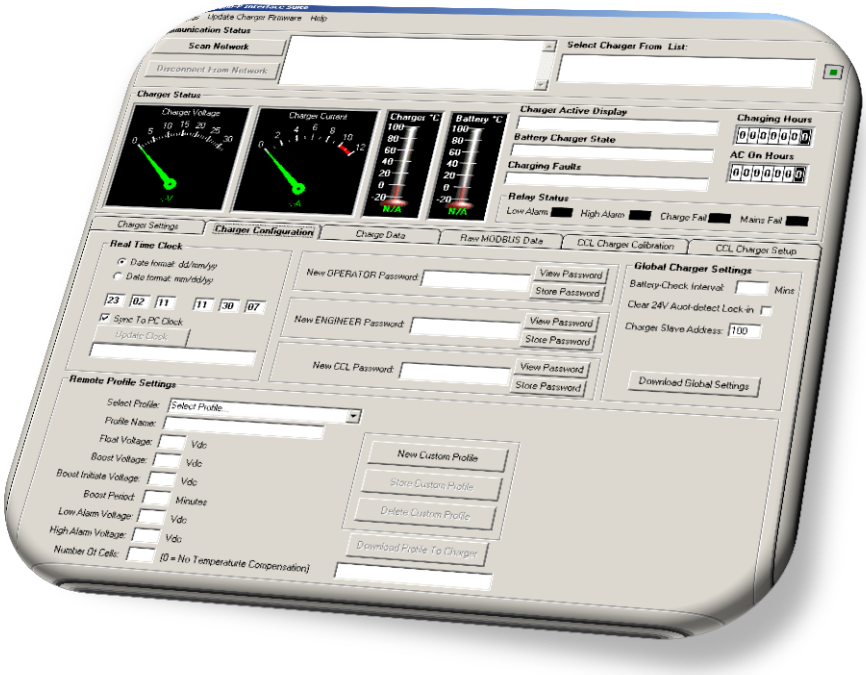
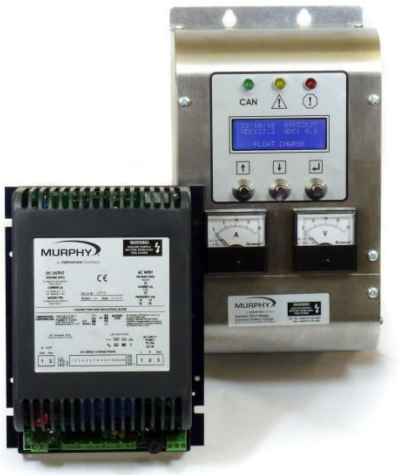
SNTL300P-PCSUITE interface suite

Configuration and Monitoring software for Sentinel 300P automatic switch mode battery chargers

Installation and Operation Manual





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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 SNTL300P-PCSUITE is a PC-based software program for configuring and monitoring Sentinel 300P series battery chargers. Communication between the PC and Sentinel 300P is via a USB and RS485 network.

Minimum system requirements:

1. Sentinel 300P 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. SNTL300P-PCSUITE software
4. USB / RS485 converter recognised as COM port on Windows OS
5. RS485 lead (connecting Sentinel to USB/RS485 converter)
6. USB lead (connecting PC to USB/RS485 converter)

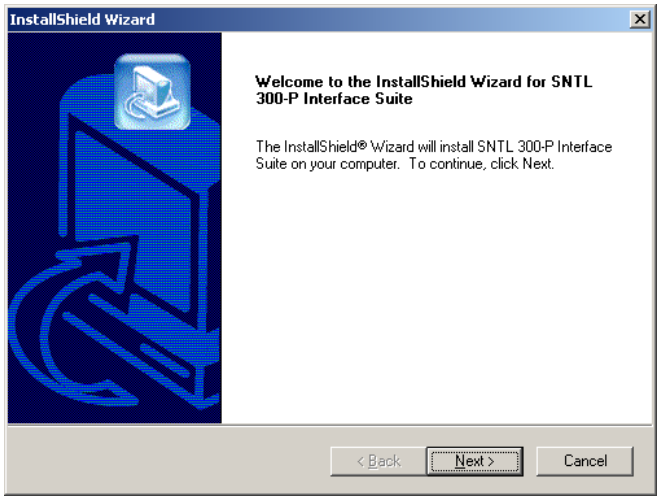
Item 3 above (SNTL300P-PCSUITE software) is available on request, part number 42.70.3898: the software is supplied by email attachment.

Item 3 is also available on CD-ROM, along with items 4 – 6, as a complete connection suite, model SNTL300P-PCCONN, part number 42.70.3899.

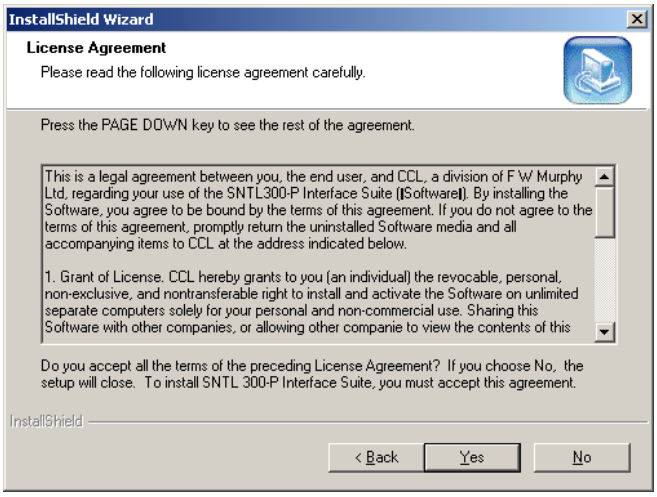
Installation Guide

1, Run the Sentinel 300-P Interface Suite.exe file to install software to PC

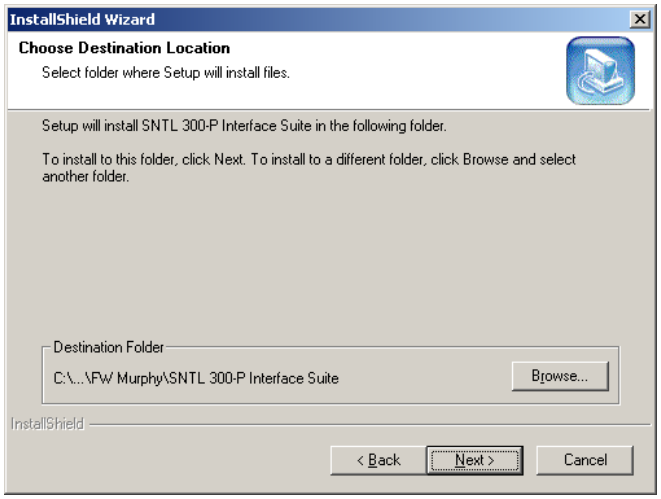
Sentinel 300-P Interface Suite.exe



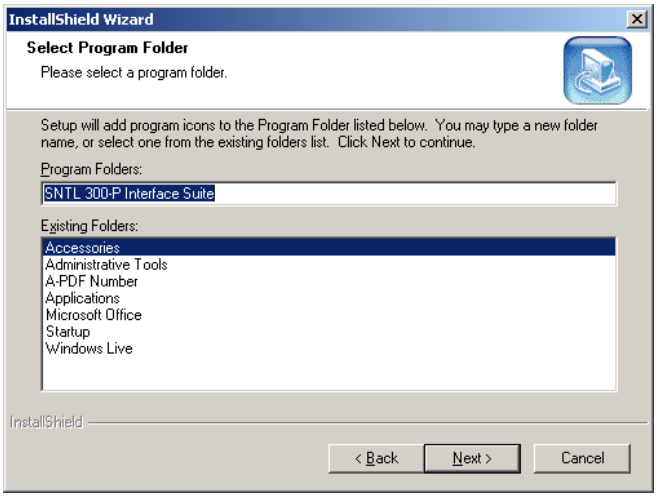
2, Select Next to continue through installation process.



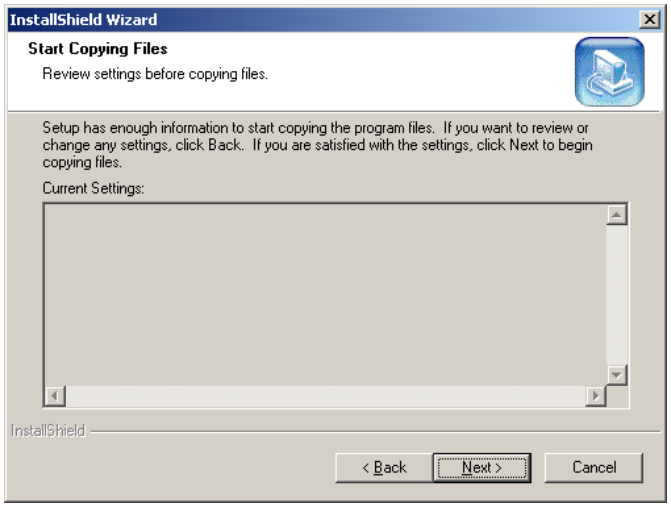
3, After viewing license agreement, select YES to proceed



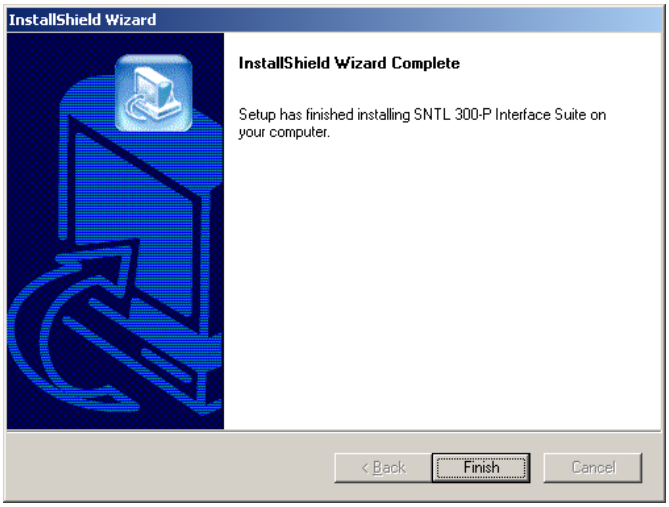
4, Select installation folder



5, Select program folder



6, Confirm installation by selecting Next



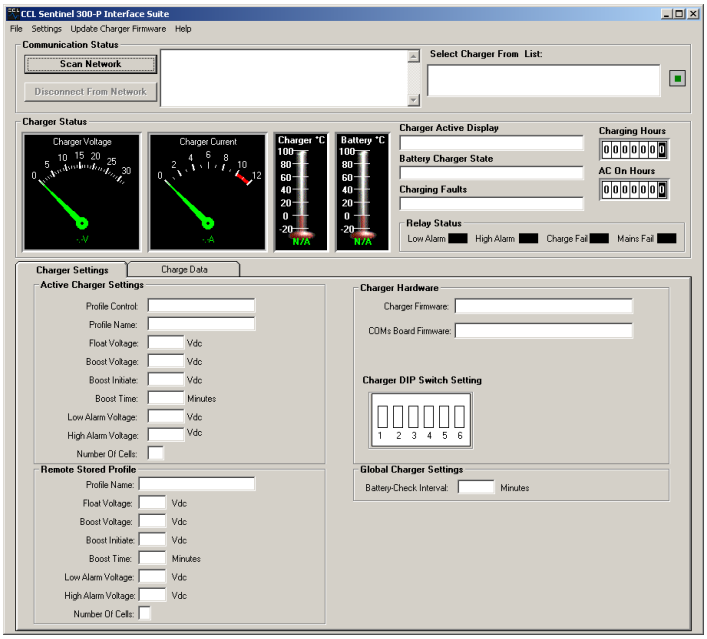
7, Installation is complete, select Finish

Getting Started

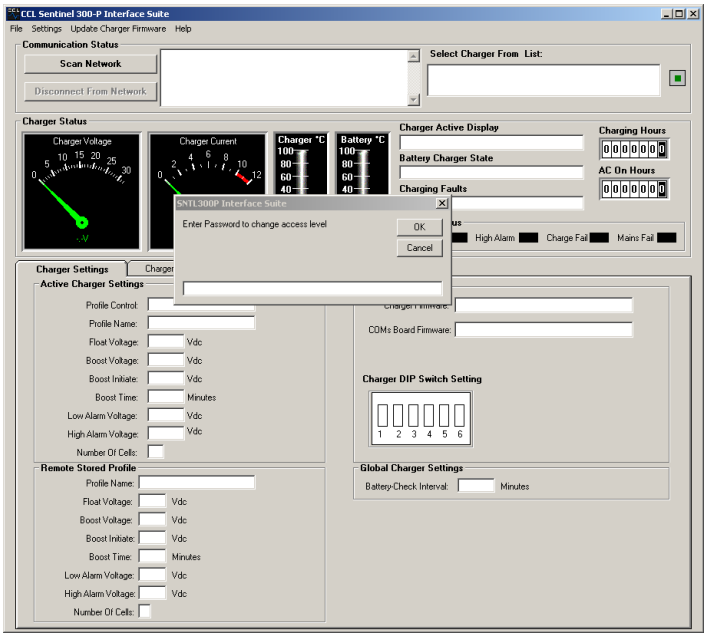
After installing SNTL300P interface suite on your PC, a desk top icon as shown below will be added. Select this to launch the SNTL300P interface suite

Environment settings

From home screen, select ***settings*** from Menu Bar and then ***environment***

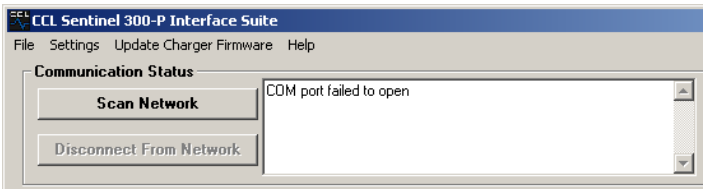


When asked for ***password,*** enter the supplied password to access the appropriate level.



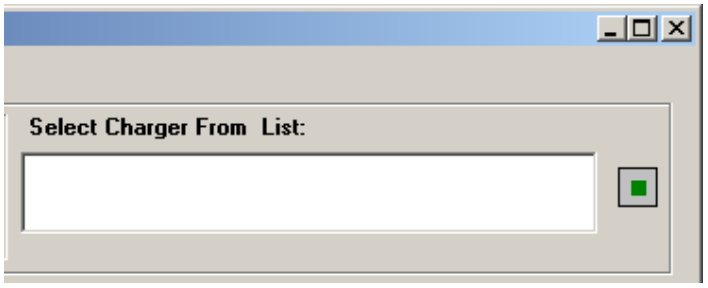
Connecting To Charger

Once connected to charger and SNTL300P has either DC or AC power, select ***Scan Network*** to initiate scan

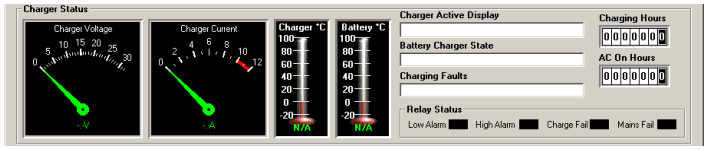


See ***resolving communication errors*** section of this document should you have problems connecting to the SNTL300P

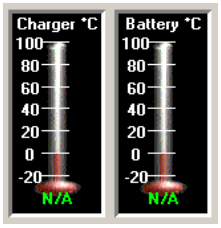
Upon connection to the SNTL300P the ***Select Charger From List*** section shown below will list all SNTL300P units that are active on the connected RS485 MODBUS. Select the appropriate charger to connect to.



Once communication is established with that unit, the Voltmeter, Ammeter and Charger Status windows and indications will become active and reflect the SNTL300P's current condition



The two thermometers will indicate SNTL300P local temperature as well detected battery temperature should a remote temperature compensation lead be connected.
Temperature is shown in °C
Note: *Local Charger temperature is for information purposes only.*



Using the Interface Suite

There are 3 modes of operation for the SNTL300P Interface Suite

- Basic View Level
- Engineer Level
- Manager Level
- CCL/Admin Level (Reserved)

Under ***settings/environment*** enter password to access either: Operator, Engineer or Admin level (see ***SNTL300P Interface Suite Environment*** settings section of this document)

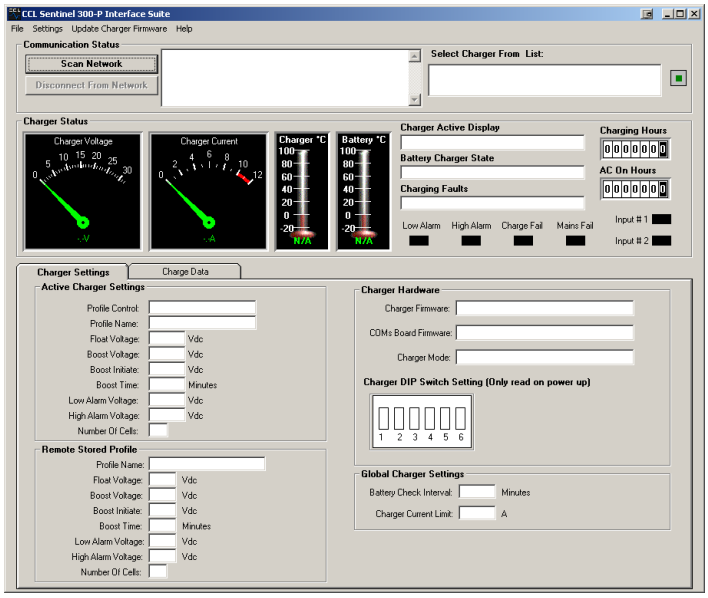
Should an incorrect password be entered then the system will state the following:

And limit access to ***View Level*** only

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 two screens are available:

Charger settings screen
This provides information of the set conditions of the SNTL300P.



Active Charger Settings
This provides information on what the SNTL300P charger is currently configured to.

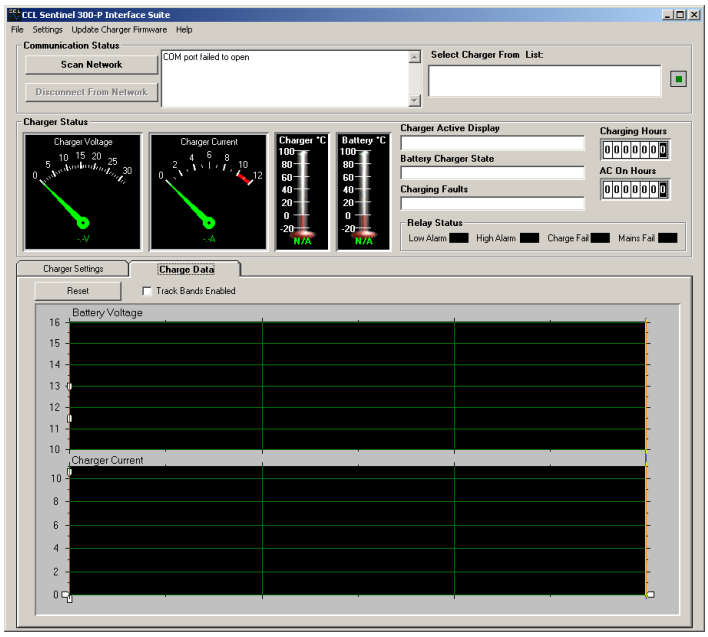
Remote Stored Profile
This provides information on what the SNTL300P charger has stored when configured to Remote Profile

Charger Hardware
The SNTL300P provides information on what revision firmware it contains along with COMs board firmware if attached.

Charger DIP switch settings
The current configuration of the DIP switches located on the rear of the SNTL300P is shown.

Global Charger Settings
Battery Check Period and Charger Current Limit are shown

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

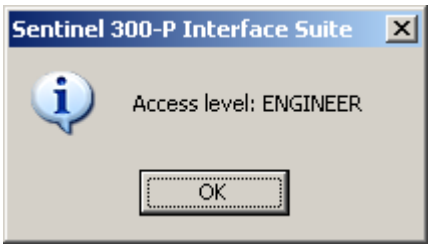


Battery Voltage Graph
This displays a record of the chargers output voltage (VDC)

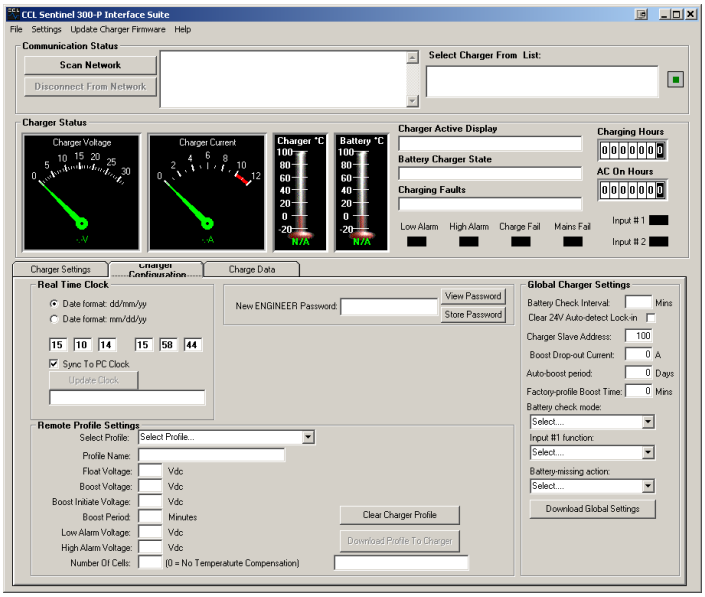
Charger Current Graph
This displays a record of the chargers output current (ADC)

Engineer View Overview

As well as the basic view screen, an additional tab of ***Charger Configuration*** is now available



Within the ***charger configuration*** tab the following additional settings are available:



Settings of Real Time Clock

(COMs Option only)
The SNTL300P can be synced to PC clock
American or European Date Layout can be selected
Select from a pre-defined list of Battery Profiles

Operator password

The engineer password can be changed or viewed

Remote Profile Settings

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

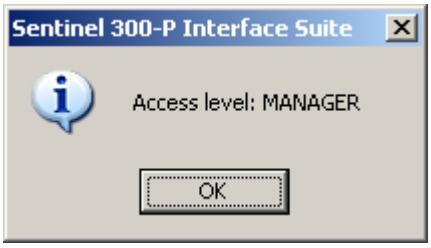
Global Charger Settings

Amend Battery Check Interval – see SNTL300P configurable settings for details
Clear 24V Auto-Detect Lock in– see SNTL300P configurable settings for details
Amend Charger Node Address– see SNTL300P configurable settings for details
Boost Drop Out Current - see SNTL300P configurable settings for details
Factory Profile Boost Time - see SNTL300P configurable settings for details

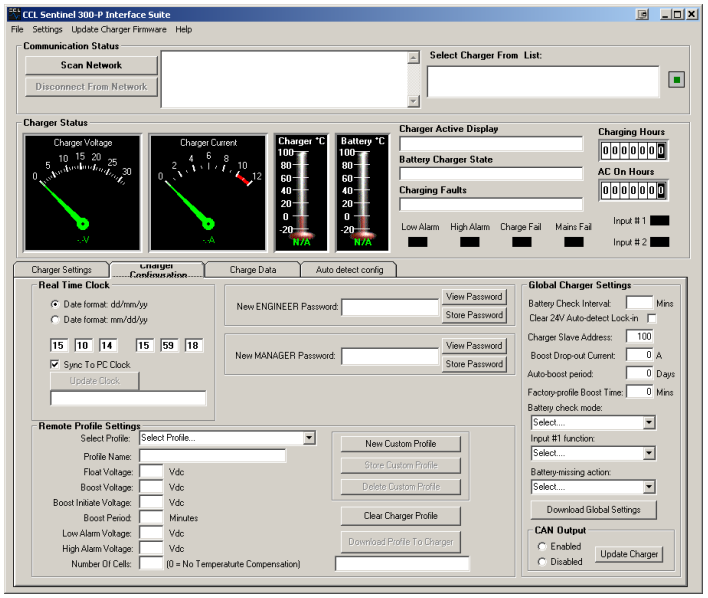
Download Profile To Charger is only enabled if charger DIP switch is in remote setting

Manger View Overview

As well as the basic view screen, an additional tab of ***Charger Configuration*** is now available



Within the ***charger configuration*** tab both the ***operator configuration levels*** are available plus the following additional settings are now available:



Manager password

The manager password can be changed or viewed

Remote Profile Settings

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 SNTL300P configurable settings for details

CAN Output

The SNTL300P can now be configured to deliver a J1939 CANBUS compliant output from terminals 12 and 13 from CN2 (IO Array).

Note: Firmware Revision v003 or above is required

To configure your hardware for CAN, set Jumpers J5a and J5b, located just above LED's, from position 2-3 as shown to positions 1-2. CAN output is now from 12 & 13 of the IO array.

SNTL300P 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
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 SNTL300P 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 SNTL300P contains an inbuilt list of the most common type of batteries used, these can be selected from the drop down menu:

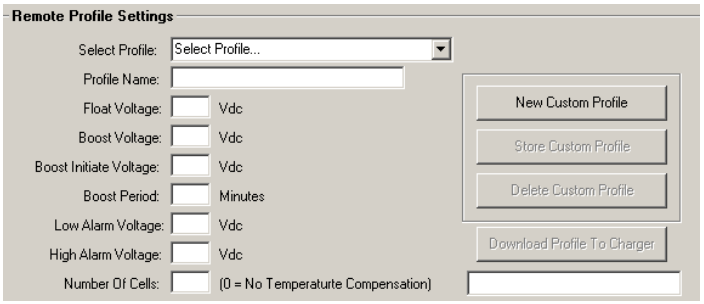
12V Wet Lead Acid
12V Wet Lead Acid for Fire Pump*
12V Calcium Calcium
12V Lead Acid Antinomy, Hybrid Sb-Ca (Antimony-Calcium)
12V VRLA – AGM
12V VRLA – Gel
10 Cell NiCd
12V Power Supply Mode
18 Cell NiCd
20 Cell NiCd
24V Wet Lead Acid
24V Wet Lead Acid for Fire Pump*
24V Calcium Calcium
24V Lead Acid Antinomy, Hybrid Sb-Ca (Antimony-Calcium)
24V VRLA – AGM
24V VRLA – Gel
24V Power Supply Mode

****Fire Pump Calibrations are only available on SNTL300P-FP Fire Pump Models***

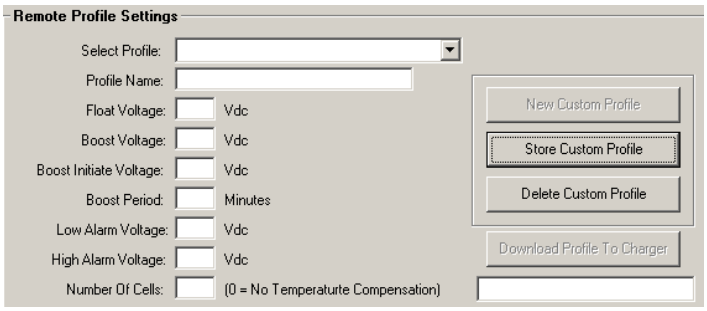
Creating Custom Profiles

Only available in Manager Mode

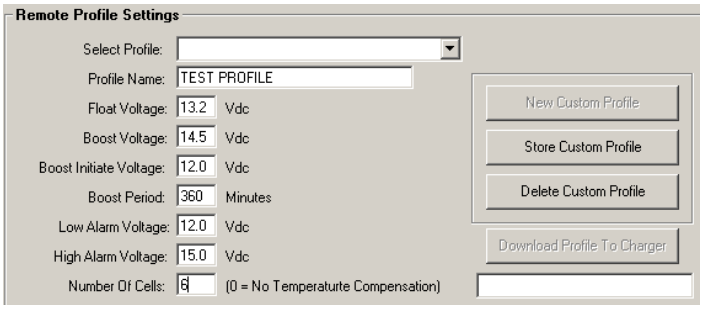
Select ***New Custom Profile*** this will allow entry of charger profile parameters as outlined above.



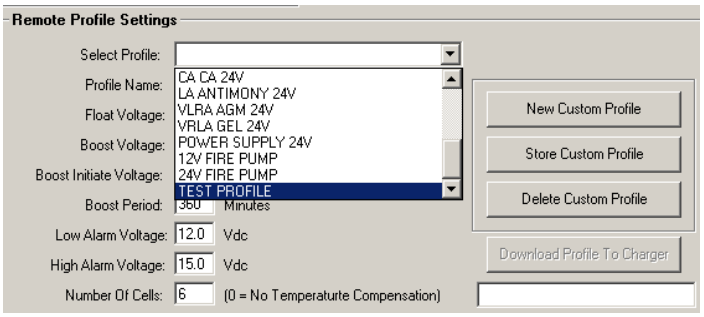
Enter all parameters as required



Once complete, select ***Store Custom Profile***

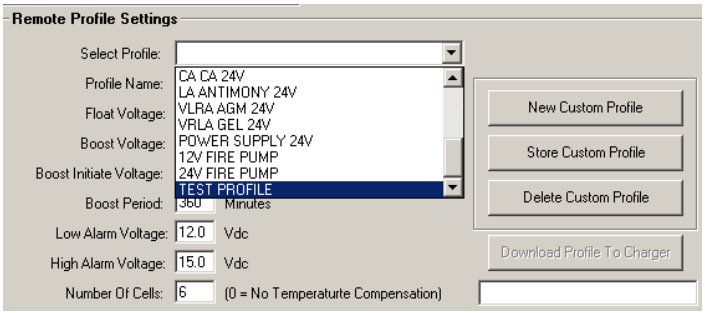


The newly created custom profile will now appear in the drop down list of profiles

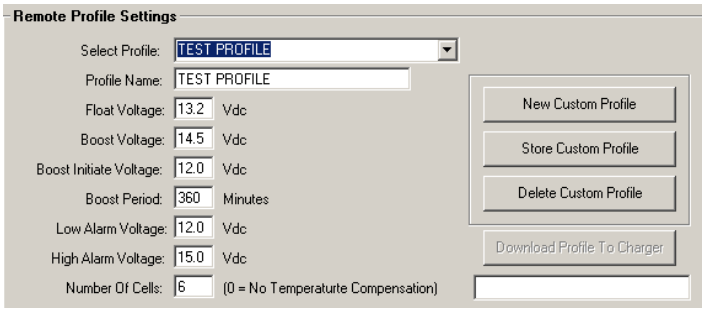


Deleting Custom Profiles

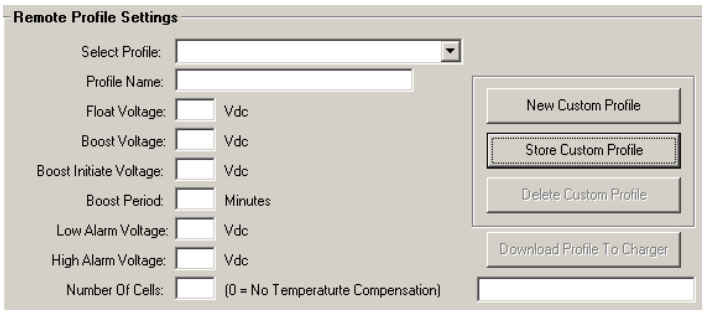
Select the custom profile from the drop down list of profiles



Once selected, as shown, select ***delete custom profile***

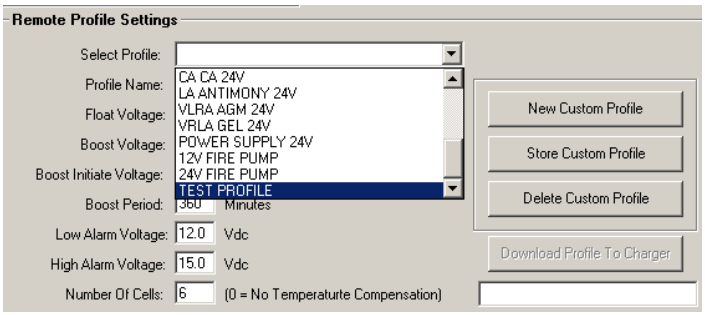


All data will now show as blank



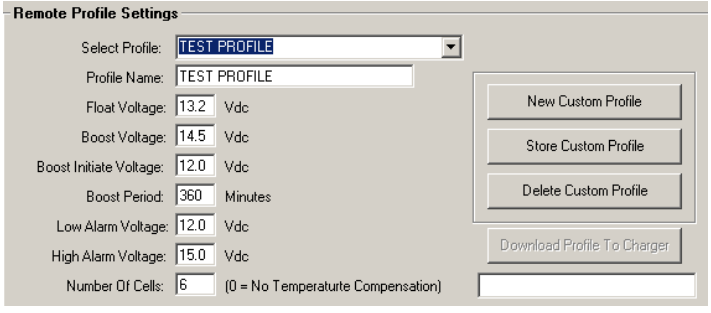
Applying Custom Profiles

Select the profile you wish to apply to the SNTL300P Charger from the drop down menu



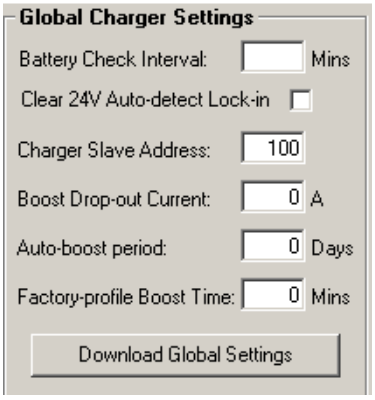
Once profile is selected, select ***download profile to charger***

Notes: *The charger must be set to Remote Configuration settings via the DIP switches. Refer to Operation & Installation Manual of SNTL30P Charger*



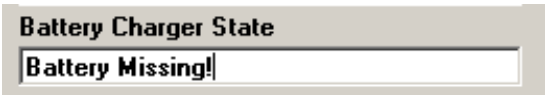
24V Auto-Detect Lock in

If the SNTL300P Battery Charger has been configured to Auto-Detect and on power up has detected 24V Battery Settings in accordance with voltage configuration, after 24 hours of operation, it will automatically lock itself into 24V operation.
Once locked in, in event of AC mains failure and system reset, it will always default to 24V mode.
To clear this timer and re-instate Auto-Detect Mode, from ***Global Charger Settings***, check the ***Clear 24V Auto-detect Lock-In*** and then select ***Download Global Settings***



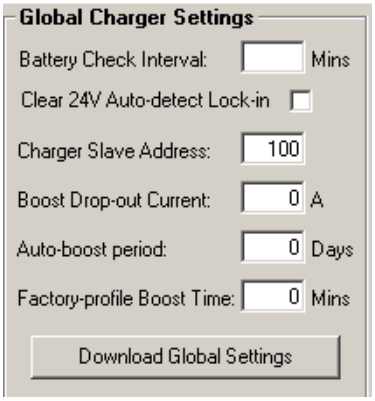
Battery Check Routine

The Battery check process reduces the output of charger to nominal voltage and validates terminal voltage.
During this battery check it will report ***Battery Check*** in the ***Battery Charger State*** window.
If no battery is detected, or battery voltage is <9VDC (12v) or <18VDC (24v) then it reports ***Battery Missing*** in the ***Battery Charger State*** window.
The SNTL300P Performs a battery at the following instances if set to any profile that is not a Power Supply Mode:
On AC Power Up, before entering boost mode of operation



Once charger is in Float mode, the charger performs a battery check in accordance with the ***Battery Check Interval*** 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 Internal*** and ***Download Global Settings*** to SNTL300P
Note: When download a new interval time, the changes will not take place until either:

a) AC & DC power is cycled and SNTL300P has performed a system restart
b) Until existing battery check period has elapsed



Should the SNTL300P 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 Interval*** time

Setting Charger Address

The SNTL300P Network address can be configured between 100 and 250, to change this enter new address in ***Charger Slave Address*** and then select ***Download Global Settings***

Note: *If multiple SNTL300P units are connected to the same RS485 network, ensure that they have unique addresses configured.*

Boost Drop Out Current

The SNTL300P 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 (Disable) and 5amps to a 0.1A resolution, and then select ***Download Global Settings***

Auto-Boost Period

The SNTL300 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, and then select ***Download Global Settings***

Factory Profile Boost Time

The Standard Boost Extension Time of preset profiles can be configured via Global Charger Settings, Enter required **Factory Profile Boost Time** in Minutes and then select ***Download Global Settings***

Maximum boost period

1440 ***(default)*** the charger will monitor time spent in ramp to boost mode, should the charger not reach the expected boost target voltage in a given time period, the unit will alarm and turn its output off for 4 hours before attempting again. This provides increased protection against batteries with shorted cell(s). Bit 10 in the alarm status register provides indication of this fault.

Configurable options from drop down Menus

Battery check mode

10 second *(default)* whereby the charger ramps its output voltage down looking for a voltage of >nominal voltage of battery, this check is performed according to the Battery Check Interval set in the Global Charger Settings and as described in the Battery Check Routine section in this document.

Ultra Fast for an immediate detection of removal of battery when in float mode of operation. *Note: panel load must be resistive >50mA and have no active capacitance value.*

Input #1 function

The input can now be configured to either manually initiate a boost cycle ***(default)*** or completely disable all boost functions.

Battery-missing action

The charger can be configured for float voltage output under battery missing alarm ***(default)*** or to shut off its own DC output until battery detected
Note: Measured voltage must exceed nominal voltage of battery for re-detection to occur.

Baud Rate

9600 ***(default)*** the RS485 baud rate can be configured from the additional drop down menu. This baud rate only applies when the SNTL300P is in remote configuration mode (DIP switch 5 ON).

The SNTL300P must be restarted for this change to take effect.

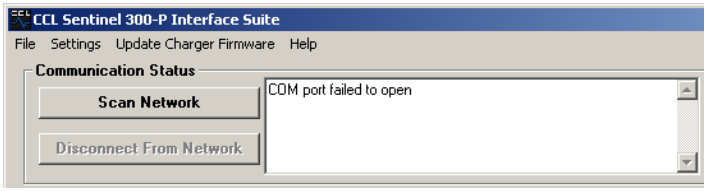
Parallel Operation

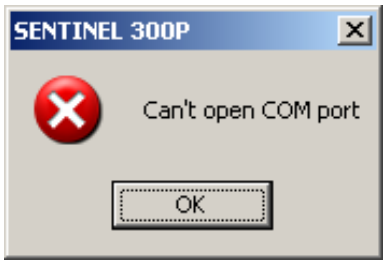
By enabling this option, the SNTL300P can now connected in parallel for an increased current output. This option disables all battery checking functions and therefore the battery missing check interval, battery check mode and battery missing action options. It also disables the Auto Detect DIP switch function. If this option is enabled and DIP switches 1-4 are set to off for Auto Detect, the SNTL300P will not turn its output on and will alarm.

Select desired configuration then ***Download Global Settings***

Resolving Communication Errors

If the correct ***COM*** port settings have not been entered the following errors will occur

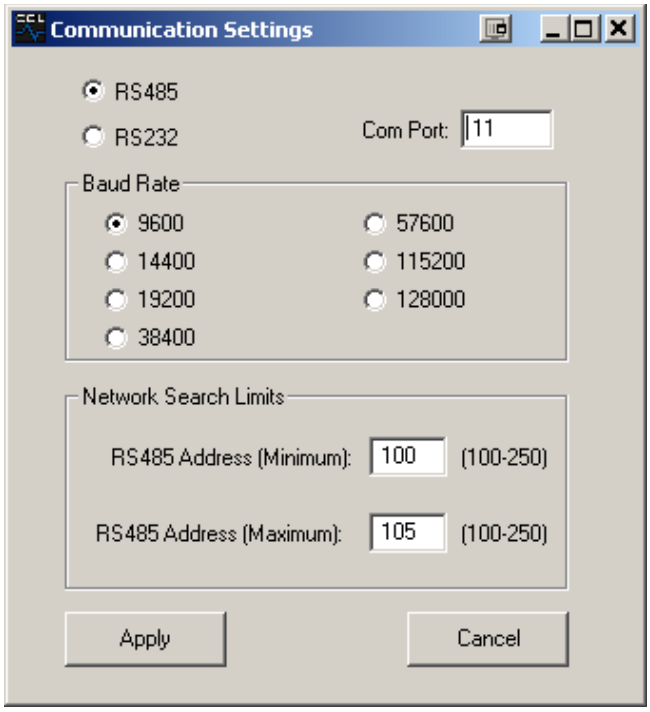




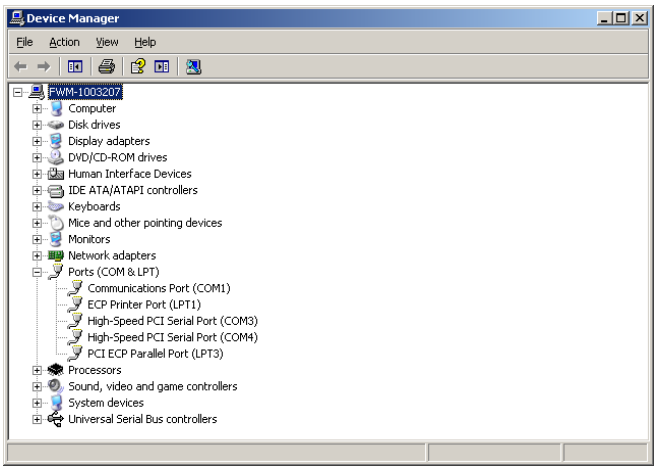
Under ***settings*** – ***communication*** settings set the following parameters.

RS485 Address (Minimum) 100
RS485 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.



RS485 Com Port must match the device settings within the Windows OS they can be found under ***Control Panel/System/Device Manager*** and should be listed under ***Ports (COM & LPT)***



Configuration of SNTL300-P via RS485

In order for customers to transmit their own remote profiles to the SNTL300P, the following protocol must be used:

Packet must be sent in MODBUS RTU format.

Use the 'Set multiple holding registers' command (0x10)

Slave address must equal that of the charger. (Default of 100)

Register start address = 64

Number of points = 17

Register	**SNTL300P Function**	**Scaling**
40064	Float voltage	Voltage X 10
40065	Boost voltage	Voltage X 10
40066	Boost initiate voltage	Voltage X 10
40067	Boost period	Minutes
40068	Low alarm voltage	Voltage X 10
40069	High alarm voltage	Voltage X 10
40070	Number of cells	Cells X 1
40071-40080	Profile name	2 ASCII characters per register

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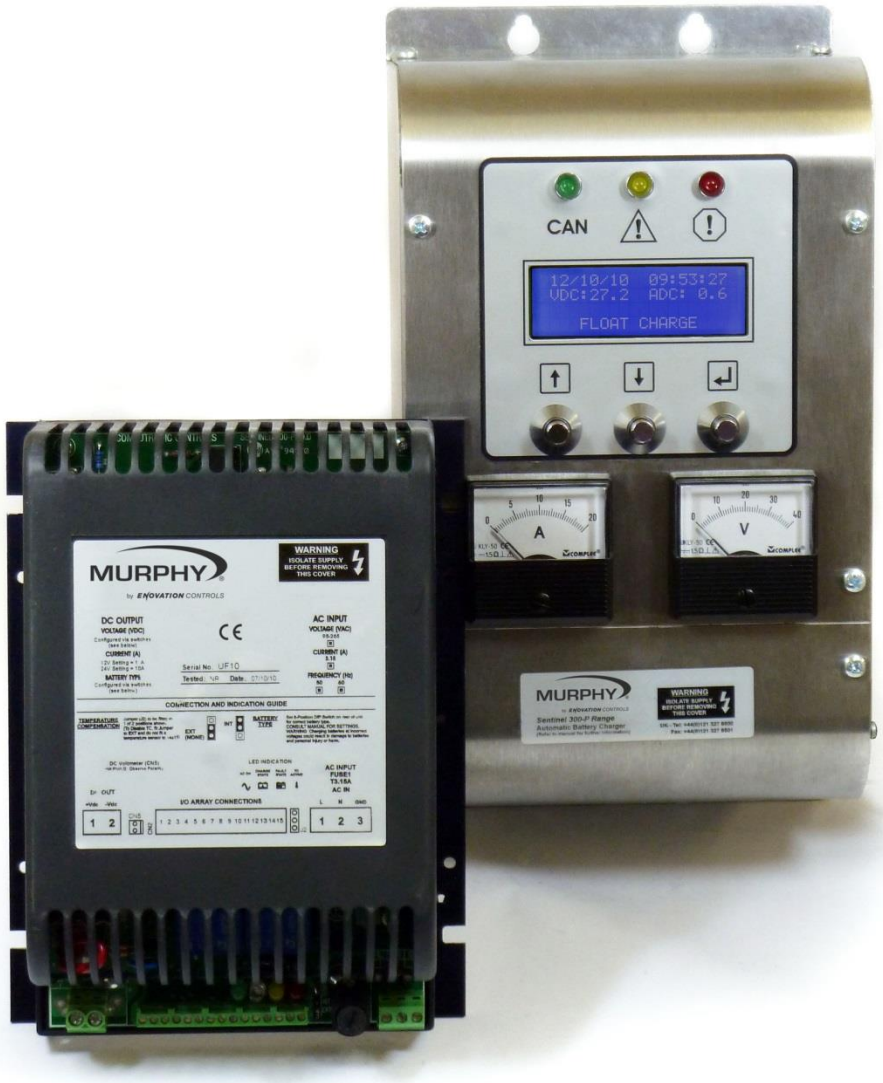

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