screen

MCT

SERIES

Multichannel TV Transmitters

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MCT Series Multichannel Transmitter/Re-Transmitter
Up to 7+1 channels
Built-in automatic changeover. 2 configurations: 4RU & 2 RU

> **MCT 050UB 7+1 (4RU Configuration)**

> **MCT 050UB in 2+1 Configuration (2RU)**

Main features

- Models available:
  - Transmitter with Satellite Receiver and Decoder
  - Multi Input (ASI+ SAT) Transmitter Seamless Switching.
  - Gap Filler with echo cancelling.

- Output power available: 2, 5 and 10W rms
- 2 hardware configurations available:
  - 4 Rack Units: up to 7 x transmitters, 1 x Reserve, 2 x GPS Boards, 1 x Main Board
  - 2 Rack Units: up to 2 x transmitters, 1 x Reserve, 2 x GPS Boards, 1 x Main Board
- Multiple RF channels: up to 7 channels can be frequency multiplexed to output.
- N+1 redundancy system with up to 7 main devices and 1 reserve.
- Full UHF Band, frequency range 470-860Mhz.
- Linear and Non Linear adaptive pre-correction with preloaded tables or graphical setting.
- GPS plug-in boards (redundancy as option). 1PPS and 10 MHz (for each GPS board).
- Redundant power supply (as option).

N+1 Redundancy

Complete interchangeability among transmitters boards from the 4RU to 2RU versions and viceversa.

MCT Series is composed by N (up to 7) transmitters and 1 Reserve. Each device stores its own operating set of parameters, used to define for example modulation mode, output channel, input satellite settings and modulation. It also stores all the other transmitter configurations. This ensures better spare part management and logistics.

The scope and the hierarchy of each Transmitter board is defined by its position in the chassis.

One transmitter is used as a reserve to provide redundancy in case of failure of one of the main transmitters and stores all the other transmitter configurations. The reserve transmitter is normally in stand-by mode and it's activated only by a failure signal from one of the main transmitters.

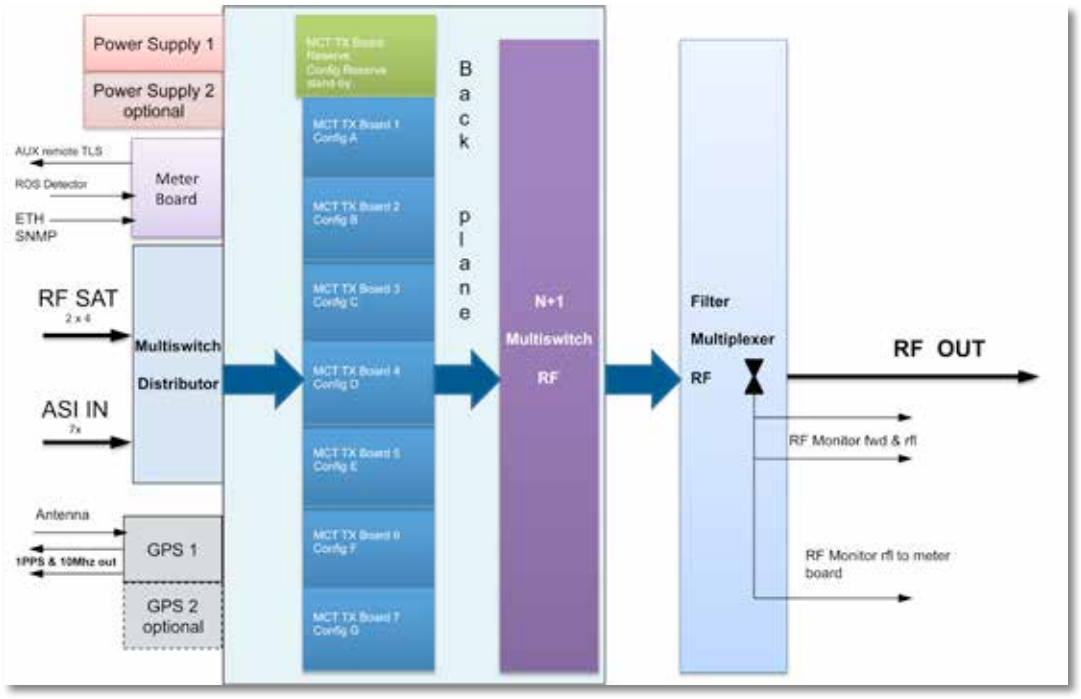
Each device uses a keyword that enables the device to work in the system. New blades have default invalid values that are set to valid only after the proper configuration of the device itself is performed.

DVB T/T2 ATSC atsc MOBILE DTV ISDB-T DTMB

Available Models

Versions	Board	Transmitter with SAT RX	Seamless	Transposer / Gap Filler w Echo Canceller
4 RU	TX	from 1 + 0 up to 7 + 1	from 1 + 0 up to 7 + 1	from 1 + 0 up to 7 + 1
	GPS	up 1+1	up 1+1	-
	Meter	1	1	1
	SAT disributor	1	1	-
	ASI matrix	-	1	-
2 RU	TX	from 1+ 0 up to 2 + 1	from 1+ 0 up to 2 + 1	from 1+ 0 up to 2 + 1
	GPS	up 1+1	up 1+1	-
	Meter	1	1	1
	SAT disributor	1	1	-
	ASI matrix	-	1	-

MCT Seamless 7+1 Block Diagram



Complete interchangeability among transmitter boards from 4RU to 2U and viceversa

Configuration 1+0: 1 transmitter and redundant GPS boards*.

Configuration 1+0: 1+1 reserve transmitters and redundant GPS boards*.

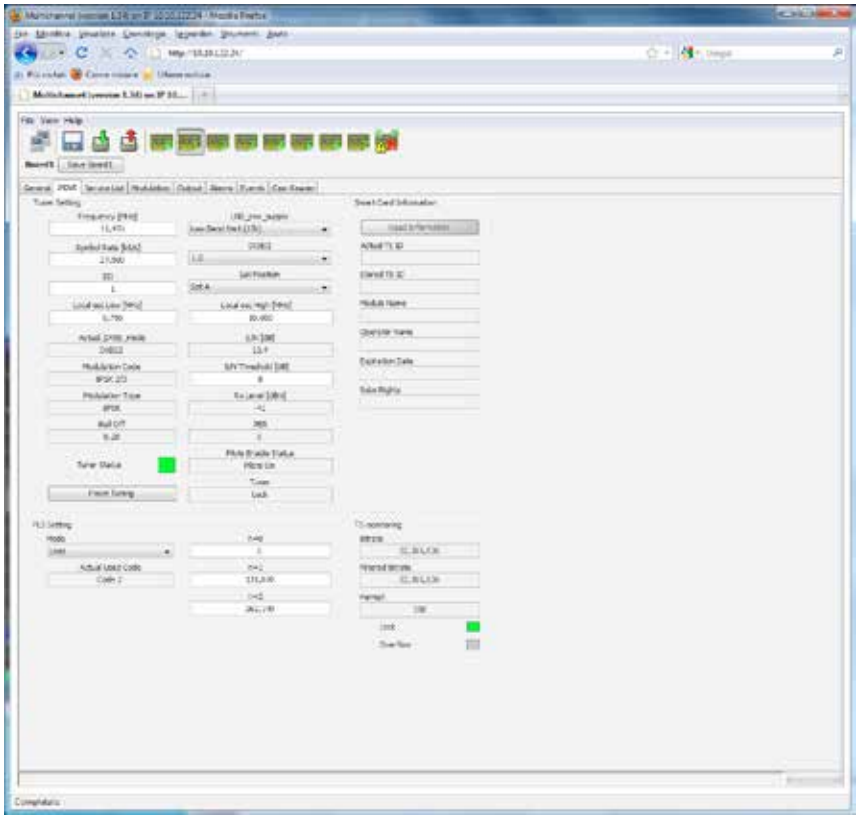
Configuration 2+0: 2 transmitters and redundant GPS boards*.

Configuration 2+1: This solution offers 2 +1 reserve transmitters and redundant GPS boards*.

DVB T/T2 ATSC a t s c MOBILE DTV ISDB-T DTMB

Java Interface

Intuitive and user friendly Java interface to set and control any parameter, alarm or status through SNMP or WEB browser



Example of common list of alarms or status:

- Satellite input not locked –> The satellite input signal did not lock.
- Satellite input high BER –> A BER higher than the set threshold was measured in the sat input signal.
- Satellite input low S/N –> A S/N lower than the set threshold was measured in the satellite input signal.
- No input TS –> a valid TS was not found at the descrambled input of the modulator.
- De-scrambling error –> the receiver returned error while de-scrambling.
- Input service not found –> the service selected is not valid or no more present in the input TS.
- Failed device enabling –> the device has an incorrect keyword and needs to be re-configured before being enabled.
- 10 MHz clock alarm –> the 10 MHz failed to lock to the external 10 MHz.
- 1 PPS alarm–> 1 PPS external signal was missing.
- System delay alarm –> the system cannot lock its internal reference timing to the STS received from MIP and cannot perform a correct SFN transmission.
- No MIP alarm–> a valid MIP packet was not found in the input TS.

MCT Gap-filler with echo canceller

TV signals from a master transmitter can be rebroadcasted directly to fill easy the small gaps in the network.
Network operators can also use the TV transposer / gap filler for the regional expansion of networks where the installation of additional transmitters would be too expensive. The MCT gap filler rebroadcasts off-air signals directly from the master transmitter, without requiring complex signal feed and modulation. The network coverage of digital transmission equipment can therefore be expanded quickly, easily and above all according to requirements. Screen MCT uses the fold back settings techniques to guarantee the right balance between echo level input and output quality of signal.
Gap fillers can be used in wide area SFN networks to implement a variety of use cases.

- To cover black spots on specific areas, whenever deemed necessary
- To increase signal coverage and quality in specific urban areas
- To extend coverage in high power transmission areas
- To limit or eliminate interference generated by multipath signals
- Improve Indoor and Mobile Penetration/Coverage for Mobile DTV Service

The MCT can receive even low quality RF signal input (even -80 dBm).
The RF input signal is converted into a standard 36 (44) MHz IF frequency by a fully agile down converter. This signal is digitally filtered, elaborated, pre-corrected and then presented at 996 MHz to the channel converter. The channel converter generates the final frequency in a fully agile mode. The LO with a very low phase noise is locked to the 10 MHz reference. The signal coming from the agile up converter goes to the RF amplifier section. The RF amplification is done by class A and AB stages. Out of the final stage, the RF signal passes through a directional coupler. The directional coupler detects samples of direct and reflected power and passes this information to the check function.

- Powerful adaptive echo cancellation with up to 17 dB gain margin (12dB for exposed stations and difficult situations)
- Broadband, frequency agile design – UHF 470 to 862 MHz
- Low Time Delay: MCT gap-filler time delay is less than 10 uSec and the echo cancellation window is 20 uS max (Equipment time delay not included).
  A low time delay allows the receiver to deal with two different signals (main transmitter and MCT) without allowing them to interfere with each other and degrade reception. This range is equally suitable for any kind of DVB standard like DVB-T/T2, ATSC, ISDB-T, DTMB
- Screen digital signal processing algorithms offer a superior cancellation, it means that stable operation can be achieved even with a feedback (undesired) signal that is larger than the incoming (desired) signal.

MCT Transposer/ Translator

The MCT provide efficient and reliable re-broadcast of the received signal in a small and robust package, is a high quality TV transposer family providing digital terrestrial transmission of TV programs using the traditional transposer method with off-air reception and non re modulation broadcasting.

Available in all DVB standard: DVB-T/T2, ATSC , ISDB-T, DTMB.

Multichannel Transmitters

MODEL SPECIFIC DATA										
Models	Output Band	Working Class	Dimensions	N. Tx	Output Connector	Cooling	Meter board N.	MER	Shoulders @ Fo 4.3 MHz	Digital output power (rms) without Filter DVB
MCT050UB 2	UHF	A	2/4 RU	2+1 (7+1)	N	Air	1	>36dB	-39	2W
MCT050UB 5	UHF	A	2/4 RU	2+1 (7+1)	N	Air	1	>36dB	-36	5W
MCT050UB10	UHF	A	2/4 RU	2+1 (7+1)	N	Air	1	>36dB	-36	10W

Specifications and characteristics are subject to change without notice.

Satellite receiver	
Standard	ETSI EN 300 421 (QPSK) (DVB-S)
	ETSI EN 302 307 (QPSK, 8PSK, 16APSK) (DVB-S2)
	ETSI EN 50083-9 (ASI)
	ETSI EN 50221 (Common Interface)
DVB-S2	VCM, CCM, Multi Stream and Single Stream, Normal & Short FEC frames
Symbol Rate	1 - 45 Msymb/s (DVB-S)
	2 - 45 Msymb/s (DVB-S2)
Constellation	QPSK, 8PSK, 16APSK
FEC	Automatic, all modalities available according to the standard.
	Block Short or Normal
	DVB-S: Reed-Solomon (204,188)
	DVB-S2: BCH, LDPC
Roll–Off	0.2, 0.25, 0.35
Input connector	F (f), 75 Ohm
Frequency	L–band 930÷2250 MHz
LNB control voltage	Off, +13/18 Vdc, 22 kHz, 0.25 A (overload protection)
RF input level	40 ÷ 100 db/ V (with attenuator)
Output connector	BNC (f), 75 Ohm
Modality	188 bytes
Max input bit rate	80 Mbps (CAM limit: 72 Mbps)
CAM interface	PCMCIA DVB-CI Common Interface
CA mode (Conditional Access)	Multicrypt, Simulcrypt
CAS Support	Mediaguard, Viaccess, Irdeto, Conax, BISS-1 with Professional multiprogram CAM (descrambling of up to 24 Elementary Streams) Betacrypt, Cryptoworks, Nagravision with standard consumer CAM (descrambling of up to 4 services)

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Other specs	
Chassis	4U rack 19"
Width	482 mm
Height	177 mm
Depth	420 mm without fans
Weight	25 Kg
Operating Temperature Range	-5°C ÷ 40°C
Max. relative Humidity	90%, non condensing
Max. operating altitude:	2500 m. a.s.l. (>2500 m. optional)

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