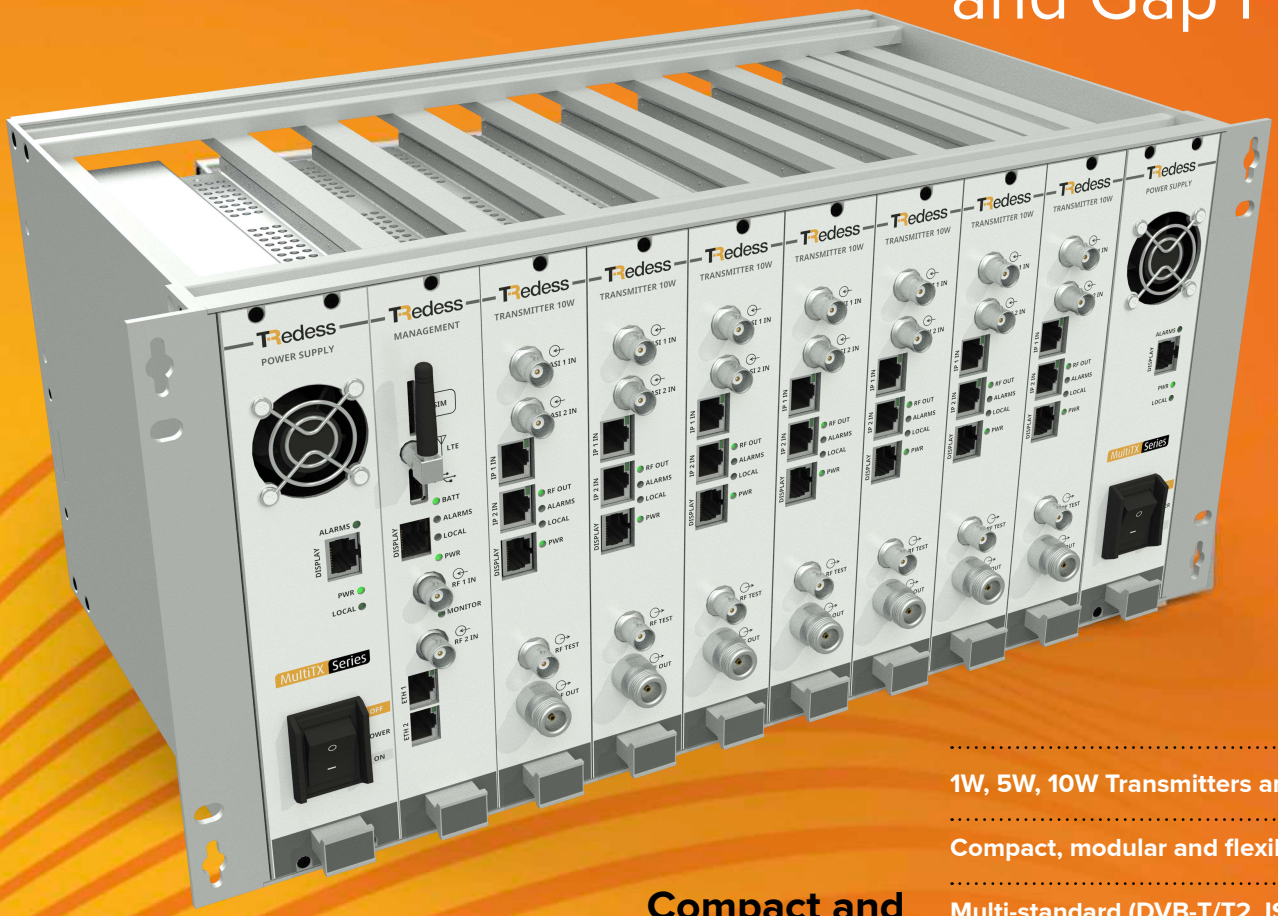
MultiTX Series

Low Power Multi-Transmitters and Gap Fillers



Compact and Cost-Effective solution for last mile coverage extension in digital TV networks

- 1W, 5W, 10W Transmitters and Gap Fillers
- Compact, modular and flexible solution
- Multi-standard (DVB-T/T2, ISDB-T/Tb, ATSC)
- Up to 9 UHF channels in a 5HU×19” subrack
- Top class GF performance (Gain margin 30dB)
- Built-in IP input for Transmitters with DAP
- Very Low Power consumption
- SFN and MFN configurations
- Redundancy system N+1, 1+1, Power Supply
- Easy operation and hot-plug modules
- Built-in Modem (option) for remote connection

Tredess

Overview

The **TRedess MultiTX Series** is a new family of **very compact and highly flexible Low Power TV Transmitters and Gap Fillers, hosting multiple UHF channels in the same 19”x5HU subrack**, helping network operators in their DTT network coverage extensions in a cost-optimum way, especially for the networks operating **multichannel sites** (multiple MUX at the same site).

A MultiTX system makes use of considerably **less space than conventional low-power systems** for multichannel sites, what is also a major advantage at sites where space is very limited.

MultiTX Series addresses multiple kind of applications, as the family includes **transmitters, transposers, gap fillers and re-transmiter solutions** in several output powers **up to 10W**, and covering multiple TV Standards (DVB-T/T2, ISDB-T/Tb and ATSC) with **Multiple redundancies** being also supported (PSU redundancy, 1+1, N+1)

The MultiTX Series has been designed also to **optimize the energy consumption**, and the very **small depth** of the solution makes it an ideal solution to be placed in **sites with very limited infrastructure**. Additionally, the **top-class performance of its embedded DEEC Echo canceller** makes the MutiTX Gap Filler systems capable to operate in very complex echo conditions.

Additional features as the built-in Modem, SAT receiver option, etc., allows also the devices to be remotely managed and operate in sites with very limited connectivity.

MultiTX Series

Modular architecture

The architecture is based on a subrack frame of 5xHU & 19” with 10 slots interconnected via a backplane. One slot is reserved for the PSU module (1×PSU is enough to drive the entire system) and the remaining 9 slots are used to build a MultiTX system configuration by combining transmitting modules of 3 different types (transmitter, transposer/ gap filler or re-transmitter), with also each module type being available in 3 different output powers (1W, 5W and 10W), and with the possibility to include modules with different output powers in a single subrack.

A second (redundant) PSU module can also be added to the system.

Additionally an optional Remote Management module (with a built-in modem) can be included for remote connection via SNMP, web, etc.

Each transmitting module is a complete transmitter (including exciter and amplifier) and operates totally independent from the other modules in the system sharing the PSU and the remote management module.

All modules are **hot-swap** for easy installation, maintenance and support. In case more channels are required at the same site, multiple 5HU subracks can be used in a system.

Outstanding compacness and flexibility

The MultiTX Series allows very flexible configuration reaching a high level of integration:

- Up to 9 UHF channels in a single 5HU×19” subrack.
- Up to 8 UHF channels in a single 5HU×19” subrack with 2×PSU (Remote Management in a separate 1RU module).
- Up to 7 UHF channels in a single 5HU×19” subrack with 2×PSU & Remote Management.

This modular and flexible combination of modules is allowing the network operator to select **the most optimum configuration for each particular** site, hence **optimizing the cost of the solution**, and making it easy to expand and modify the system in order to adapt to new system requirements (new channels, additional redundancies, etc). The built-in IP input for Transmitters with DAP also contributes to optimize the cost and to save rack space, avoiding the need of additional elements.

Additional modules as: **GNSS receiver modules** (single or redundant receivers), **DVB-S/S2 receiver module**, are available in the MultiTX family to cover a wider range of applications.

Redundancies: Apart from the PSU redundancy, the MultiTX family counts with the **Channel redundancy functionalities** (1+1, N+1) adding an additional N+1 switching unit. In the event of a failure, the standby transmitter automatically takes on the settings of the faulty transmitter and replaces the affected module.

Top class performance for challenging applications

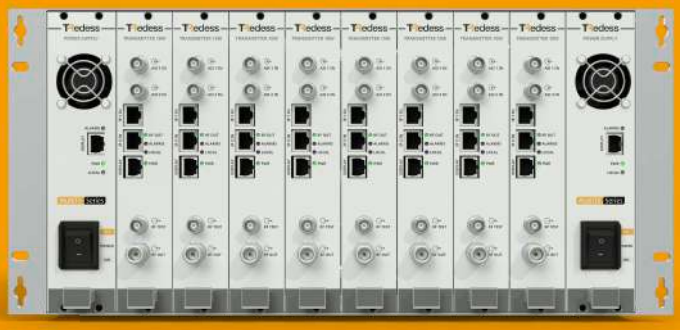
MultiTX Series is an **excellent** solution **for sites with limited IT infrastructures** (built-in Modem for remote connection and SNMP management).

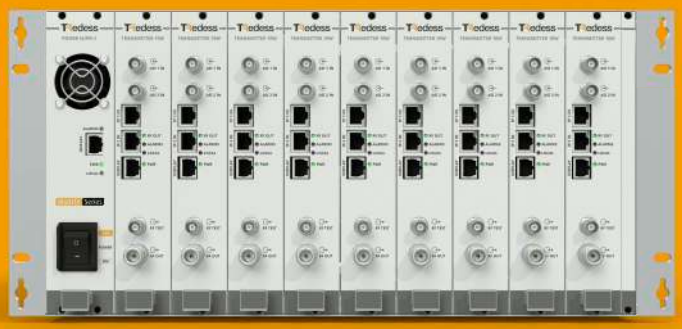
It is also **ideal for sites with minimal space requirements** due to the small depth of the 5HU subrack (25cm), and the fact that all user interfaces are accessible from the front. This is making possible to host the MultiTX system in any small outdoor rack unit hanging on a post, wall, roadside, etc.) and opening up the possibility to install the MultiTX system in sites not specially designed for TV broadcasting.

Additionally, the built-in DEEC Echo canceller makes the MultiTX Gap Filler systems able to operate in very complex echo scenarios:

- Being able to support **Gain margin up to 30dB** (suppressing feedback echoes 30dB higher than input signal)
- Being able to cope with **Multipath Echoes with Doppler/ Raileigh** echoes with a very **flexible cancellation window system** (16+3 cancellation windows)
- Very **low MER degradation (Output MER >29 dB for echoes +20dB higher than input signal)**

This makes possible to operate MultiTX Gap Fillers in sites with very limited isolation between RX and TX antennas, being able to transmit a higher power from the same site an providing a more stable operation at the site.





Configuration above left:
2×PSU + 4×TX + 3×GF + MNG

Configuration above right:
2×PSU + 8×TX with diff powers

Configuration on the left:
1×PSU + 9xTX

TRedess MultiTX Series | Technical specifications

	1W	5W	10W
Max. Output Power (before filter)	1,58W (32dBm)	7,9W (39dBm)	14W (41dBm)
Frequency range	470-698 MHz		
Modulation Standards	DVB-T/T2, ISDB-T/Tb, ATSC		
TRANSMITTERS			
Inputs	2xASI BNC female + 2xTSoIP 10/100/1000 RJ45		
MER	>35dB (Typical 42dB at nominal output power)		
Shoulders	>38dB		
Precorrection	Digital adaptative		
RF output connector	N female		
10MHz Reference input	BNC female 50 Ω (-20dBm a +10dBm)		
1pps Reference input	BNC female (TTL)		
GAP FILLERS			
Input RF level	-70 to -20dBm		
MER	>34dB for gain margin (echo - signal) = +10dB		
	>29dB for gain margin (echo - signal) = +20dB		
Echo canceller	Gain margin (echo - signal) up to +30dB. Flexible cancellation windows		
	Doppler cancellation		
Shoulders	>38dB		
Precorrection	Digital adaptative		
RF output connector	N female		
MANAGEMENT			
Ethernet Capabilities	Gigabit switch ethernet 4 ports		
WEB server	HTML 5, responsive design		
Protocols	IPv4, IPv6, DHCP, FTP, SSH, NTP HTTP, HTTPS, SNMP v1/v2c IPSEC, PPP, PPTP		
Modem	LTE CAT M1/M4 (antenna and modem integrated) (optional)		
Battery	Ion-lithium (optional)		
Monitoring receiver	Parameters: QoS MER, BER (DVB-T/T2 RF channels 8MHz UHF)		
I/O Contacts	Inputs: 5 Optocoupled/Outputs: 5 contact relays free potential		
USB	USB 2.0 compatible		
COMMON FEATURES			
AC Power supply	AC Input & Redundant power supply as option		
Input AC voltage	85 Vac to 275 Vac		
Power factor	0.99		
Local Control	LCD screen and buttons (external) / Ethernet (Management Module option)		
Remote Control	Ethernet (Web server and SNMP agent) / I/O contacts (Management Module option)		
Monitoring	Main parameters (RF power, MER, input bit rate, internal temperature, voltage...)		
Temperature range	0ºC to 45ºC		
Humidity	< 95% @ 40ºC, without condensation		
Cooling	Air cooled		
Subrack Dimensions [W×H×D]	19'' × 5HU × 255mm		
Safety	EN 60950-1:2006+A1:2010+A11:2009+A12:2011 EN 60215:1989+A1:92+A2:94		
EMC	ETSI EN 301 489-1 V2.2.3 / ETSI EN 301 489-53 V1.1.1		
Spectrum Efficiency	ETSI EN 302 296 V2.2.0		
RoHS	EN 50581:2012		

V0324 Specifications are subject to change without notice.

Over 28.000 transmitters & gap fillers worldwide, in more than 50 countries: Spain, France, Sweden, Norway, Italy, Croatia, Greece, Hungary, Poland, Estonia, Georgia, Faeroe, Peru, Chile, Brazil, Vietnam, Hong-Kong, Singapore, Thailand, Morocco, Mali, South Africa...

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TRedess is certified by
UNE - EN ISO 9001:2015

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