message will appear. Click "OK".

If you wish to verify that the values were written, click the "Disconnect" button and then reconnect to the transmitter, reopen the VC regression simulation window click on the "Read" button (3) above the PV2 column and the values stored in the transmitter will be displayed in the window.