

PROTRXion™

Quick Start Guide

inVENTUS™
POWER

S-12V100-TRX-HD



Designed & Manufactured by

inVENTUS™
POWER

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Applicable Models

Model	Part No. (NMEA 2000)
S-12V100-TRX-HD (w/out heater)	59096-001

Document Information

Release Date	Revision	Scope of Change
2023-08-01	V1.5	Minor edits to version 1 release

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Technical Support

If you have any technical questions regarding the PROTRXion™ battery, please contact our technical support team at:

Phone: +1.877.423.4242

E-mail: tech_support@inventuspower.com

Quick Start Guide

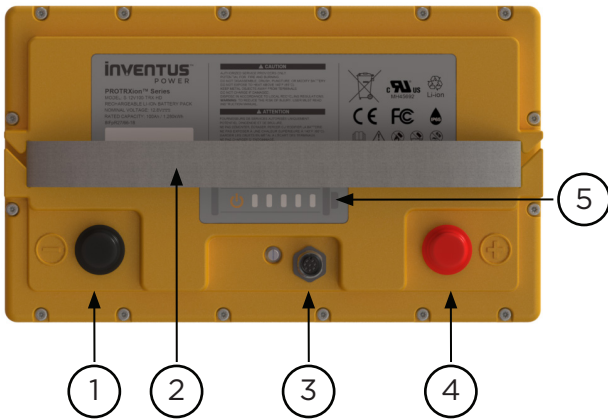
Please read the detailed User Manual first and refer to this guide as another quick resource.



Before installation or maintenance of your batteries, the following equipment is required:

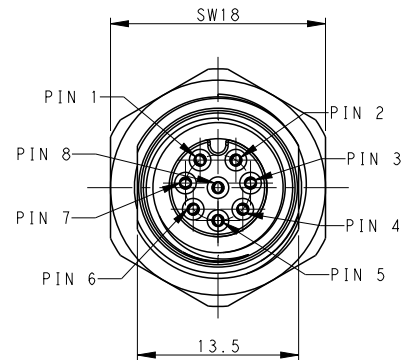
- Rubber gloves
- Safety goggles or other eye protection
- Insulated Torque Wrench / Philips Screwdriver
- Voltmeter

Mechanical Features



#	Description
1	Negative Terminal
2	Lift Strap
3	Signal Connector
4	Positive Terminal
5	Battery State of Charge Indicator

If in doubt, please consult with **Inventus Power Technical Support** (tech_support@inventuspower.com) on further instructions on the signal cable connections to the host system.



TE Connector P/N: T4131012081-000

Battery Terminal Torque Rating

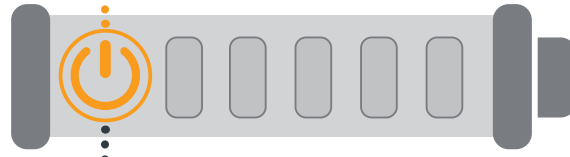
Model	Terminal Type	Wrench Size	Torque (Nm)
S-12V100-TRX-HD	ISO M8 x 1.25 x 12mm Bolt	13mm	17 ± 1
	ISO M8 x 1.25 x 16mm Spare Bolt (Use for multiple stacked ring terminal connections)		

Wake-Up & Ship Mode

TO WAKE UP THE BATTERY

Press the SOC button for 5 seconds

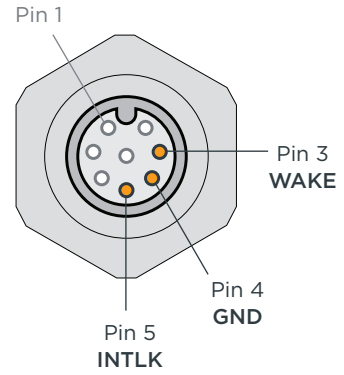
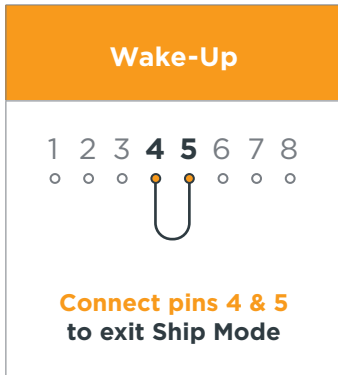
We recommend to place the battery in Ship Mode when it is not used to prevent self-consumption current drain and extend storage life.



TO PLACE IN SHIP MODE

Press the SOC button for 20 seconds

Battery can also receive a wake up signal from the signal connector by shorting pin 4 (GND) to pin 5 (INTLK) to wake up battery from Ship Mode.



Power Cables

Power cables are not included with the battery unless a integration kit is purchased. Choose the appropriate power cable size based on the system load requirements. When connected in parallel configuration, it is preferable for all cables to be the same length and wire gauge. Refer to ampacity table in User Manual when selecting power cables.

Communication Cables

Communication cables are not included with the battery unless a integration kit is purchased. If your application requires communication, please connect a CAN cable to the battery signal connector and respective system or chargers.

Item	Mfg Part No.	Cable Length	Where to Purchase
Battery to NMEA 2000 Adapter	903-09518-001	152mm (6")	Inventus Power

Charging

Many types of lead acid chargers are compatible with our PROTRXion™ batteries and safely charge in temperature ranges as shown in the table below. When choosing an intelligent charger, please discuss with Inventus Technical Support on suitable off-the-shelf charger solutions. Charger datasheets can be provided upon request.

Charge Voltage / Current

Model	S-12V100-TRX-HD
Max Charge Voltage	14.0 VDC
Charge Current	50A (0.5C)
Max Charge Current	100A (1.0C)
Charge Temperature (without heater)	0°C to 55°C (32°F to 131°F)

Pin Definition

Pin Definition (S-12V100-TRX-HD)

Pin #	Symbol	Description
1	CANH_SYS	CAN High for communication to the vehicle/machine
2	CANL_SYS	CAN Low for communication to the vehicle/machine
3	WAKE	Non-isolated wake up input signal used to wake the battery from low power Sleep Mode
4	GND	Reference ground used to pull Wake and Interlock pins low
5	INTLK	Non-isolated interlock up input signal used to wake the battery from low power Sleep Mode
6	Not Connected	Pin not connected.
7	Not Connected	Pin not connected.
8	Not Connected	Pin not connected.

Note: CAN lines in the battery pack DO NOT have internal termination resistance. It is recommended to properly terminate the system and battery CAN Bus lines following the CAN Bus termination standards. For any technical questions about properly adding termination resistance, please contact technical support at tech_support@inventuspower.com.

Connecting the Battery

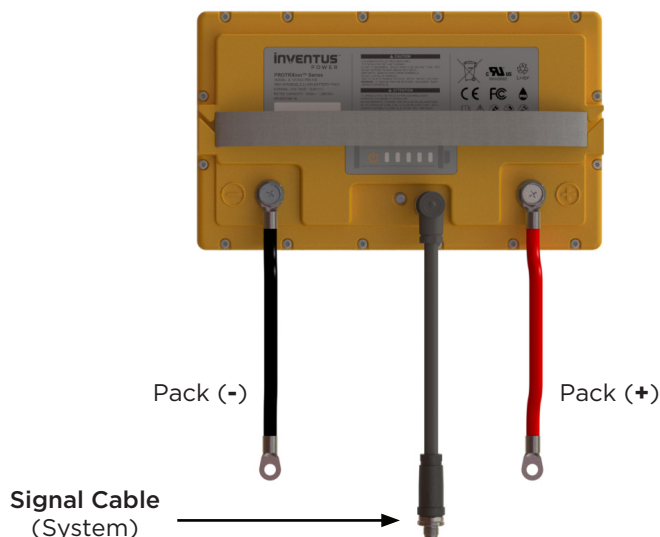
Do NOT connect in Series or Parallel. Please contact Inventus Technical Support if the system requires more than 1 battery.

1. Remove power to the vehicle/device prior to installation of the PROTRXion[™] battery.
2. Remove all other batteries from the system prior to replacing them with PROTRXion[™] batteries.
3. Ensure the PROTRXion[™] battery is in Ship Mode to remove power for safe install.
4. Remove the protective battery terminal covers from the terminals. Retain these covers in the event that you need to remove or move the battery at some future time.
5. Attach the negative cable from the device to the negative terminal on the battery.
6. Attach the positive cable from the device to the positive terminal on the battery.
7. Attach M12 communication cables from battery to host system if the host system requires NMEA 2000 communication. Connect communication cables to the M12 connector on the battery with 0.60 Nm [6.1 kgfcm] or less torque in order to maintain good connection and avoid damaging the battery. DO NOT rotate the mating connector or loosen the nut on the battery M12 connectors to avoid damaging the battery.
8. If the battery charger is integrated with the device drawing power from the PROTRXion[™] battery, then please follow manufacturers recommended sequence for each battery connection.
9. It is recommended to fully charge and fully discharge the battery system upon initial connection to properly calibrate the SOC.

Module connections

Warning: Do not connect S-12V100-TRX-HD batteries in series or parallel. Connecting in series or parallel exceeds the voltage or balancing limit of the integrated safety protection circuitry.

Single Install



Battery Modes

Sleep Mode (Terminals ON)	Charge Mode	Discharge Mode
<p>1 2 3 4 5 6 7 8 o o o o o o o o</p> <p>Disable pins 3 & 5, wait 5 min to enter Sleep Mode</p>	<p>Charge Current \geq 500mA to enter Charge Mode</p>	<p>Discharge Current $>$ 500mA to enter Discharge Mode</p>

Mode Name	WAKE	INTLK	Action	Mode Description
Sleep, (Terminals ON)	Off (Open)	Off (Open)	Disable pins 3 & 5 and wait 5 minutes to enter Sleep Mode	Sleep, Terminals ON, MOSFETs closed
Charge	N/A	N/A	Charge current \geq 500mA to enter charge mode	Charge allowed, MOSFETs closed
Discharge	N/A	N/A	Discharge current $>$ 500mA to enter discharge mode	Discharge allowed, MOSFETs closed
Ship	N/A	N/A	Press the SOC button and hold for 20 sec to place in Ship Mode	Low power mode, MOSFETs open
Shutdown	N/A	N/A	Apply charge voltage to exit Shutdown	Lowest power mode, MOSFETs open

LED Status

LED Indicator Status	SOC
	80 - 100%
	60 - 79%
	40 - 59%
	20 - 39%
	10 - 19%
	<10%