

APPLICATION NOTE

Enclosure Setup and Maintenance



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Enclosure Setup and Maintenance

Environmental enclosures protect our dataloggers and peripherals from water and most pollutants. Campbell Scientific's general use enclosures include the ENC 10/12, ENC 12/14, and ENC 16/18. For cable entry, a choice of one or two 1.25" diameter conduits or individual compression fittings are offered. The individual compression fittings provide a more water-tight seal. This application note discusses the enclosure construction, mounting equipment inside of the enclosure, desiccant, and enclosure maintenance.

Enclosure Construction

Campbell Scientific enclosures are manufactured with non-corrosive polyester and reinforced with fiberglass. These white UV-stabilized enclosures reflect solar radiation reducing temperature gradients inside the enclosure without requiring a separate radiation shield. A door gasket, external grounding lug, stainless steel hinge, and lockable hasp are included. Our enclosures were rated NEMA 6P before being modified to include the conduit(s) or compression fittings. An internal backplate is punched with a grid of one-inch-on-center holes for mounting dataloggers, peripherals, and brackets.

Enclosure Supply Kit

Each of our enclosures is shipped with an Enclosure Supply Kit that contains the materials used to seal and desiccate the enclosures. The kit includes:

- (4) 4-unit desiccant packs
- (1) humidity indicator tab
- (6) 4" cable ties
- (6) 8" cable ties
- (4) cable tabs
- (1) 4 oz. sealing putty

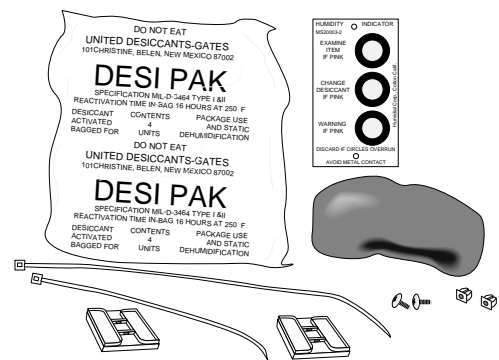


Figure 1. Components of the enclosure supply kit.

Mounting Equipment Inside the Enclosure

Procedure 1: Enclosures with one or two 1.25" conduits

1. Mount the datalogger, peripherals, and brackets onto the internal backplate.
2. Route sensor and peripheral leads through the conduit. Use the reducing plug if the conduit(s) is large enough to accommodate all wires.
3. Connect sensors and peripherals to the datalogger as described in the sensor and peripheral manuals.
4. Secure sensor and peripheral leads to the side of the enclosure and to the datalogger using cable ties and tabs.
5. Remove the RH indicator tab and two desiccant packs from the sealed plastic bag.
6. Remove the backing from the indicator tab and attach the tab to the right side of the enclosure.
7. Place a roll of putty around the sensor leads where they enter the enclosure.
8. Press the putty around the leads and into the coupling to form a tight seal.

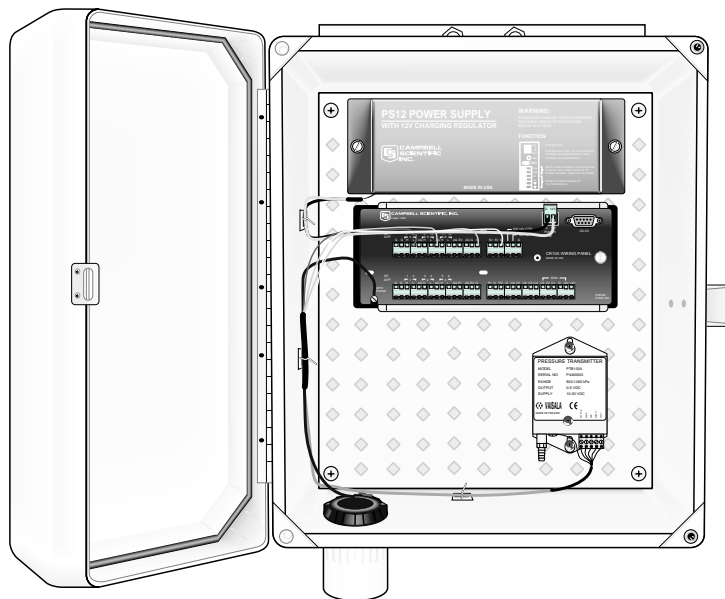


Figure 2. An ENC 12/14 with one 1.25" conduit houses a CR10X datalogger, 12 V rechargeable power supply, and a barometer.

Procedure 2: Enclosures with Individual Compression Fittings

1. Mount the datalogger, peripherals, and brackets onto the internal backplate.
2. Route each sensor and peripheral lead through a unique compression fitting.
3. Connect sensors and peripherals to the datalogger as described in the sensor and peripheral manuals.
4. Secure sensor and peripheral leads to the side of the enclosure and to the datalogger using cable ties and tabs.
5. Remove the RH indicator tab and two desiccant packs from the sealed plastic bag.
6. Remove the backing from the indicator tab and attach the tab to the right side of the enclosure.
7. Rotate each compression fitting so that the fitting clamps tightly against the sensor cable to provide a water-tight seal.

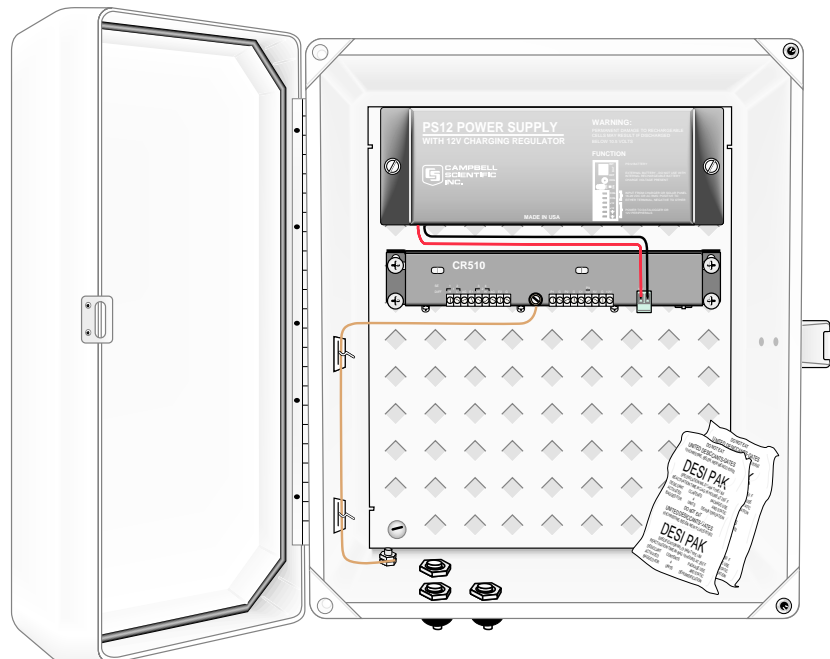


Figure 3. An ENC 10/12 with three individual compression fittings houses a CR510 datalogger and 12 V power supply. The larger enclosures (e.g., ENC 12/14, ENC 16/18) have six compression fittings.

When to Replace Desiccant

The humidity indicator tab or optional CS210 Humidity Sensor indicate when the desiccant needs to be replaced.

Humidity Indicator Tab

The humidity indicator tab has three colored circles that indicate the percentage of humidity. Desiccant packets inside the enclosure should be replaced with fresh packets when the upper dot on the indicator begins to turn pink. The indicator tab does not need to be replaced unless the colored circles overrun.

Optional CS210 Humidity Sensor

The CS210 Enclosure Humidity Sensor contains an Elan HM2000 series precision bulkpolymer relative humidity sensor to measure relative humidity inside an enclosure. When the measurements exceed 35% relative humidity, replace the desiccant packets. Refer to the CS210 manual for sensor specifications, installation procedures, and programming information.

Reusing Desiccant

Because desiccant is inexpensive, most users replace the desiccant instead of reactivating saturated desiccant. However some customers wish to reactivate saturated desiccant. To do this, care must be taken to prevent the desiccant packets from exploding during the reactivation process. This problem is caused by using too rapid of a heating process. If the heating process is too rapid, water vapor is released too quickly causing too much pressure to build up inside the packets so that the packets burst. The following methods will prevent this from happening:

Recirculating Oven Method

The optimum situation for reactivation is to use a recirculating oven that has a ramping temperature. The desiccant should bake for 16 hours, and the final temperature should be 250°F.

Standard Oven Method

1. Bake at an oven temperature of 125°F for a couple of hours.
2. Increase the oven temperature to 175°F and bake at this temperature for a couple of hours.
3. Increase the oven temperature to 245° to 250°F and bake at this temperature for 12 hours.

Baby Food Jar Method

1. Open the desiccant packets and empty the desiccant granules onto a cookie sheet.
2. Bake at 245° to 250°F for 16 hours.
3. Pour the desiccant granules into an empty baby food jar.
4. Place the open jar inside the enclosure.

Resistance to Weathering

The combination of rain, wind, and UV rays can erode the outer surface of our enclosures so that glass fibers become apparent. The depth of the erosion is superficial and only affects the aesthetic appeal. It does not reduce the effectiveness of the enclosure to protect the equipment. To reduce the erosion, periodically rub the enclosure surface with petroleum jelly (e.g., Vaseline). You can improve the appearance of an enclosure that has already been eroded by gently sanding the enclosure surface with fine grain sandpaper then rubbing the surface with petroleum jelly.



Wear safety goggles, mask, and gloves while sanding enclosure surface to improve enclosure appearance.
