

S7HP neo

1000 KW MEDIUM-WAVE RADIO TRANSMITTER Reference: TMW 1000K-S7HP NEO

Many years of design leadership in high power solid state transmitters and transmitter systems, customer feedback and high manufacturing quality have enabled Thomson to develop transmitters with increased operational benefits, long life expectancy and high reliability with high quality DRM digital signal and modulation processing and RF amplifier modules benefit from simple and effective interface by fiber optics.



KEY FEATURES for 1000kW MW Transmitter, TMW 1000K-S7HP NEO

- Drastic energy savings
- Efficiency of up to 93%
- Compact footprint
- Long, Medium-wave
- AM/DRM
- Modular configuration
- Optical fiber links
- Rotation of active modules
- Automatic recovery
- Pulse Width Modulation
- Easy maintenance with access to all modules
- Ergonomic touch screen
- New centralized UCS
- Embedded Web server and SNMP agent included as standard
- S7HP family first class references worldwide

GENERAL INFORMATION for 1000 kW MW Transmitter, TMW 1000K-S7HP NEO

Based on a long-standing analog and digital signal processing expertise and continuous research, the architecture of S7HP neo integrates all latest Thomson Broadcast innovations. Along with the extreme reliability and superior signal availability, the high efficiency of S7HP neo new amplifying chain meets environmental concerns with major energy savings and significant CO₂ emission reductions. S7HP neo series features innovative transmitter technology. This new range allows radio broadcasters to deploy local, regional and national radio networks, while benefiting from the latest Digital Radio Mondiale (DRM) services. With the biggest high-power medium-wave transmitters install base on the 5 continents, Thomson Broadcast benefits from a long field AM/DRM experience and worldwide customers positive feedbacks. Moreover, internal highly specialized manufacturing facilities for all major radio system components allow the best medium-wave radio know-how.

Designed on the technology developed for the defense market S7HP neo range is the latest generation of high-power transmitter from Thomson Broadcast resulting from years of research & development dedicated to the French defense market.

With a clear objective of highest reliability in mind, installed defense transmission stations have proven their capability to fulfill the most demanding performance requirements.

Enhanced reliability

Based on these results, Thomson Broadcast has implemented optical fiber links, Silicon Carbide (SiC) transistors, new power supply concept and Unit Control System (UCS).

Thanks to R&D heavy investments, Thomson Broadcast is the only transmission supplier that feeds amplifier modules in the S7HP neo range by optical fiber links. One of the main advantage of this solution is that interconnections are simplified for easier maintenance interventions. The second advantage is the EMC immunity guarantee of this solution which provides further robustness.

The implementation of the latest generation of SiC junction transistors allows higher circuit efficiencies as compared to traditional Si-based technologies and offers incomparable reliability and efficiency. Best serial amplifiers combining design preventing any risk of high impedance. A simple DC bias supply concept has also been set up without any floating or symmetric voltage need.

The new compact single rack UCS centralizes control management and AM / DRM modulation strategy. Web access for all input and output information is available. Latest high-tech technology is used to allow automation and best audio performances in analog and digital.

Continuous signal availability

In S7HP neo range, the auto hot pluggable system secures the replacement of default modules even in case of multiples failures avoiding any manual maintenance operations.

Moreover, the rotation of active amplifier modules enhances the outstanding reliability as equal workload is applied to all amplifier modules and thus guaranteeing less thermal stress and permitting a longer lifetime.

The innovative Pulse-Width Modulation – PWM- technology has been applied to the amplifiers allowing the control of the power supplied while correcting efficiently distortions.

With the implementation of new high efficient power modules, half as much modules are necessary for the same output power.

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1000 kW Medium Wave Radio Transmitter TMW 1000K-S7HP NEO

The new S7HP neo design is the best compromise between guaranteed redundancy of amplifiers and high reliability.

Best efficiency

Thomson provides the highest overall radio transmission system efficiency – up to 93% including the cooling system. To reach unrivalled AM performance, built-in energy savings modes are embedded – Dynamic Carrier Control (DCC 1 to 4) as well as Amplitude Modulation Companding / Enhanced (AMC/EHC). With the switch to digital modulation, the same coverage is achieved with substantial energy savings.

Reduced operating costs

During a long radio transmitter lifecycle the overall operating expenditures, including energy consumption and maintenance intervention can be quite expensive.

Compact S7HP neo blocks include built-in transformer, power supply, control circuits, and a simple combiner, and thus generates a lower footprint cost.

In addition to the high efficiency, power modules rotation and recovery features combined with simplified transmitter procedures contribute to keeping maintenance expenditures as low as possible.

With a closed liquid cooling circuit, the replacement of amplifiers is achieved without any changes to the circuit. The Mean Time To Repair –MTTR- is then lower than 2 minutes. Maintainability is enhanced by easy access to all independent modules. A front door for block units allows for fast and easy maintenance procedures.

Active redundancy

At the power modules level, active redundancy is guaranteed by the automatic hot pluggable system.

At the complete block level, if one amplifier block becomes unavailable, it is possible to reconfigure into the system to N-1 mode. This N-1 mode allows test load maintenance to be carried out. What's more, the voltage design and current handling capacity permit continuous, safe availability of the system.

To meet redundancy requirements, the dual-drive digital exciter configuration is proposed as an option as well as parallel-dual-pump liquid cooling system.

Complete Modularity

The S7HP neo family provides a solution for all levels of output power and comprises one "all-in-one" power amplifier block or multiple blocks with a simple combiner system, which does not require the extra complexity of a balancing load.

Each amplifier block provides up to a 400-kW carrier output power plus 10% using 128 power modules. This peak modulation capacity is key to advertising capability.

To meet all specific climatic conditions, a combined air/ liquid cooling system can be customized for extreme environmental conditions.

Advanced Monitoring

Thomson Broadcast has always been a leader in the ergonomic design of transmitter control and monitoring systems. With a big touch screen, the local man machine interface provides the operator with all the necessary functions to operate a single amplifier unit. A high-level display control system operates multiple blocks. The web server and SNMP agent remotely deliver a real-time and comprehensive display of the transmitter's status. They also provide the identification and precise location of any fault, allowing rapid diagnosis and maintenance.

EWF: Emergency Warning Functionality

S7HP neo equipped with the DRM stratus exciter is the perfect tool for authorities to inform general public about disaster situation:

- Automatic wake up of the receiver
- Maximum population reach as quickly possible
- Audio program and DRM text message
- Journalism advanced text service for multiple languages simultaneously

Turnkey DRM Solution

The S7HPneo family represents a huge opportunity for broadcasters, whether for the replacement of current equipment or to further digital radio deployments. The S7HPneo transmitter family lets the broadcaster benefit from the most advanced energy-efficient technologies, combined with the latest advanced spectrum digital standards.

The system, which supports the DRM standard and surround sound audio quality, allows for multimedia and data services such as Journaline® (personalized news), Electronic Program Guide (EPG), text messages, MOT slideshow, traffic info, general alert feature as well as the Diveemo application (video). All of these features can create new revenue streams.

With a long history of offering turnkey complete radio broadcasting systems Thomson Broadcast proposes network planning and engineering services, antennas, masts, auxiliaries, as well as Service Level Agreements.

S7HP NEO
1000 kW Medium Wave Radio Transmitter
TMW 1000K-S7HP NEO

Model Type	TMW 1000K-S7HP NEO
Carrier Frequency	From 531 kHz to 1602 kHz
Carrier Output power¹	1000 kW
DRM Output power	Up to 720 kW (no less than 50% of analog power)
Max. Transmitter Consumption²	1836 kVA
Amplifying Channel	3 blocks 1 block: 400 kW, 2 blocks: 800 kW, 3 blocks: 1000 kW using combiner and software
RF Filter	Optional item

¹With 125% over modulation capability
² Maximum consumption: 100% sine wave modulation

Analogue AM Modulation

Double Side Band (A3E):

- With Dynamic Carrier Control (DCC) 4 standard curves
- With AM companding (AMC) 1 standard curve –
- With Enhanced AM companding (EHC) 1 standard curve
- Other DCC customized curves may be available
- Channel bandwidth:
- Filter 4.5, 7.5, 10 kHz, full band

Digital AM Modulation

DRM digital according to ETSI ES 201 980

Channel bandwidth:

- 4.5, 5 kHz – simulcast option
- 9, 10 kHz – SD
- 18, 20 kHz – HD option

ORDERING INFORMATION

For more technical details on transmitter 1000 kW ref. TMW 1000K-S7HP NEO, please contact your authorized Thomson Broadcast representative.



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