TIGER e3-e5

Product Overview

TIGER E3/E5 is the device that can manage each kind of FM Transmitter Site and fulfills every custom requirement, from large national FM networks to local stations.

TIGER E3/E5 is 7 devices in 1, thanks to the power of the digital technology Tiger E5 can fulfil the following functions: IP Audio Codec / Audio Changeover / Audio Limiter / Stereo Generator / RDS Encoder / MPX Changeover / FM Monitoring System with integrated Tuner.

TIGER E3/E5 can manage and decode MPX and RDS signals, receive IP Audio streaming signals, be connected and analyze Analog and Digital audio signals; thanks to the audio 4 channels Audio changeover and MPX Changeover it can handle every kind of received signal in a transmitting site.

TIGER E3/E5 has a double IP streaming receiver and SD card player managed by a multimedia changeover.

TIGER E3/E5 supports the most advanced RDS dynamic services, including TMC, ODA, IH, TDC, EWS, Radio Text and Radio Text plus.

TIGER E3/E5 allows to interface Radio Automation Systems to display song title, artist and other information, but always compliant to the CENELEC (Europe), NRSC (America) and UECP v7.05.

The built-in ITU BS412 multiplex power controller acts on the output to meet even the most strict European government regulations.

To control all these functions, a web interface has been created that can be used by any browers with any device from the smartphone to the laptop.

To satisfy the most demanding technicians **TIGER E3/E5** is SNMP v2c compliant.

⸛MPX+RDS distribution (TX&RX)

multicast streaming over IP
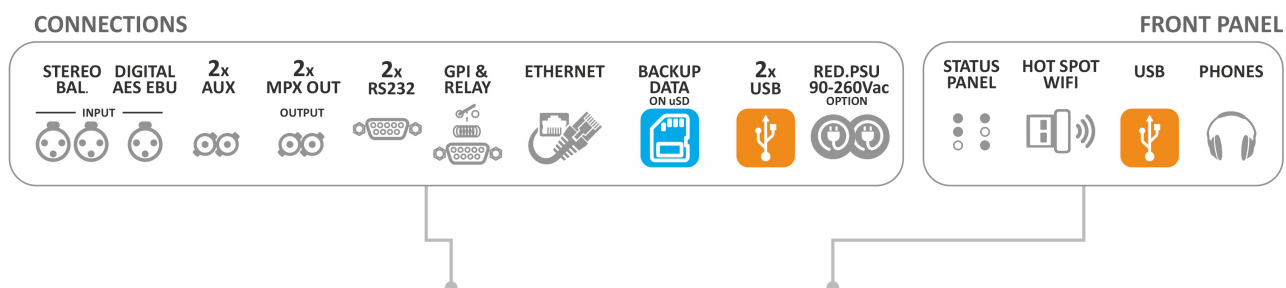
⸛New features for Dynamic RDS
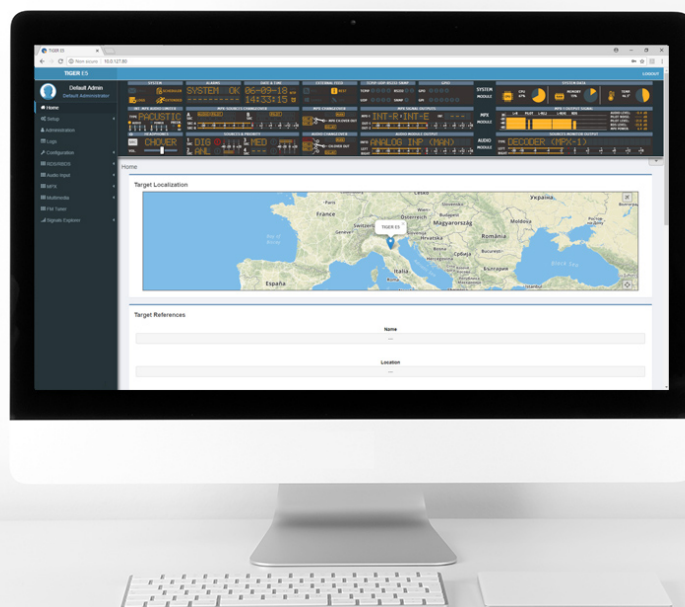
⸛RDS data multicast streaming

over IP

Models

TIGER E3

CONNECTIONS   **FRONT PANEL**

STEREO BAL.	DIGITAL AES EBU	2x AUX	2x MPX OUT	2x RS232	GPI & RELAY	ETHERNET	BACKUP DATA ON uSD	2x USB	RED.PSU 90-260Vac OPTION
INPUT			OUTPUT						

STATUS PANEL	HOT SPOT WIFI	USB	PHONES

FUNCTIONS

| WEB SERVER COMPATIBLE WITH ALL BROWSER & DEVICES | AUDIO & MPX CHANGEOVERS | AUDIO LIMITER ITU-412 | STEREO GENERATOR | RDS UECP 7.05 | RDS REBROADCAST | SNMP PROTOCOL | REMOTE UPDATE | MONITORING SYSTEM AUDIO/MPX/RDS | HI ACCURACY MEASUREMENTS | FM TUNER OPTION |

Highlights

General

- Main Supply 90--260Vac 50/60Hz. 15W

- Green device - only 15W

- Full Color Graphic display 480x128 (only Tiger E5)

- Status leds panel with 40 leds

- Rack 1u 19" - Inox steel

- Redundat PSU (available as an option)

- High immunity to strong RF fields, designed to be installed in high power TX sites

- Fully Digital – No trimmer

Inputs & Stereo Generator Section

- Analog input on XLR,

- Digital AESEBU input on XLR

- Double streaming IP input (MP3,OPUS,PCM,VORBIS…)

- Double MPX output with indipendent source and level

- Bypass HW on MPX Outputs (Aux-1 to Out 1&2)

- 2 AUX input (MPX/RDS/SCA) wide band - digitally controlled

- MPX Changeover between external or internal MPX sources.

- 2 Wide Band mixer to mix internal (Stereo generator an RDS) or external (MPX, RDS or SCA)

- signals

- Configurable delay on MPX signals

- AGC on each single source

- Limiter, Clipper MPX.

- ITU BS412 control

- ITU Loudness measurement

- Out band noise and Pilot Noise measurement

- RDS,Pilot,Main Audio and Sub Audio Measurement

⯈Integrated Hi-Quality MPX Decoder
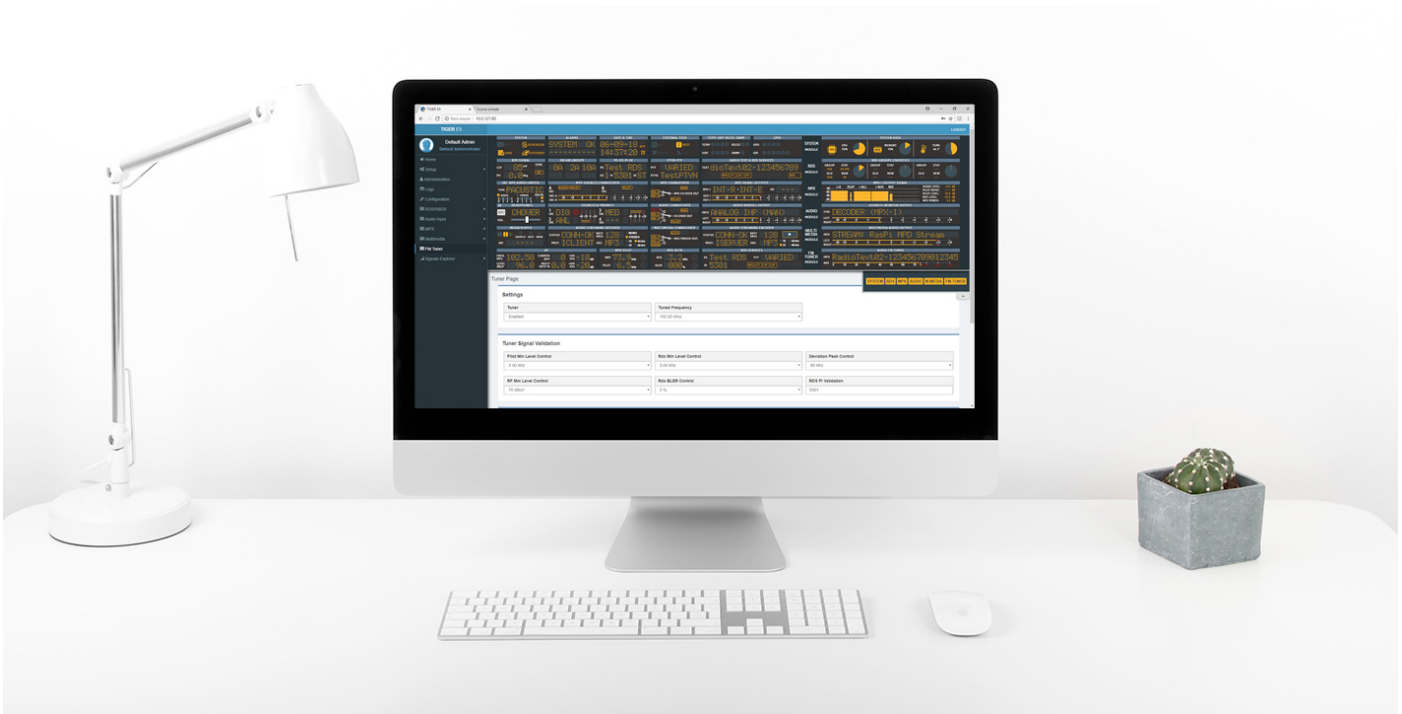
Process

⯈4 channels Audio Changeover Changeover Audio with source priority / restore logic

⯈Backup audio player on SD card

⯈Configurable delay on Audio sources

⯈Configurable UECP Filter on incoming RDS Signal (AUX-1) for rebroadcasting use

⯈Capability to Digital erase RDS signal on incoming MPX+RDS Signal

⯈Upgrade FW directly on the field managed by web GUI interface

⯈Audio limiter integrated (Psicoacustic, Look-ahead, ITU BS412)

⯈Fast DSP Starting time <5 sec (OS < 30 sec

Encoder RDS Section

⯈RDS encoder fully compliant with UECP EBU SPB490 v7.05, CENELEC (Europe) and NRSC (America)

⯈Fully support of all the RDS services, Static and Dynamic services.

⯈UEPC Ports (2 Serials, 4 TCPIP, 4 UDP)

⯈n.8 Data Set

⯈n.10 EON + Main PS for each Data Set

⯈Integrated RDS decoder

⯈Tuner FM with RDS decoder (as an option)

⯈Dataset switch managed by UECP/SNMP/REST/HTTP/ASCII PARSER/TXT FILE/GPI

Easy to interface to any kind of automation system (UECP/SNMP/REST/HTTP/ASCII PARSER/TXT FILE)

Capability to connects all the Radio Automation System to get data for RDS (PS/RT/RT+/TA/MS)

Easy RDS page fast setup
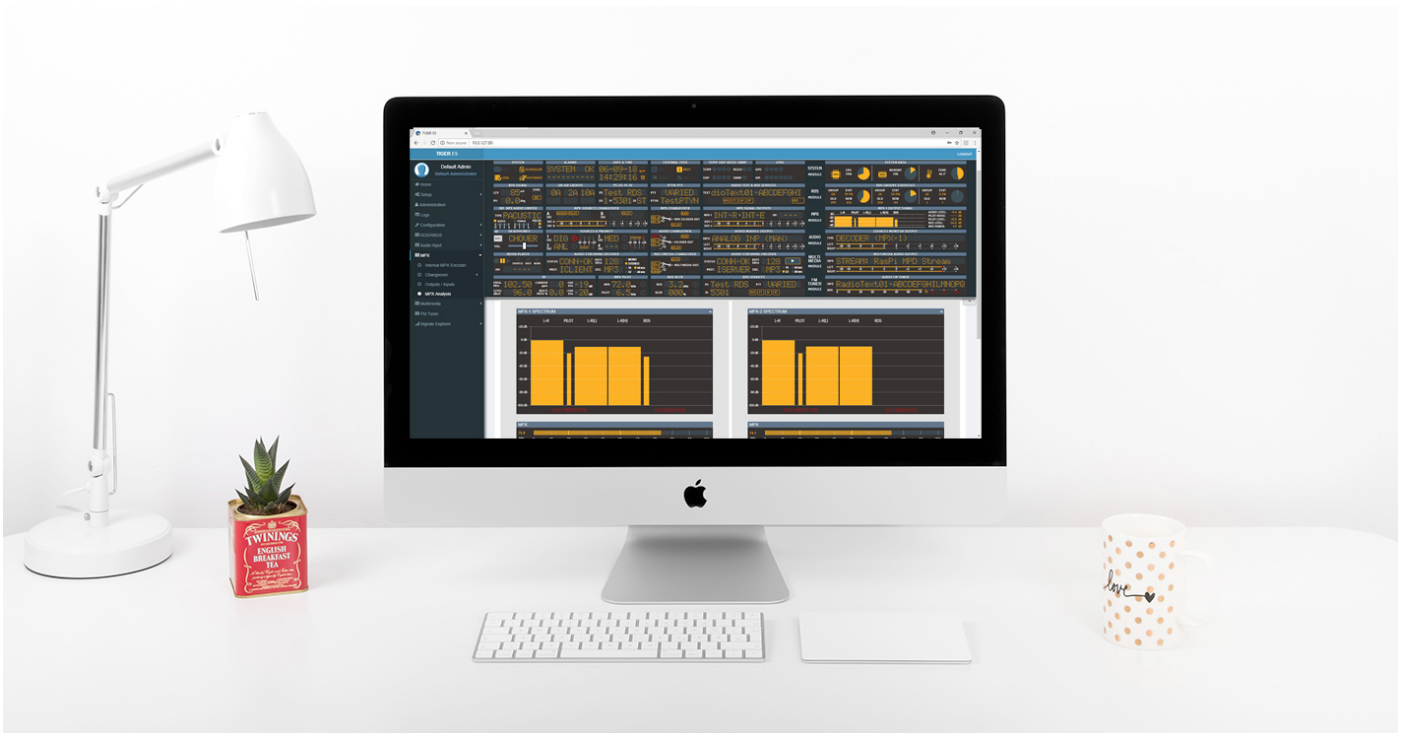
GUI & Monitoring

Fully programmable by Web GUI interface, all the browser are supported

Simple and intuitive GUI, supported by all devices (PC, notebook, tablet, smartphone, etc. ..)

Easy and configurable graphical interface

Multi user web GUI

Communications & Management

Ethernet/USB/RS232/GPIO connections

Easy WiFi Access - Hot spot WiFi USB to connect directly a wireless device to the Tiger.

SNMP V2c

Possibility to set up to 3 NTP Servers (V1, V2, V3, V4).

Map with device geolocation (RX sat or fixed coordinates are required)

Web GUI with info bubbles

Monitoring FM Tuner (as an option)

MPX spectrum signal Analyzer on outputs, Aux inputs, and internal signals.

Dynammical graphics to see the value in the time

RDS Groups data analyzer

GUI with led meter bars

IP audio streaming encoding for remote audio monitoring, with indipendent source selection and level

Headphones output with indipendent source selections and level

Monitoring Tuner (optional)

RF Level measurament

Carrier Offeset

MPX, RDS and Pilot deviations

BLER (Block Error Ratio)

RDS Decoder (PI, PS, RT, PTY, RT+,TP,TA, M/S, CT,AF,TMC, EON)

Possibility to send email to 4 receivers and set 3 differnet SMPT server.

IPV4 and IPV6 support (3 addresses IPV4 and 3 addresses IPV6).

N°2 RS232 for UECP commands.

6 GPI and 4 Relay Out (all GPIO are fully programmable by the GUI)

HTTP, FTP, SNMP, SMTP, UDP, TCP support.

Alarms via : TRAP (SNMP), email(SMTP), GPO, HTTP

External GPS support (Time, Date and Geolocation)

uSD Card for clone function, for manteniance and easy replace of a faulty unit.

Import and export configurations function

PRESET, with load/save/import /export function

Logs 24/7 with export funtions

6 levels of right access managment

Easy configuration page setup with info connection diagrams.

REST API available to manage the device

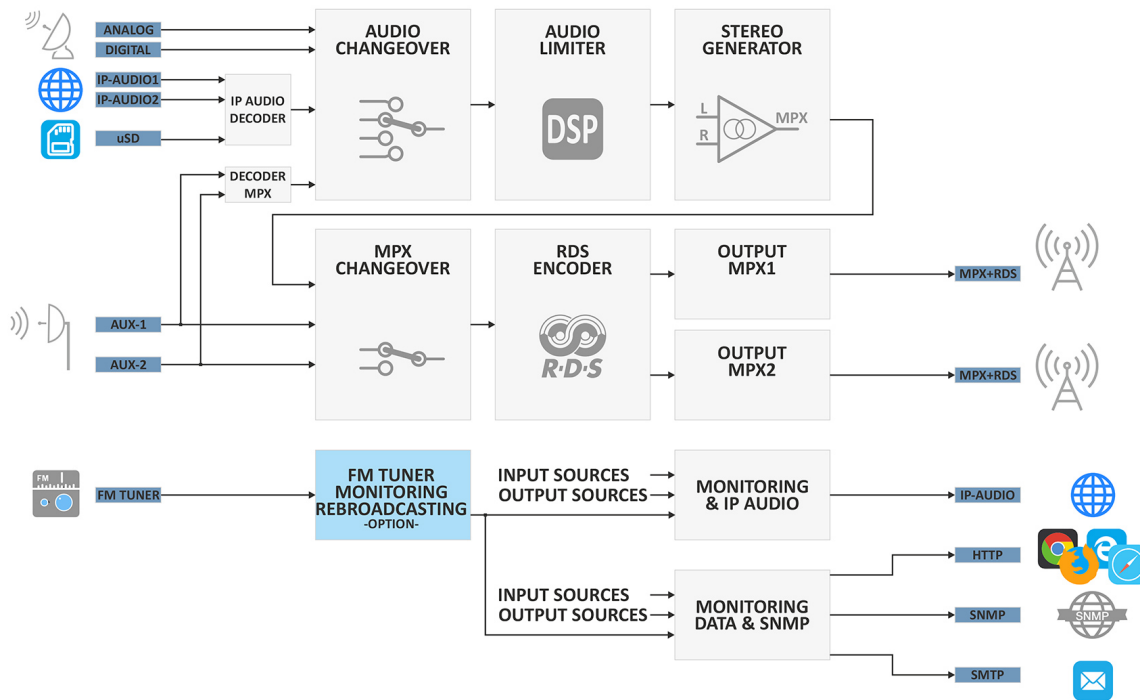ASCII PARSER interface for easy command line settings

 SAMBA SHARE function to connect and get

data from an external PC.

 Multi-user contemporary access

MONITORING SYSTEM
AUDIO/MPX/RDS

WEB SERVER COMPATIBLE
WITH ALL BROWSER & DEVICES

RDS GROUPS
ANALYZER

DSP
AUDIO LIMITER
ITU-412

STEREO GENERATOR

TEST TONE GENERATOR

AUDIO & MPX CHANGEOVERS

RDS ENCODER
UECP 7.05

HW BYPASS

Block Diagram

Special features

Connect "any" Kind of Sources

TIGER E3/E5 manages different kind of audio sources such as Analog & Digital audio, IP-Audio, Backup-Player and MPX, thanks to the 4 channels audio changeover and 2 channel MPX Changeover.

A delay can be assigned to any source and allows the time alignment of two or more sources.

It is possible to use the internal audio player as a backup if all the external sources fail.

The internal limiter continuously monitors the sources audio levels, allowing the level managing and avoiding any overshoot generated by the satellite or IP-Audio MPEG decompression.

MPX inputs are decoded (L&R) and available to be used as sources for the Audio Changeover or MPX Changeover.

MPX Changeover features a UECP filter that allows the regeneration or filtering of any RDS service (PS, RT,RT+,IH,TMC,TA/TP), thus giving the user the chance to maintain, replace or filter any RDS parameter

starting from the incoming RDS signal.

With the optional Tuner, it becomes a Changeover / FM Monitoring System with integrated Tuner.

TIGER E5 can manage and decode MPX and RDS signals, receive IP Audio streaming signals, receive and analyze Analog and Digital audio signals. Thanks to the 4 channels Audio changeover and MPX Changeover it can handle every kind of received signal in a transmitting site.

Easy Access

TIGER E3/E5 is fully configurable via WEB interface. Its web server is compatible with all the available web browsers (Chrome, Firefox, Edge, Opera, Safari…).

TIGER E3/E5 supports laptop, tablet and smartphones simplifying the browsing and setting of the device with its responsive-kind graphic interface that adapts the viewing mode according to the resolution and position (portrait/landscape) of the current viewing device.

The provided WiFi USB dongle creates a specific WiFi hotspot that enables the access to the device without the need of cabled or wireless net.

TIGER E3/E5 features 3 IPV4 and 3 IPV6 addresses to ensure concurrent connection for all the broadcasting and monitoring systems.

Easy Maintenance

Any first-time user can take advantage of Tiger E3/E5 simplified settings management. EASY CONFIGURATION FUNCTION quickly and easily enables the user to set the working mode, while QUICK RDS SETUP brings the mostly simple way to set the main RDS parameters.

IMPORT/EXPORT and PRESET MANAGER are available for a more advanced management of Tiger E3/E5.

These functions apply to the whole device configuration or only to some selectable modules (SYSTEM, RDS, MPX, AUDIO, MULTIMEDIA and TUNER).

TIGER E3/E5 uses a uSD card to create an automatic copy of all the device data whenever the user changes anything. If the device needs to be replaced or duplicated, the uSD card can be used to clone it.

Monitoring

Tiger E3/E5 features an endearing GUI (Graphical User Interface) that makes use of clear elements, rich of information. With a simple and straightforward selection of the available banners, it is possible to keep under control any function. The selected banners are always visible in any menu.

Tiger E3/E5 displays in both graphical and numerical format all the input and output levels as well as the internally generated signals. The visualization can be numerical, bar graph or time related.

In the RDS section, a specific area is available for on-air RDS group analysis (static and dynamic) to evaluate services balancing.

In the MPX section, spectrum analyzers display the MPX+RDS input and output signals.

TIGER E3/E5 provides two independent listening paths for every internal audio source:

Local: using the headphone socket on front panel and the display to select the source

Remote: using the internal IP audio encoder that enables the remote audio receiving with different listening quality choices

The MPX decoder let the user listen to the decoded L&R audio for any of the MPX sources, input, output or internal.

Technical Specifications

Analog Left & Right Input

Connector	Balanced on 2 XLR – EMI Suppressed
Input Impedance	10Kohm
Nominal Input Level (Sensitivity)	Software Adjustable from -12dBu to + 13,0 dBu (0,1dB step)
Nominal Input Level	-21,0dBu ÷ +24,0dBu
Max Input Level (clipping point)	Selectable +15,0dBu or +24,0dBu
A/D conversion	CS4272, 24 bit / 48 Khz
Input CMRR	>60dB (20Hz-20kHz)

Digital Input

Connector	Balanced on 1 XLR – EMI Suppressed
Input Impedance	110Ω
Standard	AES3
Audio Sample Rate	32/44.1/48/96/192KHz
Adjustable Nominal Input Level (Sensitivity)	From -25,0dBFS to -0,2dBFS (0,1dB step)
Nominal Input Level	-36dBFS ÷ 0,0dBFS
Dynamic Range (Converter Values)	124dB (32KHz) – 126dB (44,1KHz) 126dB(48KHz) – 122dB (96KHz)
Resolution	24 bit

MPX Input – MPX

Connector	Unbalanced on 2 BNC – EMI Suppressed
Input Impedance	50K
Adjustable Nominal Input Level (Sensitivity)	Software Adjustable -9dBm to +15,0dBm
Range of Level	-21,0dBu ÷ +24,0dBu
Max Input Level (clipping point)	Selectable +5,0dBu or +18,0dBu
A/D Conversion	Texas PCM4202

MPX Output - MPX

Connector	Unbalanced on 2 BNC – EMI Suppressed
Output Impedance	10 Ω
Load Impedance	600 Ω or greater
Maximum Load Capacitance	5nF
D/A Conversion	Texas PCM 1796
Composite Output Level	-0,0dBm to +15,0 dBm (0,1 dBm step)
S/N	≥ 85dB
THD	≤ 0.01%
Separation	≥ 70dB

Backup Player

Support	On Micro SD CARD (max 64GB)
Supported formats	MP3, WAV
Supported Sample Rates	32,44.1,48,64,96 KHz

MPX & RDS Signal

Pilot Frequency	19 KHz +/- 1Hz
Pilot Injection	Adj from -25,0dB a -15,5dB (0,1 dB step); 6 to 18% of total deviation
Pilot Stability	±10 ppm (-10 to +55°C)
Pilot Distortion	0,05% (typical)
Pilot Distortion + Noise	0,068% (on 100KHz band)
Composite out THD	0,01% (typical on the whole band)
Stereo Separation	>70 dB (typical on the whole band)
Linear Crosstalk Main to Sub / Sub to Main	>70 dB (minimum)
Digital filtering / band	30 Hz to 15 kHz (-0,1dB), 17 kHz (-70 dB), 19 kHz (-100 dB)
57 kHz (RDS/RBDS) Protection	Better than 51 dB
Pre-emphasis	Off, 50uS, 75uS (+/-0,1dB)
Freq Response	±0,3 dB (30Hz-15kHz)
Operation	Mono / Stereo
MPX/RDS Output	Adj from -10,0 dB to 15,0 dB (0,1 dB step)
Signal/Noise Ratio	≥ 85 dB (on 100 kHz band)
Carrier Suppression	> 85 dB

System

GPIO Inputs/Outputs	6 GPI / 4 GPO
Communication Port	2xRS232, 3xUSB, 1xLAN
Synchronization	Ext(Pilot Mpx)/Int/ Auto
Synchronization Monitoring	Yes
RDS Level adjustment	Digitally controlled
Phase adjustment	Yes, 0 ÷ 359.9°
Separate outputs for RDS+MPX and for RDS only	Yes
Command to activate the RDS SCA	Yes
Side Chain Mode, Loop through mode, Bypass feature	Yes
RDS Subcarrier	100% Digitally Generated Shape
CENELEC – EN50067 compliant –	Yes

Product Technical Specifications

System

Accurate Clock Time (CT) Sync with Internet Connection	Yes
Remote TA actuation for Traffic Announcements	Yes
GPS module for automatic synchronization of the built-in Real Time Clock (RTC)	Optional (USB External)
RDS decoder for rebroadcasting RDS Data	Yes
Firmware can be upgraded on the field	Yes
Front-panel Colour TFT Display	No (Tiger E3) Yes (Tiger E5)
Data may be entered on-site with Front-panel knob	No (Tiger E3) Yes (Tiger E5)
Front Panel Leds	40
Operating Temperature	0°C ÷ 50°C

RDS Features

Group supported	All
Group Sequence	Configurable
PS	8 DSN x MAIN+10 PSN
PI	8 DSN x MAIN+10 PSN
PIN & PTY	RDS/RBDS
AF Method A	up to 1024 (64 lists)
AF Method B	up to 1024 (64 lists)
RT	Yes, 32 messages
RT rate adjustment	Group Sequence
RT+ for songs and content tagging	Yes
TP	Yes
TA Control	Command, Software, GPI
PTYN	Yes
EON	10 PSN
CT	Yes
TMC, EWS, IH, TDC	Yes
Free Format Groups (FFG)	Yes
Open Data Application (ODA)	Yes
PS Scrolling	Yes
Scrolling by characters, by word, auto centre, truncate long words Yes (Characters – from 1 up to 8)	

Communication

Connection with Automation Software	Yes
Network Connectivity	4 TCP ports / 4 UDP / 1 SNMP
Configuration Software	Web Server, FTP

Communication

Password Protection	Yes
ASCII Protocol	Configuration Messages
REST Command	Yes
Alert notifications on user-defined events via SNMP traps or E-mails	Yes
Embedded SNMP agent permitting active management tasks	Yes
Supported Network Protocols	HTTP, SMTP, UDP, TCP, NTP, FTP
UECP Protocol	EBU SPB490 Ver.7.05
PI Calculator	Yes
RDS 2.0 Ready	Yes

PSU

Power Supply 90-260 Vac / 47-63 Hz 15W

Dimensions

Dimensions (W; H; D) 485 x 44 x 240 mm

Weight   < 3Kg

Dimensions