TKMS

Your Maritime Powerhouse

HAGENUK MARINEKOMMUNIKATION

TRITON® TMS 1110/1111

Multifunctional Antenna System

DESIGNED BY SUBMARINE EXPERTS.

Key Features of TRITON® TMS 1110 and TRITON® TMS 1111

- Designed for complex antenna collocation requirements on submarines
- Maximum level of simultaneous operation when surfaced or at periscope depth
- Best possible coverage in every frequency range by optimized antenna geometrics in each band between 1.5 MHz to 1.6 GHz, incl. UHF SATCOM
- Capable of voice, data, IP net and Link 11/22/16 operation
- High performance combined with durable mechanics
- Best value for money, longlife support
- Fits into almost every mast (new built and refit)
- Low weight antenna: 35 kg to 42 kg

TRITON® TMS 1110/1111
MULTIFUNCTIONAL ANTENNA SYSTEM

General

Silent operation	No noise emission due to passive cooling
Safety at sea	Suitable for GMDSS (INMARSAT-C and VHF/IMM)
System Integration	Antenna design fits into most common non-penetrating hoistable masts currently in service Very easy adaptation to a wide range of coaxial cable losses Allows re-use of platform's existing pressure hull penetrations (PHP), most coaxial cables and inboard integration space is possible
Options	Project-specific accessories and services on request

Available antenna functions

Standard antenna variants	TMS 1110-0* TMS 1111-0**	TMS 1110-1* TMS 1111-1**	TMS 1110-2* TMS 1111-2**	TMS 1110-3* TMS 1111-3**	TMS 1110-5* TMS 1111-5**	TMS 1110-6* TMS 1111-6**	TMS 1110-7* TMS 1111-7**	TMS 1110-8* TMS 1111-8**
Operation frequency bands				**NATO only**	**NATO only**	**NATO only**	**NATO only**	**NATO only**
HF RX (1.5 MHz to 30 MHz)		x		x			x	x
VHF LB TX (30 MHz to 88 MHz)			x	x	x			x
VHF LB RX (30 MHz to 88 MHz)			x	x	x			x
VHF HB TX (108 MHz to 164 MHz)	x	x	x	x	x	x	x	x
VHF HB RX (108 MHz to 164 MHz)	x	x	x	x	x	x	x	x
UHF LOS TX (220 MHz to 512 MHz)	x	x	x	x	x	x	x	x
UHF LOS RX (220 MHz to 512 MHz)	x	x	x	x	x	x	x	x
UHF SATCOM TX (290 MHz to 320 MHz)						x	x	x
UHF SATCOM RX (240 MHz to 270 MHz)						x	x	x
LINK 16 TX (960 MHz to 1275 MHz)				x	x	x	x	x
LINK 16 RX (960 MHz to 1275 MHz)				x	x	x	x	x
IFF TX (950 MHz to 1250 MHz)	x	x	x	x	x	x	x	x
IFF RX (1025 MHz to 1095 MHz)	x	x	x	x	x	x	x	x
GPS L1 RX (1530 MHz to 1580 MHz)	x	x	x	x	x	x	x	x
GPS L2 RX (1220 MHz to 1230 MHz)	x	x	x	x	x	x	x	x
INMARSAT-C TX (1626,5 MHz to 1646,5 MHz)	x	x	x	x	x	x	x	x
INMARSAT-C RX (1530 MHz to 1545 MHz)	x	x	x	x	x	x	x	x

*For hoistable mast with non-pressure proof interface
**For hoistable mast with pressure proof interface

System component overview for different product configurations

	Location	Colour scheme	Height	Width/diameter	Depth	Weight
TMA 1111	Outboard; antenna unit	Standard: RAL 9011; customizable	Radiating height: approx. 1125 mm	Approx. 176 mm	-	Approx. 35 kg
TMA 1110	Outboard; antenna unit	Standard: RAL 9011; customizable	Radiating height: approx. 1125 mm	Approx. 176 mm	-	Approx. 42 kg
TMI 1118 (@full scale, opt. #8)	Inboard; interface unit	Standard: RAL 7001; customizable	Approx. 111 mm	Approx. 230 mm, without connectors	330 mm, without connectors	Approx. 7.4 kg
TMT 1110	Inboard; triplexer unit (version 1)	Black; not customizable	Approx. 65 mm	Approx. 100 mm	Approx. 450 mm, without connectors	Approx. 3 kg
TMT 1100	Inboard; triplexer unit (version 2)	Black; not customizable	Approx. 30 mm	Approx. 80 mm	approx. 314 mm, incl. connectors	Approx. 1 kg
TMD 1100	Inboard; diplexer unit	Black; not customizable	Approx. 23 mm	Approx. 42 mm	Approx. 159 mm, incl. connectors	Approx. 0.5 kg

Power supply and consumption

The TMS is centrally power-supplied via the TMI by 115 VAC / 1 phase (non-earthed, <250 W), acc. to STANAG 1008 ed. 8, 02/94

TRITON® TMS
Interface TMI 1110

TRITON® TMS Triplexer/
Diplexer TMT

Available type approvals (certified by test, calculation and/or simulation)

Inboard and outboard components (TMS / system level):

	Standard	Details
EMI	MIL-STD-461 E / G	CE101, CE 102, CS 101, CS 103, CS 104, CS 114, CS 115, CS 116, CS 118, RE 101, RE 102, RE 103, RS 101, RS 103
REACH conformity		Product does not contain / exceed SVHC (dangerous goods) acc. to EG regulation No. 1907/2006 (REACH)
GMDSS capability		INMARSAT-C; applicable for VHF/IMM operation

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Technical data

Outboard unit (TMA)	Standard	Details
Non-operating temperature		-40 °C to +70 °C
Operating temperature		-25 °C to +60 °C
Thermal shock	MIL-STD-810H	Method 503.7, procedure I-A, with Δ T = 50 K, from T1 = +60 °C to T2 = +10 °C
Solar radiation	MIL-STD-810G	Method 505.6, procedure I; cycle A2, 72 hours
Non-operating pressure		90 bar
Shock resistance		Half-sinusoidal: Horizontal (x-/y-axis): Velocity: ≥ -25 % of 5.1 = 3.8 m/s Acceleration: ≥ -25 % of 2100 = 1575 m/s2 Vertical (z-axis): Velocity: ≥ -25 % of 6.0 = 4.5 m/s Acceleration: ≥ -25 % of 2400 = 1800 m/s2 One shock per direction of axis (total 6 shocks), equivalent to BV 0430, ed. 1985 1/89
Wave slap and hydrodynamic load		Wave slap corresponding to 50 kPa Hydrodynamic load (motion to water) up to 13 knots, equivalent to BV 0111
Colour scheme		No radome coating required; antenna colour provided by solid coloured silicone radome; standard colour RAL 9011, customizable colour scheme upon request
Inboard units (TMI, TMT, TMD)		
Storage temperature		-20 °C to +65 °C
Operating temperature		-10 °C to +60 °C
Air pressure fluctuation (non-operating)		600 hPa to 1400 hPa
Shock resistance		30 g 2.8m/s half-sinusoidal; 15 ms 3 Hz to 500 Hz (1 shock per direction of axis), equivalent to BV 0430 ed. 1985 1/89, (v0 = 2.8 m/s and a0 = 300 m/s2) at centre of gravity
Accoustic noise		No noise emission due to passive cooling
Protection class	DIN EN 60529:2014-09	IP 55 (with connector caps)

Transport box ready for shipment

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