

Residential DuraStation™: Installation Guide

Before Installation:

DuraStation should be installed only by a licensed contractor, and/or a licensed electrician in accordance with all applicable state, local and national electrical codes and standards.

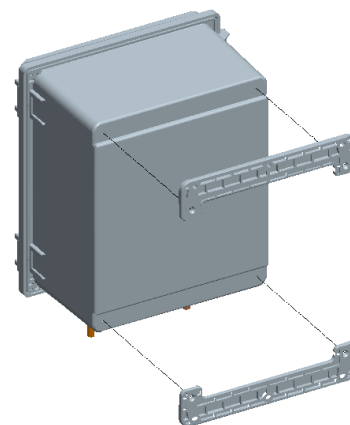
- A recommended 40A upstream circuit breaker, located either in a panelboard or load center, should be used. Lower amperage branch circuits may be used installing the optional de-rate jumper (J21)...see instructions.
- Power and ground wires for the DuraStation go in through the bottom of the unit as a default. Optionally, the power may be fed through the left side of the enclosure.
- It is recommended that in an outdoor application that the DuraStation is installed in a shaded area.
- Recommended mounting hardware for wood studs are 3/8" x 2" hex head lag bolts.
- Recommended mounting hardware for concrete walls are 3/8" x 1-3/4" concrete hex screws or 3/8" x 1-7/8" concrete anchors.



WARNING: *Danger of electrical shock or injury. Turn OFF power at the panelboard or load center before working inside the equipment or removing any component. Do not remove circuit protective devices or any other component until the power is turned*

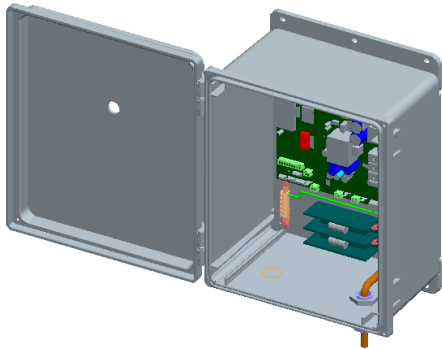
Installation Instructions:

- Step 1.** Carefully unwrap the packaging and make sure the following items are present:
- Residential DuraStation unit
 - Mounting feet
 - Template for wall mounting holes
- Step 2.** Check for any damage to the unit, the cord or the connector, if no damage is noticed, proceed to step 3. If damage is noticed, call 1-888-GE-RESOLVe.
- Step 3.** Install mounting feet to enclosure. Use the provided template to locate wall-mounting holes to ensure hole locations match the enclosure mounting. Distance from floor to bottom of the enclosure should be 18" minimum for indoor use and 24" for minimum for outdoor use. Distance to the top of the unit should be 48" maximum for all applications per NEC 625.29.

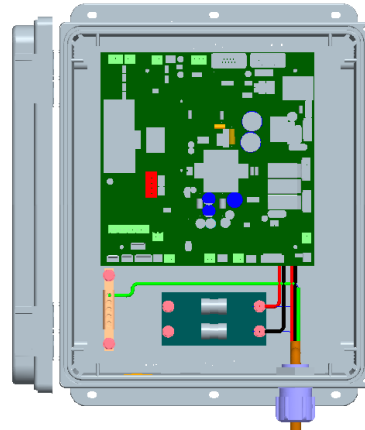


Step 4. Mounting enclosure to the wall.

Step 5. Open the front cover of the enclosure

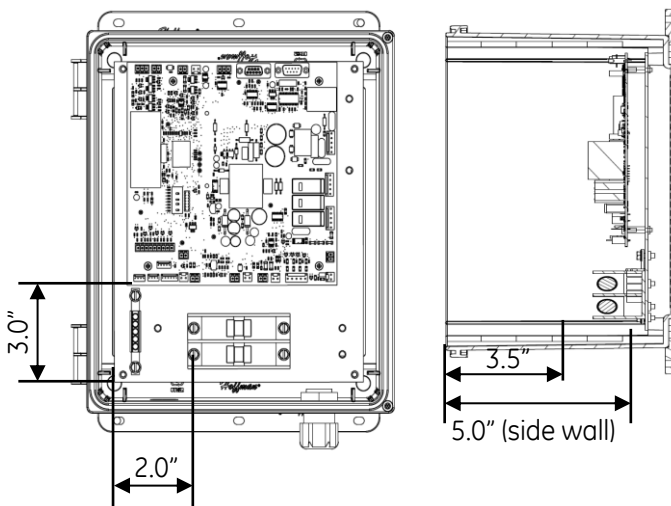


Step 8. Connect supply power wires to line side of fuse block and ground wire to the ground bar.



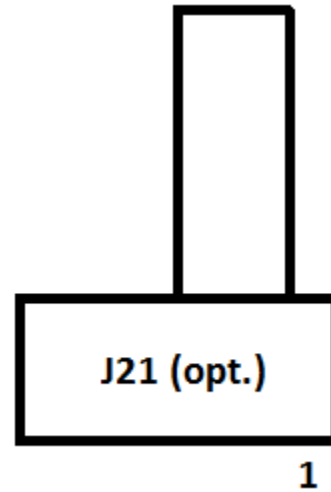
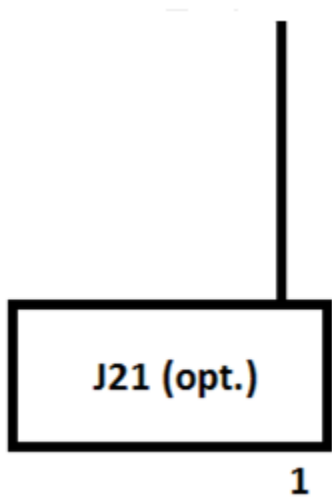
Step 6. Punch holes in the enclosure in the specified areas below. An appropriate size hole cutter should be used based on the conduit size. Conduit should be sized as per NEC based on the wire size selected.

Step 9. Replace cover.



Step 7. Feed the supply power and ground wires through the DuraStation enclosure holes. A rain tight conduit hub should be used to connect the conduit to the enclosure.

Installation of Optional De-Rate Jumper J21:

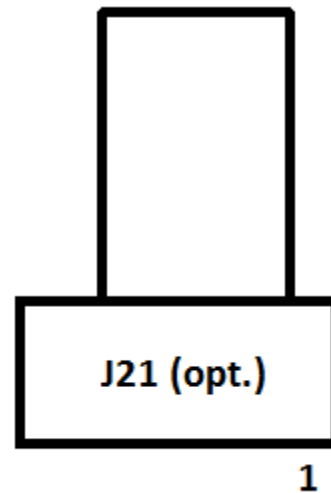
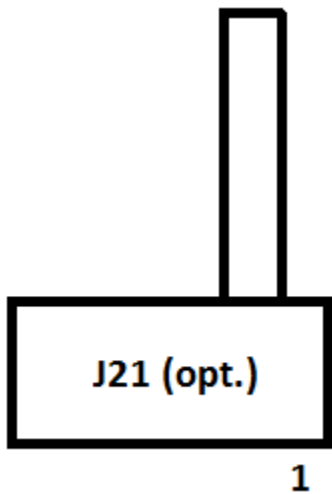


for 40A Circuit ... do not install jumper

Jumper J21 shown as delivered with wire connected only to position 1. The DuraStation by default will provide a duty cycle to the car indicating that **30A** may be drawn. The jumper should not be installed when installing the DuraStation on a **40A** branch circuit.

for 20A Circuit

Optional position B ... connect other end of wire to position #3 and the DuraStation will provide a duty cycle to the car indicating that only **16A** may be drawn. This position should be used when installing the DuraStation on a **20A** branch circuit.

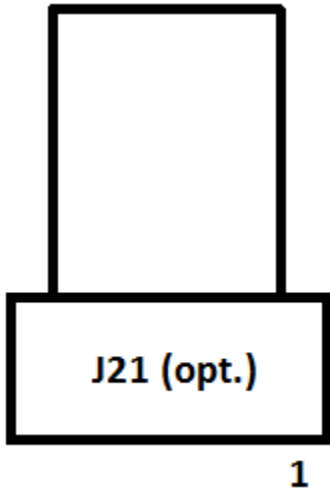


for 15A Circuit

Optional position A ... connect other end of wire to position #2 and the DuraStation will provide a duty cycle to the car indicating that only **12A** may be drawn. This position should be used when installing the DuraStation on a **15A** branch circuit.

for 30A Circuit

Optional position C ... connect other end of wire to position #4 and the DuraStation will provide a duty cycle to the car indicating that only **24A** may be drawn. This position should be used when installing the DuraStation on a **30A** branch circuit.



Optional position D ... connect other end of wire to position #5 and the DuraStation will disable the vehicle pilot diode check (see fault code 121), but will not allow simplified charging (see fault code 122). It is possible to disable the diode test with a de-rated current by installing a special jumper, e.g. to disable the diode test and operate at 16A the jumper would need to connect pins 1, 3 and 5 ... contact GE if a special jumper is needed (1-888-GE-RESOLve).

User Interface Description:

The DuraStation has a single bi-color (green/red) LED indicator on the front panel to communicate the state of the station to the operator.

State A - Standby ... Green flash every 5 sec

This is the normal standby state when the station has AC power and has passed self-tests, but no vehicle is connected.

State B - Connected ... Green flashing on/off @ 1 sec

This is the state when the vehicle is connected but has not yet started charging or has finished charging. Note that some vehicles have delayed charging capability to take advantage of reduced electricity rates at certain

times of day. The vehicle controls the transitioning between States B and C.

State C - Charging ... Green solid

This is the state when the vehicle is connected and charging. The vehicle controls the transitioning between States B and C.

Alarm and Fault Codes ... Red flashing

When the DuraStation detects a problem it will not allow charging and flash one or more 3-digit codes in red. All codes are three (3) digits and no digit is more than 5. The minimum possible code is 111 and the maximum possible code is 555. There may be more than one flashing code and in that case they will alternate.

For example, codes 123 and 231 would flash as follows:

Blink – pause – Blink-Blink – pause – Blink-Blink-Blink – long pause, Blink-Blink – pause – Blink-Blink-Blink – pause – Blink – long pause, Blink – pause – Blink-Blink – pause – Blink-Blink-Blink – long pause, Blink-Blink – pause – Blink-Blink-Blink – pause – Blink – long pause,

and so on.

The list of possible fault codes are as follows:

Code 111 – Ground Fault Alarm

This alarm indicates that the charge controller has detected a ground fault condition. The DuraStation implements the CCID 20 protection as defined in UL 2231- 2, which requires a 20mA ground fault to trip in under 1 second (higher currents require faster trip times). The controller will automatically reclose after a 15 minute delay, up to a maximum of four times per charging cycle. On the fifth ground fault, the controller will issue code 112 and the charging plug will have to be removed to clear the fault.

Code 112 – Ground Fault (GF) maximum retry per charge cycle exceeded

This fault indicates that the controller has detected more than 4 ground faults in a charge cycle, meaning that the number of allowed retries has been exceeded. The charging plug must be removed from the electric vehicle (EV) socket in order to clear this fault.

Code 113 – Ground Fault (GF) self-test failed

The controller's GF protection circuit is verified every time a vehicle is connected. This fault indicates that the self-test has failed. The charging plug must be removed from the EV socket in order to clear this fault.

Note: The GF protection circuit is also verified during the controller's power-up self-test sequence. If the GF self-test fails at this time, the fault will behave like a hard fault, and cycling AC power will be required to clear the fault. If the problem persists, verify that the GF CT (the CT with the black and white body) leads (red and black) are connected to J10 and the self-test wire loop leads (same color) are connected to J19. The polarity of these leads does not matter.

Code 115 – E-Stop input open

This alarm indicates that the E-stop input has opened ... inspect jumper J14 on the control board and replace if necessary.

Code 121 – Pilot diode test failed

The SAE J1772 standard requires a diode to be present in the vehicle's pilot circuit. Prior to every charge cycle, the charge controller checks for the presence of this diode, and will issue this fault if check fails. Remove the charge plug from vehicle to clear this fault. It is possible to disable the pilot diode test by installing the optional J21 de-rate

jumper in position D, but note that simplified charging will not be allowed (see code 122).

Code 122 – Simplified charging not allowed when diode test is disabled

The DuraStation by default allows simplified charging where the car's pilot circuit transitions directly from State A to State C. However, simplified charging is not allowed when the diode test is disabled with optional jumper J21 (see code 121). The alarm can be cleared by disconnecting the charging plug.

Code 123 – Pilot 0V feedback

This alarm indicates that the charge controller has detected a short in the Pilot circuit input. Check for problems in the wiring to J7 connection. If necessary measure the resistance of the pilot conductor (J7 pin 1) to chassis ground (J7 pin 2). The short could be in the charge cord or on the vehicle side. This alarm will clear automatically when the short circuit condition is removed.

Code 124 – Pilot out of range at startup

This fault indicates that the controller has measured an illegal voltage on the pilot interface during the power-up self-test sequence. Check the wiring and confirm that the control pilot control wire from the charge cord is correctly wired to connector J7. The pilot line should be connected to J7-1 and chassis ground to J7-2.

Code 125 – Power relay(s) won't close

When the controller attempts to close the power relays, it monitors a relay feedback circuit. If the

feedback circuit does not change state, this fault will be issued. The charging plug must be removed from the EV socket in order to clear this fault. If the fault persists, controller replacement is required.

Code 133 – Power relay(s) welded

This fault will be set during power-up self-test if voltage is not detected on one or both of the power relays' feedback circuit. The fault can also be set if the relays do not open when commanded by the controller to do so. Power must be cycled to clear. If the fault persists, controller replacement is required.

Codes 135, 144, 145, 152 – Miscellaneous controller faults

These faults indicate that the controller is failing a critical self-test. Try to cycle the AC power several times to see if the fault will clear. If cycling the AC power several times fails to clear the fault, the control board will need to be replaced.

Code 141 – Overvoltage

This alarm indicates that the charge controller has detected AC line voltage in excess of 270 Vac. This alarm will only set when charging or trying to charge. It will not set during standby operation or when the vehicle is still connected after charging completed. When the overvoltage alarm sets, the alarm condition will persist for a minimum of one minute, after which time the alarm will clear when voltage drops to 265 Vac or below.

Code 142 – Undervoltage

This alarm indicates that the charge controller has detected AC line voltage below 80 Vac. This alarm will only set when charging or trying to charge. It will not set during standby operation or when the vehicle is still connected after charging completed. When the undervoltage alarm sets, the alarm condition will persist for a minimum of one minute, after which time the alarm will clear when voltage rises to 85 Vac or above.

Code 151 – Fan required charging is not supported

The SAE J1772 standard has an accommodation for electric vehicles which have batteries that can potentially outgas during charging and thus require facility ventilation. These vehicles should take the pilot to State D (i.e. 3V) instead of the normal State C (6V) to indicate they are ready for charge. The Residential DuraStation does not allow charging of vehicles which require ventilation. Contact GE for assistance if this fault occurs (1-888-GE-RESOLve)