



HAGENUK MARINEKOMMUNIKATION

# TRITON<sup>®</sup> TMS 2111

Multifunctional Antenna System

DESIGNED FOR THE NEXT GENERATION  
OF SUBMARINES.

Key Features of TRITON(R) TMS 2111

- ◆ Pressure-proof architecture enabling integration of COTS communication equipment (e.g., LTE and Wi-Fi) in close proximity to the antenna, significantly reducing coaxial cable losses and improving overall RF performance
- ◆ Flexible and scalable design supporting expansion across additional frequency bands and future communication standards
- ◆ Maintenance-free system design ensuring high reliability and long operational availability under demanding maritime conditions
- ◆ Blind mate connector interface allowing fast, error-free antenna replacement without manual connector handling, minimizing downtime and reducing maintenance effort
- ◆ Integrated built-in test (BIT) functionality for continuous monitoring of critical parameters such as pressure integrity, water ingress, and RF performance
- ◆ Support for multiband communication including Iridium Certus 100 satellite connectivity, multi-constellation GNSS, and broadcast services (FM, DVB-T/T2, DAB+) with optical signal routing

## Supported services

Service	Frequency Band (MHz)	
HF-RX	1.5 MHz - 30 MHz	active RX
VHF-Low band	30 MHz - 88 MHz	Max. 50 W CW
VHF-High band	100 MHz -174 MHz	Max. 100 W CW
UHF -Line Of Sight	220 MHz -512 MHz	Max. 200 W CW,400 W P EP
UHF- High band Line Of Sight	512 MHz - 2000 MHz	Max. 100W CW
UHF-Satcom	RX: 240 MHz – 270 MHz	active element
	TX: 290 MHz – 320 MHz	Max. 200W CW
UHF-Satcom-MUOS	RX: 360 - 380 MHz	active element
	TX: 300 - 320 MHz	Max. 200W CW
Link-16 H	960 MHz – 1275 MHz	Max. 100W CW
IFF	950 MHz – 1250 MHz	1kW, duty cycle 2%
LTE services for 2G, 4G and 5G	450-470 MHz	Minimal RF-cable loss: Standard COTS-LTE-Unit and WLAN-Unit located in pressure proof container directly at the antenna-pedestal within the mast
	700 MHz	
	1427-1452 MHz	
	900MHz, 1710-1885 MHz	
	2110-2200 MHz	
	2500-2690 MHz	
	3300-3899 MHz	
WLAN	2.4 GHz, 5 GHz -bands	
WLAN	6 GHz -bands	
GPS	L1, L2	
GPS	L5, inkl. M-Code	active RX
GALILEO	E1, E5a, E5b, E6 – Band (inkluding PRS)	
Iridium (1610 MHz - 1626,5 MHz)	Antenna Interface for Hagenuk Iridium Terminal. Certified by Iridium.	IRIDIUM certified active TX/RX front-end implemented in antenna head
Iridium Terminal	TKMS Hagenuk Triton Terminal Iridium TTI	IRIDIUM certified
UKW-FM-Broadcast	88 MHz - 108 MHz	extra connector provided
DVBT2	474 MHz – 778 MHz	extra connector provided
DAB, DAB+	174 MHz – 230 MHz	extra connector provided
VHF Emergency Service RX	Two fixed channels: 121.5 MHz and 243 MHz	extra connector provided

Service	Frequency Band (MHz)	
Remote control	alternatively Serial RS422 interface or I/O-Pins	Remote control, status data, RF-sensor readouts environmental sensor readouts and results of Built-In Test
Built-In Test Equipment	Built in test	Temperature Pressure Humidity Leakage RF-levels

## Power input

Power supply DC	24V or 28V DC	Acc. to STANAG 1008
Power supply AC	115V - 230 V AC; 50 Hz - 60 Hz	

## Antenna unit (TMA) [outboard unit]

Dimensions Antenna Unit (TMA)	d: 198 mm, l: 1700 mm
	1500 mm
	approximately 62 kg
Temperature	-30°C to +60°C
Surface treatment	PEEK and glass fibre reinforced plastic
	Stainless steel, untreated
	Colored silicone rubber
Shock	v0 = 2,0 m/s; a0 = 600 m/s <sup>2</sup>
Pressure proof	90 bar

## Interface unit (TMI) [inboard unit]

Dimensions Interface unit	19-inch rack module, 3 rack units
Temperature	-15°C to +55°C
	-30°C to +70°C
Shock	a0 = 220 m/s <sup>2</sup> ; t= 20 ms
Wave force	BV0111 , Part 2, Issue 1/76

**Your Maritime Powerhouse**