instruction manual

IR Sensors and Receivers

Control Panel Accessories

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Product Information

The AMX infrared (IR) sensors and receivers (AXD-IR+, AXR-IRSM+, IRX-DM+, and IRX-SM+) work with AMX IR-format 38 or 455 kHz wireless transmitters.

The AXD-IR+ and AXR-IRSM+ are remote IR receivers used with AMX Axcess Central Controllers and operate via the AXlink bus to remotely control AXlink devices. The AXD-IR+ is in a UniMount wall panel that fits into most US-style single-gang enclosures. The AXR-IRSM+ is in a swivel-mount enclosure for wall or ceiling installations.

The IRX-DM+ and IRX-SM+ are remote IR sensors that work with the Axcess

AXC-RCVI card, AMX Television Managers, and MX8 and MX16 Relay Receivers to remotely control IR devices. The IRX-DM+ is in a UniMount enclosure and the IRX-SM+ is in a swivel-mount enclosure.

Behind the IR window on each of the four units is a red IR data LED. The LED is on when the IR sensor on the unit receives IR data from a transmitter (see FIG. 1).

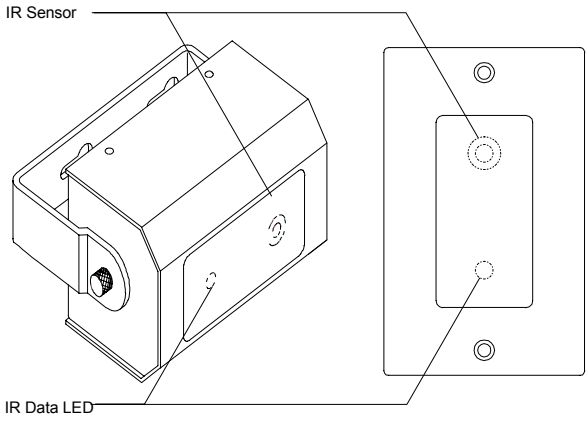

FIG. 1 Swivel-mount and UniMount sensors and receivers

Features

The AXR-IRSM+ and AXD-IR+:

- Are AXlink 38 or 455 kHz IR receivers
- Work in AMX Axcess Central Controller

The IRS-UM+ and IRX-SM+:

- Are remote 38 or 455 kHz IR sensors
- Work with the Axcess AXC-RCVI card, AMX Television Managers, and MX8 and MX16 Relay Receivers

The UniMount units mount into most US-style single-gang enclosures.

The swivel-mount units:

- Install on the ceiling or wall, and can be positioned horizontally or vertically
- Swivel for best IR reception and protection from fluorescent interference

Specifications: Sensors and Receivers

AXD-IR+

FIG. 2 shows the AXD-IR+ Decor IR receiver.

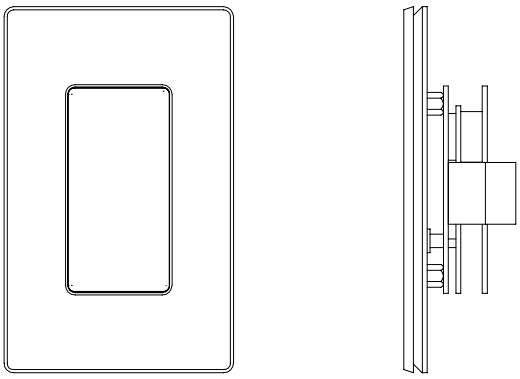

FIG. 2 AXD-IR+ Decor IR receiver

The following table lists the AXD-IR+ specifications:

AXD-IR+ Specifications	
Mounting:	Mounts into most US-style single-gang enclosures.
Dimensions (HWD):	4.5" x 3.18" x 1.80" (114 mm x 80 mm x 45.8 mm) 1.50" (38 mm) depth from wall surface
Weight:	7.8 oz. (218.4 g)
Power Consumption:	35 mA

AXR-IRSM+

FIG. 3 shows the AXR-IRSM+ swivel-mount IR receiver.

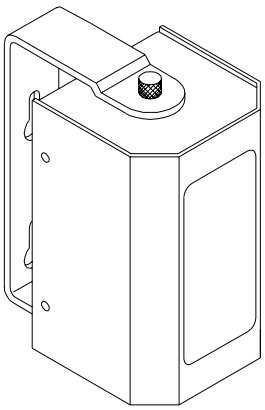

FIG. 3 AXR-IRSM+ swivel-mount IR receiver

The following table lists the AXR-IRSM+ specifications.

AXR-IRSM+ Specifications	
Enclosure	Neutral off-white metal enclosure
Mounting	May be used without the wall bracket for flush mounting. Comes with full set of mounting screws and wall anchors.
Dimensions (HWD)	2.0" x 3.3" x 2.6" (51 mm x 84 mm x 66 mm)
Weight	5.6 oz. (174 grams)
Power Consumption	35 mA

IRX-DM+

FIG. 4 shows the IRX-DM+ Decor IR sensor.

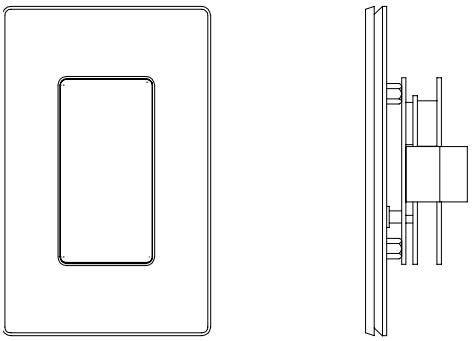

FIG. 4 IRX-DM+ Decor IR sensor

The following table lists the IRX-DM+ specifications.

IRX-DM+ Specifications	
Mounting	Mounts into most US-style single-gang enclosures.
Dimension (HWD)	4.5" x 3.18" x 1.5" (114 mm x 80.8 mm x 38 mm) 1.05" (26.7) depth from wall surface
Weight	6.8 oz. (190.4 grams)
Power Consumption	25 mA

IRX-SM+

FIG. 5 shows the IRX-SM+ swivel-mount IR sensor.

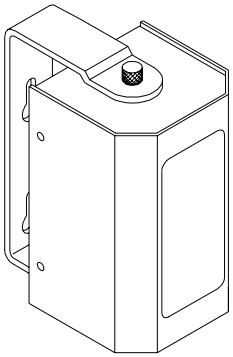

FIG. 5 IRX-SM+ swivel-mount IR sensor

The following table lists the IRX-SM+ specifications:.

IRX-SM+ Specifications	
Enclosure	Neutral off-white metal enclosure
Mounting	May be used without the wall bracket for flush mounting. Comes with full set of mounting screws and wall anchors.
Dimensions (HWD)	2.0" x 3.3" x 2.6" (51 mm x 84 mm x 66 mm)
Weight	4.8 oz. (149 grams)
Power Consumption	25 mA

Applications

Use the sensors and receivers with AMX transmitters to control devices such as media equipment. Combine several sensors and receivers for large single-area coverage or as discrete units for multiple room installations.

FIG. 6 illustrates an application using a sensor, the IRX-SM+ (the application could also use the IRX-DM+).

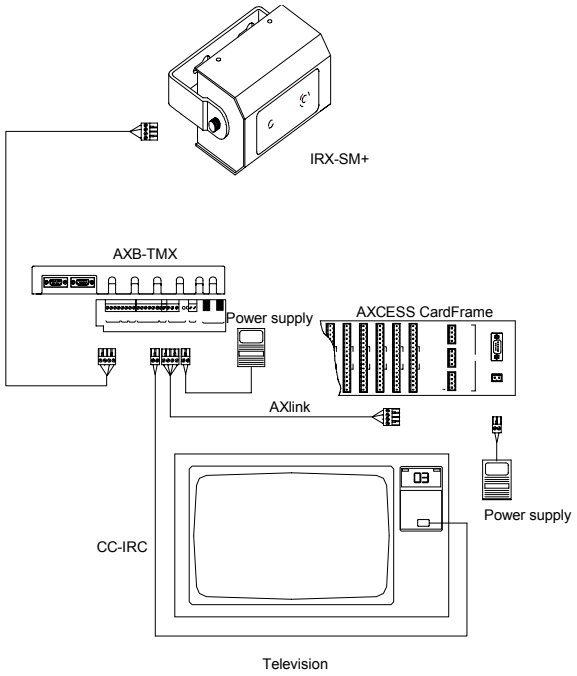

FIG. 6 Sample IRX-SM+ equipment configuration

FIG. 7 illustrates an application using a receiver, the AXD-IR+ (the application could also use the AXR-IRSM+).

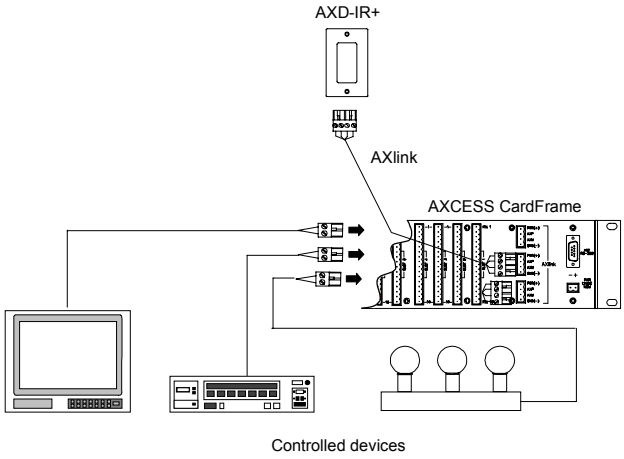

FIG. 7 Example equipment configuration using the AXD-IR+

Wiring and Installation

Before installing the sensors and receivers, set the receive frequency on the units. On the receivers, the AXD-IR+ and AXR-IRSM+, also set the AXlink device number and IR validation level.

To access the jumper pins or switches on the circuit board assembly in the swivel mount units, separate the housing from the swivel base (see FIG. 8).

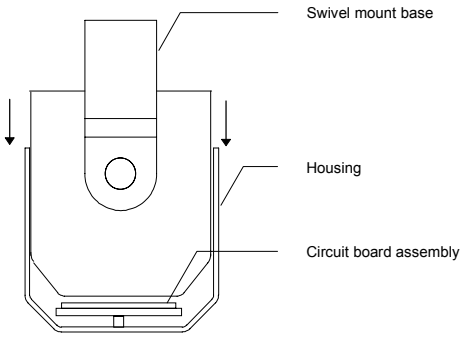

FIG. 8 Separating the housing from the swivel base on the swivel mount units

On the UniMount units, the AXlink jumpers and switches are on the back of the panel.

Setting the Receive Frequency

Perform the following steps (see FIG. 9) to set the receive frequency:

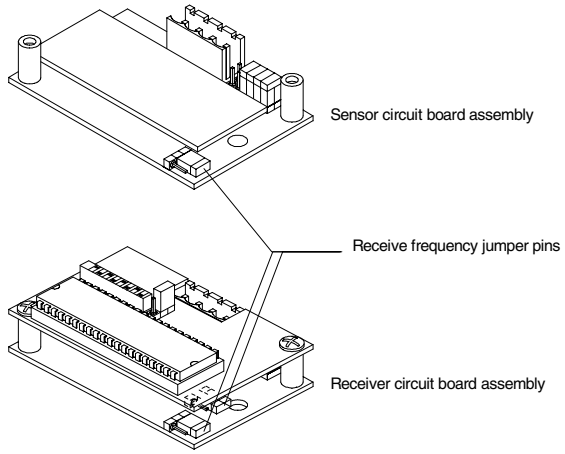

FIG. 9 Receive frequency jumper pins set at the default setting for receiving 38 kHz

1. Use the set of jumper pins (one set on the sensors and two sets on the receivers-see FIG. 9) on the corner of the circuit boards to set the receive frequency. FIG. 10 illustrates the positioning of the jumpers.

NOTE

The unit will not operate with one set of pins set for 38 kHz and the other set of pins set for 455 kHz.

- To receive 455 kHz, position the jumper (both jumpers on the receivers) on the left two pins, pins 1 and 2, away from the edge of the circuit boards, to receive 455 kHz. (This is the default setting.)
- To receive 38 kHz, position the jumper (both jumpers on the receivers) on the right two pins, pins 2 and 3, near the edge of the circuit boards, to receive 38 kHz.

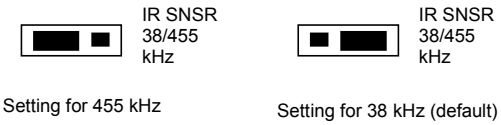

FIG. 10 Receive frequency jumper settings

2. Go on to the next procedure:
   - If you are installing a receiver, go on to Configuring the Receivers.
   - If you are installing an IR sensor, refer to Sensor IR validation level in Configuring the Receivers before going on to Installation.

Configuring the Receivers

To configure the receivers, set the AXlink device number and the IR validation level.

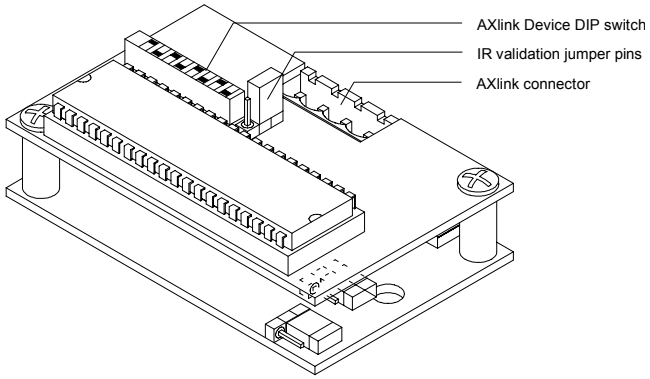

FIG. 11 IR receiver AXlink device DIP switches, IR validation jumper pins, AXlink connector, and receive frequency jumper pin locations

Setting the AXlink Device Number

Perform the following steps to set the receiver's AXlink device number:

1. Locate the eight-position Device DIP switch (FIG. 11).
2. Set the DIP switch according to the DIP switch values shown in FIG. 12.

   The device number is set by the total value of DIP switch positions that are ON (down). The Axcess software program in your system typically uses device numbers 128 through 255 for the panels.

Switch	1	2	3	4	5	6	7	8
Value	1	2	4	8	16	32	64	128

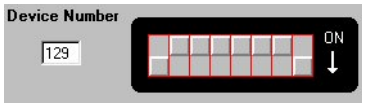

FIG. 12 DIP switch values and quick reference

As an example, the DIP switch in FIG. 12 defines device number 129 (1+128=129).

If you later change the device number, remove and reconnect the AXlink connector. This enters the new device number into memory.

NOTE

The device number takes effect only on power-up.

3. Go on to Setting the IR Validation Level below.

Setting the IR Validation Level

An IR transmitter must send repetitions of data for the receiver to accept it as valid data. In some installations, a light wall color or other physical condition may interfere with the sensor's or receiver's ability to sense the transmitted signal. The signal may reflect or bounce and become distorted. The receivers can be set to use either two or three repetitions of sequential signals to validate and accept the signal data.

Receiver IR validation level

Perform the following steps to set the receiver's IR level.

1. Locate jumper pins J1 on the circuit board (FIG. 13).

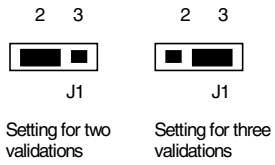

FIG. 13 IR validation jumper pin settings

2. Position the IR validation jumper (Figure 9) to select the number of valid IR data repetitions to be accepted:
   - Position the jumper at 2 to have the unit validate two sequential signals.
   - Position the jumper at 3 to have the unit validate three sequential signals.
3. Go on to Installation.

Sensor IR validation level

For the sensors, this IR validation level is set on the receiving device (such as an AXC-RCVI). Refer to the instruction manuals for the receiving device for more information.

Wiring the IR Sensors and Receivers

The IR Sensors and Receivers use a four-pin AXlink connector for power and data. If the distance between the panel and Central Controller exceeds power consumption limits, you can connect a local 12 VDC power supply to the AXlink connector.

FIG. 14 shows the location of the AXlink connector on the rear panel of the IR sensors and receivers.

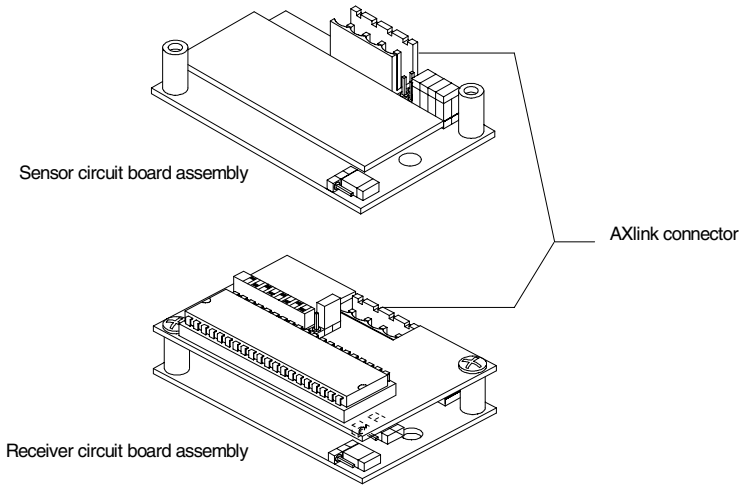

FIG. 14 Circuit board assemblies for IR sensors and receivers

To access the AXlink connector on the AXR-IRSM+, separate the swivel-mount base from the housing. (Refer to Figure 4.) On the AXD-IR+, the AXlink connector is on the underside of the unit.

Preparing captive wires

You will need a wire stripper and a flat-blade screwdriver to prepare the captive wires.

Prepare and connect the captive wires as follows.

1. Strip .25 inch (6.35 mm) of wire insulation off all wires.
2. Insert each wire into the appropriate opening on the connector according to the wiring diagrams (following) in this section.
3. Turn the flat-head screws clockwise to secure the wire in the connector.

NOTE

Do not over-torque the screw. Doing so can bend the seating pin

Wiring guidelines

The IR sensor or receiver requires 12 VDC power to operate properly. The power is supplied by the AMX system's AXlink cable. The maximum wiring distance between the Central Controller and the receiver or sensor is determined by power consumption, supplied voltage, and the wire gauge used for the cable. The following table lists wire sizes and the maximum lengths allowable between

the receiver or sensor and the Central Controller. The maximum wiring lengths are based on a minimum of 13.5 volts available at the Central Controller's power supply.

Wiring Specifications		
Maximum Wiring Length		
Wire Size	**IR Sensors**	**IR Receivers**
18 AWG	4,696 feet (1431.34 m)	3,354 feet (1022.30 m)
20 AWG	2,970 feet (905.26 m)	2,121 feet (646.48 m)
22 AWG	1,851 feet (564.18 m)	1,314 feet (400.511 m)
24 AWG	1,167 feet (355.70 m)	833 feet (253.90 m)

If you install the IR sensor or receiver farther away from the Central Controller than recommended in the Wiring Specifications table, connect an external 12 VDC power supply, as shown in the wiring diagrams in this section.

Connecting the Wiring

The following paragraphs describe wiring connections using AXlink for data and power, using AXlink plus an external 12 VDC power supply, and wiring the IRX-DM+ or IRX-SM+ to the AMX IR receiver.

Wiring the AXD-IR+ or the AXR-IRSM+ to AXlink

Install the AXlink data/power bus wiring as shown in FIG. 15.

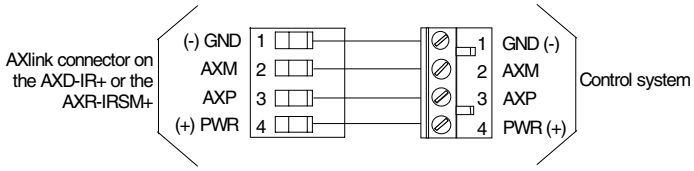

FIG. 15 AXlink wiring

Using the AXlink four-pin connector with an external 12 VDC power supply

Connect the Central Controller's AXlink connector to the AXlink connector on the AXD-IR+ or the AXR-IRSM+ as shown in FIG. 16.

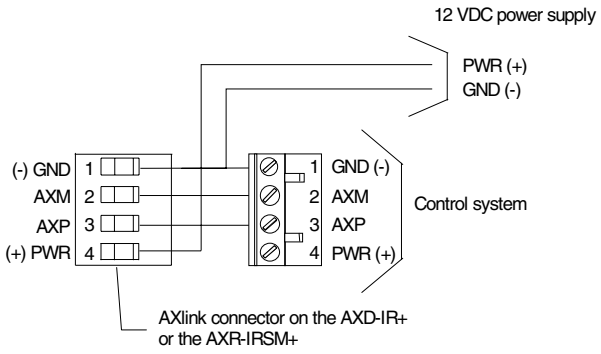

FIG. 16 AXlink wiring diagram using an external 12 VDC power supply

Use a 12 VDC power supply when the distance between the Central Controller and the sensors or receivers exceeds the limits described in the Wiring Specifications table above. Make sure to connect only the GND wire on the AXlink connector when using a 12 VDC power supply.

NOTE

Do not connect the PWR wire to the AXlink connector's PWR (+) terminal on the Central Controller's side

Wiring the IRX-DM+ or IRX-SM+ to the AMX IR Receiver

Wire the IR sensor to the AMX IR receiver as shown in FIG. 17.

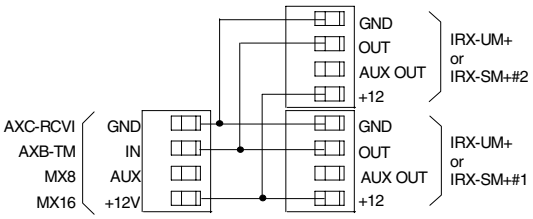

FIG. 17 Wiring the IR sensor to the AMX receiver

You can wire up to eight IR sensors in parallel to an AXC-RCVI, AMX Television Manager, MX8, or MX16. For additional information, refer to the reference guides or instruction manuals for those AMX products.

Checking IR Data status

Locate the red IR Data LED on the front of the unit. Point the system's AMX transmitter towards the sensor and press a button. The IR Data LED lights when the unit receives data. If the IR Data LED on the unit does not light:

- Verify that the transmit LED on the transmitter lights when you press a button.
- Check the wiring to the sensor.
- Verify that you configured the transmitter for the proper frequency IR transmission.

Checking AXlink status

The AXlink LED lights to indicate AXlink power/data status as follows:

• One blink per second	indicates power is active and AXlink communication is working.
• Two blinks per second	indicates the devices specified in the Master program do not match the devices found.
• Three blinks per second	indicates AXlink communication error
• Full on	indicates the following conditions: • There is no AXlink control or activity, but power is on. • The Axcess program is not loaded.

If the LED is on and not flashing, disconnect the AXlink connector and recheck all AXlink connections. Afterward, reconnect the AXlink connector to the panel and verify the LED is flashing once per second.

Mounting the UniMount Sensor or Receiver

FIG. 18 gives cutout dimensions for the AXD-IR+ and IRX-DM+. To install the AXD-IR+ or IRX-DM+, complete the following steps.

1. For wall or podium mounting, AMX recommends mounting the AXD-IR+ or IRX-DM+ in a standard 1-gang wallbox with a minimum internal clearance of 1 3/4" (W) x 2 5/8" (H) x 1 5/8" (D).

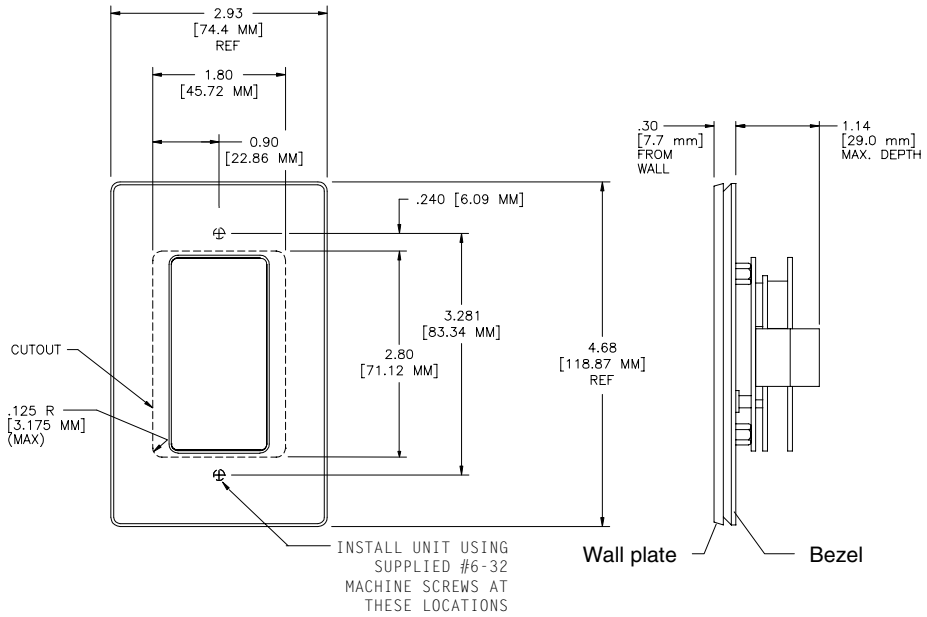

FIG. 18 AXD-IR+ and IRX-DM+ 1-gang cutout dimensions

2. Gently remove the bezel from the wallplate.
3. Place the panel in the wallbox and align the screw holes with the mounting holes on the panel.
4. If you are installing the IRX-DM+, remove the housing and wire the unit to the AMX IR receiver as shown in Wiring.
5. If you are installing the AXD-IR+, turn the unit over and locate the AXlink connector.
   a. Connect the unit to AXlink data/power bus. See Wiring.
   b. Check the AXlink LED. (LED should blink once per second.)
6. Fasten the panel to the wallbox using the screws supplied with the panel.
7. Snap the wallplate back on the bezel.

Mounting the Swivel-Mount Sensor or Receiver

FIG. 19 gives dimensions for the AXD-IRSM+ and IRX-SM+.

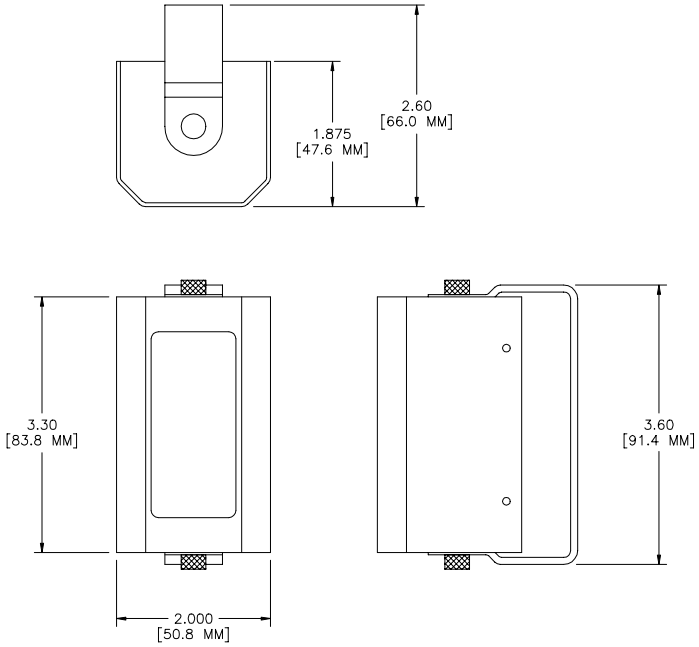

FIG. 19 AXD-IRSM+ and IRX-SM+ dimensions

To install the AXD-IR+ or IRX-SM+:

Mount the unit according to FIG. 20 for mounting the unit flush to a flat surface without using the mounting bracket (*Installation Method A*), or FIG. 21 for mounting the unit using the mounting bracket (*Installation Method B*).

Installation method A

Use when installing a swivel-mount unit without using the provided mounting bracket. The cable exit is on the back mounting panel.

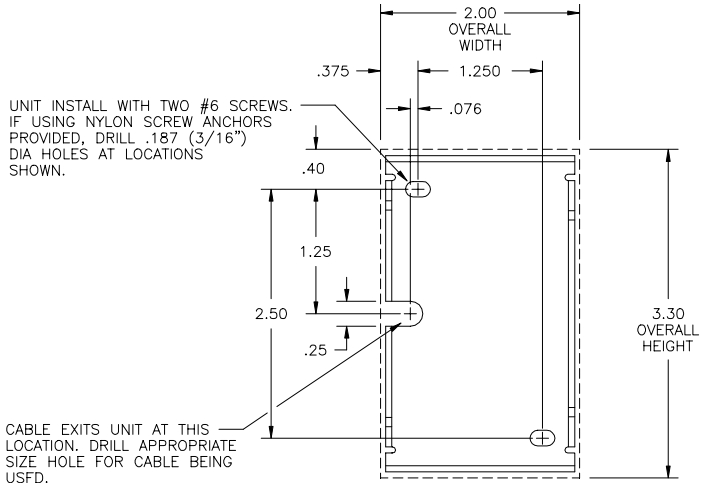

FIG. 20 Installation Method A

NOTE

Two #6 nylon screw anchors and two #6 x 1-inch long screws are provided with each unit.

Installation method B

Use when installing a swivel-mount unit using the provided mounting bracket.

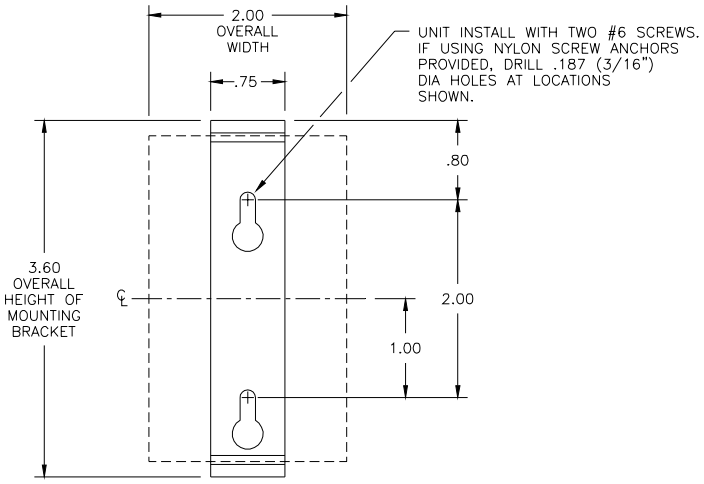

FIG. 21 Installation method B

- On drywall, install using the included wall anchors. Use a 3/16-inch drill bit.
- On wood, install using the included #6 mounting screws.

1. If you are installing the IRX-SM+, remove the housing and wire the unit to the AMX IR receiver as shown in Wiring.
2. If you are installing the AXR-IRSM+, remove the housing and locate the AXlink connector.

a. Connect the unit to AXlink data/power bus.

b. Check the AXlink LED. (LED should blink once per second.).

c. Replace the housing.

3. Check that the IR receiver is on and is supplying power to the sensor.

AMX reserves the right to alter specifications without notice at any time.

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