FUSION®

Fusion® MS-UD/AV650/750 Installation Instructions

Important Safety Information

⚠ WARNING

Failure to follow these warnings and cautions could result in personal injury, damage to the vessel, or poor product performance.

See the *Important Safety and Product Information* guide in the product box for product warnings and other important information.

This device must be installed according to these instructions.

Disconnect the vessel's power supply before beginning to install this product.

Before applying power to this product, make sure it has been correctly grounded, following the instructions in the guide.

⚠ CAUTION

Always wear safety goggles, ear protection, and a dust mask when drilling, cutting, or sanding.

NOTICE

When drilling or cutting, always check what is on the opposite side of the surface.

You must read all installation instructions before beginning the installation. If you experience difficulty during the installation, contact Fusion Product Support.
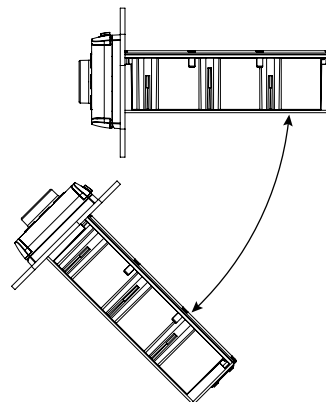
What's In the Box
- Two Mounting plates
- Mounting hardware
  - Four 8-gauge, self-tapping screws
  - Four M4 machine screws
- Power and speaker wiring harnesses
- RCA splitter
- Micro-USB to USB cable (UD models only)
- Lightning™ connector to USB cable (UD models only)
- Apple® 30-pin to USB cable (UD models only)
- Remote control (AV models only)
- Two AAA batteries (AV models only)

Tools Needed
- Phillips screwdriver
- Electric drill
- Drill bit (size varies based on surface material and screws used)
- Rotary cutting tool or jigsaw
- Marine sealant (optional)

Mounting Considerations
- The stereo must be mounted in a location where there is enough clearance for the open door of the stereo as indicated on the template.
- The stereo must be mounted in a location that allows open airflow around the rear of the stereo for heat ventilation.
- The stereo must be mounted within 45° of the horizontal plane.

- The cable should have a drip loop to allow water to drip down off the cable and avoid damaging the stereo.
- If you want to mount the stereo outside the boat, it must be mounted in a location well above the waterline, where it is not submerged.
- If you want to mount the stereo outside the boat, it should be mounted in a location where it will not be damaged by a docks, pilings, or other pieces of equipment.
- To avoid interference with a magnetic compass, the stereo should be installed at least 15 cm (5.9 in.) away from a compass.
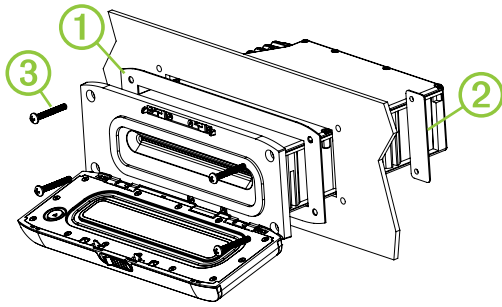
Mounting the Stereo

NOTICE

Be careful when cutting the hole to flush mount stereo. There is only a small amount of clearance between the case and the mounting holes, and cutting the hole too large could compromise the stability of the stereo after it is mounted.

Before mounting the stereo, you must choose a location following the guidelines above.

1. Trim the template and make sure it fits in the selected location.
2. Secure the template to the selected location.
3. Using a drill bit appropriate for the mounting surface, drill the hole inside the corner of the dashed line on the template to prepare the mounting surface for cutting.
4. Using a jigsaw or rotary tool, cut the mounting surface along the inside of the dashed line indicated on the template.
5. If necessary, remove the sun cover from the stereo.
6. Place the stereo in the cutout to test the fit.
7. If necessary, use a file and sandpaper to refine the size of the cutout.
8. After the stereo fits correctly in the cutout, ensure the mounting holes on the stereo line up with the pilot holes on the template.
9. If the mounting holes on the stereo do not line up, mark the new pilot-hole locations.
10. Using an appropriately sized drill bit for the mounting surface and screw type, drill the pilot holes.
11. Remove the template from the mounting surface.
12. Connect the wiring harnesses and wires, while observing polarity.
13. Place the mounting gasket on the back of the stereo ①.

14 If necessary, place the nut plates ② behind the dashboard.

15 Place the stereo in the cutout.

16 Secure the stereo to the mounting surface using the included screws ③.

17 If necessary, secure the back of the stereo with a back strap or brace (not included).
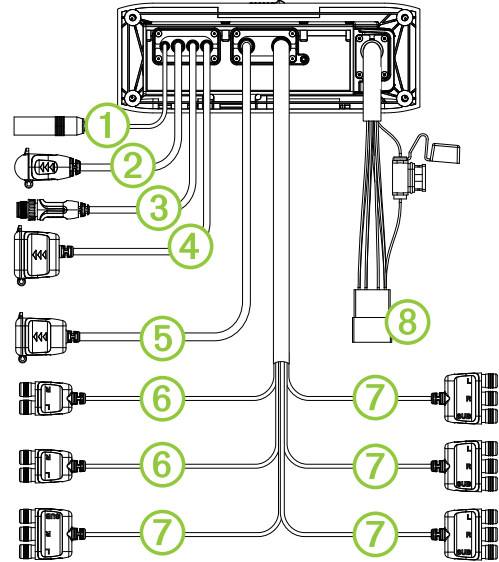
Connection Considerations

The stereo must be connected to power, to speakers, and to media input sources to function correctly. You should carefully plan the layout of the stereo, the speakers, and your input sources before making any connections.

Power and Speaker Wiring Harness Wire Identification

Wire Function	Wire Color	Notes
Power (+)	Yellow	This should be connected to a constant 12 Vdc source capable of supplying 15 A. All 12 V wiring must be fused at the power source end of your cable using a 15 A fuse.
Ground (-)	Black	This should be connected battery negative before connecting the yellow wire. All accessories connected to the stereo must share a common ground location.
Ignition	Red	This should be connected to a separately switched 12 Vdc connection, such as an ignition bus, to turn the stereo on and off. If you are not using a switched 12 Vdc connection, you must connect this to the same source as the yellow (power) wire.
Amplifier on	Blue	This is connected only when using an optional external amplifier.
Telephone Mute	Brown	When connected to ground and a call is received on a hands-free mobile phone, this mutes the audio or switches the input to AUX IN 2. This is configurable in the settings menu.
Dim	Orange	This can be connected to the boat's illumination wire to dim the stereo screen when the lights are on. This must be connected to a wire gauge suitable for the fuse supplying the circuit it is connected to.
Speaker zone 1 left (+)	White	
Speaker zone 1 left (-)	White/black	
Speaker zone 1 right (+)	Gray	
Speaker zone 1 right (-)	Gray/black	
Speaker zone 2 left (+)	Green	

Wire Function	Wire Color	Notes
Speaker zone 2 left (-)	Green/black	
Speaker zone 2 right (+)	Purple	
Speaker zone 2 right (-)	Purple/black	

Wiring Harnesses

①	Antenna	Motorola-style standard antenna connector
②	ACCESSORY	SiriusXM® connector
③	WIRED REMOTE NMEA 2000	Connect to a NMEA 2000® network or a Fusion wired remote
④	USB	USB-A industry standard
⑤	Varies by model	750 models: hdmi and Ethernet 650 models: composite and component
⑥	AUX IN 1, AUX IN 2	Red and white RCA stereo line inputs for sources such as CD and MP3
⑦	Zone connectors	Line outputs for speakers and subwoofer amplifiers. 650 models have three zones. 750 models have four zones.
⑧	Power and speaker wiring harness	See *Power and Speaker Wiring Harness Wire Identification*, page 2

Connecting to Power

When connecting the stereo to power, you must connect both power wires. The yellow power wire should be connected directly to the battery, or connected using a 15 A isolator switch. This provides power to the stereo and a constant trickle-power standby feed. The red signal wire should be connected to the same battery through the ignition or another manual switch to turn the stereo on and off.
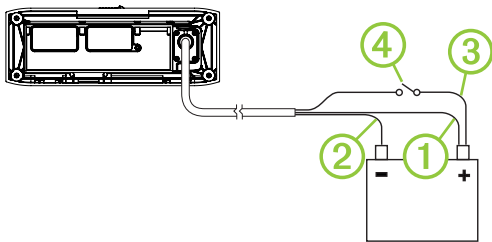
If you are not routing the red wire to the ignition or another manual switch, you can connect the yellow to the red, and connect them to the positive (+) battery terminal. You should put a fuse on the red wire.

If it is necessary to extend the yellow power and black ground wires, use 14 AWG (2.08 mm^2) wire. For extensions longer than 1 m (3 ft.), use 12 AWG (3.31 mm²) wire.

If it is necessary to extend the red signal wire, use 22 AWG (0.33 mm^2) wire.

1 Route the yellow power ① and black ground ② wires to the battery and route the wiring-harness plug to the stereo.

Do not connect the wiring harness to the stereo until all of the bare wire connections have been made.

2 Connect the black wire to the negative (-) battery terminal.

3 Select an option:

- Connect the yellow wire to the positive (+) battery terminal, and route the red signal wire ③ to the ignition or another manual switch ④.
- Connect the yellow wire to the red, and connect them to the positive (+) battery terminal.

Speaker Zones

You can group speakers in one area into speaker zones. You can then control the audio level of the zones individually. For example, you might want the audio quieter in the cabin and louder on deck.

Zones 1 and 2 are powered by the on-board, Class D amplifier. To use the four line outputs and the four subwoofer outputs, you must connect external amplifiers.

You can set the balance, volume limit, subwoofer level, and name for each of the available zones. Up to two pairs of speakers can be connected per zone in parallel to increase the amplifier output.

Subwoofer Amplifier Connection Considerations

This stereo supports output to a powered subwoofer from all zone outputs.

The subwoofer port on the stereo outputs a mono line-level signal. The port output audio level is linked to the zone.

- You should connect the connectors to the included splitter.
- You need a splitter for each zone. One splitter is included.

Speaker Amplifier Connection Considerations

In addition to the two stereo speaker zones available through the wiring harness, this stereo can be connected to a separate amplifier and speakers through the ZONE 3 connection (optional).

- The blue wire from the wiring harness must be connected to the amplifier to provide a signal to turn on the amplifier with the stereo. If it is necessary to extend this blue signal wire, use 22 AWG (0.33 mm^2) wire.
- The audio output is a stereo line-level output over standard RCA cable.

Common Connections to the Stereo

You can connect a variety of additional media inputs and outputs to the stereo, depending on the stereo model and the devices to which you are connecting.

The connectors are color coded to assist you in making the correct connections. For example, if your TV has RCA line out ports, you can connect an RCA cable to the AUX IN 1 or AUX IN 2 connector on the stereo. This table lists some possible ways to connect devices to the stereo.

NOTE: Not all connectors are available on all stereo models.

Input	Stereo Connections
FM/AM radio antenna*	Antenna connector
SiriusXM Connect Tuner	ACCESSORY
USB device	USB connector or the built-in dock (UD models)

Input	Stereo Connections
TV with a composite video connector and RCA audio line outs	Yellow to COMPOSITE VIDEO (MS-650AV only) RCA line outs from TV to AUX IN 1 or AUX IN 2
TV with component connectors and RCA audio line outs	Three component video connectors to matching connectors on stereo (MS-650AV only) RCA line outs from TV to AUX IN 1 or AUX IN 2
TV with an hdmi connector	hdmi (MS-750AV only)

* Metal hull vessels should use a marine, AM/FM, ground-dependant antenna. Other vessels can use a marine, AM/FM, ground-independent antenna.

Ethernet and Wireless Support

You can connect a wireless Ethernet router to the entertainment system to control the audio with Wi-Fi®. You can download free apps from the Apple App Store℠ for Apple devices. Android™ apps are available through Google Play™.

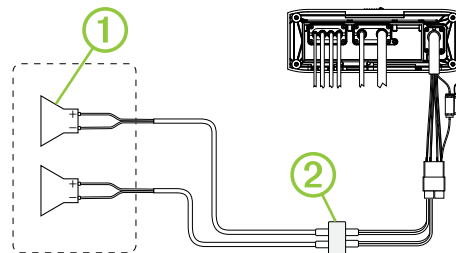For more information, see www.fusionentertainment.com.

Audio Return Channel

The Audio Return Channel (ARC) enables you to play the audio from a television with hdmi technology over the stereo system speakers.

ARC eliminates the need to connect a separate audio cable from the television to the stereo. Typically, in televisions without ARC, to play the audio from the television over the stereo system speakers, you would need a separate cable. With ARC, the hdmi cable sends the television audio to the stereo.

The hdmi version 1.4 cables support ARC. When planning your stereo installation, check whether your devices support ARC. Most devices that support ARC have an ARC label on the hdmi connector that supports ARC.
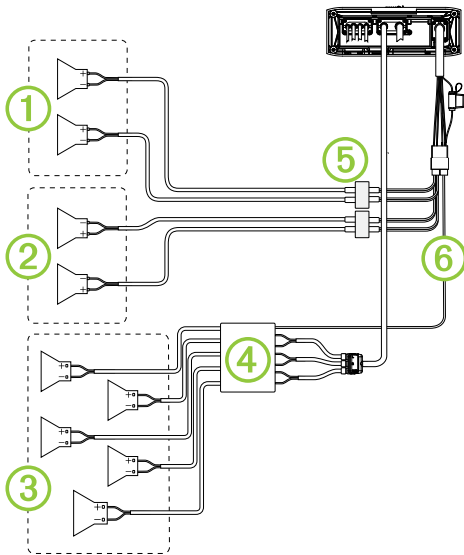
NOTE: The Fusion MS-AV750 supports ARC.
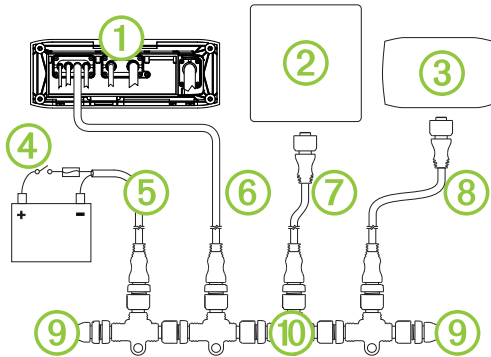
Single-Zone System Wiring Diagram

①	Speakers
②	Water-tight connection

Three-Zone System Wiring Diagram

①	Zone 1 speakers, powered from Class D amplifier in stereo
②	Zone 2 speakers, powered from Class D amplifier in stereo
③	Zone 3 line out, requires external amplifier
④	5-channel amplifier
⑤	Water-tight connections
⑥	Remote on

NMEA 2000 System Wiring Diagram

①	Stereo
②	Supported chartplotter MFD
③	Fusion Wired remote, such as the NRX200i
④	In-line switch
⑤	NMEA 2000 power cable
⑥	NMEA 2000 cable from the stereo This can be extended to a maximum length of 6 m (20 ft.) using a NMEA 2000 cable.
⑦	NMEA 2000 drop cable from the MFD
⑧	NMEA 2000 drop cable from the wired remote
⑨	NMEA 2000 terminator or backbone cable
⑩	NMEA 2000 T-connector

Stereo Information

Specifications

General	
Weight	0.88 kg (1.96 lb.)
Water resistance	IPX5

General	
Operating temperature range	From -5 to 50°C (from 23 to 122°F)
Storage temperature range	From -20 to 70°C (from -4 to 158°F)
Input voltage	From 10.8 to 16 Vdc
NMEA 2000 LEN	1 (50 mA)
Compass-safe distance	15 cm (5.9 in.)

On-board, Class D Amplifier	
Output music power per channel	70 W max. x 4 at 2 Ohms
Total output music power	280 W max.
Current (standby with ignition off)	< 3 mA
Current (max)	15 A
Current (muted)	< 900 mA

Tuner	Europe and Australasia	USA	Japan
FM radio frequency range	87.5–108 MHz	87.5–107.9 MHz	70–90 MHz
FM Frequency step	50 kHz	200 kHz	50 kHz
AM radio frequency range	522–1620 kHz	530–1710 kHz	522–1620 kHz
AM Frequency step	9 kHz	10 kHz	9 kHz

Media Player Compatibility

If you have a UD model, you can use the included adapter cables to connect popular media players to the internal docking station or the connector on the back of the stereo. If you have an AV model, you can use the USB cables that came with your media player to connect the player to the connector on the back of the stereo.
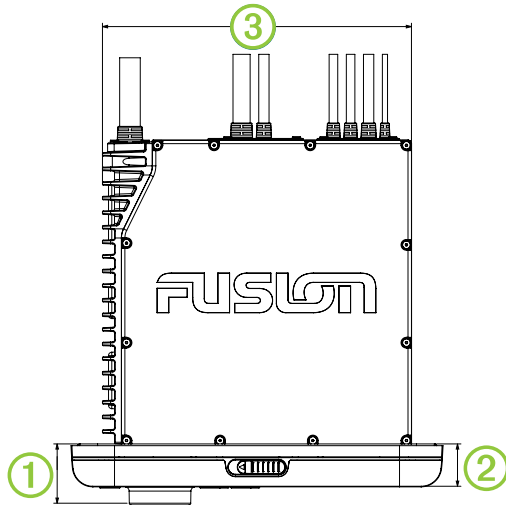
Only media players with ports on the bottom, not on the sides, fit in the docking station. Media players larger than 144 × 71 × 13 mm (5.67 × 2.80 × 0.52 in.) do not fit in the docking station.

Cable Connector in Dock	Devices
Micro-USB connector	Supported media players. See www.fusionentertainment.com.
Apple 30-pin connector	Apple iPhone® 4s, and iPhone 4. iPod touch® (3rd and 4th generation), iPod classic®, and iPod nano® (4th through 6th generation).
Apple Lightning connector	Apple iPhone 6, iPhone 5s, iPhone 5c, and iPhone 5. iPod touch (5th generation) and iPod nano (7th generation).

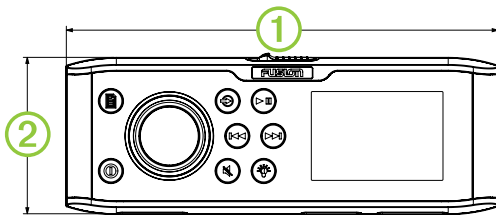You also can connect a FAT32- or NTFS-formatted USB flash drive directly to the USB port.
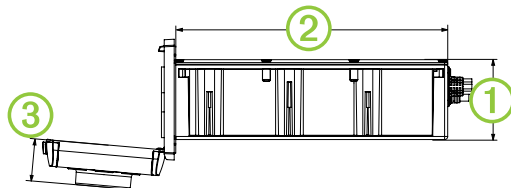
Stereo Dimension Drawings

Top Dimensions

①	35 mm (1.367 in.)
②	25 mm (0.97 in.)
③	180 mm (7.08 in.)

Front Dimensions

①	216 mm (8.50 in.)
②	78 mm (3.08 in.)

Side Dimensions

①	52 mm (1.37 in.)
②	177 mm (6.97 in.)
③	28 mm (1.08 in.)

Software Updates

For best results, you should update the software in all Fusion devices at the time of installation to ensure compatibility.

Go to www.fusionentertainment.com/marine to download the latest software. Software updates and instructions are available on your device product page.

Registering Your Fusion MS-UD/AV650/750

Help us better support you by completing our online registration today.

- Go to www.fusionentertainment.com.
- Keep the original sales receipt, or a photocopy, in a safe place.

SiriusXM READY   NMEA 2000   Made for iPod iPhone   EAC CE Bluetooth®

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