

TMR 6300

HF naval digital transmitters

- One or two high performance 500 W and 1 kW transmitters in a single cabinet
- Multimode including high speed data transmission, L11, ALE and frequency hopping capabilities
- Outstanding RF performance suited for severe cosite operation
- DSP technology and built-in high selectivity post-selector
- Blank or operator's front panel
- Wide range of remote control facilities
- Comprehensive BITE



Dual 1 kW transmitter



The TMR 6300 family of transmitters is part of the cost-effective Series 6000 HF naval range which has been designed to meet the requirements of today's naval forces. Particular attention has been given to both forward intermodulation and also to wide band noise to achieve the RF performance required for severe co-site operation. DSP technology and a compact and robust design give all the flexibility required for easy integration within the communications system.

In keeping with all equipment in the Series 6000 HF naval range, the TMR 6300 transmitters are designed to meet the shore - ship and ship - ship multimode communication requirements of the naval environment, particularly demanding in terms of radio electrical performance, environmental constraints and logistic support.

Ideally suited for use on submarines and on surface ships, from patrol boats to aircraft carriers, TMR 6300 transmitters can operate independently or within a complete integrated end-to-end naval communications system offering voice, messages, data files and facsimile high speed transfer capability.

State of the art solution

TMR 6300 transmitters are digital, microprocessor controlled, synthesised units that utilise DSP (Digital Signal Processing) technology for cost effective and highly flexible solutions in complex HF naval communications systems.

DSP technology offers a flexible, programmable approach to narrow band filtering and baseband signal processing for all modes of operation, including Independent SideBand (ISB).

Embedded agile post-selector provides an outstanding RF performance necessary for operation in severe co-site situations with a 5% spacing between transmitting and receiving frequencies.

A modular design

Series 6000 radio functions (receiver, exciter / receiver, exciter) are based on a common set of modules to plug in a 4 U chassis. The chassis can accommodate either a blank front panel or a flexible and user friendly operator's front panel.

TMR 6300 exciters are available in single or dual configurations (one or two exciter functions in one chassis). Provision is made for embedding add-on processing modules to support high speed modem capability, as well as ALE controller.

Easy maintenance

All modules are plug-in screened boards that can be quickly removed and replaced. Each module contains extensive built-in-test (BITE) circuitry allowing modules to be tested on site. On-board maintenance consists of replacement at module level. The common set of modules within the Series 6000 offer many logistic advantages, leading to economic and flexible solutions.



Dual exciter with front panel

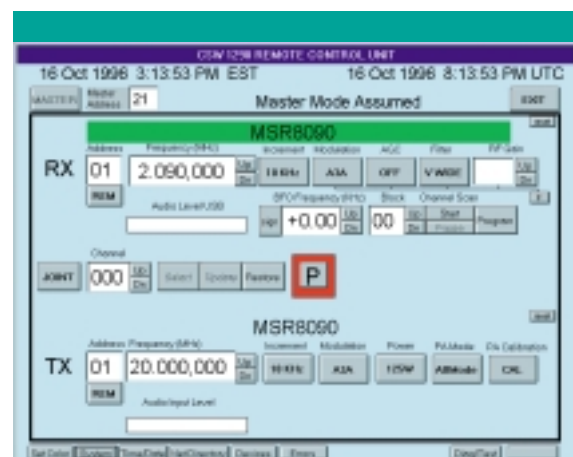
Remote control facilities

Each Series 6000 radio function includes RS-485 and RS-232 interfaces.

The RS-485 bus provides a built-in multi-addressing capability of up to 99 slaved radio functions controlled by:

- the operator's front panel of one Series 6000 radio equipment,
- the Series 6000 remote control unit (layout identical to radio operator's front panel),
- a remote PC (communication management system).

In addition, it is possible to connect to each radio function an external ALE or frequency hopping controller. All amplifier functions (including BITE) are controlled through the exciter.



TMR 6300 remote control PC display

Range of configurations

Available transmitter configurations are:

- single or dual 500 W transmitters (TMR 6305: 25 U cabinet),
- single or dual 1 kW transmitters (TMR 6309: 34 U cabinet).

Superb linearity and graceful degradation are part of the power amplifier design.

Antenna sub-system

The transmitters can be operated with whip antennas (via AEA177 fast antenna tuning unit), loop antennas (AS6000) or wide band antennas (via CA6000 common aerial working system with flexible power management capability). Transmitters, antenna coupling units and common aerial working systems have been designed to achieve optimum spectral purity by assuring that inter-transmitter (back-door) intermodulation products are below the level generated by the superstructure.

TMR 6300 - Exciter specifications

Equipment configuration

One or two independent exciters in 4 U one chassis.

General

Frequency range	1.5 kHz to 30 MHz in 1 Hz steps	
Tuning time	< 10 ms	
Frequency accuracy	Standard TCXO 3 parts in 10 ⁷ (0° C - 35° C) Optional high stability frequency reference (OCXO) in accordance with STANAG 5511 (Link 11) 10 Mhz external frequency standard output External frequency input: 0.1, 1, 5 or 10 MHz Level between - 10 dBm to + 13 dBm	
Modes of operation	CW	A1A, A1B
	MCW	A2A, A2B
	AM	A3E
	FAX	F1C, F3C
	FSK	F1B, F2B
	USB/LSB	H2A, H2B, H3E J2A, J2B, J3E R2A, R2B, R3E
	ISB	B7E, B8E, B9W
	FM	F3E (restricted bandwidth)
	STANAGs	4203, 4285, 4529 and 5511 (TADILA) compatible

IF filter The equipment has digital filters with the following bandwidths (symmetrical or non-symmetrical) 0.3 kHz, 1.1 kHz, 3 kHz, 6 kHz

Channel store 1000 channels non-volatile stored including frequency, mode, IF filter

BITE Automatic detection to module level

Exciter

In-band noise	< - 90 dBc/Hz (within 300 Hz to 3 kHz)
Wideband noise	The noise level is less than- 165 dBc/Hz for all frequencies removed by more than 5% from the tuned frequency
Carrier suppression	> 60 dB
Unwanted sideband suppression	> 60 dB
Spurious emissions	< - 90 dB at all frequencies removed by more than 5% from the tuned frequency

Interfaces (Interfaces with * are duplicated in a dual exciter)

RF output*	Load impedance 50 Ohms Power output: 17 dBm ± 1 dB
PA interface*	RS-232 serial control interface
AF inputs*	One line input for each sideband Level between - 20 dBm to + 10 dBm into 600 Ohms balanced User facility to switch the lines
Sidetone outputs*	One line input for each sideband providing - 20 dBm to 0 dBm into 600 Ohms balanced
Remote control*	One single RS-485 addressable bus (up to 99 equipments on the bus) Data rate selectable from 1200 to 9600 bits/s Asynchronous interface RS-232 serial point to point control interface also available
Power supply	AC 90 to 270 V AC / 47 - 440 Hz auto-ranging Autoselect DC with loss of AC line 20 to 32 V DC DC Protected against reverse polarity without damage

Miscellaneous

Temperature range	
Operating temperature	- 5° C to + 55° C
Storage temperature	- 30° C to + 70° C

Environmental
MIL-STD-810 E (methods 500-3, 501-3, 502-3, 507-3 and 514-4), NES 1004 and MIL-STD-461D standards

Size 17.8 H x 48.3 W X 50.0 D cm

Weight < 15 kg (depending on the configuration)

Front panel Blank front panel or operator's front panel

Series 6000 Power amplifier specifications

500 W and 1 kW power amplifier

Frequency range	1,5 MHz to 30 MHz in 1 Hz steps	
Forward intermodulation products	41 dB (below PEP)	
Inter-transmitter intermodulation products	Based on a 18 dB coupling between two equal power transmitters (through a CAW or on the air through coupling between whips), third order inter transmitter intermodulation products are at - 50 dBc with standard low pass filter. With band pass filter option, - 80 dBc is achieved if the transmitters are operating in different frequency bands-or when operating in same frequency band, for the products which fall outside the band	
BITE	To module level	
RF output	Output power 1000 / 500 W ± 1 dB into 1.05:1 VSWR $\geq 600 / 300$ W ± 1 dB into 2:1 VSWR Reduced power down to 1 W in 3 dB steps	
Power supply (3-phase)	440 V, 3-phase, 3-wire, 47 - 63 Hz	
Required power	5 kW / 3 kW power factor 0.9 (1000 W / 500 W)	
Temperature range	Operating temperature - 5° C to + 55° C Storage temperature - 30° C to + 70° C	
Environmental	MIL-STD-810 E and NES 1004 standards	
Cooling	Fan-assisted air-cooling, front exhaust Water cooling (option)	
Acoustic noise	< 66 dBA	
Transceiver cabinet	Height	34U (dual configuration)
	Width	19 in (483 mm)
	Depth	800 mm
	Weight	275 kg (dual configuration)

Transmit antennas

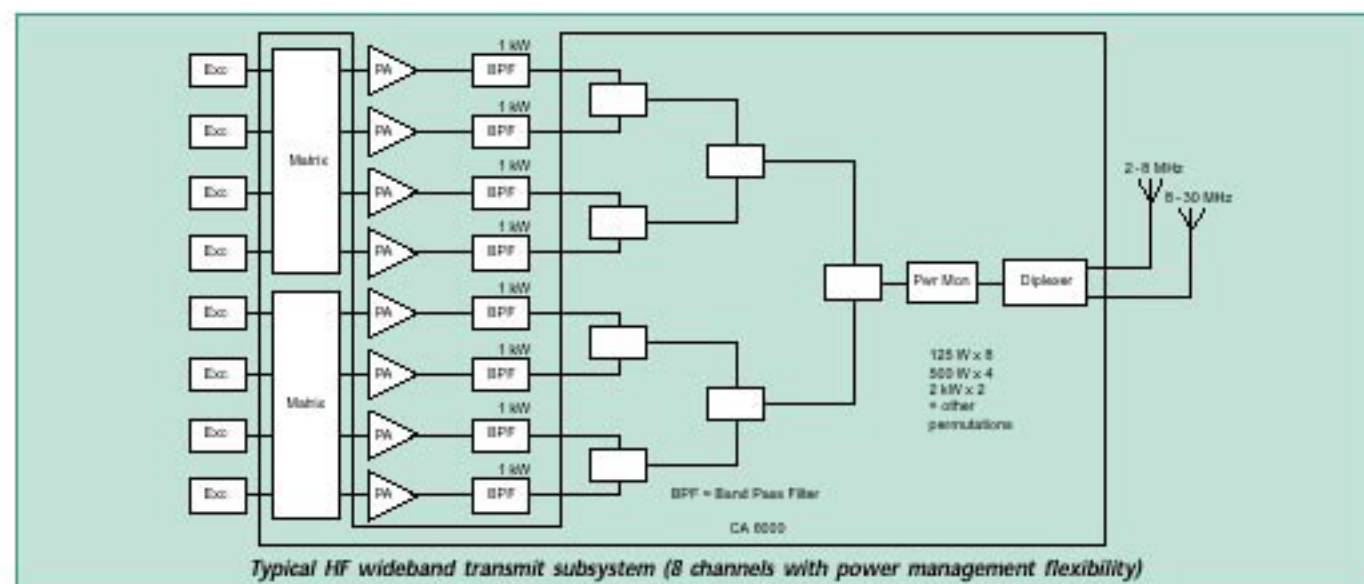
Can be operated with whip antennas (via AEA177 fast antenna tuning unit), loop antennas (A56000) or wideband antennas (via CA6000 common aerial working system with flexible power management capability).



AEA 177 - 1 kW fast antenna tuning unit



CA 6000 8 channels common aerial working



Typical HF wideband transmit subsystem (8 channels with power management flexibility)

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