

CANect® Composer User's Manual

Revision: B01

CANect® and HED® are registered trademarks of Hydro Electronic Devices (HED®), Inc.



Table of Contents

Table of Contents	2
1 References	5
1.1 Downloader User Guide and Installer	5
2 Supported Operating Systems, OS	5
2.1 Windows OS	5
2.2 Linux OS	5
3 Web Browser Support	5
4 Overview	6
4.1 CANect® Overview	6
5 CANect® Composer Installation	7
5.1 Getting CANect® Composer	7
5.1.1 Login to HED FTP Server	7
5.1.2 Select Proper Operating System in Windows	10
5.2 Launching CANect® Composer	10
5.2.1 Launch the Local Web Server Manually in Windows	10
5.2.2 Launch the Local Web Server Automatically	11
5.2.3 Launch the Local Web Server Manually in Linux	11
6 Software Layout	12
6.1 Top Menu Bar	12
6.1.1 Menu Bar Items	12
6.2 Display Pane	17
6.3 Column Settings	17
6.4 Display Format	19
6.5 Page Navigation	20
7 Configuration Steps	21
7.1 Selecting and Configuring the Module	21
7.1.1 Select Module Pane	21
7.1.2 Configure Data Logger File Size	23
7.1.3 Configure CAN Pane	23
7.1.4 Configure I/O Pane	24
7.2 Selecting Applications	24
7.2.1 Enable Application Pane	24

7.2.2	Application Types.....	26
7.3	Parameter Setup.....	46
	Parameter Tab	46
7.3.2	Localization Tab	63
7.3.3	Units Tab.....	66
7.3.4	Enumeration Tab.....	67
7.3.5	Groups Tab.....	68
7.3.6	DM1\DM2 Faults Tab.....	69
7.3.7	Logging Presets Tab	70
7.3.8	Telematics Presets Tab	71
7.4	Compiling Project	72
7.4.1	File Generation.....	72
8	Setting up the Module.....	73
8.1	Set up Telematics	73
8.1.1	Steps.....	73
8.2	Set up WIFI	74
8.2.1	Steps to Configure the File through CANect® Composer	74
8.2.2	Steps to get WIFI Configuration on the Module.	76
8.3	Set up CANect® Reflector Tunnel	77
8.3.1	Steps to Configure the File through CANect® Composer	77
8.3.2	Steps to Configure CANect® Reflector	78
8.3.3	To Update Your Root Certificate.....	78
8.4	Set up Logging to FTP	79
8.4.1	Steps to Configure the File through CANect® Composer	79
8.4.2	Steps to Load the File on the Module.....	80
9	CANect® Modules	81
9.1	Module LEDs	81
9.1.1	Module Status LED.....	81
9.1.2	WIFI LED	81
9.1.3	GPS LED	81
9.1.4	CELL LED.....	81
9.2	Module’s Antenna Connections.....	82
9.3	SIM Card.....	82
9.4	Module Pinout.....	82

10	Closing CANect® Composer	82
11	Troubleshooting Guide	83
11.1	Known Problems	83
12	Glossary	84
13	Appendix A	85
13.1	LEDs Available per Module	85
14	Appendix B	86
14.1	Antenna Connections per Module	86
15	Appendix C	87
15.1	CL-T07-108-10 Module Pinout	87
15.2	CL-T06-108-10 Module Pinout	88
15.3	CL-T05-108-10 Module Pinout	89
15.4	CL-T05-107-10 Module Pinout	90
16	Appendix D	91
16.1	Errata	91
17	Revision History	92

1 References

This manual is current to version 1.2.7. Screenshots in this User Manual show the software running in the Windows 10: 64 bit system.

1.1 Downloader User Guide and Installer

Use this information to log in to the HED server and download the CANect® Composer installer and updated user guide. See [Section 5](#) for instructions.

Location: <ftp.hedonline.com>

username: CANect

password: FirstTools

Folder: Downloader

2 Supported Operating Systems, OS

CANect® Composer can be run in each of the operating systems listed below.

2.1 Windows OS

- Windows 7
- Windows 8
- Windows 10

2.2 Linux OS

- Ubuntu
- Debian

3 Web Browser Support

- Internet Explorer
- Microsoft Edge
- Google Chrome
- Firefox
 - Not tested

Note: Some browser-based actions are dependent upon how the browser is configured.

Note: It is recommended to change the selected web browser to ask where to save/download files.

Example: web browse settings->advance->Downloads

Ask where to save each file before downloading

4 Overview

4.1 CANect® Overview

CANect® is a telematics system that lets the user manage and send asset data and view it in an aggregated fleet format. The system consists of an onboard module, software, and cloud storage. From the module, the user can send data via device-to-device or cloud-to-device. Device software is updated using Over-the-Air Programming.

The CANect® software has several parts: Composer, View, Reflector, and Portal. This manual covers [Composer](#).

Users use CANect Composer to configure what data to read, how to read it, and what to do with it after it is read (log data, transmit to View, transmit to Portal). The data can be inputs to the CANect module, inputs internal to the CANect module (ex: accelerometer), and \or messages available on the CAN bus.

CANect® View is a local website for viewing the information gathered by the CANect module. The module links to View after it has created a database with Composer.

CANect® Reflector is a cellular or WIFI connection to the cloud to a module. The software is so named because it reflects the local website out to the cloud. It allows you to remotely log in to the CANect View website.

CANect® Portal is the cloud component of the system.

CANect® Composer Overview

CANect® Composer lets the user customize their module and onboard display, as well as the data collection and transmission processes. The Composer software creates a database that will be programmed into the CANect® module.

HED®'s Orchestra® suite also has Composer software. Both the CANect® and Orchestra® Composer software share the same name, but they have different functions.

5 CANect® Composer Installation

CANect® Composer is web page that runs on a PC through a local host, as shown in [Figure 15](#).

5.1 Getting CANect® Composer

Users get CANect® Composer by logging in to the HED FTP server and downloading a folder containing the files necessary to run Composer. The folder contains the Composer .zip file, and users can then [extract files](#) for [their operating system](#).

5.1.1 Login to HED FTP Server

FTP located at:

Location: <ftp.hedonline.com>
 username: CANect
 password: FirstTools

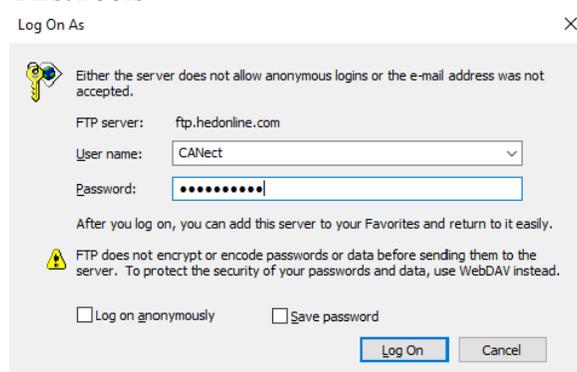


Figure 1: HED FTP Log In Screen

5.1.1.1 To Log In to FTP in Windows

1. Open Windows Explorer.
2. Enter <ftp.hedonline.com> into the menu bar, as shown in [Figure 2](#).

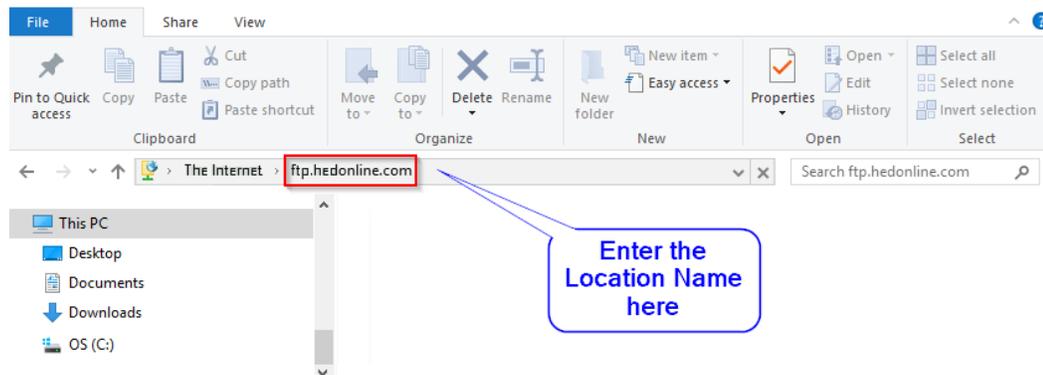


Figure 2: Enter Server Location Into Explorer Menu Bar

3. A server log in screen opens, as shown in [Figure 3](#).
4. In the User Name field, enter the name CANECT.

- In the Password field, enter the password FirstTools, as shown in [Figure 3](#).



Figure 3: HED Server Password

- Click the **Log On** button.
- An Explorer window opens.
- Click the [relevant operating system folder](#).
- In Windows Explorer, right click on the OS zip file that was downloaded.
- Extract files.

5.1.1.2 To Log In to FTP in Linux-Debian

- Open a web browser.
- Enter ftp.hedonline.com into the URL bar.
- A server log in screen opens, as shown in [Figure 4](#).

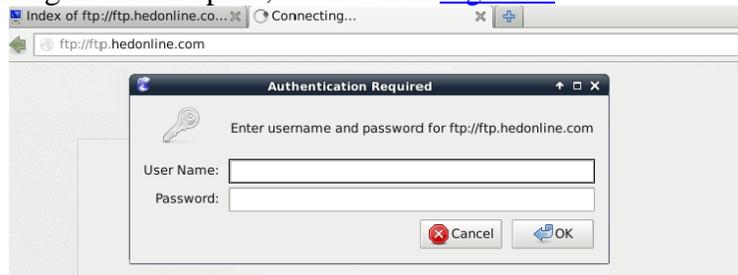


Figure 4: Linux Server Log In Screen

- In the User Name field, enter the name CANECT.
- In the Password field, enter the password FirstTools, as shown in [Figure 5](#).



Figure 5: Linux Password Field

- Click the **OK** button.
- An index of CANect® Composer Installation files opens, as shown in [Figure 6](#).

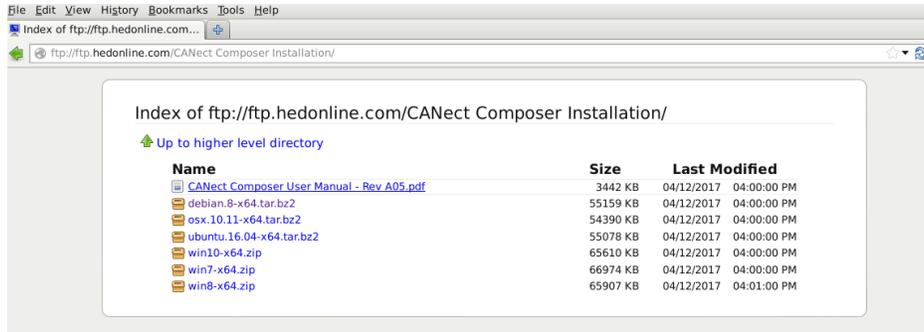


Figure 6: Linux Composer Installation Files List

8. Click the version of Linux you are using.
9. Enter the User Name and Password, if needed.
10. A dialog box appears, prompting the user to save or open the file. Accept the default software to open the file, or choose a different application. See [Figure 7](#).

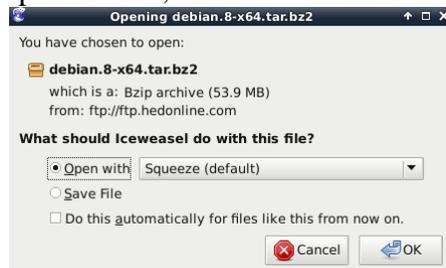


Figure 7: Linux-Open Files Dialog Box

11. Click **OK**.
12. The download list opens, as shown in [Figure 8](#).



Figure 8: Linux—Download List

13. From the download list, double click the file to open it.
14. Extract the files, as shown in [Figure 9](#).
15. Untar the tar files.
16. Debian 8 users need to run the following command in a command terminal before starting CANect® Composer:

sudo apt-get install libunwind8-dev

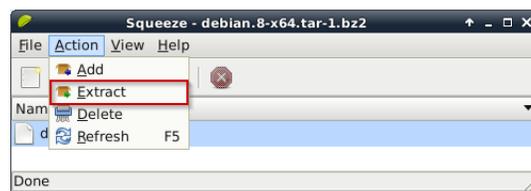


Figure 9: Linux—Extract Files

5.1.2 Select Proper Operating System in Windows

Select your operating system from the folder: CANect® Composer Installation Options:

- win7-x64.zip
- win10-x64.zip
- ubuntu.16.04-x64.tar

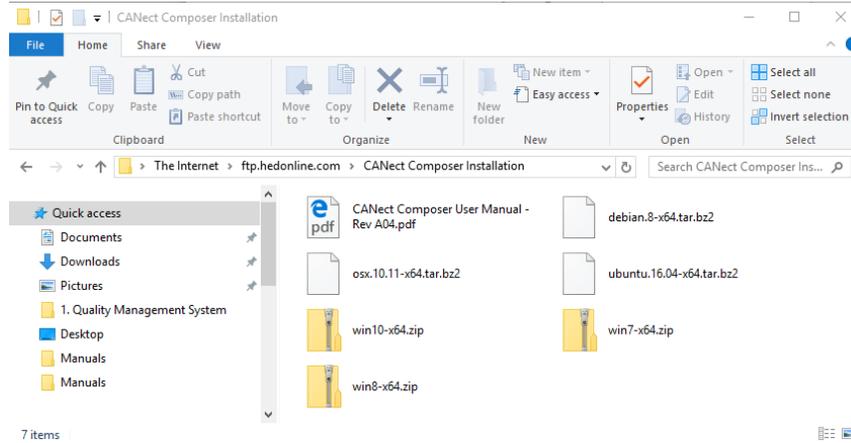


Figure 10: CANect® Composer Installation Folder

5.2 Launching CANect® Composer

Launching CANect® Composer can be done [manually](#) or [automatically](#).

5.2.1 Launch the Local Web Server Manually in Windows

Start up the local web server by running CANectComposer.exe.

1. Find the CANect Composer.exe file in the computer's program list.
2. Double click the .exe file to run it, as shown in [Figure 13](#).

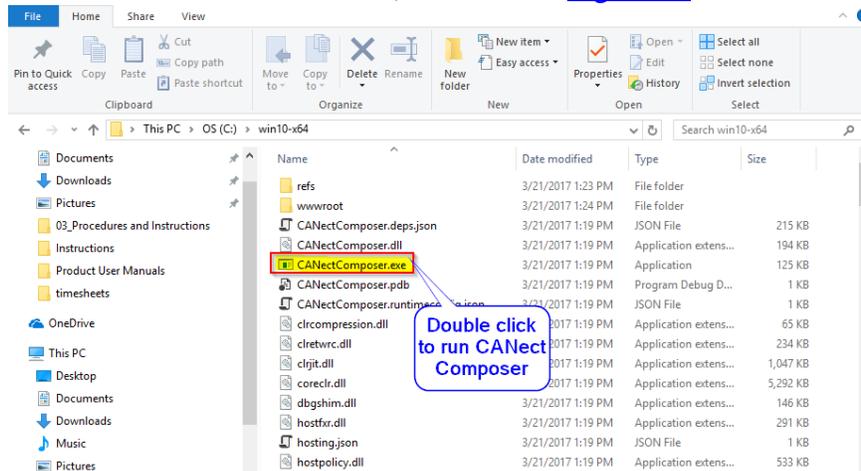


Figure 11: Composer.exe File in Program List

3. Launch the web page by typing <http://localhost:5000> into a web browser.

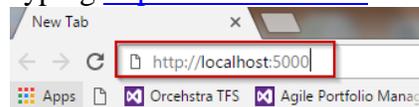


Figure 12: Enter the Server Name into a Web Browser

5.2.2 Launch the Local Web Server Automatically

- 1) Start up both the local web server and the web page by clicking the StartCANectComposer.bat file.

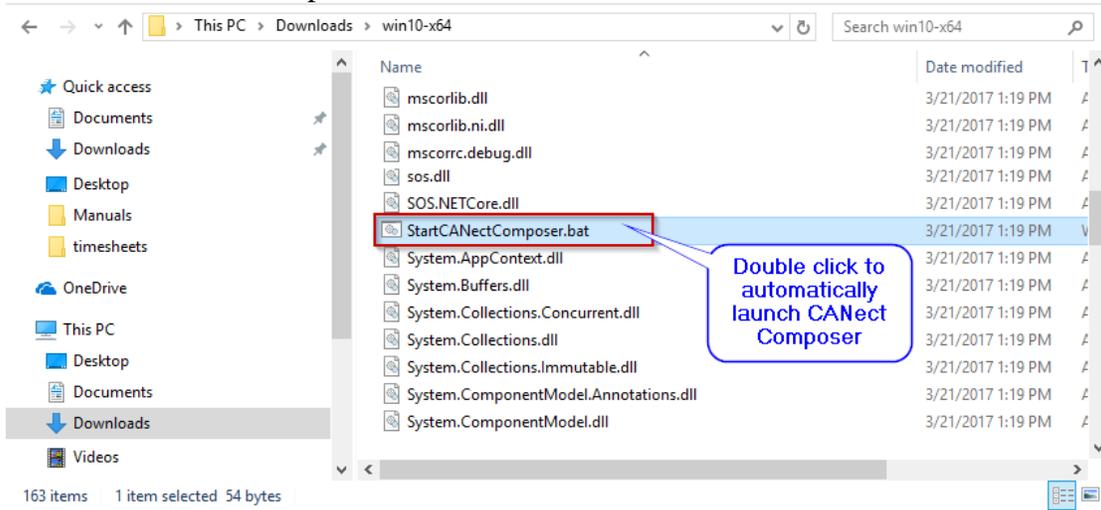


Figure 13 CANectComposer.bat File

5.2.3 Launch the Local Web Server Manually in Linux

- 1) Start up the local web server by running `./CANectComposer`.

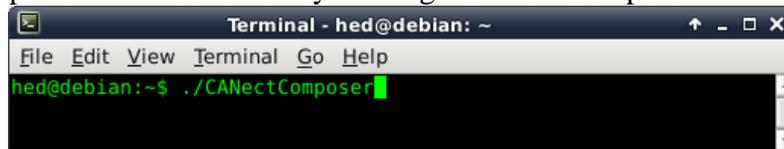


Figure 14: Linux Terminal

- 2) Launch the web page by running typing <http://localhost:5000> into a web browser.

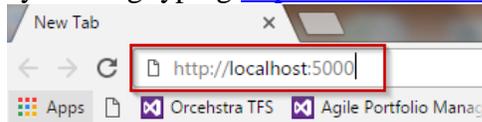


Figure 15: Enter the Server Name into a Web Browser

6 Software Layout

CANect® Composer opens as a web page, and is laid out in two parts. The first part is the [Top Menu Bar](#), and the second part is the [Display Pane](#).



Figure 16: Composer Page Layout

6.1 Top Menu Bar

The top menu bar allows the user to customize CANect Composer, aids in the configuration process, and handles project storage. It is shown in Figure 17.



Figure 17: Top Menu Bar

6.1.1 Menu Bar Items

6.1.1.1 File

Selecting File accesses a drop down menu of file operations. These operations are New Project, Open Project, Save Project, Export to Excel, and Import to Excel.

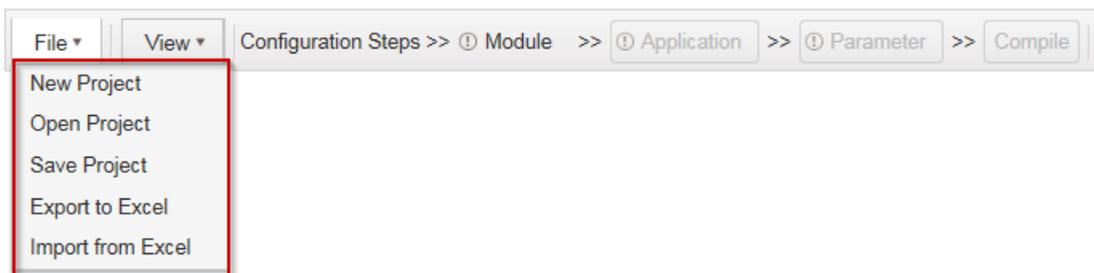


Figure 18: File Menu

6.1.1.1.1 New Project

Closes an existing project and [starts a new one](#). A new project begins with selecting a module and then prompts the user to configure it.

6.1.1.1.2 Open project

Clicking this opens an existing project with file extension “.ccm”. An open dialog box will appear for the user to select a file. Click the **Browse** button to navigate to a saved project.



Figure 19: Browse for Project File to Open

To Open a Project

1. Click **File**→**Open Project**.
2. A Select Project window opens.
3. Click **Browse**.
4. Double click the file to open.

Opening a project also closes any projects that were previously opened.

6.1.1.1.3 Save Project

Saves the current project. Saved projects are stored with the “.ccm” file extension. Files are saved to the default download path of the computer or the selected path.

Note: HED recommends that users do all their work from a local drive as losing network connection can cause corruption. If the project needs to be saved on a network or into version control, we suggest first saving it locally and then copying it where ever it needs to go. For some of the display files, version control will convert them from Linux format to Windows format and then the _CANect module doesn't work properly.

To Save a Project

1. Click **File**→**Save Project**.
2. A dialog box opens on the bottom of the webpage.

6.1.1.1.4 Click **Save** Export to Excel

Users can import and export Excel projects. This enables users to work in Excel if they choose, and it supports localization.

Exports an entire project to an Excel file. The exported file can be edited and imported back into the project. This is an advanced operation designed to speed up data entry.

If a user makes changes to the project in Excel, it needs to be re-imported into CANect Composer to save the changes. Use the [Import from Excel](#) function to import edited spreadsheets.

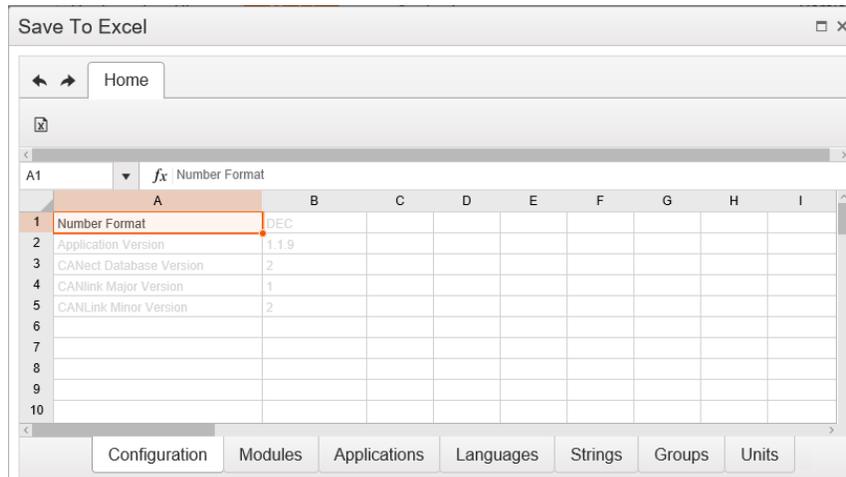


Figure 20: Export to Excel

To Export to Excel

1. Click **File**→**Export to Excel**.
2. The Save to Excel screen opens.
3. The fields are populated with data, as shown in Figure 19.
4. Click the Excel icon  in the top left corner above the spreadsheet.
5. An Export screen opens.

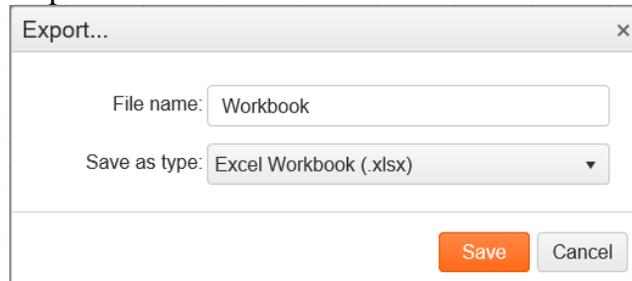


Figure 21: Export Screen

6. In the File Name field, enter a name for the exported workbook.
7. In the Save as Type dropdown field, select a file type to save the exported workbook.
8. Click **Save**.
9. A dialog box opens in the webpage.
10. Select **Save** or **Save As**.
11. A File Explorer window opens.
12. Select a place to save the exported workbook.

13. Click **Save**.
14. A dialog box opens at the bottom of the webpage.
15. Select **Open**.
16. The workbook opens.

6.1.1.1.5 Import from Excel

Imports the exported Excel changes back into CANect® Composer. When an exported project is imported, [validation checks occur](#) to ensure data is validated before the import takes place. These validation checks are shown in [Figure 23](#).

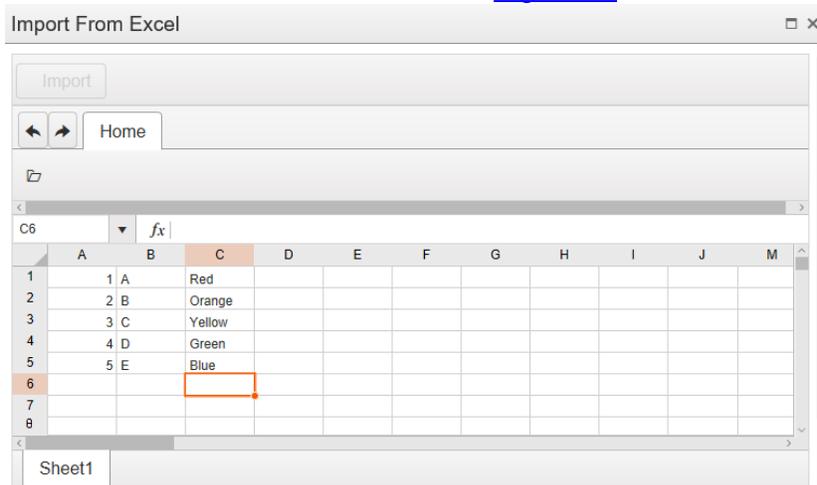


Figure 22: Import from Excel

To Import from Excel

1. Click **File**→**Import from Excel**.
2. The Import from Excel screen opens, as shown in [Figure 21](#).
3. Click the file folder icon  in the top left corner above the spreadsheet.
4. A File Explorer window opens.
5. Select the Excel file to import.
6. Composer performs validation checks.

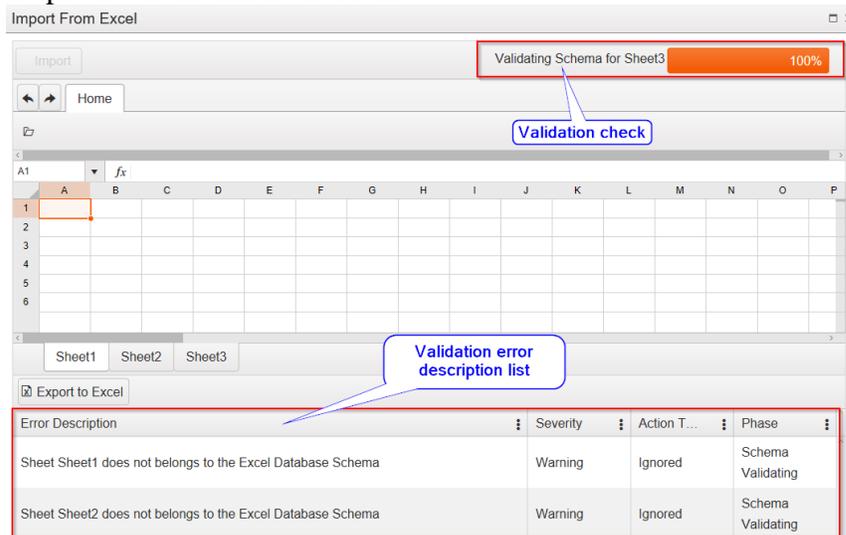


Figure 23: Import Validation Checks

If the spreadsheet data passes the validation checks, it will be imported into Composer.

If the data does not pass the validation checks, it will not be imported, as shown in [Figure 23](#). Composer displays a description of errors, with fields for severity, action taken, and phase.

7. Click the “Import” button
8. A notification saying that the database has been imported displays in the bottom right corner of the Composer screen.

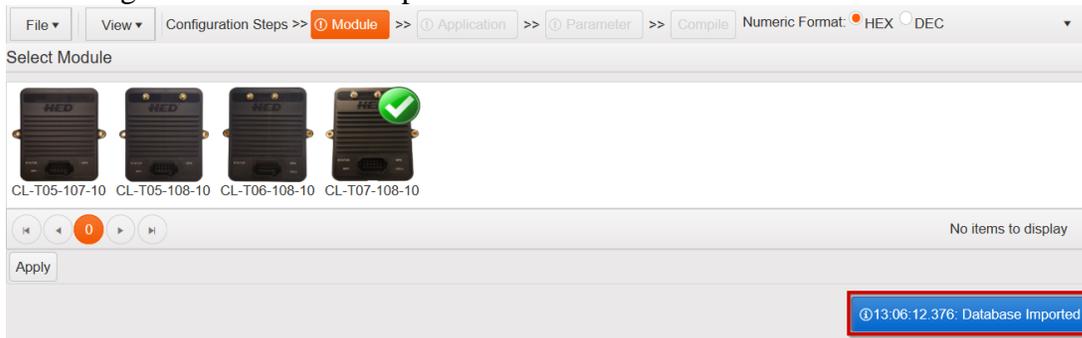


Figure 24: Successful Database Import Notification

6.1.1.2 View

Selecting View accesses the [Font Size](#) and [Theme settings](#).

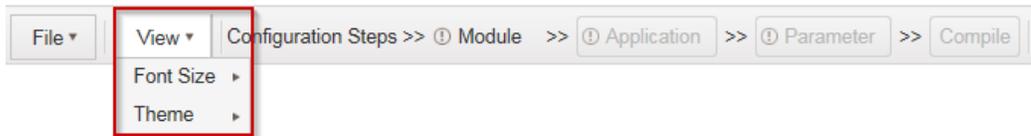


Figure 25: View Menu

6.1.1.2.1 Font Size

The Font Size property allows the user to change the font size of all text in the application. Font sizes are changed upon selection.

6.1.1.2.2 Theme

Themes allow the user to change backgrounds and colors of the web pages. Themes are changed upon selection.

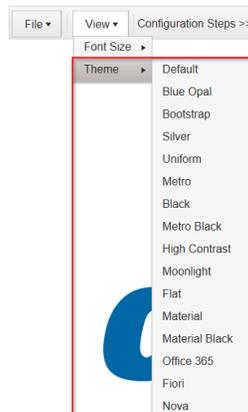


Figure 26: Theme Menu

6.1.1.3 Configuration steps

The [Configuration Steps](#) header walks the user through the minimum settings needed to move to the next step. They are shown in [Figure 25](#).



Figure 27: Configuration Steps Header

The steps are:

1. Selecting a [module](#).
2. Selecting the [applications to run](#).
3. Setting up [parameters](#).
4. [Compiling](#) the project.

The Configuration steps are explained in detail in [Section 7](#).

An orange highlighted box indicates the step selected, as shown in [Figure 26](#). The main window will load with the current step's properties.

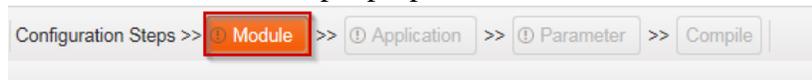


Figure 28: Highlighted Configuration Step

Note: A grayed out step means that the previous step needs to be completed first. When the step has met the minimum requirements, the  will change to  and the next step will become selectable.

6.2 Display Pane

The Configuration Steps open in the Display Pane. When CANect® Composer first opens, the CANect® logo is shown in the Display Pane.

6.3 Column Settings

To change the column settings, right click on the three dots at the right of the column. There are four settings: Sort Ascending, Sort Descending, Columns, and Filter.

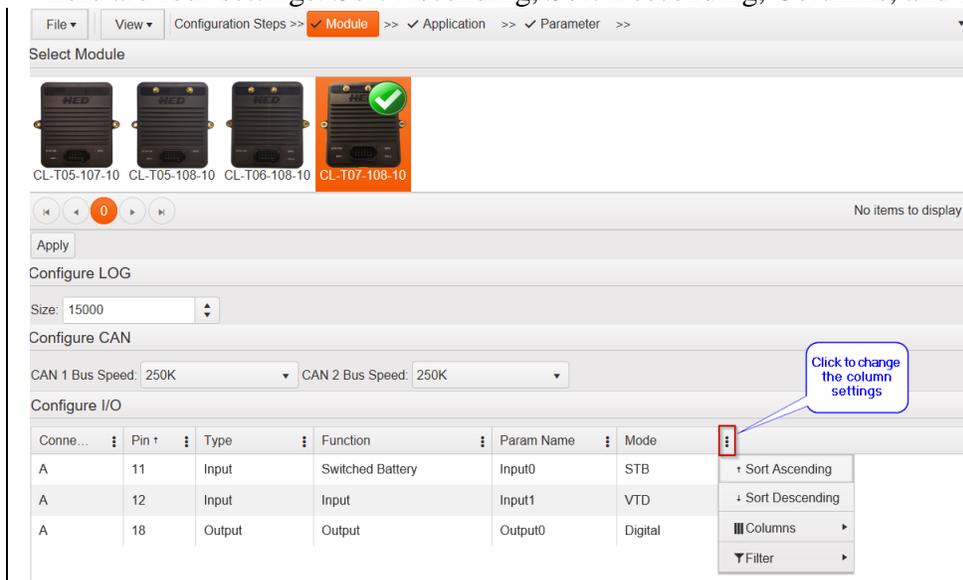


Figure 29: Column Settings

Settings:

Sort Ascending

Click Sort Ascending to organize the labels in the column in alphabetical order.

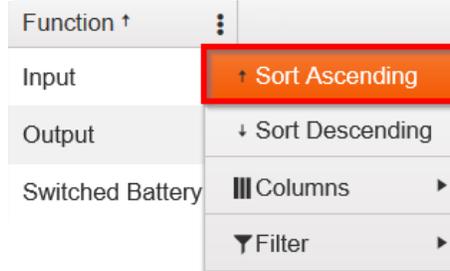


Figure 30: Sort Ascending Column Setting

Sort Descending

Click Sort Descending to organize the labels in reverse alphabetical order.

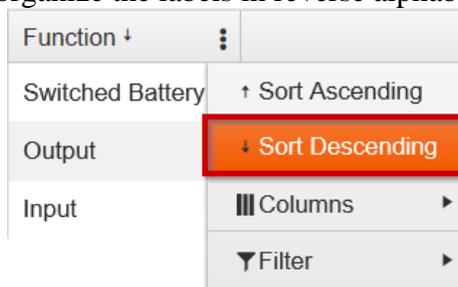


Figure 31: Sort Descending Column Setting

Columns

Click Columns to select which columns to display in the Configure I/O Pane.

Column Options

- Connector
- Pin
- Type
- Function
- Param Name
- Mode

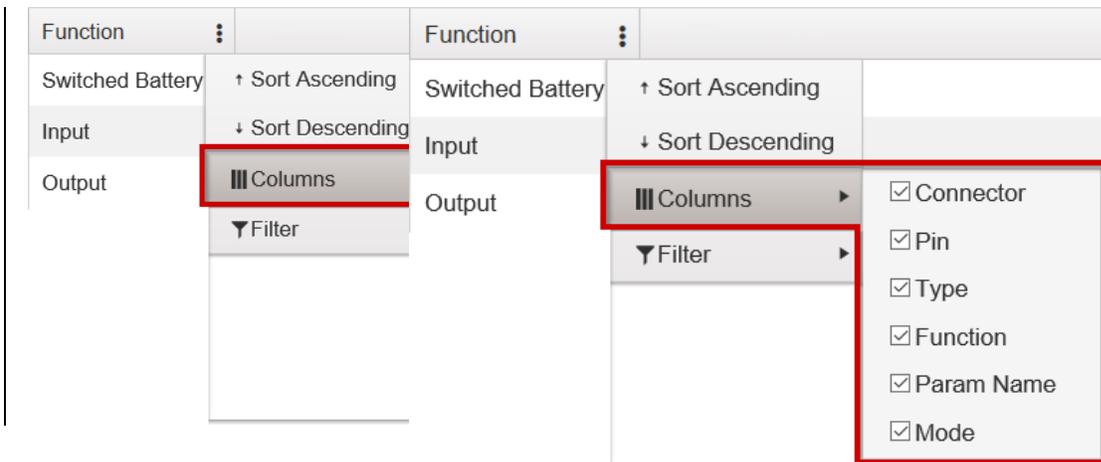


Figure 32: Columns Selection

Column Setting

Filter

Click Filter to specify which items to display

Filter Options

- Is equal to
- Is not equal to
- Starts with
- Contains
- Does not contain
- Ends with
- Is null
- Is not null
- Is empty
- Is not empty

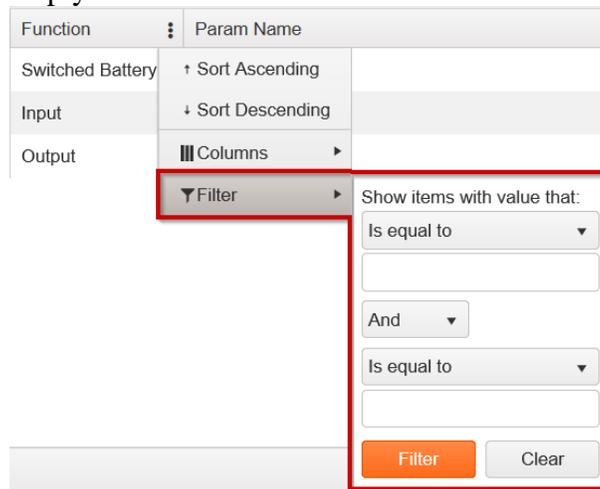


Figure 33: Filter Column Settings

6.4 Display Format

Select Decimal or Hexadecimal format for data being presented in CANect® Composer. Some data will always be displayed in a particular format. The Display Format is displayed when the main screen contains data that requires switching between HEX and Decimal format.

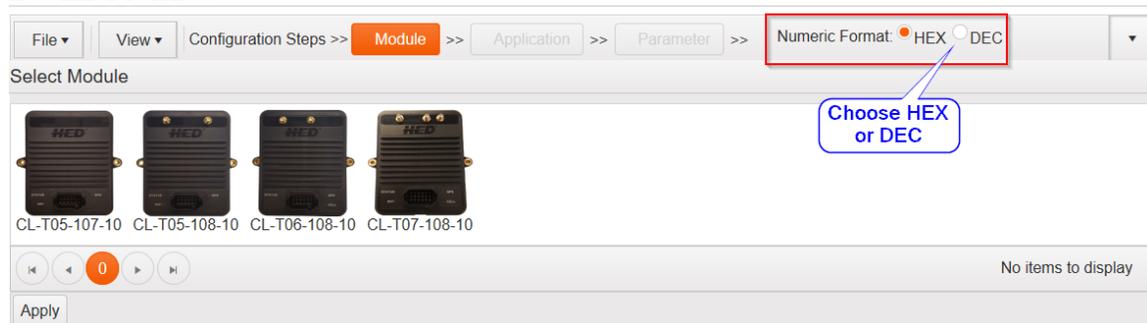


Figure 34: Numeric Format

Formats:

- HEX = Hexadecimal, where 0x is placed in front of number.
 - Base-16 system
 - 1-9 represented by Arabic numerals, 10-16 represented by the letters A,B,C,D,E,F
 - **Example:** Set 3 bits in a byte, using bit 1, 4, and 8. Data is displayed as 0x85, rather than 133 decimal

- DEC = Decimal
 - Base-10 system

6.5 Page Navigation

Page navigation is located in the bottom left corner of the display pane. Use the navigation to move forward and backward by one page, or to move to the first and last page of the list.

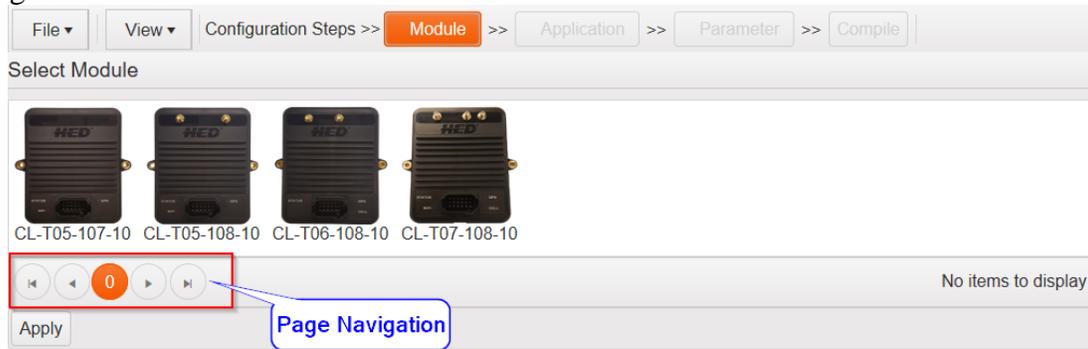


Figure 35: Page Navigation

Additional navigation options are available at each configuration step.



Figure 36: Additional Navigation Options

7 Configuration Steps

To configure the module to [read, log, or send data](#) to CANect® Portal, several steps need to be completed. The steps are:

1. [Selecting and Configuring the Module](#)
2. Select and [Configure the Applications](#)
3. [Configure the Parameters](#)

7.1 Selecting and Configuring the Module

7.1.1 Select Module Pane

When Configuration Step: Module is selected, all available modules are loaded. Available modules are shown by a picture with text to describe the part number.



Figure 37: Select Module Pane

1. Select a module to view the [CAN](#) and [I/O](#) configurations panes, as well as the datalogger file size.

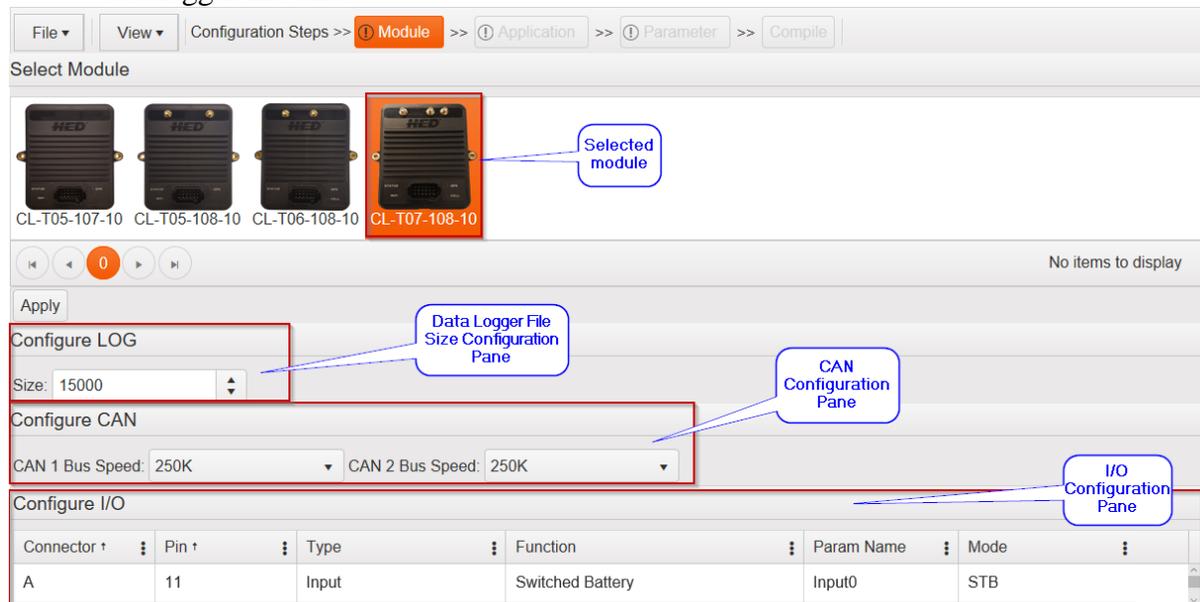


Figure 38: Module CAN and I/O Configuration Panes

- To set the selected module for use in the project, click the **Apply** button. Applying the module will set which properties of application are seen, as described in the [Selecting Application](#) section.

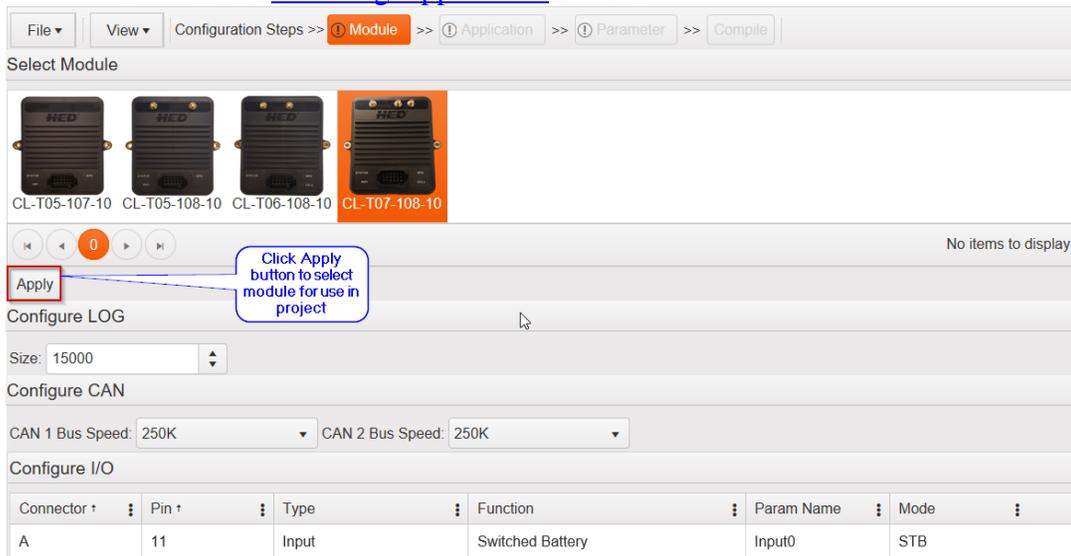


Figure 39: Apply Button

The selected module will have a green check mark overlaid.



Figure 40: Selected Module

7.1.2 Configure Data Logger File Size

In the Configure LOG box, set the size of the data logged files. Users can enter the size directly into the field, or adjust the value using the arrow buttons to the right of the field. The minimum value for the size range is 5000, and the maximum value for the size range is 1000000.



Figure 41 Configure Data Logger File Size

7.1.3 Configure CAN Pane

The Configure CAN pane allows the user to setup [CAN baud rates](#) on the module. Use the drop down boxes to select the desired CAN baud rate for each CAN bus. All applications enabled will use the CAN settings set here. The Configure CAN fields are populated with the default settings for the selected module.

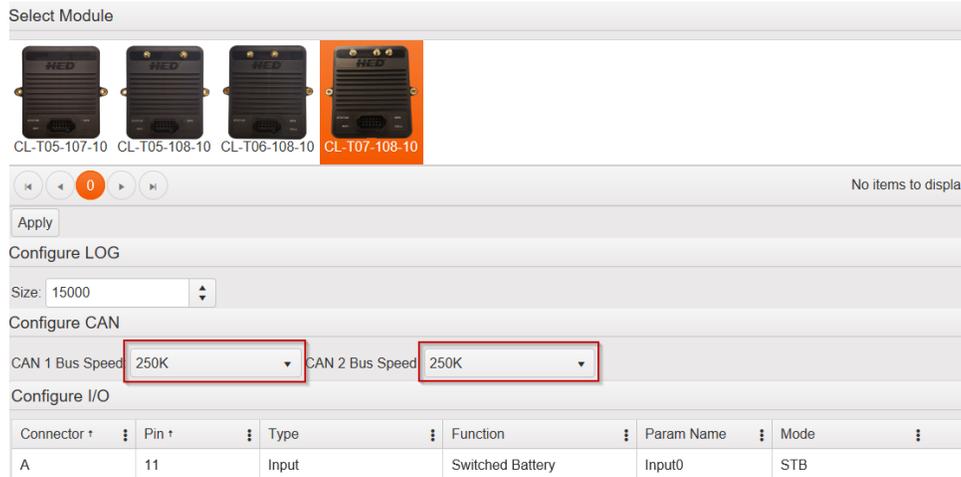


Figure 42: Configure CAN Pane

7.1.4 Configure I/O Pane

If using the modules' I/O pins, the mode must be set for each. Under the Mode column, set each pin to the desired mode. See [Mode Options](#) for descriptions of the settings.

Connector †	Pin †	Type	Function	Param Name	Mode
A	11	Input	Switched Battery	Input0	STB
A	12	Input	Input	Input1	VTD
A	18	Output	Output	Output0	Digital

Figure 43: I/O Mode Options

7.1.4.1 Mode Options

Input Modes:

- STB = Switch to Battery
 - 0 = OFF
 - 1 = ON
- VTD = Voltage to Digital
 - 0 to 4095

Output Modes:

- Digital = Either ON or OFF
 - 0 = OFF
 - 1 = ON

7.2 Selecting Applications

Applications can be enabled through the CANect® Composer's Application Pane.

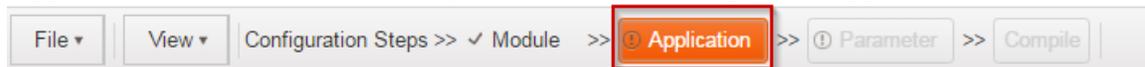


Figure 44: Application Configuration Step

7.2.1 Enable Application Pane

Enabling an application lets users set its properties and presets. To enable applications, click on the check boxes in the Enable column. To disable an application, click the checkbox again to un-check it.

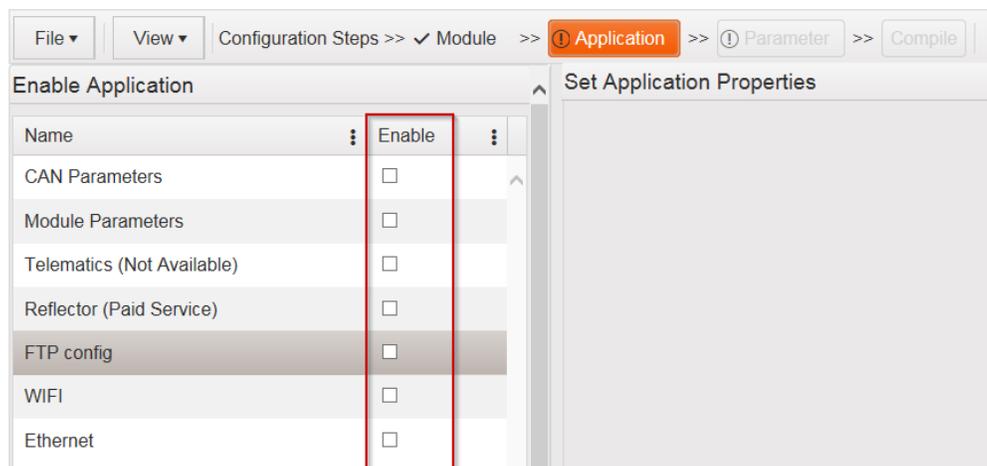


Figure 45: Enable Column

In order to select the Telematics application, enable either CAN Parameters, Module Parameters, or both. Doing so will change the (Not Available) text to (Paid Service) and enable the check box.

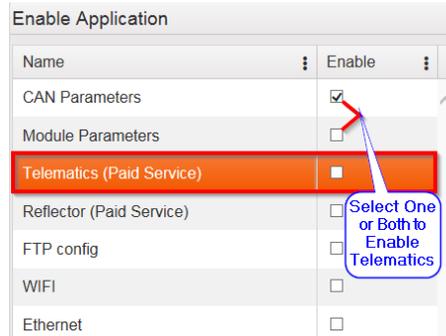


Figure 46: Select CAN or Module Parameters to Enable Telematics

7.2.1.1 Enabling an application populates several areas of CANect® Composer:

1 – The Application Properties pane is populated with the configuration of the currently selected application. Each application properties screen will contain the configuration data for the application.

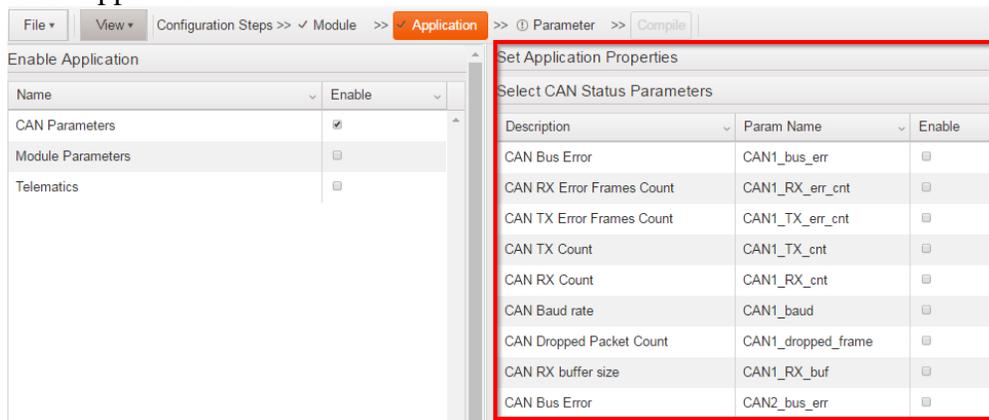


Figure 47: Populated Application Properties Pane

2 – Enabling the Telematics Application will enable the Telematics Preset tab in the parameter step.

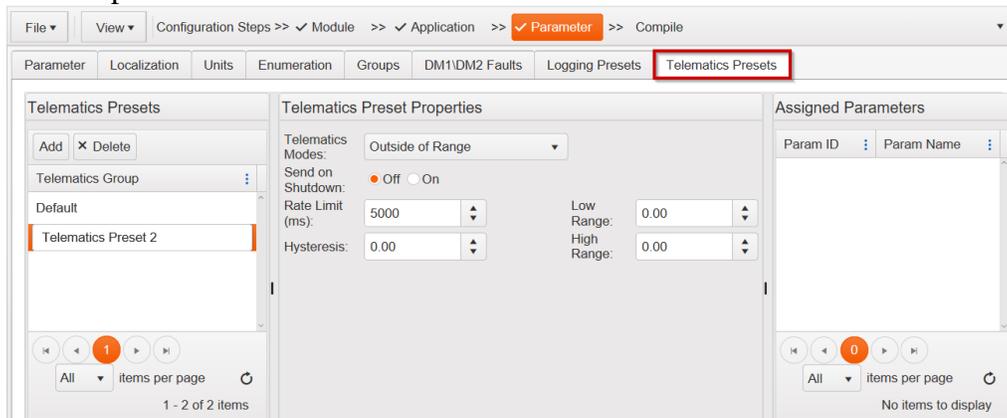


Figure 48: Telematics Preset Tab

3 – Enabling the Telematics Application will also add a property to enable and disable the parameter reporting on telematics. Inside the [Parameter Configuration tab](#), [Telematics is added](#).

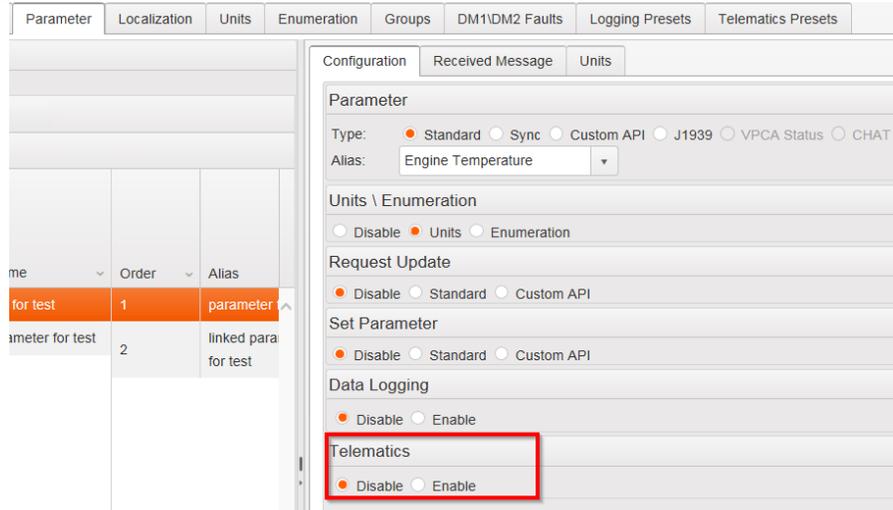


Figure 49: Disable or Enable Telematics Property

7.2.2 Application Types

7.2.2.1 CAN Parameters Application

In order to receive and transmit CAN data, the CAN Parameters application must be enabled. Enabling a CAN Status parameter will add it to the list of parameters found in the [parameter step](#). Disabling a CAN Status parameter will remove it from the list of parameters configuration.

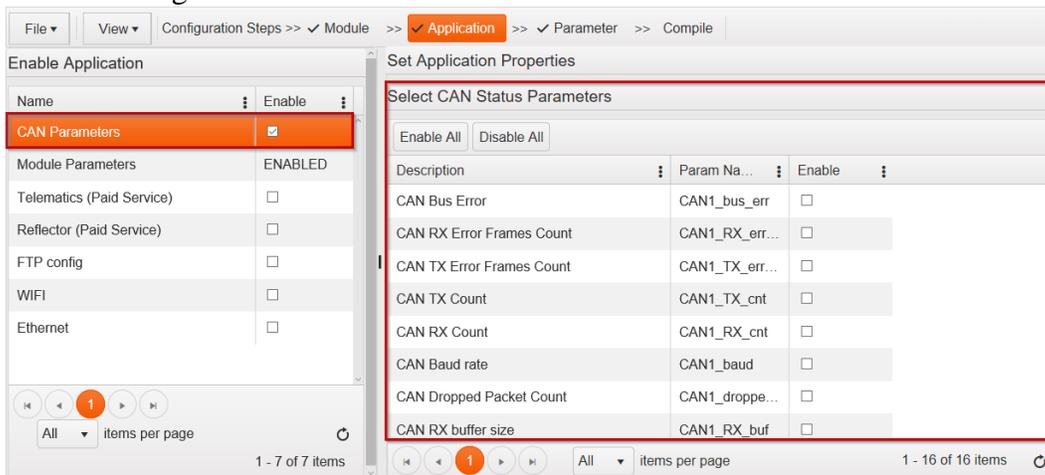


Figure 50: CAN Parameters

CAN Status Parameters: *Note: Not all parameters are available on every module.*
Users can enable or disable all of the CAN parameters.

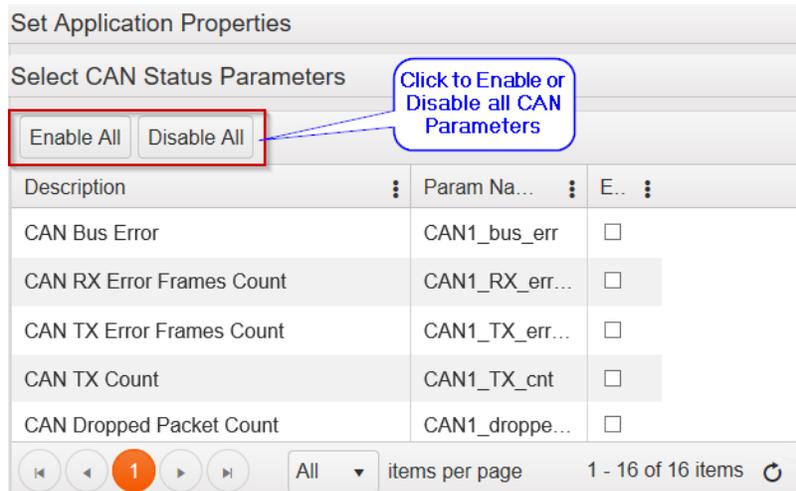


Figure 51 Enable or Disable All CAN Status Parameters

- CAN1_bus_err**
Communicates the bus status of CAN 1.
Values:
 0 = Active
 1 = Warning – Detected Errors – warning state
 2 = Passive – Detected Errors – passive state
 3 = Bus Off – Disabled due to bus-off
 4 = Stopped - Disabled
 5 = Unknown – Unknown Error
- CAN1_RX_err_cnt**
Communicates the number of receive errors on CAN 1 since power on.
Values: 0 to 4294967295
- CAN1_TX_err_cnt**
Communicates the number of transmit errors on CAN 1 since power on.
Values: 0 to 4294967295
- CAN1_TX_cnt**
Communicates the number of message transmitted on CAN 1 since power on.
Values: 0 to 4294967295
- CAN1_RX_cnt**
Communicates the number of message received on CAN 1 since power on.
Values: 0 to 4294967295

- **CAN1_baud**
Communicates what the baud rate is set to on CAN 1.
Values:
 - 20000 = 20K Baud
 - 50000 = 50K Baud
 - 100000 = 100K Baud
 - 120000 = 120K Baud
 - 250000 = 250K Baud
 - 500000 = 500K Baud
 - 1000000 = 1M Baud

- **CAN1_dropped_frame**
Communicates the number of dropped frames on CAN 1 since power on.
Values: 0 to 4294967295

- **CAN1_RX_buf**
Communicates the size of the receive buffer of CAN 1.
Values: 0 to 4294967295

- **CAN2_bus_err**
Communicates the bus status of CAN 2.
Values:
 - 0 = Active
 - 1 = Warning – Detected Errors – warning state
 - 2 = Passive – Detected Errors – passive state
 - 3 = Bus Off – Disabled due to bus-off
 - 4 = Stopped - Disabled
 - 5 = Unknown – Unknown Error

- **CAN2_RX_err_cnt**
Communicates the number of receive errors on CAN 2 since power on.
Values: 0 to 4294967295

- **CAN2_TX_err_cnt**
Communicates the number of transmit errors on CAN 2 since power on.
Values: 0 to 4294967295

- **CAN2_TX_cnt**
Communicates the number of message transmitted on CAN 2 since power on.
Values: 0 to 4294967295

- **CAN2_RX_cnt**
Communicates the number of message received on CAN 2 since power on.
Values: 0 to 4294967295

- CAN2_baud**
 Communicates what the baud rate is set to on CAN 2.
 Values:
 - 20000 = 20K Baud
 - 50000 = 50K Baud
 - 100000 = 100K Baud
 - 120000 = 120K Baud
 - 250000 = 250K Baud
 - 500000 = 500K Baud
 - 1000000 = 1M Baud
- CAN2_dropped_frame**
 Communicates the number of dropped frames on CAN 2 since power on.
 Values: 0 to 4294967295
- CAN2_RX_buf**
 Communicates the size of the receive buffer of CAN 2.
 Values: 0 to 4294967295

7.2.2.2 Module Parameters Application

In order to use the modules' I/O and internal functionality, specific parameters need to be enabled. Enabling a module application property will add it to the list of parameters found in the parameter step. Disabling a property will remove it from the parameters step.

Additional properties can be selected to get specific information about the modules' peripheral devices. Some examples are GPS, CELL and WIFI.

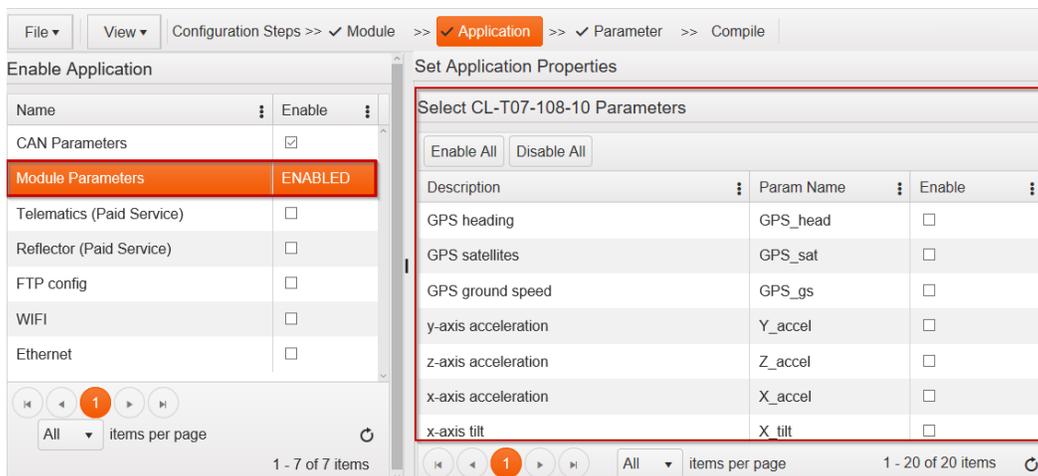


Figure 52: Module Hardware Parameters

Hardware Properties: *(Not all properties are available on every module.)*
Users can enable or disable all of the CAN parameters.

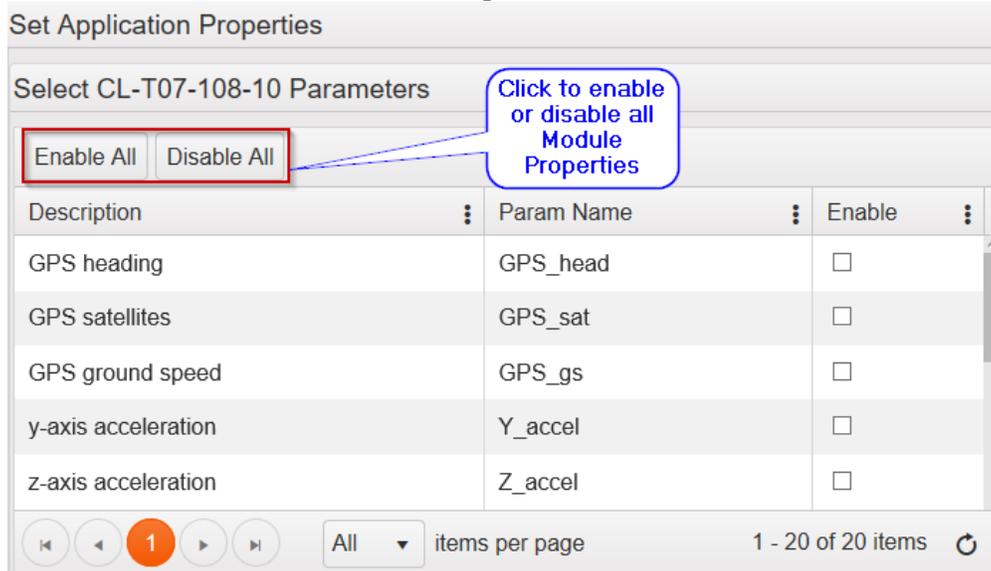


Figure 53 Enable or Disable All Hardware Properties

- Location**
 GPS Latitude, Longitude, Altitude, Time and Date
 Value: String of the Coordinates
 Units:
 Latitude in degrees
 Longitude in degrees
 Altitude in meters
 Time in UTC
 Date in Month/ Day/Year

- **GPS_head**
GPS Heading
Value: 0 – 360 degrees

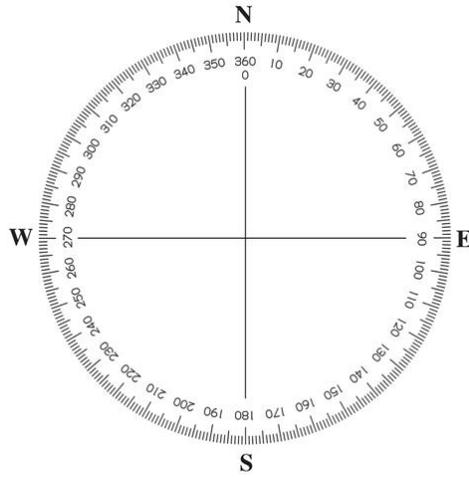


Figure 54: GPS Heading

- **GPS_sat**
Number of satellites detected.
Value: 0 to 4294967295
- **GPS_gs**
Ground Speed.
Value: 0 to 4294967295 meters per second
- **WIFI_connect**
Reports if the WIFI is connected.
Value:
 - 0 = Disconnected
 - 1 = Connected
 - 2 = Error
- **WIFI_scan**
Reports the available WIFI networks.
Value: List containing all the WIFI networks.
- **Cell_connect**
Reports the cell connection status.
Value:
 - 0 = Disconnected
 - 1 = Connected
 - 2 = Error
- **Cell_str**
Reports the cell signal strength
Value: 0 – 100%

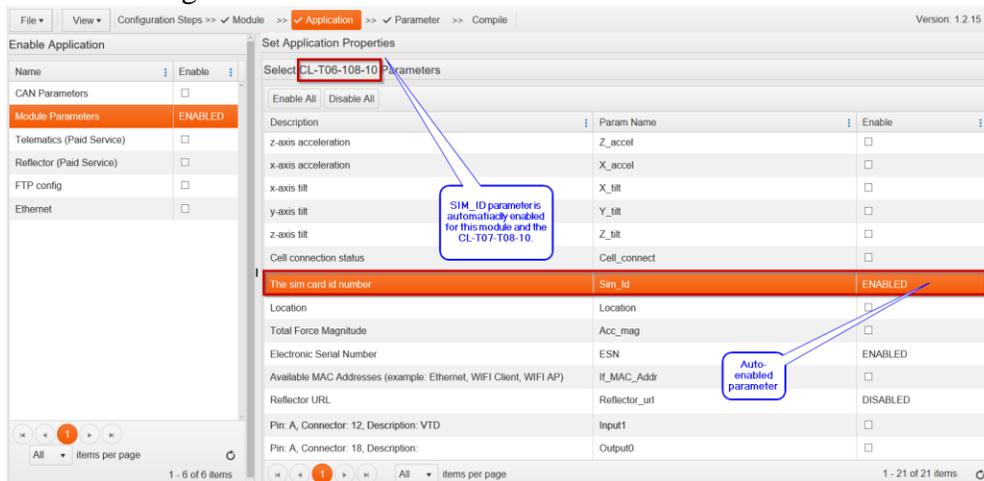
- **SIM_id**

The SIM card's 20 digit number; used for billing purposes and displays in CANect Portal

This parameter is only on modules with SIM IDs, the CL-T06-108-10 and the CL-T07-T08-10.

Auto enabled on CL-T06-108-10 and CL-T07-T08-10 modules, and cannot be disabled

Value: 20 digit number.



- **Input0 and Input 1**

Inputs will show up as InputX, where X = 0 – number of inputs.

Values:

STB

0 = OFF

1 = ON

VTD

0 - 4095

- **Output0**

Outputs will show up as OutputX, where X = 0 through number of outputs.

Values:

Digital

0 = OFF

1 = ON

- **ESN**

Electronic serial number of the asset. This parameter is automatically selected.

- **If_Mac_Addr**

Available Mac Addresses

If_MAC_Address displays the Network Interfaces that contain a MAC () address currently available on the modules. The parameter will display the list of addresses with the name of the interface and the MAC address of the interface.

Typically our modules will display 3 interfaces eth0(Ethernet), wlan0(wireless), and uap0(access point)

Example:

```
eth0 4A:F5:A5:B2:21:EE
mlan0 00:06:C6:48:3F:99
uap0 00:06:C6:48:3F:99
```

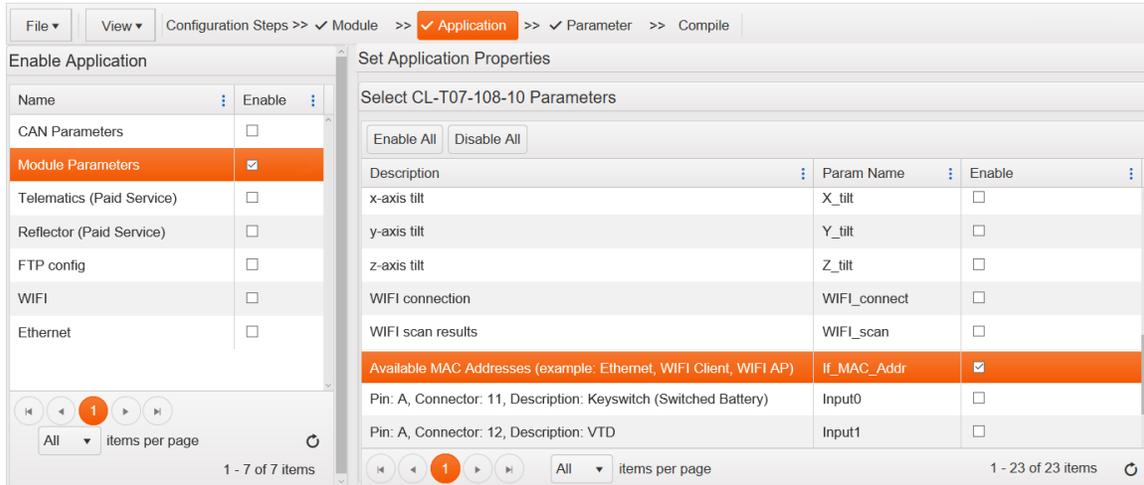


Figure 55: Available MAC Addresses

- **Reflector_url**

Reflector URL. This parameter is automatically selected based on selection of Reflector application. This property is hidden from CANect Portal users. Displays the text parameter with the URL used for Reflector

- **Reflector_status**

Reflector Status This parameter is automatically selected based on selection of Reflector application. This property is hidden from CANect Portal users. Integer bit mapped selection of what is selected for Reflector

- Allow HTTPS Access = 1
- Allow SSH Access = 2
- Allow WEBSocket Access = 4
- Allow Communication Through WIFI = 8
- Allow Communication through Ethernet = 16
- Allow Communication through Cell = 32

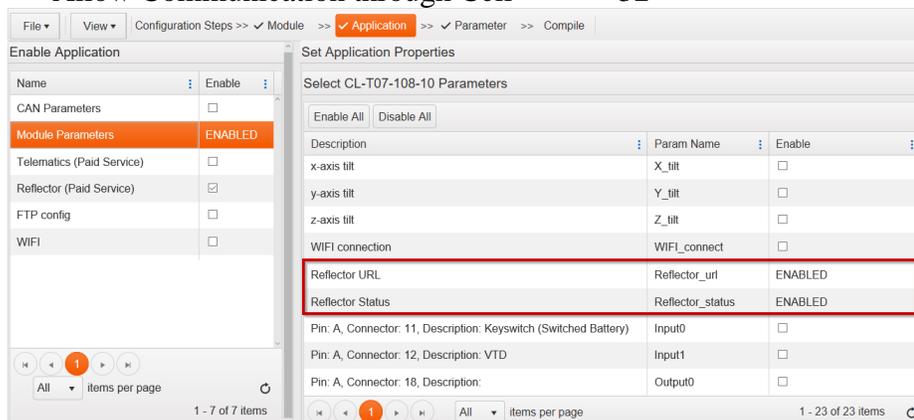


Figure 56: Reflector URL and Status Properties

- **Acc_mag**
Total force magnitude. Currently only 2G mode is supported.
Value Range:
12bit resolution = 0 – 4096
In 2G (default) mode the sensitivity is 1024 counts/g.

Note: Below is an image showing the orientation of the X, Y, and Z axis for the module. See [Figure 57](#)

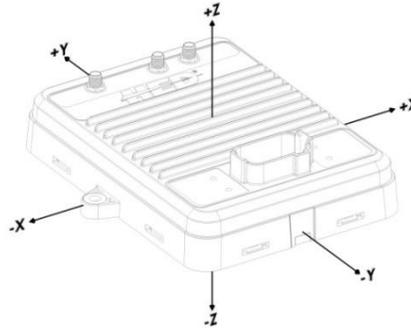


Figure 57: X, Y, & Z Acceleration Planes

- **y-axis acceleration**
Acceleration in the y-axis. Currently only 2G mode is supported.
Value Range:
12bit resolution = 0 – 4096
In 2G (default) mode the sensitivity is 1024 counts/g.
- **z-axis acceleration**
Acceleration in the z-axis. Currently only 2G mode is supported.
Value Range:
12bit resolution = 0 – 4096
In 2G (default) mode the sensitivity is 1024 counts/g.

- **x-axis acceleration**

Acceleration in the x-axis. Currently only 2G mode is supported.

Value Range:

12bit resolution = 0 – 4096

12bit resolution = 0 – 4096

In 2G (default) mode the sensitivity is 1024 counts/g.

Note: Below in [Figure 58](#) is an image showing the various module mounting orientations and the expected X, Y, and Z values when the module is not moving:

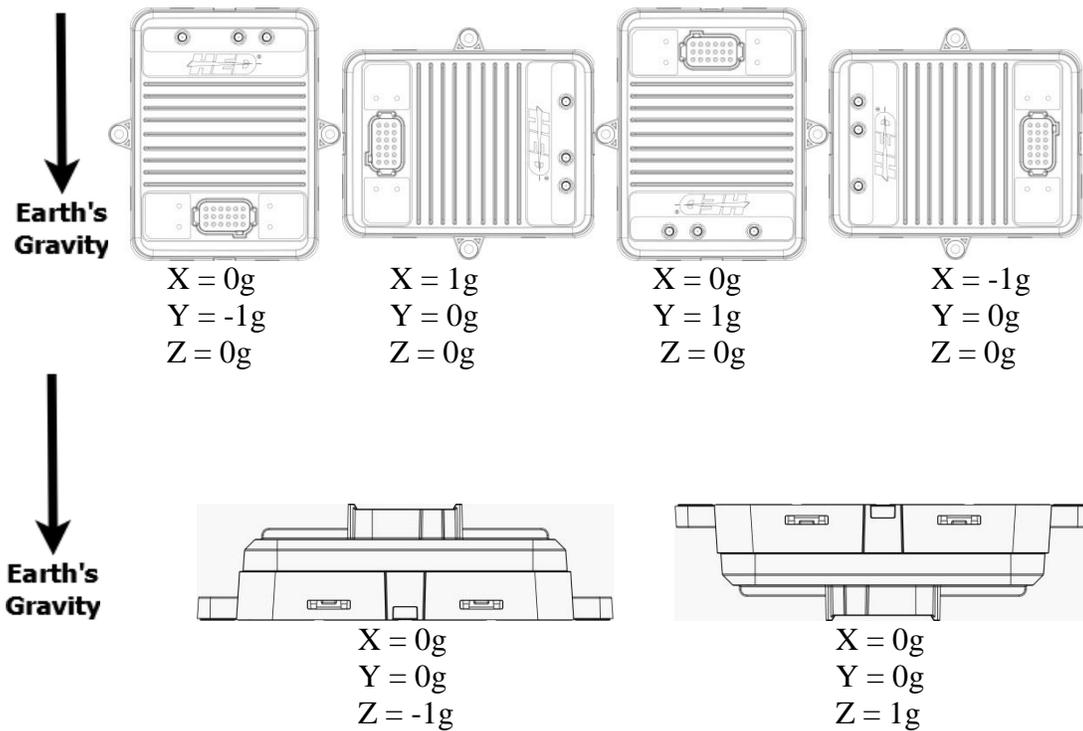


Figure 58: Expected X, Y, and Z Values when Module Not In Motion

- **x-axis tilt**

Tilt in the x axis

Values:

+/- 180 degrees

- **y-axis tilt**

Tilt in the y axis

Values:

+/- 180 degrees

- **z-axis tilt**

Tilt in the z axis

Values: +/- 180 degrees

7.2.2.3 Telematics Application

Enable the Telematics application to send any of the Modules Status, CAN Status, or CAN parameter data to CANect® Portal. To connect to the CANect® Portal website, several properties have to be configured.

Note: Telematics is a Paid Service.

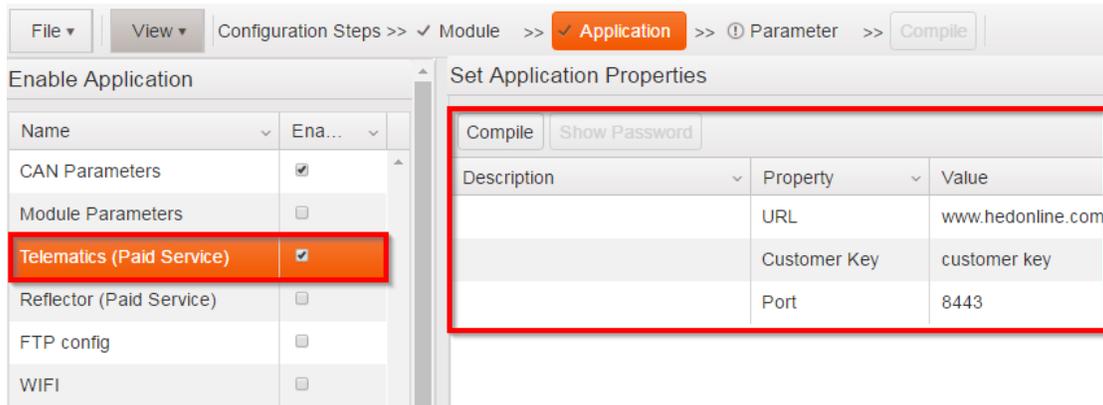


Figure 59: Telematics Properties

Telematics Properties:

- **URL**
A URL will be provided to each customer to access the CANect® Portal website. It must be typed in.

Note: Do not include “https://” prefix

- **Customer Key**
Each customer shall receive a unique customer key that must be typed in.
- **Port:**
The Port is defaulted to 8443. This number does not need to be changed. Port is shown in case a port change is needed in the future.

7.2.2.4 Reflector Application

Enable [Reflector](#) to allow access to the module from a PC through View.

Note: Reflector is a Paid Service

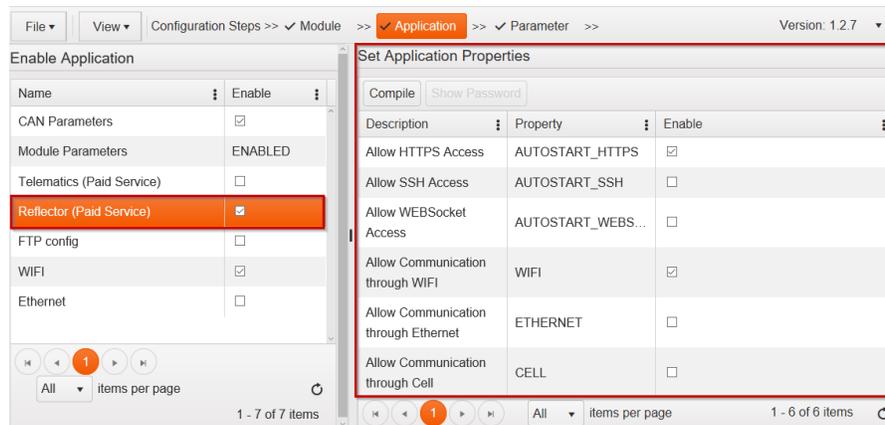


Figure 60: Reflector Properties

Reflector Properties:

- **AUTOSTART_HTTPS**
Allow HTTPS access.
 - Checked=enabled
 - Unchecked=disabled
- **AUTOSTART_SSH**
Allow SSH access.
 - Checked=enabled
 - Unchecked=disabled
- **AUTOSTART_WEBSOCKET**
Allow WEB sockets.
 - Checked=enabled
 - Unchecked=disabled
- **WIFI**
Allow Communication through WIFI
 - Checked= enabled
 - Unchecked=disabled
- **ETHERNET**
Allow Communication through Ethernet
 - Checked=enabled
 - Unchecked=disabled
- **CELL**
Allow Communication through Cell
 - Checked=enabled

- Unchecked=enabled

The **Compile** button will generate the file that can loaded to the module. The file is created in Folder/File named YalerTunnel/YalerTunnel.

Note: File name should not be modified.

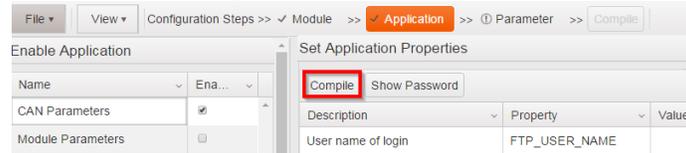


Figure 61: Compile Button

7.2.2.5 FTP Application

The FTP Application allows the user to configure how the collected log files are automatically sent to the FTP site. This is easier than manually retrieving the files from the module. It also lets users enable or disable a [SFTP](#) connection.

Enable the [FTP](#) application to automatically move the log files on the module to the set FTP site.

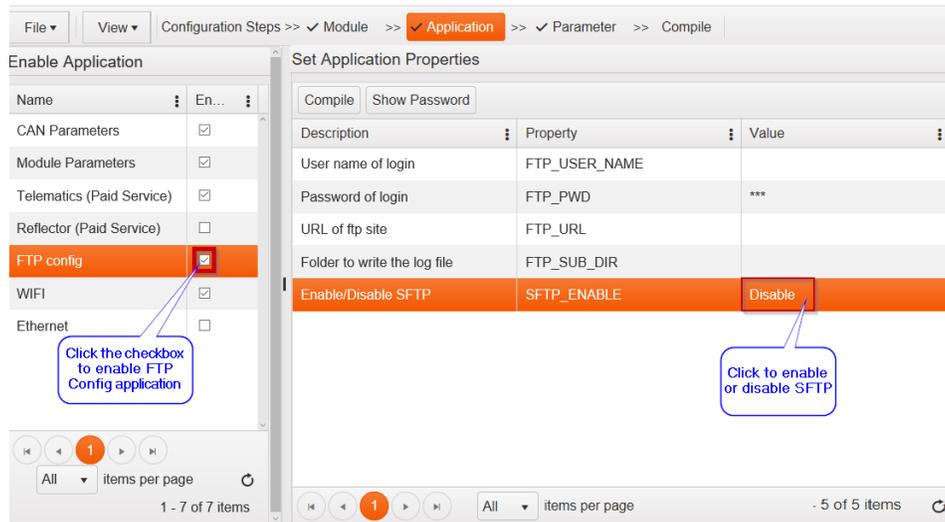


Figure 62: FTP Properties

FTP Properties:

- **FTP_USER_NAME**
The username needed to log onto FTP site.
- **FTP_PWD**
The password needed to log onto FTP site.
- **FTP_URL**
The URL needed to access the FTP site.

- **FTP_SUB_DIR**
Specify a folder where module log files will be placed. Inside the folder each module will create another folder using its serial number. The serial number folder will contain the stored logs.
- **SFTP_ENABLE**
Switch between secure FTP (SFTP) and standard FTP

The **Compile** button will generate the file that can be loaded on the module.
File name: *perm_settings.cfg*

*Note: The file name should **not** be modified.*

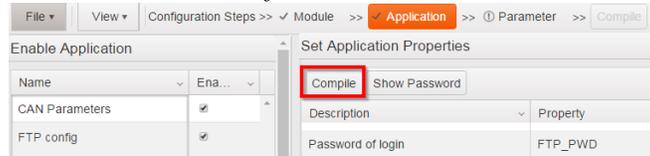


Figure 63: Compile Button

The **Show Password** button will show the text string entered for the password instead of the ***.

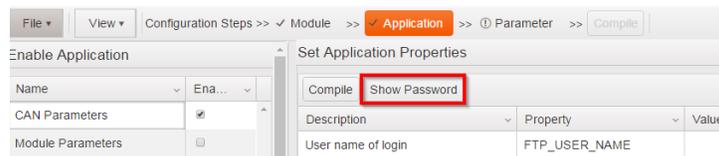


Figure 64: Show Password Button

7.2.2.6 WIFI Application

[Enable the WIFI application](#) to setup the Host and Client settings. Up to 20 networks can be defined.

Note: This application is only available if the CANect module has Wi-Fi.

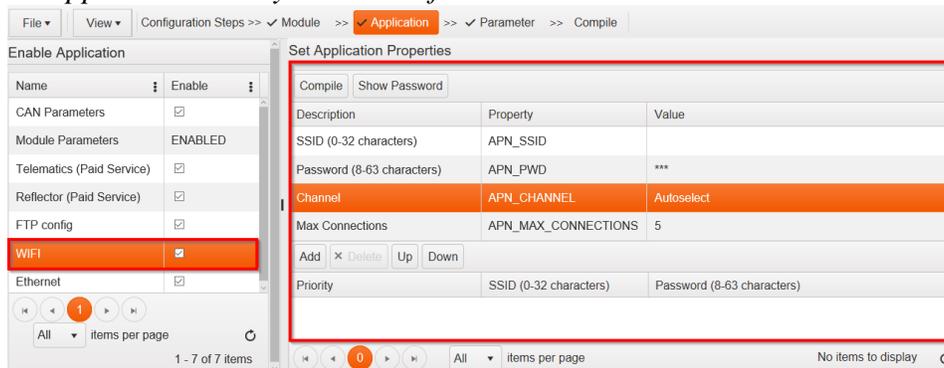


Figure 65: WIFI Properties

APN WIFI Properties:

- **APN_SSID:**
APN is a term for a network name. When a wireless network is set up, a name is given to it to distinguish it from other networks in the area. The name is shown when a computer tries to connect to the wireless network. Use %S to insert the CANect® module's serial number.

Note: Network names need to be unique. This property does not work if there are networks in the area with the same name.

The SSID name can be a max of 32 bytes long.

- **APN_PWD:**
Password of the network to connect with.
- **APN_CHANNEL:**
The channel to connect on. The value defaults to Autoselect, so the module automatically detects and selects a WIFI channel from a saturated environment. To change the default value, click the Value field and choose a specific channel from the dropdown menu.

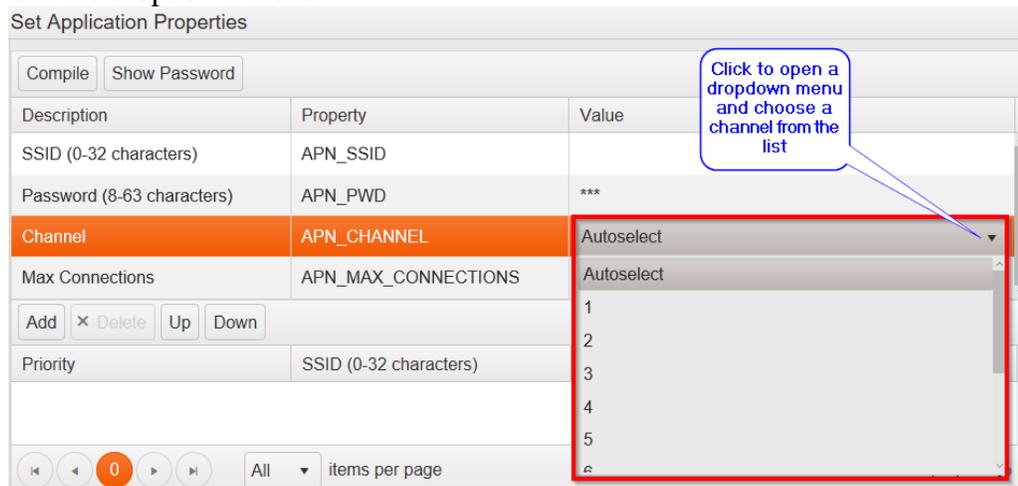


Figure 66 Channel Value Dropdown Menu

- **APN_MAX_CONNECTIONS:**
The max number of devices that can be connected at one time. This sets the maximum number of items that can connect to the CANect module at 1 time. The customer may want to change to only allow 1 at a time so that two techs are not changing things at the same time.

Client WIFI Properties

- **SSID1-20:**
Name of the network the module will connect with.
- **PASSWORD1-20:**
Password of the network the module will connect with.
- **PRIORITY1-20:**
Module will try to connect to the lowest priority number first. Range: 1 to 20.

The **Compile** button will generate the file that can loaded on the module.
File name: *wifi_settings.cfg*

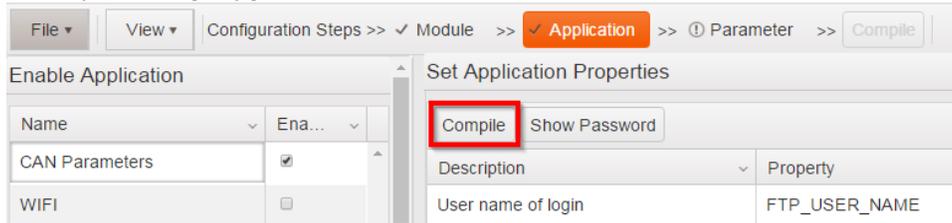


Figure 67: Compile Button

The **Show Password** button will show the text string entered for the password instead of the ***.

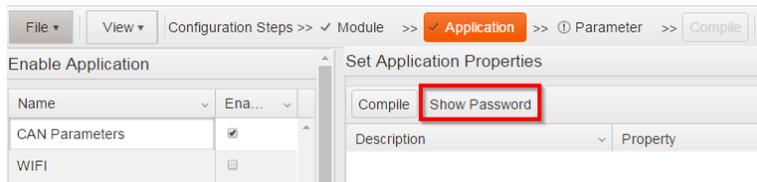


Figure 68: Show Password Button

7.2.2.7 Ethernet Application

Enable the Ethernet Application to setup the Ethernet, IPv4, and IPv6 settings.

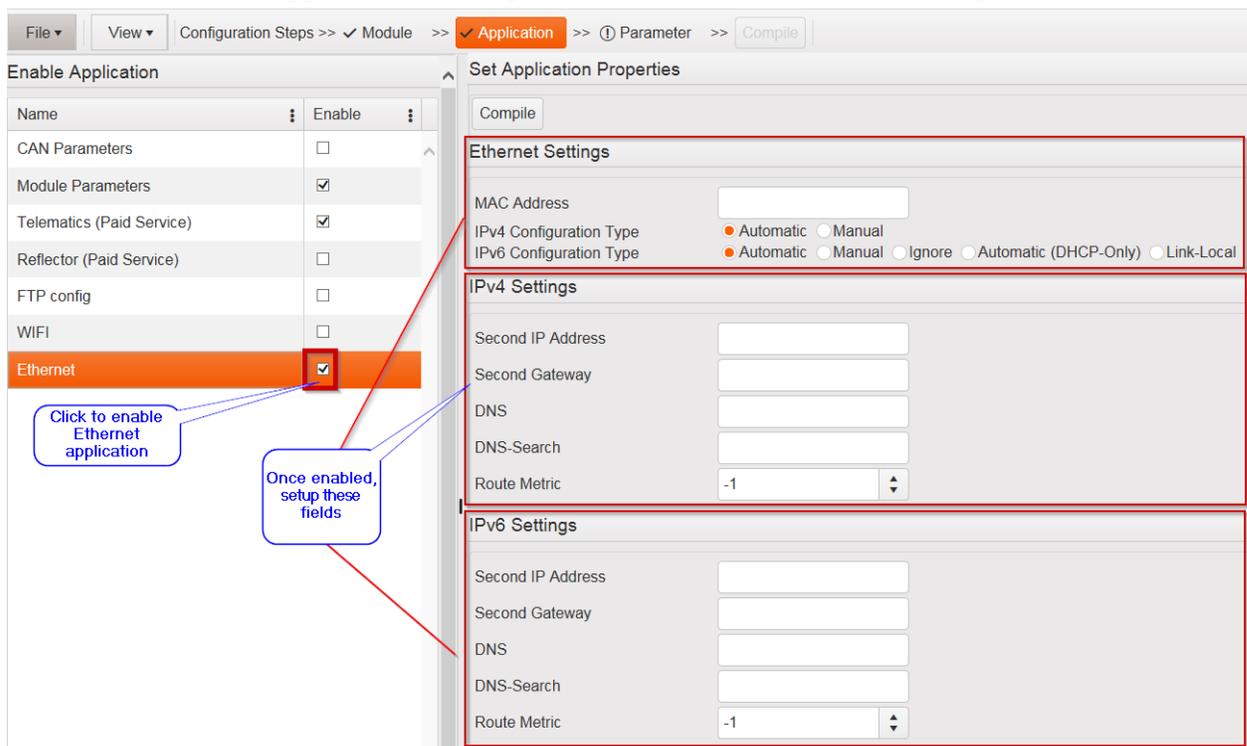


Figure 69: Ethernet Properties

Ethernet Properties:

- **MAC Address**
 - Leave blank to have the module automatically set a MAC address.
 - . Use a randomly generated MAC address or enter a MAC address to give the CANect module a static address.
 - Format
VV:VV:VV:VV:VV:VV
Where VV is 2 Hexadecimal numbers
- **IPv4 Configuration Type**
 - Automatic
 - Manual – Must Configure the IPv4 Settings
- **IPv6 Configuration Type**
 - Automatic
 - Manual – Must Configure the IPv6 Settings
 - Ignore
 - Automatic DHCP-Only
 - Link-Local
- **IPv4 IP Address**
 - This is required if Manual IPv4 Configuration selected, optional otherwise.
 - Format
xxx.xxx.xxx.xxx/yy
xxx must be between 0 and 255.
yy must be between 0 and 32.
If /yy is excluded, assume 24.
- **IPv4 Gateway**
 - Optional and requires IPv4 IP Address set.
 - Format
uuu.uuu.uuu.uuu
uuu must be between 0 and 255,
- **IPv4 DNS**
 - This is a semicolon separated list if multiple DNS addresses are listed. First address is used first, followed by seconds, etc
 - Format
ddd.ddd.ddd.ddd;ddd.ddd.ddd.ddd (Optional)
ddd must be between 0 and 255.

- **IPv4 DNS-Search**

Semicolon separated for multiple entries. Can be any length string, but if you need to limit string length allow at least 256 chars.

Format

ZZZZZZZZZZ;ZZZZZZZZ

ZZZZZZZZZZ is the domain to append for dns lookups.

- **IPv4 Route Metric:**

The route metric is the default metric given to routes. The lower the number the higher the priority of connection to the Internet if connection is available.

Format

mmmmmm (Optional).

mmmmmm: -1 to 4294967295.

If -1 then the route metric is chosen based on interface type and this is the default if not configured. A -1 means 100 for Ethernet, 500 for Wi-Fi, and 600 for Cell

- **IPv6 IP Address**

This is required if Manual IPv6 Configuration selected, optional otherwise

Format

hhhh:hhhh:hhhh:hhhh:hhhh:hhhh:hhhh:hhhh

hhhh is 4 hexadecimal characters. Not all 8 hhhh values are required.

Below are various supported IPv6 address notations:

IPv6 address	Prefix length (bits)	Description	Notes
::	128	unspecified	Used for default route and <i>router solicitations</i> . cf. 0.0.0.0 in IPv4
:::1	128	loopback address	cf. 127.0.0.1 in IPv4
::ffff:a.b.c.d	96	IPv4 mapped IPv6 address	The lower 32 bits are the IPv4 address. Used in socket API's to represent IPv4 hosts.
fe80::	10	link-local	Unroutable autoconfigured addresses used on a LAN, e.g. for DHCPv6
fc00::	7	unique local	Addresses used only within an <i>autonomous system</i> , unroutable globally. Cf. RFC 1918 addresses such as used in NAT.
ff00::	8	multicast	
2000::	3	global unicast	All global unicast addresses currently begin with 2.

- **IPv6 Gateway:**
Optional and requires IPv6 Address set
Format
gggg:gggg:gggg:gggg:gggg:gggg:gggg:gggg ()
gggg is 4 hexadecimal characters.
Not all 8 gggg values are required.
- **IPv6 DNS**
Optional. This is a semicolon separated list if multiple DNS addresses are listed. First address is used first, followed by seconds, etc.

Format
ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff;ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff
ffff is 4 hexadecimal characters.
Not all 8 ffff values are required.
- **IPv6 DNS-Search:**
Domain to append for DNS lookups. Semicolon separated for multiple entries.

Format
aaaaaaaa
aaaaaaaa: Can be any length string, but if you need to limit string length allow at least 256 chars.
- **IPv6 Route Metric:**
Optional, the route metric is the default metric given to routes.
Format
nnnnnn The lower the number the higher the priority of connection to the Internet if connection is available.
nnnnnn: -1 and 1 to 4294967295.
If -1 then the route metric is chosen based on interface type and this is the default if not configured. A -1 means 100 for Ethernet, 500 for Wi-Fi, and 600 for Cell

7.3 Parameter Setup

Parameters are all the values that the user wants to monitor on the vehicle. The parameters are how the CANect module knows what data to log and how to present it. Parameters need to be set up to:

- Receive and transmit messages on the CAN bus.
- Log parameters on the module.
- Send and receive parameters in telematics.
- Send information to View

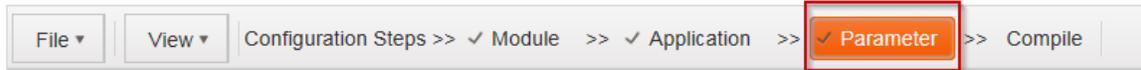


Figure 70: Parameter Configuration Step

Parameter Tab

The Parameter List shows all the parameters added to the project.

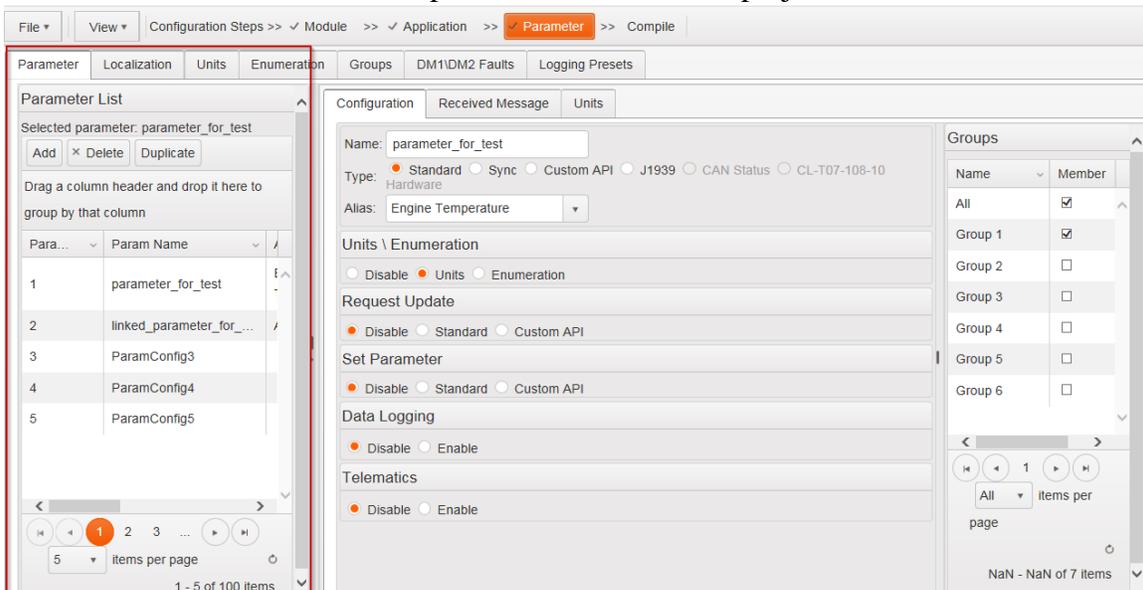


Figure 71: Parameter List

7.3.1.1 Parameter List Controls

Users can add, delete, or duplicate parameters. Add an empty parameter to create a new item and add in the information to be tracked. Delete a parameter if it isn't needed anymore. Duplicate a parameter if it is similar to another previously created parameter, and make necessary changes.

To add new parameters, click the **Add** button.

To delete a parameter, first select a parameter, and then click the **Delete** button.

To duplicate a parameter, first select a parameter, and then click the **Duplicate** button.

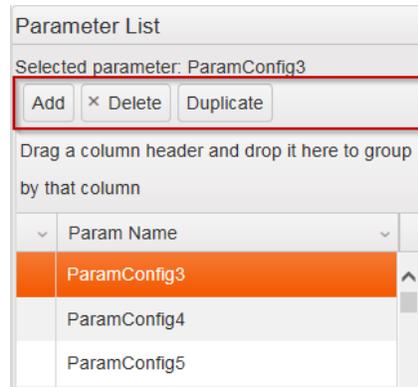


Figure 72: Parameter List Controls

Drag the divider bar left or right to see more configurations for the parameter. This shows the expanded parameter list, as pictured in [Figure 73](#).

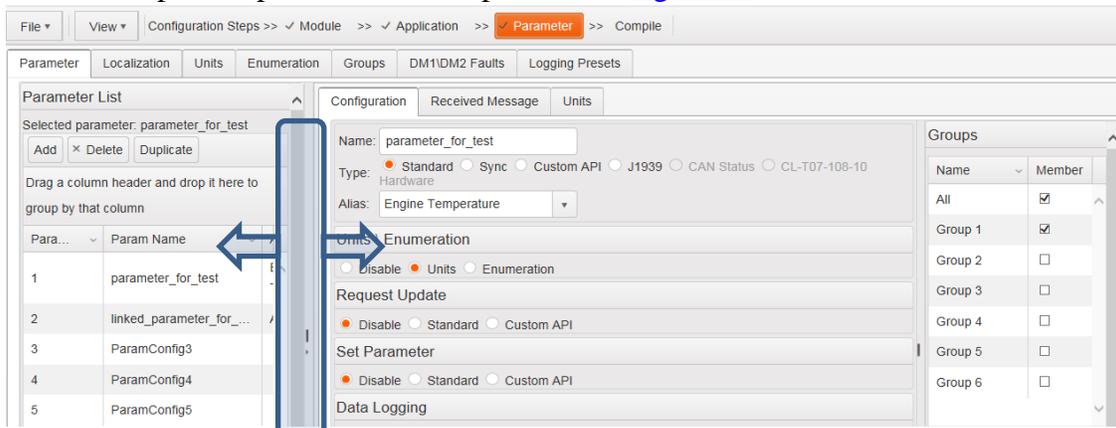


Figure 73: Divider Bar

Expanded Parameter list:

Param ID	Param Name	Alias	Enumeration	Units	Rec Message ID
3	ParamConfig3				0
4	ParamConfig4				0
5	ParamConfig5				0
6	ParamConfig6				0

Figure 74: Expanded Parameter List

7.3.1.2 Parameter - Configuration Tab

The Configuration tab sets up how the parameter is to collect data from the CAN bus. This tab also shows what groups the parameter is located in.

The screenshot shows the 'Configuration' tab for a parameter named 'ParamConfig1'. The 'Type' is set to 'Standard'. The 'Units' section has 'Disable' selected. The 'Request Update' section has 'Disable' selected. The 'Set Parameter' section has 'Disable' selected. The 'Data Logging' section has 'Disable' selected. The 'Telematics' section has 'Disable' selected. The 'Groups' panel on the right shows a table with 'All' and 'Member' columns, and a 'Member' checkbox checked for 'All'.

Figure 75: Parameter Configuration Tab

Parameter Configuration Properties:

- **Name:**
Type the name of the parameter. If the parameter is predefined from the Module or CAN Parameters, the name is fixed. This name is only used to identify the name within Composer.
- **Type:**
Type of parameter selected.
Options are:
 - Standard - (Default) Select Standard to define the raw data from a CAN message, allows conversions.
 - Can convert say an incoming value of Celsius to Fahrenheit , or engine RPM from 0.125 RPM/bit to 1 RPM/bit
 - Sync - Select sync to attach parameter to another parameter. Sync'd parameters will be passed with the parent parameter when called.

Note: Units or enumeration will not be used in logging, in View, or in Portal when sync is selected.

 - Custom API - Select custom API when assigning parameter through software configuration. Custom API reserves an ID to be filled the custom software application.
 - The parameter's value will be generated by custom software created by the user. The custom software is written inside of the Linux VM, not within Composer and should be used by advanced users only.
 - J1939 - Select J1939 to read DM1/DM2 or VIN messages from the CAN bus.

- CAN Status - Automatically selected when a CAN status parameter is selected.
-
- *Note: Cannot be selected for a user-created parameter.*
- Module Parameter - Automatically selected when a Module status parameter is selected.
 - *Note: Cannot be selected for a user-created parameter.*

The Sim_ID parameter is automatically created when the CANect module selected has a cellular modem and cannot be deleted by the user.

- **Alias:**
Shows the alias name from the Languages tab. If alias is used, local web sites will show the translated name of the parameter per the set language.
- **Units:**
Data shown on web site or in logged files can be converted into real units. Selecting units will enable the units tab within the parameter. Unit presets must be configured before unit options are selectable.

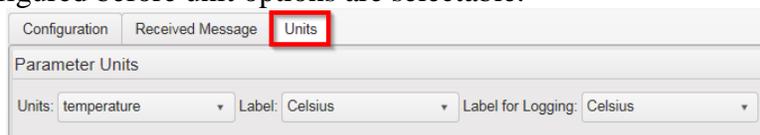


Figure 76: Units Tab

- **Enumeration:**
Data shown on web site or in logged files can be converted into enumerated values. Selecting enumeration will enable the enumeration tab within the parameter. Enumeration presets must be configured before enumeration options are selectable.



Figure 77: Enumeration Tab

- **String:**
Data shown on web site or in logged files can be converted into strings. This displays the value converted to ASCII characters.
Note: Only alphanumeric characters are supported.
- **Request Update:**
Selecting Request Update will enable the Request Update tab within the parameter. This allows the user to transmit a CAN message on report rate or automatically or by setting a transmit rate.

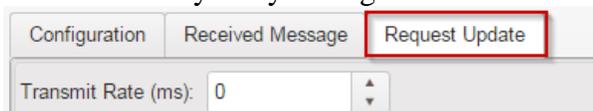


Figure 78: Request Update Tab

There are three Request Update options: Disable, Standard, and Custom API. Custom APIs allows the user to write C code for parsing the message. By enabling it, HED expects the user to go into a Linux VM and add their code in.

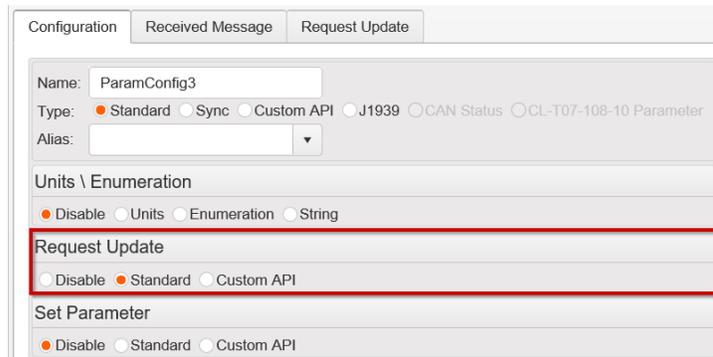


Figure 79: Request Update Options

Selecting the Standard or Custom API options opens the Request Update tab.

- Set Parameter:**
 Selecting Set Parameter will enable the Set Parameter tab within the parameter. This allows the user to transmit a CAN message when the parameter is set in View or Portal. The parameters values will be filled in the Data insert Location. Remaining bytes can be preloaded.

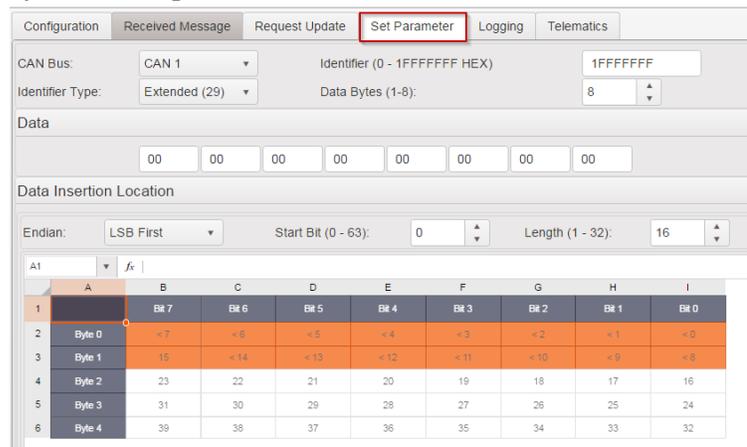


Figure 80: Set Parameter Tab

- Data Logging:**
 . Enables the Logging tab where user can set how and when to log the parameter locally on the CANect module.

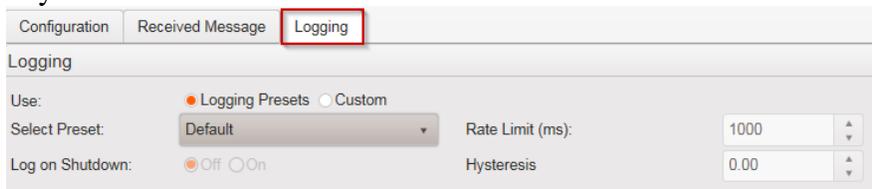


Figure 81: Logging Tab

- Telematics:**
 Select to send parameter to CANect® Portal. Enables the Telematics tab where the user configures when the parameter gets transmitted to Portal. This setting is only available when the Telematics application is enabled.



Figure 82: Telematics Tab

- Groups:**
 Show groups that the parameter is assigned to. It also allows the user to assign it to groups that have been already created, by checking or unchecking the box. By default, a parameter has to be part of the “All” group.

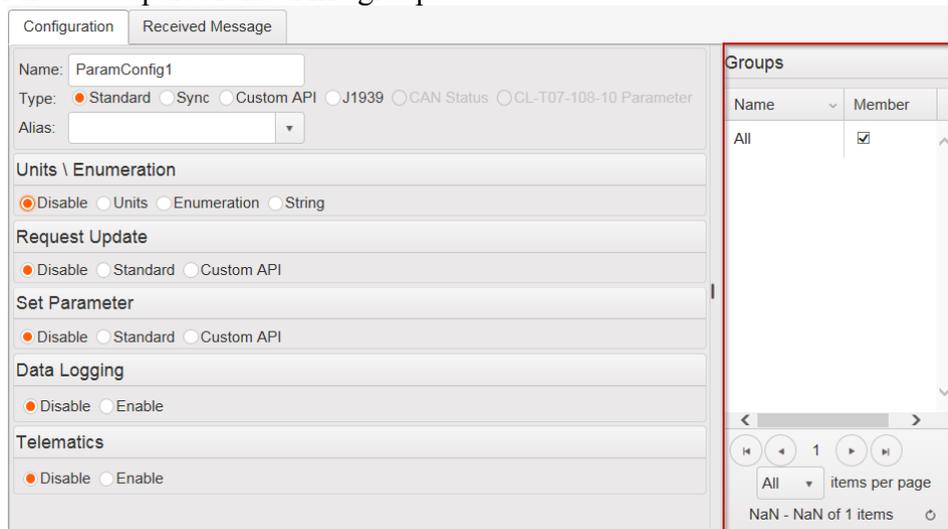


Figure 83: Groups Pane

7.3.1.3 Parameter - Received Message Tab

Use the Receive Message tab to configure the CAN data to be received.

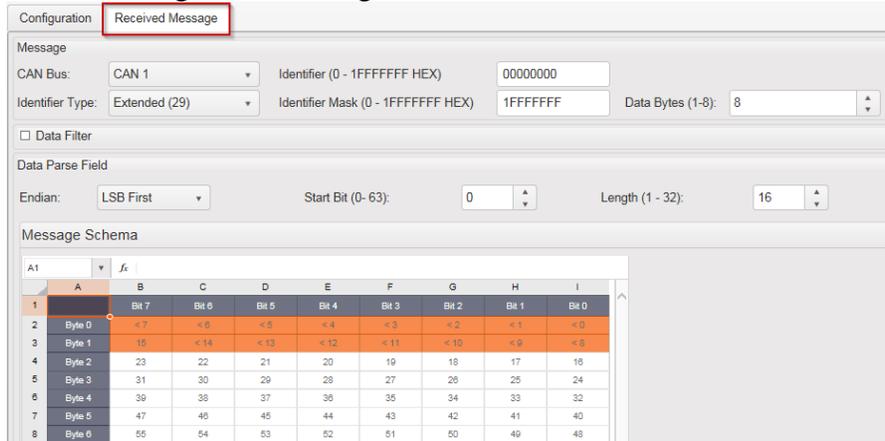


Figure 84: Received Message Tab

Received Message Parameter Properties:

Note:

If the configuration type is set to Custom API, the received tab will not be visible.

- **CAN Bus:**
Set the CAN Bus to receive the message on.

Note:

If the configuration type is set to Sync, this field follows the parent parameter.

- **Identifier Type:**
11 bit or 29 bit message type.

Note:

*If the configuration type is set to Sync, this field follows the parent parameter.
If the configuration type is set to DM1/DM2 Faults, this field is not available.*

- **Identifier:**
Based on Identifier Type, enter the 11 bit or 29 bit identifier to receive.

Note:

*If the configuration type is set to Sync, this field follows the parent parameter.
If the configuration type is set to DM1/DM2 Faults, this field is not available.*

- **Identifier Mask:**
11 bit or 29 bit identifier mask. The mask determines if the bit in the incoming CAN message needs to match the configured identifier.
0=Does not have to match
1= Does have to match

Note:

If the configuration type is set to Sync, this field follows the parent parameter. If the configuration type is set to DM1/DM2 Faults, this field is not available.

- **Data Bytes:**

Sets how many data bytes the CAN message contains. Changing the number of data bytes may update changes the Message Schema, Data Filter, Start Bit, and Data Length fields. The message being received must have the same number of data bytes otherwise the message will not be received.

Note:

If the configuration type is set to DM1/DM2 Faults, this field is not available.

- **Data Filter:**

Use the data filter to set data bytes as additional selection criteria. Data field contains Data and Masks fields:

Figure 85: Data Filter

- Data - set the data bits to receive.
- Mask - The mask determines if the bit in the incoming CAN message needs to match the configured identifier.
 - 0=Does not have to match
 - 1= Does have to match

Note:

If the configuration type is set to DM1/DM2 Faults this field is not available.

- **Endian:**

Tell the application how to read the bytes of the CAN data.

- LSB First - Data is packed least significant byte first. Byte 0 is least significant byte of data.
- MSB First – Data is packed most significant byte first. Byte 0 is most significant byte of data

Note:

If the configuration type is set to DM1/DM2 Faults, this field is not available.

Figure 86: Endian Drop Down Menu Options

- **Start Bit:**
Bit in the CAN message to start reading from.

Note:
If the configuration type is set to DM1/DM2 Faults this field is not available.

- **Length:**
How many bits to read from the start bit.

Note:
If the configuration type is set to DM1/DM2 Faults this field is not available.

- **Message Schema:**
Visual diagram of the CAN data to be received. The highlighted bits will be used to set the parameter data.

Note:
If the configuration type is set to DM1/DM2 Faults, Message Schema is not available.

	A	B	C	D	E	F	G	H	I
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
Byte 0	< 7	< 6	< 5	< 4	< 3	< 2	< 1	< 0	
Byte 1	15	< 14	< 13	< 12	< 11	< 10	< 9	< 8	
Byte 2	23	22	21	20	19	18	17	16	
Byte 3	31	30	29	28	27	26	25	24	
Byte 4	39	38	37	36	35	34	33	32	
Byte 5	47	46	45	44	43	42	41	40	
Byte 6	55	54	53	52	51	50	49	48	
Byte 7	63	62	61	60	59	58	57	56	

Figure 87: Highlighted CAN Data

If the configuration mode is set to J1939, two sub fields are shown: Faults and Source Address.

Figure 88: Faults and Source Address Fields

- **Faults:**
Link to faults created in the DM1/DM2 Faults tab. FMI and SPN will be translated into the text created in the Faults tab.
- **Source Address:**
The source address of the controller sending the J1939 message.

7.3.1.4 Parameters - Request Update

Sometimes the module needs to request information from other systems on the CAN bus, because the parameter that the user wants is not being broadcast on the CAN bus.

For example, the user needs to send a message at a periodic rate to an Engine controller. In response, the Engine will send a message to the CANect Module with the information requested. The user would configure the request message by enabling the request update, configuring the rate to send the request, and the CAN message to send.

If the transmit rate is set to 0, the request is only transmitted when a user requests the parameter on View or Portal. Each user request will send on 1 request CAN message.

Configuration	Received Message	Request Update
Transmit Rate (ms):	0	
CAN Bus:	CAN 1	Identifier (0 - 1FFFFFFF HEX): 00000000
Identifier Type:	Extended (29)	Data Bytes (1-8): 8
Data:	00 00 00 00 00 00 00 00	

Figure 89: Request Update Tab

Request Update Parameters Properties:

- **Transmit Rate:**
The rate the CAN message described in the Request Update will be transmitted. Rate is in milliseconds.
- **CAN Bus:**
Set the CAN Bus to transmit the message on.
- **Identifier:**
Based on Identifier Type, enter the 11 bit or 29 bit identifier to transmit.
- **Identifier Type:**
11 bit or 29 bit message type
- **Data Bytes:**
Sets how many data bytes the CAN message contains.
- **Data:**
Set the data bytes of the CAN message.

7.3.1.5 Parameter - Set Parameter

Some of the defined parameters can be updated, such as the configuration settings for speed or time. This is how the CANect module will send the new value to the other unit on the vehicle.

A1	A	B	C	D	E	F	G	H	I
1		Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
2	Byte 0	<7	<6	<5	<4	<3	<2	<1	<0
3	Byte 1	15	<14	<13	<12	<11	<10	<9	<8
4	Byte 2	23	22	21	20	19	18	17	16
5	Byte 3	31	30	29	28	27	26	25	24
6	Byte 4	39	38	37	36	35	34	33	32
7	Byte 5	47	46	45	44	43	42	41	40
8	Byte 6	55	54	53	52	51	50	49	48
9	Byte 7	63	62	61	60	59	58	57	56

Figure 90: Set Parameter Tab

Set Parameter Properties:

- CAN Bus:**
Set the CAN Bus to transmit the message on.
- Identifier:**
Based on Identifier Type, enter the 11 bit or 29 bit identifier to transmit.
- Identifier Type:**
11 bit or 29 bit message type
- Data Bytes:**
Sets how many data bytes the CAN message contains.
- Data:**
Set the data bytes of the CAN message.
- Data Insert Location:**
Set the location within the data bytes that the parameter value will be inserted.
Any bits set in the Data fields will be overwritten by the parameter value set here.

7.3.1.6 Parameter - Units Tab

The Units tab gives the user the ability to convert the received value to the proper units. Sometimes, the value sent out on the CAN bus may not be in the correct units for displaying. For example, in j1939, engine RPM is sent in 0.125 RPM per bit. When the CANect module reads the data value, it reads it as a whole number. With the Units tab, an engine RPM value of 8,000 is multiplied by 0.125 to get 1,000 RPM.

The parameters Units tab is enabled when its configuration for [Data Logging](#) is enabled.

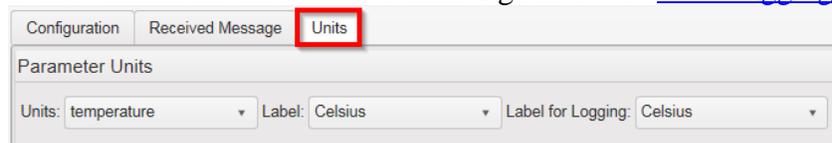


Figure 91: Parameter Units Tab

Units Parameter Properties:

- **Units:**
Select the how to convert the parameter from a list of the conversions already defined in the main units tab
- **Label:**
The default unit used for viewing the parameter in CANect View and Portal. This dropdown is also populated from the main Units tab.
- **Label for logging:**
The specific unit used when logging the parameter to a file. This dropdown is also populated from the main Units tab.
 - This setting won't affect Portal or View, and changes on Portal or View won't affect data logging.

7.3.1.7 Parameter - Enumeration Tab

This tab can be used to display text, rather than a numeric value. An example of this is when displaying On or Off, rather than 0 or 1.

Set up [enumerations](#) for a parameter in the Enumeration tab. The parameters Enumeration tab is enabled when its configuration for [Data Logging](#) is enabled.

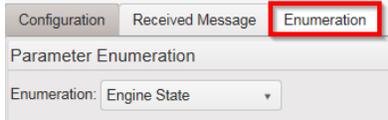


Figure 92: Parameter Enumeration Tab

Enumeration Parameter Settings:

- **Enumeration:**

Select the how to convert the parameter value to text from a list of the enumerations already defined in the main enumerations tab

7.3.1.8 Parameter - Logging Tab

This tab configures how the individual parameter will be logged locally on the CANect module. The presets are set up so that rather than configuring the same thing 100 times for 100 parameters, the user configures it once and reuses it.

The parameters Logging tab is enabled when its [configuration for Data Logging](#) is enabled.

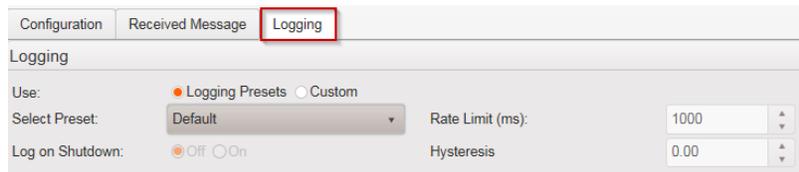


Figure 93: Parameter Logging Tab

Logging Parameter Settings:

- **Use:**

Options

- Logging Presets- Drop down list of logging modes setup in the main Logging Preset tab.
- Custom- User selects from several logging types.

- **Select Preset:**

Select the datalogging operations from the drop down, which shows the preconfigured presets from the main Logging tab.

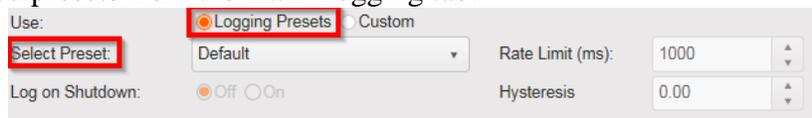


Figure 94: Select Preset

All other fields are disabled and populated with presets, based on how the preset is configured.

- **Select Logging Type:**
Shown when Custom is selected.

Figure 95: Select Logging Type

Fields are enabled per logging type.

- **Types:**
 - On Startup - Logs the first CAN Parameters message received upon module start.
 - Non-CAN Parameters are logged upon the first valid reading of either the predefined parameters for VPCA or the CHAT based parameter.

Figure 96: On Startup Logging Type

- On Received - Logs the first CAN Parameters message received upon module start.
 - Non-CAN Parameters are logged upon the first valid reading of either the predefined parameters for VPCA or the CHAT based parameters.

Figure 97: On Received Logging Type

- At Rate - Logs the received value of the first CAN Parameters message at the rate specified. Rate set in milliseconds; current value is stored regardless of if it got an updated value from the last time it was logged
 - Non-CAN Parameters are logged upon the first valid reading of either the predefined parameters for VPCA or the CHAT based parameters.

Figure 98: At Rate Logging Type

- On Change - Log only when data changes, no faster than the rate limit. Data must have changed larger than [Hysteresis](#).

Figure 99: On Change Logging Type

- **Outside Range** - Log outside the low and high ranges. Module will also log data once crossing either the high or low range. Data must have changed more than the Hysteresis to send

Figure 100: Outside of Range Logging Type

- **Inside Range**- Log inside the low and high ranges. Module will also log data once crossing either the high or low range.

Figure 101: Inside of Range Logging Type

- **On Shutdown**- When the module detects shutdown sequence has started it will log the last known parameter value.
 - If doesn't get a valid value, the module logs a NULL value.

Figure 102: On Shutdown Logging Type

- **Log on Shutdown**

When the module detects shutdown sequence has started it will log the last known parameter value. This can be selected for any of the types, regardless of rate limit, hysteresis, etc..

Figure 103: Log on Shutdown Options

7.3.1.9 Parameter - Telematics Tab

The parameter's Telematics tab is enabled when the [Telematics application](#) is enabled **and** the [parameter configuration for telematics](#) is enabled.

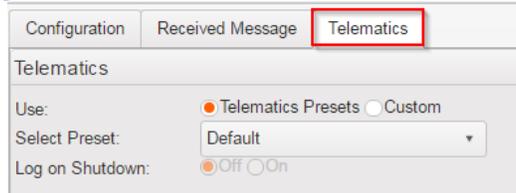


Figure 104: Parameter Telematics Tab

Telematics Parameter Settings:

- **Use:**
Options
 - Logging Presets- Drop down list of logging modes setup in the main Logging Preset tab.
 - Custom- User selects from a several logging types.
- **Select Preset:**
Drop down shows the preconfigured presets from the main Telematics tab.



Figure 105: Select Telematics Preset

All other fields are disabled and populated with the presets.

Tele-cache

If the module is not in communication with the Portal, Tele-cache stores data on disk. Then when the module gets connected, Tele-cache will push all the stored information up to the Portal.

- **Select Telematics Type:**
Shown when Custom is selected.

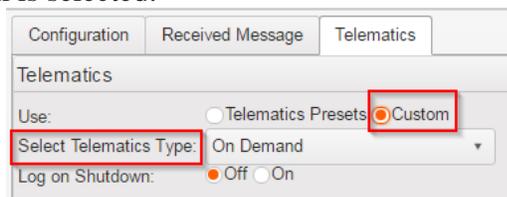


Figure 106: Select Custom Telematics Type

Fields are enabled per Telematics type.

Types:

- On Demand – No data is transmitted to CANect® Portal until requested by manually requested by CANect® Portal

Figure 107: On Demand Telematics Type

- On Startup - Transmit the first piece of data received.

Figure 108: On Startup Telematics Type

- At Rate – Send parameter to CANect® Portal at the rate specified. Rate set in milliseconds. 5000 or 5seconds is the fastest rate, in 1 second increments.

Note: This is to prevent sending too much data.

Figure 109: At Rate Telematics Type

- On Change - Transmit when data changes, no faster than the rate limit. Data must have changed larger then Hysteresis.

Figure 110: On Change Telematics Type

- Outside Range - Transmit outside the low and high ranges. Module will also transmit data once crossing either the high or low range.

Figure 111: Outside of Range Telematics Type

- Inside Range - Transmit inside the low and high ranges. Module will also transmit data once crossing either the high or low range.

Figure 112: Inside of Range Telematics Type

Log on Shutdown

When the module detects that the shutdown sequence has started, it will send the last known parameter value to [CANect® Portal](#). This can be selected for any of the types.

Figure 113: Log Telematics on Shutdown Options

7.3.2 Localization Tab

The Localization tab is used to add translations to the project. Every time a language is added a new column will be added to the labels where the text can be translated.

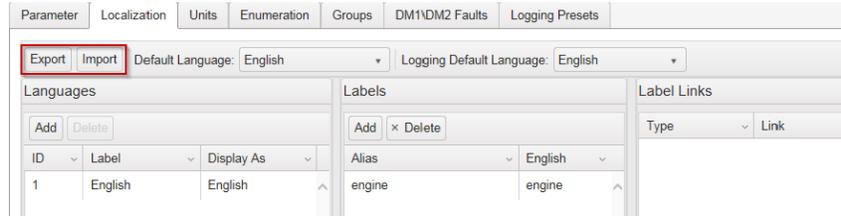


Figure 114: Localization Tab

Export Button:

Export the languages and its strings to be edited manually by a translation expert outside of Composer.

Steps:

- 1) Click **Export**, a temporary spreadsheet will be shown.

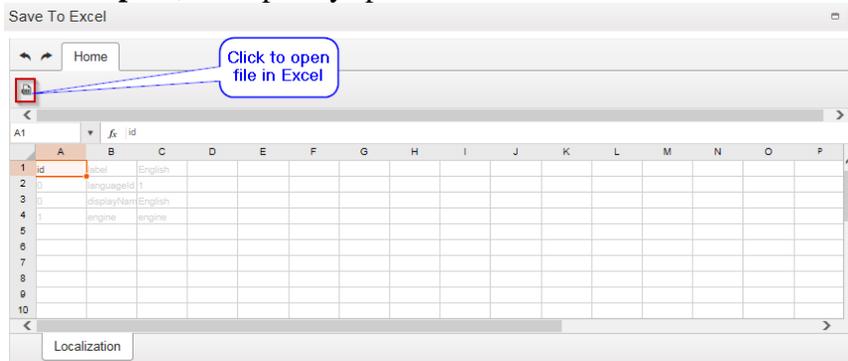


Figure 115: Temporary Excel File

- 2) Click the folder icon to save the spreadsheet to a local Excel file.
- 3) Give the file a name and click save.

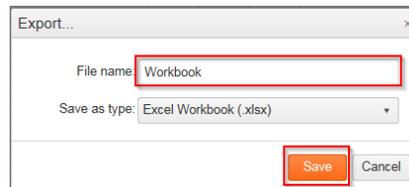


Figure 116: Export File Dialog Box

- 4) Open Excel file.
- 5) Add new languages in columns to the right. Add new text with translations in rows.

	A	B	C	D
1	id	label	English	Spanish
2	0	languageId	1	2
3	0	displayName	English	Spanish
4	1	engine	engine	motor

Figure 117: New Language and Translation

- 6) Save file.

Import Button:

Use the **Import** button to import the edited language file.

Steps:

- 1) Click the import button to open the import temporary view.

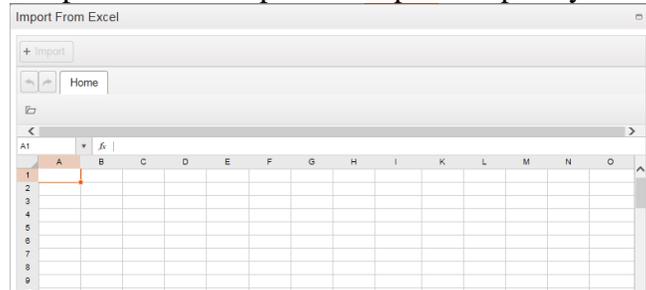


Figure 118: Import-Temporary View

- 2) Click the folder 
- 3) Select the edited export file. The file will automatically load.

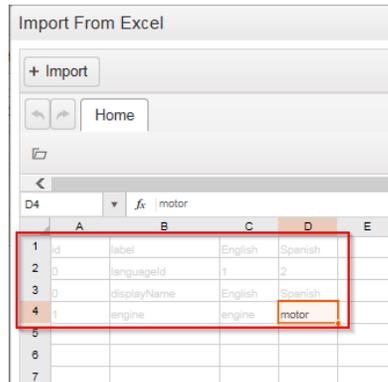


Figure 119: Auto-loaded Exported File

- 4) Click the  button.
 - a. If there are validation errors, they are shown in the error description pane.

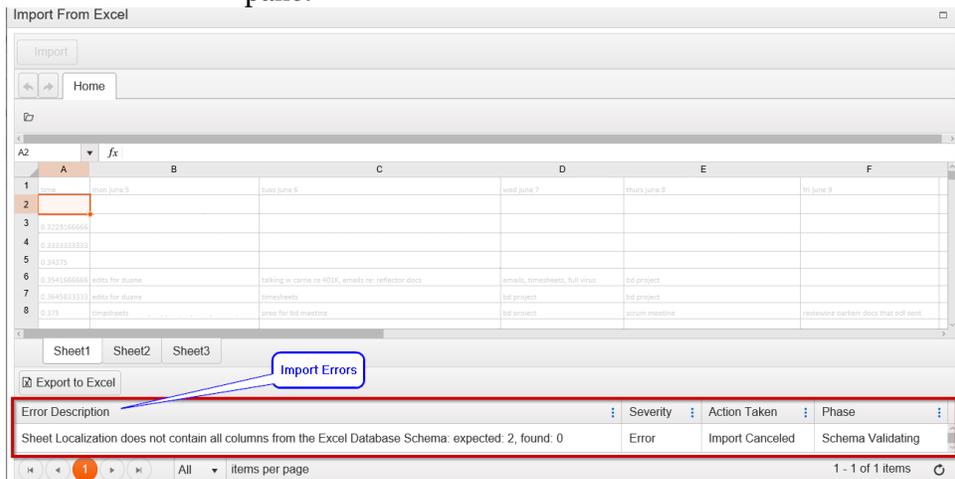


Figure 120: Import Errors

- Review the Localization tab to ensure that the import worked correctly. Compare what was in the Excel file to what Composer is showing onscreen.

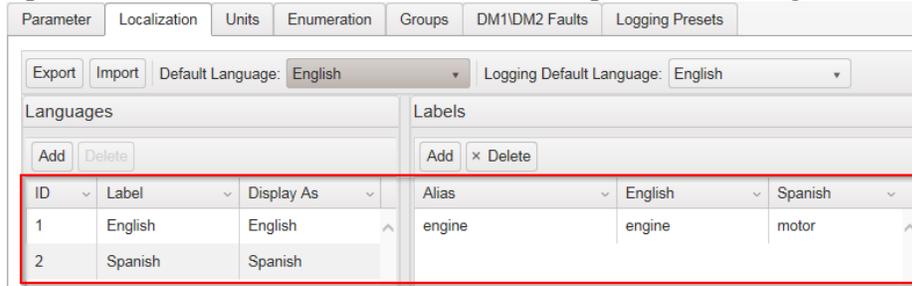


Figure 121: Localization Tab

Default Language:

The default language strings that will be used on View.

Logging Default Language:

Language strings that will be used in the log files.

Languages Pane:

Shows all the languages that have been configured.

Labels Pane:

Shows all the strings and converted text, and allows the user to reuse the translation in multiple places.

An Alias is what users name the localized language. It gets reused in the parameter and in units.

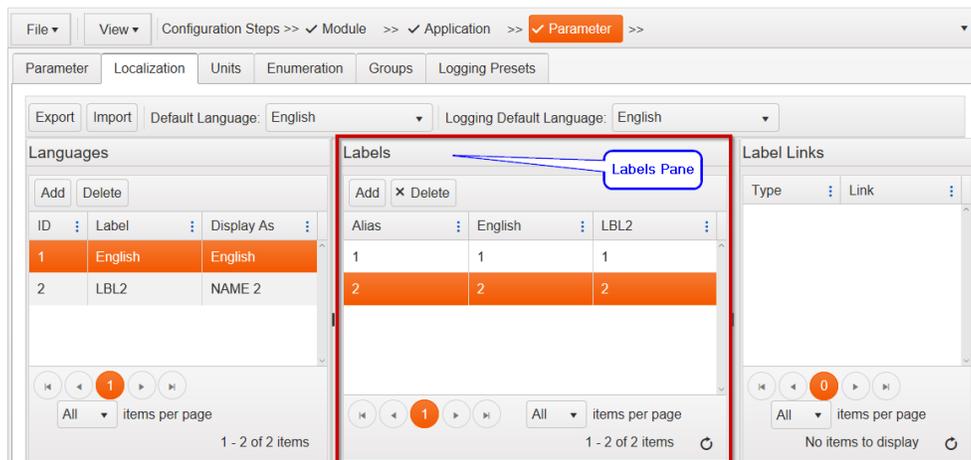


Figure 122: Labels Pane

Label Links Pane:

Shows which parameters are linked to a specific label.

In the Language Tab, describe each new [alias](#) across all languages. Text will be enumerated to the language selections.

7.3.3 Units Tab

The Units tab is used to set up the units to be used for one or multiple parameters. Data captured will have the units applied.

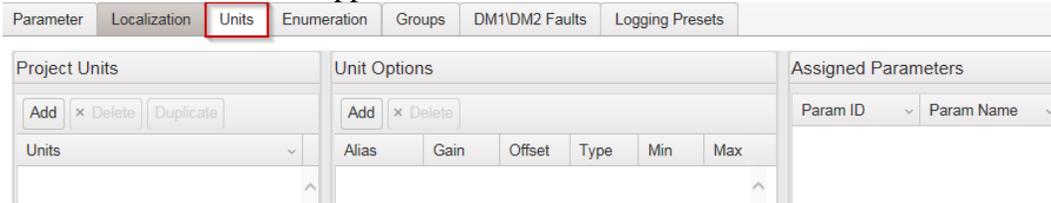


Figure 123: Units Tab

Project Units Pane: See Figure 124

- To add project units, click the **Add** button.
- To delete project units, click the **Delete** button.
- To duplicate a project unit, click the **Duplicate** button.

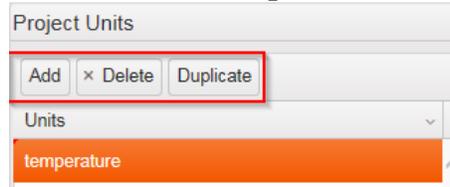


Figure 124: Project Units Pane Controls

Unit Options Pane: See Figure 125

Once a project unit is added it can be described in the unit options pane.

- To add a specific unit, highlight the desired unit in the Project Units pane and click the **Add** button in the Unit Options pane.
- To remove a specific unit, click the **Delete** button.



Figure 125: Unit Options Controls

Adjust the following properties per [CAN message specification](#).

Properties will be applied in the following order:

- 1) Type – Sets Integer or Double.
 - a. Integer is signed 32 bit.
 - b. Double is signed floating 64 bits. Can use decimal points in the gain and offset using this type.
- 2) Gain – CAN data (x)gain
- 3) Offset - Add the offset after the gain is applied (CAN data x gain) + offset
- 4) Min – Parameters value cannot go below the min.
- 5) Max – Parameters value cannot go above the max.

Assigned Parameters Pane:

Shows the parameters using the selected unit.

7.3.4 Enumeration Tab

The Enumeration tab is used to set up the enumeration to be used for one or multiple parameters. Data captured will have the units applied.

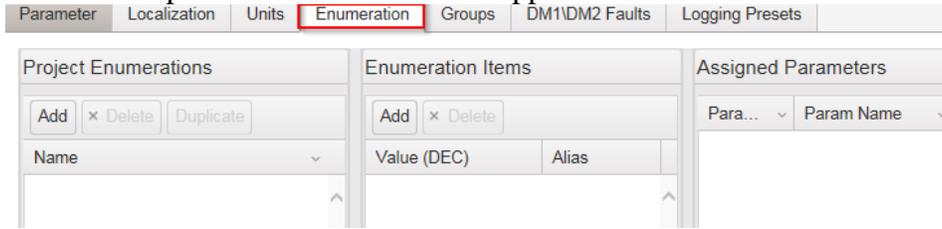


Figure 126: Enumeration tab

If runtime value does not have an associated enumeration, then the value itself is displayed. If there is an associated enumeration, the string is displayed instead of the value.

Project Enumeration Pane: See Figure 127

- To add project enumeration, click the **Add** button.
- To delete project enumeration, click the **Delete** button.
- To duplicate a project enumeration, click the **Duplicate** button.

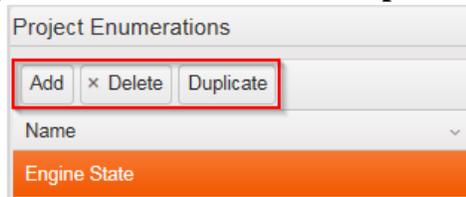


Figure 127: Enumeration Pane

Enumeration Options Pane: See Figure 128

Once a project enumeration is added, it can be described in the Enumeration Items pane.

- To add the individual conversions to the enumerations, highlight the desired enumeration in the Project. Click the **Add** button in the Enumeration Items pane.
 - Give an alias for the enumeration. Either type in a new name to create a new alias or select one that has already been created.
- To remove an enumeration, click the **Delete** button.

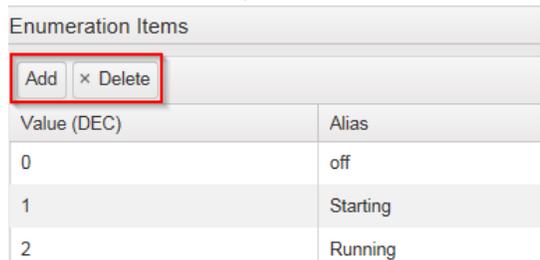


Figure 128: Enumeration Pane Controls

Assigned Parameters Pane:

Shows all the parameters using the selected enumerations.

7.3.5 Groups Tab

The Groups tab allows parameters to be assigned to groups. View can use this to request all the parameters assigned to a group with one command.

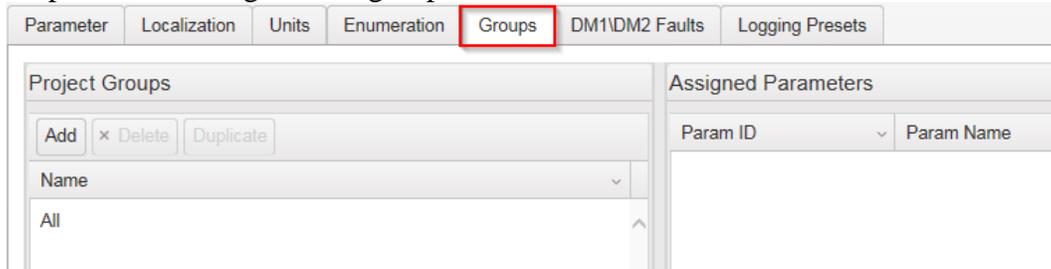


Figure 129: Groups Tab

Project Groups Pane: See Figure 130

Use the **Add**, **Delete**, and **Duplicate** buttons to manage groups.

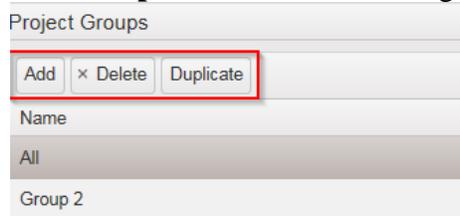


Figure 130: Project Groups Controls

Assigned Parameters Pane: See Figure 131

Click the desired group to see parameters associated with it.

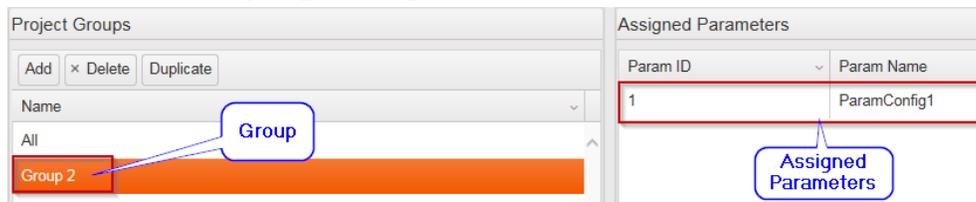


Figure 131: Group-Associated Parameters

To assign a parameter to a group: See Figure 132

- 1) Click the Parameters tab
- 2) Click a parameter
- 3) Check the desired groups the parameter should be in.

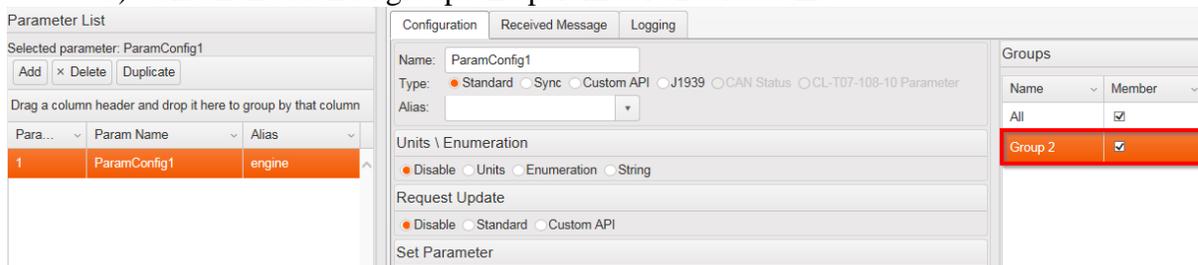


Figure 132: Assign Parameters to Groups

7.3.6 DM1\DM2 Faults Tab

Use the DM1\DM2 Faults Tab to enter in FMI and SPN codes. Then add descriptive text that the code will be translated into.

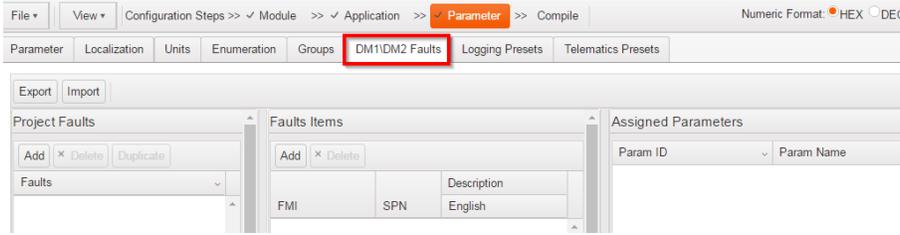


Figure 133: DM1/DM2 Faults Tab

Export Import Buttons; See Figure 134

Use the **Export** button to export the Fault information to Excel.

Use the **Import** button to import the Fault information back into the project.



Figure 134: Export and Import Buttons

Project Faults Pane: See Figure 135

Use the **Add**, **Delete**, and **Duplicate** buttons to manage Faults.

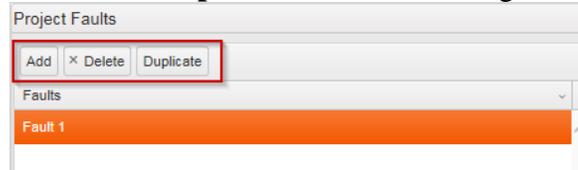


Figure 135: Project Faults Pane Controls

Faults Items Pane: See Figure 136

When the parameter value is received, the user of the parameter will see the text description instead of the FMI and SPN numbers, if entered.

To add FMI and SPN descriptions, use the **Add** button and enter in the desired FMI, SPN, and Descriptions. To delete a FMI or SPN entry, use the **Delete** button.

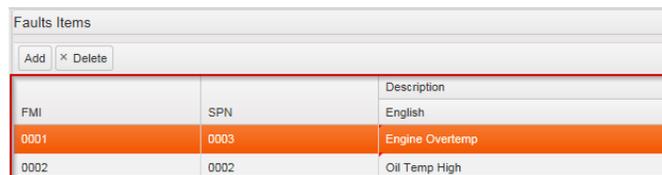


Figure 136: Faults Items Pane

Assigned Parameter Pane:

The Assigned Parameter pane will show the parameters using the faults information.

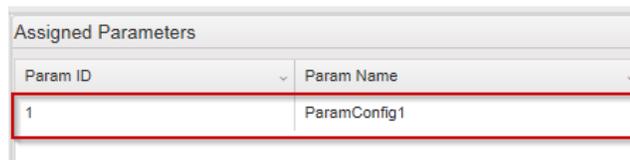


Figure 137: Assigned Parameters Pane

7.3.7 Logging Presets Tab

The Logging Presets tab is used to set up logging modes that can be used in multiple parameters.

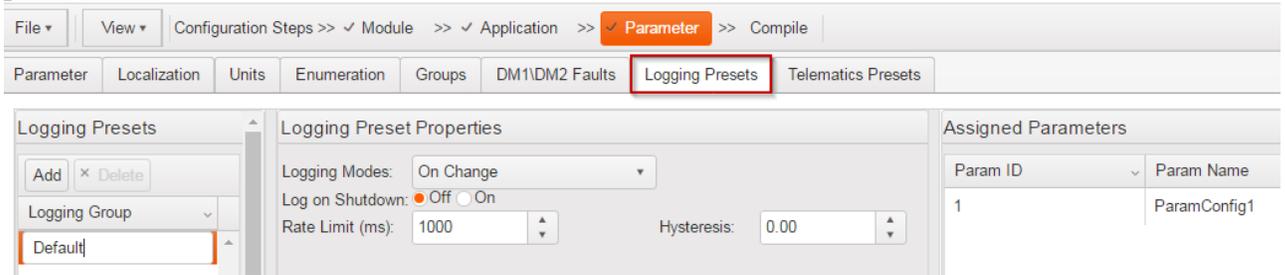


Figure 138: Parameter Logging Presets Tab

Logging Presets: See Figure 139

- Use the **Add** button to add a logging preset.
- Use the **Delete** button to delete a logging preset.



Figure 139: Logging Presets Controls

Logging Preset Properties:

Select a logging preset group and set the fields accordingly. The field settings will be used for every [parameter](#) that has been assigned this preset.

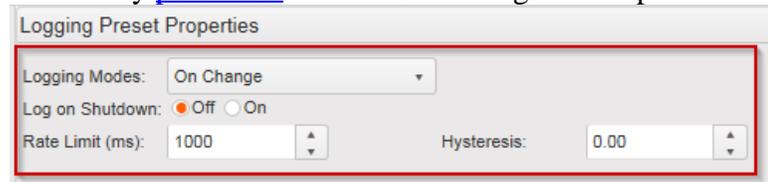


Figure 140: Logging Preset Properties

Assigned Parameters:

The parameters that are using the preset are shown in the Assigned Parameters Pane.



Figure 141: Assigned Parameters

7.3.8 Telematics Presets Tab

In order to view the Telematics Presets tab, the Telematics application must be enabled. The Telematics Presets tab is used to set up logging modes that can be used in multiple parameters.

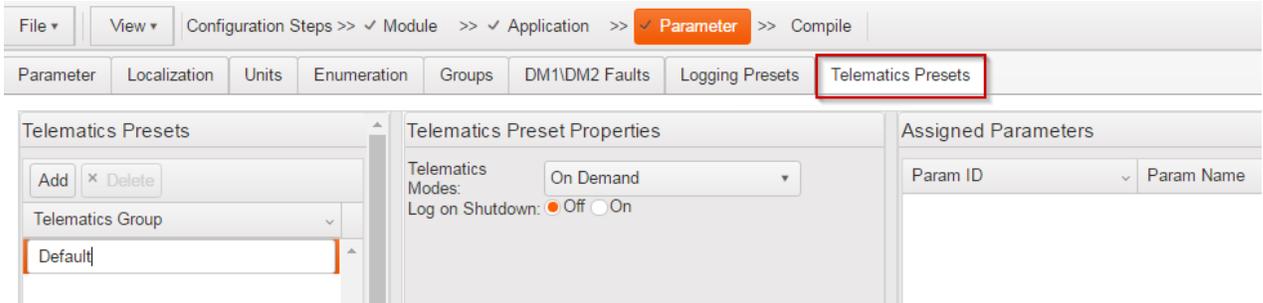


Figure 142: Telematics Presets Tab

Telematics Preset: See Figure 143

Use the **Add** button to add a telematics preset.

Use the **Delete** button to delete a telematics preset.



Figure 143: Telematics Presets Controls

Telematics Preset Properties:

Select a telematics preset group and set the fields accordingly. The field settings will be used for every [parameter](#) that has been assigned this preset.

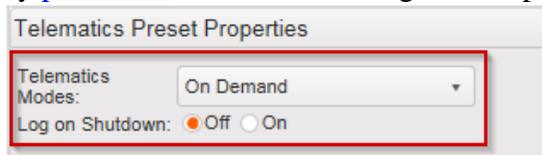


Figure 144: Telematics Presets Properties

Assigned Parameters:

The parameters that are using the preset are shown in the Assigned Parameters Pane.

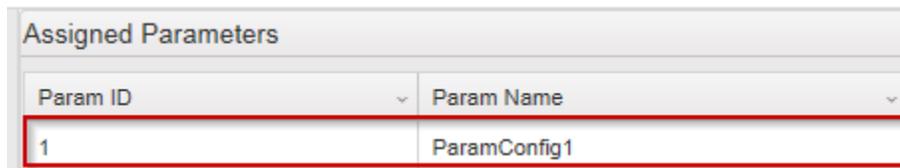


Figure 145: Assigned Parameters Pane

7.4 Compiling Project

The entire project needs to be compiled to generate the config.sql file, which is used by the CANect module. This is accomplished by clicking the **Compile** button. The **Compile** button is only activated if the Module, Application, and Parameters steps have been completed.

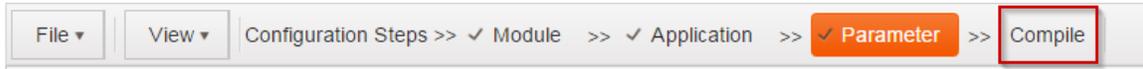


Figure 146: Compile Configuration Step

7.4.1 File Generation

The **Compile** button generates a .zip file containing the project information. These files must be unzipped to place all or some of the [component to the root of a USB stick](#).

7.4.1.1 Zip File Name

The project will ask the user to save the project by giving it a unique name.

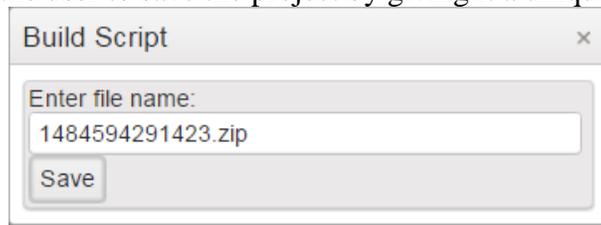


Figure 147: Build Script File Name

This can be changed if the [browser is configured](#) to ask where to save the file and what to save it as.

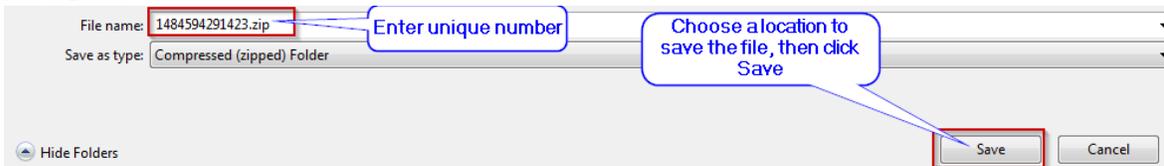


Figure 148: Change Build Script File Name and Location

7.4.1.2 Example Zip File Contents

This shows an example of the compiled project zip file. The compiled project zip file contains all the configuration (.cfg) files that Composer is creating, based off of the information that the user inputted.

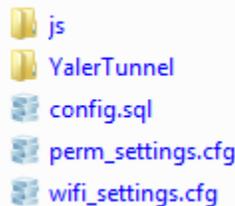


Figure 149: Example Zip File of Compiled Project

8 Setting up the Module

Once the user has selected applications and enabled parameters, they must download the Composer file to the module.

8.1 Set up Telematics

[Set up telematics](#) through the CANect® Composer telematics [application settings pane](#).

8.1.1 Steps

- 1) Enable the Telematics Application.

Name	Enable
CAN Parameters	<input checked="" type="checkbox"/>
Module Parameters	<input type="checkbox"/>
Telematics	<input checked="" type="checkbox"/>

Figure 150: Enable Telematics Application

- 2) Setting the Telematics properties.
 - a. Set the URL, provided by manufacturer. It is the same as target server.
NOTE do not include https:// prefix
Example: canectportal.com/Thingworx/FormLogin/CANect
 - b. Set the Customer Key. This is a unique string for each customer provided by the Manufacturer. Contact an HED sales rep to acquire a Customer Key.

Property	Group	Value
URL		www.hedonline.com
Customer Key		customer key
Port		8443

Figure 151: Set Customer Key

- 3) When compiling the project, the telematics settings are inserted into config.sql file.

8.2 Set up WIFI

The user needs to set up two things:

1. How the module shows a WiFi host, so that users can connect to it
2. How the CANect module connects to other WiFi hotspots to get internet connectivity

8.2.1 Steps to Configure the File through CANect® Composer

- 1) Enable the [WIFI Application](#).

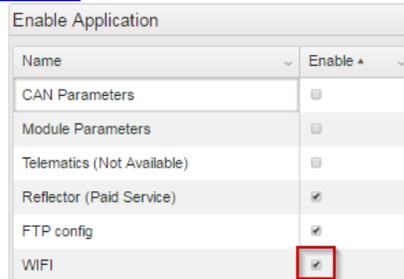


Figure 152: Enable WIFI Application

- 2) Configure the [APN](#).

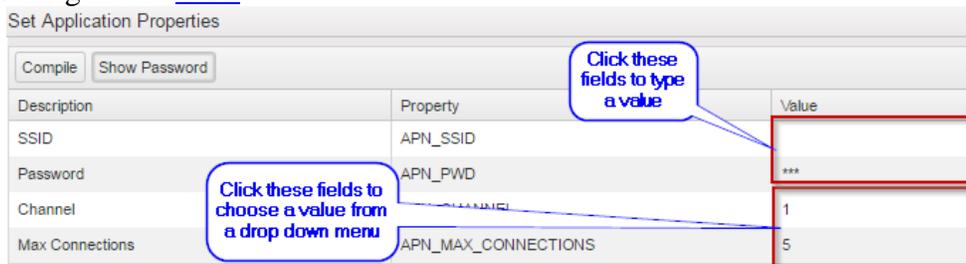


Figure 153: Configure APN

- 3) Click the **Add** button to add the WiFi information for the [SSIDs](#) that the CANect module will connect to.

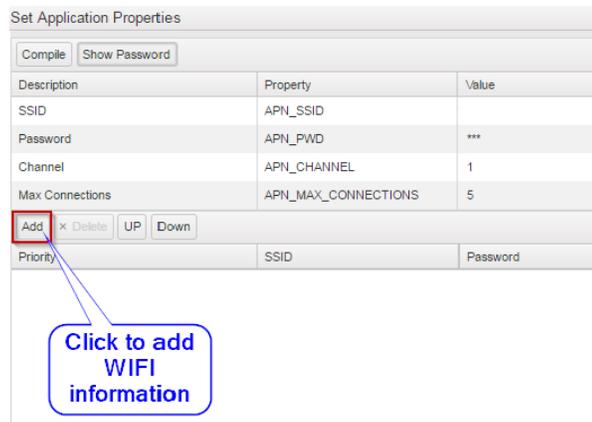


Figure 154: Add WIFI information

- 4) Enter in the SSID and password.

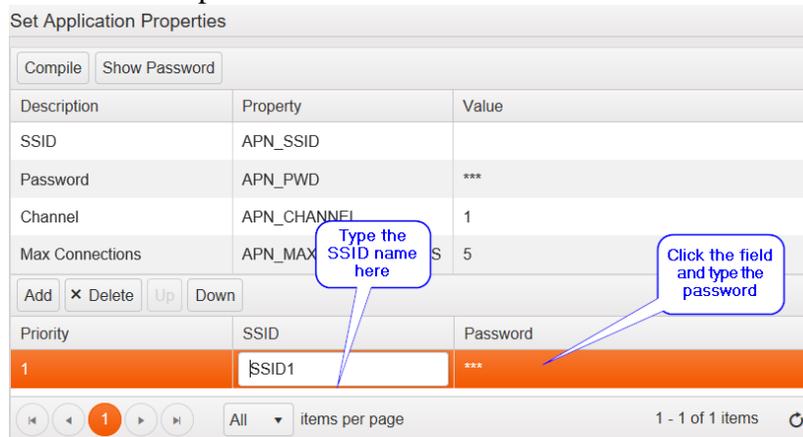


Figure 155: WIFI SSID and Password

- 5) Repeat for all the different SSIDs that the CANect® module will need to connect to.
- 6) Use the **Up** and **Down** buttons to set the priority that the CANect® module will use to select what to connect to.

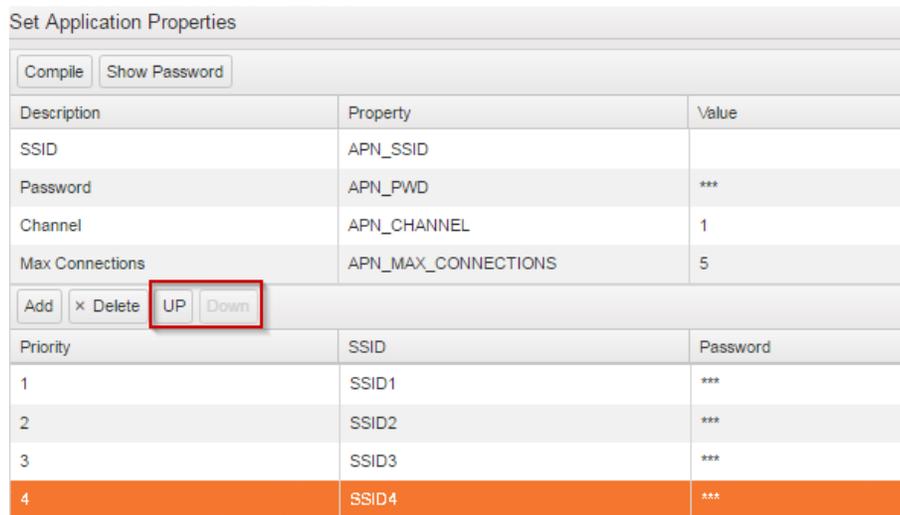


Figure 156: Up and Down Buttons

- 7) Generate the configuration file by pressing the **Compile** button on this page; otherwise, it is generated when the entire project is compiled.

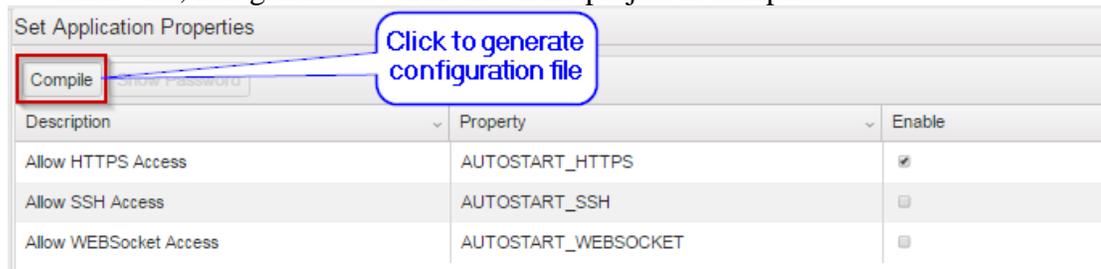


Figure 157: Generate a Configuration File

8.2.2 Steps to get WIFI Configuration on the Module.

- 1) Configure the wifi_settings.cfg file.
- 2) Copy the wifi_settings.cfg to the root of a USB stick. These files must be unzipped to place all or some of the component to the root of a USB stick.
 - a. File names cannot have underscores or numbers.

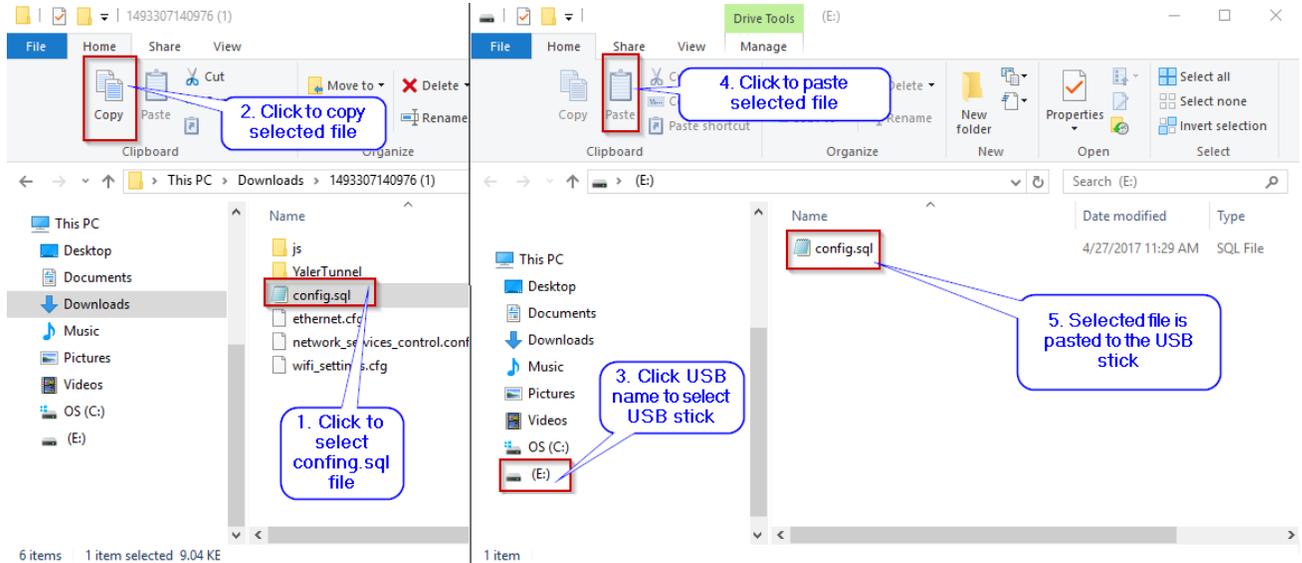


Figure 158 Copy WIFI Settings from Compiled File to USB

- 2)3) _____ Connect USB to module.
- 3)4) _____ Power on the Unit. Most users do this by turning the ignition on.
- 4)5) _____ Unit will automatically grab the file and apply the configuration.

8.3 Set up CANect® Reflector Tunnel

8.3.1 Steps to Configure the File through CANect® Composer

- 1) Enable the Reflector Application.

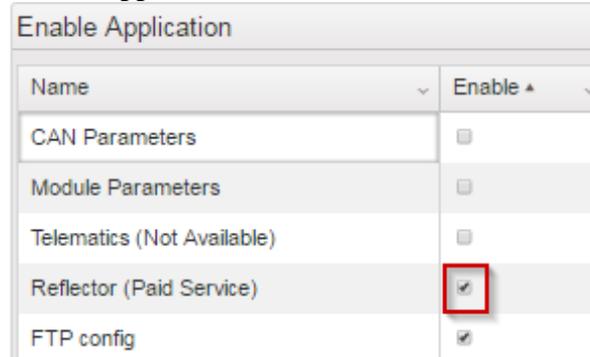


Figure 159: Enable Reflector Application

- 2) Enable the different communication methods that are needed, as determined by how the vehicle is wired and how the system is used. The default CANect® View only needs HTTPS enabled.

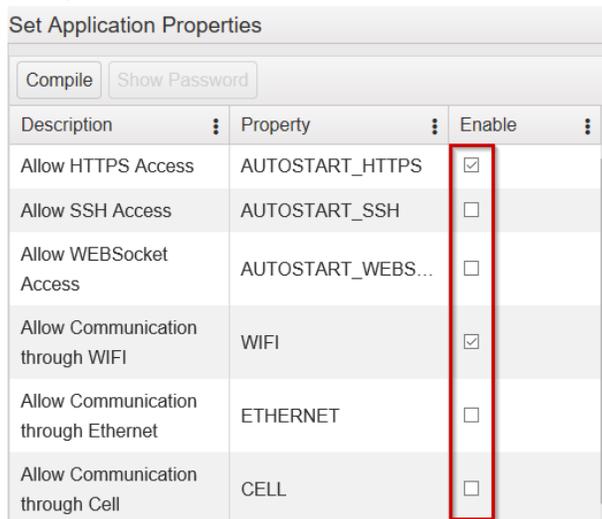


Figure 160: Enable Needed Communication Methods

- 3) Generate the configuration file by pressing the **Compile** button on this page; otherwise, it is generated when the entire project is compiled.

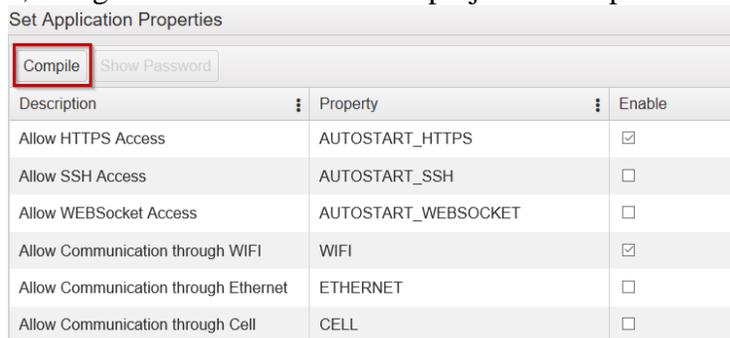


Figure 161: Generate a Configuration File

8.3.2 Steps to Configure CANect® Reflector

1. Modify your [YalerTunnel](#) script as detailed [below](#) in Section 8.3.3.
2. Make a YalerTunnel folder in the root of the USB stick. HED provides the YalerTunnel script.
3. Copy the YalerTunnel script to the USB stick YalerTunnel/ folder.
4. Plug USB stick into module.
5. Module will automatically install file.

8.3.3 To Update Your Root Certificate

1. Modify your YalerTunnel script.
 - a. CA_FILE="/mnt/persistent/YalerTunnel/NewCertificateName".
2. Make a YalerTunnel folder in the root of the USB stick.
3. Copy the YalerTunnel script and certificate to the USB stick YalerTunnel/ folder.
4. The script and certificate will be automatically installed.

8.4 Set up Logging to FTP

This configures where and how the local data logged files get sent to the FTP site.

8.4.1 Steps to Configure the File through CANect® Composer

- 1) [Enable the FTP Config Application.](#)

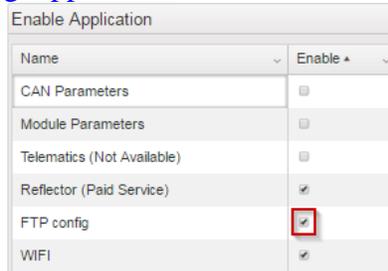


Figure 162: Enable the FTP Config Application

- 2) Configure the settings as needed for the application. Users should contact their IT team for help in setting up and connecting to an FTP site.

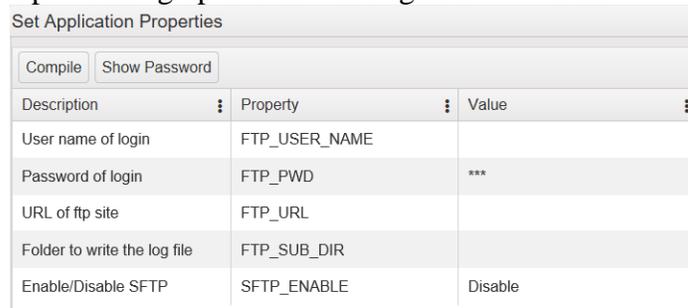


Figure 163: Configure Needed FTP Settings

- 3) To view the password, click on the **Show Password** button.

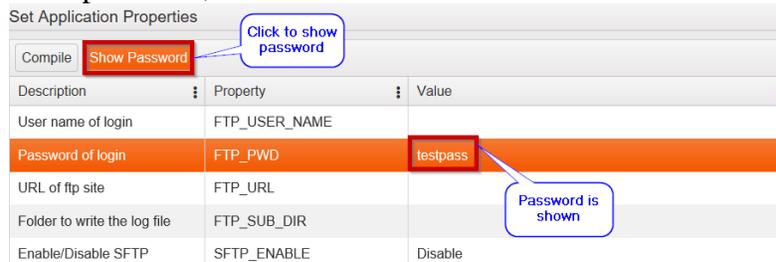


Figure 164: Show Password Button

- 4) Generate the configuration file by pressing the **Compile** button on this page; otherwise, it is generated when the entire project is compiled.

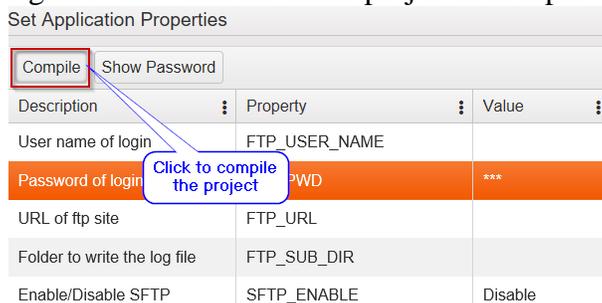


Figure 165: Generate a Configuration File

8.4.2 Steps to Load the File on the Module

- 1) Configure the perm_settings.cfg file.
- 2) Copy the perm_settings.cfg to the root of a USB stick.
- 3) Connect USB to module.
- 4) Power on the Unit.
- 5) Module will automatically grab the file and apply the configurations.

9 CANect® Modules

9.1 Module LEDs

The module has several LEDs to indicate status of GPS, CELL, WIFI and the module itself. See [Appendix A](#) for LEDs available per module.



Figure 166: CL-T07-108-10 LED Configuration.

9.1.1 Module Status LED

Modes of operation:

- Red Solid – Initial and entering programming mode.
- Blue Heartbeat – Normal Operation but no connection to CANect® Portal.
- Green Heartbeat – Programming.
- Green Solid – Programming Complete.
- Green Solid with Blue Heartbeat – Connected to CANect® Portal.

9.1.2 WIFI LED

Modes of operation:

- Red Solid – Indicates error. Also red throughout programming.
- Yellow Solid – Connecting to APN.
- Green Solid – Connected to APN.
- Off – WIFI Disabled.

9.1.3 GPS LED

Modes of operation:

- Red Solid – Indicates error and while programming.
- Yellow Solid – Connecting to Satellites.
- Solid Green – Acquired Satellite Fix.
- Off – Disabled.

9.1.4 CELL LED

Modes of operation:

- Red Solid – Indicates error, no SIM card, and while programming.
- Yellow Solid – Connecting to Network.
- Solid Green – Connected to Network.
- Off – Disabled.

9.2 Module's Antenna Connections

Depending on the module used, several antennas are needed to acquire signals. Antenna types are GPS, CELL, and WIFI. See [Appendix B](#) for antennas per module.



Figure 167: CL-T07-108-10 Antenna Configuration:

9.3 SIM Card

Several modules require a SIM card to connect to a cellular network. The SIM card can be accessed on the backside of the module by removing the SIM panel.

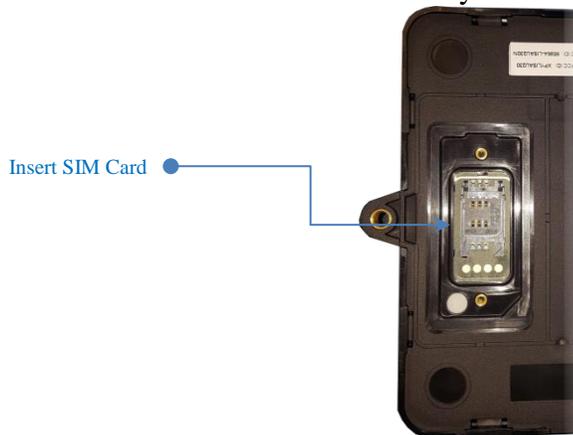


Figure 168: SIM Card Panel

9.4 Module Pinout

A Module Pinout is a map of the pins on the module and what to connect to each of the pins. See [Appendix C](#) for module pinouts.

10 Closing CANect® Composer

- 1) Close CANect® Composer web page.
- 2) Close the Web Server.

11 Troubleshooting Guide

11.1 Known Problems

11.1.1.1 *Downloading Zip files doesn't complete in Chrome*

Problem: Files don't appear when they are downloaded.

Solution: Disable the Phishing and Malware Protection feature in Chrome.

For additional information see: <https://productforums.google.com/forum/#!category-topic/chrome/report-a-problem-and-get-troubleshooting-help/BXkOMwUOVfg>

11.1.1.2 *Cannot Access USB Flash Drive*

Problem: A noisy environment blocks Portal from accessing a USB flashdrive, so the system cannot update.

Solution: Keep module and USB cable away from noisy environments. Portal will signal when the USB is connected.

11.1.1.3 *Unauthorized Update*

Problem: Unauthorized user inserts a USB stick, attempting a unauthorized update. This could cause damage to the vehicles.

Solution: Users should change the encryption key. This will invalidate the old software.

12 Glossary

Entry	Definition
APN	Access Point Name; a connection gateway for sharing information between a mobile network and a computer network
Baud Rate	The frequency that a single bit is transmitted.
CAN	Controller Area Network
CAN Message Specification	The CAN message specification details all the messages that are on the CAN bus. If connected to an engine, users should reference the J1939 specs. For a custom protocol, users need to configure the message specification based on the CAN protocol that they are getting the file off of.
CANect	HED Telematics Suite Software
Enumeration	A number list and the text that represents each number in the list.
FTP	File Transfer Protocol
Hysteresis	How much a value has to change before it is considered a change by the software algorithm
I/O	Input/Output
J1939	One of several standard CAN protocols
Module	Will need a definition
Portal	Software in the HED CANect suite
Reflector	Software in the HED CANect suite
SFTP	Secure File Transfer Protocol, see also FTP .
SSID	Service Set Identifier; the name of a wireless router
Yaler	(“Relay” spelled backwards). Secure connection relay service, using either Web, SSH, or VNC. See https://yaler.net/ for additional information.
YalerTunnel	Relay software that connects local device services to the cloud.

13 Appendix A

13.1 LEDs Available per Module

Module	GPS	WIFI	CELL	Status
CL-T07-108-10	YES	YES	YES	YES
CL-T06-108-10	YES	NO	YES	YES
CL-T05-108-10	YES	YES	NO	YES
CL-T05-107-10	YES	YES	NO	YES

14 Appendix B

14.1 Antenna Connections per Module

Module	GPS	WIFI	CELL
CL-T07-108-10	External	External	External
CL-T06-108-10	External	No	External
CL-T05-108-10	External	External	No
CL-T05-107-10	Internal	Internal	No

15 Appendix C

15.1 CL-T07-108-10 Module Pinout

18-Pin Deutsch Pinout	
Pin	Function
1	ETHERNET TXN
2	ETHERNET TXP
3	ETHERNET RXN
4	ETHERNET RXP
5	BATTERY (-)
6	BATTERY (+)
7	CAN1-H
8	CAN1-L
9	CAN2-H
10	CAN2-L
11	KEYSWITCH (+)
12	INPUT STB/STG/VTD (0-5.66V)
13	USB POWER
14	USB DM (D-)
15	USB DP (D+)
16	USB ID
17	USB GROUND
18	150mA SINKING OUTPUT

Peripherals		
Item	Peripheral	Status
1	eMMC MEMORY	4GByte
2	DRAM MEMORY	128MByte
3	ACCELEROMETER	POPULATED
4	REAL-TIME CLOCK	POPULATED
5	SECURITY AUTHENTICATION IC	NOT POPULATED
6	STATUS LEDS	POPULATED QTY 4
7	WIFI MODULE	802.11 b/g/n
8	WIFI ANTENNA	EXTERNAL
9	GNSS MODULE	GPS / GLONASS / BEIDOU
10	GNSS ANTENNA	EXTERNAL
11	CELLULAR MODULE	3G WORLDWIDE (LISA)
12	CELLULAR ANTENNA	EXTERNAL
13	USB	USB OTG (HOST AND CLIENT)
14	ETHERNET	POPULATED

Figure 169

15.2 CL-T06-108-10 Module Pinout

18-Pin Deutsch Pinout	
Pin	Function
1	ETHERNET TXN
2	ETHERNET TXP
3	ETHERNET RXN
4	ETHERNET RXP
5	BATTERY (-)
6	BATTERY (+)
7	CAN1-H
8	CAN1-L
9	CAN2-H
10	CAN2-L
11	KEYSWITCH (+)
12	INPUT STB/STG/VTD (0-5.66V)
13	USB POWER
14	USB DM (D-)
15	USB DP (D+)
16	USB ID
17	USB GROUND
18	150mA SINKING OUTPUT

Peripherals		
Item	Peripheral	Status
1	eMMC MEMORY	4GByte
2	DRAM MEMORY	128MByte
3	ACCELEROMETER	POPULATED
4	REAL-TIME CLOCK	POPULATED
5	SECURITY AUTHENTICATION IC	NOT POPULATED
6	STATUS LEDS	POPULATED QTY 3
7	WIFI MODULE	NOT POPULATED
8	WIFI ANTENNA	NOT POPULATED
9	GNSS MODULE	GPS / GLONASS / BEIDOU
10	GNSS ANTENNA	EXTERNAL
11	CELLULAR MODULE	3G WORLDWIDE (LISA)
12	CELLULAR ANTENNA	EXTERNAL
13	USB	USB OTG (HOST AND CLIENT)
14	ETHERNET	POPULATED

Figure 170

15.3 CL-T05-108-10 Module Pinout

18-Pin Deutsch Pinout	
Pin	Function
1	ETHERNET TXN
2	ETHERNET TXP
3	ETHERNET RXN
4	ETHERNET RXP
5	BATTERY (-)
6	BATTERY (+)
7	CAN1-H
8	CAN1-L
9	CAN2-H
10	CAN2-L
11	KEYSWITCH (+)
12	INPUT STB/STG/VTD (0-5.66V)
13	USB POWER
14	USB DM (D-)
15	USB DP (D+)
16	USB ID
17	USB GROUND
18	150mA SINKING OUTPUT

Peripherals		
Item	Peripheral	Status
1	eMMC MEMORY	4GByte
2	DRAM MEMORY	128MByte
3	ACCELEROMETER	POPULATED
4	REAL-TIME CLOCK	POPULATED
5	SECURITY AUTHENTICATION IC	NOT POPULATED
6	STATUS LEDS	POPULATED QTY 3
7	WIFI MODULE	802.11 b/g/n
8	WIFI ANTENNA	EXTERNAL
9	GNSS MODULE	GPS / GLONASS / BEIDOU
10	GNSS ANTENNA	EXTERNAL
11	CELLULAR MODULE	NOT POPULATED
12	CELLULAR ANTENNA	NOT POPULATED
13	USB	USB OTG (HOST AND CLIENT)
14	ETHERNET	POPULATED

Figure 171

15.4 CL-T05-107-10 Module Pinout

18-Pin Deutsch Pinout	
Pin	Function
1	ETHERNET TXN
2	ETHERNET TXP
3	ETHERNET RXN
4	ETHERNET RXP
5	BATTERY (-)
6	BATTERY (+)
7	CAN1-H
8	CAN1-L
9	CAN2-H
10	CAN2-L
11	KEYSWITCH (+)
12	INPUT STB/STG/VTD (0-5.66V)
13	USB POWER
14	USB DM (D-)
15	USB DP (D+)
16	USB ID
17	USB GROUND
18	150mA SINKING OUTPUT

Peripherals		
Item	Peripheral	Status
1	eMMC MEMORY	4GByte
2	DRAM MEMORY	128MByte
3	ACCELEROMETER	POPULATED
4	REAL-TIME CLOCK	POPULATED
5	SECURITY AUTHENTICATION IC	NOT POPULATED
6	STATUS LEDS	POPULATED QTY 3
7	WIFI MODULE	802.11 b/g/n
8	WIFI ANTENNA	INTERNAL
9	GNSS MODULE	GPS / GLONASS / BEIDOU
10	GNSS ANTENNA	INTERNAL
11	CELLULAR MODULE	NOT POPULATED
12	CELLULAR ANTENNA	NOT POPULATED
13	USB	USB OTG (HOST AND CLIENT)
14	ETHERNET	POPULATED

Figure 172

