

#### Required Tools

- ▶ Field Update Tool (FUT)
- ▶ Windows® Laptop PC
- ▶ USB Mini-b cable
- ▶ Bullhorn® Tools configuration software
- ▶ Installation tools

#### Optional Items

- ▶ Hook-up wire for field installation
- ▶ Ground rod and copper wire

#### Installing the Surge Arrester Kit

The following procedures are general steps for a typical installation. For additional information, please contact Technical Support at 1-800-229-3404 or support@aiworldwide.com.

**WARNING:** To prevent electrostatic discharge (ESD) damage when handling electronic equipment, always wear an anti-static wrist strap attached to an unpainted, grounded metal object. Ensure the wrist strap has maximum contact with bare skin.

**NOTE:** For rectifier types other than **JA** — If a non-Delta high energy surge arrester is already installed on the **AC** input, you **do not** need to install the **Storm Trapper HE Surge Arrester**.

# 1

#### Power Off All Devices & Install Storm Trapper

- 1 Ensure power has been terminated on rectifier and all devices.
- 2 Install **Storm Trapper HE Surge Arrester** on **AC** input:
  - a Install black leads across **Line 1 and Line 2** of rectifier's **AC** input. These lines should be routed to the breaker.
  - b Connect white lead to rectifier chassis.

**NOTE:** If an arrester is already installed on the **AC** input, then install the **Storm Trapper HE Surge Arrester** in parallel. Replace spade terminals with flat terminals for easier connection to where existing arrester is connected.

- 4 Secure **Storm Trapper HE Surge Arrester** by zip-tie to suitable location or place on floor of rectifier.



**Storm Trapper HE Surge Arrester**

# 2

#### Install DC Lightning Arrester & Surge Detector

- 1 Attach **DC Lightning Arrester's** black leads to rectifier **DC** outputs.
- 2 Thread **DC Lightning Arrester's** white wire through the hole (marked **Pulse**) on the **Surge Detector's** current transformer.
- 3 Connect a spade connector (included in kit) to the end of the **DC Lightning Arrester's** white wire and connect to common ground location.
- 4 Wire and connect the **Surge Detector** to the Bullhorn RMU's digital **Channel 5**. Be sure to observe proper polarity.
- 5 Connect **DC Lightning Arrester's** two yellow wires to Bullhorn RMU's **Channel 6**. Polarity is not important as long as one wire is on the positive input and the other is on the negative input.
- 6 **DC Lightning Arrester** can be placed on rectifier floor or anywhere to keep the installation tidy.



**DC Lightning Arrester**



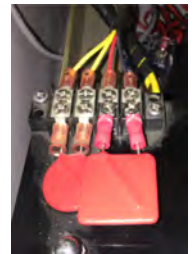
**Surge Detector**

# 3

## Install DC Surge Suppressor

- 1 Replace existing surge suppressor on **DC** side of stack with **DC Surge Suppressor** from kit.

**NOTE:** For **JA rectifiers** — black/red leads = DC side of stack; yellow/white leads = AC side of stack. You will need to replace the **Surge Suppressor** for **DC** side of stack.



DC Surge Suppressor

# 4

## Ground RMU and Ground Connections to Earth Ground

- 1 **Do not** ground the RMU if unit is inside rectifier or attached to the external rectifier case.

If RMU is attached on another pole (**not inside or attached to external rectifier case**), ensure the RMU's ground is connected to a **common ground point** on the rectifier chassis.

- 2 Ground connection to earth ground.

- a If there is a ground rod, check connection and ensure it is connected to rectifier chassis.
- b If there is no ground rod, install one if possible. If one cannot be installed, make a note in records that no ground rod is installed.
- c Ensure **all** ground connections are installed to single point on rectifier chassis, including **DC Lightning Arrestor**, ground rod, and potentially the RMU. A 1/4" bolt can be installed on rectifier chassis that connects ground rod to the bolt via a copper wire (externally) and all internal ground connections (internally).



Common Ground Location on Rectifier Chassis

# 5

## Upgrade Firmware

**IMPORTANT:** If unit's firmware version is **4.7** or later, skip this step. You can check firmware version through your **Bullhorn Web** account or by connecting the unit to **Bullhorn Tools**. Be sure to **disconnect from Bullhorn Tools** before beginning the update process.

- 1 Attach **FUT** to **Unit's Firmware Upload** port. The update begins automatically.

**IMPORTANT:** Do not turn off the unit during the update process.

- 2 LED lights on the **FUT**:

- ▶ **Status** LED light indicates when **FUT** is updating or complete.
- ▶ **Activity** LED light flashes during the verification and update process.

- 3 When the **Completed** status light turns on and the **Activity** light turns off, disconnect the **FUT**.

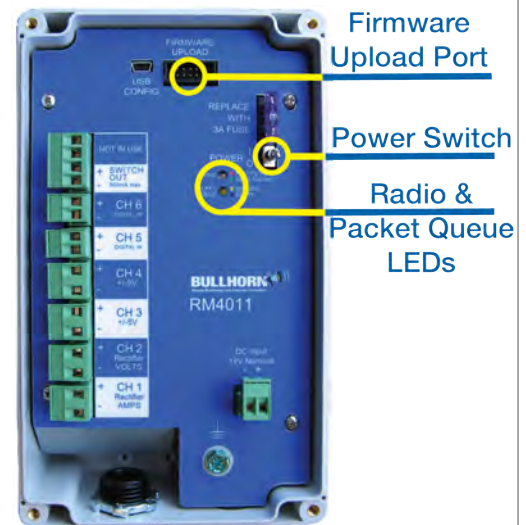
- 4 LED lights on the **Unit**:

- ▶ The **Acquiring Signal** light flashes to indicate **Unit** is searching for satellite signal.
- ▶ The **Packet Queue** light flashes to indicate **Unit** is transmitting. The light turns off when Bullhorn Web receives the packet.
- ▶ **Unit** automatically sends a packet when update is complete.

**IMPORTANT:** Unit must complete packet transmission to complete the update. If packet transmission is not successful, repeat the firmware update process.

- 5 Connect to unit using the USB cable. Open **Bullhorn Tools** and complete the following:

- a Verify that firmware was updated to version **4.7**.
- b Ensure the **Alarm Measurement Interval** field is set to 240 minutes.
- c Ensure **Channel 5** is enabled and the **accumulator** is turned on.
- d Ensure **Channel 6** is enabled.



RM4011 Port, Switch, and LED Lights