SMART Enclosure

User Guide

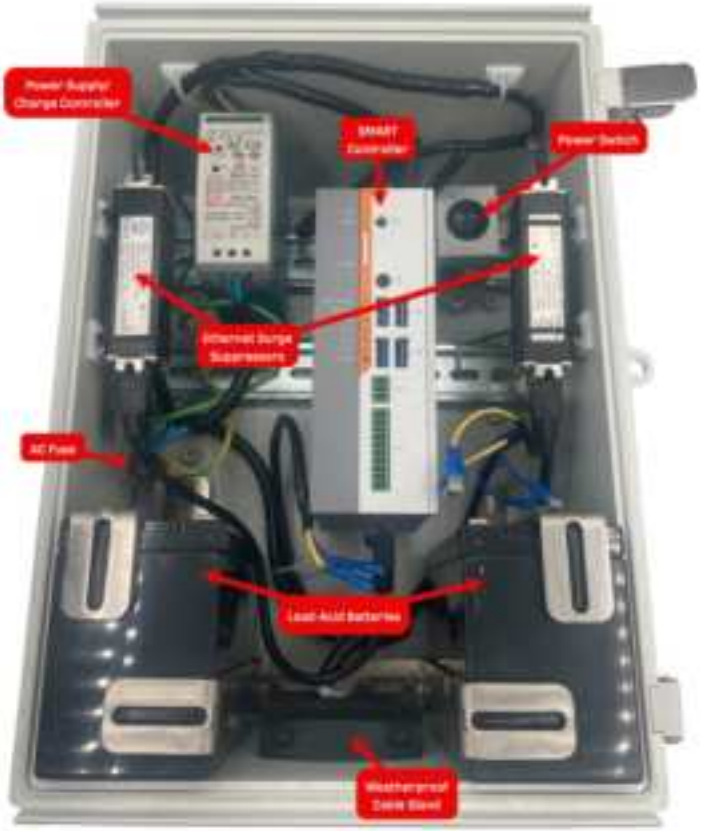
2025-05-08

1. SMART Enclosure Overview

The Wildlife Acoustics SMART Enclosure is a weatherproof enclosure for the SMART System with an uninterruptible power supply (UPS).

The SMART Enclosure is designed for use indoors or outdoors (for example, inside the base of a wind turbine or on a meteorological tower). By default, it is configured with a SMART Controller preinstalled and includes an uninterruptible power supply comprised of two lead-acid batteries and a battery charge controller.

SMART Enclosure Features



Uninterruptible Power Supply (UPS)

The SMART Enclosure is available with an uninterruptible power supply (UPS) preinstalled. The UPS is designed to keep the SMART System powered during temporary power interruptions.

The UPS consists of two lead-acid batteries and a power supply that also acts as a battery charge controller. The combined energy capacity of the two batteries is enough to power the SMART System without AC power for up to one full day, depending on how the SMART System is configured. The UPS will also smooth out fluctuating or intermittent power, reducing the likelihood that the SMART System fails to record because of poor power quality.

The installed AC power cable is configured by Wildlife Acoustics to match the AC power plug format in your region.

Weatherproof Cable Gland

The enclosure features an adjustable, UV-rated cable gland that allows up to four cables of various diameters to pass into the enclosure while maintaining a weatherproof seal. The cable gland housing fits four grommet inserts, each of which has a hole allowing cables of a narrow range of sizes to pass through it. The SMART Enclosure ships with extra grommet inserts, so you can reconfigure the grommet to allow for different cable sizes. Inserts without any hole are also provided, in case you need fewer than four cable pass-throughs.

Preinstalled Microphone Cables and Surge Suppressors

The SMART Enclosure comes equipped with two Ethernet cables leading out of the enclosure through the weatherproof cable gland. These cables are intended to connect directly to up to two SMART MIC-1 microphones or to connect to more microphones via Ethernet switches.

Each cable passes through an Ethernet surge suppressor that is mounted to the inside of the SMART Enclosure and grounded. These surge suppressors protect the SMART Controller in the event that an electrical surge travels towards the controller through a microphone cable.

Power Switch

A power switch is installed in the upper-right corner of the enclosure. Setting this switch to ○ **(Off)** disconnects both the AC power cable and the lead-acid batteries from the power supply. This disconnects the SMART Controller from both sources of power.

Mounting Points

On the back face of the enclosure, there is a mounting tab extending outward from each corner, suitable for mounting the enclosure.

2. SMART Enclosure Initial Setup

Connect the SMART Controller to power, install microphone cables through the weatherproof grommet, and install small accessories.

Connect the SMART Controller to the SMART Controller UPS

Before using the SMART Controller, you must carefully connect the batteries and SMART Controller in the correct configuration.

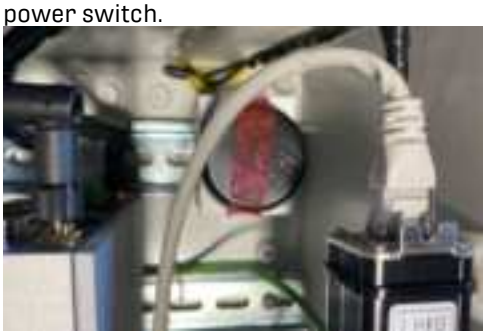
About this task

The SMART Enclosure ships with foam packing inserts to protect the internal components from damage during shipping and with its lead-acid batteries disconnected from the uninterruptible power supply.

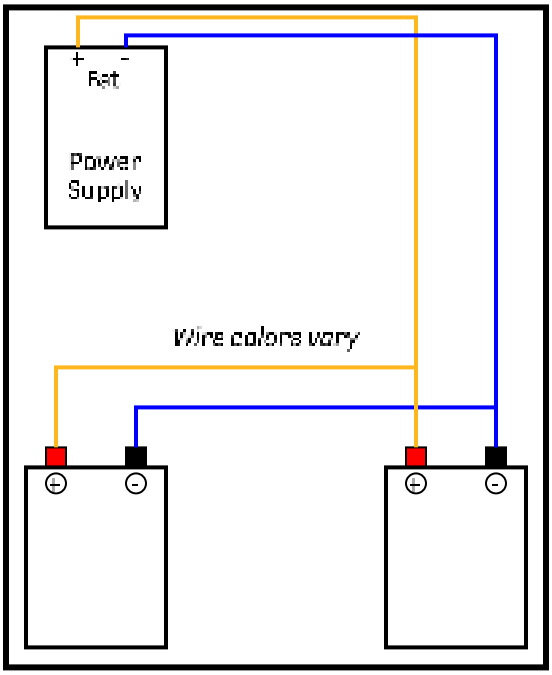
> ⚠ **DANGER:** Use care to avoid accidentally touching live electrical contacts. Failure to follow these instructions can result in permanent equipment damage, personal injury, or fire.

Procedure

1. Remove the foam packing inserts from the inside of the enclosure and remove the cover from the power switch.



2. Ensure the power switch is in the ○ **(Off)** position.
3. Connect the leads from the power supply to the two lead-acid batteries.
    a. Find the two colored wires connected to the **Bat. +/-** terminals at the top edge of the power supply.
    The wires that need to be connected to the battery terminals share the same colors. These colors will vary depending on the serial number of your SMART Enclosure.



b. Connect the wire from the **Bat. -** power supply terminal to the black, negative terminal on each of the two batteries.

c. Connect the wire from the **Bat. +** power supply terminal to the red, positive terminal on each of the two batteries.
You may need to separate the positive and negative wires from each other by unraveling part of the black cable wrap.

4. Connect the enclosure's power cable to grounded, 110-240 V AC power.
5. Set the power switch to **| (On)**.

Results

The **Power** LED on the SMART Controller will light up blue.

SMART Enclosure Microphone Cable Routing

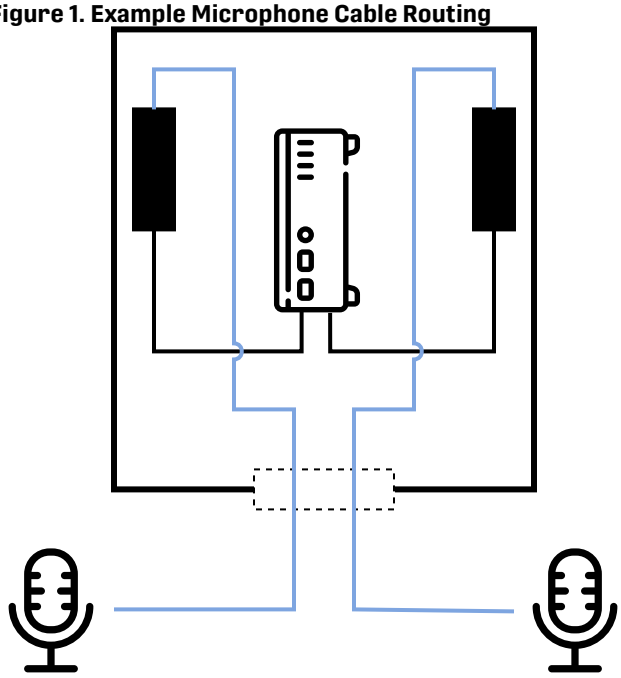
Before you install cables through the cable gland, plan your cable routing to ensure you have enough slack.

The SMART Enclosure arrives with a power cable and two Ethernet cables installed through the weatherproof cable gland. The installed Ethernet cables are suitable for configuring and testing the SMART Controller, but you will likely need to replace them with longer cables before you deploy. It can be difficult to adjust the positions of cables after they are installed in the cable gland, so you should plan your cable routing in advance.

Two Ethernet surge suppressors are installed inside the SMART Enclosure: one each on the left and right inside walls. Connections between your SMART Controller and microphones or between the SMART Controller and an external Ethernet switch should pass through a surge suppressor in order to protect the SMART Controller.

The Ethernet surge suppressors are bidirectional, so you can connect the microphone to either the top or bottom port. The opposite port should connect to one of the SMART Controller's **PoE+** ports.

Figure 1. Example Microphone Cable Routing



Assemble the SMART Enclosure Weatherproof Cable Gland

Reconfiguring the cables that pass through the enclosure wall requires disassembling the cable gland to access its rubber grommet inserts.

Before you begin

You will need the following tools and supplies:

- 3 mm hex key or Allen wrench
- **Strongly recommended:** Torque wrench with 3 mm hex head, set to 2 N m (18 lbf in)
- Optional: Flat-head screwdriver to lever open the grommet inserts
- Up to three cables to feed through the cable gland, in addition to the preinstalled power cable
  Category 5 Ethernet cables are recommended for connecting SMART MIC-1 microphones. Categories 5e, 6, and above are compatible but provide no additional benefit.
- Grommet inserts to match your cables
  Each grommet insert is marked on one corner with its internal diameter, in millimeters. To ensure a tight but workable fit, the cable should be up to 1 mm thicker in diameter than the grommet insert.

- Solid grommet inserts to fill any unused space, if you are installing fewer than four cables.

Procedure

1. If any cables are already installed in the cable gland and connected to the SMART controller, unplug them to allow them to move more freely.
2. Unscrew and remove the large, plastic bolt from the outer face of the SMART Enclosure.

3. Using a 3 mm hex key, unscrew the two bolts on the side of the cable gland assembly.

The cable gland will separate into two pieces. The larger piece has two tracks that accept the grommet inserts.

4. Decide how you will arrange the cables in the cable gland.
   To make reassembly and future adjustments easier, plan to keep the cable gland's two hex bolts facing the front opening of the enclosure. Choose one of the four possible grommet slots for each cable accordingly.
   As you install the cables in their grommet inserts, ensure you keep enough cable length inside the SMART Enclosure to allow you to route the cables without sharp bends or kinks.
5. Install each cable in its grommet insert by opening the side of the grommet to accept the cable. If necessary, use a flathead screwdriver as a lever to pry open the grommet.

6. Check that you will be able to install the cable gland through the hole in the enclosure with the large plastic nut on the outer face.
   You may need to feed cables through the enclosure hole or the plastic nut individually.

7. Slide each grommet into one of the tracks in the cable gland.
   The grommets have grooves on two faces that correspond to grooves in the cable gland tracks.
   Do not worry if the grommets show slight gaps from being pried open. The grommets will be compressed when you reassemble the cable gland.
8. Reassemble the cable gland and, using a torque wrench with a 3 mm hex bit, tighten the two bolts on the side of the gland to 2 N m (18 lbf. in.).
   As you tighten, the cable gland body should compress the grommet inserts, closing any gaps.
9. Reinstall the cable gland through the hole in the SMART enclosure and hand-tighten the large bolt onto the threads.
10. Connect cables to the SMART Controller or other accessories inside the enclosure.
    Ethernet cables connected to SMART MIC-1 microphones should connect to either of the two Ethernet surge suppressors installed on the inner walls of the enclosure.

3. Installing Accessories Inside the SMART Enclosure

Small accessories for the SMART System, such as a USB drive or cellular modem, can be attached to the inside walls of the SMART enclosure.

We recommend using fasteners that can be detached and reattached, such as hook and loop strips,[1] to fasten small accessories to the enclosure. Choose fasteners with marine-grade adhesive that will withstand UV exposure and any changes in temperature or humidity that you expect at your deployment site.

Install a Cellular Modem

A small, USB-powered cellular modem can be installed inside the SMART Enclosure to connect the SMART Controller to the Internet.

About this task

A USB-powered cellular modem or mobile hotspot can draw power from the SMART Controller's USB ports without requiring an additional power connection.

Procedure

1. Using hook and loop fasteners with marine-grade adhesive backing,[1] attach the cellular modem to one of the interior walls of the SMART Enclosure.
2. Connect a USB cable from one of the SMART Controller's USB ports to the modem's USB input port to power the modem.
3. Connect the SMART Controller to the modem's network via Ethernet or Wi-Fi.
    - If the modem has an Ethernet port, connect it to the SMART Controller's **Ethernet 1** port.
    - If the modem does not have an Ethernet port, configure the SMART Controller as a Wi-Fi Client Device with the SSID and password for your modem's Wi-Fi network.
      See the *SMART System User Guide* for Wi-Fi configuration instructions.

Install a USB Backup Drive

A small, USB-powered solid-state drive (SSD) can be fastened inside the SMART Enclosure to use for data backup.

About this task

The SMART Controller can be configured to back up new recordings and activity logs to a USB storage drive each day.

We strongly recommend using an SSD as a backup drive instead of a hard disk drive (HDD) with spinning platters. SSDs are generally smaller and lighter than HDDs, and they are less likely to suffer permanent damage if knocked loose.

Procedure

1. Using hook and loop fasteners with marine-grade adhesive backing,[1] attach a USB SSD to one of the interior walls of the SMART Enclosure.
2. Use a USB cable to connect one of the SMART Controller's USB ports to the SSD's USB port.
3. Verify that the SMART Controller recognizes and can access the USB drive.
   See the *SMART System User Guide* for full instructions on configuring USB backup.

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1. VELCRO® is one manufacturer of hook and loop fasteners.

4. Remove the SMART Controller from the Enclosure

If you purchased the SMART Controller and Enclosure together, the controller arrives installed on a DIN rail inside the enclosure and can be removed tool-free.

About this task

A DIN mounting clip is installed to the back edge of the SMART Controller. A built-in spring keeps the clip firmly attached to the DIN rail while still allowing you to attach and remove the SMART Controller quickly and without tools.

Procedure

1. Start with the SMART Enclosure securely mounted upright, with the cable gland facing downwards, or lying on a work surface, with the cable gland facing you.
2. Use one hand to hold the enclosure in place and use your other hand to push the SMART Controller towards the top face of the enclosure and then towards the front opening.
   You should feel resistance from the DIN clip spring, but the SMART Controller should move and come free.

5. Replace the SMART Enclosure UPS Fuse

A replaceable fuse protects the SMART System and UPS in the event of an electrical surge along the AC power input.

Procedure

1. Set the power switch to ○ **(Off)**.
2. Unplug the SMART Enclosure from AC power.
3. Using a flat-head screwdriver, remove the cap from the fuse case on the left inside wall of the SMART Enclosure.
4. Remove the burnt fuse and insert a new one with the specifications listed below.

   Table 1. SMART Enclosure Power Fuse Specifications

Current Rating	2.5 A
Voltage Rating	250 V AC
Package	5 mm × 20 mm Glass Cartridge
Response Time	Medium Blow

5. Replace the cap on the fuse case.

6. SMART Enclosure Specifications

Table 2. Enclosure Specifications

Outer Dimensions (without Mounting Tabs)	14.5 in. × 10.75 in. × 7.5 in. 39.8 cm × 27.3 cm × 19.1 cm
Inner Dimensions (including internal depth of front cover)	13.0 in. × 9.0 in. × 6.5 in. 33.0 cm × 22.9 cm × 16.5 cm
Enclosure Material	Polycarbonate
Ingress Protection Code	IP67 (dust-tight and waterproof up to 1 meter immersion)
Padlock Maximum Diameter	0.3 in. (7.6 mm)
Mounting Tab Maximum Bolt Diameter	5/16 in.
Weight	22.56 lb. (10.23 kg)

Table 3. Power Supply Specifications

AC Power Cord Length (External to Enclosure)	7.75 ft. (2.4 m)
AC Power Cord Plug Type	Custom-installed by Wildlife Acoustics to match local plug standard
Output Voltage	13.8 V DC
Rated Output Current	2.8 A
Output Current Range	0 ~ 4.3 A
Rated Output Power	59.34 W
Input Voltage Range	90 ~ 264 V AC
Input Frequency Range	47 ~ 63 Hz
Operating Temperature Range	-22 ~ +158 °F -30 ~ +70 °C

Table 4. Battery Specifications

Chemistry	Valve-regulated lead-acid (sealed lead-acid)
Nominal Voltage	12 V DC
Nominal Charge Capacity	8.5 Ah per battery, 19 Ah combined

7. Copyright Notices

8. Contact Information

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