

SIERA.AI S2 Installation Instructions

Rev 6.2

SIERA.AI provides these instructions for a correct and speedy install of your S2 devices. Only a vehicle OEM certified technician proficient with both electrical and mechanical works should attempt to install SIERA.AI products. Using a non-certified person for installation will immediately void your warranty.

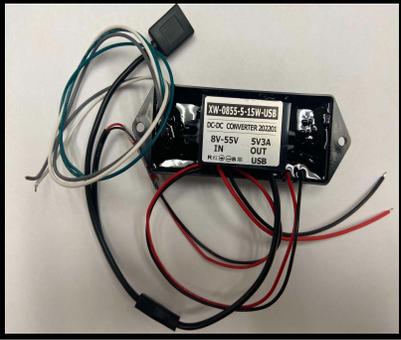
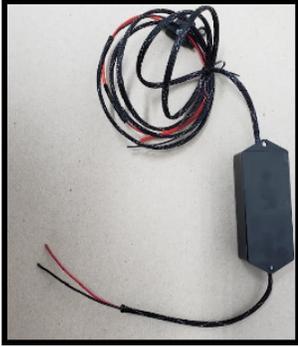
Rev Number	Revised By	Approved By	Revision Notes
6.0	Himansh Zadoo	Vernon Peeler, Saurav Agarwal	Inrush filter modification, Overall Schematic diagram added
6.1	Himansh Zadoo	Vernon Peeler , Saurav Agarwal	ICE engine power hook up considerations added
6.2	Himansh Zadoo	Vernon Peeler, Saurav Agarwal	Added Bypass switch modification
6.3	Saurav Agarwal	Vernon Peeler	Updated instructions for ICE vehicles, related to in-rush filter installation

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Hardware

In your box should be the following:

<p>1x Access Control and Power Module</p> <ul style="list-style-type: none">- 8V-55V input DC to DC converter- In-rush filter (certain older shipments may not contain the in-rush filter, the inrush filter is required for 36V and higher voltage batteries. Please contact us for sending this part)	
<p>1x Inrush Filter</p> <ul style="list-style-type: none">- 18V-60V input range- Required for 24V, 36V, 48V, 60V vehicle power source- DO NOT use when power source is 12V	
<p>2 Amp fuse holder with fuse (certain older shipments may not contain this part, you may easily procure these from an auto-parts store or contact us for sending this part).</p>	

<p>1x Tripp Lite tablet charging cable</p>	
<p>1x Regular wall charger</p>	
<p>1x Tablet (S2) installed in its holder</p>	
<p>1x clamp base with ball</p>	

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1x Double ball socket arm

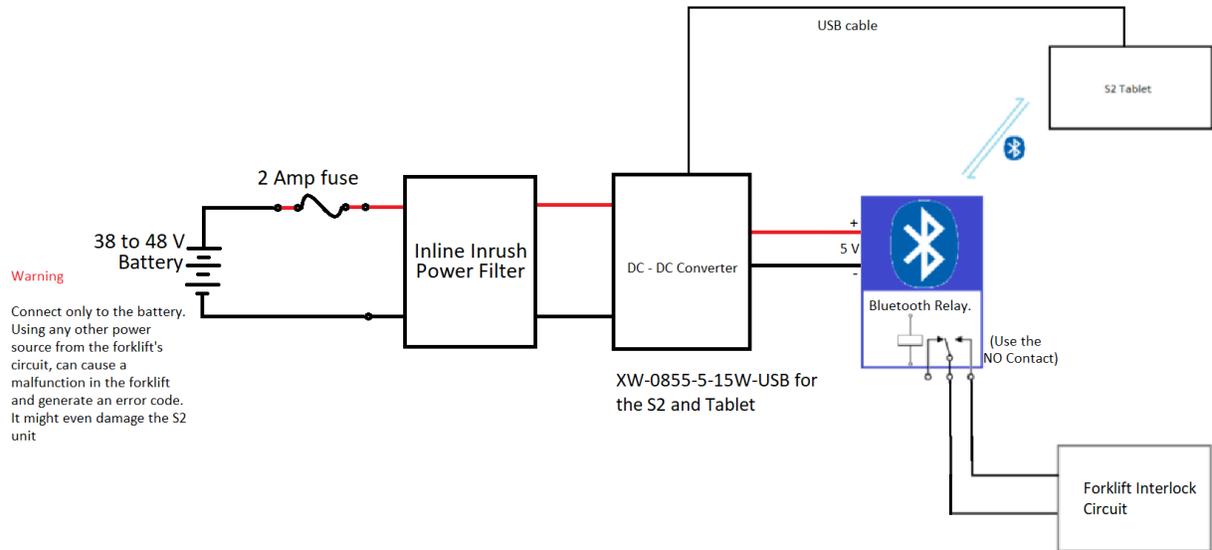


Hardware Installation

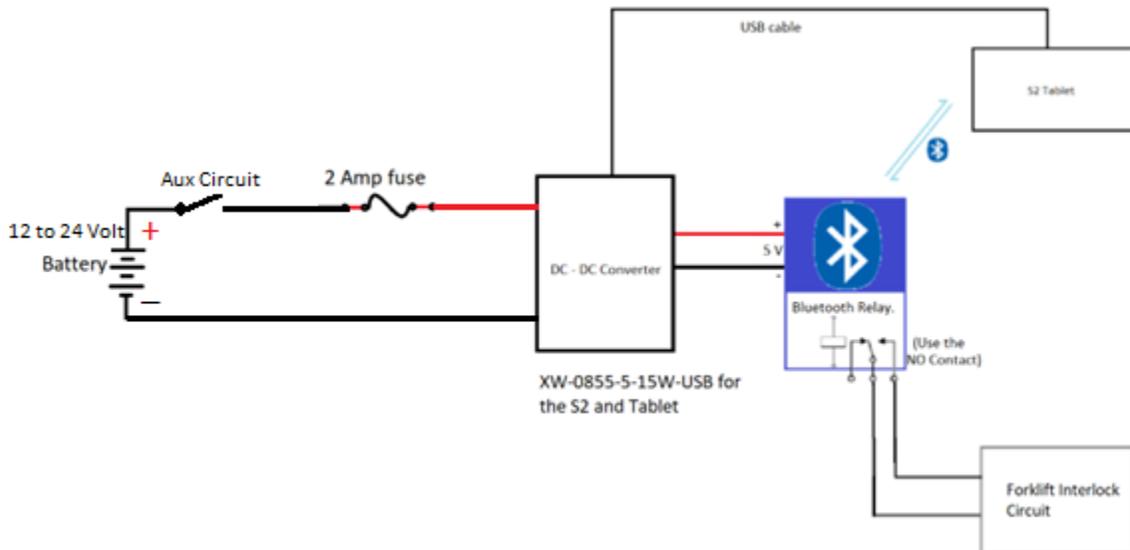
These instructions apply to Electric as well as Internal Combustion engine based Vehicles.

1. Install the clamp base on the vehicle in an area of the operator's compartment where it is accessible but will not obstruct the view of the operator when the S2 is installed.
2. Next install your double ball socket arm to the clamp base and the S2 mount. Adjust and tighten the socket arm to hold it in place (*Make sure the S2 does not obstruct the operator's view or interfere with unit operation*).
3. Ensure that the S2 tablet is snug in the S2 holder and lock it down.

Overall Schematic



Note: The Inrush filter is optional for Internal Combustion Engine (Propane, Diesel etc) vehicles. We highly recommend installing an Inrush filter, however in case you decide not to use the inrush filter, please refer the following schematic:

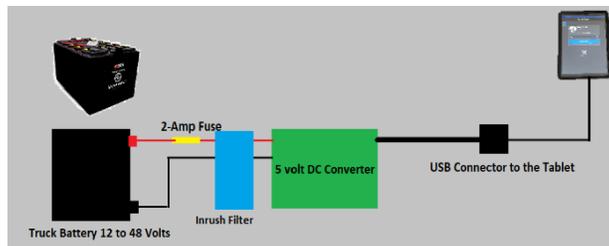


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Wiring Considerations

Electric Vehicles

1. The power should be drawn with a 2A fuse, directly from the positive and negative terminals of the place from where the forklift connects to the battery.
WARNING: Connecting it to some known DC source other than the battery can throw error code in the vehicle's control system or it can damage the DC-DC Converter itself.
2. Attach ground wire to the negative terminal at the place from where battery power enters the forklift. **Caution! Do Not Ground To The Frame Of The Vehicle!!!**
3. Connect the output of the in rush filter with the DC-DC converter.
4. Run the USB-C cable end close to where your S2 unit is placed and attach the provided tablet charger to the USB-A cable end.
5. Plug tablet charger cable (Tripp-Lite tablet charging cable) into the Tablet (The tablet should show charging).
6. Please verify that over all connections look like this:



NOTE: Make sure to route power cables so that they do not rub or get pinched during normal operations.

Warning: For forklift battery voltages greater than 48V, you **MUST** use an inline step down DC to DC converter to lower the voltage below 48V. Then connect the output of the step down converter to the input of the S2 power module.

Internal Combustion Engine (ICE)

When making connections to an ICE vehicle, you should remove the negative battery connection for safety. This way you will not accidentally short anything to the frame of the vehicle.

1. On ICE (Internal Combustion Engine) vehicles, please do not connect the power harness directly to the battery like on an electric vehicle. If you connect an IC engine vehicle battery directly to the S2, the S2 may draw power until the battery is exhausted. This may disable vehicle operation.
2. Locate an auxiliary circuit connection on the vehicle. An auxiliary circuit will only be powered when the ignition key is in the run position. Many vehicle manufacturers place an auxiliary output somewhere on the vehicle that is meant for radios or other add-on equipment. You may find one of these under the dashboard cover or on the engine wire harness, or close to the fuse panel.
3. Once you locate the auxiliary power connection, take a voltmeter and connect it to the positive and negative of this suspected auxiliary connection and cycle the ignition key to the run position. No need to actually start the vehicle. If the power comes on while the key is in the run position, and you have battery voltage at that point, you have an auxiliary connection you can use to power the S2.

Some locations you may find this Auxiliary connection:



On some Yale and Hyster vehicles, it can be under the dashboard like Clark, or behind the motor beside the overflow tank for the radiator.



Hyster and or Yale Vehicles

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4. Most ICE vehicles are negative frame grounded. This means that the battery negative post is grounded to the frame of the vehicle just like in most cars. If you find a positive auxiliary connection without a negative conductor, you may use the frame of the vehicle as your negative connection to the vehicle. Always test this by using a voltmeter, testing from the suspected auxiliary connection to ground and cycling the ignition switch to the run position. If you see battery voltage on the meter, you have a good auxiliary connection.
5. On ICE vehicles with a 12V power source you do not need to install the in-rush filter before the 5-volt DC-to-DC converter.
6. On 24V DC ICE vehicles (typically diesel), please install the in-rush filter to protect the electronics from voltage surges.

Access Control Installation (optional)

WARNING: If hooking up to any low voltage control circuit, be very cautious about how it is hooked up. If hooked up wrong, even accidentally it could cause damage to the Engine Control Unit (ECU) or the Computer of your vehicle.

The instructions below show how to install the wiring to activate access control:

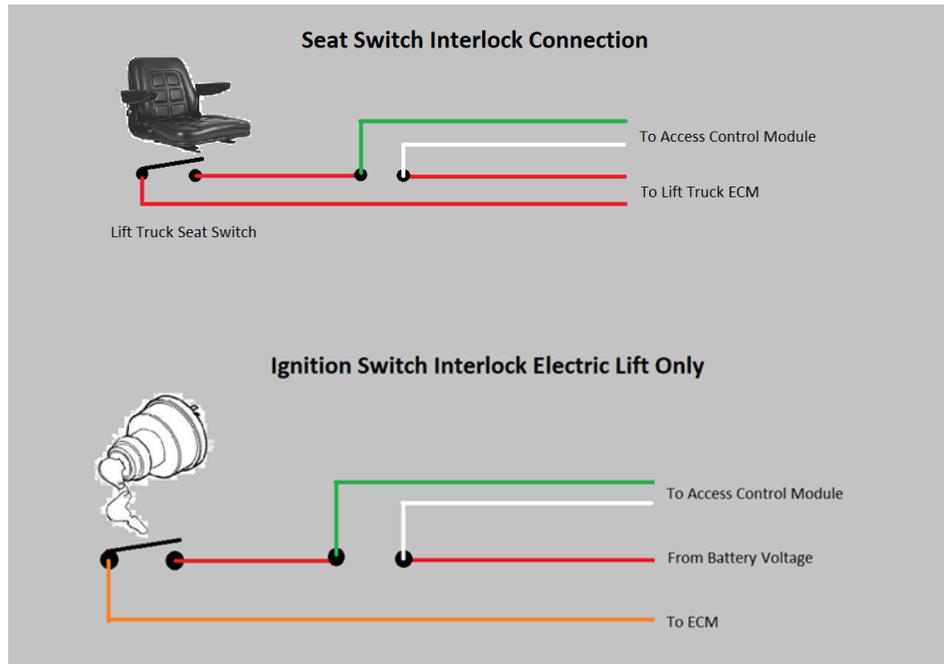
Remove the battery connections before starting this process.

1. The Access Control and Power Module include the S2 power supply and Access Control Relay.
2. Decide where to mount the Access Control and Power Module. Mount it in a place that is safe from moving parts and will not interfere with any mechanical parts or functions. Secure it with cable ties to a surface or wire bundle on the vehicle. You may need to extend the power input and Access Control wires to where they will connect to the vehicle.
3. Run a two-conductor power cable from the location where the battery connects to the vehicle, (This may be in the back of the vehicle) for electric vehicles, or for ICE vehicles, from the auxiliary connection and install a 2-amp fuse to the end of the cable that will connect to the positive input from the battery or auxiliary circuit, and connect the other wire to the negative input. Run this cable to the In-Rush Power filter then connect the In-Rush filter to the Access Control Module. Connect the positive to the Red Wire input and the Negative to the Black Wire Input of the Access Control Module. Properly secure the entire power cable throughout the vehicle to ensure the cable will not be pinched or chafed.
4. Decide how you will control Access to the vehicle. With Electric Vehicles, you may use the Key Switch, the Seat Switch, or maybe a Seat Belt Switch. For a normally open interlock, i.e., Seat Switch or Key Switch you will use the Green and White Wires from the Access Control Module.
5. **Do not use the key switch for access control on ICE vehicles. The 20 AWG wire from the access control module may not handle the current from the ignition switch.**

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See Examples Below:



6. Break the circuit you will be using to control and insert the white and green wire into the circuit as shown on the previous examples.
7. Leave the grey wire (the Normally Closed Connection) disconnected, or if it is not to be used, trim the wire close to the surface of the access control module to prevent it from coming in contact with any metal surfaces.

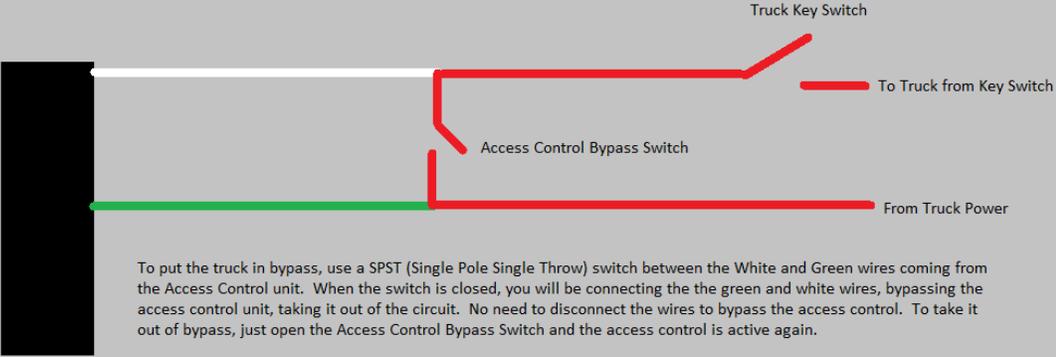
Access Control Bypass switch installation (Optional)

In order to prevent the operations from getting disrupted in the event of any malfunction by the system, SIERA.AI recommends that the users install a bypass switch as per the following schematic. If, due to any malfunction, the access control relay locks the vehicle, we can simply bypass it till the time the issue is resolved. This would unlock the vehicle and let you use it. It's strongly recommended that only Account Admins or worksite admins have the access to the key used to bypass the access control system.

Part Number: E-SWC-KS-02-101-12mm-1-M

Where to buy: Amazon.com

Installing a Bypass Switch on Truck Access Control



To put the truck in bypass, use a SPST (Single Pole Single Throw) switch between the White and Green wires coming from the Access Control unit. When the switch is closed, you will be connecting the the green and white wires, bypassing the access control unit, taking it out of the circuit. No need to disconnect the wires to bypass the access control. To take it out of bypass, just open the Access Control Bypass Switch and the access control is active again.



12mm Key Switch - Position ON-Off - Key Pulled on Both Positions - Metal Housing - Solder-Free Terminals Included
Part NumberE-SWC-KS-02-101-12mm-1-M
From Amazon.

Software Setup

Note that the S2 device is connected to a web server using a cellular connection, if you have poor cellular reception you may have trouble during this setup step. We recommend switching to WiFi on the S2 by using the touchscreen or installing a cellular signal booster to resolve this problem.

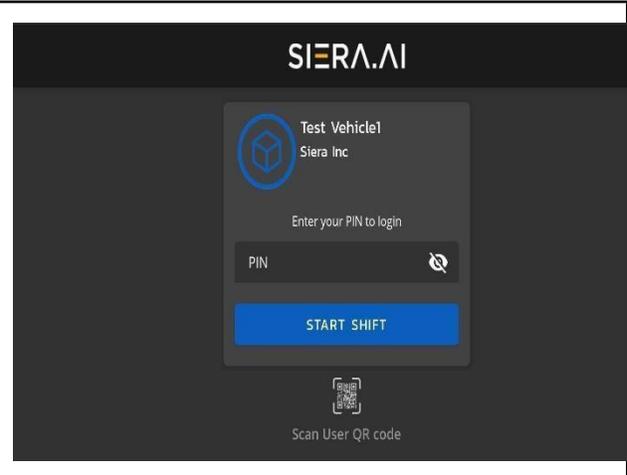
Before you proceed to software setup on your device, you must ensure that your online dashboard account is correctly configured.

Your online dashboard account must have the following setup:

1. At least one worksite should be added to represent your facility.
2. One or more vehicles (assets) must be added to the relevant worksite.
3. One or more operators are created for this worksite.

Note: If you do not have access to the online dashboard or are having trouble accessing it, please contact our support team.

1. Turn on your tablet and you should see the screen below. In the upper right hand corner you will see three dots, tap those three dots to go to the next screen.



<p>2. This screen will ask for your admin email address and password. If you do not know your admin email address and password. Contact your supervisor or contact our support hotline at support@siera.ai or call 512-817-0702.</p>	
<p>3. Enter your email and password and confirm. This will take you to the worksite selection screen. Find your worksite by scrolling and click "Select" for the correct worksite.</p> <p><i>If the worksite is not visible, login to the dashboard with your admin credentials and create a worksite.</i></p>	
<p>4. On the next screen you will locate your asset, select it and confirm it.</p>	

<p>5. Once this is done the next screen to come up is the Access Control Pairing screen. Currently there is only one method to set up a Bluetooth connection i.e. selection from the list.</p>	
<p>6. Once you choose your relay you will select it and let the tablet connect to the relay. Please note that the Mac ID of the relay would be printed on the Access control module</p>	
<p>Note: On certain models, once connected the blue flashing light on the relay will be a solid blue light showing that it is connected. The tablet will then go back to the home screen, where you would enter your pin or QR code to access the unit. The forklift will not power up until this is done and is effectively locked out.</p>	

WARNING: When you power off the vehicle (battery disconnect / key off) the relay will turn off and disconnect from the tablet. When you power on the vehicle, the relay will turn on BUT will not reconnect to the tablet automatically. You will need to power cycle the tablet and reconnect it with the Bluetooth relay.

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