

Analogue and Digital Radio-TV Transmitters

 General Catalogue 2007

OUR PRODUCTS

- ■ SECTION 1** **6-29**

FM Broadcasting Equipment
Digital & Analog FM Transmitter & FM Amplifiers with output power up to 10KW,
DAB Exciter, Audio Processor, RDS Coder.
- ■ SECTION 2** **30-45**

TV Broadcasting Drivers
DVB-T/H and Analog UHF and VHF Television Driver outputpower up to 250W,
Transposer, Regenerative Transposer, Gap-filler, Digital repeater, MIP Inserter.
- ■ SECTION 3** **46-53**

TV Power Amplifiers
UHF and VHF Solid State Amplifiers with output power up to 20KW
- ■ SECTION 4** **54-63**

Microwave & UHF Links
TV Microwave links (from 2,3 GHz to 23 GHz) in Digital and Analog version.
Radio Microwave (from 1,4 GHz to 2,7 GHz) & UHF links (from 180 MHz to 450 Mhz)
FM Professional Receiver
- ■ SECTION 5** **64-73**

Complete TV transmitters and Systems
Automatic Change Over System, Complete Transmitters, UPS
- ■ SECTION 6** **74-89**

Antennas & Combiners
FM Cavity Filters and Star point or Double-Bridge Combiners
Wide variety of FM Antennas and UHF or VHF Band Panel Antenna Systems.



Cte International was founded in 1972 with the purpose of manufacturing and distributing telecommunication equipment.

The first range of products manufactured by Cte International included transceivers and accessories (HF-VHF-UHF Radio Equipment) for professional PMR-LMR and Ham. CB, branded Midland and Alan.



In 1975 Cte Broadcast began the production of FM Radio Broadcasting Transmitters. Cte Broadcast, together with its partner Meta System has always invested considerable resources in research and development.

The excellent quality of the products and the competitive prices allow Cte International successfully distribute in the major Countries of the European Union and worldwide, thus confirming the cosmopolitan vocation of the company.





The Corporate Headquarters of the company are in Reggio Emilia (Italy). The production plants are based in Reggio Emilia and in Milan. The company employs more than 350 people, 75 of whom are technicians and engineers granting the high quality and reliability of the CTE International products.

The facilities in Reggio Emilia and Milan include:

- › More than 8.000 square meters of manufacturing and support facilities.
- › Ultra-modern instrumentation for Testing, Research and Development.
- › Automatic and modern machinery for worldwide shipping.
- › Climatic chamber and vibration platform.
- › Graphic thermal control equipment
- › Anechoic chamber for immunity emission EMC test up to 18GHz

The production includes:

- › Solid state analog terrestrial FM TRANSMITTERS, up to 20 KW
- › Solid state analog terrestrial TELEVISION TRANSMITTERS operating both in VHF and UHF bands, up to 20 KW
- › DAB DIGITAL AUDIO TRANSMITTERS in L band and III band up to 5 KW
- › DVB DIGITAL VIDEO TRANSMITTERS in UHF band up to 5 KW
- › ANTENNA SYSTEMS, FILTERS, DIPLEXERS.
- › CUSTOMIZED SOLUTIONS

Customized solutions to meet any particular requirements of the market.

Cte International operates a quality management system in compliance with the requirements of UNI EN ISO 9001:1994



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Analogue and Digital Radio-TV Transmitters

 Our products

Since this catalogue has a relatively long validity please ask for confirmation of all data at the time of ordering or when considering a purchase.

Low Power FM Transmitters

TX 25 PLUS – 25 W

TX 250 PLUS – 250 W

The TX 25 PLUS and TX 250 PLUS FM Exciters are designed to accept Stereo Mono MPX Audio Signals to be modulated in FM and to amplify the RF. The TX 25 PLUS and TX 250 PLUS FM are equipped with an innovative and high-performance power supply stage «switching-mode mains direct», without mains transformer (the mains voltage can vary from 80 to 265 Vac with no variation on the output power). The major features include high insulation from mains, high overall efficiency, modular design for

friendly maintenance, compliance with European norms EN61000-4-3 and long term reliability. In these FM Exciters, an AGC audio circuit control is included to keep the modulation level below the maximum figures allowed in compliance with CEPT/ERC 5401 E. The RF output specifications have been drastically improved, thus obtaining figures which are comparable to digital transmitters. These FM Exciters can be controlled locally by a PC or remotely by modem.



The TX 25 PLUS is a completely solid state Exciter, frequency agile controllable from the front panel with adjustable output power up to 25 W.

The power device used to obtain 25 W is the PHILIPS BLF 245.

In TX 250 PLUS FM Exciter, usable also as a stand-alone transmitter, we have added a power amplifier module with the power device PHILIPS 278, able to grant 250 W output power in the entire frequency range.

CODE	MODEL	DESCRIPTION
F662	TX 25/S PLUS	25 W Stereo, Mono MPX Transmitter
F663	TX 250/S PLUS	250 W Stereo, Mono MPX Transmitter

6



FM Broadcasting Equipment

Technical data

FREQUENCY	
Range	87,5 ÷ 108 MHz
Internal Setting mode	10 KHz steps
External Setting mode	10 KHz steps by remote control RS232-RS485
Generation	PLL synthesizer
Control	Microprocessor
Output frequency stability	± 300 Hz / 3 months
Reference	TCXO 12,8 MHz
Nominal deviation	± 75 KHz
Stability of Frequency Deviation	± 2,5 % over 6 months
Impedance RF Connector	50 Ohm
RF OUTPUT SPECIFICATIONS	
Harmonics suppression	< - 75 dBc
Spurious Emission	< - 90 dBc
Off Lock Attenuation	> 60 dBc
S/N RATIO (weighted)	> 73 dB (referred to ± 75 KHz)
THD	0,10%
VSWR	Less then 1,5:1
Probe	BNC connector RF – 40 dB BNC connector LF
MONO MPX SPECIFICATIONS	
Mono/MPX Impedance	600 Ohm bal. or 10 KOhm unbal., XLR female Connector
Mono Level	From - 6 to + 12 dBm
MPX Level	- 6 dBm
Audio Filter Response	> 30 dB (from 19 KHz to 100 KHz)
THD	< 0,2% From 40 Hz to 15 KHz
Suppression of 19 KHz	> 46 dB
RDS and SCA Impedance	10 KOhm unbal., BNC Connector (with 30 Hz to 100 KHz Filter)

STEREO SPECIFICATIONS	
Left, and Right Impedance	600 Ohm bal. or 10 KOhm unbal, XLR female Connector
Left, Right Level	From – 6 to + 12 dBm
Crosstalk	> 50 dB (@ 19 KHz)
THD on Encoded channels	< 0,3 % From 0,4 Hz to 15 KHz
Suppression of 38 KHz	> 50 dB
Spurious suppression outside band	According to ETSI 300-384
Sub Carrier Generation	Internal Cristal
Pilot Frequency	19 KHz ± 1 Hz
DESIGN DATA	
Type	Solid state direct FM frequency
Pre-emphasis	Flat or 75 or 50 µs
Audio frequency response	± 0,2 dB (from 40 Hz to 15 KHz) (stereo) ± 0,3 dB (from 40 Hz to 100 KHz) (MPX)
Unbalance rejection	> 40 dB
Modulation	Type: Direct VCO frequency modulation F3E/F8E Capability: Meets or exceeds all CE 99/ 05 R&TTE requirements
REMOTE CONTROL	
Output Connector	RS 232 – PC connection (front panel) RS 232 Amplifier connection (rear panel) RS 485 (rear panel)
Input Connector	RS 485 (rear panel)
STANDARDS COMPLIANCE	
Radio spectrum	ETSI 300-384; ETS 302-018
EMC	ETSI 300-447; ETS 301-489
Safety	EN 60950 - EN 60215
TEMPERATURE	
Operating range	0° to 45° C
Storage range	- 40° to 60° C
Maximum relative Humidity	90% non condensing
Max Operating Altitude	2500 mt. a.s.l.



SPECIFICATIONS	TX 25 PLUS	TX 250 PLUS
RF output power	From 0 to 25 W	From 5 to 250 W
Output Connector	N Type Female	N Type Female
Dimensions (WxHxD) mm	482 x 88 x 500 (550 x 220 x 60 Package)	482 x 88 x 500 (550 x 220 x 60 Pack)
Weight	10 Kg (12.6Kg. Package)	12 Kg (15.5 Kg. Package)
Power consumption	Approx. < 75 VA	Approx. < 350 VA
Number of power supplies	1 From 80 to 265 Vac, single phase;	1 From 80 to 265 Vac, single phase;
DC Power Supply	Not included	Not included
Number of fans	1 blower 220 V ac	2 blowers 220 V ac

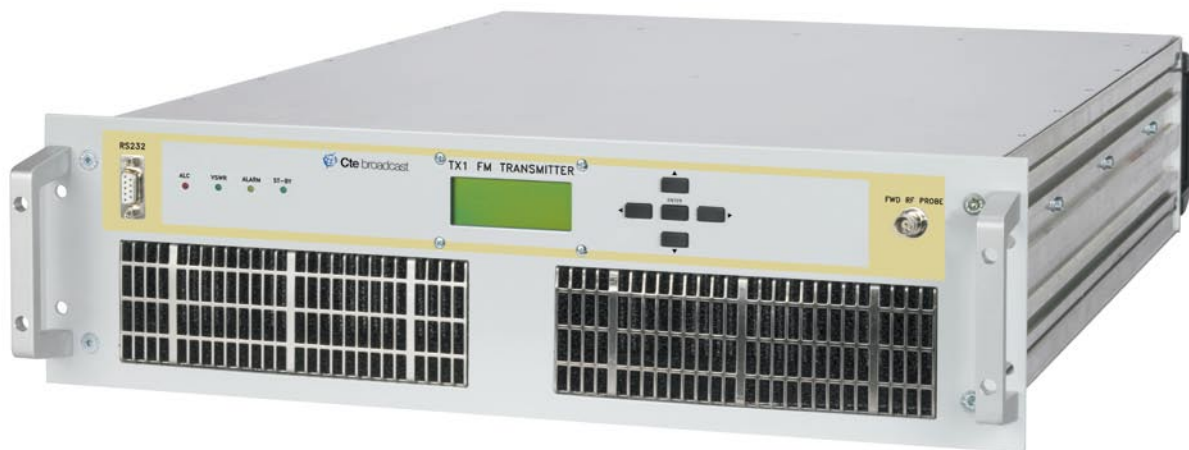
Medium Power FM Transmitters

TX 1 – 1000 W

TX 05 – 500 W

The TX 1 and TX 05 are really innovative FM Transmitters with 1000W and 500W output power respectively. Thanks to the new solutions that our engineers have implemented in the circuitry and to the compact design, for these transmitters we have estimated a 20% longer MTBF with respect to the average similar models available in the market.

The TX 1 and TX 05 are equipped with a microprocessor board that allows the programming from the local display or even remotely, through a standard RS232 or SNMP. Thanks to the ultimate electronic components that have been largely implemented in the design, also the RF spectrum specifications have been significantly improved



The equipment complies with the RTTE European Requirements.

- Solid state amplifier with Mosfet technology.
- Output Power adjustable from 100W to 1000W
- User friendly for monitoring and control
- Double stage power supply
- Fast and multiple protections
- Compact and modular design for quick and easy maintenance
- Flexible telemetry system and remote control
- N+1 Hardware and software control facility

CODE	MODEL	DESCRIPTION
F866	TX 1	1000 W Stereo, Mono MPX Transmitter
F872	TX 05	500 W Stereo, Mono MPX Transmitter



Technical data

FREQUENCY	
Range	87,5 ÷ 108 MHz
Internal Setting mode	10 KHz steps
External Setting mode	10 KHz steps by remote control RS232-RS485
Generation	PLL synthesizer
Control	Microprocessor
Output frequency stability	± 300 Hz / 3months
Reference	TCXO 12,8 MHz
Nominal deviation	± 75 KHz
Stability of Frequency Deviation	± 2,5 % over 6 months
Impedance RF Connector	50 Ohm
RF OUTPUT SPECIFICATIONS	
Harmonics suppression	< - 75 dBc
Spurious Emission	< - 90 dBc
Off Lock Attenuation	> 60 dBc
S/N RATIO (weighted)	> 73 dB (referred to ± 75 KHz)
THD	0,10%
VSWR	Less then 1,5:1
Probe	BNC connector RF – 40 dB BNC connector LF
MONO MPX SPECIFICATIONS	
Mono/MPX Impedance	600 Ohm bal. or 10 KOhm unbal., XLR female Connector
Mono Level	From - 6 to + 12 dBm
MPX Level	- 6 dBm
Audio Filter Response	> 30 dB (from 19 KHz to 100 KHz)
THD	< 0,2% From 40 Hz to 15 KHz
Suppression of 19 KHz	> 46 dB
RDS and SCA Impedance	10 KOhm unbal., BNC Connector (with 30 Hz to 100 KHz Filter)

STEREO SPECIFICATIONS	
Left, and Right Impedance	600 Ohm bal. or 10 KOhm unbal, XLR female Connector
Left, Right Level	From – 6 to + 12 dBm
Crosstalk	> 50 dB (@ 19 KHz)
THD on Encoded channels	< 0,3 % From 0,4 Hz to 15 KHz
Suppression of 38 KHz	> 50 dB
Spurious suppression outside band	According to ETSI 300-384
Sub Carrier Generation	Internal Cristal
Pilot Frequency	19 KHz ± 1 Hz
DESIGN DATA	
Type	Solid state direct FM frequency
Pre-emphasis	Flat or 75 or 50 µs
Audio frequency response	± 0,2 dB (from 40 Hz to 15 KHz) (stereo) ± 0,3 dB (from 40 Hz to 100 KHz) (MPX)
Unbalance rejection	> 40 dB
Modulation	Type: Direct VCO frequency modulation F3E/F8E Capability: Meets or exceeds all CE 99/ 05 R&TTE requirements
REMOTE CONTROL	
Output Connector	RS 232 – PC connection (front panel) RS 232 Amplifier connection (rear panel) RS 485 (rear panel)
Input Connector	RS 485 (rear panel)
STANDARDS COMPLIANCE	
Radio spectrum	ETSI 300-384; ETS 302-018
EMC	ETSI 447; ETS 301-489
Safety	EN 60950 - EN 60215
TEMPERATURE	
Operating range	0° to 45° C
Storage range	- 40° to 60° C
Maximum relative Humidity	90% non condensing
Max Operating Altitude	2500 mt. a.s.l.



SPECIFICATIONS	TX 01	TX 05
RF output power	From 100 to 1000 W	From 50 to 500 W
Output Connector	7/16 Type Female	7/16 Type Female
Dimension (WxHxD) mm	482 x 132 x 700 (550 x 270 x 800 Package)	482 x 132 x 700 (550 x 220 x 800 Package)
Weight	18 Kg (20 Kg. Package)	17 Kg (19 Kg. Package)
Power consumption	Approx. < 1800 VA	Approx. < 900 VA
Number of power supplies	230 Vac±15%, single phase;	230 Vac±15%, single phase;
Number of fans	2 blowers 24 V dc	2 blowers 24 V dc

Remote control system

This remote control system for FM transmitters can be operated by Cable or by GSM Modem; basically, it allows monitoring and modifying remotely the

overall setting of transmitters. In case of failures in the transmitter which is under control, the software of the remote control automatically sends an SMS warning message.



DESCRIPTION

All the main parameters (frequency, levels, mono-stereo- pre-emphasis, output power) are adjustable through the keypad and are automatically stored in the memory, even in case of lack of mains. Many events can be stored; every alarm information is advised with its start alarm date and the end alarm date.

The main measurements realized by this system are: value of modulation, heatsink temperature, mains line voltage, voltage and current of the RF final stage, main oscillator faulty.

The transmitter can be controlled by means of the keypad or in remote mode.

As a monitor, a common personal computer can be connected on the dedicated connector on the front panel. By simply installing an appropriate program on the PC, it is possible to set and see all the parameters.

Every transmitter can be connected to a GSM Modem with an external antenna, to link the transmitter to the public telephone network. It is possible to control and modify all the parameters of the transmitter just like if the user were on the site.

CODE	MODEL	DESCRIPTION
F634.06		Modem analogico
F634.07		Modem GSM
F634.08		Opzione software

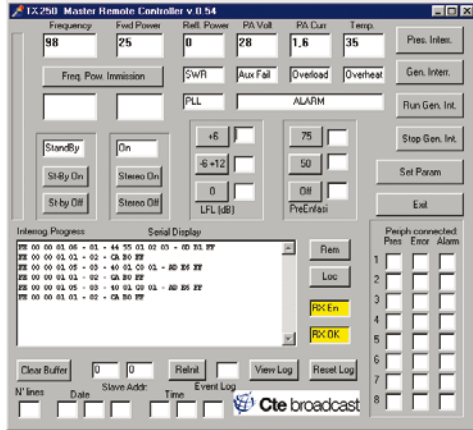
TECHNICAL FEATURES

- › Remote setting and measurement of: direct power, reflected power, modulation, current, voltage, temperature, power supply
- › Immediate information via GSM on unexpected events (managed by two different telephone numbers)
- › Password as system protection
- › Friendly use
- › Operated by TCP/IP protocol using SNMP protocol

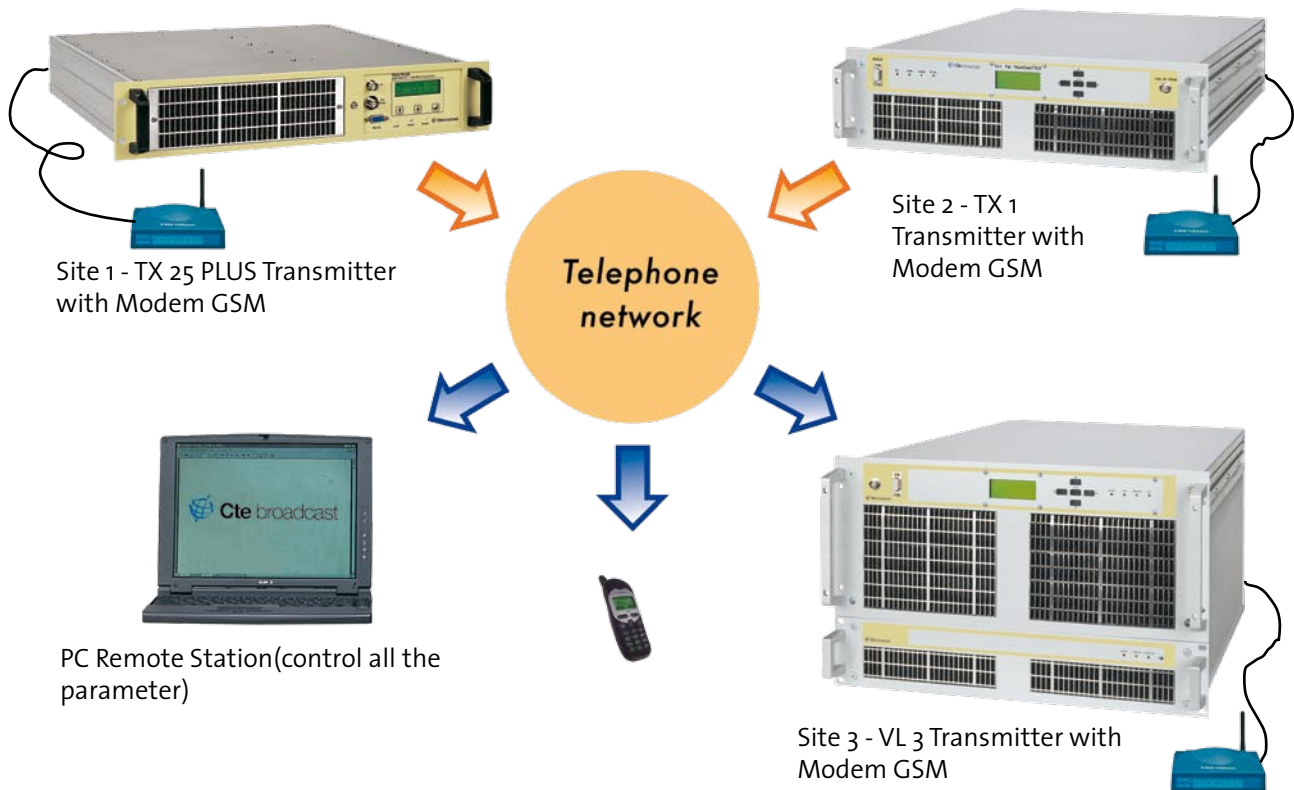
PC System requirements:

- Processor Type: PENTIUM or higher
- Operative system: WINXP
- RAM: 256MB
- Graphic: SVGA 600x800/768x1024

SOFTWARE



EXAMPLE OF A STANDARD TRANSMITTING STATION



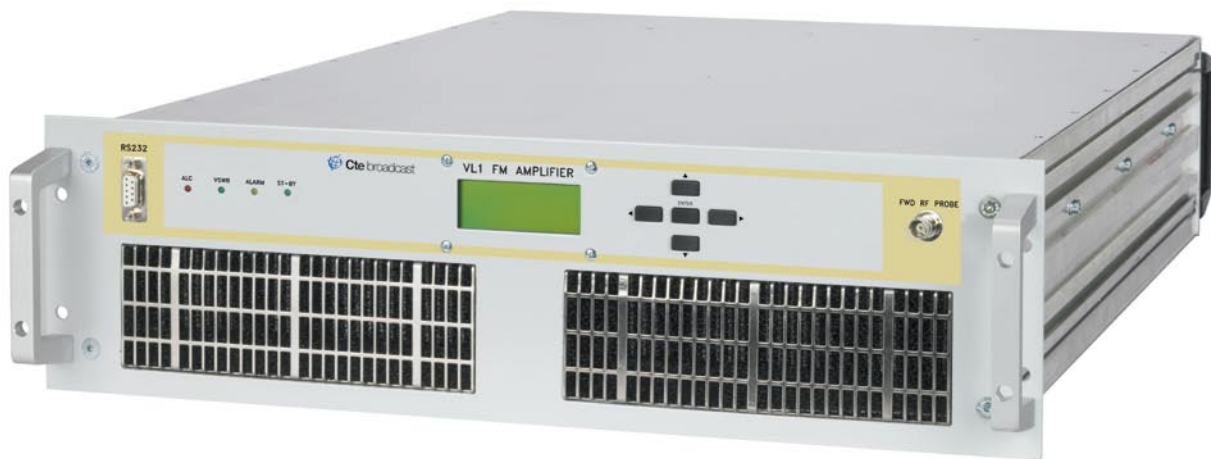
Compact FM Power Amplifiers

VL 1 – 1000 W

VL 05 – 500 W

The VL1 and VL05 are really innovative FM Amplifiers with 1000W and 500W output power respectively. Thanks to the new solutions that our engineers have implemented in the circuitry and to the compact design, for these amplifiers we have estimated a 20% longer MTBF with respect to the average similar models available in the market.

The VL1 and VL05 are equipped with a microprocessor board that allows the programming from the local display or even remotely, through a standard RS232 or SNMP. Thanks to the ultimate electronic components that have been largely implemented in the design, also the RF spectrum specifications have been significantly improved.



The equipment complies with the RTTE European Requirements.

- Solid state amplifier with Mosfet technology.
- Output Power adjustable from 100W to 1000W
- User friendly for monitoring and control
- Double stage power supply
- Fast and multiple protections
- Compact and modular design for quick and easy maintenance
- Flexible telemetry system and remote control
- N+1 hardware and software control facility

CODE	MODEL	DESCRIPTION
F868	VL 1	1000 W Power Amplifier 87.5-108 MHz
F867	VL 05	500 W Power Amplifier 87.5-108 MHz

Technical data

RF OUTPUT SPECIFICATIONS	
Range	87,5 ÷ 108 MHz
Overall efficiency	Better than 58 %
Impedance RF Connector	50 Ohm input and output
Output power stability	± 3 %
Harmonics suppression	≥ - 80 dBc (typically better than 90 dBc)
Spurious Emission	< 1 µW (without Modulation)
Residual Asynchrony AM	- 74 dB Weighed
Residual Synchrony AM	- 58 dB Weighed
Probe	BNC connector RF – 60 dBc
POWER SUPPLY	
Type	Switch mode (Double conversion voltage direct mains)
Protections	Overheating 70 °C (by means of the General Control stage) Over charge Short Circuit on the output voltage Crow – Bar protection: (Excessive output voltage limit) Excessive current consumption of the RF module Over-voltage
DESIGN DATA	
Display Meter	Forward power - Reflected power - DC supply voltage - DC supply current - Power supply temperature - Power amplifier voltage
Protections	RF Amplifier module over-temperature 70 Excessive reflected power Permissible VSWR ≤ 1.5
Programmable logic protection	Stopping of the unit after 8 alarms Stopping of the unit after 16 alarms
Logic protections reset	Manual , Remote or Automatically every 24 hours
Controls	Mains - DB 15 Connector (Stand-by and Reset command)
Alarm	Excessive output SWR (red led) 50 W adj. – Alarm (red led) - Stand –by (yellow led) - Mains - DC out – ALC
Type	Solid state direct FM frequency

REMOTE CONTROL	
Output Connector	RS232 interface Connector DB9 Male – Two Connector DB9 Female programmable – RS 485 - Connector DB15 Male
Output Connector Analogue	Signal proportional to the output voltage of the power supply module Signal proportional to the current supplied by the power supply module Signal proportional to the square root of the direct power Signal proportional to the square root of the reflected power
Output Connector Digital	“Stand-by” signal (contact is N.C. in normal operations, connected to GND in stand-by mode) “N.O.” alarm contact (contact is not connected in normal operation, connected to pin 15 in alarm) “N.C.” alarm contact (connected to pin 15 in alarm, contact is not connected in normal operation)
Input Connector	Stand-by command Reset command
Ethernet interface (option)	Connector RJ 46 WEB browser or SNMP client
STANDARDS COMPLIANCE	
Radio spectrum	ETSI 302-018
EMC	ETSI 301-489
Safety	EN 60950 - EN 60215
TEMPERATURE	
Operating range	0° to 45° C
Storage range	- 40° to 70° C
Maximum relative Humidity	90% @ 26 °C non condensing
Max Operating Altitude	2500 mt. a.s.l.



SPECIFICATIONS	VL 05	VL 1
RF output power	From 50 to 500 W	From 100 to 1000 W
Output Connector	7/16 Type Female	7/16 Type Female
Dimensions (WxHxD) mm	482 x 132 x 700 (550 x 220 x 800 Package)	482 x 132 x 700 (550 x 270 x 800 Package)
Weight	17 Kg (19 Kg. Package)	18 Kg (20 Kg. Package)
Power consumption	Approx. < 900 VA	Approx. < 1800 VA
Number of power supplies	230 Vac±15%, single phase;	230 Vac±15%, single phase;
Number of fans	2 blowers 24 V dc	2 blowers 24 V dc

FM Power Amplifier

VL 3 – 2500 W

This innovative and compact amplifier is able to satisfy the strictest requests of all end-users who are looking for high reliable and top-quality equipment at competitive prices.

All the declared operational parameters are assured in the entire frequency range and for extreme environmental conditions.

Thanks to the advanced approach in the design focused on low power consumption and linearity over the entire operative band, we estimate a 20% longer MTBF with respect to the average standard equipment available in the market.



The equipment complies with the RTTE European Requirements.

- Mosfet technology
- User friendly for monitoring and control
- Double stage power supply
- Fast and multiple protections
- Modular design for quick and easy maintenance
- Flexible telemetry system and remote control
- N+1 Hardware and software control facility

CODE	MODEL	DESCRIPTION
F869	VL 3	2500 W Power Amplifier 87.5-108 MHz

Technical data

RF OUTPUT SPECIFICATIONS		REMOTE CONTROL	
Range	87,5 ÷ 108 MHz	Output Connector	RS232 interface Connector DB9 Male – Two Connector DB9 Female programmable – RS 485 – Connector DB15 Male
Overall efficiency	Better than 58 %	Output Connector Analogue	Signal proportional to the output voltage of the power supply module Signal proportional to the current supplied by the power supply module Signal proportional to the square root of the direct power Signal proportional to the square root of the reflected power
Impedance RF Connector	50 Ohm input and output	Output Connector Digital	“Stand-by” signal (contact is N.C. in normal operations, connected to GND in stand-by mode) “N.O.” alarm contact (contact is not connected in normal operation, connected to pin 15 in alarm) “N.C.” alarm contact (connected to pin 15 in alarm, contact is not connected in normal operation)
Output power stability	± 3 %	Input Connector	Stand-by command Reset command
Harmonics suppression	≥ - 80 dBc (typically better than 90 dBc)	Ethernet interface (option)	Connector RJ 46 WEB browser or SNMP client
Spurious Emission	< 1 µW (without Modulation)	STANDARDS COMPLIANCE	
Residual Asynchrony AM	- 74 dB Weighed	Radio spectrum	ETSI 302-018
Residual Synchrony AM	- 58 dB Weighed	EMC	ETSI 301-489
Probe	BNC connector RF – 60 dBc	Safety	EN 60950 - EN 60215
POWER SUPPLY		TEMPERATURE	
Type	Switch mode (Double conversion voltage direct mains)	Operating range	0° to 45° C
Protections	RF Amplifier module over-temperature 70 Excessive reflected power Permissible VSWR ≤ 1.5	Storage range	- 40° to 70° C
Programmable logic protection	Stopping of the unit after 8 alarms Stopping of the unit after 16 alarms	Maximum relative Humidity	90% @ 26 °C non condensing
Logic protections reset	Manual , Remote or Automatically every 24 hours	Max Operating Altitude	2500 mt. a.s.l.
Controls	Mains - DB 15 Connector (Stand-by and Reset command)		
Alarm	Excessive output SWR (red led) 50 W adj. – Alarm (red led) - Stand –by (yellow led) - Mains - DC out – ALC		
Type	Solid state direct FM frequency		



SPECIFICATIONS	VL3
RF output power	2500 W
Nr. of Transistors	8 MOS-FET SD 2942
RF Input (Nominal Level)	40 W
Output Connector	7/8 EIA
Dimensions (WxHxD) mm	(482 x 220 x 700) + (482 x 88 x 700)
Weight	30 + 14 Kg
Power consumption	Approx. < 4800 VA
Power supply req.	three-phase 380 Vac ± 15% / 230 Vac mono-phase
Nr. of power supply boards	3
Number of fans	2 blowers for each PA & PS module

FM Power Amplifiers

VL 5 – 5 KW

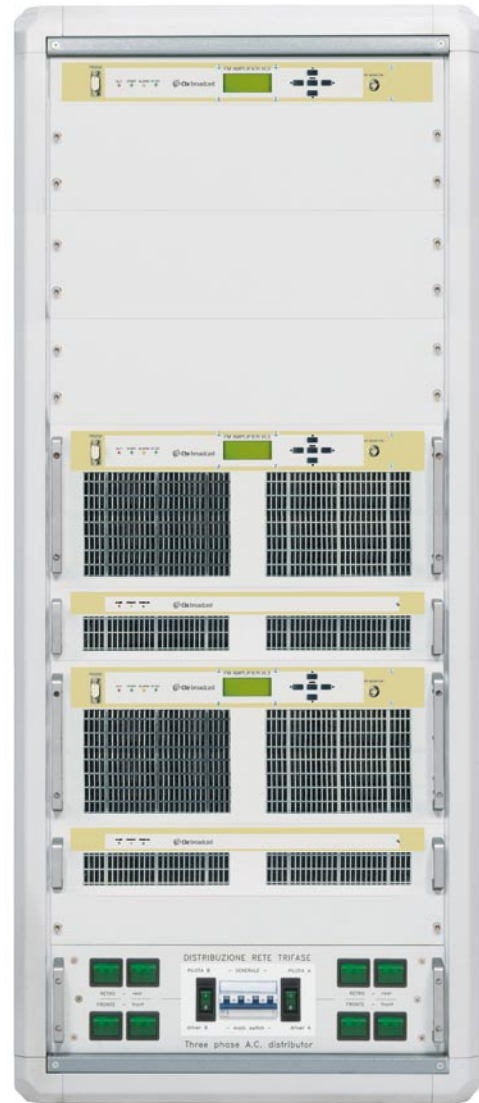
VL 10 – 10 KW

VL 20 – 20 KW

This innovative and compact amplifier is able to satisfy the strictest requests of all end-users who are looking for high reliable and top-quality equipment at competitive prices. All the declared operational parameters are assured in the entire frequency range and for extreme environmental conditions.

By means of the advanced approach in the design focused on low power consumption and linearity over the entire operative band, we estimate a 20% longer MTBF with respect to the average standard equipment available in the market. The equipment complies with the EN 302-018 European Requirement.

- Mosfet technology
- User friendly for monitoring and control
- Double stage power supply
- Fast and multiple protections
- Modular design for quick and easy maintenance
- Flexible telemetry system and remote control



The VL5 - 5 KW FM Power Amplifier is composed by two pieces of VL 3 - 2,5 kW FM Power amplifiers.
The VL10 - 10 KW FM Power Amplifier is composed by four pieces of VL 3 - 2,5 kW FM Power amplifiers.
The VL20 - 20 KW FM Power Amplifier is obtained by combining two VL 10-10 kW Power amplifiers

CODE	MODEL	DESCRIPTION
F870	VL 5	5 KW Power Amplifier 87,5-108 MHz
F871	VL 10	10 KW Power Amplifier 87,5-108 MHz
F871.02	VL 20	20 KW Power Amplifier 87,5-108 MHz
AVAILABLE OPTIONS	cabinet with air extraction hood	

Technical data

RF OUTPUT SPECIFICATIONS	
Range	87.5 ÷ 108 MHz
Overall efficiency	Better than 58 %
Impedance RF Connector	50 Ohm input and output
Output power stability	± 3 %
Harmonics suppression	≥ - 80 dBc (typically better than 90 dBc)
Spurious Emission	< 1 µW (without Modulation)
Residual Asynchrony AM	- 74 dB Weighed
Residual Synchrony AM	- 58 dB Weighed
Probe	BNC connector RF – 60 dBc
POWER SUPPLY	
Type	Switch mode (Double conversion voltage direct mains)
Protections	Overheating 70 °C (by means of the General Control stage) Over charge Short Circuit on the output voltage Crow – Bar protection: (Excessive output voltage limit) Excessive current consumption of the RF module Over-voltage
DESIGN DATA	
Display Meter	Forward power - Reflected power - DC supply voltage - DC supply current - Power supply temperature - Power amplifier voltage
Protections	RF Amplifier RF module over-temperature 70 Excessive reflected power Permissible VSWR ≤ 1.5
Programmable logic protection	Stopping of the unit after 8 alarms Stopping of the unit after 16 alarms
Logic protections reset	Manual , Remote or Automatically every 24 hours
Controls	Mains - DB 15 Connector (Stand-by and Reset command)
Alarm	Excessive output SWR (red led) 50 W adj. – Alarm (red led) - Stand –by (yellow led) - Mains - DC out – ALC
Type	Solid state direct FM frequency

REMOTE CONTROL	
Output Connector	RS232 interface Connector DB9 Male – Two DB9 Female programmable connectors – RS 485 - Connector DB15 Male
Output Connector Analogue	Signal proportional to the output voltage of the power supply module Signal proportional to the current supplied by the power supply module Signal proportional to the square root of the direct power Signal proportional to the square root of the reflected power
Output Connector Digital	“Stand-by” signal (contact is N.C. in normal operations, connected to GND in stand-by mode) “N.O.” alarm contact (contact is not connected in normal operation, connected to pin 15 in alarm) “N.C.” alarm contact (connected to pin 15 in alarm, contact is not connected in normal operation)
Input Connector	Stand-by command Reset command
Ethernet interface (option)	Connector RJ 46 WEB browser or SNMP client
STANDARDS COMPLIANCE	
Radio spectrum	ETS 302-018
EMC	ETS 301-489
Safety	EN 60950 - EN 60215
TEMPERATURE	
Operating range	0° to 45° C
Storage range	- 40° to 70° C
Maximum relative Humidity	90% @ 26 °C non condensing
Max Operating Altitude	2500 mt. a.s.l.



SPECIFICATIONS	VL 5	VL 10	VL 20
RF output power	5 KW	10 KW	20 KW
Nr. of Transistors	16 MOS-FET SD 2942	32 MOS-FET SD 2942	64 MOS-FET SD 2942
RF Input (Nominal Level)	80 W	150 W	250 W
Output Connector	1-5/8 EIA	1-5/8 EIA	3-1/8 EIA
Dimensions (WxHxD) mm	540 x 1380 x 1000	540 x 2000 x 1000	540 x 2000 x 1000 (2 pcs)
Weight	150 Kg	250 Kg	500 Kg
Power consumption	Approx. < 9500 VA	Approx. < 19000 VA	Approx. < 38000 VA
Power supply req.	three-phase 380 Vac ± 15%	three-phase 380 Vac ± 15%	three-phase 380 Vac ± 15%
Nr. of power supply boards	6	12	24
Number of fans	2 blowers for each PA & PS module	2 blowers for each PA & PS module	2 blowers for each PA & PS module

FM Power Amplifier

VL 10/HP – 10 KW

VL 20/HP – 20 KW

The VL 10K/HP belongs to the High Power VHF product family of FM Radio Transmitters fully solid state technology designed to obtain wide band, reliability, and high efficiency. These transmitters have been specifically designed to comply with the latest international standards and the requirements of advanced broadcasters, meeting tighter specifications than usually required, at an affordable cost.

Great care went into producing a Hi-Fi-quality modulated signal, with low residual noise and distortion.

The RF signal is also free from spurious and harmonic components to a higher degree than required by CCIR and most international standards.

The RF amplifier is made up by five RF modules (for the 10 KW) installed in the rack with HOT PLUGGABLE system, the nominal output power for each module is 2 KW; each RF module has its own independent switch-mode power supply unit selfprotected against overcurrent and overvoltage , as well the overtemperature, overdrive and VSWR for RF parameters.

Remote control facility by GSM or standard modem is available.



CODE	MODEL	DESCRIPTION
F673	VL 10/HP	10 KW Power Amplifier 87.5-108 MHz (40U cabinet included)
F688	VL 20/HP	20 KW Power Amplifier 87.5-108 MHz (2 x 40U cabinet included)
AVAILABLE OPTIONS	cabinet with air extraction hood	

Technical data

RF OUTPUT SPECIFICATIONS	
Range	87.5 ÷ 108 MHz
Overall efficiency	Better than 52 %
Impedance RF Connector	50 Ohm input and output
Output power stability	± 3 %
Harmonics suppression	≥ - 70 dBc
Spurious Emission	< -90 dBc
Residual Asynchrony AM	- 60 dB Weighed
Residual Synchrony AM	- 50 dB Weighed
Probe	BNC connector RF – 60 dBc
POWER SUPPLY	
Type	One power supply DC/DC each RF module
Protections	Overheating 70 °C (by means of the General Control stage) Over charge Short Circuit on the output voltage Crow – Bar protection: (Excessive output voltage limit) Excessive current consumption of the RF module Over-voltage
DESIGN DATA	
Display Meter	Forward power - Reflected power - DC supply voltage - DC supply current - Power supply temperature - Power amplifier voltage
Protections	RF Amplifier RF module over-temperature 70 Excessive reflected power Permissible VSWR ≤ 1.5
Programmable logic protection	Trimmer which selects the RF alarm threshold
Logic protections reset	Manual , Remote or Automatically every 24 hours

Controls	Mains - DB 15 Connector
Alarm	Excessive output SWR (red led) – Alarm (red led) – Stand –by (yellow led) - Mains - DC out – ALC
Type	Solid state direct FM frequency
Pre –emphasis	Flat or 75 or 50 µs
REMOTE CONTROL	
Output Connector	DB 25F Connector for the Remote control – DB 25M Connector for equipment control - DB9 Female programmable – DB15F Connector for Check Panel – DB 37F Connector for auxiliary
Input Connector	Stand-by command Reset command
STANDARDS COMPLIANCE	
Radio spectrum	ETSI 300-384
EMC	ETSI 447
Safety	EN 60950 - EN 60215
TEMPERATURE	
Nominal range	0° to 45° C (Meets ETS 300 019 norms)
Operating range	- 5° to 45° C
Storage range	- 40° to 70° C
Maximum relative Humidity	90% @ 26 °C non condensing
Max Operating Altitude	2500 mt. a.s.l.



SPECIFICATIONS	VL 10/HP	VL 20/HP
RF output power	10 KW	20 KW
Nr. of Transistors	40 MOS-FET BLF 278	80 MOS FET BLF 278
RF Input (Nominal Level)	20 W	20 W
Output Connector	1-5/8 EIA	3-1/8 EIA
Dimensions (WxHxD) mm	600 x 2000 x 1200	600 x 2000 x 1200 (2 pcs)
Weight	630 Kg	1100 Kg
Power consumption	Approx. < 19000 VA	Approx. < 38000 VA
Power supply req.	three-phase 380 Vac ± 15%	three-phase 380 Vac ± 15%
Nr. of power supply boards	5 DC/DC	10 DC/DC
Number of fans	2 blowers for each PA & PS module	2 blowers for each PA & PS module

Digital Audio Processor

CONDOR 50

The CONDOR 50 is a 5 band digital audio processor integrating a bass enhancer, a noise gate, a digital stereo enhancer, a MPX stereo coder and a RDS coder.

The CONDOR 50 has two RS 232 serial ports optically isolated (not optically coupled) which assure maximum immunity for disturbing noises coming from other equipment.

The equipment is supplied with a PC control software for both local and remote control, to greatly simplify the management to broadcasters.

Through a standard PC, the software allows the remote

monitoring and control of all the processor stages (starting from the generation of the MPX signal at AGC level) as well as the statement of the messages and information provided by the RDS encoder.

By means of its exclusive design, the CONDOR 50 allows an extraordinary saving of space and money, since it includes four digital units in a single box, thus avoiding compatibility problems with the connection to any type of equipment and manufacturers.



The CONDOR 50, fully digital unit based on 9 powerful DSP, features:

- 5 band digital processor operated by 30 factory pre-sets programmed curves.
- Editing up to 10 different user pre-sets (in non-volatile memory) personalised equalizations, easily saveable and recallable.
- Setting parameters to create a unique sound, which will identify the radio station in an unmistakable way.

Alternative parameters that can be set are:

Super Bass Type, Super Bass Level, Bass Compressor, Mid1 Compressor, Mid2 Compressor, Mid3 Compressor, High Compressor, Broadband Density, Brilliance.

Digital MPX clipper built-in into the Stereo coder, assuring no audible artefacts and a perfect control of max frequency deviation.

Digital stereo enhancer with setting parameters, needed to reach the psychoacoustic desired effect. This integrated feature allows maximum expression of stereophonic effect and full control of the parameters without affecting the modulation stability.

CODE	MODEL	DESCRIPTION
F519.2	CONDOR 50	Digital 5 Band Audio Processor
F519.04	CONDOR 50A	Digital 5 Band Audio Processor with Option A
F519.05	CONDOR 50B	Digital 5 Band Audio Processor with Option B
F519.03	CONDOR 50AB	Digital 5 Band Audio Processor with Option A + B
AVAILABLE OPTIONS:		Digital input AES/EBU - Digital coder RDS - SPDIF optical and coaxial.

Technical data

INPUT SIGNAL			
ANALOGUE INPUT		DIGITAL INPUT	
Conversion	24 bit	Connectors	Type XLR female Optical standard connector tos-link
Connectors	Type XLR female	Formats	AES/EBU, S/PDIF, IEC60958, EIAJCP1201
Sensitivity	-30 dBu to 22 dBu	Sample Rates	32KHz / 44.1 KHz / 48 KHz / 96 KHz with automatic selection and jitter correction
Maximum Input Level	22 dBu	Connectors	Type XLR female input and Optical input
Impedance	600 Ω bal. or 10 KΩ unbal., MI – suppressed	AGC Range	± 20 dB
AGC Gain Offset	± 6 dB	AGC Speed	Adjustable from 0 to 6 dB/sec.
AGC Range	± 20 dB	RDS INPUT	
AGC Speed	Adjustable from 0 to 6 dB/sec	Input	-40 to 0 dBm for ± 2 KHz of main carrier
BY-PASS MODE (Analogue Input, AGC = Off, Gain Offset = 0 dB, Output Level = 0 dB)		Impedance	10 KΩ
		Connectors	BNC floating over chassis, EMI sup.
SCA INPUT			
Frequency Response	20 Hz ÷ 21 KHz (± 0.3 dB)	Input	-40 to 0 dBm for ± 2 KHz of main carrier
Output Noise	-102 dB (A-weighted)	Impedance	10 KΩ
Total Harmonics Distortion	0.005 %	Connectors	BNC floating over chassis, EMI sup.
Total Harmonics Distortion + Noise	-95 dB		
Pass Band Ripple	± 0.01 dB		
INPUT FILTER CHARACTERISTICS			
High Pass	30 Hz (IIR-4th Order)		
SIGNAL PROCESS (Five Bands Process Algorithm) Filters	Band Pass 30 Hz ÷ 200 Hz (IIR-4th Order-Butterworth) Band Pass 200 Hz ÷ 1.5 KHz (IIR-4th Order-Butterworth) Band Pass 1.5 KHz ÷ 4.8 KHz (IIR-4th Order-Butterworth) Band Pass 4.8 KHz ÷ 9.5 KHz (IIR-4th Order-Butterworth) Band Pass 9.5 KHz ÷ 15 Hz (IIR-4th Order-Butterworth) Bass Enhancer Filter (Programmable) HF Limiter Filter: (IIR 2nd , 6 KHz) High Frequency Denoiser: Threshold Adjustable - 51 ÷ - 80 dB		



Low Pass	15 KHz (FIR-84 Taps, 15 KHz / -0.1 dB, 17 KHz / -70 dB)		
Control	Super Bass Type (Disco Soft Bass, Club Long Bass, Tight Hard Bass) Super Bass level (0 ÷ +12 dB) Bass Level (± 6) Mid1 Level (± 6) Mid2 Level (± 6) Mid3 Level (± 6) High Level (± 6) Broadband Density (0 ÷ +12 dB) Pre-set: 30 pre-set factory programmed and 10 user-editable		
REMOTE CONTROL (2 x RS232 optically decoupled)		STEREO ENHANCER MODULE (Controls)	
Satellite Date	4800 baud	Effect Depth	Effect Depth
PC Host Communications	19200 Baud	Effect Band	3 KHz / 5 KHz / 8 KHz / 15 KHz
Control Link Mode	38400 Baud	Effect Level	-29 dBu to -6 dBu
MPX MODULE		RDS MODULE (standards EBU service)	
Conversion	16 bit		
Pilot Frequency	19 KHz ± 0.001 %	PS	Program Service Name
Pilot Injection	Adjustable from -26 dB to -14 dB	PI	Program Identifier
Pilot Phase	Adjustable 6 degrees	PTY	Program Type
S/N	> 90 dB	TA	Traffic Announcement
Stereo Separation	> 65 dB	TP	Traffic Program
Cross-talk Main to Sub	> 65 dB	M/S	Music/Speech
Cross-talk Sub to Main	> 65 dB	AF	Alternative Frequency
38 KHz Subcarrier Suppression	> 75 dB	RT	Radio Text
Composite output level	-∞ to +12 dB	PIN	Program
Impedance	50 Ohm	DI	Decoder Identifier
Output Connectors	BNC floating over chassis, EMI sup.	IH	In House Applications
Pilot reference output	TTL Level Wave	EM	Emergency Messages
Pilot reference phase error	± 8 degrees		

SPECIFICATIONS	CONDOR 50
Power supplies	From 220/230 V (110/115 V internal setting); 50-60Hz, single phase.
Dimensions (W x H x D) mm	482 x 44 x 352 (570 x 130 x 420 Package)
Weight	6 Kg (7 Kg. Package)
Output filter characteristics	Low Pass 15 KHz (FIR-84 Taps, 15 KHz / -0.1 dB, 17 KHz / -70 dB)
Output Connectors	Type XLR male
Conversion	24 bit Codec
Configuration	Pre-emphasized (50µs or 75 µs) internal or external
Output Level	-4 dBu to 20 dBu (Adjustable with 1 dBu Steps)
Output Impedance	600 Ohm balanced EMI suppressed
Input / Output Delay	< 1.5 m sec.
Tone generation	1 KHz, Ref 100 % Modulation

Radio Data System encoder

CR 102

The CR 102 is a friendly use dynamic RDS encoder which supports all the most popular services and features used by Broadcasters. The equipment provides:

- Full-Digital RDS coder total software remote control
- Advanced dynamic PS management (i-PS technology)
- Easy interface to hard disk automation systems

RDS characters customizable for different Countries
- Dedicated SW interface for DJ and announcers.
The CR 102 specifications and benefits have been accurately designed to satisfy the most demanding requirements concerning the RDS generation in the broadcasting field.



Using state-of-art, high-speed DSP technology, CR 102 ensures the purest modulation quality (the whole processing is performed by phase linear filters).

Its digital architecture also guarantees long term reliability and easy firmware updates.

A powerful PC control software is integrated in the equipment.

The CR 102 allows the control and setting in an easy and intuitive way of all RDS data and of signal generation parameters (level and phase, synchronism source, etc).

The basic software screen, always displays in real time PS and RT content currently on air, allowing a full and immediate monitoring of RDS broadcasting, even when an FM tuner is not available.

A software module available as an option (i-PS technology), further boosts the new PS management features: it eliminates every PS programming constraint leaving maximum freedom in terms of message length, save / recalling facilities and message editing masks.

Any text can be entered and broadcasted 'on-the-fly', both as a full PS sequence or in a scrolling mode.

Furthermore, featuring a true ASCII communication protocol, i-PS software module enables the CR 102 coder to be easily and quickly interfaced to any hard disk automation system, for song and artist identification on PS fields and much more...!

CODE	MODEL	DESCRIPTION
F827	CR 102	Digital Radio Data System (RDS) Coder
F827.01	CR 102-IPS	Digital Radio Data System (RDS) Coder with Instant PS
AVAILABLE OPTIONS	Instants PS software - USB Communication interface 1 USB + 1 RS-232 port	

Technical data

RDS MODULATIONS	
Signal generation	Meets or exceeds all CENELEC EN 50067 (1998) requirements
Sub-carrier freq.	57 kHz \pm 3 Hz
Bandwidth	\pm 2.5 kHz (-60dB) / \pm 3.0 kHz (-80dB)
Synchronization	to ext. pilot tone or MPX signal Automatic switchover to int. osc. in case of absence or low quality of the ext ref. signal
RDS output level	0 \div 1200 mVpp (5 mVpp steps)
Linear Distortion	0.01 dB
RDS phase	\pm 120 deg (ref to MPX pilot). 1 deg step
Ext MPX summation	Ref to AUX IN 1&2 specifications
AUX INPUT (1 and 2)	
Connector	Type floating BNC, EMI suppressed
Pass-through Level	-40dB \div +20dB trim adj. max 24 Vpp inp
Distortion	< 0.03 %
Frequency response	30 Hz \div 80 KHz +/- 0.1dB
Input Impedance	> 10 Kohm
Purpose	wide band MPX, SCA, RDS inputs
SYNC-IN & SYNC-OUT	
Connector	Type floating BNC, EMI suppressed
Sync-In	TTL for RDS synch. (ETS compliant)
Sync-Out	Not Used

RDS PROGRAMMING	
Command formats	compliant to UECP Forum document SPB 490 (Version 5.1 - 22.08.97) + extended manufacturer's commands list ASCII interface for dynamic mode only
Static services	DI, PI, TP, TA, M/S, RT, AF, PS, PTY
Dynamic services	PS SEQUENCE, PS SCROLLING
RDS groups	0A (75%), 2A (25%) – FIXED SEQUENCE (0A, 0A, 0A, 2A)
Character tables	ISO 8859-1 (Latin 1), 8859-2 (Latin 2), 8859-5 (Cyrillic), 8859-7 (Greek), 8859-9 (Turkish), 8859-10 (Nordic)
AF lists	24, containing up to 25 freq each one
PS (basic version)	8 pages containing 20 PS each one + 1 Scrolling message - 24 hours / day scheduling capabilities
RT	8, with 24 Hours Day scheduling capabilities
PS (i-PS option)	8 pages containing 48 PS each one + 32 scrolling messages – instant broadcasting capabilities (up to 384 dynamic PS includes software dedicated interface for DJ and ASCII programming support)
REMOTE CONTROL	
Output Connector	2 x RS-232
Connection Rate	19200 Baud
Communication	Dedicated Remote Control software (supplied) for Win 95, 98, XP, NT, 2000 accordingly to UECP. SPB 490 (5.1) ASCII Interface (with i-PS option installed)
Input Connector	3, optoinsulated
Connector	SubD 15 pin, female
Purpose	TP, TA, M/S flag switching
TEMPERATURE	
Nominal range	0° to 45° C (Meets ETS 300 019 requirements)



SPECIFICATIONS	
	CR102
Output Connector	type floating BNC, EMI suppr. (50 Ohm)
Dimensions (W x H x D) mm	482 x 44 x 352 (570 x 130 x 420 Package)
Weight	10 Kg (12.6Kg. Package)
Power consumption	Approx. < 10 VA
Number of power supplies	From 220/230 V (110/115 V internal setting); 50-60Hz, single phase.
DC Power Supply	24 V
Number of fans	1 blower 220 V ac

DAB VHF Band III & L Band Transmitter

DAB 04

This new and fully integrated transmitter for DAB applications has been realized in 1U rack space only, making its design truly unique.

The equipment has been carefully designed to satisfy the needs of the professional Broadcasters, in perfect compliance with the revolution now taking place worldwide in broadcasting Digital Radio.

The robust and effective RF modulation technology,

provides the benefit of superior coverage in non-line of sight situations or even in mobile environments with severe multi-path interferences.

The DAB 04 includes all the subsystems of a standard DAB transmitter VHF band III or L Band.

Our DAB Series medium power Radio Transmitters can be matched with VHF Band III power amplifiers, or with L Band power amplifiers.



- ETS 300 401, 300 799 and EU147 compliant
- Digital IQ (ETS 300 798), IF and RF outputs
- T1 and E1 input rates supported
- Programmable static delay from 39 msec to 1.6 seconds
- Digital Pre-corrector
- SNMP remote control provided as an option
- RS 232 and RS 485 control provided as an option
- Internal GPS receiver provided as an option
- Auto Single Frequency Network setup function

CODE	MODEL	DESCRIPTION
F900	DAB 04	Professional DAB Modulator IF output
AVAILABLE OPTIONS	Integrated GPS receiver	

Technical data

FREQUENCY				
Range	VHF Band III: Channel 5A to 13 F (174.928 to 239.200 MHz) L Band: 1450 – 1550 Mhz			
Delay compensation	Up to 1.6 Seconds in steps of 488 ns			
Transmitter Offset Delay	0 to 2047 microseconds			
Network Padding Delay	0 to 1 Second Automatically adjusted for each NA input.			
Setting mode	488 nS steps			
RF OUTPUT SPECIFICATIONS				
Mode	Mode 1	Mode 2	Mode 3	Mode 4
Processing Delay	111000uS	39000uS	39000uS	63000uS
Transmitter Trimming Delay	111000 to 200000 uS	39000 to 120000 uS	39000 to 120000 uS	63000 to 150000 uS
RF Stability MFN	+/- 10 Hz	+/- 40 Hz	+/- 80 Hz	+/- 20 Hz
RF Stability SFN	< 10 Hz	< 40 Hz	3 < 80 Hz	< 20 Hz
Stability of Frequency	1 Hz over 3 months			
Shoulder	< 45 dBc (typically)			
Probe	BNC connector RF – 40 dB; BNC connector LF			
INPUT PARAMETERS				
Input connector / Impedance	10 KOhm unbal., 2 x BNC female Connector			
Selection	Dual NA or dual NI (Auto mode Inhibited) Automatic mode (seamless redundancy switchover between NA input 1 & NA input 2)			
Type	ETI(NI) 2.048 MHz short haul or ETI(NA) protocols with support for either T1 or E1			
Input Error conditions CRC Violations	User selectable Parameters to define Output muting (on-off and level) 1) muting off - on 2) number of detected errors from 1 to 6 3) number of frames to be detected over N= 10 to 60			
Input Error conditions Reset period	User selectable Parameter to define how long the modulator should wait before restoring its output. number of frames to be error free N = 20 to 200			
OUTPUT PARAMETERS				
Input connector / Impedance	1 DB 25 female type Digital I/Q 8 bit interleaved at 4MHz			
Output level	ECL-10k			
Stream timing	Auto Selects: GPS as preference with auto switch over to internal. GPS: Locks the reference to GPS reference. Internal: Locks the reference to Internal frequency reference. Input stream 1: Takes it's timing from input stream 1. Input stream 2: Takes it's timing from input stream 2.			
Analogue Modulation	Directly applied digitally at LF.			
Number of bits	15 bits using 64 MHz samples			
DAB MODE				
All modes	Selectable from the ETI stream (Auto) or manual from the front panel.			
MNSC Control	Transmitter Offset Delay Transmitter Identification Information TII			
Digital Linear Pre-correction	Allows correction of frequency domain distortion Tilt +/- 3dB; Sag +/- 3dB; S-Curve +/- 2dB; Group Delay +/- 1uSec			
Digital Non Linear Pre-correction	Corrects for the non linear characteristic of the transmitter. 3rd and 5th order amplitude Range: 0 to 99.99 3rd and 5th order phase Range: -240 to +240 degrees			
Memory	6 sets of Non Linear figures PC Stored			
Peak clipping adjustment	Range of back off: 6 - 12 dB.			
Differential delay between carriers	Less than 2.5uSeconds between any carrier			
Local Control Interface	Interface no. 1 Front panel and keypad Password protected Interface standard no. 2: RS 232, Type: DB 9 (M) Protocol: TBD Password protected			
Frequency reference input	10 MHz, BNC 50 Ohm			
Time reference input	1 PPS, BNC 50 Ohm			
ALARM				
Internal Alarms	Complete list TBD, GPS Failure of RF Input Internal failure			
Rear Panel Alarm contacts	10 voltage free, contacts. High impedance indicating a Fault Low impedance indicating correct operation User configurable from any of the available internal alarms User configurable Filtering scheme of up to 10 sec for each alarm			
REMOTE CONTROL				
Input / Output Connector	All front panel commands available (Alarm, Modulator configuration)			
Ethernet interface (option)	Connector RJ 46 WEB browser or SNMP client			
STANDARDS COMPLIANCE				
Modulation	ETSI 300-401; Out of Band spurious TBA; Center carrier level TBA			
Interface	ETSI 300 799			
EMC	ETSI 447			
Safety	EN 60950 - EN 60215			
TEMPERATURE				
Nominal range	0° to 45° C (Meets ETS 300 019 requirements)			
Maximum relative Humidity	90% non condensing			
Max Operating Altitude	2500 mt. a.s.l.			



SPECIFICATIONS	DAB 04
IF output level	adjustable -10 to 0 dBm
Output Connector	3 x N Type Female 50 Ohm
Dimensions (W x H X D) mm	482 x 44 x 483
Weight	6 Kg
Power consumption	Approx. < 25 VA
Nr. of power supply boards	1 from 230 V a.c. ± 20%

FM BROADCASTING DIGITAL EXCITER

DEX 30 - 30W

DEX 100 - 100W

DEX 250 - 250W

These new state-of-the-art digital exciter are in available both Mono/MPX and Stereo version with output power 30W to 100W. They are available in multiple versions they meet the specific requirements for different needs. High accuracy is obtained by using the built-in meter. Telecontrol and telemeasurement is possible via any type of computer.

The complete set of operation parameters are controlled by PC, and there is no readjustment in the event of change of the carrier frequency. The

simplicity of operation allows significant savings in maintenance costs. All operation functions are easy to access and to follow.

Digital modulation and carrier frequency guarantee absolute and long-lasting stability. Minimum shifts in the carrier frequency are possible leading to best results in the broadcast service tuning offset facility. With these digital exciters signal-to-noise ratio and attenuation is achieved, with results of over 10dB better than any other top-quality analogue exciter.



- Mono/MPX version • Input MPX, SCA and RDS

- Stereo version • Digital input AES/EBU

CODE	MODEL	DESCRIPTION
F585	DEX 30/M	30 W Mono/MPX Digital Exciter
F585.03	DEX 30/S	30 W Stereo Digital Exciter
F670	DEX 100/M	100 W Mono/MPX Digital Exciter
F671	DEX 100/S	100 W Stereo Digital Exciter
AVAILABLE OPTIONS		

Technical data

RF OUTPUT	
Frequency Band	87.5 ÷ 108 Mhz (adjustable by 10 kHz steps)
Frequency Stability	± 1000 Hz per year, 60 Mhz internal reference, 10 MHz external reference
RF Monitory	0,5 V eff on 50 Ω BNC/F connector
AM noise	≥ 65 dB not weighted, referred to 100% AM
AM noise	≥ 60 dB weighted CCIR 468-2, referred to 100% AM
AM Synchronous	≥ 60 dB with 500 Hz freq. Mod. and Δf ± 40 kHz, referred to 100% AM
In-band spurious	≥ 75 dBc
Out-band spurious	≥ 90 dBc
Harmonics attenuations	> 70 dBc
MODULATOR	
Class of emission	Frequency modulation F3E
Frequency deviation	± 75 kHz + 3 dB
Max deviation	± 75 kHz + N dB with N=0.5 ÷ 2 presettable, overmodulation dynamic control, pre-settable switch-off time
Temperature	0 ÷ 45°C in characteristics
Temperature	- 10 ÷ + 50°C in operation
RDS CODER static	According to CENELEC EN 50067 Specifications with the functions, in EPROM, PI, PS, SCROLL PS, AF (1 list of 25 frequencies)
MONO/MPX VERSION CHARACTERISTICS AUX. 1 (MPX) Input	
Band	30 Hz ÷ 75 kHz
Impedance	600 Ω or ≥ 2 kΩ pre-settable - Balanced - common mode rejection ≥ 40 dB (50 Hz ÷ 100 kHz) - Unbalanced pre-settable
Level	÷ 6 dB output (4.36 V pp) with Δf ± 75 kHz - Adjustment ± 6 dB with 0.1 dB steps
Amplitude-frequency	≥ ± 0.1 dB (30 Hz ÷ 53 kHz) - ≥ ± 0.2 dB (53 Hz ÷ 100 kHz)
Crosstalk	≥ 40 dB (30 ÷ 100 Hz) - ≥ 45 dB (40 ÷ 200 Hz) - ≥ 50 dB (200 Hz ÷ 15 kHz) (external stereocoder)
Intermodulation	d2 ≥ 0,05% d3 ≥ 0,05% (15 Hz ÷ 75 kHz)
Signal-to-Noise ratio unweighted	≥ 75 dB (RMS value, de-emphasis included), referred to 500 Hz modul frequency and Δf ± 75 kHz (external stereo coder)
Signal-to-Noise ratio	≥ 70 dB (RMS value, de-emphasis included), ref. to 500 Hz CCIR weighted - modul freq. and Δf ± 75 kHz (external stereocoder)
Signal-to-Noise ratio	≥ 70 dB (peak value, de emphasis included) referred to 468-2 CCIR weighted - 500 Hz modul freq. and Δf ± 75 kHz (ext. stereocoder)
Low-pass filters	15 kHz Mono - 53 kHz MPX Stereo - 72 kHz MPX Stereo + RDS 75 - 90 kHz MX + RDS + SCA
AUX. 2 (SCA) INPUT - AUX. 3 (RDS) INPUT	
Band	30 Hz ÷ 90 kHz
Impedance	600 Ω or ≥ 2 kΩ pre-settable - Balanced - rejection common mode ≥ 40 dB (50 Hz ÷ 90 kHz) Presettable when unbalanced

Level	1 Vpp with Δf ÷ 3 kHz Adjustment + 6 dB by 0.1 dB steps
Amplitude-Frequency	≤ ± 0.2 dB (30 Hz ÷ 90 kHz)
Intermodulation	d2 ≤ 0.05% d3 ≤ 0.05% (53 ÷ 90 kHz)
SCA MODULATOR (Option) - LF INPUT	
Band	30 Hz ÷ 7,5 kHz
Impedance	600 Ω or ≥ 2 k Ω pre-settable - Balanced - rejection common mode ≥ 40 dB (50 Hz ÷ 90 kHz) Presettable when unbalanced
Level	± 6 dBm Adjustment ± 6 dB by 0.1 dB step Δf ± 7,5 kHz
Pre-emphasis	50/75 μs ± 0.2 dB
Distortion	≤ ± 0.5% with Δf ± 6 kHz
Signal-to-Noise ratio	≥ 70 dB (RMS value, pre-emphasis included), referred to unweighted Δf ± 7,5 kHz subcarrier and Δf ± 6 kHz of MF
SCA/STEREO Crosstalk	≥ 65 dB referred to Δf ± 6 kHz of MF
STEREO/SCA Crosstalk	≥ 75 dB referred to Δf ± 75 kHz
MODULATOR	
Frequency	60 ± 85 kHz
Max deviation	± 10 kHz presettable
STEREO VERSION CHARACTERISTICS - AUX. 3 (AES/EBU) Digital Input - AUX. 2 (LEFT) Analogical input - AUX. 1 (RIGHT) Analogical Input	
Band	30 Hz ÷ 15 kHz
Impedance	600 Ω or ≥ 2 kΩ pre-settable - Balanced - rejection common mode ≥ 40 dB (50 Hz ÷ 100 kHz) Presettable when unbalanced
Low-pass Filter	15 kHz = 0dB 19 kHz ≥ 70 dB
Level	6 dBm with deviation ± 75 kHz adjusment ± 10 dB by 0.1 dB steps - Max level + 18 dBm
Pre-emphasis	50 or 75 μs pre-settable -Tolerance (50 Hz ÷ 15 kHz) ± 0.1 dB
Amplitude-Frequency	≤ ± 0.1 dB (30 Hz ÷ 15 kHz) referred to 500 Hz
Total Crosstalk	≥ 50 dB (30 Hz ÷ 10 kHz) ≥ 45 dB (10 KHz ÷ 15 KHz)
Distortion	≤ ± 0.05% with Δf ± 75 kHz (30 Hz ÷ 15 kHz)
Intermodulation	d2 ≤ 0.05% d3 ≤ 0.05% with Δf ± 75 kHz (5 Hz ÷ 15 kHz)
Signal-to-Noise ratio unweighted	≥ 75 dB (RMS value), referred to 500 Hz of modulated frequency and Δf ± 75 kHz
Signal-to-Noise ratio CCIR weighted	≥ 70 dB (RMS value), referred to 500 Hz modulated frequency and Δf ± 75 kHz
Signal-to-Noise ratio 468-2 CCIR weighted	≥ 70 dB (peak value), referred to 500 Hz of modulated frequency and Δf ± 40 kHz
Auxiliary Frequencies	
Driver frequency	19 kHz ± 0.5 Hz
Driver output	1 V p.p. sinusoidal or TTL
Sub-carrier frequency	38 kHz ± 1 Hz
Sub-carrier suppression	≥ 80 dB



SPECIFICATIONS	DEX 30 – DEX 100	DEX 250	DEX 30R – DEX 100R	DEX 250R
RF output power	30 W (100 W)	250 W	30 W (100 W)	250 W
Output Connector	N Type Female	N Type Female	N Type Female	N Type Female
Dimensions (W x H X D) mm	482 x 88 x 500	482 x 88 x 500	482 x 132 x 500	482 x 132 x 500
Weight	13 Kg	14 Kg	23 Kg	24 Kg
Power consumption	< 200 VA (< 400 VA)	Approx. < 750 VA	< 200 VA (< 400 VA)	Approx. < 750 VA
Power supplies requ.	230 Vac±15%	230 Vac±15%	230 Vac±15%	230 Vac±15%
Number of fans	1 blowers 24 V dc	2 blowers 24 V dc	1 blowers 24 V dc	2 blowers 24 V dc

FM Solid State Amplifier & Transmitter

VL 1000 PLUS – 1000 W

TX 1000 PLUS – 1000 W

VL 500 PLUS – 500 W

TX 500 PLUS – 500 W

The VL1000 PLUS is the new and modern 1 KW FM Amplifier manufactured by CTE International. The optimal solution for the design was found by following a state-of-the-art manufacturing method,

and by using high gain MOSFET transistors. This new sound and compact amplifier is able to satisfy the requests of all end-users who are looking for top quality at a competitive price.



Weight: only 32 Kg – for easy handling and maintenance
 Management software
 Remote and Local Control RS232/RS485
 Extremely competitive price
 Mono/MPX version • Input MPX, SCA and RDS
 Stereo version • Digital input AES/EBU

CODE	MODEL	DESCRIPTION
F636	VL500 PLUS	500 W Amplifier 87.5-108 MHz (11U cabinet included)
F636.01	VL500 PLUS	500 W Amplifier 87.5-108 MHz
F603	VL1000 PLUS	1000 W Amplifier 87.5-108 MHz (11U cabinet included)
F603.01	VL1000 PLUS	1000 W Amplifier 87.5-108 MHz
F685	TX 500 PLUS	500 W Stereo, Mono MPX Transmitter
F686	TX 1000 PLUS	1000 W Stereo, Mono MPX Transmitter
AVAILABLE OPTIONS		

Technical data

FREQUENCY RANGE	
Range	87,5 ÷ 108 MHz
Impedance	50 Ω input and output power
Input power	VL1000 PLUS - Max 20 W; ALC setting from 500 W to 1KW VL 500 PLUS - Max 10 W; ALC setting from 250 W to 500 W
Overall efficiency	Better than 52 %
RF OUTPUT SPECIFICATIONS	
Output power stability	± 3 %
Harmonics suppression	≥ - 80 dBc (typically better than 90 dBc)
Spurious Emission	< 1 mW (without Modulation)
Residual Asynchrony AM	- 74 dB Weighed
Residual Synchrony AM	- 58 dB Weighed
RF PROBE	- 60 dBc
POWER SUPPLY	
Type	Switch mode (Double conversion voltage mains direct)
Protections	Overheating 70 °C (by means the General Control) Over charge Short Circuit of the output voltage Crow – Bar protection: (Exceeding higher output voltage limit) Excessive “consumption” of the RF module (25 A max.) Over-voltage (253 V max.) Under-voltage (165 V off – 187 V on)
DESIGN DATA	
Display Meter	Forward power : 2 KW f.s. with log. scale Reflected power : 200 W f.s. with log. Scale DC supply voltage: 50 V f.s. with linear scale DC supply current: 50 A f.s. with linear scale Power supply temperature Power amplifier voltage
Protection RF Amplifier	RF module over-temperature 70 Excessive reflected power Permissible VSWR fff 1.5

Programmable logic protection	Stopping of the unit after 8 alarms Stopping of the unit after 16 alarms
Logic protections reset	Manual , Remote or Automatically every 24 hours
Controls	Mains DB 15 Connector (Stand-by and Reset command)
Alarm	Excessive output SWR (red led) 50 W adj. – Alarm (red led) - Stand –by (yellow led) Mains - DC out – ALC
REMOTE CONTROL (BNC AND DB 15 CONNECTORS)	
Connectors	Type BNC and DB 15
Input	Stand-by command Reset command
Analog output	Signal proportional to the output voltage of the power supply module (1 V ÷ 10 V) Signal proportional to the current supplied by the power supply module (1 V ÷ 10 A) Signal proportional to the square root of the direct power (5 V ÷ 500 W) Signal proportional to the square root of the reflected power (4 V ÷ 500 W)
Digital output	“Stand-by” signal (contact is N.C. in normal operations, connected to GND in stand-by mode) “N.O.” alarm contact (contact is not connected in normal operation, connected to pin 15 in alarm) “N.C.” alarm contact (connected to pin 15 in alarm, contact is not connected in normal operation)
TEMPERATURE	
Ambient range	0 ° to 45 ° C (operating - 10° to 50°)
Storage range	-40 ° to 70 ° C
Humidity	90 % @ 26 °C
Altitude	< 2500 mt. above sea level



SPECIFICATIONS	VL 500 PLUS	VL 1000 PLUS	TX 500 PLUS	TX 1000 PLUS
RF output power	500 W	1000 W	500 W	1000 W
Output Connector	7/16 Type Female	7/16 Type Female	7/16 Type Female	7/16 Type Female
Dimensions (W x H x D) mm	482 x 220 x 600	482 x 220 x 600	482 x 220 x 600	482 x 220 x 600
Weight	31 Kg	32 Kg	35 Kg	36 Kg
Power consumption	Approx. < 900 VA	Approx. < 1800 VA	Approx. < 975 VA	Approx. < 1875 VA
Power supplies requ.	230 Vac±15%, single phase;	230 Vac±15%, single phase;	230 Vac±15%, single phase;	230 Vac±15%, single phase;
Number of fans	2 blowers 24 V dc	2 blowers 24 V dc	2 blowers 24 V dc	2 blowers 24 V dc

DVB-T / DVB-H Modulator & Regenerative Transposer & MIP Inserter

EM 010 EM 010T
EM 010R EM 010A

The modulator EM 010 is designed to convert a Transport Stream (MPEG-2) into a COFDM on a frequency between 35 and 37 MHz. The generation and transmission of COFDM signals at 2k or 8k is possible with QPSK, 16QAM or 64QAM modulation with payloads up to 31.67 Mb/s. EM 010 complies with DVB-H standard thanks to 4k IFFT mode, DVB-H signalling in TPS-bits, cell-ID and 8k symbol interleaver also for 2k and 4k mode. The built-in SFN interface allows operations in precision offset conditions with frequency lock onto the GPS reference signal and compensation of the network delay. The unit includes a standard hierarchical capability and it is equipped with two ASI inputs.

The EM 010 can itself store up to ten linear and ten non-linear correction curves in the internal memory. The non-linear pre-corrector compensates the non-linearity introduced by RF power amplifiers (gain and phases vs. power level), while the linear pre-corrector compensates the group delay and distortions caused by output filters and combiners (level and group delay response vs. frequency). The correction characteristics are set-up using an intuitive and easy to use graphical user interface, the IMD Buster, designed for standard PCs with Windows operating system. A WEB interface that allows remote control through TCP/IP on Ethernet is also available as option.



The EM 010T is a complete agile transmitter, that covers a frequency range from 30 MHz to 1 GHz. The EM 010R Digital Re-Modulator covers applications to receive a DVB-T/H signal, demodulating the signal completely to MPEG-2 TS level thereby utilizing the built-in error correction capability of a DVB-T/H COFDM signal to provide a completely restored and error free signal that, finally, is modulated onto a fresh COFDM spectrum for re-transmission on a user selectable channel in accordance with the rules for channels coding and modulation specified in the DVB-T/H standard. The EM 010A is a device for inserting MIP information into a transport stream. The EM 010A must be installed at the head end of the network, before the transport stream is distributed to the individual transmitter. In accordance with the SFN standard, the timing information embedded in the MIP is referenced to external 10MHz and 1PPS clock references.

CODE	MODEL	DESCRIPTION
F843	EM 010	Professional DVB-T/H Modulator IF output
F843.01	EM 010T	1 mW rms UHF Agile DVB-T/H Digital Transmitter
F843.02	EM 010R	1 mW UHF Agile Regenerative Transposer DVB-T/H
F843.03	EM 010A	MIP Inserter DVB-T/H
AVAILABLE OPTIONS	6 MHz Bandwith - 5 MHz Bandwith - RF converter - WEB Browser - SNMP client - Precision TCXO (0,01 ppm) - 18 dBm output class A Amplifier - 20 dB attenuator for protection of RF output	

Technical data

FREQUENCY	
Range	30 - 1000MHz Adjustable (IF 35 - 37 MHz)
Internal Setting mode	1 Hz steps
Output frequency stability	Frequency stability Locked to external reference or 1 ppm reference
In band flatness	± 0.1 dB.
Output Power stability	± 0.5 dB
Output Return loss	> 16 dB
COFDM MODULATOR	
Input signal	MPEG-2 Transport Stream
Input data (payloads)	Rate from 3.73 to 31.67 Mbits/s in according to selected BW and mode
Transport packet length	188 bytes - 204 bytes (SPI)
IFFT	2k, 8K and 4k (DHB-H)
Guard intervals	1/4, 1/8, 1/16, 1/32
Code rates	1/2, 2/3, 3/4, 5/6, 7/8
Modulation	QPSK, 16QAM, 64QAM
Precision offset	Integrated (Exact 1 Hz steps @ all BW)
SFN function	Integrated
Network delay compensation	Automatic
Bandwidth	8 MHz, 7MHz, 6 MHz, 5 MHz
Eye aperture on vector constellation	> 32 dB (w/o I.F. filter)
Virtual elastic store function to prevent data overflow	Integrated
Serial data input	2 x ASI, BNC 75 Ohm
Frequency clock reference input	10 MHz, BNC 50 Ohm / > 1k Ohm, Level 100 mV - 3Vpp
Time reference input	1 PPS, BNC 50 Ohm / > 1k Ohm, Level 0-5V, Trigger: Positive transition
Reference output	TS clock signal
Hierarchical mode	16-QAM and 64-QAM in alpha-1, alpha-2 and alpha-4
Spectrum inversion	Inverted and non inverted selectable via front panel menu
Non-linear correction	Curve formats: S21 and VO/VI Amplitude scale: Linear and logarithmic Correction points: Max 256, user-defined position Gain correction: Max 12dB, subject to available headroom Phase correction: -6 to +30 degrees, subject to available headroom

Linear correction	Correction points: 21 Point spacing: 1/20 of nominal spectrum BW Amplitude correction: ±10dB Amplitude resolution: 0.01dB Group delay correction: ±1000ns
Test functions	Programmable carrier packet removal CW mode Null packet only stream
COFDM TRANSPOSER VERSION	
Input Frequency	30 - 945MHz (1 Hz steps resolution)
Input Impedance	50 Ohm N (Female) connector
Input field Level (QEF = BER 2E-4)	20dBuV to 120dBuV @ QPSK, CR1/2 36dBuV to 120dBuV @ 64QAM CR7/8
Input Return loss	> 10 dB
Selectivity	Defined as the maximum allowed level of the disturbing signal relative to the level of the wanted DVB-T signal for QEF reception of the wanted signal
OUTPUT SPECIFICATIONS	
BER	Zero over five hour period before RS decoding
MER	> 40 dB
Spectrum outside band	+/-3,8MHz: 0 dB +/-4,25MHz: <47dB +/-5,25MHz: <53dB
Harmonics emission	< -50 dBm (with output filter)
Spurious emission	< -50 dBm (with output filter)
REMOTE CONTROL	
Output Connector	RS232 interface Connector DB9 Male – Two DB9 Female programmable connectors - Alarms via separate floating relays (common make-break contacts, contact rating 60V / 0.2A 5W max)
Input Connector	Reset and muting control activated by ground closure
Ethernet interface (option)	Connector RJ 46 WEB browser or SNMP client
STANDARDS COMPLIANCE	
Modulation characteristics	ETSI 300-744
EMC	EN 300-489-1 EN 301 489-14
Safety	EN 60950 - EN 60215
TEMPERATURE	
Temperature Operating range	0° to 50° C (Meets ETS 300 019 requirements)
Maximum relative Humidity	90% non condensing
Max Operating Altitude	2500 mt. a.s.l.



SPECIFICATIONS	EM 010	EM 010R	EM 010A
Output power rms	IF From -2 to 8 dBm	+0 dBm (adj. +0 / -10 dB)	-
Output Connector	BNC Type Female 50 Ohm	BNC Type Female 50 Ohm	BNC Type Female 50 Ohm
Dimensions (W x H x D) mm	482 x 44 x 483	482 x 44 x 483	482 x 44 x 483
Weight	6 Kg	6 Kg	6 Kg
Power consumption	Approx. < 25 VA	Approx. < 25 VA	Approx. < 25 VA
Nr. of power supply boards	1 from 230 V a.c. ± 20%	1 from 230 V a.c. ± 20%	1 from 230 V a.c. ± 20%
DC Power Supply	Not included	Not included	Not included
Type of ventilation	Forced Air, 2 blowers	Forced Air, 2 blowers	Forced Air, 2 blowers

TV Analogue Professional Modulator

EMA 010

The EMA 010 television modulator is a high performance device which meets the strictest technical requirements necessary to obtain a really outstanding quality of the Television Signal. It is available in different versions for the PAL, SECAM, NTSC world standards.

The equipment is a single 19" 1U height mainframe: inside it, each module is located in a sealed

aluminium case for an outstanding shield protection and easy removing for quick service.

A front panel multifunction display is available to monitor all the main parameters that can be easily set by means of a keyboard placed on the front panel of the equipment.



- Multifunction Graphic Display
- SAW Vestigial Filter
- Synchronism Regenerator
- Group Delay and 8-cells Pre-corrector (excludible)
- Automatic White and Synchronism
- Limitation Circuit
- Multi-standard Modulator
- Differential Phase Pre-Corrector and ICPM

CODE	MODEL	DESCRIPTION
F858	EMA 010/E	Professional Television Mono IF output Modulator
F858.01	EMA 010/ES	Professional Television Stereo IF output Modulator
F858.02	EMA 010/EK	Professional Television Mono SECAM IF output Modulator
F858.03	EMA 010/ESK	Professional Television Stereo SECAM IF output Modulator
AVAILABLE OPTIONS	Stereo/Dual Sound Versions	

Technical data

VIDEO PARAMETERS	
Input connector	BNC type connector
Input impedance	75 Ohm
Input level	1 V p.p. \pm 6 dB
K factor	< 1 %
Tilt	< 1 %
Frequency response	\pm 0,5 dB (on the entire video band)
Differential gain	< \pm 1 %
Differential phase	< \pm 2 °
IF Output impedance	50 Ohm
IF Nicam	Optional 33.050 MHz (others upon request)
Input return loss	< 0 – 30 dB
Group delay	\pm 50 ns (Within the vision band)
S/N ratio (weighted)	> 68 dB (weighted according to CCIR) > 60 dB (unweighted according to CCIR)
Pre –emphasis	Flat or 75 or 50 μ s
Luminance Non Linearity	< \pm 2 %
Frame distortion	< 2 %
Line distortion	< 2 %
Vision IF	38,9 MHz

AUDIO PARAMETERS	
Input connector	XLR type male connector
Input impedance	600 Ohm (balanced) or > 10 kOhm (unbalanced) (jumper selectable)
Input level	0 dBm \pm 8 dB 0.5 step
Frequency response (30 Hz - 15 kHz)	\pm 0.5 dB (\pm 0.2 dB typically)
Audio pre-emphasis	Flat or 75 or 50 μ s
Distortion (30 Hz - 15 kHz)	< 0.3%
S/N ratio (un-weighted)	> 50 dB unweighted for 50 KHz deviation
Stereo / Dual mode	Available
Stereo Separation	> 37 dB (better than 40 dB typically)
Audio IF	33,4 MHz and 33,1578 MHz
REMOTE CONTROL	
Output Connector	RS232 interface Connector DB9 Male – RS 485 - Analog & Digital contact
Input Connector	Enabling
STANDARDS COMPLIANCE	
Frequency Spectrum	EN 302 296 – EN302 297
EMC	EN 300-489-1 EN 301 489-14
Safety	EN 60215
TEMPERATURE	
Temperature Operating range	0° to 50° C (Meets ETS 300 019 requirements)
Maximum relative Humidity	90% non condensing
Max Operating Altitude	2500 mt. a.s.l.



SPECIFICATIONS	EMA 010
IF output power	From -2 to 8 dBm
Output Connector	BNC Type Female
Dimensions (W x H X D) mm	482 x 44 x 483
Weight	6 Kg
Power consumption	Approx. < 25 VA
Nr. of power supply boards	1 from 230 V a.c. \pm 20%
DC Power Supply	48 V
Type of ventilation	Forced Air

DVB-T / DVB-H Transmitter & Regenerative Transposer

E 05-DU – 5 W

E 10-DU – 10 W

E 02-DU – 2,5 W

E 01-DU – 1 W

The E10-DU digital transmitter is designed to convert a Transport Stream into a Coded Orthogonal Frequency Division Multiplex (COFDM) with an output power of 10W rms.

The generation and transmission of COFDM signals at 2k, 4k or 8k is possible with QPSK, 16QAM or 64QAM modulation with payloads from 3,73 to 31.67 Mb/s.

Thanks to an internal 32-bit processor, the innovative software implemented in the equipment allows the elaboration of a zero error signal.

The integrated SFN interface allows operations in precision offset conditions with frequency lock onto

the GPS reference signal and compensation of the network delay.

The unit includes a standard hierarchical capability and it is equipped with four ASI inputs in Dual ASI both for uniform modulation and hierarchical modulation.

The friendly use of this digital transmitter, the sturdiness of the modular construction and its high performance capability, open up new perspectives about the realization of DVB-T/H networks both in SFN and MFN applications.

A WEB interface that allows remote control through TCP/IP on Ethernet is available as option.



Compliant with ETS 300 744 requirements
Channel Bandwidth 6, 7, 8 MHz all uniform
DVB-H support thanks to 4k IFFT mode, Cell-id and 8k symbol interleaver
Superior linear and non linear digital pre-corrector.
Dual ASI for each input (LP & HP)

MIP decoder for automatic configuration
De-jitter on input signal prior to transmission
GPS reference lock signal
Superior MER performance (designed to meet 45 dB)
All redundancy configurations available on request
(Dual driver; active reserve; N+1; 1+1)

CODE	MODEL	DESCRIPTION
F885.02	E 01-DU	1 W rms UHF DVB-T/H Digital Transmitter (4U out filter incl.)
F885.01	E 02-DU	2,5 W rms UHF DVB-T/H Digital Transmitter (4U out filter incl.)
F885.03	E 05-DU	5 W rms UHF DVB-T/H Digital Transmitter (4U out filter incl.)
F885.04	E 10-DU	10 W rms UHF DVB-T/H Digital Transmitter (4U out filter incl.)
AVAILABLE OPTIONS	6 MHz Bandwidth - 5 MHz Bandwidth - RF Agile converter – GPS Receiver - WEB Browser - SNMP client - Precision TCXO (0,01 ppm).	

Technical data

FREQUENCY	
Range	UHF (470-860MHz) VHF Band III (174-260 MHz)
Internal Setting mode	1 Hz steps
Output frequency stability	Frequency stability Locked to external reference or 1 ppm reference or 1 ppm
In band flatness	± 0.1 Db
Impedance RF Connector	50 Ohm
TRANSPOSER / REGENERATIVE VERSION	
Input Frequency	UHF (470-860MHz) - VHF Band III (174-260 MHz) - VHF Band I (45-90 MHz)
Input Impedance	50 Ohm N (Female) connector
Input Matching	> 26dB
Input Level Amplitude	-30 to -75 dBm
RF OUTPUT SPECIFICATIONS	
Output Power stability	± 0.5 dB
Intermodulation distortion	< -60 dB at rated output power (With pre-correction inserted)
Harmonics emission	< -75 dBc (with output filter)
Spurious emission	< -75 dBc (with output filter)
Impedance RF Connector	50 Ohm
BER	Zero over five hour period before RS decoding
MER	> 37 dB
Protections	Over power, Over voltage, Over current, Over temperature
Probe	IF monitor SMA connector (36.15 Mhz)
COFDM MODULATOR	
Input signal	MPEG Transport Stream
Input data	rate 3.73 to 31.67 Mbits/s (according to selected BW and mode)
Transport packet length	188 bytes - 204 bytes (SPI)
IFFT	2k, 8K and 4k (DHB-H)
Guard intervals	1/4, 1/8, 1/16, 1/32

Code rates	1/2, 2/3, 3/4, 5/6, 7/8
Modulation	QPSK, 16QAM, 64QAM
Precision offset	Integrated (Exact 1 Hz steps @ all BW)
SFN function	Integrated
Network delay compensation	Automatic
Bandwidth	8 MHz, 7MHz, 6 MHz, 5 MHz
Eye aperture on vector constellation w/o I.F. filter	> 32 dB
Virtual elastic store function to prevent data overflow	Integrated
Serial data input	4 x ASI, BNC 75 Ohm
Frequency reference input	10 MHz, BNC 50 Ohm
Time reference input	1 PPS, BNC 50 Ohm
Reference output	TS clock signal
Hierarchical mode	Integrated, all modes supported
Spectrum inversion	Supported
Test functions	Programmable carrier packet removal CW mode Null packet only stream
REMOTE CONTROL	
Output Connector	RS232 interface Connector DB9 Male – Two DB9 Female programmable connector - Alarms via separate relays
Input Connector	Reset and muting control activated by ground closure
Ethernet interface (option)	Connector RJ 46 WEB browser or SNMP client
STANDARDS COMPLIANCE	
Frequency Spectrum	EN 302 296 – EN302 297
EMC	EN 300-489-1 EN 301 489-14
Safety	EN 60215
TEMPERATURE	
Temperature Operating range	0° to 45° C (Meets ETS 300 019 requirements)
Maximum relative Humidity	90% non condensing
Max Operating Altitude	2500 mt. a.s.l.



SPECIFICATIONS	E 01-DU	E 02-DU	E 05-DU	E 10-DU
RF output power	1 W rms	2,5 W rms	5 W rms	10 W rms
Output Connector	N Type Female	N Type Female	N Type Female	N Type Female
Dimensions (W x H X D) mm	482 x 132 (+ 44) x 450	482 x 132 (+ 44) x 450	482 x 132 (+ 44) x 450	482 x 132 (+ 44) x 450
Weight	15 Kg	15 Kg	15 Kg	15 Kg
Power consumption	Approx. < 400 VA	Approx. < 400 VA	Approx. < 400 VA	Approx. < 400 VA
Nr. of power supply boards	1 from 230 V a.c. ± 20%	1 from 230 V a.c. ± 20%	1 from 230 V a.c. ± 20%	1 from 230 V a.c. ± 20%
DC Power Supply	48 V (36-60 V)	48 V (36-60 V)	48 V (36-60 V)	48 V (36-60 V)
Number of fans	2 blowers, 24 Vdc	2 blowers, 24 Vdc	2 blowers, 24 Vdc	2 blowers, 24 Vdc

DVB-T / DVB-H Transmitter & Regenerative Transposer

EK 50-DU – 50 W

The EK 50-DU Series digital transmitter is designed to convert a Transport Stream into a Coded Orthogonal Frequency Division Multiplex (COFDM) with an output power of 50 W rms. The generation and transmission of COFDM signals at 2k, 4k or 8k is possible with QPSK, 16QAM or 64QAM modulation with payloads from 3,73 to 31.67 Mbits/s. Thanks to an internal 32-bit processor, the innovative software implemented in the equipment allows the elaboration of a zero error signal. The integrated SFN interface allows operations in precision offset conditions with frequency lock onto

the GPS reference signal and compensation of the network delay.

The unit includes a standard hierarchical capability and it is equipped with four ASI inputs in Dual ASI both for uniform modulation and hierarchical modulation.

The friendly use of this digital transmitter, the sturdiness of the modular construction and its high performance capability, open up new perspectives about the realization of DVB-T/H networks both in SFN and MFN applications.

A WEB interface that allows remote control through TCP/IP on Ethernet is available as an option.



- Complies with ETS 300 744 requirements
- Channel Bandwidth 6, 7, 8 MHz all uniform
- DVB-H support thanks to 4k IFFT mode, Cell-id and 8k symbol interleaver
- Superior linear and non linear digital pre-corrector.
- Integrated Dual ASI for each input (LP & HP)
- MIP decoder for automatic configuration
- De-jitter on input signal prior to transmission
- GPS reference signal lock
- Superior MER performance (designed to meet 45 dB)
- All redundancy configurations available on request (Dual driver; active reserve; N+1; 1+1)

CODE	MODEL	DESCRIPTION
F885.05	EK 50-DU	50 W rms UHF DVB-T/H Digital Transmitter COMPACT
AVAILABLE OPTIONS	6 MHz Bandwidth - 5 MHz Bandwidth - RF Agile converter – GPS Receiver - WEB Browser - SNMP client - Precision TCXO (0,01 ppm).	

Technical data

FREQUENCY	
Range	UHF (470-860MHz) VHF Band III (174-260 MHz)
Internal Setting mode	1 Hz steps
Output frequency stability	Frequency stability Locked to external reference or 1 ppm reference or 1 ppm
In band flatness	± 0.1 Db
RF OUTPUT SPECIFICATIONS	
Output Power stability	± 0.5 dB
Intermodulation distortion	< -60 dB at rated output power (With pre-correction inserted)
Harmonics emission	< -75 dBc (with output filter)
Spurious emission	< -75 dBc (with output filter)
Impedance RF Connector	50 Ohm
BER	Zero over five hour period before RS decoding
MER	> 37 dB
Protections	Overpower, Over voltage, Over current, Over temperature
Probe	IF monitor SMA connector (36.15 Mhz)
TRANSPOSER / REGENERATIVE VERSION	
Input Frequency	UHF (470-860MHz) - VHF Band III (174-260 MHz) - VHF Band I (45-90 MHz)
Input Impedance	50 Ohm N (Female) connector
Input Matching	> 26dB
Input Level Amplitude	-30 to -75 dBm
COFDM MODULATOR	
Input signal	MPEG Transport Stream
Input data	rate 3.73 to 31.67 Mbits/s (according to selected BW and mode)
Transport packet length	188 bytes - 204 bytes (SPI)
IFFT	2k, 8K and 4k (DHB-H)
Guard intervals	1/4, 1/8, 1/16, 1/32
Code rates	1/2, 2/3, 3/4, 5/6, 7/8
Modulation	QPSK, 16QAM, 64QAM
Precision offset	Integrated (Exact 1 Hz steps @ all BW)
SFN function	Integrated
Network delay compensation	Automatic
Bandwidth	8 MHz, 7MHz, 6 MHz, 5 MHz
Eye aperture on vector constellation w/o I.F. filter	> 32 dB
Virtual elastic store function to prevent data overflow	Integrated
Serial data input	4 x ASI, BNC 75 Ohm
Frequency reference input	10 MHz, BNC 50 Ohm
Time reference input	1 PPS, BNC 50 Ohm
Reference output	TS clock signal
Hierarchical mode	Integrated, all modes supported
Spectrum inversion	Supported
Test functions	Programmable carrier packet removal CW mode Null packet only stream
REMOTE CONTROL	
Output Connector	RS232 interface Connector DB9 Male – Two DB9 Female programmable connectors - Alarms via separate relays
Input Connector	Reset and muting control activated by ground closure
Ethernet interface (option)	Connector RJ 46 WEB browser or SNMP client
STANDARDS COMPLIANCE	
Frequency Spectrum	EN 302 296 – EN302 297
EMC	EN 300-489-1 EN 301 489-14
Safety	EN 60215
TEMPERATURE	
Temperature Operating range	0° to 45° C (Meets ETS 300 019 requirements)
Maximum relative Humidity	90% non condensing
Max Operating Altitude	2500 mt. a.s.l.



SPECIFICATIONS	EK 50-DU
RF output power	50W rms
Output Connector	N Type Female
Dimensions (W x H X D) mm	482 x 132 (+ 44) x 450
Weight	28 Kg
Power consumption	Approx. < 600 VA
Nr. of power supply boards	1; 230 Vac ± 20%
DC Power Supply	48 V (36-60 V)

DVB-T / DVB-H Transposers

E 10-UU – 10 W

E 50-UU – 50 W

E 10-VV – 10 W

E 50-VV – 50 W

This new DVB-T/H Digital Transposer and Gap-filler family is suitable for applications in digital terrestrial broadcasting of TV programs, with the classical transposer method with relay reception and non

remodulation broadcasting.

All the equipment can be configured to operate also for analogue TV system configuration.

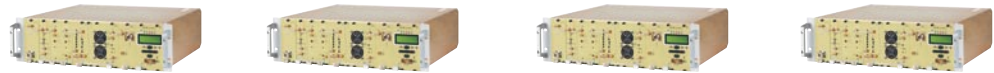


Compact design, modular construction, plug-in modules from the front panel
 LCD graphic display and soft keys to control the module parameters
 Superior class AB pre-corrector, for both digital and analogue TV for high power transmission or simplified class A pre-corrector for low power transmission
 Ultra low phase noise Local Oscillator
 Modules for relay applications
 Broadband amplifiers
 High reliability, long maintenance-free periods, friendly-service design
 All redundancy configurations available on request (Dual driver; active reserve; N+1; 1+1)
 WEB monitoring for remote control

CODE	MODEL	DESCRIPTION
F864	E 05-UU	5 W UHF Transposer with output filter
F864.01	E 10-UU	10 W UHF Transposer with output filter
F834	E 10-VV	10 W VHF Band III Transposer with output filter
F834.01	E 10-UV	10 W VHF Band III Transposer with output filter
F834.02	E 50-VU	50 W UHF Band Transposer with output filter
F835	E 50-UU	50 W UHF Band Transposer with output filter
AVAILABLE OPTIONS	Professional SAW filter - Precision TCXO	

Technical data

FREQUENCY	
Range	UHF (470-860MHz) - VHF Band III (174-260 MHz) - VHF Band I (45-90 MHz)
Internal reference frequency	5 MHz (or 10 MHz)
External reference frequency	Input From the front 5 MHz (or 10 MHz)
Output frequency stability	TCXO 1 p.p.m / year (opt.: OVEN < 0.2 p.p.m /years)
Frequency drift	Better than 10 exp-7
Amplitude/frequency response band	± 0,5 dB throughout the vision band
RF OUTPUT SPECIFICATIONS	
Output Power stability	± 0,5 dB
Intermodulation distortion	< -60 dB at rated output power (With pre-correction inserted)
Harmonics emission	< -75 dBc (with output filter)
Spurious emission	< -75 dBc (with output filter)
Impedance RF Connector	50 Ohm
Group delay deviation	± 30 ns within the vision band
Up converter A.G.C. dynamic	> 10 dB
Sync pulse compression	< 3 %
Differential gain	< 5 °
Differential phase	< 3 %
MER	Better than 36 dB
Phase noise	- 70 dBc @ 10 Hz ; - 85 dBc @ 100 Hz – 1 KHz; - 100 dBc @ 10 KHz
Protections	Overpower, Over voltage, Over current, Over temperature
Load mismatch	10 dB
Probe	IF monitor SMA connector (36.15 Mhz)
Off Lock Attenuation	> 60 dBc
S/N RATIO (weighted)	> 73 dB (referred to ± 75 KHz)
THD	0,10%
VSWR	Less than 1,5:1
TRANSPOSER VERSION	
Input Frequency	UHF (470-860MHz) - VHF Band III (174-260 MHz) - VHF Band I (45-90 MHz)
Input Impedance	50 Ohm N (Female) connector
Input field Level	-30 to -65 dBm
Input Matching	> 20dB
Selectivity	S.A.W. Filter 50° C
Synthesis Resolution	1 Hz
Noise figure	< 8 dB
IF Input level	-4 dBm ± 0.5 dB at RF input digital (0 dBm ± 0.5 dB at RF input analog)
Input matching	VSWR better than 1.2:1 in channel
REMOTE CONTROL	
Output Connector	RS232 interface Connector DB9 Male, RS 485, Auxiliary port 25-pole Connector
Ethernet interface (option)	Connector RJ 45 WEB browser or SNMP client
STANDARDS COMPLIANCE	
Frequency Spectrum	EN 302 296 – EN302 297
EMC	EN 300-489-1 EN 301 489-14
Safety	EN 60215
TEMPERATURE	
Temperature Operating range	0° to 45° C (Meets ETS 300 019 requirements)
Storage temperature	From -30°C to +80°C
Maximum relative Humidity	90% non condensing
Max Operating Altitude	2500 mt. a.s.l.



SPECIFICATIONS	E 05-UU	E 10-UU	E 50-UU	E 50-VV
RF output power rms	1 W	2,5 W	10 W	10 W
RF output power Psync	5 W	10 W	50 W	50 W
Output Connector	N Type Female	N Type Female	N Type Female	N Type Female
Dimensions (W x H X D) mm	482 x 132 x 450	482 x 132 x 450	482 x 132 x 450	482 x 132 x 450
Weight	15 Kg	15 Kg	15 Kg	15 Kg
Power consumption	Approx. < 110 VA	Approx. < 140 VA	Approx. < 350 VA	Approx. < 350 VA
Nr. of power supply boards	1: 230 V a.c. ± 15%	1: 230 V a.c. ± 20%	1: 230 V a.c. ± 20%	1: 230 V a.c. ± 20%
DC Power Supply	48 V (36-60 V)	48 V (36-60 V)	48 V (36-60 V)	48 V (36-60 V)
Number of fans	2 blowers, 24 Vdc	2 blowers, 24 Vdc	2 blowers, 24 Vdc	2 blowers, 24 Vdc

DVB-T / DVB-H Transposers

EK 150-UU – 150 W

EK 200-UU – 200 W

The new family of DVB-T/H Digital Transposer and Gap-fillers is suitable for applications in the digital terrestrial broadcasting of TV programs with the classical transposer method with relay reception and

non remodulation broadcasting.

All the equipment can be configured to operate also for analogue TV system configuration.



Compact design, modular construction, plug-in modules from the front panel

LCD graphic display and soft keys to control the module parameters

Superior class AB pre-corrector, for both digital and analogue TV

Ultra low phase noise Local Oscillator

Modules for relay application

Broadband amplifiers

High reliability, long maintenance-free periods, friendly-service design

All redundancy configurations available on request (Dual driver; active reserve; N+1; 1+1)

WEB monitoring for remote control

CODE	MODEL	DESCRIPTION
F841.01	EK 150-UU	150 W UHF Band Transposer with output filter COMPACT
F841	EK 200-UU	200 W UHF Band Transposer with output filter COMPACT
AVAILABLE OPTIONS	Professional SAW filter - Precision TCXO	

Technical data

FREQUENCY	
Range	UHF (470-860MHz) - VHF Band III (174-260 MHz) - VHF Band I (45-90 MHz)
Internal reference frequency	5 MHz (or 10 MHz)
External reference frequency	Input From the front 5 MHz (or 10 MHz)
Output frequency stability	TCXO 1 p.p.m / year (opt.: OVEN < 0.2 p.p.m /years)
Frequency drift	Better than 10 exp-7
Amplitude/frequency response band	± 0,5 dB throughout the vision band
RF OUTPUT SPECIFICATIONS	
Output Power stability	± 0,5 dB
Intermodulation distortion	< -60 dB at rated output power (With pre-correction inserted)
Harmonics emission	< -75 dBc (with output filter)
Spurious emission	< -75 dBc (with output filter)
Impedance RF Connector	50 Ohm
Group delay deviation	± 30 ns within the vision band
Up converter A.G.C. dynamic	> 10 dB
Sync pulse compression	< 3 %
Differential gain	< 5 °
Differential phase	< 3 %
MER	Better than 36 dB
Phase noise	- 70 dBc @ 10 Hz ; - 85 dBc @ 100 Hz – 1 KHz; - 100 dBc @ 10 KHz
Protections	Overpower, Over voltage, Over current, Over temperature
Load mismatch	10 dB
Probe	IF monitor SMA connector (36.15 Mhz)
Off Lock Attenuation	> 60 dBc
S/N RATIO (weighted)	> 73 dB (referred to ± 75 KHz)
THD	0,10%
VSWR	Less than 1,5:1
TRANSPOSER VERSION	
Input Frequency	UHF (470-860MHz) - VHF Band III (174-260 MHz) - VHF Band I (45-90 MHz)
Input Impedance	50 Ohm N (Female) connector
Input field Level	-30 to -65 dBm
Input Matching	> 20dB
Selectivity	S.A.W. Filter 50° C
Synthesis Resolution	1 Hz
Noise figure	< 8 dB
IF Input level	-4 dBm ± 0.5 dB at RF input digital (0 dBm ± 0.5 dB at RF input analog)
Input matching	VSWR better than 1.2:1 in channel
REMOTE CONTROL	
Output Connector	RS232 interface Connector DB9 Male, RS 485, Auxiliary port 25-pole Connector
Ethernet interface (option)	Connector RJ 45 WEB browser or SNMP client
STANDARDS COMPLIANCE	
Frequency Spectrum	EN 302 296 – EN302 297
EMC	EN 300-489-1 EN 301 489-14
Safety	EN 60215
TEMPERATURE	
Temperature Operating range	0° to 45° C (Meets ETS 300 019 requirements)
Storage temperature	From -30°C to +80°C
Maximum relative Humidity	90% non condensing
Max Operating Altitude	2500 mt. a.s.l.



SPECIFICATIONS	EK 150-UU	EK 200-UU
RF output power rms	50 W	50 W
RF output power Psync	150 W	200 W
Output Connector	N Type Female	N Type Female
Dimensions (W x H X D) mm	482 x 132 x 450	482 x 132 x 450
Weight	17 Kg	17 Kg
Power consumption	Approx. < 700 VA	Approx. < 800 VA
Nr. of power supply boards	1 from 230 V a.c. ± 15%	1 from 230 V a.c. ± 20%
DC Power Supply	48 V (36-60 V)	48 V (36-60 V)
Number of fans	2 blowers, 24 Vdc	2 blowers, 24 Vdc

DVB-T / DVB-H Gap filler

E 50-UG – 10 W

EK 200-UG – 50 W

The primary application of our DVB-T/H Digital Gap filler, is the propagation of a seamless DAB-COOFDM signal where geographical and physical impediments have affected network coverage. The GAP FILLER will receive the channel and re-broadcast it on the same channel, in a cost-effective

manner, towards geographically challenged areas. In any Gap Filler installations, the correct location of the transmitting and of the receiving antennas must be realized to ensure a suitable insulation between them.



- Cost effective solution to increase coverage in a urban environment or to provide suitable RF signal in a geographically challenged area.
- Efficient and cost-effective way for RF power distribution
- Ultimate design and rugged construction

CODE	MODEL	DESCRIPTION
F835.01	E 05-UG	1,5 W UHF Band Gap Filler with output filter
F835.02	E 10-UG	2,5 W UHF Band Gap Filler with output filter
F835.03	E 50-UG	10 W UHF Band Gap Filler with output filter
F835.04	EK 200-UG	50 W UHF Band Gap Filler with output filter COMPACT
AVAILABLE OPTIONS		



SPECIFICATIONS	E 05-UG	E 10-UG	E 50-UG	E 200-UG
RF output power	1 W rms	2,5 W rms	10 W rms	50 W rms
Output Connector	N Type Female	N Type Female	N Type Female	N Type Female
Dimensions (W x H X D) mm	482 x 132 x 450	482 x 132 x 450	482 x 132 x 450	482 x 132 x 450
Weight	15 Kg	15 Kg	15 Kg	17 Kg
Power consumption	Approx. < 110 VA	Approx. < 140 VA	Approx. < 350 VA	Approx. < 800 VA
Nr. of power supply boards	1 from 230 V a.c. ± 15%	1 from 230 V a.c. ± 20%	1 from 230 V a.c. ± 20%	1 from 230 V a.c. ± 20%
DC Power Supply	48 V (36-60 V)	48 V (36-60 V)	48 V (36-60 V)	48 V (36-60 V)
Number of fans	2 blowers, 24 Vdc	2 blowers, 24 Vdc	2 blowers, 24 Vdc	2 blowers, 24 Vdc

VHF-UHF Band Up converters

EUP 05-U – 5 W

EUP 10-U – 10 W

EUP 200-U – 200 W

These IF channel up-converters are available in 5, 10, 50, 150 and 200W output power versions and can be used as stand-alone low power transmitters or as driver stages for higher power amplifiers as well. The optimal spectrum purity of the local oscillator endows this equipment with an excellent transmission signal for analogue or digital

applications. The pre-corrector can save up to 6% of compression on the syncs.

The Local Oscillator signal is taken to 12dBm and the IF signal to a rated value of about –10 dBm.

The equipment is provided with RJ45, RS485 and parallel interface connector for the remote control monitoring.



CODE	MODEL	DESCRIPTION
6001540623	EUP 05-U	5W UHF Band Up-Converter with output filter
6001540622	EUP 10-U	10W UHF Band Up-Converter with output filter
6001540624	EUP 50-U	50W UHF Band Up-Converter with compact output filter
6001540625	EUP 150-U	150W UHF Band Up-Converter with compact output filter
AVAILABLE OPTIONS	Precision TCXO	



SPECIFICATIONS	EUP 05-U	EUP 10-U	EUP 50-U	EUP 200-U
RF output power	5 W ps	10 W ps	50 W ps	200 W ps
Output Connector	N Type Female	N Type Female	N Type Female	N Type Female
Dimensions (W x H X D) mm	482 x 132 x 450	482 x 132 x 450	482 x 132 x 450	482 x 132 x 450
Weight	14 Kg	15 Kg	15 Kg	16 Kg
Power consumption	Approx. < 110 VA	Approx. < 140 VA	Approx. < 350 VA	Approx. < 800 VA
Nr. of power supply boards	1 from 230 V a.c. ± 15%	1 from 230 V a.c. ± 20%	1 from 230 V a.c. ± 20%	1 from 230 V a.c. ± 20%
DC Power Supply	48 V (36-60 V)	48 V (36-60 V)	48 V (36-60 V)	48 V (36-60 V)
Number of fans	2 blowers, 24 Vdc	2 blowers, 24 Vdc	2 blowers, 24 Vdc	2 blowers, 24 Vdc

DVB-T / DVB-H Digital Regenerative Transposer

EM 010-DR

E 10-DRU

EK 50-DRU

The EM 010DR provides top performances and a wide range of features that make it ideal for DVB-T/H channel repetition and channel conversion applications.

A key factor in the success of this Product is the unique utilization of digital technology in the entire signal path, from the input to the output. The low-delay internal processing ensures compatibility with the strict requirements of SFN networks.

The basic version of EM 010DR is configured for high performance ISO-channel repeater applications with digital non-linearity corrector function.

In repeater applications, the user is therefore able to maximize the performance of the output power amplifier with no need for an expensive separate

analogue pre-corrector function.

The down conversion on the input stage and the up conversion on the output stage, share a common local oscillator. This ensures the highest possible level of transparency in the signal path from input to output. The unit supports both automatic gain control and manual gain control operations.

The EM 010DR is controllable via the front panel, via RS232 interface (SCPI protocol) and via Ethernet (Weblink for Web browser control and SNMP client function). The Ethernet connection supports field updates of Software and Firmware.

To drive amplifiers that require an input level higher than 0dBm (1mW), a 20dBm (100mW) version can be provided on request.



Optimized for DVB-T/H transmission
Output frequency range from 30 MHz to 1000 MHz
Input frequency range from 30 to 954 MHz
Customized channel filters available on demand to enhance the selectivity for critical applications
Support of SFN and MFN operation
High precision squelch function

Manual and automatic gain control with adjustable max gain
Built-in Digital linear/non linear Pre-corrector
Prepared for Echo Canceller option
Optional GPS function for precision frequency offset
Ground closure alarm inputs (4) for external SNMP trap generation

CODE	MODEL	DESCRIPTION
F901	EM 010DR	1 mW rms UHF Agile Digital Gapfiller DVB-T/H
F901.01	E 01-DRU	1,5 W UHF Band Digital Gap Filler with output filter
F901.02	E 02-DRU	2,5 W UHF Band Digital Gap Filler with output filter
F901.03	E 10-DRU	10 W UHF Band Digital Gap Filler with output filter
F901.04	EK 50-DRU	50 W UHF Band Digital Gap Filler with output filter COMPACT
AVAILABLE OPTIONS	6 MHz Bandwith - 5 MHz Bandwith - WEB Browser - SNMP client - Precision TCXO (0,01 ppm) - 18 dBm output class A Amplifier - 20 dB attenuator for protection of RF output	

Technical data

FREQUENCY	
Range	30 - 1000MHz Adjustable (1 Hz steps resolution)
Output frequency stability	Frequency stability Locked to external reference or 1 ppm reference or 1 ppm
In band flatness	± 0.1 dB
Impedance RF Connector	50 Ohm
Output Power stability	± 0.5 dB
Output Return loss	> 16 dB
TRANSPOSER	
Input signal	MPEG-2 Transport Stream
Input Frequency	30 - 945MHz (1 Hz steps resolution)
Input Impedance	50 Ohm N (Female) connector
Input field Level (QEF = BER 2E-4)	20dBuV to 120dBuV @ QPSK, CR1/2 36dBuV to 120dBuV @ 64QAM CR7/8
Input Return loss	> 10 dB
Selectivity	Defined as the maximum allowed level of the disturbing signal relative to the level of the wanted DVB-T signal for QEF reception of the wanted signal
Serial data input	2 x ASI, BNC 75 Ohm
Frequency clock reference input	10 MHz, BNC 50 Ohm/>1kOhm, Level 100 mV - 3Vpp
Time reference input	1 PPS, BNC 50 Ohm/>1kohm, Level 0-5V, Trigger: Positive transition
Reference output	TS clock signal
Spectrum polarity inversion	Inverted and non inverted selectable via front panel menu
Non-linear correction	Curve formats: S21 and VO/VI Amplitude scale: Linear and logarithmic Correction points: Max 256, user-defined position Gain correction: Max 12dB, subject to available headroom Phase correction: -6 to +30 degrees, subject to available headroom

Linear correction	Correction points: 21 Point spacing: 1/20 of nominal spectrum BW Amplitude correction: ±10dB Amplitude resolution: 0.01dB Group delay correction: ±1000ns
Test functions	Programmable carrier packet removal CW mode Null packet only stream
OUTPUT SPECIFICATIONS	
BER	Zero over five hour period before RS decoding
MER	> 40 dB
Spectrum outside band	+/- 3,8MHz: 0 dB +/- 4,25MHz: <47dB +/- 5,25MHz: <53dB
Harmonics emission	< -50 dBm (with output filter)
Spurious emission	< -50 dBm (with output filter)
REMOTE CONTROL	
Output Connector	RS232 interface Connector DB9 Male – Two DB9 Female programmable connector - Alarms via separate floating relays (common make-break contacts, contact rating 60V / 0.2A (5W max)
Input Connector	Reset and muting control activated by ground closure
Ethernet interface (option)	Connector RJ 46 WEB browser or SNMP client
STANDARDS COMPLIANCE	
Modulation characteristics	ETSI 300-744
EMC	ETSI 447
Safety	EN 60950 - EN 60215
TEMPERATURE	
Temperature Operating range	0° to 50° C (Meets ETS 300 019 requirements)
Maximum relative Humidity	90% non condensing
Max Operating Altitude	2500 mt. a.s.l.



SPECIFICATIONS	EM 010-DR	E 010-DRU	EK 50-DRU
Output power rms	IF From -2 to 8 dBm	10 W rms	50 W rms
Output Connector	BNC Type Female 50 Ohm	N Type Female	N Type Female
Dimensions (W x H X D) mm	482 x 44 x 483	482 x 132 (+ 44) x 450	482 x 132 (+ 44) x 450
Weight	6 Kg	15 Kg	28 Kg
Power consumption	Approx. < 25 VA	Approx. < 400 VA	Approx. < 600 VA
Nr. of power supply boards	1 from 230 V a.c. ± 20%	1 from 230 V a.c. ± 20%	1 from 230 V a.c. ± 20%
DC Power Supply	Not included	48 V (36-60 V)	48 V (36-60 V)
Type of ventilation	Forced Air, 2 blowers	2 blowers, 24 Vdc	2 blowers, 24 Vdc

DVB-T / DVB-H UHF Power Amplifiers

DTA 125U – 125 W RMS

DTA 250U – 250 W RMS

DTA 500U – 500 W RMS

DTA 1000U – 1 KW RMS

The DTA SERIES equipment are solid state amplifiers designed for digital television broadcast applications, to operate in the 470 ÷ 860 MHz UHF frequency band (Band IV & V).

These amplifiers distinguish themselves by their very high efficiency and excellent linearity over the entire operational band. High reliability is mainly guaranteed by using a limited number of transistors

to achieve a given power target and by using over dimensioned cooling devices: broadcasters can thus reduce their long-term operating costs. Final power modules incorporate micro-strip technology and LDMOS, MRF377H, push-pull transistors. Ultimate and innovative microprocessor technologies have been implemented for the protection and control circuits.



High efficiency and reliability
 High linearity over the entire band
 ALC and Input Over Drive Protection Functions
 LCD multifunctional display
 RJ 45 Ethernet connection and RS 232 and RS 485 IN & OUT

Metering Board controlled by Microprocessor
 Power supply with PFC Active
 Forced air cooling
 WEB monitoring and SNMP for remote control

CODE	MODEL	DESCRIPTION
F873	DTA 125U	125 W rms UHF Power Amplifier
F875	DTA 250U	250 W rms UHF Power Amplifier
F874	DTA 500U	500 W rms UHF Power Amplifier
AVAILABLE OPTIONS	Double Power Supply	

Technical data

FREQUENCY		STANDARDS TV VERSION	
Range	UHF (470-860MHz)	TV standards analog	B,G others on request
Class	AB	TV Standards digital	DVB-T/H
Input Connector	N female	REMOTE CONTROL	
Impedance Input /Output RF Connector	50 Ohm	Output Connector	RS232 interface Connector DB9 Male – Two DB9 Female programmable connectors – RS 485
Internal Setting mode	1 Hz steps	Input Connector	Reset and muting control activated by ground closure
Stability	Frequency stability Locked to external reference or 1 ppm reference or 1 ppm	Ethernet interface (option)	Connector RJ 46 WEB browser or SNMP client
In band flatness	± 0.1 Db	STANDARDS COMPLIANCE	
Gain	24 ÷ 25 dB	Frequency Spectrum	EN 302 296 – EN302 297
Input VSWR	1.7:1 typical (2:1 max.)	EMC	EN 300-489-1 EN 301 489-14
RF OUTPUT SPECIFICATIONS		Safety	EN 60950 - EN 60215
Intermodulation distortion (DVB-T)	< -36 dB at rated output power (With pre-correction inserted)	TEMPERATURE	
Spurious emission (with output filter)	< -55 dBc	Operating range	0° to 45° C (Meets ETS 300 019 requirements)
Load mismatch	1,8:1 Max	Storage range	- 10° to 80° C
BER	Zero over five hour period before RS decoding	Maximum relative Humidity	90% non condensing
MER	> 37 dB	Max Operating Altitude	2000 mt. a.s.l.
Protections	Overpower, SWR, Over voltage, Over current, Over temperature		
Probe	BNC connector RF – 60 dBc		



SPECIFICATIONS	DTA 125U	DTA 250U	DTA 250U	DTA 1000U
RF output power	125 W rms	250 W rms	500 W rms	1000 W rms
RF Input (Nominal Level)	≤0,5W	≤1Watt	≤2Watt	≤1Watt
Output Connector	N Type Female	7/16 N Type Female	7/16 N Type Female	7/16 N Type Female
Dimensions (W x H X D) mm	482 x 132 (+ 88)x 600 (3U)	482 x 132 (+ 88)x 600 (3U)	482 x 132 (+ 88)x 600 (3U)	600 x 1390 x 800 2 (6U)
Weight	20 Kg	25 Kg	25 Kg + 15 Kg	200 Kg
Power consumption	Approx. < 1000 VA	Approx. < 2000 VA	Approx. < 4000 VA	Approx. < 8000 VA
Power supply req.	from 230 V a.c. ± 15%	from 230 V a.c. ± 15%	three-phase 280 V a.c. ± 15%	three-phase 280 V a.c. ± 15%
Nr. of power supply boards	1	2	3	6
Number of fans	1 blower, 24 Vdc	1 blower, 24 Vdc	2 blower, 24 Vdc	4 blower, 24 Vdc

DTA DUAL CAST TV UHF Power Amplifiers

DTA 125/500U – 500 W PS

DTA 250/1KU – 1 KW PS

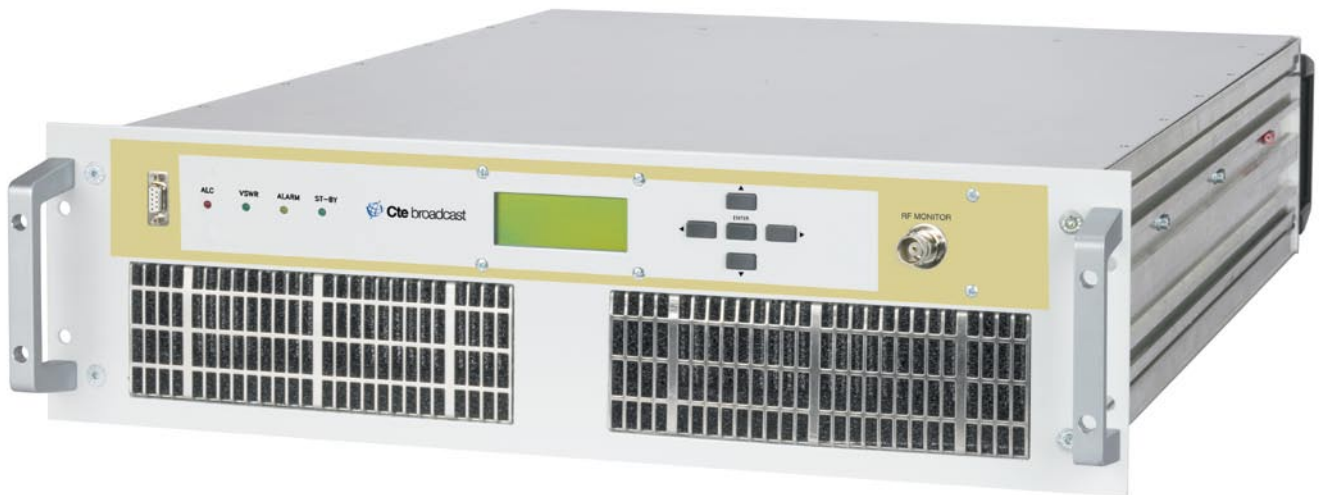
DTA 500/2KU – 2 KW PS

DTA 1K/4KU – 4 KW PS

The DTA SERIES Dual Cast equipment are solid state amplifiers for digital and analogue television broadcast applications designed with ultimate technology to operate in the UHF 470÷860MHz frequency band (Band IV & V). Size and weight have been reduced to obtain a compact unit. The improved performance has been achieved by means of an advanced approach in the design, focusing on low power consumption and on excellent linearity over the entire operational band. High

reliability is mainly guaranteed by using a limited number of transistors to achieve a given power target and by using over dimensioned cooling devices: broadcasters can thus reduce their long-term system costs.

Final power modules incorporate micro-strip technology and LDMOS, MRF377H, push-pull transistors. Ultimate and innovative microprocessor technologies have been implemented for the protection and control circuits.



- Forced cooling
- High efficiency and reliability
- High linearity over the entire band
- ALC and Input Over Drive Protection Functions
- LCD multifunctional display
- RJ 45 Ethernet connection and RS 232 and RS 485 IN & OUT
- Metering Board controlled by Microprocessor
- Power supply with PFC Active
- WEB monitoring and SNMP for remote control

CODE	MODEL	DESCRIPTION
F873.01	DTA 125/500U	UHF Power Amplifier, 500W ATV / 125W rms
F875.01	DTA 250/1KU	UHF Power Amplifier, 1kW ATV / 250W rms
F874.01	DTA 500/2KU	UHF Power amplifier, 2kW ATV / 500W rms
F874.02	DTA 1K/4KU	UHF Power Amplifier, 4 KW ATV/1 KW rms
AVAILABLE OPTIONS	Double Power Supply Cabinet with air extractor duct	

Technical data

FREQUENCY		STANDARDS TV VERSION	
Range	UHF (470-860MHz)	TV standards analog	B,G others on request
Class	AB	TV Standards digital	DVB-T/H
Input Connector	N female	REMOTE CONTROL	
Impedance Input /Output RF Connector	50 Ohm	Output Connector	RS232 interface Connector DB9 Male – Two DB9 Female programmable connectors– RS 485
Gain	28 ÷ 30 dB (DTA100/400V 14dB)	Input Connector	Reset and muting control activated by ground closure
Input VSWR	1.7:1 typical (2:1 max.)	Ethernet interface (option)	Connector RJ 46 WEB browser or SNMP client
RF OUTPUT SPECIFICATIONS		STANDARDS COMPLIANCE	
Intermodulation distortion (DVB-T)	< -36 dB at rated output power (With pre-correction inserted)	Frequency Spectrum	EN 302 296 – EN302 297
Spurious emission (with output filter)	< -55 dBc	EMC	EN 300-489-1 EN 301 489-14
Load mismatch	1,8:1 Max	Safety	EN 60950 - EN 60215
BER	Zero over five hour period before RS decoding	TEMPERATURE	
MER	> 37 dB	Operating range	0° to 45° C (Meets ETS 300 019 requirements)
Protections	Overpower, SWR, Over voltage, Over current, Over temperature	Storage range	- 10° to 80° C
Probe	SMA BNC connector RF – 60 dBc	Maximum relative Humidity	90% non condensing
		Max Operating Altitude	2000 mt. a.s.l.

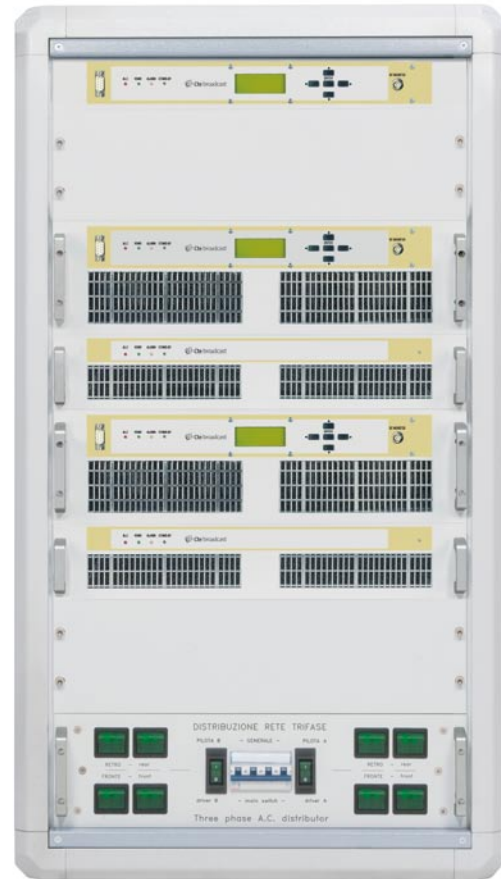


SPECIFICATIONS	DTA 125/500U	DTA 250/1KU	DTA 500/2KU	DTA 1K/4KU
RF output power DVB	125 W rms	250 W rms	500 W rms	100 W rms
RF output power +0dB –0,5dB	500 W psync	1000 W psync	2000 W psync	4000 W psync
RF Input (Nominal Level)	≤ 2W	≤ 4Watt	≤ 8Watt	≤ 20Watt
Output Connector	N Type Female	7/16 N Type Female	7/8 Flange	7/8 Flange
Dimensions (W x H X D) mm	482 x 132 x 700 (3U)	482 x 220 x 700 (5U)	482 x 220x 700 (5U) 482 x 88x 700 (2U)	600 x 1144 x 1000
Weight	25 Kg	30 Kg	30 Kg + 13 Kg +13kg	< 200 kg
Power consumption				
ATV @ Pmax	< 800 VA	< 1800 VA	< 8300 VA	< 7200 VA
DVB @ Pmax	< 500 VA	< 1200 VA	< 2000 VA	< 4800 VA
Power supply req.	from 230 V a.c. ± 15%	from 230 V a.c. ± 15%	three-phase 380 V a.c. ± 15%	three-phase 380 V a.c. ± 10%
Nr. of power supply boards	1	2	3	6
Number of fans	1 blower, 24 Vdc	1 blower, 24 Vdc	1 blower, 24 Vdc	1 blower, 24 Vdc

DUAL CAST TV VHF Power Amplifiers

DTA 125/500V - 500 W P.SYNC DTA 250/1KV - 1000 W P.SYNC
 DTA 500/2KV - 2000 W P.SYNC

The DTA SERIES Dual Cast equipment are solid state amplifiers for digital and analogue television broadcast applications designed with ultimate technology to operate in the UHF 470÷860MHz frequency band (Band IV & V). Size and weight have been reduced to obtain a compact unit. The improved performance has been achieved by means of an advanced approach in the design, focusing on low power consumption and on excellent linearity over the entire operational band. High reliability is mainly guaranteed by using a limited number of transistors to achieve a given power target and by using over dimensioned cooling devices: broadcasters can thus reduce their long-term system costs. Final power modules incorporate micro-strip technology and LDMOS, MRF377H, push-pull transistors. Ultimate and innovative microprocessor technologies have been implemented for the protection and control circuits.



Forced cooling
 High efficiency and reliability
 High linearity over the entire band
 ALC and Input Over Drive Protection Functions
 LCD multifunctional display
 RJ 45 Ethernet connection and RS 232 and RS 485 IN & OUT

Metering Board controlled by Microprocessor
 Power supply with PFC Active
 WEB monitoring and SNMP for remote control
 - WEB monitoring and SNMP for remote control

CODE	MODEL	DESCRIPTION
F873.01	DTA 100/400V	Power amplifier VHFIII 400W ATV / 100W rms; DVB 150W DAB
F875.02	DTA 200/800V	Power amplifier VHFIII 800W ATV / 200W rms; DVB 300W DAB
F874.03	DTA 400/1,6KV	Power amplifier VHFIII 1600W ATV / 400W rms; DVB 600W DAB
AVAILABLE OPTIONS	Cabinet with air extractor	

Technical data

FREQUENCY		STANDARDS TV VERSION	
Range	VHF (170-230 MHz)	TV standards analog	B,G others on request
Class	AB	TV Standards digital	DVB-T/H
Input Connector	N female	REMOTE CONTROL	
Impedance Input /Output RF Connector	50 Ohm	Output Connector	RS232 interface Connector DB9 Male – Two DB9 Female programmable connector – RS 485
Gain	28 ÷ 30 dB (DTA100/400V 14dB)	Input Connector	Reset and muting control activated by ground closure
Input VSWR	1.7:1 typical (2:1 max.)	Ethernet interface (option)	Connector RJ 46 WEB browser or SNMP client
RF OUTPUT SPECIFICATIONS		STANDARDS COMPLIANCE	
Intermodulation distortion (DVB-T)	< -36 dB at rated output power (With pre-correction inserted)	Frequency Spectrum	EN 302 296 – EN302 297
Spurious emission (with output filter)	< -55 dBc	EMC	EN 300-489-1 EN 301 489-14
Load mismatch	1,8:1 Max	Safety	EN 60950 - EN 60215
BER	Zero over five hour period before RS decoding	TEMPERATURE	
MER	> 37 dB	Operating range	0° to 45° C (Meets ETS 300 019 requirements)
Protections	Overpower, SWR, Over voltage, Over current, Over temperature	Storage range	- 10° to 80° C
Probe	SMA BNC connector RF – 60 dBc	Maximum relative Humidity	90% non condensing
		Max Operating Altitude	2000 mt. a.s.l.



SPECIFICATIONS	DTA 125/500 V	DTA 250/1KV	DTA 500/2KV
RF output power DVB	125 W rms	250 W rms	500 W rms
RF output power DAB	250 W rms	500 W rms	1000 W rms
RF output power +0dB –0,5dB	500 W psync	1000 W psync	2000 W psync
RF Input (Nominal Level)	≤ 4W	≤ 1Watt	≤ 2Watt
Output Connector	N Type Female	7/16 N Type Female	7/16 N Type Female
Dimensions (W x H X D) mm	482 x 132 x 700	482 x 132 x 700 + 482 x 88	482 x 132 (+88) x 700 (2 pscs)
Weight	25 Kg	30 Kg	30 Kg + 13 Kg +13kg
Power consumption			
ATV @ Pmax	< 800 VA	< 1800 VA	< 3600 VA
DVB @ Pmax	< 500 VA	< 1200 VA	< 2400 VA
Power supply req.	from 230 V a.c. ± 15%	from 230 V a.c. ± 15%	three-phase 380 V a.c. ± 15%
Nr. of power supply boards	1	2	3
Number of fans	1 blower, 24 Vdc	2 blower, 24 Vdc	2+2 blower, 24 Vdc

DVB-T / DVB-H UHF Power Amplifiers

EG 10-DU – 650 W RMS

EG 20-DU – 1,3 KW RMS

EG 02-TU – 2,5 KW RMS

EG 05-TU – 5 KW RMS

The HIGH POWER air-cooled TV transmitters are solid state amplifiers designed for digital and analogue television broadcast applications. The Output Power is adjustable from 650 W up to 5 kW rms in digital mode, and from 2,5kW up to 20kW Peak sync in analogue.

The transmitter is composed of plug-in modules (max weight 25Kg) designed with a modular up-gradable configuration. The ultimate Broadband Splitter/Combiner has been realized according to a unique design, using a $\lambda/4$ 90° serial feed combiner.

The vertical parallel AIR cooling system can safely operate in shelters with or without air exchange. Several smart solutions have been introduced in the general design of the equipment. For instance: the cooling system is controlled by an “intelligent” blowers device able to vary the speed of the fans in case of damage of one of them, thus granting extra long duration to the fans and stable temperature on the heat sink. The “Anti Turbulence” heatsink has been realized according to a special original shape to avoid turbulences in the air flow: by means of this simple trick, the best cooling conditions have been obtained in the entire power stage.

The high reliability of the heart of the equipment, is mainly assured by using a limited number of transistors to achieve a given RF power target and by means of over dimensioned cooling devices: broadcasters can thus significantly reduce their long-term operating costs.

Ultimate and innovative microprocessor technologies have been implemented for the protection of the equipment in case of excessive SWR, and a really fast protection circuit is used to save the RF modules from overdrive, bad SWR figures and over-temperature. The final power modules incorporate micro-strip technology and LDMOS, MRF377H, transistors in push-pull configuration. The RF Module design assures a total redundancy by means of an independent and high reliability driver on each final stage.

- High linearity over the entire band
- LCD multifunctional display
- RJ 45 Ethernet connection and RS 232 and RS 485 IN & OUT
- WEB monitoring and SNMP for remote control



CODE	MODEL	DESCRIPTION
F877.01	EG 10-DU	650 W rms UHF DVB-T/H Digital Transmitter - (38U cab. incl.)
F877	EG 20-DU	1,3 KW rms UHF DVB-T/H Digital Transmitter - (38U cab. incl.)
F862.01	EG 02-TU	2,5 KW UHF Transmitter, Output Filter incl. (38U cabinet incl.)
F862	EG 05-TU	5 KW UHF Transmitter, Output Filter incl. (38U cabinet incl.)
AVAILABLE OPTIONS	Cabinet with extraction Hood	

Technical data

FREQUENCY	
Range	UHF (470-860MHz)
Class	AB
Input Connector	N female
Impedance Input /Output RF Connector	50 Ohm
Internal Setting mode	1 Hz steps
Stability	Frequency stability Locked to external reference or 1 ppm reference or 1 ppm
In band flatness	± 0.1 Db
Gain	24 ÷ 25 dB
Input VSWR	1.7:1 typical (2:1 max.)
RF OUTPUT SPECIFICATIONS	
Intermodulation distortion (DVB-T)	< -36 dB at rated output power (With pre-correction inserted)
Intermodulation distortion (Analog)	< -58 dB at rated output power (V.C. -8 dB; S.1C -10 dB; C.Sb. -16 dB)
Spurious emission (with output filter)	< -60 dBc
Load mismatch	1,8:1 Max
BER	Zero over five hour period before RS decoding
MER	> 37 dB
Protections	Overpower, SWR, Over voltage, Over current, Over temperature
Probe	BNC connector RF – 60 dBc

STANDARD TV VERSION	
TV standards analogue	B,G others on request
TV Standards digital	DVB-T/H
REMOTE CONTROL	
Output Connector	RS232 interface Connector DB9 Male – Two DB9 Female programmable connectors– RS 485
Input Connector	Reset and muting control activated by ground closure
Ethernet interface (option)	Connector RJ 46 WEB browser or SNMP client
STANDARDS COMPLIANCE	
Frequency Spectrum	EN 302 296 – EN302 297
EMC	EN 300-489-1 EN 301 489-14
Safety	EN 60950 - EN 60215
TEMPERATURE	
Operating range	0° to 45° C (Meets ETS 300 019 requirements)
Storage range	-10° to 80° C
Maximum relative Humidity	90% non condensing
Max Operating Altitude	2000 mt. a.s.l.



SPECIFICATIONS	EG 10-DU; EG 02-TU	EG 20-DU; EG 05-TU	EG 40-DU; EG 10-TU	EG 80-DU; EG 20-TU
Rf output power rms	650 W rms	1300 W rms	2500 W rms	5000 W rms
RF output power (+0dB –0,5dB)	2500 W p.sync	5000 W p.sync	10000 W p.sync	20000 W p.sync
RF power of plug-in modules	1	2	4	8
RF Input (Nominal Level)	≤ 1 W rms (5 W ps)	≤ 2 W rms (10 W ps)	≤ 2 W rms (10 W ps)	≤ 10 W rms (50 W ps)
Output Connector	1-5/8 Flange	1-5/8 Flange	3-1/8 Flange	3-1/8 Flange
Dimensions (W x H X D) mm	600 x 1800x 1000	600 x 1800x 1000	2x600 x 1800x 1000	2x600 x 1800x 1000
Weight	200 Kg	250 Kg	500 Kg	1000 Kg
Power consumption ATV @ Pmax DVB @ Pmax	< 6000 VA < 9000 VA	< 12000 VA < 18000 VA	< 24000 VA < 36000 VA	< 48000 VA < 72000 VA
Power supply req.	three-phase 380 V a.c. ± 20%	three-phase 380 V a.c. ± 20%	three-phase 380 V a.c. ± 20%	three-phase 380 V a.c. ± 20%
Nr. of power supply boards	2	4	8	16
Number of fans	3 blower	6 blower	12 blower	24 blower
Nominal air volume at fan input at 1000 hPa barometric pressure	11 m3/min	11 m3/min	11 m3/min	11 m3/min

TV Microwave Analogue Link

EL 2327 – 4 W

EL 5285 – 1 W

EL 1014 – 1 W

EL 2123 – 1 W

The EL SERIES microwave links are designed for long and medium distance applications, STL's, backbones, multi-hop systems, and other broadcast requirements to deliver with broadcast-quality one video and up to four high-quality audio channels (two are optional) or data flows.

The radio link is available from 2,3 to 23 Ghz: it is made in a single 1-unit rack that allows a fast and easy

integration with existing telecommunication systems in the full respect of the levels of the modulations and of the impedance.

Output power up to 4w and several alarms to check the amplifier working conditions are available. The excellent spectral purity and the special design of the conversion oscillators endow these units with an excellent Signal to Noise ratio both in transmission and reception.



The radio links on 23 Ghz are composed by two units; an indoor unit (IDU) supplied in a single 1-unit rack containing the mo/demodulator stage, and an outdoor unit (ODU) in aerial head containing SHF part. The outdoor head is connected to the indoor console

by means of a single coaxial cable to lead both the I.F. signal and the power supply.

For heavy duty applications, a series of external solid-state amplifiers in a single 1-unit rack can be connected to every microwave transmitter.

CODE	MODEL	DESCRIPTION
F846	EL 2327-36	4 W Microwave Link, freq. 2.3-2.7 Ghz
F863	EL 5285-30	1 W Microwave Link, freq. 5.2-6.5 Ghz
F846.01	EL 1014-30	1 W Microwave Link, freq. 10.3-10.7 Ghz
F863.01	EL 2123-30	1 W Microwave Link, freq. 21,2-23,6 Ghz - External Head
AVAILABLE OPTIONS	External Head - Synthesized LO 16 ch. Selectable - Two extra Audio	

Technical data

FREQUENCY	
Modulation	Type FM positive, Heterodyne
Range	Microwave Band: 2.3 - 23 GHz
System Capacity	One video plus two audio signals
System Deviation	8 MHz p.p.
Output frequency stability	± 10 p.p.m. or better (synthesized version)
I.F. Frequency	70 MHz
I.F. I/O Level / Impedance	+ 5 dBm / 75 Ohm
I.F. I/O Return loss	> 26 dB
Impedance RF Connector	50 Ohm
RECEIVER	
I.F. Bandwidth	28 MHz
Dynamic range	> 50 dB
Noise figure weighted	Better than 5 dB at - 40 dBm
33 dB S/N Threshold	-86 dBm
Rejection @ 70 Mhz	60 dB (Band pass filter)
Return loss	26 dB minimum (Band pass filter)
RF OUTPUT SPECIFICATIONS VIDEO PERFORMANCE	
Bandwidth	From 25 Hz tp 5 Mhz
Frequency response	± 0.5 dB
Pre-emphasis	CCIR REC. 405-1 or FCC
Video I/O level / impedance	1 V P.P / 75 Ohm
Group delay deviation	< 10 ns p.p within the vision band
Up converter A.G.C. dynamic	> 10 dB
Sync pulse compression	< 1 %
Differential gain	< 2 %
Differential phase	< 2 °
Field time distortion	< 1 % K
2T pulse and bar	< 1 %
Croma/Luma Crosstalk	< 2 %
Croma/Luma gain	± 0.3 dB
S/N ratio	> 70 dB rms (10 kHz - 5 MHz Weighted) > 55 dB rms (20 Hz - 10 KHz Weighted)
RF OUTPUT SPECIFICATIONS AUDIO PERFORMANCE	
Bandwidth	80 Hz -12 KHz ± 0.5 dB
Pre-emphasis	50 uS
Capacity	Up to 4 channels
Audio I/O level / Impedance	+ 9 dBm / 600 Ohm
Frequency	7.020 MHz - 7.500 MHz - 8.065 MHz - 8.590 MHz (CCIR) 6.200 MHz - 6.800 MHz - 7.500 MHz - 8.300 MHz (FCC)
Deviation	300 kHz eff. (Single or non adjacent dual channel) 200 kHz eff. (Multi Channel)
S/N ratio	> 65 dB (100 kHz peak deviation)
Distortion	< 0.5% at 1 kHz (30 Hz - 15 kHz)
REMOTE CONTROL	
Output Connector	DB 25 Connector
STANDARD COMPLIANCE	
R&TTE	Declaration of Conformity with regards to the Directive 1999/5/EC
TEMPERATURE	
Nominal range	0° to 45° C (Meets ETS 300 019 requirements)
Storage range	- 30° to 50° C
Maximum relative Humidity	90% non condensing
Max Operating Altitude	2500 mt. a.s.l.



SPECIFICATIONS	EL 2327	EL 5285	EL 1014	EL 2123
Rf output power	4 W	1 W	1 W	1 W
Output Connector	N Type Female	N Type Female	UDR 120	UDR 120
Dimensions (W x H X D) mm	482 x 44 x 312	482 x 44 x 312	482 x 44 x 312	482 x 44 x 312
Weight	2x5 Kg	2x5 Kg	2x5 Kg	2x5 Kg
Power consumption	Approx. < 30 VA	Approx. < 30 VA	Approx. < 30 VA	Approx. < 30 VA
Nr. of power supply stages	1 from 230 V a.c. ± 10%	1 from 230 V a.c. ± 10%	1 from 230 V a.c. ± 10%	1 from 230 V a.c. ± 10%
DC Power Supply	24 V (20-31 V)	24 V (20-31 V)	24 V (20-31 V)	24 V (36-31 V)
Type of ventilation	Forced Air	Forced Air	Forced Air	Forced Air

TV Microwave Digital Link

EDL 1011 – 1 W

EDL 1214 – 1 W

EDL 2123 – 1 W

The EL SERIES microwave links are designed for long and medium distance applications, STL's, backbones, multi-hop systems, and other broadcast requirements to deliver with broadcast-quality one video and up to four high-quality audio channels (two are optional) or data flows.

The radio link is available from 2,3 to 23 GHz: it is made in a single 1-unit rack that allows a fast and easy

integration with existing telecommunication systems in the full respect of the levels, of the modulations and of the impedance.

Output power up to 4W and several alarms to check the amplifier working conditions are available. The excellent spectral purity and the special design of the conversion oscillators endow these units with an excellent Signal to Noise ratio in both transmission and reception.



The radio links are composed by two units; an indoor unit SHF (IDUSHF) (optionally outdoor unit ODU in aerial head) supplied in a single 1-unit rack containing the RF Transmitter (or RF Receiver) and a second indoor unit LF (IDU-LF) supplied in a single 1-unit rack containing mo/demodulator (QPSK or 16QAM MO/DEM) and co/ decoder (MPEG2 CO/DEC + MUX).

On the front panel, a colour display provides the information about the functions of each board; the video signals in input and output to CODEC MPEG2 can be easily checked out.

The power supply stage can receive either alternate or direct voltage (even simultaneously); furthermore, it can be removed completely from its location to allow easy and quick maintenance.

The program of the function can be realized either locally by the keyboard, or remotely by means of an interface Ethernet 10 /100 base T which allows a remote connection also through the web.

Two other serial interfaces RS 232 and six relè contacts complete the interfaces.

CODE	MODEL	DESCRIPTION
F881.02	EDL 1011-30	1 W Digital Link-16 Channels, freq. 10,3-10,7 Ghz (TS ASI in/out)
F881.03	EDL 1214-30	1 W Digital Link-16 Channels, freq. 12-14 Ghz (TS ASI in/out)
F881.04	EDL 2123-30	1 W Digital Link-16 Channels, freq. 21,2-23,6 Ghz (TS ASI in/out)
AVAILABLE OPTIONS	External Head – Encoder & Decoder MPEG 2	

Technical data

FREQUENCY		DE/CODER MPEG 2 (OPTIONAL)	
Modulation	Type QPSK, 16 QAM	Video Input	Analogue PAL composite, 1 Vpp 75 Ohm, BNC connector
Range	Microwave Band: 2.3 - 23 GHz	Video encoding standards	ISO / IEC 13818-2 MP@ML (MPEG-2 4:2:0)
System Capacity	System Capacity ASI / E3 G703 (with optional de/coder one video plus two audio signals)	Picture type I, P, B	Horizontal: up to 720 pixel in 32 pixel steps Vertical PAL: up to 576 pixel in 32 pixel steps
Output frequency stability	± 10 p.p.m. or better (synthesized version)	Supported resolution	Full D1, D1. 2/3 D1, HD1, SIF
I.F. Frequency	70 MHz +/- 5 KHz	Audio input	Analogue two channel, 0 dBm 600 Ohm, BNC connector
I.F. I/O Level / Impedance	From - 25 to 0 dBm in step 0,1 dBm / 75 Ohm BNC connector	Audio encoding standards	ISO / IEC 11172-3 (MPEG-1 audio) layer compliant
I.F. I/O Return loss	> 26 dB	Sampling frequency	32 KHz, 44,1 KHz, 48 KHz
Impedance RF Connector	50 Ohm	Bit rate	Video 0,8 – 14 Mb/s Audio max 384 kb/s
RECEIVER		Stream type	Transport Stream on ASI interface
I.F. Bandwidth	1.75 to 28 MHz (software selectable)	Stream multiplexing standards	ISO / IEC 13818-1 (MPEG-2) PAT table
Dynamic range	> 50 dB	System Bit rate	Up to 45 Mb/s on 100 Kbit steps
Noise figure weighted	Better then 5 dB at – 40 dBm	REMOTE CONTROL	
33 dB S/N Threshold	-86 dBm	Output Connector	Parallel Remote signals and controls with floating contacts
Rejection @ 70 Mhz	60 dB (Band pass filter)	Ethernet interface	Connector RJ 46 TCP/IP Web server via Ethernet 10/100 base T
Return loss	26 dB minimum (Band pass filter)	STANDARD COMPLIANCE	
QPSK DE/MODULATOR- 16 QAM DE/MODULATOR		R&TTE	Declaration of Conformity with regards to the Directive 1999/5/EC
Mode	QPSK - ETS 300 421 (DVB-S) 16 QAM - ETS 301 210	TEMPERATURE	
FEC (code rate)	Viterbi 1/2, 2/3, 3/4, 5/6, 7/8 selectable	Nominal range	0° to 45° C (Meets ETS 300 019 requirements)
Outer code	Reed Solomon (188 204)	Storage range	- 30° to 50° C
Payload	From 3 to 45 Mbits/s on 500 Kb/s steps	Maximum relative Humidity	90% non condensing
Selectable roll off	0,15 – 0,55 in 0,05 steps	Max Operating Altitude	2500 mt. a.s.l.
Data scrambling	X15+X14+1		



SPECIFICATIONS	EDL 104	EDL 1214	EDL 2123
Rf output power	1 W	1 W	1 W
Output Connector	N Type Female	UDR 120	UDR 120
Dimensions (W x H x D) mm	482 x 44 x 312	482 x 44 x 312	482 x 44 x 312
Weight	2x5 Kg	2x5 Kg	2x5 Kg
Power consumption	Approx. < 30 VA	Approx. < 30 VA	Approx. < 30 VA
Nr. of power supply stages	1 from 230 V a.c. ± 10%	1 from 230 V a.c. ± 10%	1 from 230 V a.c. ± 10%
DC Power Supply	24 V (20-31 V)	24 V (20-31 V)	24 V (36-31 V)
Type of ventilation	Forced Air	Forced Air	Forced Air

TV Mobile Microwave Analog & Digital Link

EML - EMDL

The EML SERIES mobile microwave links are designed for long and medium distance applications, STL's, backbones, multi-hop systems, and other broadcast requirements to deliver with broadcast-quality one video and up to four high-quality audio channels (two are optional) or data flows.

These links provide outstanding quality and reliability together with ease of installation and friendly use, especially by means of the fast mechanical assembly system.

The EML Series microwave links are available in different frequency ranges and are equipped with

synthesized oscillators which allow changes of the operational channel both from the outdoor RF head and from the indoor console.

The EML Series links are used for analogue applications or digital DVB-T application (EMDL Series).

Tripods are fundamental accessories in the mobile radio links since they play a basic role in the alignment operation between two parabolic reflectors.

To avoid prejudice to the alignment stability, our standard tripods are very stable devices and have a great capacity of absorbing vibrations. Thanks to their patented design, they can be quickly adapted to any kind of grounds.

As an option, the EML Series mobile links may be provided with a professional type of Tripods and a set of special Trunks with wheels and handles for their easy transportation and handling.



CODE	MODEL	DESCRIPTION
F881.01	EMDL 1214-30	1 W Mobile Link-16 Channels, freq. 12-14 Ghz
AVAILABLE OPTIONS	Outdoor Head – MPEG 2 Encoder & Decoder	

The outdoor receiving and transmitting RF units are placed in a waterproof mechanical case.

To facilitate the system's tracking operations, the output power level and the input RF level are available by means of an external meter device. The IF monitoring connector and a socket for the "Intercom" circuit between the indoor console and the outdoor unit are also available



Technical data

Structure of the tripod	Single flowing tube
Minimum operative elevation from earth	780 mm
Maximum operative elevation from earth	1580 mm
Tripod weight	8,0 Kg
Leg diameter	40 mm
Terminal diameter	35 mm
Maximum load	30,0 Kg
Height when closed	940 mm
Leg Material	Aluminium
Terminal leg Material	Chromium plated steel
Foot	Reversible with conical tip or antivibration rubber foot.
Pulling	Adjustable aluminium
Special options	Antislid rubber handles

FM UHF Studio Links – FM Receivers

UTX-15M

URX-15M

RX-12

These new UHF links are designed for long and medium distance applications, STL's, backbones, multi-hop systems and other broadcast requirements, whenever the purpose is to deliver with broadcast-quality up to four high-quality audio channels (two are optional) or data flows.

UTX-15/S

URX-15/S

RX-12/S

The radio link is available from 180MHz up to 450MHz: it is made in a single 2-unit rack that permits a fast and easy integration with existing telecommunication systems, without any degradations about the levels, the modulations and the impedance



The output power is continuously adjustable up to 15W; several alarms to keep under control the working conditions of the amplifier are available.

The excellent spectral purity and the special design of the conversion oscillators endow these equipment with

an excellent Signal to Noise ratio, both in transmission and reception stage.

Both Transmitter and Receiver are agile: this means friendly use for installation and readjustments

CODE	MODEL	DESCRIPTION
F891	UTX-15/M	15W Mono/MPX UHF Transmitter 180-450 MHz
F892	UTX-15/S	15 W Stereo/UHF Transmitter 180-450 MHz
F889	URX-15/M	UHF Mono/MPX Receiver 180-450 MHz
F890	URX-15/S	UHF Stereo Receiver 180-450 MHz
F887	RX-12	FM Mono/MPX Receiver 87,5-108 MHz
F887.01	Rx-12/S	FM Mono/MPX/Stereo Receiver 87,5-108 MHz

Technical data

FREQUENCY		DESIGN DATA	
Modulation	solid state direct FM frequency synthesised crystal ref. thermal compensated	Pre & De emphasis	Flat or 75 or 50 μ s
Range	180-450MHz (tx_range 50MHz bandwidth; rx_range 5MHz /for 50MHz bandwidth tuning filter is required)	Amplitude response TX	(Mono) \pm 0,15 dB (from 30 Hz to 15 KHz) - 40dB from 19 kHz to 100 kHz (MPX) \pm 0,1 dB (from 40 Hz to 100 KHz) (SCA) 1 dB (from 20 KHz to 100 KHz)
System Capacity	1 stereo program or 1 mono program and one subcarrier (SCA) Better than 2 pp	Audio frequency response RX	(Mono) < 0,15 dB (from 30 Hz to 53 KHz); < -45 dB (from 19 kHz to 100 kHz) (MPX) < 0,2 dB (from 30 Hz to 53 KHz) < 1 dB (from 53 Hz to 75 kHz) < 3 dB (from 75 kHz to 100 kHz) > 40 dB (from 120 kHz to 1 MHz)
Setting	Directly digitally programmable on the front panel in 100 kHz steps	Display Meter	Frequency, power output, voltage, temperature, lock, input level meter, input level set, pre-emphasis value, pre-emphasis set, carrier enable, temperature alarm set, -3dB power down alarm set
Fine frequency Adjustment	International multiturn trimmer	Protections	Alarm Frequency programming error Local oscillator locked in Heat sink temperature exceeds that set RF output power below 2,5 W (TX version) RF output power below squelch threshold (RX version) Power supply voltage of a module outside the permitted range
RF OUTPUT SPECIFICATIONS VIDEO PERFORMANCE		REMOTE CONTROL	
Harmonics suppression	< - 80 dBc	Output Connector	DB9 connectors (command - CD: transmitter power ; RX: RS232 signal; TX: RS232 signal; ALL1 & ALL 2: alarm output signal; GND: earth ;
Spurious Emission	< - 80 dBc	STANDARDS COMPLIANCE	
Residual Asynchrony AM	> 60 dB Weighed	Radio spectrum	RTTE
Residual Synchrony AM	> 60 dB Weighed	EMC	ETS 449, ETS-339, ETS-384, CCIR-450, CCIR-412, CCIR-559, CCIR-468
S/N RATIO (weighted)	> 70 dB (referred to \pm 75 KHz)	Safety	EN 60950 - EN 60215
Distortion	0.05% or less for 75 kHz FM deviation	R&TTE	Declaration of Conformity with regards to the Directive 1999/5/EC
Probe	BNC connector RF 0 dBm; BNC connector LF 12 dBm	TEMPERATURE	
AUDIO SPECIFICATIONS		Nominal range	0° to 45° C (Meets ETS 300 019 requirements)
Mono/MPX Impedance	600 Ohm bal. or 10 KOhm unbal., XLR female Connector	Storage range	- 30° to 50° C
SCA Impedance	10 KOhm unbal., BNC Connector	Maximum relative Humidity	90% non condensing
Mono/MPX SCA Level	From 0 to + 12 dBm	Max Operating Altitude	2500 mt. a.s.l.
Left, and Right Impedance	600 Ohm bal. or 10 KOhm unbal, XLR female Connector		
Left, Right Level	From - 6 to + 12 dBm		
Stereo Separation	> 60 dB (40 Hz to 15KHz)		
THD	< 0,15% From 30 Hz to 15 KHz with de-emphasis		
RECEIVER SPECIFICATIONS			
Selectivity Static	3 dB @ \pm 150 KHz; 60 dB @ \pm 450 KHz; 80 dB @ \pm 600 KHz		
Selectivity Dynamic	\pm 300 KHz @ +5 dB; \pm 400 KHz @ +38 dB; \pm 500 KHz @ +40 dB		
Sensitivity Mono (deviation \pm 75 KHz)	15 mV (S/N = 60 dB with bandwidth = 30 \div 15 KHz)		
Sensitivity Stereo (deviation \pm 75 KHz)	150 mV (S/N = 60 dB with bandwidth = 30 \div 15 KHz decoded, de-emphasis)		



SPECIFICATIONS	UTX15	URX15	RX12
Rf output power	15 W		
Output Connector	N Type Female 50 Ohm	N Type Female	N Type Female 50 Ohm
Dimensions (W x H x D) mm	482 x 88 x 500	482 x 884 x 500	482 x 88 x 500
Weight	12 Kg	12 Kg	12 Kg
Power consumption	Approx. < 130 VA	Approx. < 90 VA	Approx. < 90 VA
Nr. of power supply	1 from 230 V a.c. \pm 10%	1 from 230 V a.c. \pm 10%	1 from 230 V a.c. \pm 10%
DC Power Supply	24 V (18-26 V)	24 V (18-26 V)	24 V (18-26 V)
Cooling	Forced Air	Forced Air	Forced Air

Studio Links Microwave Analogue Links

MTL/M-P

MTL/S-P

MR/P

MR/S-P

MTL/M-UK

MTL/S-UK

MR2/UK

These Studio Transmitter Links operate on the following frequency bands: 1.400–2.700 GHz (European Band 1.377-1.382 GHz; 1.429-1.434 GHz; 1.517-1.525 GHz; 1.660-1.670 GHz; 2.367-2.372 GHz; 2.468-2.483 GHz.)

The MTL equipment are suitable for transmitting a high-quality mono or stereo audio signal for broadcasting with output power up to 5 W.

In the Transmitter there are no tuned circuits or adjustable components for tuning onto the required frequency. Also, since all the circuits are wide band,

the absence of spurious emissions is assured.

The frequency steps of the synthesised oscillator are 100 kHz.

In the UK version, a circulator ensures effective protection against possible intermodulation products caused by other transmitters feeding the same dish, and a low-loss band pass filter which restricts harmonic emissions to the levels in compliance with the strictest current standards.

It is also possible to power the equipment by using an external 24 Vdc battery.



- Same synthesised oscillator for the transmitter and the receiver.
- Comb line band pass filter to ensure image-frequency rejection exceeding 60dB.
- High sensitivity in mono is around 10mV per 60dB of S/N Ratio.

- Low phase and frequency distortion of the output base-band are ensured by the AGC, compensated filters, digital-pulse frequency demodulator, amplitude and phase equaliser and an elliptic low-pass filter with cut-off of 100 kHz.

CODE	MODEL	DESCRIPTION
F445.04	MTL/M-P	4 W Mono/MPX Microwave Transmitter with Output Filter
F445.05	MTL/M-UK	3,5 W Mono/MPX Microwave Transmitter with Circulator
F445.07	MTL/S-P	4 W Stereo Microwave Transmitter with Output Filter
F445.08	MTL/S-UK	3,5 W Stereo Microwave Transmitter with Circulator
F444.04	MR/P	Microwave Mono/MPX Receiver
F444.05	MR2/UK	Microwave Mono/MPX Receiver 1377-1382; 1429-1434 MHz
F444.07	MR/S-P	Microwave Stereo Receiver
AVAILABLE OPTIONS	Stereo coder & decoder - Circulator - Other frequency on request in the range from 1400 to 2700 MHz	

Technical data

FREQUENCY		DESIGN DATA	
Modulation	solid state direct FM frequency synthesised crystal ref. thermal compensated	Pre & De emphasis	Flat or 75 or 50 μ s
Range	P Version: 1517÷1525; 1650÷1680; 2367÷2372; 2468÷2435 MHz UK Version: 1429÷1434; 1377÷1382 MHz	Amplitude response TX	(Mono) \pm 0,15 dB (from 30 Hz to 15 KHz) - 40dB from 19 kHz to 100 kHz (MPX) \pm 0,1 dB (from 40 Hz to 100 KHz) (SCA) 1 dB (from 20 KHz to 100 KHz)
System Capacity	1 stereo program or 1 mono program and one subcarrier (SCA)	Audio frequency response RX	(Mono) < 0,15 dB (from 30 Hz to 53 KHz); < -45 dB (from 19 kHz to 100 kHz) (MPX) < 0,2 dB (from 30 Hz to 53 KHz) < 1 dB (from 53 Hz to 75 kHz) < 3 dB (from 75 kHz to 100 kHz) > 40(from 120 kHz to 1 MHz)
Output frequency stability	Better than 2 ppm	Display Meter	Frequency, power output, voltage, temperature, lock, input level meter, input level set, pre-emphasis value, pre-emphasis set, carrier enable, temperature alarm set, -3dB power down alarm set
Setting	Directly digitally programmable on the front panel in 100 kHz steps	Protections	Alarm Frequency programming error Local oscillator locked in Heat sink temperature exceeds that set RF output power below 2,5 W (TX version) RF output power below squelch threshold (RX version) Power supply voltage of a module outside the permitted range
Fine frequency Adjustment	International multiturn trimmer		
RF OUTPUT SPECIFICATIONS VIDEO PERFORMANCE			
Harmonics suppression	< - 80 dBc		
Spurious Emission	< - 80 dBc		
Residual Asynchrony AM	> 60 dB Weighed		
Residual Synchrony AM	> 60 dB Weighed		
S/N RATIO (weighted)	> 70 dB (referred to \pm 75 KHz)		
Distortion	0.05% or less for 75 kHz FM deviation		
Probe	BNC connector RF 0 dBm; BNC connector LF 12 dBm		
AUDIO SPECIFICATIONS			
Mono/MPX Impedance	600 Ohm bal. or 10 KOhm unbal., XLR female Connector		
SCA Impedance	10 KOhm unbal., BNC Connector		
Mono/MPX SCA Level	From 0 to +12 dBm		
Left, and Right Impedance	600 Ohm bal. or 10 KOhm unbal., XLR female Connector		
Left, Right Level	From -6 to +12 dBm		
Stereo Separation	> 60 dB (40 Hz to 15KHz)		
THD	< 0,15% From 30 Hz to 15 KHz with de-emphasis		
RECEIVER SPECIFICATIONS			
Selectivity Static	3 dB @ \pm 150 KHz; 60 dB @ \pm 450 KHz; 80 dB @ \pm 600 KHz		
Selectivity Dynamic	\pm 300 KHz @ +5 dB; \pm 400 KHz @ +38 dB; \pm 500 KHz @ +40 dB		
Sensitivity Mono (deviation \pm 75 KHz)	15 mV (S/N = 60 dB with bandwidth = 30 ÷ 15 KHz)		
Sensitivity Stereo (deviation \pm 75 KHz)	150 mV (S/N = 60 dB with bandwidth = 30 ÷ 15 KHz decoded, de-emphasis)		
		REMOTE CONTROL	
		Output Connector	DB9 connectors (command - CD: transmitter power ; RX: RS232 signal; TX: RS232 signal; ALL1 & ALL 2: alarm output signal; GND: earth ;
STANDARDS COMPLIANCE			
Radio spectrum	ETSI 300-384		
EMC	ETS 449, ETS-339, ETS-384, CCIR-450, CCIR-412, CCIR-559, CCIR-468		
Safety	EN 60950 - EN 60215		
R&TTE	Declaration of Conformity with regards to the Directive 1999/5/EC		
TEMPERATURE			
Nominal range	0° to 45° C (Meets ETS 300 019 requirements)		
Storage range	- 30° to 50° C		
Maximum relative Humidity	90% non condensing		
Max Operating Altitude	2500 mt. a.s.l.		



SPECIFICATIONS	MTL P	MTL UK	MR P	MR UK
Rf output power	5 W	5 W		
Output Connector	N Type Female 50 Ohm	N Type Female	N Type Female 50 Ohm	N Type Female
Dimensions (W x H X D) mm	482 x 88 x 500	482 x 884 x 500	482 x 88 x 500	482 x 884 x 500
Weight	12 Kg	12 Kg	12 Kg	12 Kg
Power consumption	Approx. < 130 VA	Approx. < 130 VA	Approx. < 130 VA	Approx. < 130 VA
Nr. of power supply	1 from 230 V a.c. \pm 10%	1 from 230 V a.c. \pm 10%	1 from 230 V a.c. \pm 10%	1 from 230 V a.c. \pm 10%
DC Power Supply	24 V (18-26 V)	24 V (18-26 V)	24 V (18-26 V)	24 V (18-26 V)
Cooling	Forced Air	Forced Air	Forced Air	Forced Air

Automatic Change Over Unit

ACU

ACU-S

The ACU model is a universal and flexible automatic change-over unit designed for controlling FM radio and television transmitters or repeaters.

ACU includes a Baseband and RF internal switch. It can also control an external high power coaxial relay. In case of breakdown of the main RF signal, the equipment operates the subsequent switch-over to the auxiliary source, thus ensuring continuity of service.

The internal coaxial relay allows switch-over of RF signals of up to 350 W average power up to 1 GHz, and 150W up to 3 GHz.

By means of the dedicated DB-25 connector located in the rear panel of the unit, it can be matched with any type of external coaxial relay to control any high-power installations.

The unit, which is 100% microprocessor-controlled, allows the software-operated configuration of all operating parameters, such as low power threshold, waiting and switching time. The graphic display makes it possible to check the parameter settings and the operational status of the system.

Automatic operation can be deactivated from the front panel in order to allow the manual control of switching.

All base-band routing is made by means of fully passive bistable circuitry, in order to grant the signal continuity even in case the changeover unit gets damaged.

The unit features a dual independent mains power system and, as a standard, it is equipped with low voltage DC input for battery supplied systems.



CODE	MODEL	DESCRIPTION
F860.02	ACU	Automatic changeover unit for FM & TV Equipment
F860	ACU-S	Automatic changeover unit for FM & TV Equip. with Switch 350 W
AVAILABLE OPTIONS	Internal DC Input 24 V or 48 V	

Technical data

Video A, Video B	BNC, 75 Ohm fully passive routing		Unit A and Unit B	Fully isolated INPUTS and OUTPUTS 80 dB 75 dB
Audio stereo	Left A (main), Left B (aux), Right A (main), Right B (aux),		Can BUS (future option)	9 pin sub-D connector
Audio Connector	standard XLR fully passive routing		Serial RS232/RS485	9 pin sub-D connector (software selectable by user)
Output Connector	N Type Female 50 Ohm		Ethernet TCP/IP	RJ45 (optional)
Input Sensitivity	-30 dBm nominal \pm 20 dB		Temperature operating range	0° to 45° C (Meets ETS 300 019 requirements)
Operating frequency	1 GHz		Maximum relative Humidity	90% non condensing
Average output power	350 W		Dimensions (W x H x D) mm	482 x 44 x 450
Insertion loss	0.15 dB	2 Ghz 3 Ghz	Weight	5 Kg
V.S.W.R	1.15	250 W 150 W	Power consumption	Approx. < 50 VA
Isolation between channels	85 dB	0.2 dB 0.25 dB	Nr of power supply boards	2 from 230 V a.c. \pm 20%
Parallel port	25 pin sub-D connector 1.20 1.25		DC Power Supply	24 V or 48 V floating

Automatic Change Over System ACS (N + 1 SYSTEM)

The ACS model is a universal and flexible automatic change-over unit designed for controlling FM radio and television transmitters or repeaters. In case of damage of one of the main equipment, the ACS automatically switches to the reserve equipment. The equipment can be used in the applications for active and passive reserve systems, pre- and final stage reserve, (n+1)-systems and for the control of antenna selector switches.

The ACS is designed to control up to six service equipments and one reserve according to (n+1)-systems.

The general switchover criteria as well as the delay time between missing RF signal and switchover, and the priority of the survive transmitter, are freely selectable.

All program specific settings of the service transmitter are effective in case of the switching over to the reserve equipment.

Furthermore, manual switchover and operation of the

each equipment via the ACS are possible.

By means of the dedicated DB-25 connector located in the rear panel, the equipment can be connected with any type of external coaxial relays to control high-power installations.

The unit, which is 100% microprocessor-controlled, allows the software-operated configuration of all operating parameters, such as low power threshold, waiting and switching time.

The graphic display is a TFT 6" colour VGA and makes it possible to check the parameter settings and the operational status of the system. The established operating figures and the status of the transmitters and antennas, are respectively symbolically represented in the graphic display.

All the connections to the components of the transmitter system are arranged in the rear part of the unit. The unit features a dual independent mains system and optionally includes a low voltage DC input for battery supplied systems.



CODE	MODEL	DESCRIPTION
F860.02	ACS	Automatic changeover System up to 6 FM & TV Equipment
AVAILABLE OPTIONS	Internal DC Input 24 V or 48 V	

Technical data

Controls	up to six service transmitters and one reserve transmitter in a (n+1)-system	Temperature operating range	0° to 45° C (Meets ETS 300 019 requirements)
Fast overview	operating status with LED's on the front panel	Maximum relative Humidity	90% non condensing
Status overview	TFT 6" VGA graphic colour display	Dimensions (W x H x D) mm	482 x 132 x 450
Serial RS232/RS485	9 pin sub-D connector (software selectable by user)	Weight	6 Kg
Ethernet TCP/IP	RJ45 (optional)	Power consumption	Approx. < 100 VA
		Nr of power supply boards	2 from 230 V a.c. ± 20%
		DC Power Supply	24 V or 48 V floating (optional)

Analogue TV Transmitters

E 50-TU – 50 W

EK 150-TU – 150 W

EK 200-TU – 200 W

Basically, the general design of our Television transmitters includes five plug-in modules with output power up to 200 W solid state. The directional coupler, the output filter and the switching power supply module are built-in stages in any equipment. The transmitters are available to operate on any bands and in compliance with several TV standards. To greatly simplify the conversion to digital

technology, the TV modulator is an external unit. The modulator can operate as a final stage directly connected to a radiating system or as a driver in an independent power amplifier. In any equipment, RJ-45, RS-485 and parallel interface connectors are available for remote control monitoring.



CODE	MODEL	DESCRIPTION
F842.01	E 10-TU	10 W UHF Transmitter with output filter
F842	E 50-TU	50 W UHF Transmitter with output filter
F844	EK 150-TU	150 W UHF Transmitter COMPACT with output filter
F878	EK 200-TU	200 W UHF Transmitter COMPACT with output filter
AVAILABLE OPTIONS	Precision TCXO	



Technical data

SPECIFICATIONS	E10-TU	E50-TU	EK150-TU	EK200-TU
Rf output power	10 W ps	50 W ps	150 W ps	200 W ps
Output Connector	N Type Female	N Type Female	N Type Female	N Type Female
Dimensions (W x H x D) mm	482 x 176 x 450	482 x 176 x 450	482 x 176 x 450	482 x 176 (+44) x 450
Weight	20 Kg	20 Kg	22 Kg	25 Kg
Power consumption	Approx. < 140 VA	Approx. < 370 VA	Approx. < 700 VA	Approx. < 850 VA
Nr. of power supply boards	1 from 230 V a.c. ± 15%	1 from 230 V a.c. ± 20%	1 from 230 V a.c. ± 20%	1 from 230 V a.c. ± 15%
DC Power Supply	48 V (36-60 V)	48 V (36-60 V)	48 V (36-60 V)	48 V (36-60 V)
Number of fans	2 blowers, 24 Vdc	2 blowers, 24 Vdc	2 blowers, 24 Vdc	2 blowers, 24 Vdc

Analogue TV Transmitters

E 300-TU – 300 W

E 500-TU – 500 W

E 1000-TU – 1 KW

Basically, the general design of our Television transmitters includes five plug-in modules with output power up to 1 KW solid state. The directional coupler, the output filter and the switching power supply module are built-in stages in any equipment. The transmitters are available to operate on any bands and in compliance with several TV standards.

To greatly simplify the conversion to digital technology, the TV modulator is an external unit. The modulator can operate as a final stage directly connected to a radiating system or as a driver of an independent power amplifier. In any equipment RJ45, RS485 and parallel interface connector for the remote control monitoring



CODE	MODEL	DESCRIPTION
F848.01	E 300-TU	300 W UHF Transmitter with output filter (20U cabinet incl.)
F848	E 500-TU	500 W UHF Transmitter with output filter (20U cabinet incl.)
F896	E 1000-TU	1000 W UHF Transmitter with output filter (20U cabinet incl.)
AVAILABLE OPTIONS	Precision TCXO	



Technical data

SPECIFICATIONS	E300-TU	E500-TU	E1000-TU
Rf output power	300 W p.s.	500 W p.s.	100 W p.s.
Output Connector	7/16 Type Female	7/16 Type Female	7/16 Type Female
Dimensions (W x H x D) mm	600 x 800 x 660	600 x 800 x 660	600 x 800 x 660
Weight	120 Kg	120 Kg	150 Kg
Power consumption	Approx. < 140 VA	Approx. < 370 VA	Approx. < 700 VA
Nr. of power supply boards	3 from 230 V a.c. ± 15%	4 from 230 V a.c. ± 15%	5 from 230 V a.c. ± 20%
DC Power Supply	48 V (36-60 V)	48 V (36-60 V)	48 V (36-60 V)
Number of fans	4 blowers	4 blowers	4 blowers

Digital TV Transmitters

E 125-DU – 125 W

E 250-DU – 250 W

The ED SERIES television transmitters are designed with the latest state of the art technology and are composed by the DVB-T Driver, the solid state power amplifier and the output filter. All the equipment are assembled in a 19" cabinet and can deliver up to 250 W output power. The ED SERIES transmitters use rugged and reliable components and ultimate circuit design. The equipment can be suitable for unattended operation. In the design, a particular attention has been given to greatly improve redundancy in each stage/module in the RF chain as well as in the overall transmitter configuration. The latest RF power FET Transistor used in the ED SERIES assures superior technical performance in digital applications. These equipment are available to operate on all bands and are designed to receive DVB-T and DVB-H Transport Stream signals. Configurations as dual drive or full redundancy 1+1 are available on request. The transmitters are equipped with RJ 45, RS 485 and parallel interface connector for the remote control monitoring.



CODE	MODEL	DESCRIPTION
F873	E 125-DU	125 W rms UHF DVB-T/H Digital Transmitter - (20U cab. incl.)
F875	E 250-DU	250 W rms UHF DVB-T/H Digital Transmitter - (20U cab. incl.)
AVAILABLE OPTIONS	6 MHz Bandwidth - 5 MHz Bandwidth - RF Agile converter – GPS Receiver - WEB Browser - SNMP client - Precision TCXO (0,01 ppm).	

Technical data

SPECIFICATIONS	E125-DU	E250-DU
Rf output power	125 W ps	250 W ps
Output Connector	7/16 Type Female	7/16 Type Female
Range	UHF (470-860MHz)	UHF (470-860MHz)
Dimensions (W x H x D) mm	600 x 800 x 660	600 x 800 x 660
Weight	110 Kg	120 Kg
Power consumption	Approx. < 1300 VA	Approx. < 2300 VA
Power supply req.	from 230 V a.c. ± 15%	from 230 V a.c. ± 15%
Nr. of power supply boards	1	2
Number of fans	2+1 blowers	2+2 blowers

Digital TV Transmitter

E 500-DU – 500 W

The ED SERIES television transmitters are designed with the latest state of the art technology and are composed by the DVB-T Driver, the solid state power amplifier and the output filter.

All the equipment are assembled in a 19" cabinet and can deliver up to 250 W output power.

The ED SERIES transmitters use rugged and reliable components and ultimate circuit design. The equipment can be suitable for unattended operation. In the design, a particular attention has been given to greatly improve redundancy in each stage/module in the RF chain as well as in the overall transmitter configuration.

The latest RF power FET Transistor used in the ED SERIES assures superior technical performance in digital applications. These equipment are available to operate on all bands and are designed to receive DVB-T and DVB-H Transport Stream signals.

Configurations as dual drive or full redundancy 1+1 are available upon request.

The transmitters are equipped with RJ 45, RS 485 and parallel interface connector for the remote control monitoring



CODE	MODEL	DESCRIPTION
F874	E 500-DU	500 W rms UHF DVB-T/H Digital Transmitter - (20U cab. incl.)
AVAILABLE OPTIONS	6 MHz Bandwidth - 5 MHz Bandwidth - RF Agile converter – GPS Receiver - WEB Browser - SNMP client - Precision TCXO (0,01 ppm).	

Technical data

SPECIFICATIONS	E500-DU
Rf output power	500 W rms.
Output Connector	7/16 Type Female
Range	UHF (470-860MHz)
Dimensions (W x H X D) mm	600 x 800 x 660
Weight	150 Kg
Power consumption	Approx. < 4300 VA
Power supply req.	three-phase 380 V a.c. ± 15%
Nr. of power supply boards	3
Number of fans	2+3 blowers

Uninterruptible Power Supply

MEGALINE

UPS's can protect systems against lightning strikes, power failures, brownouts, surges, poorly conditioned power feeds and offer an economical safeguard against many forms of electrical spikes in the frequency or the amplitude of the input voltage. In case of critical environment with no proper protection installed, these kinds of occurrences can cause damage to the equipment or cause components not to work or function properly.

In our MEGALINE UPS's, the decoupling of the output from the input makes it possible to operate the equipment with a wide input voltage range, reducing the number of battery switchovers and allowing operation with GEN-SETS and frequency conversion. Thanks to the special design of the inverter stage which is always on line, the intervention time is nil. The modular architecture of electronics and batteries admits redundant configurations, simplified maintenance and the possibility of fast expansions, to provide your UPS with additional increased capability.



Redundancy in terms of both the power modules and the batteries: rectifier, inverter and battery charger are all fitted on each of the power boards.

Operating continuity is always guaranteed, even if one of the modules should fail, without any interruption or switchover, thanks to parallel load sharing (all the boards participate in the supply of power to the load). The level of redundancy is set via software using the display, to warn when redundancy, but not operation, may be endangered because of an increase in consumption.

All the operating data and UPS settings are readily accessible by way of the LCD panel. The operating parameters can be set in UPS Setup in order to optimise their application.

It is also possible to programme UPS switch on,

switch off and testing with a daily, weekly or monthly schedule, or on command.

The LCD display is extremely user friendly, so that these operations are also accessible to the less experienced.

Password protection, however, is envisaged.

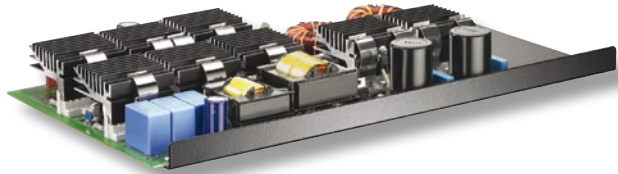
Easy to expand in power and autonomy thanks to the full modularity of the boards and the low voltage (36V) battery kits, enabling the battery operation time to be customised according to the specific application. All the models, even the single cabinet versions up to 5000 VA, can be easily connected to external battery cabinets without the need for any modification thanks to the standard, plug&play-type connection.

CODE	MODEL	DESCRIPTION
F859	MEGA 2500R	UPS 2,5 KVA MEGALINE RACK (Back up 30 min. at 80%)
AVAILABLE OPTIONS	1 Battery charger slots in dedicated battery cabinet up tp 5000 W	

Technical data

Technology	On line dual conversion
Input voltage range	184÷264 V with 100% load - 100÷264 V with 50% load
Input frequency	50 / 60 Hz ± 2% autosensing
Input current THD	< 3%
Input power factor	> 0,99 from 20% of load on
OUTPUT SPECIFICATIONS	
Nominal output voltage	230 V ± 1%
Nominal output frequency	50 / 60 Hz synchronized
Output voltage THD	< 1%
Batteries	3 pcs 12 V 9 Ah sealed, lead-acid, maintenance free batteries each power board
Back up – 80%	load 11

Back up – 50%	load 20
Bypass	Static + electromechanical - zero transfer time
Overload capability (mains mode)	150% for 30 sec. - 200% for 5 sec. Without bypass intervention
Acoustic noise @ 1m	40 dBA
STANDARDS COMPLIANCE	
Typical Features	EN 50091-3
EMC	EN 50091-2
Safety	EN 50091-1
TEMPERATURE	
Nominal range	0° to 40° C (Meets ETS 300 019 requirements)
Maximum relative Humidity	From 20% to 80% non condensing



SPECIFICATIONS	MEGALINE 1250	MEGALINE 2500	MEGALINE 3750	MEGALINE 3750
Nominal power	1250	2500	3750	5000
Active power	875	1750	2625	3500
Batteries number	3	6	9	12
Dimensions (W x H x D) mm	270 x 475 x 570	270 x 475 x 570	270 x 475 x 570	270 x 475 x 570
Weight	23 Kg	34 Kg	43 Kg	53 Kg
Installed power boards	1	2	3	4
Available power slots	3	2	1	0
Installed battery kits	1	2	3	4
Available battery slots	3	2	1	0

SPECIFICATIONS	MEGALINE 6250/2	MEGALINE 7500/2	MEGALINE 8750/2	MEGALINE 10000/2
Nominal power	6250	7500	8750	10000
Active power	4375	5250	6125	7000
Batteries number	15	18	21	24
Dimensions (W x H x D) mm	2 x 270 x 475 x 570	2 x 270 x 475 x 570	2 x 270 x 475 x 570	2 x 270 x 475 x 570
Weight	26 + 58 Kg	29 + 65 Kg	31 + 73 Kg	34 + 80 Kg
Installed power boards	5	6	7	8
Available power slots	4	3	2	1
Installed battery kits	4	5	6	7
Available battery slots	6	5	4	3

Uninterruptible Power Supply

TRIMOD

UPSes can protect systems against lightning strikes, power failures, brownouts, surges, poorly conditioned power feeds and offer an economical safeguard against many forms of electrical spikes in the frequency or the amplitude of the input voltage. In case of critical environment with no proper protection installed, these kinds of occurrences can cause damage to the equipment or cause components not to work or function properly.

Modularity, redundancy, scalability, versatility, efficiency, all the same time. These are the reasons why the TRIMOD line is truly a unique and revolutionary UPS.

With its innovative modular structure and excellent quality of the components, TRIMOD guarantees absolute reliability. In fact, the modular solution applied to these UPS allows redundant configurations with respect to the load so that any failures of one module is compensated by the remaining modules, with no downtime.

Thanks to the modular concept, to the extremely compact size and to the simple installation process, TRIMOD can be up-graded according to the customer's real needs by simply adding power modules and battery modules just as needed.

The energy efficiency offered by TRIMOD is among the best ones available in the market today. This means a significant save of energy when the equipment is under operation.

Moreover, TRIMOD contributes to eliminate the costs related to the absorption of reactive power thanks to the Power Factor Correction of the input current, providing great power savings in operating costs as well as savings in the installation and equipment costs.

The exclusive "Smart Charger" function ensures that battery operates under equalised and balanced conditions at any time, granting a longer working life and providing the benefits of great savings in maintenance costs.

TRIMOD is easily transportable by a single person in a regular van, movable to its installing position



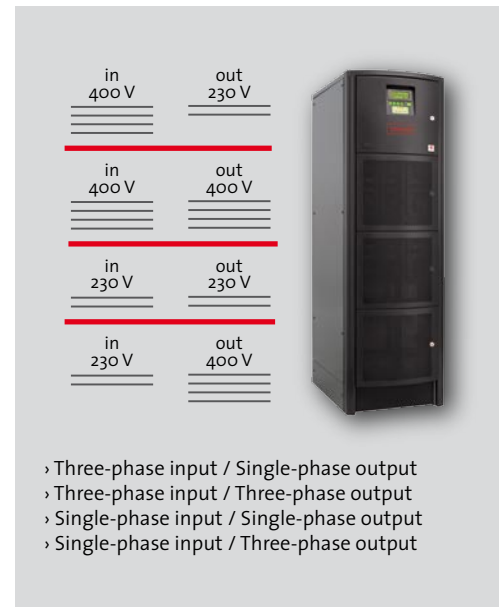
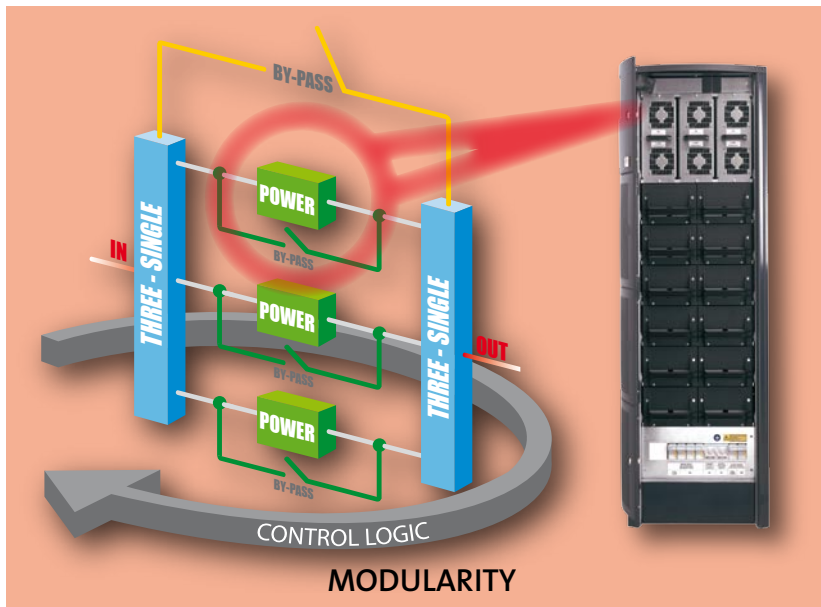
and installable inside shelters or buildings, with the maximum of ease and in a minimum of time. TRIMOD meets the needs of a wide variety of applications demanding enhanced versatility to be adapt to the various types of electrical systems. The unit is available for single-or three-phase input, single-or three-phase output with the possibility of adapting the output voltage and frequency parameters, with insulation or passing neutral: TRIMOD really covers all types of application.

CODE	MODEL	DESCRIPTION
F859.05	TRIMOD 8	UPS 8 KVA TRIMOD
AVAILABLE OPTIONS	Isolating transformer	

Technical data

Technology	On line dual conversion
Input/Output Configuration	1/1, 3/1, 3/3, 1/3 (user selectable during installation) 3/3
Input voltage range	230 +15% -20% / 400 +15% -20% (neutral line is needed)
Input frequency	50 / 60 Hz \pm 2% auto-sensing
Input current THD	< 5 %
Input power factor	> 0,99
OUTPUT SPECIFICATIONS	
Nominal output voltage	230 \pm 1% / 400 \pm 1%
Nominal output frequency	50 / 60 Hz synchronized
Output voltage THD	< 1%
Batteries	3 pcs 12 V 9 Ah sealed, lead-acid, maintenance free batteries each power board
Back up – 80%	load 11
Back up – 50%	load 20
Bypass	Static and electromechanical (independent on each power module)
Overload capability (mains mode)	150% for 30 sec. - 200% for 5 sec. Without bypass intervention
Crest Factor	3-5
Acoustic noise @ 1m	42 \div 46 dBA

EFFICIENCY	
AC / AC (on line)	93% max
AC / AC (Eco Mode)	98%
DC / AC (on batteries)	93% max
REMOTE CONTROL	
Output Connector	Two RS232 serial ports (on standard canon DB9 connectors) One logic level port (on canon DB9 male connector) Four dry contact outputs (user selectable NC or NO relay contacts)
User Interface	Back-lit display with colour status indicator and multi-function buttons for real time monitoring of remaining runtime and UPS working status
STANDARDS COMPLIANCE	
Typical Features	EN 62040-3
EMC	EN 50091-2
Safety	EN 62040-1-1
Protection Level	IP20
TEMPERATURE	
Nominal range	0° to 40° C (Meets ETS 300 019 requirements)
Maximum relative Humidity	From 20% to 80% non condensing
Cooling System	Fan assisted, independent on each power module. Smart electronic control based on the ambient temperature and the load percentage



SPECIFICATIONS	TRIMOD 8	TRIMOD 10	TRIMOD 16	TRIMOD 20	TRIMOD 30
Nominal power	8000	10000	16000	20000	30000
Active power	6400	8000	12800	16000	24000
Installed Power Modules	3	3	6	6	9
Dimensions (W x H x D) mm	414 x 1345 x 628	414 x 1345 x 628	414 x 1345 x 628	414 x 1345 x 628	2 x 414 x 1345 x 628
Weight	110 Kgs	110 Kgs	130 Kgs	130 Kgs	1540 + 70 Kgs

FM Double Cavity Filters

M1F4N

M1F4Q

M1F4R

The M1F4 are high quality filters with one-quarter wavelength coaxial cavities, especially designed for heavy duty service in the 87,5 ÷ 108 MHz band. They are band pass double cavities to be installed between the transmitter and the antenna, to drastically reduce spurious signals and any other intermodulation product.

The M1F4 are double filters with rotating loops allowing easy tuning of the circuit for a different sideband attenuation and with a variable coupling. To enhance the dissipation of even high temperatures, a heat sink has been installed on the rear panel. The filters are provided in a 19" standard rack.



CODE	MODEL	DESCRIPTION
F894.01	M1F4N	3U 250W Band Pass filter with directional coupler, In/Out N
F894.02	M1F4R	3U 500 W Band Pass filter with directional coupler, In/Out 7/16
AVAILABLE OPTIONS	Different Input and Output connector	

Technical data

SPECIFICATIONS	M1F4N	M1F4R
Rf output power	250	500
Input Connector	N	N
Output Connector	N	7/16
Weight	4	5
Minimum Frequency Spacing	2,0 MHz 1,4 MHz 0,7 MHz	2,0 MHz 1,4 MHz 0,7 MHz
Typical Insertion loss	< 0,65 dBd < 0,9 dBd < 1,4 dBd	< 0,65 dBd < 0,9 dBd < 1,4 dBd
Frequency Range	87,5 ÷ 108 MHz	87,5 ÷ 108 MHz
Input Impedance	50 Ohm	50 Ohm
VSWR	≤ 1.15:1	≤ 1.15:1
Internal parts	Silver-plated brass and PTFE	Silver-plated brass and PTFE
External parts	Aluminium	Aluminium
Colour	Grey	Grey
Temperature operating range	From -10°C to +50°C	From -10°C to +50°C

FM Double & Triple Cavity Filters

DCF 500

DCF 2000

DCF 5000

TCF 3000

These high quality Cavity Filters are one-quarter wavelength coaxial cavities designed for the 87,5 ÷ 108 MHz band. They are band pass double cavities to be installed between the transmitter and the antenna, to drastically reduce spurious signals and any other intermodulation product.

The DCF is a double filter and the TCF is a triple filter, all of them with rotating loops allowing easy tuning of the circuit for a different sideband attenuation and with a variable coupling.

CODE	MODEL	DESCRIPTION
F210	DCF 500	Double cavity filter, 800 W Power rate per channel IN/OUT N
F211	DCF 2000	Double cavity filter, 2 KW Power rate per channel IN/OUT 7/16"
F212	DCF 5000	Double cavity filter, 5 KW Power rate per channel IN/OUT 7/8"
F679	TCF 3000	Triple cavity filter, 3000 W Power rate per channel IN/OUT 7/8"
AVAILABLE OPTIONS	Different Input and Output connector	



Technical data

SPECIFICATIONS	DCF 500	DCF 2000	DCF 5000	TCF 3000
Rf output power	800	2000	5000	3000
Input Connector	N	7/16	7/8	7/8
Output Connector	N	7/16	7/8	7/8
Weight	10 Kg	18 Kg	37 Kg	25 Kg
Minimum Frequency Spacing	2,2 MHz	2,2 MHz	2,2 MHz	2,2 MHz
Typical Insertion loss	< 0,4 dBd	< 0,3 dBd	< 0,2 dBd	from 0,3 to 0,8 dBd
Frequency Range	87,5 ÷ 108 MHz	87,5 ÷ 108 MHz	87,5 ÷ 108 MHz	87,5 ÷ 108 MHz
Input Impedance	50 Ohm	50 Ohm	50 Ohm	50 Ohm
VSWR	≤ 1.15:1	≤ 1.15:1	≤ 1.15:1	≤ 1.15:1
Internal parts	Silver-plated brass and PTFE	Silver-plated brass and PTFE	Silver-plated brass and PTFE	Silver-plated brass and PTFE
External parts	Aluminium	Aluminium	Aluminium	Aluminium
Colour	Black	Black	Black	Black
Temperature operating range	From -10°C to +50°C	From -10°C to +50°C	From -10°C to +50°C	From -10°C to +50°C

FM Double Bridge Combiners & FM Star Point Combiners in rack Slide

M2F4N

M3F4N

M4F4N

M2F4N/P

M3F4N/P

M4F4N/P

The “Starpoint” combining filters are carefully calibrated at our laboratories onto any frequency figures required by the customer. Even with 100% modulation, they assure an effective separation for adjacent frequencies up to 1,3 MHz. The multi-program models are designed in one modular mechanical structure which can house up to four identical band pass Coaxial Cavity filters, type M1F4. In these configurations, the output power figures of the filters are combined through rigid lines which are part of the unit and can be adjusted at 2, 3, 4, 5, 6, 7, 8 Narrow band inputs by means of easy operations.

The “Double Bridge” combining filters allow easy changes to new figures of the operating frequencies. With 100% modulation, they can satisfactorily separate two adjacent frequencies up to 0,6 MHz distance. The multi-program models are designed in one modular mechanical structure which can house up to two identical band pass filters, type M1F4 in Double Bridge Configuration.

They are composed by two different Double Cavity Filters and two Hybrid Couplers, including a Narrow Band and Wide Band input lines



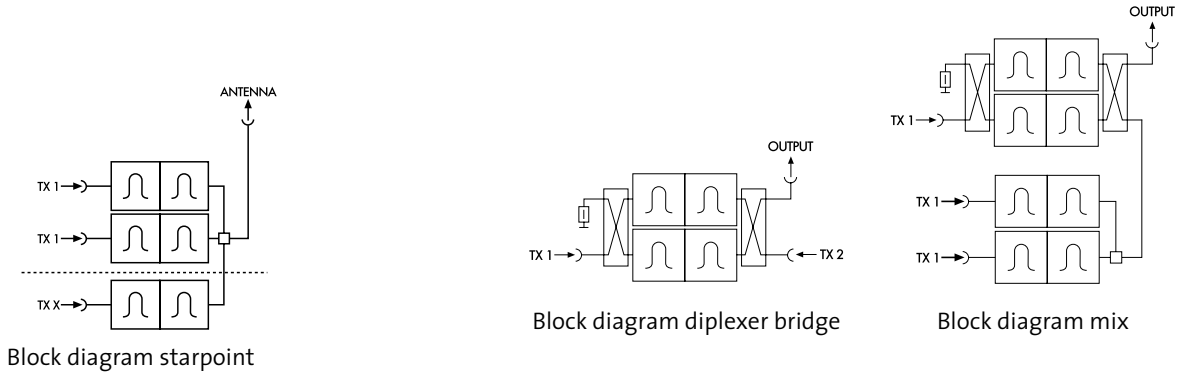
On request, up to eight different transmitters can be combined to a common transmission antenna with the same technology.

To deliver two reflected and direct monitories at a preset level of -50 dB, a directional coupler is assembled at the output of the combiner.

CODE	MODEL	DESCRIPTION
100252	M5F4R	500 W/ch Pentaplexer Starpoint Combiner heads., Out 7/8
100226	M5F4N	100 W/ch Pentaplexer Starpoint Combiner, Out 7/16
100227	M4F4R	500 W/ch Quadriplexer Starpoint Combiner heads. Out 7/8
100229	M2F4R	500 W/ch Diplexer Starpoint Combiner heads., Out 7/16
100241	M6F4R/P	500 W/ch Esaplexer Bridge Combiner heads., Out 7/8
100225	M5F4R-P	500 W/ch Pentaplexer Bridge Combiner heads., Out 7/8
100251	M4F4R/P	500 W/ch Quadriplexer Bridge Combiner heads., Out 7/8
AVAILABLE OPTIONS	Different Input and Output connector	

Technical data

Frequency Range	87,5 ÷ 108 MHz	External parts	Aluminium
Input Impedance	50 Ohm	Colour	Black
VSWR	≤ 1.2:1	Temperature operating range	From -10°C to +50°C
Decoupling between Input port	28 dB	Dimensions (W x H X D) mm	482 x 310 (7 Unit) x 578 up to 4 Channel 482 x 620 (14 Unit) x 578 from 5 to 8 Channel
Internal parts	Silver-plated brass and PTFE		



SPECIFICATIONS	M2F4N	M4F4N	M2F4Q	M4F4Q	M2F4R	M4F4R
Rf output power	100	100	300	300	500	500
Input Connector	N	N	N	N	N	N
Output Connector	N	N	N	7/16	7/16	7/8
Weight	18 Kg	25 Kg	19 Kg	26 Kg	20 Kg	27 Kg
Minimum Frequency Spacing	2,0 MHz	2,0 MHz	1,4 MHz	1,4 MHz	0,7 MHz	0,7 MHz
Typical Insertion loss	< 0,65 dBd	< 0,65 dBd	< 0,9 dBd	< 0,9 dBd	< 1,4 dBd	< 1,4 dBd
Minimum Frequency Spacing	4,0 MHz	3,0 MHz	2,0 MHz	1,6 MHz	1,3 MHz	0,6 MHz
Max operating Power	500	500	500	350	200	not available



SPECIFICATIONS	M2F4N/P	M4F4N/P	M2F4Q/P	M4F4Q/P	M2F4R/P	M4F4R/P
Rf output power	100	100	300	300	500	500
Input Connector	N	N	N	N	N	N
Output Connector	N	N	N	7/16	7/16	7/8
Weight	20 Kg	27 Kg	21 Kg	28 Kg	22 Kg	30 Kg
Minimum Frequency Spacing	2,0 MHz	2,0 MHz	1,4 MHz	1,4 MHz	0,7 MHz	0,7 MHz
Typical Insertion loss	< 0,65 dBd	< 0,65 dBd	< 0,9 dBd	< 0,9 dBd	< 1,4 dBd	< 1,4 dBd
Minimum Frequency Spacing	4,0 MHz	3,0 MHz	2,0 MHz	1,6 MHz	1,3 MHz	0,6 MHz
Max operating Power	1000	1000	700	500	400	300

FM Double Bridge Combiners

DPX 1000
TLX 500

DPX 2000
TLX 2000

DPX 5000
TLX 5000

The “Double Bridge” combining filters allow easy changes to new figures of the operating frequencies. With 100% modulation, they can satisfactory separate two adjacent frequencies up to 2 MHz. They are composed of two different double cavity filters and

two hybrid couplers, including a narrow band and wide band input lines. Combining systems for special purposes are available on request.

CODE	MODEL	DESCRIPTION
F247	DPX 1000	Diplexer 800 W Power rate per channel, IN N, OUT 7/16”
F248	DPX 2000	Diplexer 2 KW Power rate per channel, IN 7/16”, OUT 7/8”
F248.01	DPX 2000	Diplexer 2 KW Power rate per channel, IN 7/8”, OUT 1-5/8”
F249	DPX 5000	Diplexer 4 KW Power rate per channel, IN 7/8” , OUT 1-5/8”
F252	TLX 500	Triplexer 800 W power rate per channel, IN N, OUT 7/8”
F253	TLX 2000	Triplexer 2 KW power rate per channel, IN 7/16”, OUT 1-5/8”
F254	TLX 5000	Triplexer 4 KW power rate per channel, IN 1-5/8” , OUT 3-1/8”
AVAILABLE OPTIONS	Different Input and Output connector - Triple cavity	



SPECIFICATIONS	DPX 1000	TLX 1000	DPX 2000	TLX 2000	DPX 5000	TLX 5000
Rf output power	800	800	2000	2000	4000	5000
Input Connector	N	N	7/16	7/16	7/8	1-5/8
Output Connector	7/16	7/8	7/8	1-5/8	1-5/8	3-1/8
Weight	28 Kg	56 Kg	58 Kg	122 Kg	107 Kg	230 Kg
Minimum Frequency Spacing	2,2 MHz	2,2 MHz	2,2 MHz	2,2 MHz	2,2 MHz	2,2 MHz
Typical Insertion loss	< 0,6 dBd	< 0,6 dBd	< 0,5 dBd	< 0,4 dBd	< 0,5 dBd	< 0,4 dBd
Isolation Between Channels	> 30 dB	> 30 dB	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Frequency Range	87,5 ÷ 108 MHz					
Input Impedance	50 Ohm					
VSWR	≤ 1.2:1					
Internal parts	Silver-plated brass and PTFE					
External parts	Aluminium					
Colour	Black					
Temperature operating range	From -10°C to +50°C					

FM Starpoint Combiners

DSX 1000
TTX 500

DSX 2000
TTX 2000

DSX 5000
TTX 5000

The “Starpoint” combining filters are carefully calibrated at our laboratories onto the frequency figures required by the customer. Even at 100% modulation, they assure an effective separation for adjacent frequencies up to 2 MHz. They are composed

of two or more coaxial cavity filters connected to rigid lines, each of them equipped with narrow band input lines. Combining systems for special purposes are available on request.

CODE	MODEL	DESCRIPTION
F255	DSX 1000	Diplexer 800 W power rate per channel, IN N, OUT 7/16”
F256	DSX 2000	Diplexer 2 KW power rate per channel, IN 7/16”, OUT 7/8”
F257	DSX 5000	Diplexer 4 KW power rate per channel, IN 7/8” , OUT 1-5/8”
F271	TTX 500	Triplexer 800 W power rate per channel, IN N, OUT 7/8”
F272	TTX 2000	Triplexer 2 KW power rate per channel, IN 7/16”, OUT 1-5/8”
F273	TTX 5000	Triplexer 4 KW power rate per channel, IN 1-5/8” , OUT 3-1/8”
F625	QPX 500	Quadriplexer 500 W power rate per channel, IN N, OUT 7/8”
F625.01	QPX 250	Quadriplexer 250 W power rate per channel, IN N, OUT 7/16”
F625.02	QPX 100	Quadriplexer 100 W power rate per channel, IN/OUT N
F626	QPX 1000	Quadriplexer 1 KW power rate per channel, IN 7/16”, OUT 1-5/8”
AVAILABLE OPTIONS	Different Input and Output connector - Triple cavity	



SPECIFICATIONS	DSX 1000	TTX 500	QPX 1000	DSX 2000	TTX 2000	QPX 250	DSX 5000	TTX 5000	QPX 500	QPX 1000
Rf output power	800	800	100	2000	2000	250	5000	5000	500	1000
Input Connector	N	N	N	7/16	7/16	N	7/8	1-5/8	N	7/16
Output Connector	7/16	7/8	N	7/8	1-5/8	7/16	1-5/8	3-1/8	7/8	1-5/8
Weight	23 Kg	40 Kg	45 Kg	42 Kg	60 Kg	46 Kg	80 Kg	120 Kg	47 Kg	80 Kg
Minimum Frequency Spacing	2,2 MHz	2,2 MHz	2,2 MHz	2,2 MHz	2,2 MHz	2,2 MHz	2,2 MHz	2,2 MHz	2,2 MHz	2,2 MHz
Typical Insertion loss	< 0,6 dBd	< 0,6 dBd	< 0,5 dBd	< 0,5 dBd	< 0,4 dBd	< 0,4 dBd	< 0,4 dBd	< 0,4 dBd	< 0,4 dBd	< 0,4 dBd
Isolation Between Channels	> 30 dB	> 30 dB	> 35 dB	> 40 dB	> 40 dB	> 40 dB	> 40 dB	> 40 dB	> 40 dB	> 40 dB
Frequency Range	87,5 ÷ 108 MHz									
Input Impedance	50 Ohm									
VSWR	≤ 1.2:1									
Internal parts	Silver-plated brass and PTFE									
External parts	Aluminium									
Colour	Black									
Temperature operating range	From -10°C to +50°C									

FM Dipole Antennas

PLS 1

DIP 11

DIP 15

These dipole antennas model DIP-15, are rugged broadband aerials especially designed for arrays composed of several elements. The dipole is made of hot galvanized steel to provide high corrosion resistance, for a lifetime duration and operation in any climate conditions.

A thick internal ground connection across the feeding line assures heavy duty service and protection in case of lightning. The design of the internal lines and the

PTFE insulator provide reliability and long lasting operation for power ratings up to 1500 W on the DIP 11 model, and up to 5000 W on the DIP 15 model.

The aluminium dipole PLS 1 model is a smart, effective and budget solution . An accurate testing process is carried out at factory on each of these dipoles to control the compliance to all the stated figures.

CODE	MODEL	DESCRIPTION
F033.01	PLS1	Aluminium Dipole, 600 W Power rate
F204	DIP11/N	Hot Galvanized steel Dipole, 600 W Power rate
F204.01	DIP11/16	Hot Galvanized steel Dipole, 1,5 KW Power rate
F204.02	DIP11/F	Hot Galvanized steel Dipole, 1,5 KW Power rate
F202.01	DIP15/16	Hot Galvanized steel Dipole, 2 KW Power rate
F202	DIP15/F	Hot Galvanized steel Dipole, 5 KW Power rate



SPECIFICATIONS	PLS 1	DIP 11	DIP 15
RF input power	600 W	1500 W	5000 W
Input Connector	N	N - 7/16 - 7/8	N - 7/16 - 7/8
Polarization	Vertical	Vertical	Vertical
Weight	4 Kg	7 Kg	16 Kg
Gain (Referred to Half-Wave Dipole)	2 dB	2 dB	2 dB
H Plane - V Plane	180° - 78°	180° - 78°	180° - 78°
Max Wind Velocity	150 Km/h	150 Km/h	150 Km/h
Wind Load (with speed at 150Km/h)	10 Kgs.	18 Kgs.	25 Kgs.
Wind Surface	0,11 SQM	0,11 SQM	0,18 SQM
Frequency Range	87,5 ÷ 108 MHz	87,5 ÷ 108 MHz	87,5 ÷ 108 MHz
Input Impedance	50 Ohm	50 Ohm	50 Ohm
VSWR	≤ 1.4:1	≤ 1.4:1	≤ 1.4:1
Internal parts	Silver-plated brass and PTFE		
External parts	Aluminium	Hot Galvanized steel	Hot Galvanized steel
Mounting	From 60 to 120 mm diam.		
Dimensions (W x H X D) mm	60 x 1400 x 850	60 x 1400 x 850	100 x 1340 x 910

FM Dipole Circular Polarization Antennas

PLC 4 PLC 4/H
PLC 5

These stainless steel antennas have been designed to obtain circularly polarized radiation patterns, for low and medium output power FM Radio transmitters. For easy and low cost transportation, the PLC4 models

are disassembled and packed.

The PLC 5 model is factory tuned onto any channels within 87.5 - 108 MHz according to the customer's requests.

CODE	MODEL	DESCRIPTION
F455.01	PLC4/N	Double-crossed Dipole Stainless steel, 600 W Power rate
F455	PLC4/16	Double-crossed Dipole Stainless steel, 1.5 KW Power rate
F455.02	PLC4/F	Double-crossed Dipole Stainless steel, 1.5 KW Power rate
F524.01	PLC4/H/16	Double-crossed Dipole Stainless steel, 2 KW Power rate
F524	PLC4/H/F	Double-crossed Dipole Stainless steel, 3 KW Power rate
F540	PLC5/N	Tuned Dipole Narrow Band Stainless steel, 600 W Power rate
AVAILABLE OPTIONS	F680 - Reflector for Double-Cross Dipole model PLC4 F681 - Reflector for Double-Cross Dipole model PLC4/H	



SPECIFICATIONS	PLC 4	PLC 4R	PLC 5
Rf output power	600 – 1500 - 3000 W	600 – 1500 - 3000 W	1500 W
Input Connector	N – 7/16 – 7/8	N - 7/16 - 7/8	N
Polarization	Circular	Circular	Circular
Weight	12 Kg	14 Kg	4 Kg
Gain (Referred to Half-Wave Dipole)	-1.5 dB	0 dB	-1.5 dB
H Plane - V Plane	Omnidirectional	Omnidirectional	270° - 330°
Max Wind Velocity	150 Km/h	150 Km/h	150 Km/h
Wind Load (with speed at 150Km/h)	45 Kgs.	45 Kgs.	25 Kgs.
Wind Surface	0,1 SQM	0,1 SQM	0,09 SQM
Frequency Range	87,5 ÷ 108 MHz	87,5 ÷ 108 MHz	87,5 ÷ 108 MHz
Input Impedance	50 Ohm	50 Ohm	50 Ohm
VSWR	≤ 1.4:1	≤ 1.4:1	≤ 1.4:1
Internal parts	Silver-plated brass and PTFE		
External parts	Hot Galvanized steel		
Mounting	From 60 to 120 mm diam.		
Dimensions (W x H X D) mm	1240 x 1520 x 1150	1240 x 1520 x 1150	580 x 850 x 350

FM Dipole Panel Antennas

APL 1

APL 5

These advanced and hot galvanized steel panel antennas are successfully used in high power antenna system arrays.

The standard application of the APL 1 panel antenna is to be mounted on one side of the transmitting tower for radiating systems with directional coverage.

When a circular pattern on a vast area should be

achieved, more APL5 model antennas can be mounted in correspondance of the four sides of the transmitting tower.

An accurate testing process is carried out at factory on each antenna to control the compliance to all the stated figures.

CODE	MODEL	DESCRIPTION
F203.01	APL5/16	Double Dipole Panel Galvanized steel, 2KW Power rate
F203	APL5/F	Double Dipole Panel Galvanized steel, 5KW Power rate
F510	APL1/16	Dipole Panel Galvanized steel, 2KW Power rate
F510.01	APL1/F	Dipole Panel Galvanized steel, 5KW Power rate
F510.02	APL1/N	Dipole Panel Galvanized steel, 600W Power rate



SPECIFICATIONS	APL 1	APL 5
Rf output power	600 – 1500 W	2000 - 5000 W
Input Connector	N – 7/16 – 7/8	7/16 – 7/8
Polarization	Vertical (or Horizontal)	Vertical (or Horizontal)
Weight	23 Kg	45 Kg
Gain (Referred to Half-Wave Dipole)	6 dB	7,5 dB
H Plane - V Plane	130 ° - 73 ° (78 ° - 160 °)	57 ° - 73 °
Max Wind Velocity	225 Km/h	225 Km/h
Wind Load (with speed at 150Km/h)	110 Kgs.	140 Kgs.
Wind Surface	0,46 SQM	0,65 SQM
Frequency Range	87,5 ÷ 108 MHz	87,5 ÷ 108 MHz
Input Impedance	50 Ohm	50 Ohm
VSWR	≤ 1.4:1	≤ 1.4:1
Internal parts	Silver-plated brass and PTFE	Silver-plated brass and PTFE
External parts	Hot Galvanized steel	Hot Galvanized steel
Mounting	From 60 to 120 mm diam.	From 60 to 120 mm diam.
Dimensions (W x H X D) mm	2000 x 1280 x 850	2000 x 1280 x 850

FM & VHF Directional Antennas

ADR 3

ADR 5

These Broadband directional antennas are available in two versions with 3 or 5 elements. They are made of hot galvanized steel and are especially designed for medium and high output power transmitters.

The robust design of these antennas make them suitable for any climate conditions and lifetime duration. High quality and selected materials have

been used in any details: all insulators are made of PTFE and the screws are stainless steel. The metallic parts are electrically grounded.

The ADR 3 model is also available for 140-174 Mhz band and 174 – 215 Mhz.

These aerials can be disassembled in two parts, thus allowing lower freighting costs.

CODE	MODEL	DESCRIPTION
F022	ADR3/N	3 Elements galvanized steel Yagi, 600W Power rate
F022.01	ADR3/16	3 Elements galvanized steel Yagi, 1,5kW Power rate
F022.02	ADR3/8	3 Elements galvanized steel Yagi, 1,5kW Power rate
F022.05	ADR5/N	5 Elements galvanized steel Yagi, 600W Power rate
F022.04	ADR5/16	5 Elements galvanized steel Yagi, 1,5KW Power rate
F022.06	ADR5/F	5 Elements galvanized steel Yagi, 1,5kW Power rate



SPECIFICATIONS	ADR 3	ADR 5
Rf output power	600 – 1500 W	600 – 1500 W
Input Connector	N – 7/16 – 7/8	N – 7/16 – 7/8
Polarization	Vertical	Vertical
Weight	10 Kg	17 Kg
Gain (Referred to Half-Wave Dipole)	5 dB	6,5 dB
H Plane - V Plane	118° - 70°	118° - 70°
Max Wind Velocity	200 Km/h	200 Km/h
Wind Load (with speed at 150Km/h)	21,5 Kgs.	32 Kgs.
Wind Surface	0,19 SQM	0,30 SQM
Frequency Range	87,5 ÷ 108 MHz	87,5 ÷ 108 MHz
Input Impedance	50 Ohm	50 Ohm
VSWR	≤ 1.4:1	≤ 1.4:1
Internal parts	Silver-plated brass and PTFE	Silver-plated brass and PTFE
External parts	Hot Galvanized steel	Hot Galvanized steel
Mounting	From 60 to 120 mm diam.	From 60 to 120 mm diam.
Dimensions (W x H X D) mm	1250 x 1800 x 60	1850 x 1800 x 70

UHF Directional Antennas

CRF 400

CRF 401

CRF 402

These broadband antennas are designed to connect the studio of the broadcasting station to the repeater site: the antenna provides excellent gain figures and directivity.

The rugged construction makes the CRF400 model

suitable even in very severe climate conditions and for lifetime duration.

It can be completely disassembled for lower freighting costs.

CODE	MODEL	DESCRIPTION
F331.02	CRF402	Corner Reflector type, 200-250 MHz, 10 dB gain
F331.01	CRF401	Corner Reflector type, 300-360 MHz, 10 dB gain
F331	CRF400	Corner Reflector type, 380-530 MHz, 10 dB gain



SPECIFICATIONS	CRF 400	CRF 401	CRF 402
Rf output power	150	150	150
Input Connector	N	N	N
Polarization	Vertical (or Horizontal)	Vertical (or Horizontal)	Vertical (or Horizontal)
Weight	5 Kg	6.5 Kg	8.5 Kg
Gain (Referred to Half-Wave Dipole)	9 dB	9 dB	9 dB
H Plane - V Plane	44° - 67°	44° - 67°	44° - 67°
Max Wind Velocity	180 Km/h	180 Km/h	200 Km/h
Wind Load (with speed at 150Km/h)	11 Kgs.	14 Kgs.	17 Kgs.
Wind Surface	0,11 SQM	0,15 SQM	0,20 SQM
Frequency Range	380 ÷ 530 MHz	300 ÷ 360 MHz	200 ÷ 250 MHz
Input Impedance	50 Ohm	50 Ohm	50 Ohm
VSWR	≤ 1,5:1	≤ 1,5:1	≤ 1,5:1
Internal parts	Silver-plated brass and PTFE	Silver-plated brass and PTFE	Silver-plated brass and PTFE
External parts	Hot Galvanized steel	Hot Galvanized steel	Hot Galvanized steel
Mounting	From 60 to 120 mm diam.	From 60 to 120 mm diam.	From 60 to 120 mm diam.
Dimensions (W x H X D) mm	1140 x 750 x 500	1450 x 950 x 700	2150 x 1700 x 1100

Parabolic Antennas

PRB 60 PRB 120 PRB 180

Designed and realized to be used in the frequency band for radio link systems, these reflectors guarantee high directivity and high front to back ratio.

The perfect parabolic mirror is realized by means of a new advanced technology capable of assuring a very accurate mechanical construction.

Each type of antenna can be equipped with a fiberglass radome, to protect the illuminator.

The radome introduces a very limited attenuation and has no influence on the front to back ratio.

The antenna is also equipped with a metal shroud.

The parabolic dish can be equipped with different type of illuminators for several frequency bands, and for single or double polarization.

The range between 1.4Ghz to 23 GHz is approved by English body DTI class 3.

CODE	MODEL	DESCRIPTION
F675	PRB60/P	Parabolic Antenna 60 cm., Yagi feeder, 1.4-2.8 GHz
F682	PRB120/P	Parabolic Antenna 120 cm, Yagi feeder, 1.4-2.8 GHz
F677	PRB180/P	Parabolic Antenna 180 cm, Yagi feeder, 1.4-2.8 GHz
F652	PRB60/H	Parabolic Antenna, 60 cm. diameter, with mounting kit
F651	PRB120/H	Parabolic Antenna, 120 cm. diameter, with mounting kit
F655.01	ILM 5-7/60	Feeders for 60 cm. diameter Parabolic Frequency 5-7GHz
F655.02	ILM 5-7/120	Feeders for 120 cm. diameter Parabolic Frequency 5-7GHz
F652.02	ILM 10-15/60	Feeders for 60 cm. diameter Parabolic Frequency 10-15Ghz
F655	ILM 10-15/120	Feeders for 120 cm. diameter Parabolic Frequency 10-15Ghz
AVAILABLE OPTIONS	Radome fiber glass for Parabolic, Diameters up to 300 cm.	



SPECIFICATIONS	PRB 60	PRB 60/P	PRB 60/H
Type	Yagi	Yagi or Waveguide	Yagi or Waveguide
Input Connector	N - PBR	N - PBR	N - PBR
Accuracy construction	± 0,5 mm	± 0,5 mm	± 0,5 mm
Adjustment of polarization	360 °	360 °	360 °
Max Wind Velocity	150 Km/h	150 Km/h	150 Km/h
Adjustment azimuth and elevation	± 10 °	± 10 °	± 10 °
Dimensions (W x H X D) mm	60, 120, 180 mm diam.	60, 120, 180 mm diam.	60, 120, 180 mm diam.

FREQUENCY RANGE	DIAMETER	TYPE	GAIN	VSWR MAX	HALF POWER BEAMWIDTH (°)	FRONT TO BACK RATIO
900 ÷ 1500 MHz	60	Yagi feed-horn	16,5	>16	25,6	>25
900 ÷ 1500 MHz	120	Yagi feed-horn	22,5	>16	14,1	>26
900 ÷ 1500 MHz	180	Yagi feed-horn	26	>16	9,3	>26
1400 ÷ 2500 MHz	60	Yagi feed-horn	20,2	>19	20,5	>30
1400 ÷ 2500 MHz	120	Yagi feed-horn	26,2	>19	10,2	>32
1400 ÷ 2500 MHz	180	Yagi feed-horn	29,2	>19	6,9	>34
6900 ÷ 9000 MHz	60	Waveguide	32,1	>22	5,3	>42
6900 ÷ 9000 MHz	120	Waveguide	38,2	>22	2,7	>45
6900 ÷ 9000 MHz	180	Waveguide	41,7	>22	1,8	>48
10000 ÷ 15000 MHz	60	Waveguide	36,1	>22	3,2	>41
10000 ÷ 15000 MHz	120	Waveguide	42,2	>22	1,6	>47
10000 ÷ 15000 MHz	180	Waveguide	45,7	>22	1,09	>50
10000 ÷ 15000 MHz	60HP	Waveguide	38,2	>23	2,6	>72
15000 ÷ 18000 MHz	60HP	Waveguide	40	>25	2,4	>72
21000 ÷ 23800 MHz	60HP	Waveguide	41,2	>25	1,8	>72

FM Power Dividers

PD 2 PD 3 PD 4 PD 6 PD 8

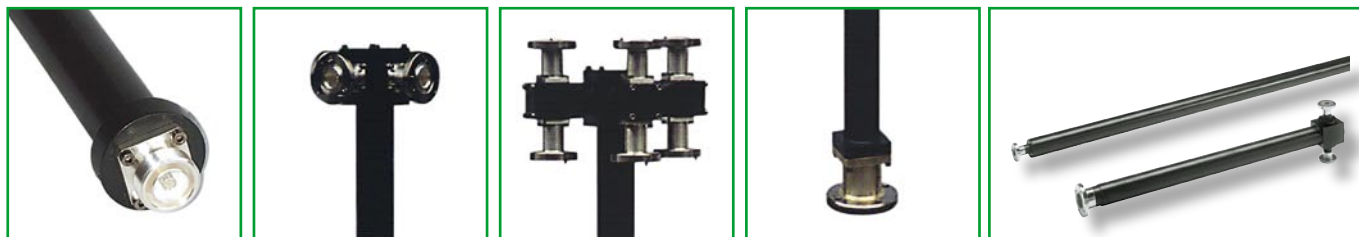
These power dividers are available for any RF output power with 50 Ohm Impedance (or 75 ohm on request). They can be supplied with any connector or flange, according to user requirements and for every need regarding the number of outputs.

All the power dividers are broadband from 87,5 to 108 Mhz and 22 Mhz bandwidth.

The typical insertion loss is better than 0,2 dB with VSWR <1,2.

Our power dividers are made in silver-plated brass with insulator in PTFE and O-RING type washers; the body of the device is treated and covered by a special paint for lifetime duration in any climate conditions.

Power dividers for other frequency ranges are available upon request.



CODE	DESCRIPTION	INPUT CONNECTOR	OUTPUT CONNECTOR	MAX INPUT POWER (W)	STEPS
2 - WAY POWER DIVIDER FM (87,5 -108 Mhz)					
F038	PD2 - N/N 2 ways	N	N	800	1
F531.01	PD2 - S/S 2 ways	7/16	7/16	2.000	1
F536.01	PD2 - F/F 2 ways	7/8"	7/8"	4.000	2
F531	PD2 - S/N 2 ways	7/16	N	1.600	1
F536.02	PD2 - F/N 2 ways	7/8"	N	1.600	2
F536	PD2 - F/S 2 ways	7/8"	7/16	4.000	2
F206.01	PD2 - Y/S 2 ways	1-5/8"	7/16	4.000	2
F206	PD2 - Y/F 2 ways	1-5/8"	7/8"	8.000	2
F206.03	PD2 - Z/Y 2 ways	3-1/8"	1-5/8"	20.000	2
3 - WAY POWER DIVIDER FM (87,5 -108 Mhz)					
F520	PD3 - N/N 3 ways	N	N	800	1
F534.01	PD3 - S/S 3 ways	7/16	7/16	2.000	1
F534.06	PD3 - F/F 3 ways	7/8"	7/8"	4.000	2
F534	PD3 - S/N 3 ways	7/16	N	2.000	1
F534.03	PD3 - F/N 3 ways	7/8"	N	2.400	2
F534.05	PD3 - F/S 3 ways	7/8"	7/16	4.000	2
F534.07	PD3 - Y/S 3 ways	1-5/8"	7/16	6.000	2
F534.08	PD3 - Y/F 3 ways	1-5/8"	7/8"	10.000	2
4 - WAY POWER DIVIDER FM (87,5 -108 Mhz)					
F039.01	PD4 - N/N 4 ways	N	N	800	1
F040.03	PD4 - S/S 4 ways	7/16	7/16	2.000	2
F336.01	PD4 - F/F 4 ways	7/8"	7/8"	4.000	2
F040	PD4 - S/N 4 ways	7/16	N	2.000	2
F533	PD4 - F/N 4 ways	7/8"	N	3.200	2
F533.01	PD4 - F/S 4 ways	7/8"	7/16	4.000	2
F207.01	PD4 - Y/S 4 ways	1-5/8"	7/16	8.000	2
F207	PD4 - Y/F 4 ways	1-5/8"	7/8"	10.000	2
6 - WAY POWER DIVIDER FM (87,5 -108 Mhz)					
F486.01	PD6 - N/N 6 ways	N	N	800	2
F486.07	PD6 - S/S 6 ways	7/16	7/16	2.000	2
F208.03	PD6 - F/F 6 ways	7/8"	7/8"	4.000	2
F486.02	PD6 - S/N 6 ways	7/16	N	2.000	2
F208	PD6 - F/N 6 ways	7/8"	N	4.000	2
F208.02	PD6 - F/S 6 ways	7/8"	7/16	4.000	2
F486	PD6 - Y/S 6 ways	1-5/8"	7/16	10.000	2
F486.08	PD6 - Y/F 6 ways	1-5/8"	7/8"	10.000	2
8 - WAY POWER DIVIDER FM (87,5 -108 Mhz)					
F526.05	PD8 - S/S; 8 ways	7/16	7/16	2.000	2
F526.09	PD8 - F/F; 8 ways	7/8"	7/8"	4.000	2
F526.08	PD8 - F/S; 8 ways	7/8"	7/16	4.000	2
F526	PD8 - Y/S; 8 ways	1-5/8"	7/16	10.000	2
F526.12	PD8 - Y/F; 8 ways	1-5/8"	7/8"	20.000	2

Power Dividers

PD U2 PD U3 PD U4 PD V2 PD V3 PD V4

These power dividers are available for any RF output power with 50 Ohm Impedance (or 75 ohm on request). They can be supplied with any connector or flange, according to user requirements and for every need regarding the number of outputs.

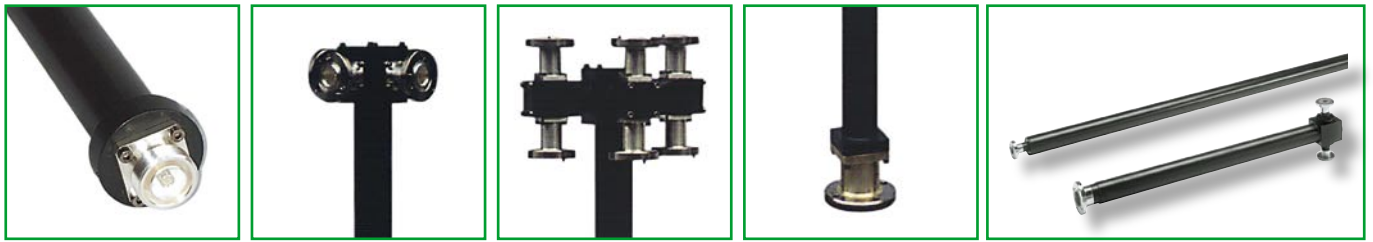
Our power dividers are broadband from 87,5 to 108 Mhz and 22 Mhz bandwidth.

The typical insertion loss is from 0,2 to 0,5 dB with

VSWR <1.08:1.

Our power dividers are made in silver-plated brass with insulator in PTFE and O-RING type washers; the body of the device is treated and covered by a special paint for lifetime duration in any climate conditions.

Power dividers for other frequency ranges are available upon request.



CODE	DESCRIPTION	INPUT CONNECTOR	OUTPUT CONNECTOR	MAX INPUT POWER (W)
2 - WAY POWER DIVIDER VHF (175-230 Mhz)				
F796.02	PDV2-S/N 2 ways	7/16	N	1.200
F796.01	PDV2-S/S 2 ways	7/16	7/16	2.000
F796	PDV2-F/S 2 ways	7/8"	7/16	3.500
F796.03	PDV2-Y/F 2 ways	1-5/8"	7/8"	7.000
F796.04	PDV2-Z/Y 2 ways	3-1/8"	7/8"	7.000
3 - WAY POWER DIVIDER VHF (175-230 Mhz)				
F797	PDV3-S/N 3 ways	7/16	N	1.800
F797.01	PDV3-S/S 3 ways	7/16	7/16	2.000
F797.02	PDV3-F/S 3 ways	7/8"	7/16	3.500
F797.03	PDV3-Y/F 3 ways	1-5/8"	7/8"	7.000
4 - WAY POWER DIVIDER FM (175-230 Mhz)				
F792.01	PDV4-S/N 4 ways	7/16	N	2.000
F792.02	PDV4-F/N 4 ways	7/8"	N	2.400
F792	PDV4-S/S 4 ways	7/16	7/16	2.000
F700	PDV4-F/S4 ways	7/8"	7/16	3.500
F700.01	PDV4-F/F4 ways	7/8"	7/8"	3.500
F700.02	PDV4-Y/F 4 ways	1-5/8"	7/8"	7.000
F700.03	PDV4-Z/F 4 ways	3-1/8"	7/8"	7.000
2 - WAY POWER DIVIDER UHF (470-860 Mhz)				
F798	PDU2-S/N 2 ways	7/16	N	800
F798.01	PDU2-S/S 2 ways	7/16	7/16	1.500
F798.02	PDU2-F/S 2 ways	7/8"	7/16	2.000
F798.05	PDU2-F/F 2 ways	7/8"	7/8"	2.000
F798.03	PDU2-Y/F 2 ways	1-5/8"	7/8"	4.000
F798.04	PDU2-Z/Y 2 ways	3-1/8"	1-5/8"	10.000
3 - WAY POWER DIVIDER UHF (470-860 Mhz)				
F799	PDU3-S/N 3 ways	7/16	N	1.200
F799.01	PDU3-S/S 3 ways	7/16	7/16	1.500
F799.02	PDU3-F/S 3 ways	7/8"	7/16	2.000
F799.03	PDU3-Y/F 3 ways	1-5/8"	7/8	5.000
F799.04	PDU3-Z/Y 3 ways	3-1/8"	1-5/8"	15.000
4 - WAY POWER DIVIDER UHF (470-860 Mhz)				
F791.02	PDU4-S/N 4 ways	7/16	N	1.500
F791.03	PDU4-S/S 4 ways	7/16	7/16	1.500
F791.01	PDU4-F/S 4 ways	7/8"	7/16	2.000
F791.04	PDU4-F/F 4 ways	7/8"	7/8"	2.000
F791	PDU4-Y/F 4 ways	1-5/8"	7/8"	5.000
F791.05	PDU4-Z/F 4 ways	3-1/8"	7/8	8.000
F791.06	PDU4-Z/Y 4 ways	3-1/8"	1-5/8"	15.000

VHF Band III Dipole Panel Antennas

PTV/N

PTV/16

These VHF directional wide-band aeriels, PTV model, are designed for horizontal or vertical polarization in the transmission for TV systems. The antenna is composed of two stainless steel dipoles and a reflecting grid realized with hot dip galvanized steel.

The PTV model is suitable for the VHF band and can operate in low, medium and high power stacked-array systems, especially for square and round transmitting towers. The PTV antenna can be disassembled to reduce freighting costs.

CODE	MODEL	DESCRIPTION
F795.01	PTV/N	VHF Panel with 2 Galvanized steel dipoles, N type connector
F795	PTV/16	VHF Panel with 2 Galvanized steel dipoles, 7/16 type connector



SPECIFICATIONS	PTV
Rf output power	1000 W
Input Connector	N - 7/16 - 7/8
Polarization	Vertical (or Horizontal)
Weight	25 Kg
Gain (Referred to Half-Wave Dipole)	7,5 dB
H Plane - V Plane	57° - 73°
Max Wind Velocity	225 Km/h
Wind Load (with speed at 150Km/h)	140 Kgs.
Wind Surface	0,65 SQM
Frequency Range	174 ÷ 225 MHz
Input Impedance	50 Ohm
VSWR	≤ 1.4:1
Internal parts	Silver-plated traded copper and brass
External parts	Hot Galvanized steel
Mounting	From 60 to 120 mm diam.
Dimensions (W x H x D) mm	1250 x 850 x 400

UHF Band IV-V Panel Antennas

PTU/N

PTU/16

PTU/F

These UHF directional wide-band aeriels are designed for horizontal or vertical polarization in the transmission of TV systems. The antenna is composed of eight half-wave dipoles with panel reflector and protection radome. The PTU model is suitable for the entire UHF band and can operate in low, medium or high power stacked-array systems, especially for square and round transmitting towers. As a standard, the connector is 7/16 (N female or EIA 7/8" Flange on request). The PTU antenna is supplied with a standard mounting system and can be disassembled to reduce freighting costs.

CODE	MODEL	DESCRIPTION
F790.02	PTU/N	UHF Panel with 8 dipole half wave, N type connector
F790	PTU/16	UHF Panel with 8 dipole half wave, 7/16 type connector
F790.01	PTU/F	UHF Panel with 8 dipole half wave, 7/8 type connector



SPECIFICATIONS	PTU
Rf output power	1000 - 2500 W
Input Connector	N - 7/16 - 7/8
Polarization	Horizontal
Weight	14 Kg
Gain (Referred to Half-Wave Dipole)	11 dB
H Plane - V Plane	60° - 25°
Max Wind Velocity	225 Km/h
Wind Load (with speed at 150Km/h)	89 Kgs.
Wind Surface	0,65 SQM
Frequency Range	470 ÷ 860 MHz
Input Impedance	50 Ohm
VSWR	≤ 1.13:1
Internal parts	Silver-plated traded copper and brass
External parts	Hot Galvanized steel
Mounting	From 60 to 120 mm diam.
Dimensions (W x H x D) mm	450 x 1000 x 250

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