

SNTL150P-PCSUITE interface suite

Configuration and Monitoring software for
Sentinel 150P automatic switch mode battery chargers
Installation and Operation Manual



In order to consistently bring you the highest quality, full featured products, we reserve the right to change our specifications and designs at any time.



Please read the following information before installing.

BEFORE BEGINNING INSTALLATION OF THIS PRODUCT:

Read and follow all product safety and installation instructions.

Please contact your Enovation Controls or Murphy representative immediately if you have any questions.

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System requirements

The SNTL-PCSUITE is a PC-based software program for configuring and monitoring Sentinel 150P series battery chargers. Communication between the PC and Sentinel 150P is via a USB and TTL converter.

Minimum system requirements:

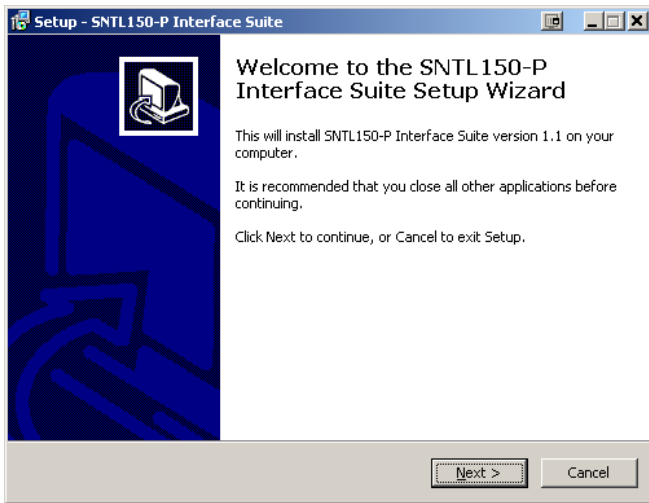
1. Sentinel 150P series battery charger
2. Personal Computer (PC):
 - Processor: x86 (32 bit), 1GHz
 - RAM: 1Gb
 - USB port
 - Display: minimum resolution 1024 x 768
 - Operating System: Windows 7, Windows Vista, Windows XP Professional or Windows XP Home with .NET framework 3.5 or higher
3. SNTL-PCSUITE software
4. USB / TTL converter recognised as COM port on Windows OS
5. TTL Data lead (connecting Sentinel to USB/TTL converter)
6. USB lead (connecting PC to USB/TTL converter)

Item 3 above (SNTL150P-PCSUITE software) is available as a free-of-charge download from our product support page <https://support.enovationcontrols.com/hc/en-us/articles/115001391433-Sentinel-150P-Series>

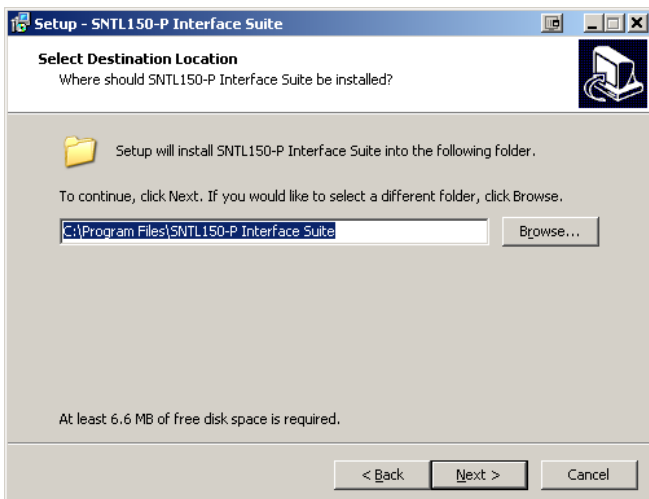
Items items 4 – 6 are available to order as a programming hardware kit, model SNTL150P-PCCONN, part number 42.70.3825.

Installation Guide

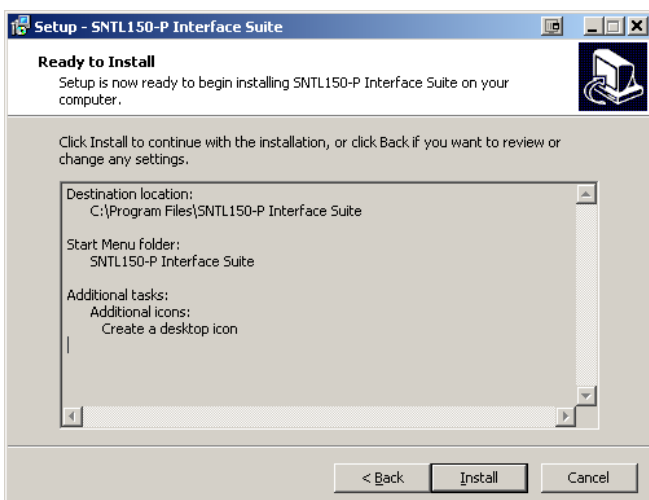
1, Run the *Sentinel 150-P Interface Suite.exe* file to install software to PC



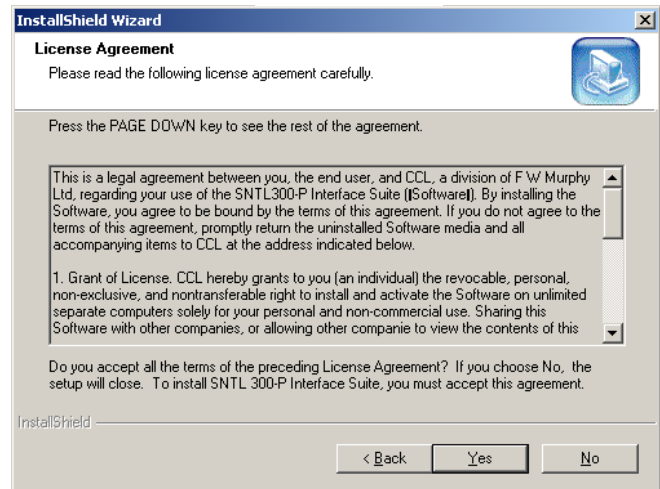
2, Select Next to continue through installation process.



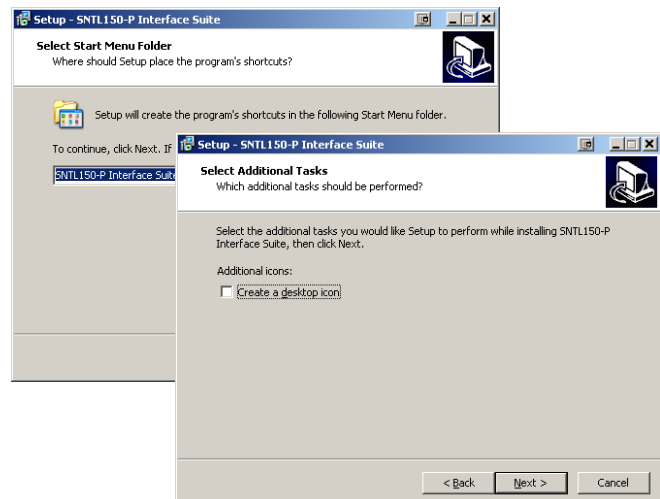
4, Select installation folder



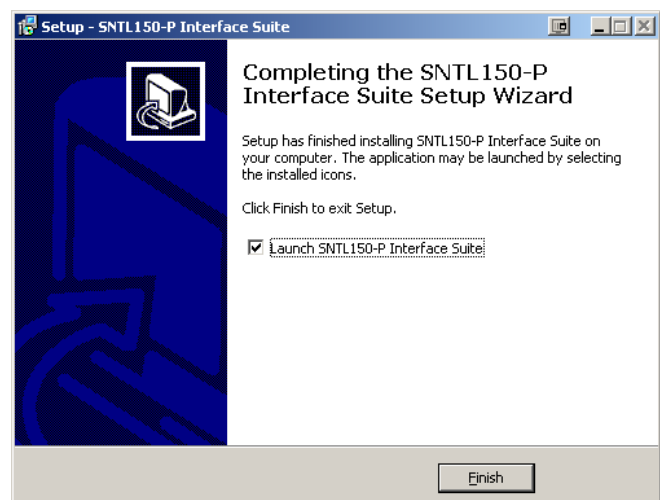
6, Confirm installation by selecting Next



3, After viewing license agreement, select YES to proceed



5, Select program folder and optional desktop icon



7, Installation is complete, select Finish

Getting Started

After installing SNTL150P interface suite on your PC, a desk top icon as shown below will be added. Select this to launch the SNTL150P interface suite



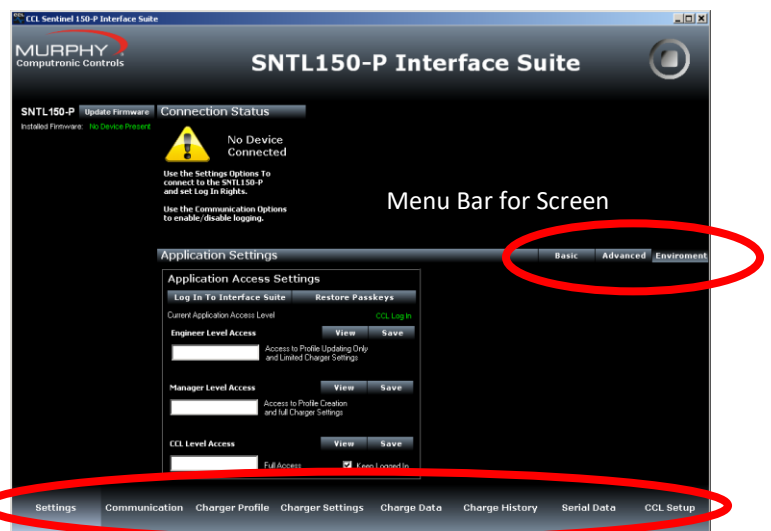
Environment settings

From Settings Screen, select **environment** from Menu Bar and then **select Log In To Interface Suite**

When asked for **password**, enter the supplied password to access the appropriate level.

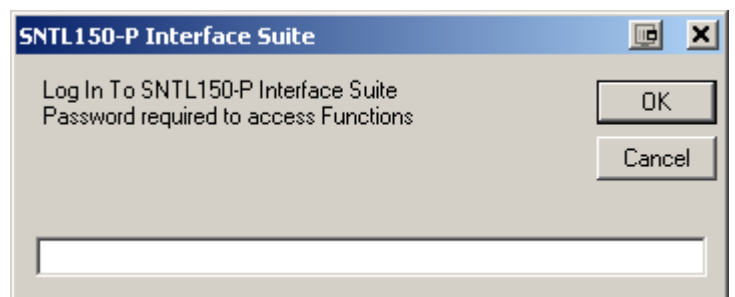
There are 3 modes of operation for the SNTL150P Interface Suite

- Basic View Level
- Engineer Level
- Manager Level



Screen Tab Control

See **SNTL150P Interface Suite Environment** settings section of this document for information on parameters available within each log in level.



Should an incorrect password be entered then the system will state the following:

And limit access to **View Level** only

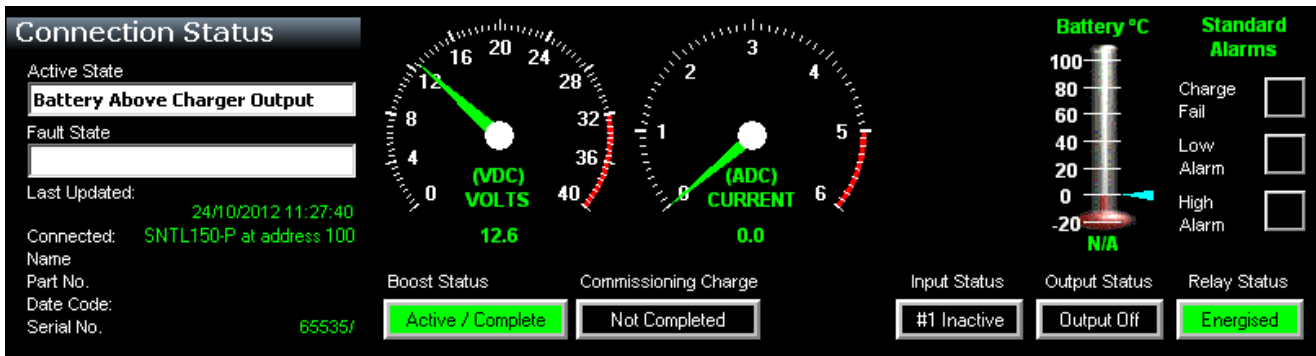
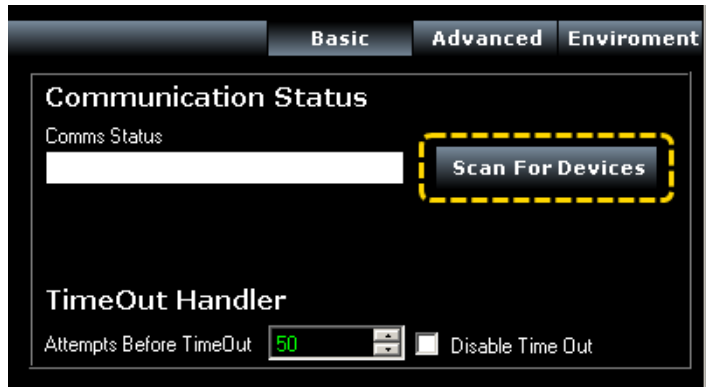


Connecting To Charger

Once connected to charger and SNTL150P has either DC or AC power, select **Scan For Devices** to initiate scan.

Upon successful detection of the SNTL150P the software suite will automatically connect and start communicating

See **resolving communication errors** section (- page 25) of this document should you have problems connecting to the SNTL150P



Once communication is established with the unit, the Top & Side Status windows and indications will become active and reflect the SNTL150P's current condition

Top Status Window

In addition to information about voltage, output current and SNTL150P model information, the Top Status Window provides information regarding its charging state.

Battery (°C) Thermometer - will indicate SNTL150P detected battery temperature should a remote temperature compensation lead be connected. (Temperature is shown in °C)

Boost Status – Will indicate if SNTL150P needs to enter its boost cycle. Indicates if Waiting to Start, Active or Completed. Once SNTL150P terminal voltage has increased above boost initiate voltage, then this will become green.

Commissioning Charge – When SNTL150P is first powered up, it will automatically enter a prolonged boost extension period, factory set to 6 hours, once complete this will become green and be marked as complete.

Input Status (if option fitted) – Shows indication of SNTL150Ps digital input

Output Status – Shows indication of SNTL150P self-resetting output protection circuit

Relay Status (if option fitted) – Shows Fault Relay Status

Side Status Window

The **firmware revision** installed in the SNTL150P is displayed along with option to update, Consult *updating firmware* section within this document.

The side status window will indicate information about timers on the SNTL150P.

Power On Time – Duration that the SNTL150P has been powered (AC or DC)

Time Left in Active State - How long the SNTL150P has remaining in its current state.

Time Until Battery Check - How long before next Battery Check is performed.

P.O.S.T. Timer / Boost Initiate Timer -

Time (counting down from 30s) until boost is initiated if battery measured voltage is below the boost initiate set point or the 6 second POST timer performed on initial power up or after a Connection Fault

Alarm Hold Off's – Low, High and Charge Fail alarms are held off for 2 minutes, should the fault still be present at the end of the hold timer then an alarm will be indicated.



Using the Interface Suite

The Communication Screen

This screen shows Incoming and Outgoing Transmissions between the PC and SNTL150P.

Reset Counters – Allows the monitored counts to be reset on the PC software

Pause – Allows the connections to be paused, ceasing all communications with charger until **Continue** is selected

To terminate connections with SNTL150P, select **Disconnect** from the Actions to ensure the Port is correctly closed.

Warning! Failure to do so before physically disconnecting from the SNTL150P may cause interrupt damage to the SNTL150P requiring a full AC/DC reset before normal operation can continue.

Transmission Log

SNTL150P Interface Suite can log all serial transmissions. These log files can then be loaded into the Charge Data Screen.

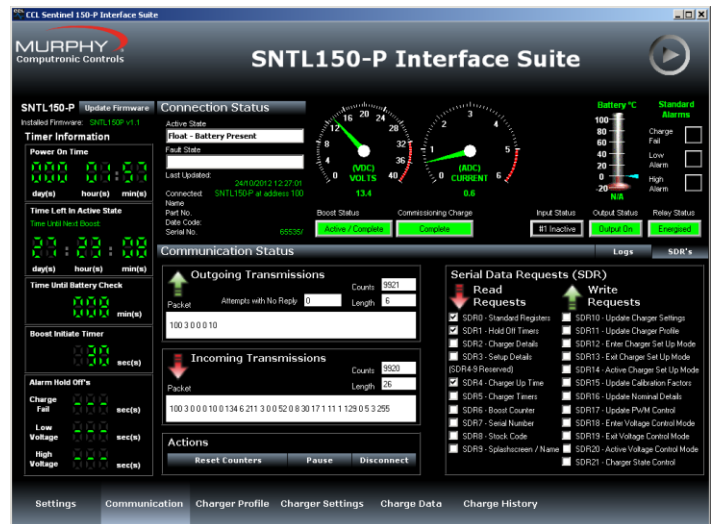
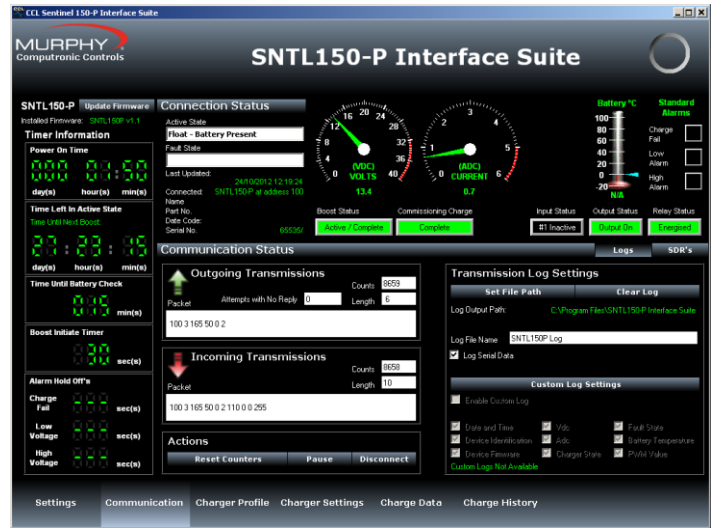
Set File Path - The File Path of stored log can be selected, default is same path as installed interface suite

Clear Log – Delete the log if already present

Log File Name – Enter a name for the log (default is SNTL150P Log)

Note: Custom Logs can be configured to record specific data in a csv file (TAB separated), under the directory selected as above.

The SDR (Serial Data Request) option shows messages queued waiting for action by software suite.



Interface Suite Environment

There are 3 modes of operation for the SNTL150P Interface Suite

- Basic View Level
- Engineer Level
- Manager Level

The following pages outline features and parameters available within each log in level.

View Level Overview

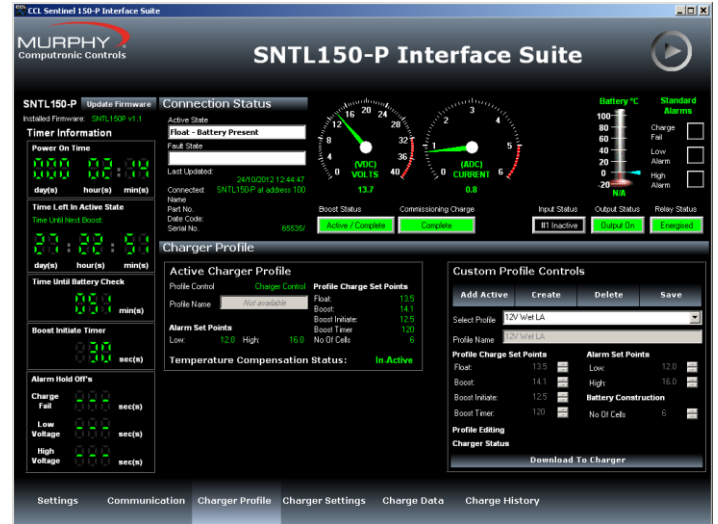
If no password is entered when requested or environment level not changed then the Interface Suite works in **view mode** only. From this setting the following four screens are available in addition to the standard Settings & Communication Screens:

Charger Profile screen

This provides information of the set conditions of the SNTL150P.

Active Charger Profile

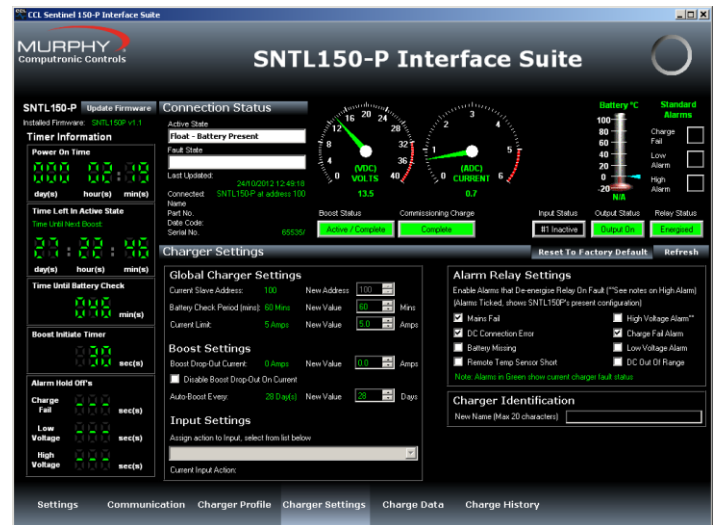
This provides information on what the SNTL150P charger is currently configured to along with status of temperature compensation sensor.



Charger settings screen

This provides information of the set conditions of the SNTL150P

It shows what the various parameters of the SNTL150P are configured to as well as alarm conditions and actions.



View Level Overview

If no password is entered when requested or environment level not changed then the Interface Suite works in **view mode** only. From this setting the following four screens are available in addition to the standard Settings & Communication Screens:

Charger History screen – Charger State History

This provides an historic view of the chargers time in various charge states as well as key counters.

Time in AC failure

Time spent powered by DC with AC failure fault recorded

Time Charging (>500mA)

Time spent delivering in excess of 500mA

Max Battery Temperature

SNTL150P will record the highest temperature recorded by the Temperature Sensor (if connected)

Time Battery Missing

Time spent powered by AC with no Battery Connected

Time in Float Mode

Time spent with charger in its float mode of operation

Time in Boost

Combination of all time spent both in SNTL150Ps ramping to boost stages as well as Boost Extension Periods, including commissioning charge times.

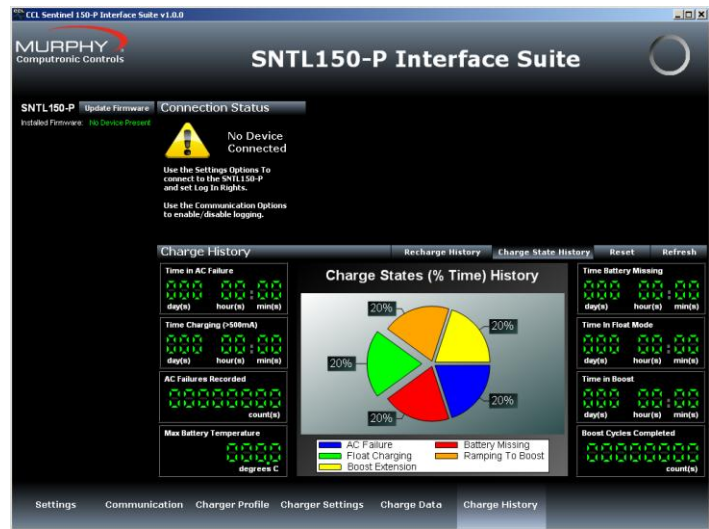
Charger History screen – Recharge History

This provides an historic view of the last 15 bulk charges in time.

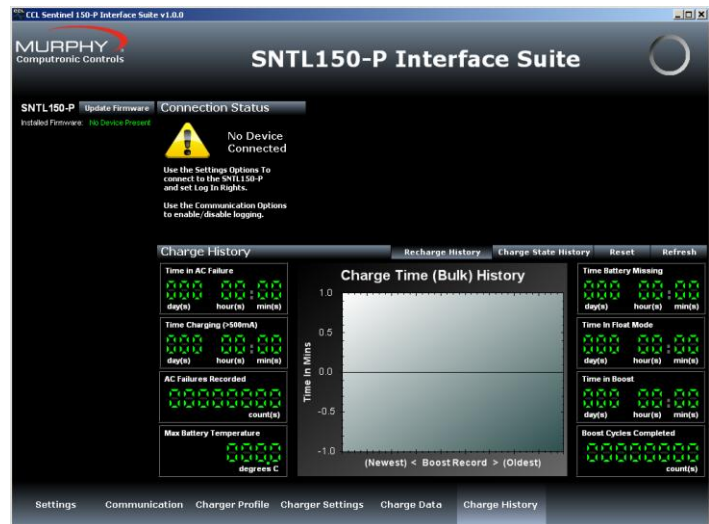
The SNTL150P will record time spent 'ramping the batteries to their target boost voltage. (recorded in 10 minute blocks)

The Bar Graph Display will provide an indication of the trend of the battery recharge time, typically as batteries chemical makeup weakens, the bulk charge time will decrease, as the capacity of the battery becomes reduced.

Note: Use with caution as a guide to battery health, as the SNTL150P will only record time spent in this condition, but not the batteries terminal voltage at start of charge cycle.



The central pie chart shows a breakdown of time spent by SNTL150P in its 5 key charge states.



Charger data screen

This provides a scrolling display of the chargers output voltage and current.

Battery Voltage Graph

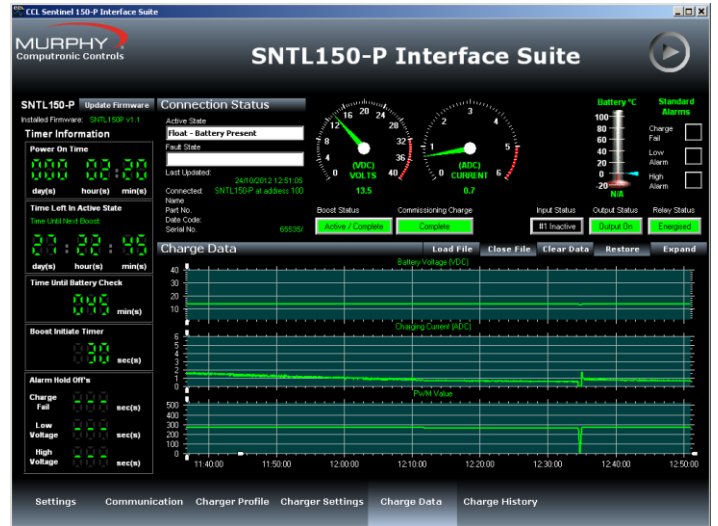
This displays a record of the chargers output voltage (VDC)

Charger Current Graph

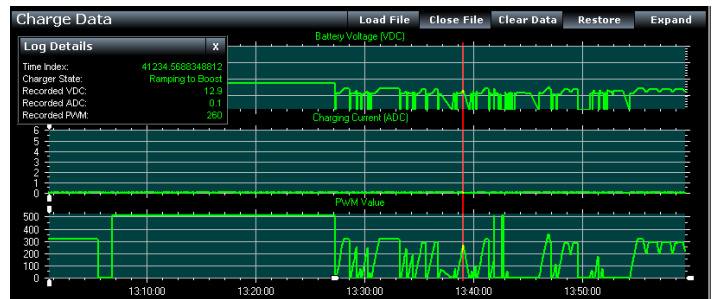
This displays a record of the chargers output current (ADC)

PWM Graph

This displays a record of the chargers internal PWM output.

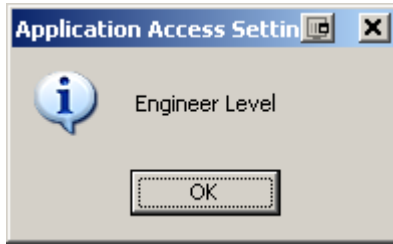


Selecting a position within the charge data display will open a Log Details window which will show specific time index, charger state, VDC, ADC and PWM for position selected in chart.



Engineer View Overview

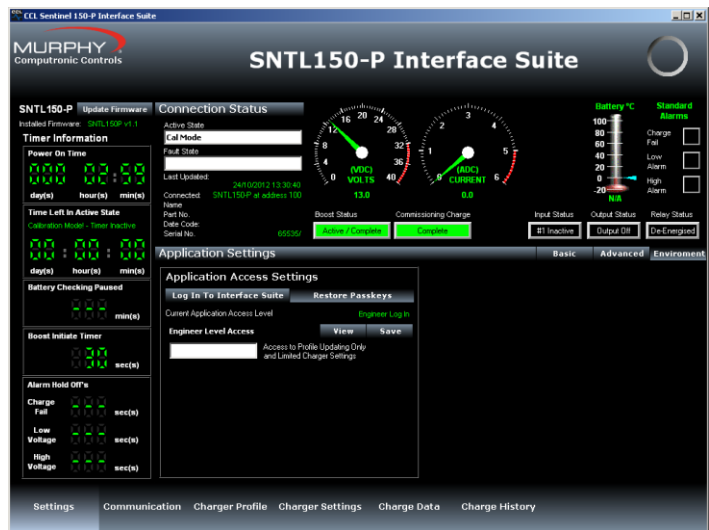
As well as the basic view screens, additional controls are now available



Within the *interface suite* the following additional settings are available:

Engineer password

Within the Settings/Environment Tab, the engineer password can be changed or viewed

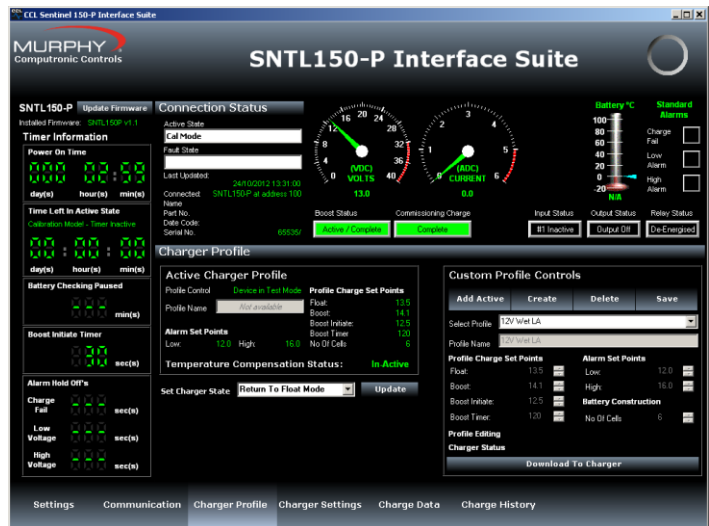


Charger Profile

From the drop down list provided a new charger state can be selected, select item from list then select **Update** to make changes

Note: SNL150P cannot change its state whilst performing a charger check (mains check)

From the predefined list of battery profiles a new charger profile can be selected and downloaded to charger



Within the *charger settings* screen the following additional settings are available:

Global Charger Settings

Charger Settings Reset To Factory Default Refresh

Global Charger Settings
Current Slave Address: No Device
Current Limit: No Device New Value Amps
Alarm Hold Off: No Device New Value sec

Battery Check Settings
Battery Check Period (mins): No Device New Value Mins
Battery Detect Voltage: No Device New Value Vdc
Battery Detect Action: Output Off for... sec
Battery Missing Action: No Device New Value Vdc
 Output Off Remain at Float Level

Boost Settings
Boost Drop-Out Current: No Device New Value Amps
 Disable Boost Drop-Out On Current
Auto-Boost Every: No Device New Value Days
Commissioning Charge: No Device New Value Mins

Input Setting
Current Input Action: No Device

Alarm Relay Settings
Alarms de-energise on Fault Alarms in Green show current charger faults
 Mains Fail High Voltage Alarm**
 DC Connection Error Charge Fail Alarm
 Battery Missing Low Voltage Alarm
 Remote Temp Sensor Short

Charger Identification
New Name (Max 20 characters)

Master Configuration
Configure for parallel operation

Download To Charger
No Device Connected

Global Charger Settings

View Charger Slave Address

Amend Current Limit – See SNTL150P configurable settings for details

Alarm Hold Off Timer - see SNTL150P configurable settings for details

Battery Check Settings

Amend Battery Check Interval – see SNTL150P configurable settings for details

Battery Detect Voltage – see SNTL150P configurable settings for details

Battery Detect Action & Timer – see SNTL150P configurable settings for details

Battery Missing Actions & Timers – see SNTL150P configurable settings for details

Boost Settings

Boost Drop Out Current - see SNTL150P configurable settings for details

Auto-Boost Timer - see SNTL150P configurable settings for details

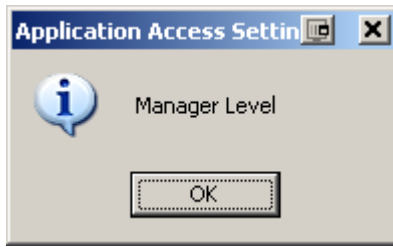
Commissioning Charge Timer - see SNTL150P configurable settings for details

Input & Alarm Configurations can also be set - - see SNTL150P configurable settings for details

Select **Download To Charger** to finalise changes

Manager View Overview

As well as the basic view screens additional controls are now available



Within the *various screens* both the *engineer configuration levels* are available plus the following additional settings are now available:

Manager password

Within the Settings/Environment Tab, the manager password can be changed or viewed

Charger Profiles

From the predefined list of battery profiles a new charger profile can be selected and downloaded to charger. New charger profiles can also be both created and deleted – see SNTL150P configurable settings for details

Charger Settings

From the Charger Settings the SNTL150P can be reset to factory defaults for the Part Number the charger is configured to.

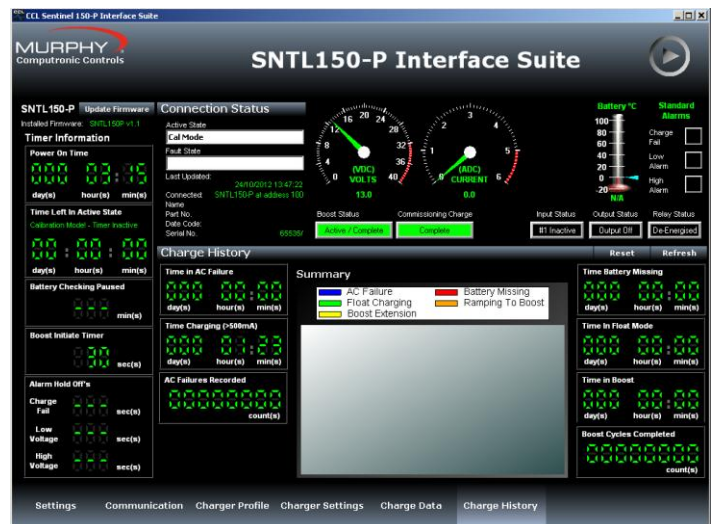
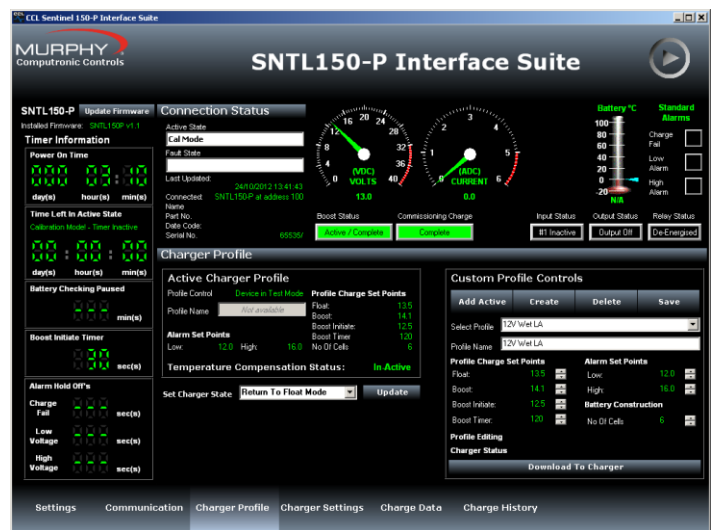
Charger Identification

The SNTL150P can now be configured to have a unique Charger Name. This appears within the Connection Status Window.

Charge History

The SNTL150P charge history can be cleared by selecting **Reset** from the **Charge History** Screen.

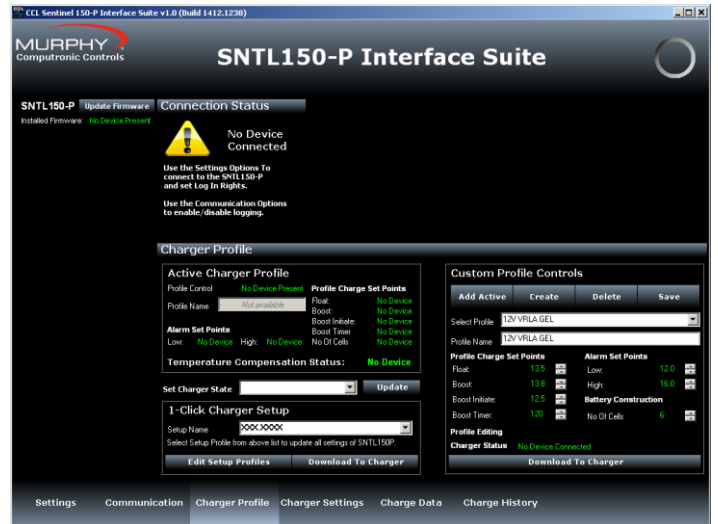
Note: Power On Time and Charging Time (>500mA) are not resettable.



1-Click Setup Options

Within the **Charger Profile** Tab an option to set the SNTL150P up by means of a user generated part number is available.

This allows all settings, including charger profile and general settings to be configured in a singular process. These setup profiles can be created, modified and deleted from the Editor Screen.



Select **Download To Charger** to apply setup.

Select **Edit Setup Profiles** to access the Setup editor screen.



From the Setup Editor screen, a full Setup configuration can be created, deleted or modified. To create a new Setup enter required name in the Setup Name area and complete all details as required.

Once complete select **Save Setup** from the menu. The setup profile can also be **exported** to a .pro file. Any previously **exported** .pro files can also be **imported** into the Setup Editor and modified/saved as required.



Should any details be missing or out of range. The Setup Editor will highlight errors and prevent saving of profile.

Once complete select **Exit Editor**. Any newly saved profiles will now appear within the 1-Click Editor panel in the main application Tab.

Note: If the connected SNTL150P does not match the nominal voltage of the Setup Profile created then the SNTL150P Interface will flag the error and not download the information to the SNTL150P.



SNTL150P Configurable Settings

Charger Profiles

Depending upon access password entered, the selection or creation of new charger profiles is available. The configurable fields are as follows:

PROFILE NAME	Name of profile* <i>*Note: This is for local PC storage of profile, not stored or saved by SNTL150P.</i>
FLOAT VOLTAGE	This should be according to manufacturer recommendations for battery type, i.e Wet Lead Acid = 2.25V/p/c = 12V Settings = 13.5Vdc
BOOST VOLTAGE	This should be according to manufacturer recommendations for battery type, i.e Wet Lead Acid = 2.23V/p/c = 12V Settings = 14.1dc
BOOST INITIATE VOLTAGE	The voltage at which the SNTL150P Initiates Boost Function. This should be a voltage lower than Float voltage, typically nominal (i.e. 12V or 24V)
BOOST PERIOD	Amount of Time for Charger to remain at Boost Voltage before returning to Float
LOW ALARM VOLTAGE	Low Alarm Voltage Setting
HIGH ALARM VOLTAGE	High Alarm Voltage Setting
NUMBER OF CELLS	Used for correct calibration of Temperature Compensation. If, such as in the case of Power Supply modes, no temperature compensation is required enter '0'

Preset Charger Profiles

The SNTL150P contains an inbuilt list of the most common type of batteries used, these can be selected from the drop down menu:

- 12V Wet Lead Acid**
- 12V Calcium Calcium**
- 12V Lead Acid Antinomy**
- 12V VRLA – AGM**
- 12V VRLA – Gel**
- 10 Cell NiCd**
- 18 Cell NiCd**
- 20 Cell NiCd**
- 24V Wet Lead Acid**
- 24V Calcium Calcium**
- 24V Lead Acid Antinomy**
- 24V VRLA – AGM**
- 24V VRLA – Gel**

Creating Custom Profiles

Only available in Manager Mode

Select **Create** this will allow entry of charger profile parameters as outlined above.

The screenshot shows the 'Custom Profile Controls' window with the 'Create' button selected. The 'Select Profile' dropdown is set to 'Enter New details...'. The 'Profile Name' field is empty. Under 'Profile Charge Set Points', Float is 0.0, Boost is checked (disable), Boost Initiate is 0.0, and Boost Timer is 0. Under 'Alarm Set Points', Low is 0.0 and High is 0.0. Under 'Battery Construction', No Of Cells is 0. The 'Charger Status' is 'No Device Connected'. A 'Download To Charger' button is at the bottom.

Enter all parameters as required

Once complete, select **Save**

**Please see notes below for rules on charger profiles.*

The screenshot shows the 'Custom Profile Controls' window with the 'Save' button selected. The 'Select Profile' dropdown is set to 'New Profile'. The 'Profile Name' field contains 'New Profile'. Under 'Profile Charge Set Points', Float is 13.5, Boost is unchecked (disable), Boost Initiate is 12.0, and Boost Timer is 60. Under 'Alarm Set Points', Low is 10.0 and High is 18.0. Under 'Battery Construction', No Of Cells is 6. The 'Charger Status' is 'No Device Connected'. A 'Download To Charger' button is at the bottom.

The newly created custom profile will now appear in the drop down list of profiles

Rules & Limits of Profile Creation:

Parameter	12V Models	24V Models
Boost Initiate Setting	10V / 20Vdc- Float Setting within correct scale	
Float Setting	10V – 17Vdc	20V-32.0Vdc
Boost Setting* *To disable boost tick boost disabled option	10V – 17Vdc	20V-32.0Vdc

Note: Mixing voltage thresholds (17V) on a singular profile will also create an error. For example, Float cannot be 13.5Vdc and Boost be >17Vdc.

Deleting Custom Profiles

Select the custom profile from the drop down list of profiles, once selected, as shown, select **delete**. The entry will be removed and the first profile within the list will be shown.

Note: Only custom profiles can be deleted from the list.



Adding Current SNTL150P Profile To Software Suite

Once SNTL150P is connected to the Interface Suite, the current profile can be stored on the PC. Select Add Active to save this profile. It will be added under the profile name of "SNTL150-P Downloaded Profile"

Applying Custom Profiles

Select the profile you wish to apply to the SNTL150P Charger from the drop down menu

Once profile is selected, select **download to charger**

Notes: If the profile selected is not suitable for the charger connected to, i.e. 24V profile on a 12V unit the shown dialogue screen will appear warning of this error. Profile will not be downloaded.



Battery Check Routine

The Battery check process reduces the output of charger to nominal voltage and validates terminal voltage.

During this battery check it will report **Checking Battery** in the **Active State** window.

If no battery is detected, or battery voltage is less than the configured **Battery Detect Voltage** then it reports **Battery Missing** in the **Fault State** window.

The SNTL150P Performs a battery check at the following instances:

- On AC Power Up, before entering boost mode of operation
- After Completing a Boost Cycle
- Every 1 minute if battery presence is not detected
- Every period of minutes as defined by Global Charger Settings whilst in Float Mode of Operation

Once charger is in Float mode, the charger performs a battery check in accordance with the **Battery Check Period** setting as configured in **Global Charger Settings**

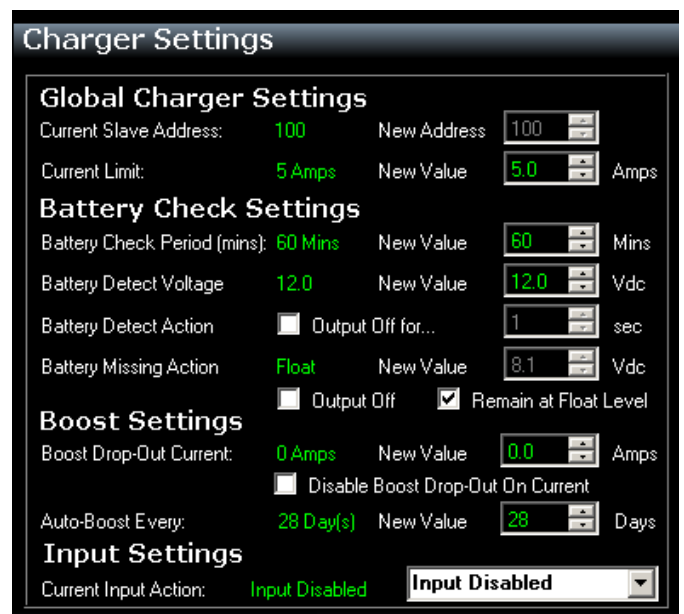
To change the interval time of the battery check routine, enter required time in minutes into **Battery Check Period** and select **Download To Charger** to SNTL150P

*Note: When download a new interval time, the changes will take place immediately. To **disable** battery checking, enter "0" as Battery Check Period and update charger.*

The SNTL150P can also be configured to turn its output off for up to 30 seconds when performing battery check. After this period has elapsed, the SNTL150P will measure its own DC supply voltage and in accordance with **Battery Detect Voltage** will report Battery Missing status.

Should the SNTL150P report a battery check, it will continue checking every 1 minute for battery until fault has cleared. Once a battery is detected it will revert to **Battery Check Period** time

During a **Battery Missing Alarm** the SNTL150P will behave in accordance with the parameters set in **Battery Missing Action**. The SNTL150P's output can be turned off, or set to a specified level.



Setting Charger Current Limit

The SNTL150P maximum output current can be limited to a value as set within the Current Limit field in Global Charger Settings.

Note: *If battery voltage is below minimum charger output voltage (typically 10V on a 12V unit and 20V on 24V unit) then the SNTL150P will be limited by demands from battery and hardware current limit control (5A)*

Boost Drop Out Current

The alarm output can be set to hold off fault reporting for up to a maximum of 240 seconds (4 mins).

The screenshot shows the 'Charger Settings' interface with the following sections and values:

- Global Charger Settings**
 - Current Slave Address: 100 | New Address: 100
 - Current Limit: 5 Amps | New Value: 5.0 Amps
- Battery Check Settings**
 - Battery Check Period (mins): 60 Mins | New Value: 60 Mins
 - Battery Detect Voltage: 12.0 | New Value: 12.0 Vdc
 - Battery Detect Action: Output Off for... | 1 sec
 - Battery Missing Action: Float | New Value: 8.1 Vdc
 - Output Off | Remain at Float Level
- Boost Settings**
 - Boost Drop-Out Current: 0 Amps | New Value: 0.0 Amps
 - Disable Boost Drop-Out On Current
 - Auto-Boost Every: 28 Day(s) | New Value: 28 Days
- Input Settings**
 - Current Input Action: Input Disabled | Input Disabled

Boost Drop Out Current

The SNTL150P will terminate its Boost cycle if the output current has dropped below a preset level. This prevents needless battery gassing and temperature rise, once the battery is fully charged.

Configurable **Boost Drop-Out Current** between 0 and 5amps to a 0.1A resolution, the option to disable this feature can be done by ticking the checkbox marked "Disable Boost Drop Out On Current"

Auto-Boost Period

The SNTL150P employs a configurable option to allow an auto-boost cycle to occur without the need to manually engage it. Should the charger not have recorded a boost cycle happening within a given period, it exercises the batteries, elevating their terminal voltage, recombining the partly separated water and strong sulphuric acid within the cells, preventing build up on the battery plates and maintaining battery life and performance

Enter required **Auto-Boost Period** in Days, 0 (Disable) - 31.

Digital Input Settings (where fitted)

The digital input can be configured to make SNTL150P behave in a given manner.

The following options are available:

Return To Float Mode

Single Input Action, forcing charger back to Float.
(Once actioned, the input needs to be released and re-triggered for it to act again)

Ramp To Boost

Single Input Action, forcing charger through a full boost cycle

Boost Extension

Single Input Action, forcing charger into a timed boost extension cycle

Perform Battery Check

Single Input Action, forces SNTL150P to perform a battery check

Reduce to Nominal Voltage

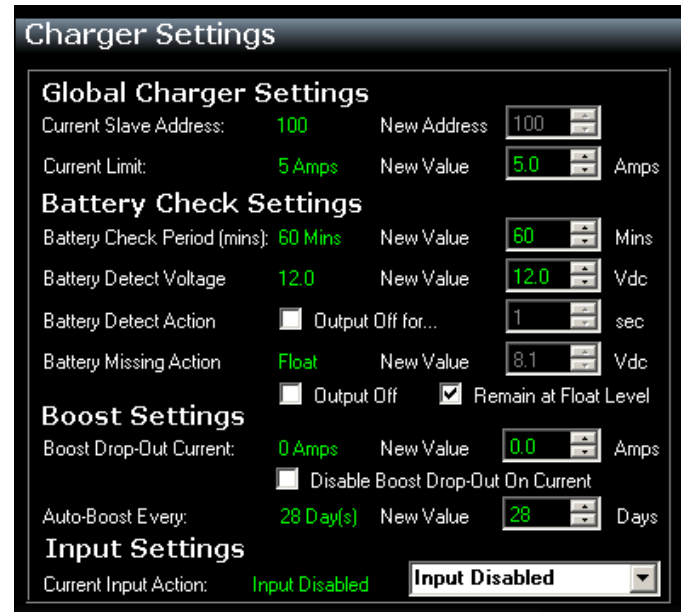
Held Input Action, reduces the output voltage of SNTL150P to its nominal value. (12/.24V) SNTL150P will remain at this level until either:

- Input is released
- A Short Circuit / Reverse Polarity Fault occurs

Turn Output Off

Held Input Action, turns the output off from the SNTL150P. SNTL150P will remain in this condition until either:

- Input is released
- A Short Circuit / Reverse Polarity Fault occurs



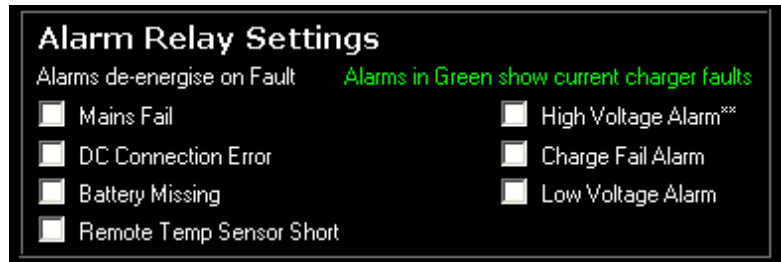
Alarm Settings (where fitted)

The alarm output can be configured to make SNTL150P behave in a given manner.

Of the 8 indicated reported faults, any combination can be ticked to cause the SNTL150P to de-energise relay in fault condition.

Apply changes and **Download Global Settings**

Note: Should only High Alarm be configured to alarm, then SNTL150P will inverse the logic of the relay and cause it to energise on fault. This prevents mi-interpreted readings from the alarm.



Alarm Relay Settings

Alarms de-energise on Fault Alarms in Green show current charger faults

<input type="checkbox"/> Mains Fail	<input type="checkbox"/> High Voltage Alarm***
<input type="checkbox"/> DC Connection Error	<input type="checkbox"/> Charge Fail Alarm
<input type="checkbox"/> Battery Missing	<input type="checkbox"/> Low Voltage Alarm
<input type="checkbox"/> Remote Temp Sensor Short	

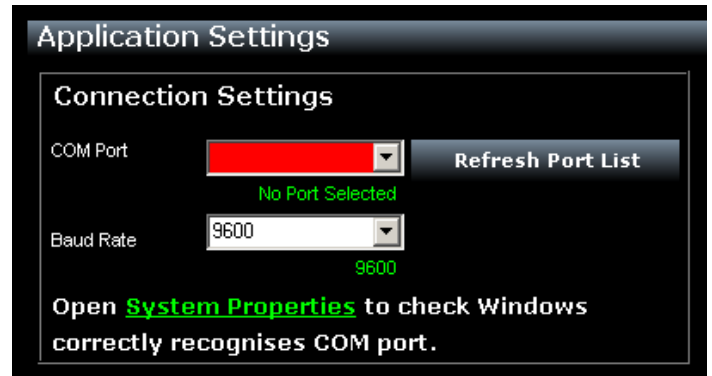
Once all settings have been made as per requirements, select **Download To Charger** to update SNTL150P.

Resolving Communication Errors

If a valid **COM** port setting has not been entered the following errors will occur. Ensure a COM port is selected from the drop down list.

Ensure the COM port selected is correct for the USB/TTL converter connected between SNTL150P and PC.

Baud Rate is 9600 as default for the SNTL150P charger.



Under **settings – Advanced** settings set the following parameters.

Network Address (Minimum) 100 (cannot be changed)

Network Address (Maximum) Up to 250

Note:

The Higher the number the longer it will take for the system to scan node addresses, if possible limit the Maximum address number to as low as possible. Currently the SNTL150P has a fixed address of 100. These settings have no effect.

Communication Settings

Scan Rate – Sets the scan rate interval between the Interface suite and the SNTL150P. This enables reduced entries in the log file when capturing long charge logs.

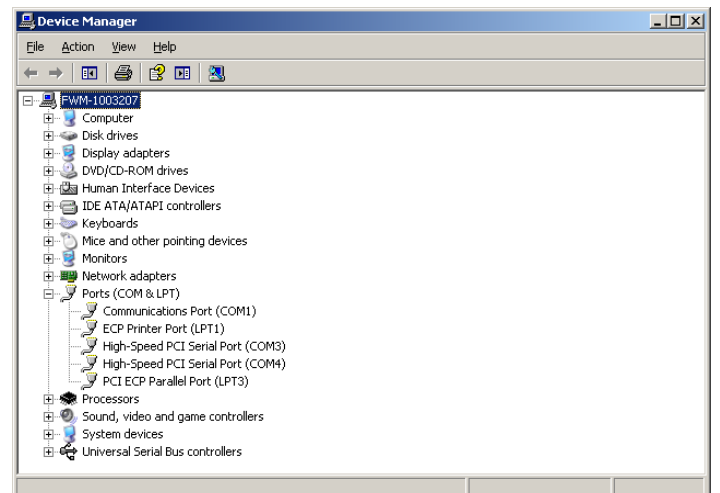
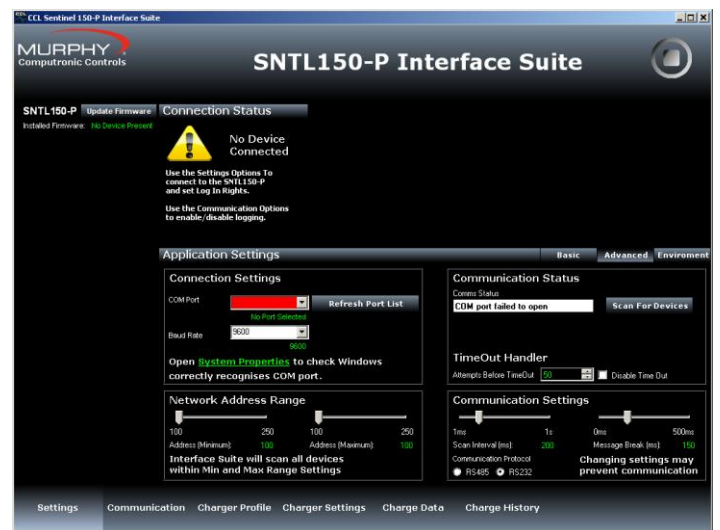
(Adjustable between 1ms and 60s)

Message Break - Controls the end of message time out from the SNTL150P.

(Adjustable between 0ms and 500ms)

Note: Adjusting the Message Break Time may result in failure of the SNTL150P to communicate.

USB Com Port must match the device settings within the Windows OS they can be found under **Control Panel/System/Hardware/Device Manager** and should be listed under **Ports (COM & LPT)**



Configuration of SNTL150-P via TTL

In order for customers to transmit their own remote profiles to the SNTL150P, the following protocol must be used:

Packet must be sent in the following format

[Byte1] Node Address must be that of the charger (Preset of 100)

[Byte2] Write Multiple Registers (0x10)

[Byte3] Starting Address (High Byte)

[Byte 4] Starting Address (Low Byte)

[Byte 5] Number of Registers (High Byte)

[Byte 6] Number of Registers (Low Byte)

[Bytes 7 – 20] Data as per below

Register start address = 11

Number of points = 7

Register	SNTL150P Function	Scaling
40011	Float voltage	Voltage X 10
40012	Boost voltage	Voltage X 10
40013	Boost initiate voltage	Voltage X 10
40014	Boost period	Minutes
40015	Low alarm voltage	Voltage X 10
40016	High alarm voltage	Voltage X 10
40017	(High Byte) Number of cells	Cells X 1
	(Low Byte is reserved, the value stored must be read and then rewritten to SNTL150P when updating profile)	

The confirmation message back will match Bytes 1 – 6 of transmitted message. Changes are made instantly.

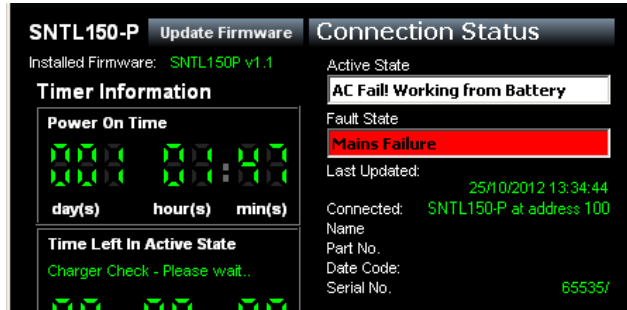
In System Programming

Updating your firmware

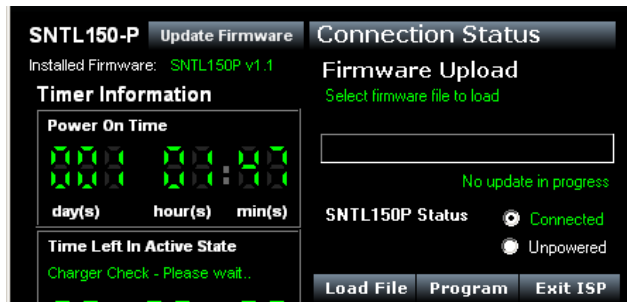
Install the SNTL150P Interface Suite as per the instructions contained with the manual.

Once installed follow standard **Connecting To Charger** section of manual to ensure charger connects correctly to software suite. Once successfully connected, follow instructions below.

From side status window, select **update firmware**



From the in-system programming tool select file to download using **Load File** Dialogue



If the SNTL150P is powered up and connected the Interface Suite, after selecting **Program** the SNTL150P will automatically reset ready to accept new program. Should the SNTL150P not be powered follow instructions on screen to turn on charger



Whilst programming the charger firmware the SNTL150Ps green LED will flash rapidly as the data is downloaded.

Selecting **Exit ISP** will abort the process.

Once complete, the interface suite will automatically close the ISP and connect to the SNTL150P





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