



MobilitySound - GM22S6

GPS Speaker Microphones for Icom
IC-F2000D /F3101D /F4101D /F3210D /F4210D

The GM22S6 is a heavy duty, waterproof remote speaker microphone with a built-in GPS receiver.



Made in Taiwan

Controls and Connection

GPS Antenna (Internal)

The GM22 uses an internal high-gain "stealth" GPS antenna. Placing the antenna inside the microphone results in a more durable design and prevents the GPS antenna from drawing attention.

Noise Cancelling Microphone

The noise cancelling microphone reduces the amount of background noise transmitted over-the-air, making the user's voice clearer and easier to understand, even in high-noise environments.

Push-to-Talk Button

Pressing and holding this button causes the two-way radio to transmit. The large PTT button is easy to operate even when wearing gloves.

Rubberized Grips

The grips on each side of the GM22 make it easier to hold the microphone.

Polycarbonate Housing

The weatherized housing is made of durable high-impact polycarbonate. It meets the requirements for MIL-STD-810 and has an IP55 rating against dust and moisture.

Listen Only Earphone Jack

The microphone uses a standard 3.5 mm mono earphone jack for connecting an optional listen-only accessory (sold separately).

Microphone Cable

The cable has a tough polymer jacket on the outside and Kevlar reinforcement inside and is engineered to last longer and retain its shape better than other cables.

Speaker

Received signals are heard over the loud, front-firing speaker.

Swivel Clip

The metal-reinforced 360° rotating clip allows the user to secure the microphone to their clothing.

Note: GM22S6 model shown.

Other models may vary slightly in appearance.

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Using the GM22 GPS Speaker Microphone

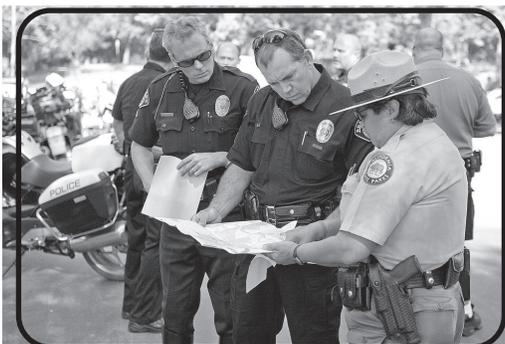
To connect the speaker microphone to the radio:

- * Insert the speaker/microphone plugs into the speaker/microphone jacks of the transceiver.
- * Push the connector toward the transceiver until you feel it "snap" into place.
- * Tighten the two screws on the connector to secure it to the radio. Do NOT over tighten.

NOTE: You should ensure that the two-way radio is powered off whenever you connect/disconnect the GM22 GPS speaker microphone from the two-way radio.

Operation of the GM22 is transparent to the user. The user may transmit voice messages by pressing and holding the Push-To-Talk button on the side of the GM22 and then speaking into the microphone. Received calls will be heard GM22's front-firing speaker or through the optional listen-only earphone, if one is used.

As long as the GM22 is connected to the radio's accessory jack, the radio is powered on, and the GPS receiver inside the GM22 has a valid location fix, the user's GPS coordinates will be sent as data across the radio system at the pre-programmed intervals. The user can also manually send their GPS location by selecting the "Send the GPS Data" option from the radio's menu.



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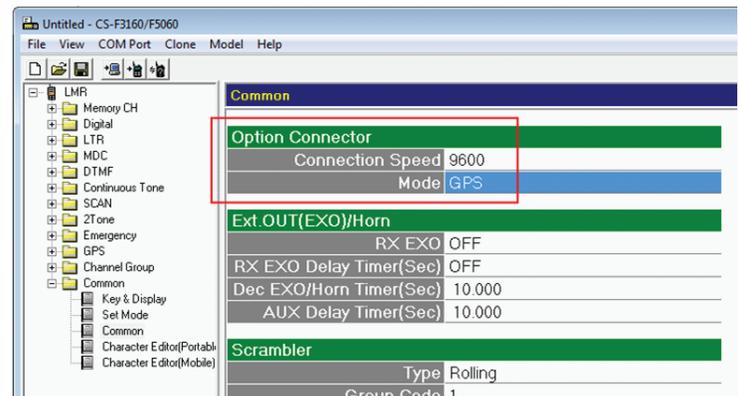
Setup and Programming

In order for the GPS receiver in the GM22 to work properly, the two-way radio that the speaker microphone will be used with must be properly programmed using the appropriate CPS (Computer Programming Software) and programming cable.

NOTE: The information in this section pertains to *Icom IDAS IC-F3160* and *IC-F4160* radios. Other radio models may require slightly different programming.

1. On the **Common > Common > Option Connector** screen set the following:

Connection Speed:	9600
Mode	GPS

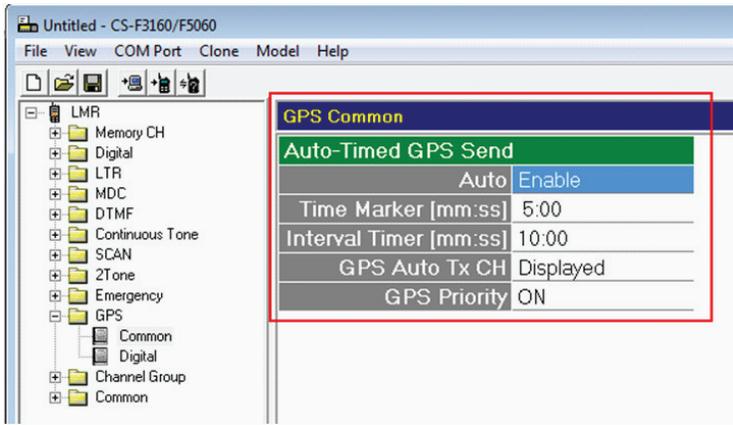


This setting allows the radio to detect and communicate with the GPS receiver in the GM22 GPS speaker microphone.

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2. On the **GPS > Common** screen set the following:

Auto:	Enable
Time Marker [mm:ss]:	00:01 to 59:59
Interval Timer [mm:ss]:	00:01 to 59:59
GPS Auto Tx CH	Displayed or select a channel
GPS Priority	On or Off



Setting the Auto mode to Enable allows the radio to send out GPS messages at set intervals as determined by the Interval Timer. The Time Marker setting determines how soon radio will send its first location report after acquiring a GPS fix. The GPS Auto Tx CH function determines whether GPS location reports will be sent on the same channel that the radio is tuned to, or if a priority channel will be used instead. The GPS Priority setting determines whether or not the radio will interrupt a voice call or other function in progress to send a location report if the interval timer is reached.

Specifications

Receiver Type	Channels:	50
	Frequency:	L1
	Signals:	GPS C/A Code
Configuration	Time Pulse:	0.25 Hz to 1 kHz
	Navigation Update Rate:	up to 5Hz (ROM)
Time-To-First-Fix ¹	Cold Start (Autonomous):	28 s
	Warm Start (Autonomous):	28 s
	Hot Start (Autonomous):	1 s
	Aided Starts ² :	1 s
Sensitivity ³	Tracking & Navigation:	-160 dBm
	Reacquisition:	-160 dBm
	Cold Start (Autonomous):	-143 dBm
Accuracy	Horizontal position ⁴ :	< 2.5 m Autonomous < 2.0 m SBAS
	RMS 99%:	30 ns <60 ns
	Velocity ⁵ :	0.1m/s
	Heading ⁶ :	0.5 degrees
Limits	Acceleration:	4 g
	Altitude ⁶ :	50000 m
	Velocity ⁶ :	500 m/s

Note:

- ¹ All satellites at -130 dBm
- ² Dependent on aiding data connection speed and latency
- ³ Demonstrated with a good active antenna
- ⁴ CEP, 50%, 24 hours static, -130dBm, SEP: <3.5m
- ⁵ 50% @ 30 m/s
- ⁶ Assuming Airborne <4g platform

DISCLAIMER: GPS location data is acquired from government satellites. Accuracy of this data is subject to obstructions, reflections, interference, and government interventions, and is not under MobilitySound's control. Users should avoid placing absolute reliance on coordinates obtained from any GPS receiving device.

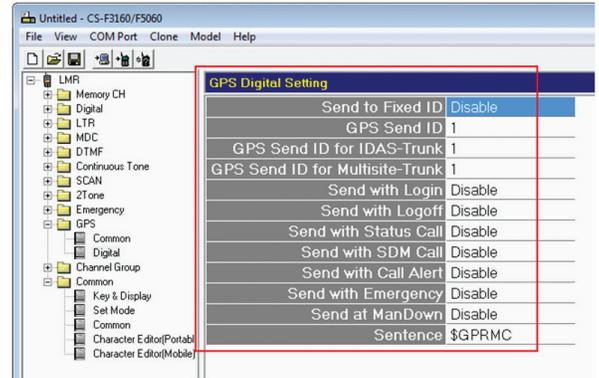
At best, GPS location reports are only accurate to:

- within 10 meters for latitude and longitude
- within 50 meters for altitude

In practice, accuracy is variable and is affected by many environmental factors such as interference and obstruction. Altitude is especially subject to inaccuracies. Ultimately, the reliability of the data is under the control of the GPS source, not the GPS receive system

3. On the **GPS > Digital** screen set the following:

Send to Fixed ID:	Enable <i>or</i> Disable
GPS Send ID:	Enter the Unit ID of the base station radio
GPS Send ID for IDAS-Trunk:	Enter the Unit ID of the base station radio
GPS Send ID for Multisite-Trunk	Enter the Unit ID of the base station radio
Send with Login	Enable <i>or</i> Disable
Send with Logoff	Enable <i>or</i> Disable
Send with Status Call	Enable <i>or</i> Disable
Send with SDM Call	Enable <i>or</i> Disable
Send with Call Alert	Enable <i>or</i> Disable
Send with Emergency	Enable <i>or</i> Disable
Send at ManDown	Enable <i>or</i> Disable
Sentence	\$GPRMC



The settings determine how GPS messages are routed. To have GPS messages sent to a fixed base station, set **Send Fixed ID** to **Enable**. You will then have to enter the ID of the base station radio to use in normal, IDAS trunking, and multisite trunking operation. You can also set whether or not the radio will send location reports in conjunction with other types of data messages. For example, setting **Send with Emergency** to **Enable** will cause the radio to send a location report over-the-air whenever the radio's emergency alarm function is triggered.

The settings on this screen apply to the radio's **digital** modulation mode. If you wish to use the GPS in analog mode, you must have a radio with the EMDC or BISS feature enhancements and those systems must be enabled.