FURUNO

ANTI-JAMMING & ANTI-SPOOFING GNSS RECEIVER



GNSS

Multiband & Multiconstellation

Model
FFGR-10

Visit furuno.fr/anti-jamming-spoofing-system for more information

WHAT IS JAMMING AND SPOOFING?

GNSS THREAT LANDSCAPE



JAMMING

Intentional radio frequency interference that blocks or degrades GNSS signals, causing loss of positioning accuracy.

SPOOFING

Deceptive transmission of false GNSS signals, leading to incorrect position, navigation, or timing data.

Furuno's solutions detect and mitigate these threats, improving resilience for continuous, accurate navigation.

KEY BENEFITS

Reliable Navigation

Maintains positioning accuracy even under jamming or spoofing attacks.

Real-Time Monitoring

Instant alerts for interference, enabling rapid response.

Multi-band & Multi-Constellation Support

Compatible with GPS, Galileo, GLONASS, BeiDou, and QZSS for global coverage with L1, L2 and L5 bands.

Easy Integration

Seamless installation with existing navigation systems.

Regulatory Compliance

IEC60945 marine compliant. Recommended as a backup solution.

Important: Furuno FFGR-10 is designed to enhance resilience against jamming and spoofing threats. While it provides significantly improved protection compared to standard wheelmarked GNSS equipment, it is important to note that no system can guarantee absolute immunity. Under conditions of sufficiently strong jamming or sophisticated spoofing signals, FFGR-10 may also experience degradation in positioning accuracy or be affected by spoofing. Users should remain aware of operational limitations and maintain situational awareness when relying on GNSS data. Furuno does not warrant that FFGR-10 will prevent all instances of jamming or spoofing.

JAMMING AND SPOOFING RESISTANT GNSS RECEIVER

- FFGR-10 is a high precision multi-frequency multi-constellation GNSS receiver.
- Concurrent reception of L1/L2/L5 GPS, Galileo, GLONASS, BeiDou, and QZSS signals.
- Default NMEA messages GGA, VTG, ZDA, DTM, RMC, with 4800 bps (2 output channels) and 38400 bps (2 output channels) serial interfaces.
- IEC 60945 marine compliant.



GNSS
Multiband & Multiconstellation

FURUNO FINLAND GNSS RECEIVER

Multi-band & Multi-constellation Resistance against jamming & spoofing with anti-jamming antenna FFGR-10 receiver provides reliable positioning and robustness in jammed and spoofed environments together with an antijam antenna.

With a special multi-band and multi-constellation antenna, functionalities improve remarkably resistance against all interferences which exist at GNSS frequency bands.

For SOLAS vessels FFGR-10 GNSS receiver can be used as a backup unit for wheelmarked marine GNSS receivers.

FFGR-10 is a high performance and reliable GNSS receiver with 10 Hz output update rate. This unit is simple to install and integrate into all platforms.

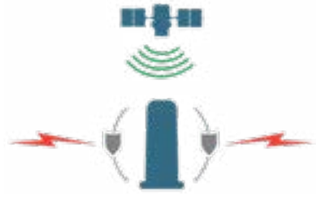
BENEFITS

Operates during ground-based jamming

- Circular polarisation throughout the full bandwidth
- Superior multipath signal rejection
- Excellent signal-to-noise ratio
- Excellent out-of-band signal rejection
- Increased system accuracy
- Ideal for noisy RF environments

TALLYSMAN ANTI-JAMMING ANTENNA

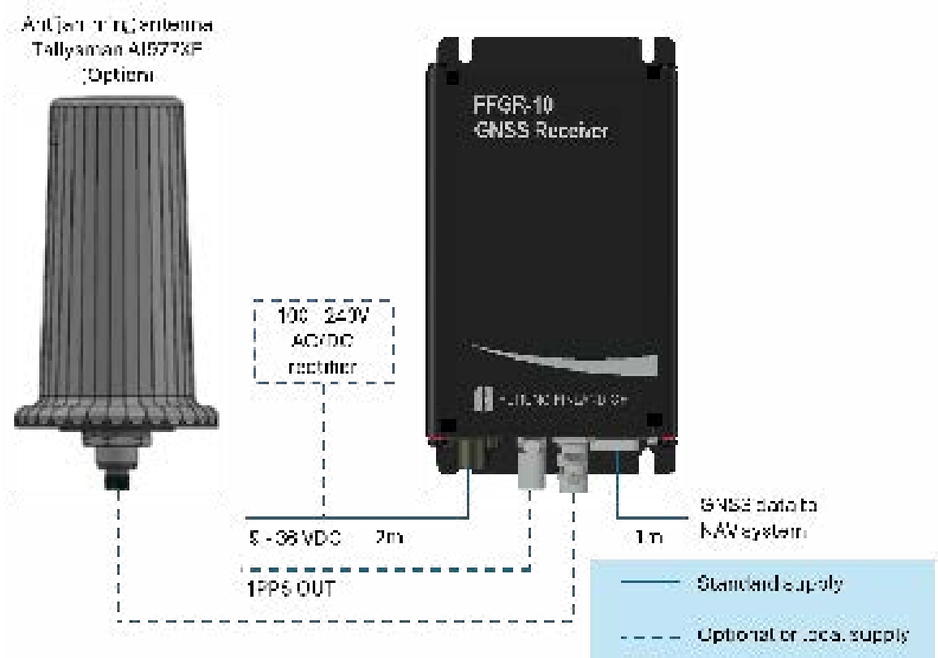
The Tallysman AJ977XF Anti-Jamming antenna is designed to mitigate interference and jamming signals broadcast from near ground-based transmitters. The radiation pattern of the Low Elevation Angle Nulling Antenna (LEANA) provides 20 dB (Typical) wideband suppression for all GNSS band signals received at an elevation angle of 0° through to approximately 15°.



THE FFSP-100 ANTI-JAMMING AND ANTI-SPOOFING MONITORING DEVICE

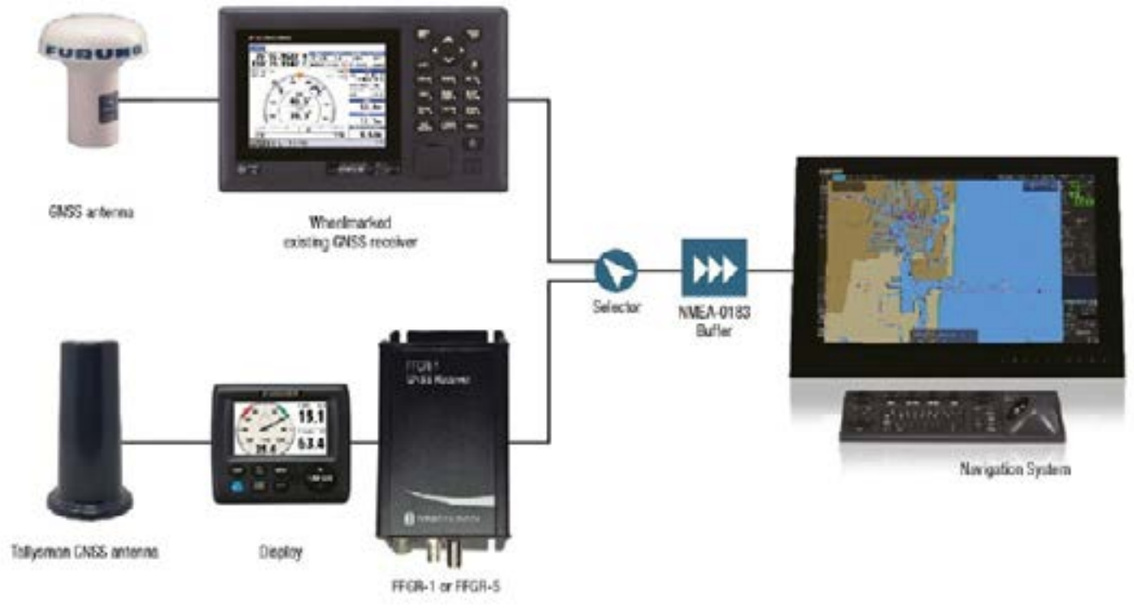
As a parallel product, **the FFSP-100 warns you when GNSS signal is jammed or spoofed.** An alarm unit provides relay output which can be connected to vessel alarm management system or control external buzzer. When interference is detected it is important to react and defend rapidly and it is here that can counter the threat by switching to your FFGR-10.

INTERCONNECTION DIAGRAM



INTERCONNECTION DIAGRAM

FFGR-10 GNSS receiver can be installed in SOLAS vessels as a backup unit. Please check the flag state local requirements.



SPECIFICATIONS

GENERAL

Parameter	Value	
Size	Receiver	159 × 84 × 48 mm
	Antenna Unit	Ø90 mm
Weight	Receiver	410 g
	Antenna Unit	245 g
GNSS horizontal pos. accuracy	1,5 m	
Sensitivity (tracking)	-1 67 dBm	
Sensitivity (nav)	-1 67 dBm	
GNSS acquisition Cold start	25 s	
GNSS acquisition Hot start	2 s	

INTERFACES

1 PPS	BNC, TTL signal level
Antenna	TNC 50SL, 3.3 VDC BIAS
Serial interface	D9F connector, RS-422 NMEA-0183 (v4.11) GGA, VTG, ZDA, DTM, RMC 2×4800 bps (1 Hz) 2×38400 bps (GGA+RMC 10 Hz)

ENVIRONMENT

Temperature range	Receiver	-20 °C to +70 °C
	Antenna Unit	-40 °C to + 85 °C
Degree of protection	Receiver	IP22
	Antenna Unit	IP67
Relative humidity	93% or less at 40 °C	

POWER SUPPLY

Power input	9 - 36 VDC / Max. 2 W

EQUIPMENT LIST

Standard

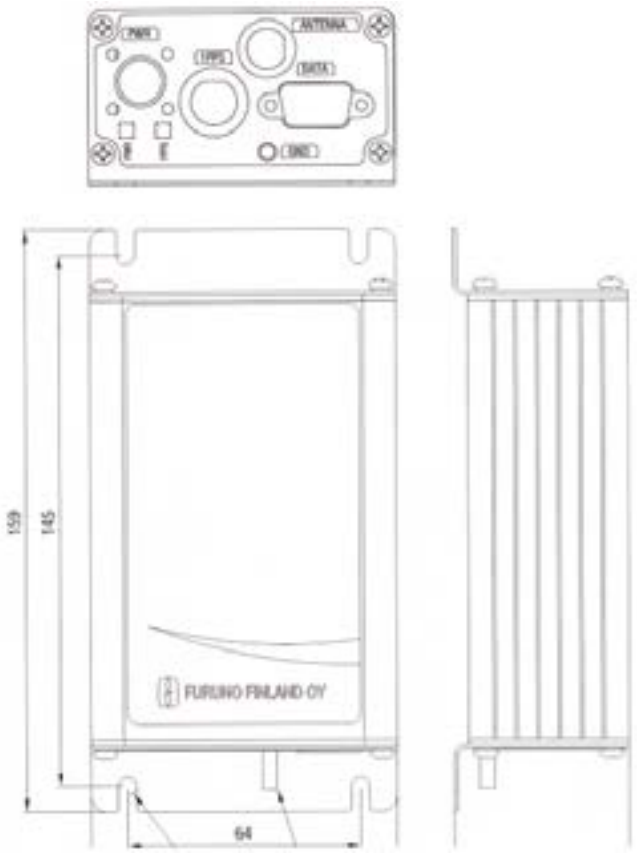
1	Receiver	FFGR-10	1 unit
2	Power Cable	2 m	1 pc
3	Data Cable	1 m	1 pc

Option

1	Antenna	AJ977XF	1 unit

MECHANICS

RECEIVER



ANTENNA UNIT



All brand and product names are registered trademarks, trademarks or service marks of their respective holders.
SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

Developed by:
FURUNO FINLAND OY

Niittyrinne 7
02270 Espoo
Finland
www.furuno.fi