



Programming Guide

for Crude Oil Systems

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SensorLink

SensorLink is a desktop software application that Titan Logix created for programming and configuring your **TD100 System hardware** installed on your vehicles. SensorLink allows you to create and modify your strapping tables and program your hardware based on specific operational parameters and tank specifications. SensorLink can be downloaded from Titan Logix's website.

Titan Logix's Transmitter and FINCH II display must be connected to the computer that has the latest version of SensorLink installed, Titan Logix's desktop application, to complete the programming steps.

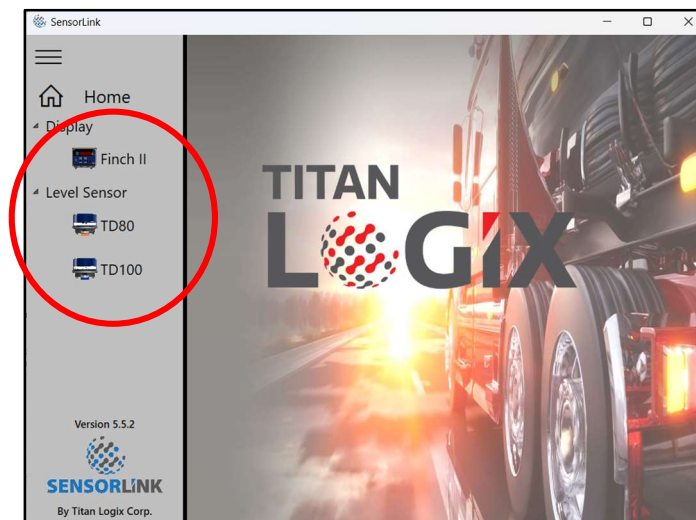
- 1 Go to www.titanlogix.com/downloads to download the latest version of SensorLink onto your computer.

Note:

SensorLink will only work on a PC computer.

- 2 After this is installed, double-click the **SensorLink icon** on your desktop.

The **SensorLink home page** appears with the Transmitter and FINCH menu options on the left panel.



- Select **FINCH II** option on the left panel to program your FINCH II – 6W.
- Select **TD100** option on the left panel to program your TD100 Transmitter.

Strapping Table Setup

Probe Settings

Step 1: Probe Settings

Probe Type
Coaxial Probe

Detection Mode ?

Performance

Depth Units
Inches

Volume Units
Gallons (US)

1 Select the appropriate values from the drop-down menus on the left panel:

- Probe Type
- Detection Mode
- Depth Units
- Volume Units

The strapping table in the middle of the screen is now ready to be filled out. The first row is added once these drop-down menus are filled out.

Strapping Table Configuration

The example below highlights the different sections that are required to build out your strapping table. The required fields become active once the section above is filled out. The active drop-down field name appears in red to indicate your next step.

Make sure your strapping table includes the exact measurements provided by the tank manufacturer.

Step 1: Probe Settings

Probe Type 1

Coaxial Probe

Detection Mode 2

Performance

Depth Units 3

Inches

Volume Units 3

Gallons (US)

Step 2: Strapping Table

Fill in table on right

Edit

Step 3: Offset Measurement

Offset Measurement 5

Step 4: Alarm Settings

Spill Alarm Level

4.0 in (7.5 US gal)

Spill Alarm Reset 6

Auto-Clear

HH Level 7

Depth (in) , Volume (US gal)

8.50 , 4.50

Step 5: Display Settings

Display Resolution 8

3 Digits

Optional Steps

9

Set Sump

Set 4-20mA Points

Steps 3, 4, and 5

Depth (in)	Volume (US gal)	Information
0.00	0.000	4mA Point, Bottom of Sump
4.00	0.000	Top of Sump
4.50	0.500	2Lo
5.00	1.000	
6.00	2.000	4
7.00	3.000	
8.00	4.000	
8.50	4.500	HH 7
9.00	5.000	
9.50	5.500	
10.00	6.000	
10.50	6.500	
11.00	7.000	
11.50	7.500	Spill Level
12.00	8.000	
13.00	9.000	
14.00	10.000	Actual Tank Top
15.50	10.000	20mA Point, Probe Tank Top

8

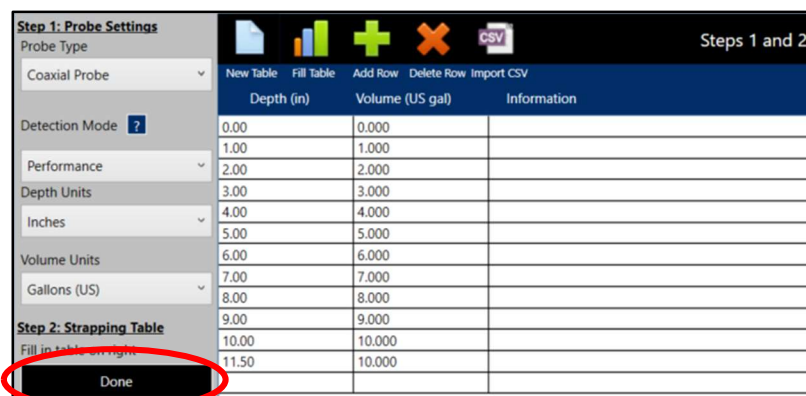
Tank	Spill	HH	2Lo	Sump	Total Offset
10.000	4.000	7.000	4.500	4.000	1.500

Graph of Strapping Table

— Volume — Spill — HH — 4mA — 20mA

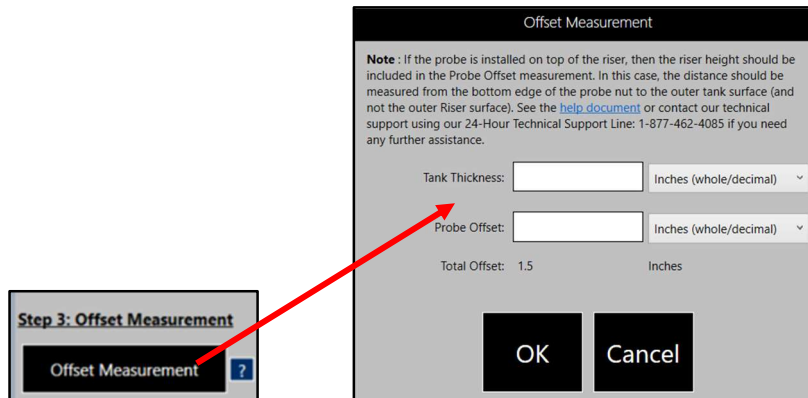
Section	Description	Reference
1	Probe Type	The type of probe installed in your tank. Page 5
2	Detection Mode	<ul style="list-style-type: none"> The Performance Detection Mode is recommended for new installations. The Standard Detection Mode is only recommended when it is necessary to mimic TD80 behaviour. Page 5
3	Depth and Volume Units	The Depth and Volume units used in your strapping table. These values will update in the Depth and Volume columns in the middle of the screen based on the selection made in these drop-down menus. Page 5
4	Strapping Table	The depth and volume measurements provided by the tank manufacture. Page 5
5	Offset Measurement	The Tank Thickness and Probe Offset values measured when installing the probe. Page 7
6	Spill Alarm	<ul style="list-style-type: none"> This is only required to fill out for Coaxial Probes. The Dual-Rod Probe spill levels are automatically set for you and are not able to be changed from here. Page 7
7	HH Level	The High-High Depth and Volume level. Page 7
8	Display Resolution	The number of Digits used for your maximum volume measurement value. Page 8
9	Optional Settings	This is where you would set the Sump Value and 4-20mA Points , if required. Page 9

- Fill out the strapping table based on one of the following options:
 - Importing through a CSV file (Page 11)**
 - Manually adding through SensorLink (Page 13)**
- After the strapping table is properly filled out, click the **Done** button on the left panel.



The strapping table and the diagram to the right of the table automatically updates with the tank specifications filled out.

Offset Measurement Setup



- 1 Click the **Offset Measurement** button from the left panel.

The Offset Measurement dialog box appears.

- 2 Fill in the **Tank Thickness** and **Probe Offset** values and units from the drop-down menus.

Note:

These are the measurements captured in the **TD100 System Installation Quick Reference Guide**.

- 3 The total offset value is automatically calculated based on the following formula:

TOTAL OFFSET = TANK THICKNESS + PROBE OFFSET

Tip:

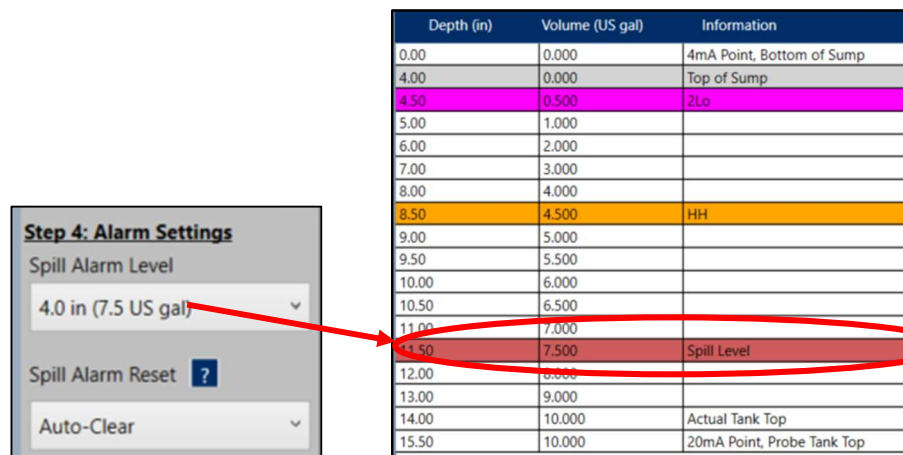
Make sure your total offset is not greater than the Spill level.

- 4 Click **OK**.

You are taken back to the main screen.

Configuring Alarm Settings

The Spill Alarm configuration for a **Dual-Rod Probe** is pre-selected based on the settings defined in your strapping table. You are **not** able to make any changes to Spill Alarm drop-down values if you have a dual-rod probe.



- 1 If using a **Coaxial Probe**, complete the Spill Alarm fields. If using a **Dual-Rod Probe**, skip this step and go to **step 2**.

Menu	Description
Spill Alarm Level	<p>The Spill Alarm level is set based on the detection mode selected above.</p> <ul style="list-style-type: none"> • Performance Detection Mode: Select from a range between 4 to 17 inches. • Standard Detection Mode: Use the measurement from the bottom edge of the probe nut.
Spill Alarm Reset	<p>Select one of the following options from the drop-down menu:</p> <ul style="list-style-type: none"> • Auto-Clear • Band-Clear

Depth (in)	Volume (US gal)	Information
0.00	0.000	4mA Point, Bottom of Sump
4.00	0.000	Top of Sump
4.50	0.500	2Lo
5.00	1.000	
6.00	2.000	
7.00	3.000	
8.00	4.000	
8.50	4.500	HH
9.00	5.000	
9.50	5.500	
10.00	6.000	
10.50	6.500	
11.00	7.000	
11.50	7.500	Spill Level
12.00	8.000	
13.00	9.000	
14.00	10.000	Actual Tank Top
15.50	10.000	20mA Point, Probe Tank Top

- 2 Fill in the High-High level in the **Depth** and **Volume** fields and press **[Enter]** to update the strapping table.

Tip:
The HH alarm threshold must be **above** 2Lo and at least 2 inches **below** the spill level.

Setting the Display Settings

It is recommended to configure your volume measurements to use the 5-digit reading on the FINCH II – 6W display.

For example, if the maximum volume of your tank is **80 barrels**, then set the display resolution to 3 decimal places. This will display as **80.000** on the FINCH II – 6W display as well as on the strapping table.

- 1 Select the number of digits to use for your maximum volume measurement from the **Display Resolution** drop-down menu.
The **Volume** column in the strapping table is updated based on your selection.

Step 5: Display Settings

Display Resolution

3 Digits

Depth (in)	Volume (US gal)	Information
0.00	0.000	4mA Point, Bottom of Sump
4.00	0.000	Top of Sump
4.50	0.500	2Lo
5.00	1.000	
6.00	2.000	
7.00	3.000	
8.00	4.000	
8.50	4.500	HH
9.00	5.000	
9.50	5.500	
10.00	6.000	
10.50	6.500	
11.00	7.000	
11.50	7.500	Spill Level
12.00	8.000	
13.00	9.000	
14.00	10.000	Actual Tank Top
14.50	10.500	20mA Point, Probe Tank Top

(Optional) Sump and 4-20mA Settings

These steps are only required if you have a sump on your tank and if your installation includes a 4-20mA current loop interface. Otherwise, skip this section and go to **Saving your Strapping Table (Page 10)**.

Setting the Sump Value

- 1 Click the **Set Sump** button under the **Optional Steps** section in the left panel.

The Set Sump dialog box appears.

- 2 Fill out the **Sump** value as applicable to the installation.

Tip:
The sump value cannot be **less than zero**.

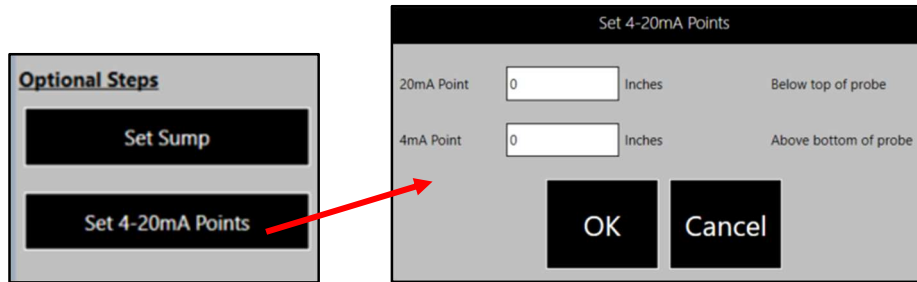
- 3 Click **OK**.

You are now taken back to the main window. The strapping table updates with the new information.

Setting the 4-20mA Points

- 1 Click the **Set 4-20mA Points** button below the **Optional Steps** section in the left panel.

The Set 4-20mA Points dialogue box appears.



- Fill out the **20mA Point** and **4mA Point** values.

Tip:

- The 4mA and 20mA points cannot be **less than zero**.
- The 4mA point must be set **below** the 20mA point.

- Click **OK**.

You are now taken back to the main window. The strapping table updates with the new information.

Saving the Strapping Table

It is important to save your strapping table data for reference or troubleshooting purposes.

- Prior to saving your file, click **Verify** from the top menu bar to ensure there are no errors in your strapping table.

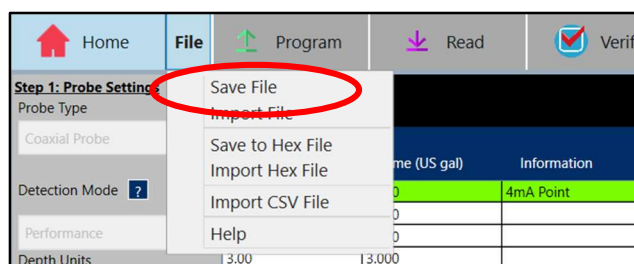


- If everything is configured correctly, a verification window appears letting you know that the strapping table is configured correctly.

Note:

A dialogue box appears indicating the specific errors to address before continuing. Make any necessary adjustments and click **Verify** again to ensure all the errors have been addressed.

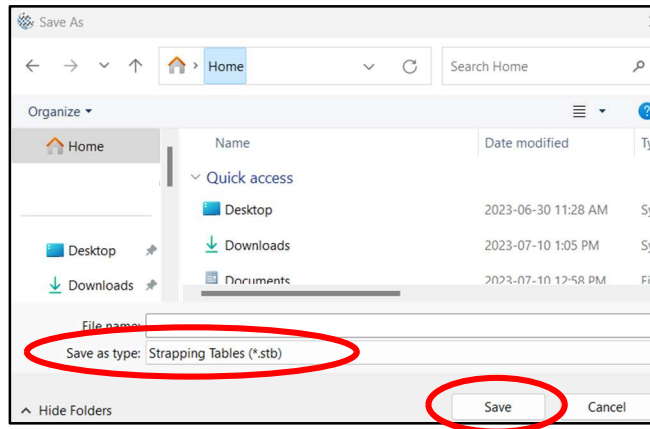
- Once everything is verified, click **File > Save File** from the top menu bar.



The **Save As** window appears.

- Choose the desired location to save the strapping table to on your computer.
- Fill out a **File name** (as per your organization's convention) for the strapping table and click **Save**.

Note:
Notice that the file type is set to ***.stb** which is the strapping table file extension.



Adding Your Strapping Table Data

You can add the manufacturer’s depth and volume measurements for your tank by importing this through a CSV file or manually adding it inside SensorLink.

After completing this step, go back to the **Configuring Probe Settings (Page 5)** section and proceed with **step 3**.

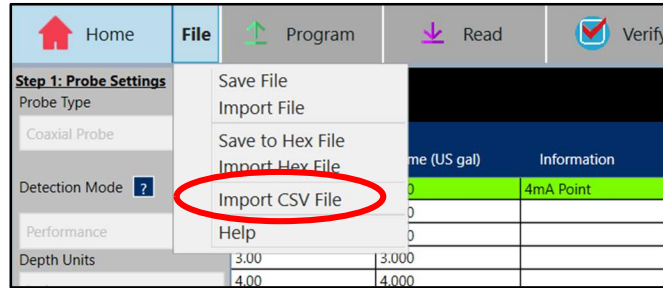
Option 1: Importing through a CSV File

It is sometimes easier to build out your strapping table outside of SensorLink and import the information afterwards.

- 1 Create a two-column table that includes the depth and volume values from the manufacturer strapping table.

Depth (in)	Volume (US gal)
0.00	0.00
1.00	5.00
2.00	10.00
3.00	15.00
4.00	20.00
5.00	25.00
6.00	30.00
7.00	35.00
8.00	40.00
9.00	45.00
10.00	50.00
11.00	55.00
12.00	60.00

- 2 Save this file as a ***.csv** file.
- 3 From SensorLink, click **File > Import CSV File** from the top menu bar.



The **Open** dialogue window appears.

- 4 Navigate to where you saved your *.csv file and select the file.
- 5 Click **Open** to import this into SensorLink.

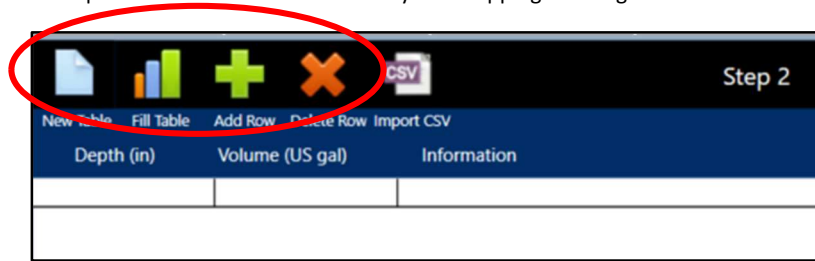
Tip:

Make sure the *.csv file is closed out before importing it into SensorLink.

The Depth and Volume information added in the .csv file is now added to the strapping table inside of SensorLink.

Option 2: Manually Adding through SensorLink

You can manually add the depth and volume information for your strapping table right inside of SensorLink as well.

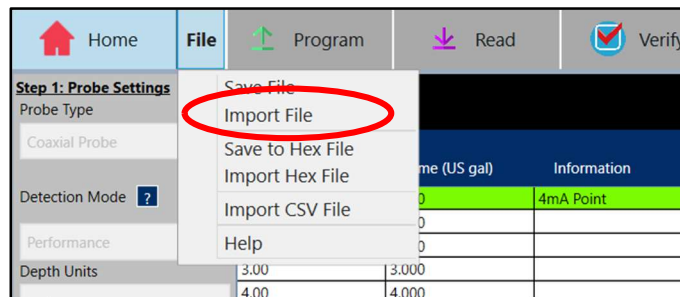


- 1 Use the icons in the strapping table section to fill out your **Depth** and **Volume** values of your strapping table.

Icon Name	Description
New Table	This will clear the existing strapping table. Make sure to save your information before clicking this icon if you do not want to lose your data.
Fill Table	The Fill Depth Values dialogue box appears to allow you to easily build out your strapping table based on your start and end values for the depth and volume of your tank, and how much the values increment by.
Add Row	Adds an additional row to your table.
Delete Row	Deletes the selected row from your table.

Viewing Your Strapping Table Configurations

- 1 From SensorLink, click **File > Import File** from the top menu bar.



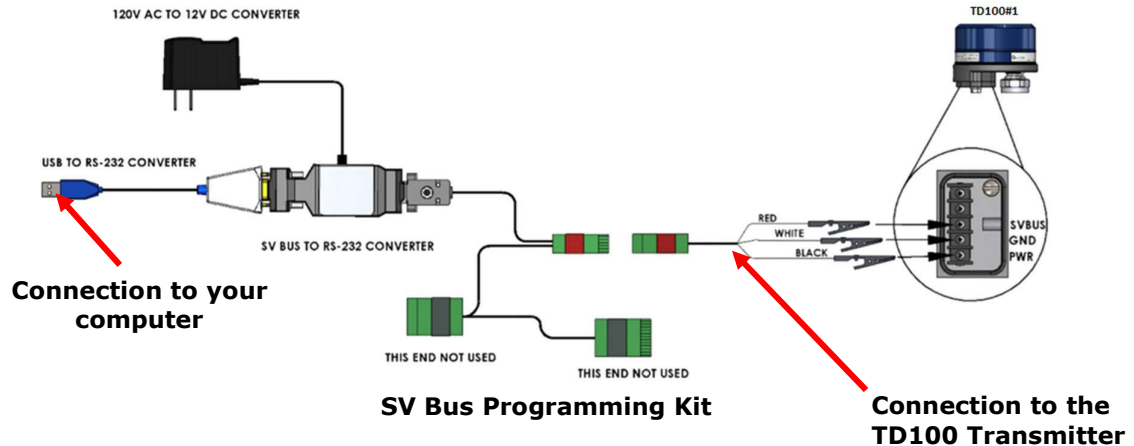
The **Open** dialogue window appears.

- 2 Navigate to where you saved your **.stb (strapping table) file** and select the file.
- 3 Click **Open** to import this into SensorLink.

TD100 Transmitter Programming

Titan Logix provides an **SV Bus Programming Kit** as well as a **USB serial port adapter** for you to use to program your **TD100 Transmitter**.

The diagram below shows the **SV Bus Programming Kit** and the connection between the **TD100 Transmitter** and your computer.



Connecting to the TD100 Transmitter

Use one of the two options listed below to connect Titan Logix's **SV Bus Programming Kit** to your **TD100 Transmitter**:

Option 1: Direct Connection through the TD100 Transmitter

Use alligator pins to connect the three wires inside the TD100 Transmitter.

Note:

Use this option if you haven't installed your **TD100 Transmitter** on top of your tank yet.

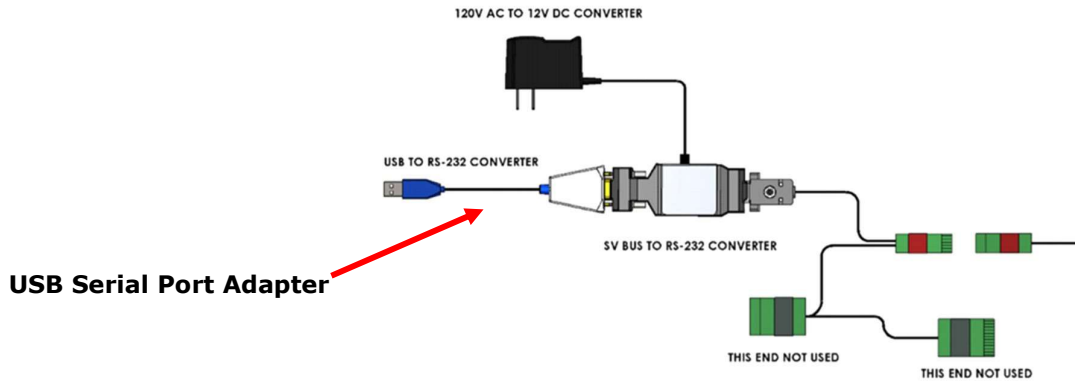
Option 2: Connection through the FINCH II – 6W

Use the adapter to connect to the circuit board in the FINCH II – 6W.

Connecting TD100 Transmitter to Computer

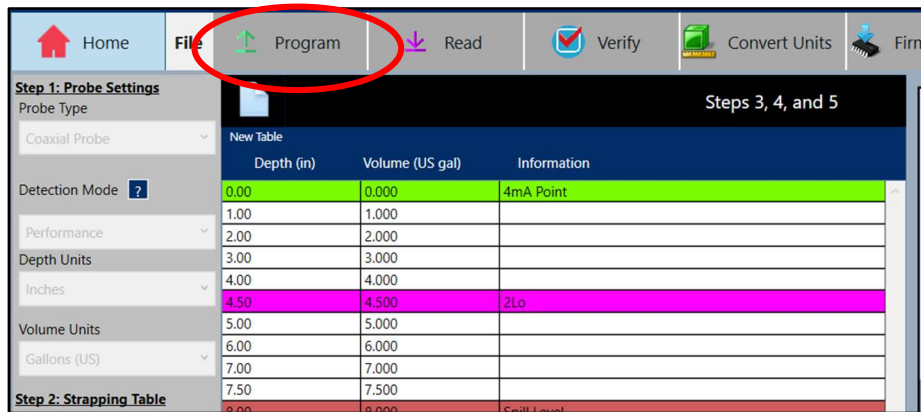
The **TD100 Transmitter** now needs to be connected to the computer that SensorLink is installed on. You can connect to your computer through a native COM Port or by using the provided USB serial port adapter.

- 1 Use one of the two options for connecting the **TD100 Transmitter** to your computer.
 - **Option 1:** Use the **SV Bus Programming Kit** to plug directly into a native COM Port on your computer
 - **Option 2:** Use **USB Serial port adapter** to plug into the **SV Bus Programming Kit** and then use the USB side to plug into your computer

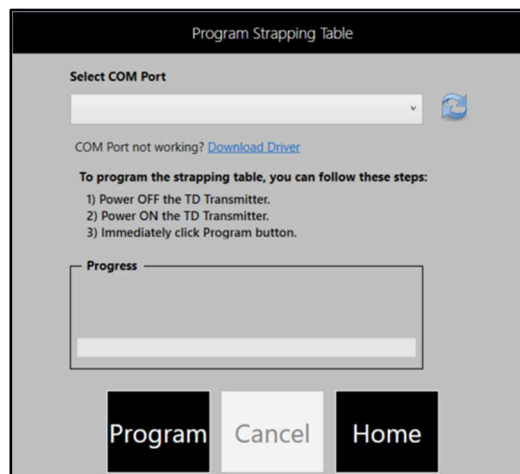


Programming the TD100 Transmitter

- 1 Click **Program** from the top menu bar inside SensorLink.



The **Program Strapping Table** dialogue box appears.



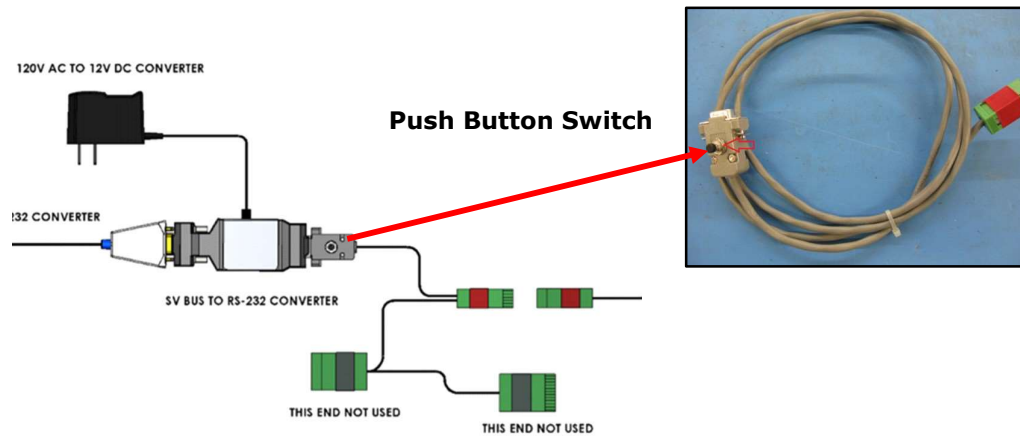
Tip:

If nothing appears in the **Select COM Port** drop-down menu, you will need to download and install the COM port driver that applies to how you connected the **TD100 Transmitter** to your computer.

This can be done by clicking the **Download Driver** link from this window.

- 2 Once the driver is downloaded, select the appropriate **COM Port** option from the drop-down menu.

- Click the **push button switch** on the **SV Programming Kit** to power the **TD100 Transmitter** off and then back on.



- After the **TD100 Transmitter** is powered back on, click the **Program** button from the dialogue box in SensorLink. The progress bar will update and if everything runs successfully, your **TD100 Transmitter** is fully programmed.
- Click the **Home** button to return to the main screen.

FINCH II Programming

Titan Logix provides a **FINCH II Programming Kit** that includes the following four items:



USB-RS-232 Adapter



RS-232 Adapter



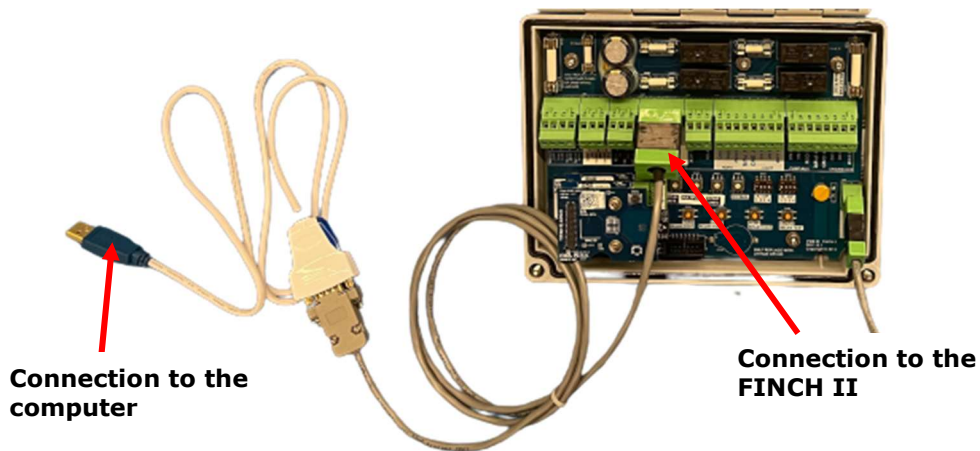
Power Adapter



Transformer

Connecting to the FINCH II – 6W

The diagram below shows how the **USB-RS-232 Adapter** and the **RS-232 Adapter** connect to the FINCH II circuit board and to your computer.



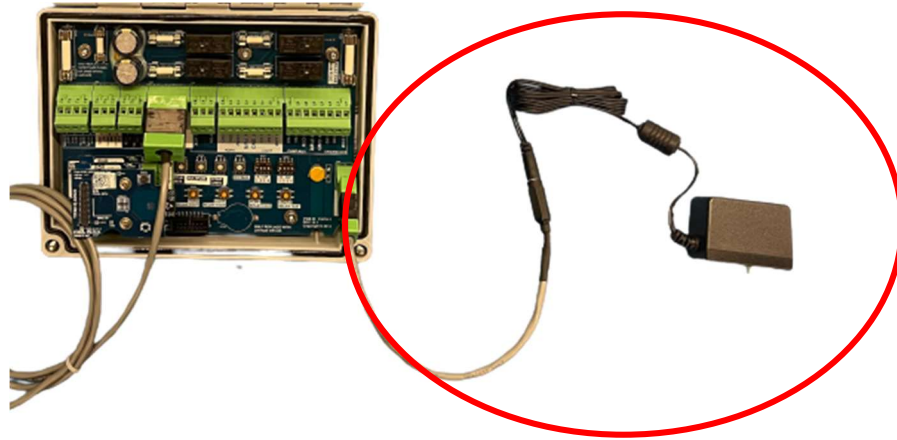
- 1 Use the Titan Logix provided **RS-232 Adapter** to connect to the 5-pin connector on the FINCH II circuit board.
- 2 Then take the Titan Logix provided **USB-RS-232 Adapter** and connect this to the **RS-232 Adapter**.
- 3 Then connect the USB side of the **USB-RS-232 Adapter** to the computer that SensorLink is installed on.

Connecting FINCH II – 6W to Power Source

Use one of the two options to power on the FINCH II display.

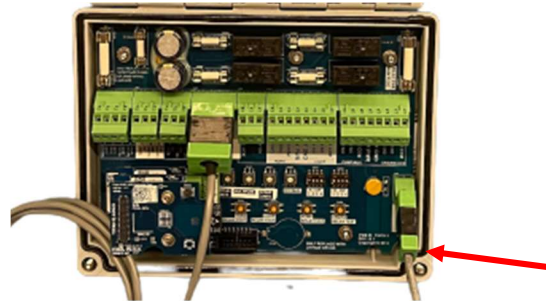
Option 1: Wall Adapter Power Source

- 1 Use the Titan Logix provided Power Adapter and Transmitter to connect to a wall adapter.



Option 2: Vehicle Power Source

- 1 Refer to the **TD100 System Installation Guide** for instructions on connecting your FINCH II to your vehicle.

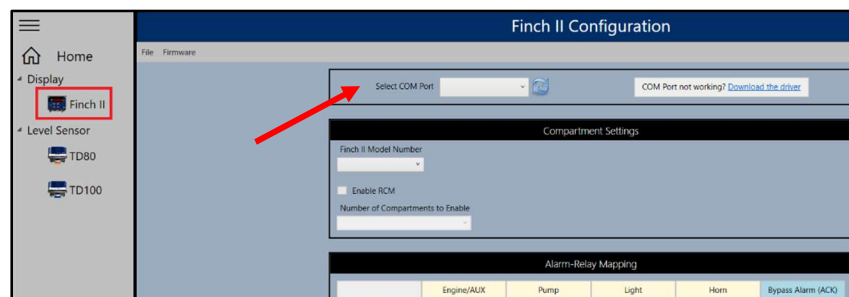


Connection to Vehicle Power

Programming FINCH II – 6W

- 1 Click **Finch II** from the main SensorLink page.

The **Finch II Configuration** window appears.



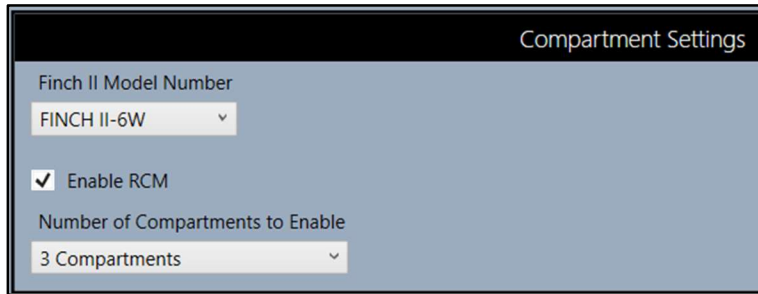
Tip:

If nothing appears in the **Select COM Port** drop-down menu, you will need to download and install the COM port driver that applies to how you connected the FINCH II to your computer.

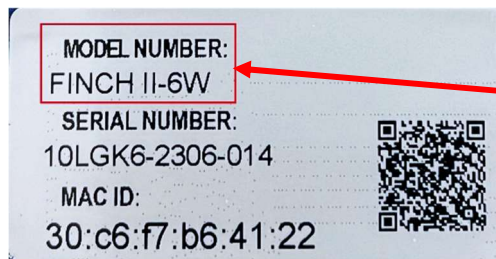
This can be done by clicking the **Download the driver** link from this window.

- 2 Once the driver is downloaded, select the appropriate **Select COM Port** option from the drop-down menu.

Compartment Settings



- 3 Select the **Finch II Model Number** from the drop-down list.
 - **FINCH II:** Traditional 2-compartment display
 - **FINCH II-W:** 2-compartment display with Bluetooth capability
 - **FINCH II – 6W:** 6-compartment display with Bluetooth capability



Model number appears on hardware cover

- 4 Select the **Enable RCM** checkbox if your installation includes a Rack Control Module. Leave this unselected if it does not apply.
- 5 Select the **Number of Compartments to Enable** from the drop-down menu that are applicable to your installation.
Based on your model selection and if using an RCM, the options within the drop-down list will update accordingly.

Alarm-Relay Mapping Configuration

Every FINCH II display leaves the factory with the same Alarm-Relay Mapping settings, as shown in the image. These default settings are the same for all three models of the FINCH II display.

You can modify these settings as they are applicable to the specific installation. To return to the factory settings, just click the **Set Defaults** button to return to the default state.

Alarm-Relay Mapping					
	Engine/AUX	Pump	Light	Horn	Bypass Alarm (ACK)
Spill/Fail	✓	✓			
HH		✓	✓	✓	✓
Fill				✓	✓
Fall					✓
Relay Alarming State	Energized ▾	De-energized ▾	Energized ▾	Energized ▾	

Set Defaults

- 1 Select the boxes to enable or disable the specific alarms.
- 2 Select the drop-down menu under each column to configure if the alarm setting will be energized or de-energized when reached.

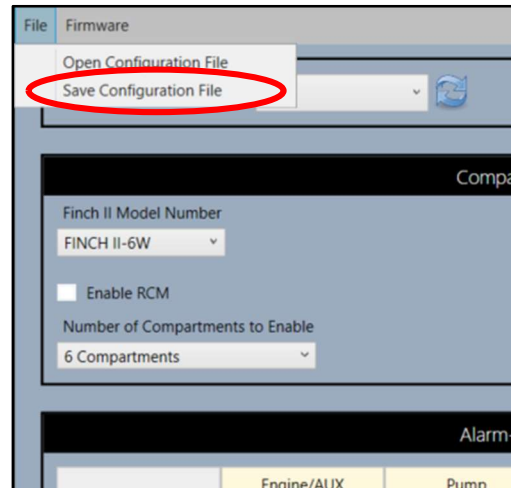
Tip:

It is recommended to contact Titan support if you need any further help.

Saving Configuration File

It is important to save the FINCH II- 6W configuration file for reference or troubleshooting purposes. Ensure the FINCH II is still connected and all fields are properly filled out before proceeding.

- 1 Click on the **File > Save Configuration File** from the upper left corner of the screen.



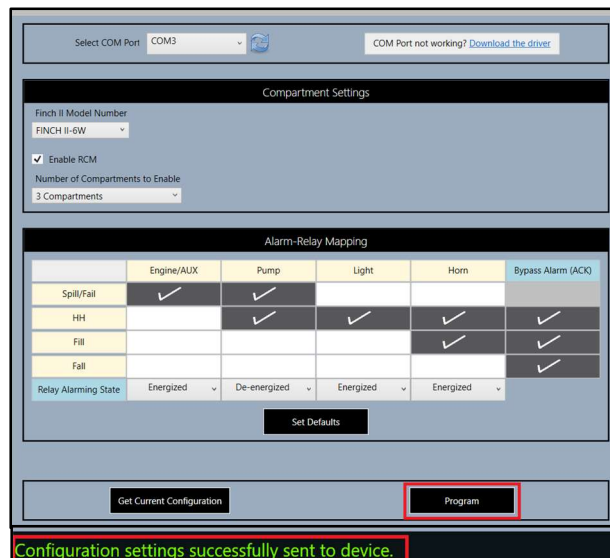
The **Save As** window appears.

- 2 Choose the desired location to save the strapping table to on your computer.
- 3 Fill out a **File name** (as per your organization's convention) for the configuration file and click **Save**.

Note:

Notice that the file type is set to ***.f2c format**.

- 4 Click the **Program** button at the bottom of the screen.



A Confirmation notification appears in green text at the bottom left of the screen to confirm the programming was successfully accepted to the FINCH II – 6W.

Viewing FINCH II – 6W Configurations

Once your FINCH II is successfully programmed, you can go back afterwards to view the information if your FINCH II is still plugged into your computer. You can also import an existing FINCH II configuration file.

If importing or viewing your configuration of a FINCH II – 6W, ensure you have version 2.7x or later of the Firmware.

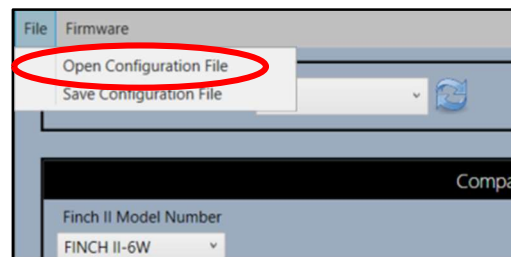
If viewing a configuration file from an older FINCH II model, only the Alarm-Relay Mapping settings will appear on the screen. Once the file is imported into SensorLink, go to **Programming FINCH II (Page 20)** to complete the other fields on this screen.

Note:

Any existing configurations filled out on this screen will be over-written with the new values.

Importing Configuration File

- 1 Click **File > Open Configuration File** from the upper left corner of the screen.



The **Open** dialogue window appears.

- 2 Navigate to the saved .f2c file and select the file.
- 3 Click **Open** to import this file into SensorLink.
The saved configuration file auto-populates on the screen.
- 4 Make any necessary changes and save your configuration file (Page 22).

Viewing Current Configuration

Prerequisite:

Ensure the FINCH II display is connected to your computer before proceeding.

- 1 From the Finch II Configuration window, click the **Get Current Configuration** button at the bottom of the screen.

Finch II Configuration

Select COM Port [COM Port not working? Download the driver](#)

Compartment Settings

Finch II Model Number

Enable RCM

Number of Compartments to Enable

Alarm-Relay Mapping

	Engine/AUX	Pump	Light	Horn	Bypass Alarm (ACQ)
Spill/Fail	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hx	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Fill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Fail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Relay Alarming State	Energized <input type="text"/>	De-energized <input type="text"/>	Energized <input type="text"/>	Energized <input type="text"/>	

The existing configuration of the connected FINCH II display auto-populates on the screen.

- 2 Make any necessary changes and save your configuration file (Page 22).