Multi-Gauge Surface Box

User Manual V1.5

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<table>
<thead>
<tr>
<th>Rev. No.</th>
<th>Date</th>
<th>Pages</th>
<th>Description of Changes</th>
<th>Author</th>
</tr>
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<td>0.1</td>
<td>November 2018</td>
<td></td>
<td>Initial Draft</td>
<td>J.W.</td>
</tr>
<tr>
<td>0.2</td>
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<td>1.1</td>
<td>January 2019</td>
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<td>Added SRO Pictures</td>
<td>L.D.</td>
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<tr>
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<td>46</td>
<td>Added Tool Line Vout</td>
<td>M.J.</td>
</tr>
<tr>
<td>1.3</td>
<td>April 2019</td>
<td>46</td>
<td>Updated Warning description, added power cycle timer</td>
<td>M.J.</td>
</tr>
<tr>
<td>1.4</td>
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<td>48</td>
<td>Updated Modbus Map output</td>
<td>M.J.</td>
</tr>
<tr>
<td>1.5</td>
<td>October 2019</td>
<td>48</td>
<td>Fixed Supervisor mode hot key</td>
<td>J.W.</td>
</tr>
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1 About this Guide

1.1 Who Should Use It

This guide is intended for users of different degrees of knowledge and experience:

Operators – Tool operators can learn how to operate the software and maintain the tools.

Technicians – Our technicians can learn how to interrogate and troubleshoot the tools.

This guide assumes that you have some computing and tool knowledge. For more information, contact your local service representative.

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We thank you for any feedback or comments that will help us to continue to improve our products and service.

1.2 Disclaimer

This document is intended as a supplement to formal training. DataCan is constantly working to improve its products. We must therefore reserve the right to change designs, materials, specifications, and prices without notice. DataCan declines any liability that may arise out of the potential inaccuracies in this guide. We thank you for any feedback or comments that will help us to continue to improve our products and service.
2 Introduction

The DataCan Multi-Gauge Surface Box is a logging unit capable of storing and displaying data from telemetry cards, downhole gauges, surface gauges, and many other sensors. The internal telemetry card can be programmed to communicate with any of DataCan's one-way (original style) or two-way (multi-gauge or newer-style) permanent / SRO gauges.

This manual is supplemented by a number of other manuals depending on the elements of your system:

- DataCan Download Software User Manual – for all features of the software and graphing.
- Surface Transmitter Manual
- Cablehead Installation Manual
- Permanent Gauge Installation Manual
- Multi-Gauge Surface Box Troubleshooting Guide

To answer questions not covered in the manual about a specific component of your system, please refer to the manual for that specific component.

2.1 General Information

The DataCan Surface Box is a reliable instrument that works in conjunction with DataCan telemetry units, DataCan Downhole gauges, and DataCan surface gauges. In addition to providing power to the attached equipment, the surface box displays the data collected; also, depending upon user settings, it stores some or all of the collected information. A PC can be
plugged into the surface box to program which data is collected and recorded, as well as to download records from the memory using the included DataCan Download Software.

### 2.2 Network Connections

The Surface box connects to 3 different networks, as well as a USB link to a PC. The 3 networks are the downhole tool network, the surface gauge Modbus network, and the Modbus-Out network used to connect to a user’s SCADA system. Each external Multi-Gauge Telemetry Card has its own downhole tool network.

Each device connected to the Modbus-In network needs its own a unique Modbus address on the network. This can be in the range of 1 to 247, with no two devices having the same address. The internal telemetry in the Surface Box is address 0 (reserved). Addresses on this network are completely separate from the Modbus-Out network, so devices on this network can have the same addresses as devices on the user’s SCADA network.

For two-way communication style gauges, each downhole gauge on each telemetry card must be set up with its own gauge address. These gauge addresses have nothing to do with the Modbus addresses between telemetry cards. If a gauge has never had its address changed, it defaults to address 1.
3 Basic Hardware Setup

DataCan will attempt to program the Surface Box for the customer’s requirements prior to shipping whenever possible. The only setup that must be done for every unit is to remove the battery tag and set the time; however, it is recommended that users connect the system and confirm the setup before attempting to install the system in the field. Record rate, time, pressure and temperature units are set to defaults and can be changed using the download software. If it is discovered that the sensors are not set up to the user’s requirements then proceed to section 8—Surface Box Sensor Setup—to change the setup.

3.1 Backup Clock Battery

Before using the surface box, the plastic tag on the card stack on the back of the swing panel must be removed to power the backup clock. The battery has to be replaced occasionally for the surface box to maintain time during power outages. It is recommended that the user replace the battery as part of their annual maintenance.

![Backup Clock Battery](image)

Figure 1: Backup Clock Battery with plastic slip still installed.
3.2 Connecting the Sensors

All the sensor connections are found on the terminal strip behind the metal swing panel. If your system includes extra telemetry cards installed in the surface box, they will already be connected. All other sensors will have to be connected.

3.2.1 Hooking up Downhole Gauges

The surface box should already be configured to log the gauges shipped with the box. There will be labels describing the configured gauges affixed below the card stack on the back of the swing panel. Please confirm the gauges you have are the ones assigned to that box. Otherwise, you will have to configure the system—see section 8 to configure the system.

Figure 2: Serial numbers of Downhole tools assigned to the surface box.

Downhole Gauges are connected to the DH TOOL connection of the surface box. The DH TOOL [+ ] terminal must be connected to the center pin of the gauge, and the DH TOOL [-] must be connected to the housing of the gauge. To connect multiple gauges, start with a pass-through gauge, and use a pass-through cable to connect the next gauge. The “bottom” gauge can only be the last gauge in the chain.
Figure 3: Downhole tool terminal connections for Surface Box and Rackmount Unit.

If you have additional telemetry cards, the Downhole gauges for those cards will have to be attached to the tool connection of the assigned card.

3.2.2 Connecting Modbus Gauges (Surface Transmitters and Telemetry Cards)

Surface transmitters or telemetry cards are connected to the four SURFACE GAUGE terminals.

Figure 4: Surface Gauge Connections for Surface Box and Rackmount Unit.
For transmitters, connect the four wires as follows:

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Wire Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOUT</td>
<td>Red wire</td>
</tr>
<tr>
<td>B</td>
<td>Yellow wire</td>
</tr>
<tr>
<td>A</td>
<td>White wire</td>
</tr>
<tr>
<td>GND</td>
<td>Black wire</td>
</tr>
</tbody>
</table>

If you have extra telemetry cards installed in the surface box, they will already be connected. If you have extra telemetry cards that will be installed outside the box, they need to be connected.

Connect the telemetry card terminals to the surface box terminals as follows:

<table>
<thead>
<tr>
<th>Surface Box Terminal</th>
<th>Telemetry Card Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOUT</td>
<td>Vin+</td>
</tr>
<tr>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>GND</td>
<td>Vin-</td>
</tr>
</tbody>
</table>

### 3.3 Input Power

Before connecting power, ensure that the power switch found on the card stack on the back of the swing panel is in the **OFF** position. On the Rack-Mount Unit, the switch must be in the middle position.

![Figure 5: Surface Box ON/OFF switch and Rackmount Power Selector.](image)
If your box is a DC powered box, connect your power supply with positive to the \textbf{POWER [+]} terminal and negative to the \textbf{POWER [-]} terminal. The rack-mount unit may be labeled \textbf{VIN [+]} and \textbf{VIN [-]}.

If your box is AC-powered, please plug in the AC power cable to the 3 pronged connector.

\textbf{Figure 6: DC Power connections.} \hspace{1cm} \textbf{Figure 7: AC power connection}

### 3.4 Turning On

Once all the sensors and power connections are made, the system is ready to be turned on. Switch the power switch to the \textbf{ON} position. For the rack mount unit, press the switch on the side to which the power is connected, up for AC power and down for DC power.

\textbf{Figure 8: Power switch in the ON position and DH TOOL COMM INDICATOR.}

\textbf{Figure 9: Power switch and DH TOOL COMM INDICATOR for the Rackmount Unit.}
The “DH TOOL COMM INDICATOR” will flash immediately to indicate power is on. If not, confirm that your power supply is on, that you have connected the power lines to the correct terminals, and that the fuse in the box is intact.

### 3.5 Confirming Sensor Readings on the Display

Shortly after power up, the screen will turn on and start to display messages. After initializing and finding devices, the screen will scroll through the attached sensors, displaying a reading from each. If a sensor is missing or continues to read “NO DATA” after the first reading, confirm it is connected, then turn the system off and on again. If the sensor still is not displaying data on the screen, proceed to section 4—Basic Software Operation—to see if it is part of the surface box configuration. See section 6—Screen Warnings and Errors—to explain all warnings and errors displayed.

**NOTE:** The first reading of the display will always read “NO DATA”. This is normal operation.

### 3.6 Display On/Off Button

The button on the bottom of the box (front panel of rack-mount unit) turns the screen off and on. To conserve power, the screen is by default set to turn off after 1 minute. To change the turn off time or to leave the screen always on, see section 7.3—Screen Settings.

---

**Figure 10:** Button to turn display on and off for Surface Box and Rackmount Unit.
3.7 Installation setup

The setup for installation is almost identical to the procedure described above. The only differences will be that the "bottom" will start on the spool and the connection cable will be connected to the commutator cable as well as to the pass-through gauges.

To confirm connectivity through the installation process, all that is needed is to see a reading from that gauge on the screen. If a gauge stops communicating with the surface box or loses connectivity, the screen will display “NO DATA” for that gauge. When connectivity is restored, a sensor reading will again be displayed for that gauge.

**WARNING:** The sensor readings may have to cycle through once before a disconnection or a reconnection is displayed. Also, the connectivity check is only performed when a sample is taken, so it is advised to use the minimum sample rate (1sec/gauge) during installation.
4 Basic Software Operation

4.1 Connecting to DataCan Download Software

The user interface with the Surface Box is through a Windows PC connected via a USB cable while running the DataCan Download Software. You will need a Windows PC with the DataCan Download Software installed, a USB-A to USB-B cable, and a DataCan Permanent Surface Logger Box that is powered up and connected to sensors.

STEP1: connect the surface box to a Windows PC using the USB cable and run the DataCan Download Software. (Connecter is on the bottom of Surface Box, on the front panel of the rack-mount unit)

![USB connector covered and uncovered with cable attached.](image)

Figure 11: USB connector covered and uncovered with cable attached.

![USB connector for Rackmount Unit](image)

Figure 12: USB connector for Rackmount Unit
WARNING: The box draws minimal power from the USB if the main power supply is turned off. This is to allow a user to download a log without the need for an external power supply; however, there is not enough power to run the sensors. If you want to power down the box, you must disconnect the USB cable.

Figure 13: DataCan Download Software main page
Step 2: Click on the **Connect** button. A progress bar will appear, stating its connectivity status as shown below.

![Progress bar](image)

**Figure 14:** Progress bar demonstrating the connectivity with the device.

**Note:** If this is the first time connecting to the surface box, you will be prompted to set the time; this is normal. If you are prompted to set the time every time you connect to the Surface box, make sure you have removed the plastic slip on the Backup Clock Battery. If the slip has been removed, the backup battery may need to be replaced. If the battery has recently been replaced, then the backup clock may be damaged and your surface box should be serviced by DataCan.

Step 3: After successful connection, in the information page you should see the following details:
- Tool Model of the logger
- Serial Number of the logger
- Company Info
- Location Info
- Date and time of the logger's clock
- Modbus details
  - Modbus Out (slave address)
  - Modbus In & Out baud rates.
- Details of devices connected to logger
- Tool ID, Modbus Address and Firmware Week & Year

Figure 15: Information after successful connection.
4.2 Confirming Sensor Setup

As shown above, the “Information” page has a list of all connected devices. If the list of Downhole Gauges does not match the list of gauges attached, or you do not see a surface transmitter or telemetry card that is hooked up to the surface box, please confirm you have the devices you intend to install with this Surface Box. If you need to change the gauge configuration, please proceed to section 8—Surface Box Sensor Setup—to change the sensor setup.

If a Downhole gauge is in the “Downhole Gauge(s)” list but no sensor reading is displayed on the screen from that gauge, please try to confirm that it is connected and then proceed to Surface Box Sensor Setup to remove the gauge and then re-add it.

4.3 Programming Sample Rate

Programming Sample Rate sets how often the data is collected and stored to memory. For example, if the sample rate is set to 60 seconds, data will be sampled and recorded every 60 seconds. The default rate is 5 seconds. After connecting the box to the software, if you wish to change the sample rate, proceed with the following steps:

Step 1: Click on the icon to get to the programming page.
Step 2: Enter an appropriate sample rate in seconds and click on the **Program Tool** button found at the bottom left of the screen.

![Success Dialogue box after clicking program tool button.](image)

**Figure 16:** Program page.

**Figure 17:** Success Dialogue box after clicking program tool button.
4.4 Changing Units

The DataCan readout can display units in a wide variety of formats.

If you wish to change the format, after connecting to the software, proceed with the following steps:

Step 1: Click on the Configuration menu, and then click on Change Units as shown in the figure.

![Figure 18: Change units from configuration menu.]

![Figure 19: Change units form.]

Step 2: Select appropriate units for each and click on Save Units to Tool. Once successful, you should see a dialogue showing status of operation and information related to the Job (i.e. job number and date and time of the job start)

[Note: This operation automatically restarts the device]

![Success](image)

Figure 20: Dialogue confirming Changes.

Step 3: Click on OK to exit.

### 4.5 Downloading and Erasing All Jobs

Data records are recorded in the logger as jobs. The Surface Box creates a new job every time it is powered up and is able to collect data. It also creates a new job anytime the settings are changed.

#### 4.5.1 Downloading Data

To download jobs, after connecting to the software, proceed with the following steps:

Step 1: Click on the button to go to the download page.
Step 2: Select jobs that need to be downloaded and click on the **Download** button. You will be prompted to save a binary file for each job selected. Choose a location to save to and click **OK**. Once it succeeds, you will see a progress bar with the download progress.
Figure 22: Progress bar showing status of download.

After the download, a dialogue box will appear stating the result of the download.

Figure 23: Success status after download succeeds.
4.5.2 Erase All Jobs

In the download page, click on the **Erase All Jobs** button to erase all jobs. Once you click on it, a confirmation prompt appears and states the approximate time to erase all jobs in memory depending on the memory filled.

![Erase all jobs?](image)

**Figure 24:** confirming erase all jobs dialogue box.

Click **Yes** to continue.

![Progress bar stating status](image)

**Figure 25:** Progress bar stating status.

After the erase completes, you will see a dialogue box stating the results of the erase.
Figure 26: Erase jobs success dialogue box.
5 Graphing Data

After downloading a job, you can display the data by loading it in the graph screen.

Click the button to get to the graph page.

![Graph page](image)

Figure 27: Graph page.
Next click the open icon 📖.

![Figure 28: Graph “Open” window showing all files downloaded when 4 downhole gauges and 1 surface gauge were connected during a job.](image)

If more than one gauge was connected during a job, the data downloaded is divided into one file per device and one summary file. The summary file has “_Summary(FileList).txt” at the end of the file name. This summary file can be opened in the graphing software if the user would like to view all gauges from one job at the same time. Alternatively, each file can be opened and viewed individually.

Please see the *DataCan Download Software Guide* for a description of all the graphing functionality.
# Screen Warnings and Errors

<table>
<thead>
<tr>
<th>Shown on Display</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Found internal telemetry only. No external devices found.”</td>
<td>The user has only programmed an internal telemetry card and no other devices such as pressure transmitters or external telemetry cards. This message is just informational and a warning only if the user thinks the message is incorrect.</td>
</tr>
<tr>
<td>“Found X device(s).”</td>
<td>The Surface Box was able to connect to X devices (including itself) programmed by the user, devices such as pressure transmitters or external telemetry cards.</td>
</tr>
<tr>
<td>“Erasing all jobs...”</td>
<td>The user has selected to erase all jobs in the Surface Box memory using the DataCan Download Software, and it is currently in progress.</td>
</tr>
<tr>
<td>“Restarting...”</td>
<td>The DataCan Download Software has requested to restart the Surface Box, and it is in progress.</td>
</tr>
<tr>
<td>“Logging paused.”</td>
<td>The DataCan Download Software has paused logging so that it can complete some user requested actions. This will clear itself within 10 seconds of the software actions completing.</td>
</tr>
<tr>
<td>“No data.”</td>
<td>The Surface Box has not received good data from a connected device or no devices are connected. Check electrical connections and power.</td>
</tr>
</tbody>
</table>
**WARNING: Tool Current too low. Tool may be disconnected**

The tool current monitor is reading less than 0.3 mA. Most likely this means a loss of connection to the downhole gauge. Check the connections to the downhole gauge.

**“ERROR: Telemetry power fault. Possible short circuit”**

The Surface Box has detected a power fault or short circuit on the telemetry connection to the downhole gauge(s). Check the electrical connection to the downhole gauge(s).

**“WARNING: Input voltage may be too low for telemetry operation.”**

The Surface Box firmware has measured the input voltage to the Surface Box and determined that it is too low. Please check the input power.

**“Updating firmware...”**

The user has selected to update the Surface Box firmware, and it is in progress.

**“No devices connected or programmed.”**

The initial setup of the Surface Box has not been completed. Please connect to the DataCan Download Software and set up the system.

**“Error – Number of devices found is too large.”**

The user has programmed more than 100 external devices. Please connect to the DataCan Download Software and correct this.

Data from some gauge(s), but not all.

If a gauge is not responding, its data will not show up on the display. Check electrical connection to the downhole gauge(s).
7 Other Setup and Testing

The previous sections describe the basic functionality needed to operate and install a properly configured system. This section describes other functionality.

7.1 Diagnostics

From the main menu bar, “Utilities -> Diagnostics” opens a window that shows real time data from all programmed and connected devices.

Figure 29: Diagnostics screenshot from a single one-way style gauge.
7.2 ModBus Out Setup (Connecting to a SCADA Network)

7.2.1 ModBus Out Connections

The Surface Box can be connected to a customer SCADA network using Modbus. The connections are labeled **MODBUS OUT: B, A, and GND.**
7.2.2 ModBus Out Settings

To change the slave address of the Surface Box or the baud rate, set the **Modbus Out (Slave address)** and **Modbus out (Baud Rate)**. Change this on the **Information** page. If any changes are made, press the “Update Details” button.

![Modbus settings](image)

**Figure 32**: Modbus settings.

7.2.3 ModBus out Registers

Once all of the sensors are configured and connected to the Surface Box, the user can generate a map of the ModBus registers for all of the sensor readings. Click on **Utilities -> Generate ModBus Map (PDF)**. Note that if you change your sensor configuration your map will change.
Choose a location and file name and then save the PDF. The PDF will include all the box setup information, sensor reading registers, and reading types. Below is an example of the sensor readings Table. If the Gauge # is the same as the Surface Box Serial number then the reading is generated by the Surface Box.

<table>
<thead>
<tr>
<th>Register</th>
<th>Gauge (Label)</th>
<th>Reading Type</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>31129</td>
<td>DC3569</td>
<td>Surface Box Input Voltage</td>
<td>Swapped Float</td>
</tr>
<tr>
<td>31131</td>
<td>DC3569</td>
<td>Surface Box Tool Current</td>
<td>Swapped Float</td>
</tr>
<tr>
<td>31133</td>
<td>DC3752(5000 ft)</td>
<td>Pressure</td>
<td>Swapped Float</td>
</tr>
<tr>
<td>31135</td>
<td>DC3752(5000 ft)</td>
<td>Temperature</td>
<td>Swapped Float</td>
</tr>
<tr>
<td>31137</td>
<td>DC3569</td>
<td></td>
<td>Decimal</td>
</tr>
<tr>
<td>31138</td>
<td>DC3569</td>
<td></td>
<td>Decimal</td>
</tr>
</tbody>
</table>

7.3 Screen Settings

The screen on the Surface Box shows a maximum of two readings at a time. The readings also have a label (optional) that can be shown.

To change the way the screen works, in the main menu, select Configuration -> Logger Setup.

>DataCan

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Figure 33: Screen settings.

The Surface Box screen can be set up to be **Always On**, **Always Off** (for data security), or to turn on for a set period of time. If the user would like the screen to stay on for a set period of time and then turn off, set the **Screen Timeout** to the number of minutes it stays on before it automatically turns off.

The **Screen Refresh Rate** sets the amount of time in seconds the current readings are displayed before the screen cycles to the next set of readings.

If any changes are made to the settings, press the **Save** button to store them to the logger.

The Surface Box has a button that, when pressed, toggles whether the screen is on or off.
8 Surface Box Sensor Setup

DataCan will attempt to program the Surface Box for the customer’s requirements prior to shipping whenever possible. This section describes how to either do the initial setup of the telemetry system and gauges or how to completely reconfigure a Surface Box for a different configuration than was previously set up.

It is assumed you are familiar with the basic functionality of the DataCan Download Software.

8.1 Gauge Setup – Original Style

When using “original style” (one-way communication) gauges down hole, the gauges themselves do not need any software setup. The surface box does need to be set up to handle this style of gauge.

8.1.1 Software Setup

The internal telemetry card always shows up on the Information page in the DataCan Download Software as address 0. To change your setup, you must enter supervisor mode by pressing Ctrl+SHIFT+D at the same time, and “- Supervisor Mode” should appear in the top bar. To then set up a one-way communication gauge, press the Edit button for the “Permanent Telemetry
Logger”.

Figure 34: One-way communication gauge, "Edit" button.
Figure 35: Select “Single Gauge”.

Select **Single Gauge** for one-way communication style gauges. You will notice the warning that **Calibration File Not Loaded**. In the **Calibration** section, press **Choose File** and browse to the calibration files for the gauge to be connected, select the file, and click **Open**.

A label can be added for the gauge. The label will be displayed on the Surface Box for each gauge reading. In the **Telemetry Card Details** section, press the **Manage Labels** button.

Figure 36: Gauge label section.

The label can be up to 20 characters. Suggested labels for each gauge are gauge depth (e.g. 2516 feet) or sensor measurement location (e.g. tubing, casing or vent).

In the **Telemetry Card** section, choose the gauge type from the drop-down list.
Once the label is set, the calibration is loaded, and the gauge type is set, click the **Update** button to store these settings to the Surface Box. The software will store the information to the Surface Box and then start a new job in the Surface Box memory.

### 8.2 Gauge Setup – Multi-Gauge Style

When using "multi-gauge style" (two-way communication) gauges down hole, the gauges themselves need to be set up in software. The surface box also needs to be set up to handle this style of gauge and know how many gauges to communicate with. To configure the gauges they must be electrically connected to the **DH TOOL** connection of the surface box, and you must know their serial number. To connect multiple gauges start with a pass-through gauge and use a pass-through cable to connect the next gauge. The bottom-hole gauge can only be the last gauge in the connection.

#### 8.2.1 Software Setup

The internal telemetry card always shows up on the **Information** page in the DataCan Download Software as address 0. To change your setup you must enter supervisor mode by pressing **Ctrl+SHIFT+D** at the same time, and “- Supervisor Mode” should appear in the top bar. Once in supervisor mode press the **Edit** button for the “Permanent Telemetry Logger”. 
Figure 37: Two-way communication gauge, "Edit" button.
Figure 38: Select "Multi Gauge".

Select “Multi Gauge” for two-way communication style gauges.

If there are any gauges listed that will not be connected to this Surface Box, press the **Remove** button.

Once the gauges are connected, fill in the serial number and desired label for the first gauge. The label can be up to 20 characters. Suggested labels for each gauge are gauge depth (e.g. 2516 feet) or sensor measurement location (e.g. tubing, casing or vent). Once filled in, click the **Add** button.
Figure 39: Add gauge dialog.

Repeat the procedure until all the gauges are entered. If you receive the error “Gauge Not Found!” please confirm all your connections and that you have the correct gauge serial number as printed on the side of the tool. Once all the tools are added click the “Update” button. The software will store the information to the Surface Box and then start a new job in the Surface Box memory. Once updated you should see the list of downhole gauges with (labels) in the information page.
Figure 40: Updated Gauge List

The labels can be edited at any time by pressing the **Edit** then **Labels** buttons.

It is recommended that the user connects all the gauges to the Surface Box and then runs Diagnostic mode or views the data on the Surface Box screen to confirm that everything is working correctly.
8.3 Output Voltage

The telemetry card can output either 12 Volts or 24 Volts to the tool line. Lower voltage requires less power and puts less stress on the tools, extending their life. A single tool on a line less than 7000 m (23000 ft) should be run on 12 Volts. A pair of tools run on a line less than 4000 m (13000 ft) should be run on 12 Volts. If you have more than 2 tools or depths deeper than described above, you will likely need to run the system at 24 V output.

To change the tool line voltage you must enter supervisor mode by pressing Ctrl+SHIFT+D at the same time, and “- Supervisor Mode” should appear in the top bar. Then select Configuration -> Logger Setup.

![Select Logger Setup](image)

Figure 41: Select Logger Setup
The **Logger Setup** popup will appear. Select the desired output voltage then click **Save**.

![Logger Setup](image)

**Figure 42: Select Tool Line Voltage**

### 8.4 Power Cycle timer

**WARNING:** Do not set this timer until after you have finished setting up the sensor and sampling. Trying to change settings when the power is in the off phase, will not work.

The telemetry unit can turn off the power to the connected gauges. The user can set a timer to turn the gauge power on for a time and then off for a time. Turning the power off to the gauges will lower the power to 0.5W of power consumption, extending battery life if needed.

To enable the On/Off timer you must enter supervisor mode by pressing **Ctrl+ SHIFT+D** at the same time, and “- Supervisor Mode” should appear in the top bar. Then select **Configuration -> Logger Setup**.

The **Logger Setup** popup will appear. Click the **Enable** box and then set the on and off time in seconds. The minimum On time is 11 seconds. Once the On and Off time are set then click **Save**.
8.5 Gauge Setup – Surface Transmitter

Surface transmitters can be added as well. The process is similar to adding an external telemetry card.

To change your setup you must enter supervisor mode by pressing **Ctrl+SHIFT+D** at the same time, and "- Supervisor Mode" should appear in the top bar. Once in supervisor mode, on the Information page, press the Add Device button.
Each external device must have its own unique Modbus address. This is separate from the user's SCADA Modbus system, so each device can have the same Modbus address as is on the user's SCADA system.

**NOTE:** DataCan will attempt to setup surface transmitters for the customer’s requirements, prior to shipping, whenever possible. If you are changing the original setup, especially if you are adding additional surface transmitters to a system, you may have to set up the address on the transmitter. See the Pressure Transmitter Manual.

To add a device, enter the "Modbus Address" of the device to be added and then press the **Find** button. For pressure transmitters start at address 1 and attempt to add, if unsuccessful attempt 2 through 4.
Figure 45: Find connected device screen.

Figure 46: External device found.

Once the device is found, the user can change “Company Info”, “Location Info”, change labels, update calibration files and change various device settings. Usually only “Company Info”, “Location Info” and / or labels change when setting up a system.

After all changes have been completed, press the **Add** button. The logger will add the device to the system and restart the Surface Box.