



FUSION® MS-UD/AV650/755 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

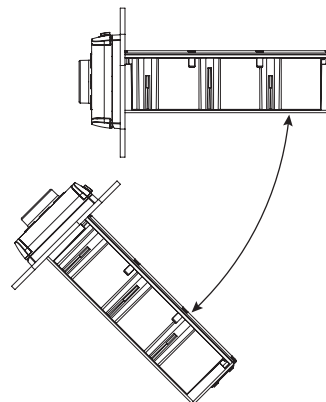
- Two Mounting plates
- Mounting hardware
 - Four 8-gauge, self-tapping screws
 - Four M4 machine screws
- Power and speaker wiring harnesses
- RCA splitter
- Micro-USB to USB cable (UD models only)
- Lightning™ connector to USB cable (UD models only)
- Apple® 30-pin to USB cable (UD models only)
- Remote 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
- Silicone-based 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.

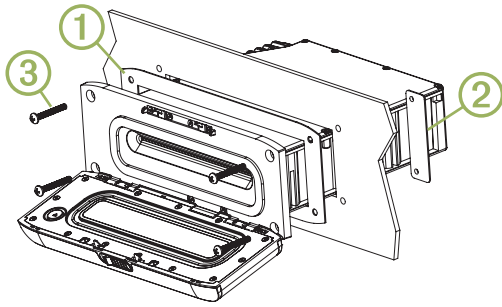
Mounting the Stereo

NOTICE

Be careful when cutting the hole to flush mount the 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

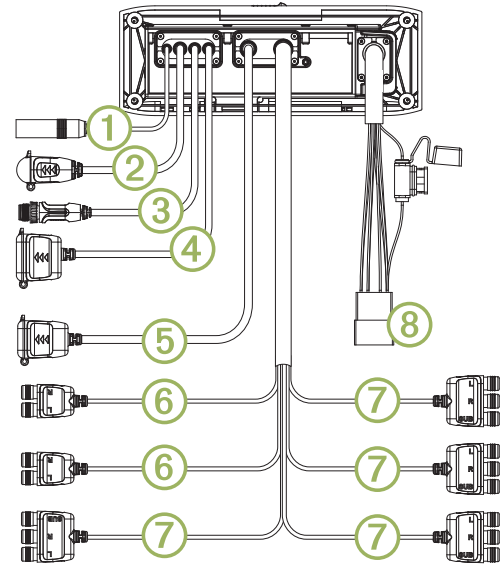
The stereo must be connected to power, to speakers, and to media input sources to function correctly. You should carefully plan the layout of the stereo, wired remote, speakers, optional NMEA 2000® network, and your input sources before making any connections.

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 or ARC source (ARC source is available on the MS-AV755 only). 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	

Wire Function	Wire Color	Notes
Speaker zone 2 left (+)	Green	
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 SIRIUSXM TUNER	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 Video	755 models: HDMI® cable 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 players
⑦ Zone connectors	Line outputs for speakers and subwoofer amplifiers. 650 models have three zones. 755 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. You should connect the yellow power wire directly to the battery. This provides power to the stereo and a constant trickle-power standby feed.

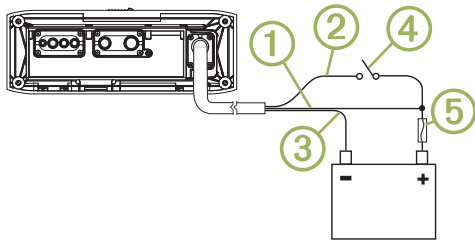
You should connect the red ignition wire to the same battery through the ignition or another manual switch to turn the stereo on and off. If you are not routing the red wire through the ignition or another manual switch, you can connect the red wire to the yellow wire, and connect them both to the positive (+) battery terminal.

You must connect the power wires to the battery through a 15 A fuse or a 15 A circuit breaker.

If it is necessary to extend the yellow power and black ground wires, use 14 AWG (2.08 mm²) wire. For extensions longer than 1 m (3 ft.), use 12 AWG (3.31 mm²) wire. If it is necessary to extend the red wire, use 22 AWG (0.33 mm²) wire.

- 1 Route the yellow power ①, red ignition ②, and black ground ③ 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 If you are routing the red wire through the ignition or another manual switch ④, connect the red ignition wire to the ignition or switch.
- 4 Connect the red wire to the yellow wire, install a 15 A fuse ⑤ as close to the battery as possible, and connect both wires to the positive (+) battery terminal.

NOTE: If you are running the red wire through a fused switch, it is not necessary to connect the red wire to the yellow wire or to add another fuse to the red wire.

Enabling Standby Mode

You can set the stereo to enter a low-power standby mode when you press ①. When you press ① again, it takes less than the typical 30 seconds to turn on.

NOTE: When the stereo is in low-power standby mode, it continues to draw current from the battery. The maximum current draw in standby mode is 200 mA.

Select > **Settings** > **Standby Mode**.

The stereo now enters standby mode when you press ①.

Speaker Zones

You can group speakers in one area into speaker zones. This enables you to control the audio level of the zones individually. For example, you could make the audio quieter in the cabin and louder on deck.

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

You can set the balance, volume limit, subwoofer level, and name for each zone.

Subwoofer Connection Considerations

This stereo supports output to a powered subwoofer for each zone.

The subwoofer outputs are mono line-level signals tied to the corresponding zone volume.

A splitter is provided to connect this mono output to the stereo input of a subwoofer amplifier. Additional splitters (not included) are needed for additional subwoofer connections.

Speaker Amplifier Connection Considerations

This stereo supports output to an external amplifier for each zone.

The zone outputs are stereo line-level signals tied to the zone volume. A standard RCA cable (not included) is required to connect each zone output to an external amplifier.

The blue wire from the wiring harness must be connected to each amplifier to provide a signal to turn on the amplifier with the stereo. If it is necessary to split or extend this blue signal wire, use 22 AWG (0.33 mm²) wire.

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	SIRIUSXM TUNER connector
USB device	USB connector or the built-in dock (UD models)
TV with a composite video connector and RCA audio line outs	Yellow to COMPOSITE VIDEO (MS-AV650 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-AV650 only) RCA line outs from TV to AUX IN 1 or AUX IN 2
TV with an HDMI connector	HDMI cable (MS-AV755 only)

* You should connect a marine, AM/FM, ground-independent antenna.

Ethernet and Wireless Support

You can connect a compatible FUSION-Link™ MFD to the entertainment system using the Ethernet port. See the documentation provided with your MFD for more information.

NOTE: Some MFDs with Ethernet support may not be compatible with FUSION-Link over Ethernet, but may be compatible with FUSION-Link over NMEA 2000 instead.

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

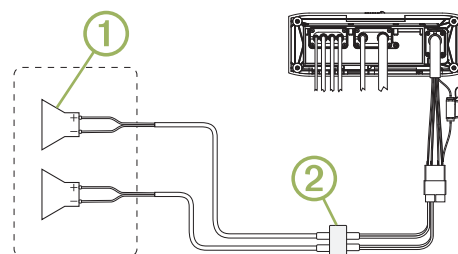
Audio Return Channel

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.

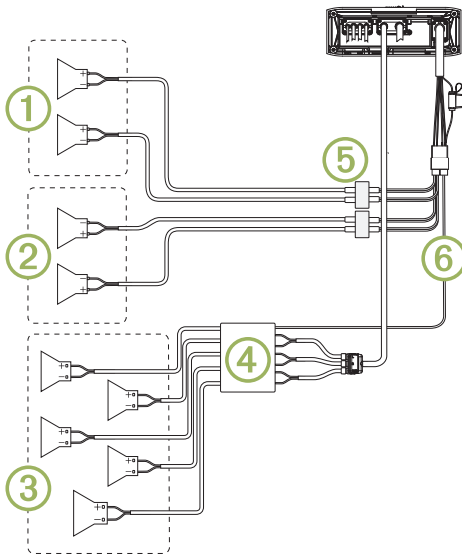
HDMI version 1.4 with ethernet cables support ARC. When planning your stereo installation, check whether your devices support ARC. Most devices that support ARC have an ARC label on the HDMI connector that supports ARC.

Single-Zone System Wiring Example



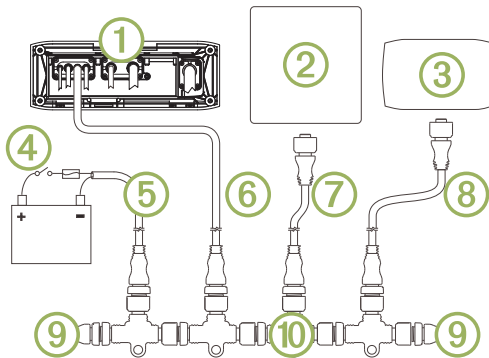
①	Speakers
②	Water-tight connection

Three-Zone System Wiring Example



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 speakers, powered by an external amplifier connected to the zone 3 line out
④	External amplifier (not included)
⑤	Water-tight connections
⑥	Remote on

NMEA 2000 System Wiring Diagram



①	Stereo
②	Supported chartplotter MFD
③	FUSION NRX series wired remote
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

Configuring an Optional Wired Remote

NOTICE

The stereo is configured by default to work with a NMEA 2000 network, and the NRX Power option should be enabled only

when an optional remote is connected directly to the stereo. Enabling this option when the stereo is connected to a NMEA 2000 network may damage other devices on the NMEA 2000 network.

If you connect an optional wired NRX remote directly to the stereo, and not through a NMEA 2000 network, additional configuration is needed.

1 Select > **Settings**.

2 Select an option:

- If you connected both your stereo and your optional wired remote to a NMEA 2000 network, make sure the **NRX Power** option is not selected. This enables the optional remote to receive power from the NMEA 2000 network.
- If you connected the optional wired remote directly to the stereo through the NMEA 2000 connector, select the **NRX Power** option. This enables the stereo to supply power to the optional remote.

Stereo Information

Specifications

General	
Weight	0.88 kg (1.96 lb.)
Water resistance	IEC 60529 IPX5
Operating temperature range	From 0 to 50°C (from 32 to 122°F)
Storage temperature range	From -20 to 70°C (from -4 to 158°F)
Compass-safe distance	15 cm (5.9 in.)
Input voltage	From 10.8 to 16 Vdc
NMEA 2000 LEN	1 (50 mA)
Bluetooth®	Class 2
Bluetooth®/ANT® frequency	From 2,400 to 2,483.5 MHz
Bluetooth®/ANT power (max.)	8 dBm EIRP

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.
Output power per channel (14.4 VDC at 10% THD+N)	43W RMS x 4 @ 2 ohms 26W RMS x 4 @ 4 ohms
Line output level (max.)	6 V (peak to peak)
Aux input level (typical)	1 V RMS

Current Consumption

Stereo is off	Ignition off	Standby Mode = Off	< 3 mA
		Standby Mode = On	< 200 mA
	Ignition on	Standby Mode = Off	< 20 mA
		Standby Mode = On	< 200 mA
Stereo is on	Muted	<900 mA	
	Typical listening volume	2 A	
	Maximum current draw	15 A	

Tuner	Europe and Australasia	USA	Japan
FM radio frequency range	87.5 to 108 MHz	87.5 to 107.9 MHz	76 to 95 MHz
FM frequency step	50 kHz	200 kHz	50 kHz
AM radio frequency range	522 to 1620 kHz	530 to 1710 kHz	522 to 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.

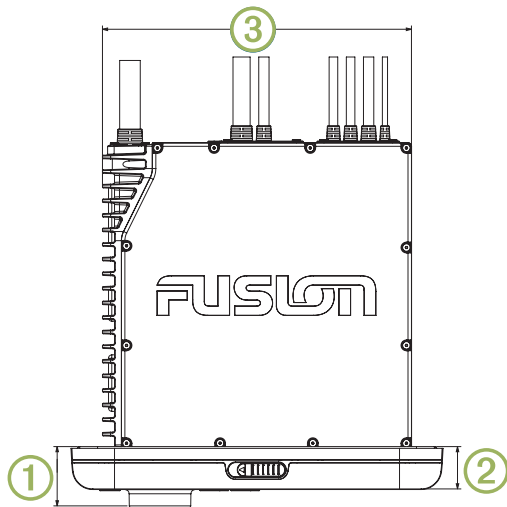
Only media players with ports on the bottom, not on the sides, fit in the docking station. Media players larger than 144 × 71 × 13 mm (5.67 × 2.80 × 0.52 in.) do not fit in the docking station.

Cable Connector in Dock	Devices
Micro-USB connector	Supported media players.
Apple 30-pin connector	Apple iPhone® 4s.
Apple Lightning connector	Apple iPhone 7 Plus, iPhone 7, iPhone SE, iPhone 6s Plus, iPhone 6s, iPhone 6 Plus, iPhone 6, iPhone 5s, iPhone 5c, and iPhone 5. iPod touch® (5th and 6th generation) and iPod nano® (7th generation).

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

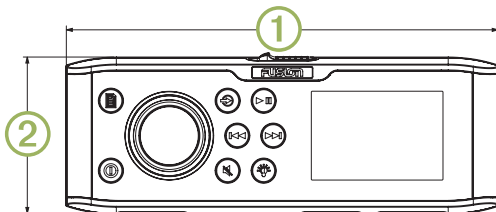
Stereo Dimension Drawings

Top Dimensions



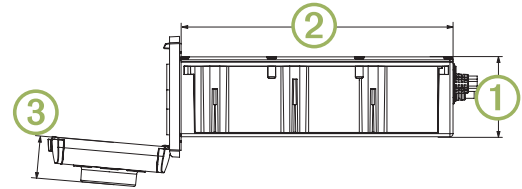
①	35 mm (1.367 in.)
②	25 mm (0.97 in.)
③	180 mm (7.08 in.)

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.