# Eurotek
Broadcast Solutions

MOD. A4D SERIES

DIGITAL RADIO LINKS FREQ. 2-23 GHZ

Digital microwave Radio Link "A4D" series can be utilised to carry signals Studio -Transmitter (STL), Transmitter – Studio (TSL), in the distribution/contribution networks and also for Mobile connections. Available from 2 to 23 GHz with modulations QPSK, QAM, COFDM and transfer capacity up to 155 Mb/s with interfaces I/O: GbE, ASI, BTS, SDI, PAL/NTSC, G.703 and E1/T1.

The installation of full In Door Unit (IDU) or splitted Out Door Unit (ODU) versions with coaxial or waveguide I/O allows the realisation of every kind of connections that would be fixed, semi-fixed, Mobile for mono or bi-directional use.
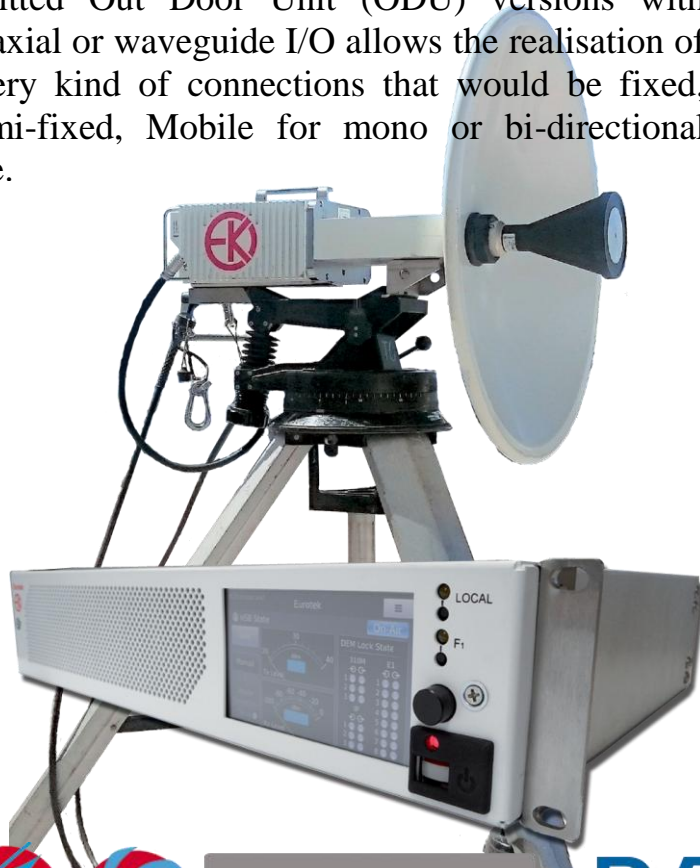
Features

- Frequency: from 2 ÷ 23 GHz
- Out Door / In Door / Mobile version
- Modulation: QPSK to 1024 QAM and COFDM
- Interfaces: GbE, ASI, BTS, SDI, PAL/NTSC, G.703, E1/T1
- IF 70 MHz IN / OUT
- 6/7/8MHz channel bandwidth
- Viterbi rate & Reed Solomon
- Excellent MER
- Colour front panel control
- Embedded Linux OS
- Complete web management

Applications

- Backbone Systems
- STL/TSL connection
- Mobile Systems

ALL4DIGIT SYSTEM

DVB Digital Video Broadcasting

DEVICES COMPOSITION

FULL IN DOOR UNIT VERSION

Frequency	Transmitter section	Receiver section
From 2 to 14 GHz	EK-MFR/2*	EK-MFR/2*
	EK-MFR/5*	EK-MFR/5*
	EK-MFR-ETSI*	EK-MFR-ETSI*

OUT DOOR UNIT VERSION - SINGLE CHANNEL

Frequency	Transmitter section		Receiver section	
From 2 to 23 GHz	EK-MFR/2*	A4D-ExT/1**	EK-MFR/2*	A4D-ExR/1**
	EK-MFR/5*		EK-MFR/5*	
	EK-MFR-ETSI*		EK-MFR-ETSI*	

OUT DOOR UNIT VERSION - MULTICHANNEL

Frequency	Transmitter section		Receiver section	
From 2 to 23 GHz	EK-MFR/2*	A4D-ESxT/1**	EK-MFR/2*	A4D-ESxR/1**
	EK-MFR/5*		EK-MFR/5*	
	EK-MFR-ETSI*		EK-MFR-ETSI*	

* The Indoor section must be assembled with the optional boards that are described in the Eurotek documentation.
** It is also available the Outodoor RTX units version with code A4D-ExRTD/1H & A4D-ExRTU/1H

AUTOCOMPOSE EXAMPLE

10 GHz DIGITAL RADIO LINK TRANSCEIVER - FULL INDOOR VERSION

8 WATT Agile UP/DOWN-CONVERTER

10 GHz TX BRANCHING FILTER

DIGITAL MO/DEMODULATOR

10 GHz RX BRANCHING FILTER
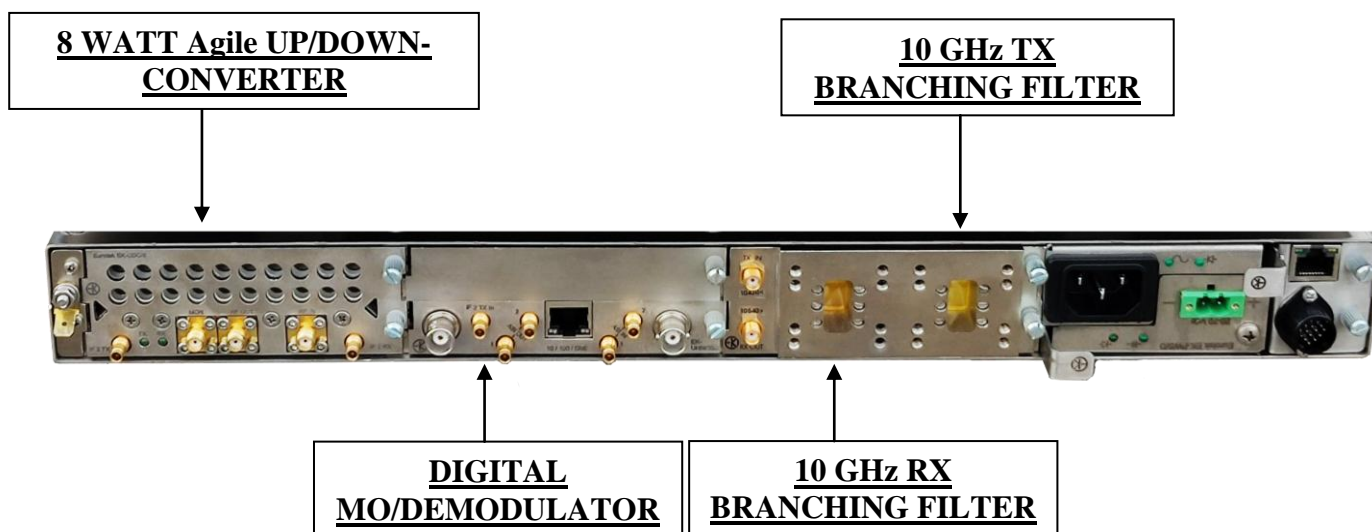
A4D Full In Door Unit (IDU) specification

Link section performance (-40 dBm at receiver input)	
Frequency band	1.98 - 2.1 GHz / 2.3 - 2.7 GHz / 3.2 - 3.8 GHz / 3.9 - 4.4 GHz / 4.4 - 4.9 GHz / 5.2 - 5.4 GHz / 5.9 - 6.4 GHz / 6.4 - 7.2 GHz / 7 - 8 GHz/ 8 - 8.5 GHz/ 10 - 10.7 GHz /10.7 - 11.7 GHz/ 11.7 - 12.5 GHz / 12.7 - 13.3 GHz / 14.25 - 14.5 GHz
FI band	from 60 - 80 MHz +/- 0.5 dB from 62 - 78 MHz within 3 nS
FI connections	-25 ÷ 0 dBm @ 75 Ohm
Output interface	Coaxial "N" female connector (2, 3, 4, 5 GHz band), Waveguide Flange type UBR70 (6, 7 GHz band), Waveguide Flange type UBR84 (8 GHz band)
	Waveguide Flange type UBR120 (10, 11, 12, 13, 14 GHz band)
Input interface	Coaxial BNC female connector

Freq. band (GHz)	1.98 - 2.1	2.3 - 2.7	3.2 - 3.8	3.9 - 4.4	4.4 - 4.9	5.2 - 5.4	5.9 - 6.4	6.4 - 7.2	7.0 - 8.0	8.0 - 8.5	10.0 - 10.7	10.7 - 11.7	11.7 - 12.5	12.7 - 13.3	14.2 - 14.5
Output power (dBm) QPSK*	t.b.d	t.b.d	24	24	24	25.5	27	27	27	27	27	27	27	27	27
Output power (dBm) 16QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24
Output power (dBm) 32QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24
Output power (dBm) 64QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24
Output power (dBm) 128QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24
Output power (dBm) 256QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24

* Output power excluding branching filter (necessary) - Branching filter loss: 0.5 dB Multi-channel vers. / 1.5 dB Single channel version

Working climatic conditions (IDU)	
Normal	-5°/ +45°Celsius

Power supply	
Transmitter side	85-264V_{ac} +/- 10% 47÷ 63Hz 120W 10A and optional: 18÷ 36V_{dc} or 36-72V_{dc} (negative galvanic insulated)
Receiver side	85-264V_{ac} +/- 10% 47÷ 63Hz 120W 10A and optional: 18÷ 36V_{dc} or 36-72V_{dc} (negative galvanic insulated)

Rack mechanical specifications (IDU)			
Height	44 mm (1U)		
Width	482 mm (19")		
Depth	312 mm	Weight	in function of boards inside it

A4D Out Door Unit (ODU) Single channel specification

Link section performance (-40 dBm at receiver input)	
Frequency band	1.98 - 2.1 GHz / 2.3 - 2.7 GHz / 3.2 - 3.8 GHz / 3.9 - 4.4 GHz / 4.4 - 4.9 GHz / 5.2 - 5.4 GHz / 5.9 - 6.4 GHz / 6.4 - 7.2 GHz / 7 - 8 GHz / 8 - 8.5 GHz / 10 - 10.7 GHz / 10.7 - 11.7 GHz / 11.7 - 12.5 GHz / 12.7 - 13.3 GHz / 14.25 - 14.5 GHz
Noise figure	< 3 dB @ – 40 dBm
FI band	from 60 - 80 MHz +/- 0.5 dB from 62 - 78 MHz within 3 nS
Output interface	Coaxial "N" female connector (2, 3, 4 GHz band)
	Waveguide Flange type PDR70 (5, 6, 7 GHz band)
	Waveguide Flange type PDR84 (8 GHz band)
	Waveguide Flange type PBR120 (10, 11, 12, 13, 14 GHz band)
Input interface	Coaxial "N" or Lemo (optional) female connector, TNC on RTX model

Freq. band (GHz)	1.98 - 2.1	2.3 - 2.7	3.2 - 3.8	3.9 - 4.4	4.4 - 4.9	5.2 - 5.4	5.9 - 6.4	6.4 - 7.2	7.0 - 8.0	8.0 - 8.5	10.0 - 10.7	10.7 - 11.7	11.7 - 12.5	12.7 - 13.3	14.2 - 14.5
Output power (dBm) QPSK*	t.b.d	t.b.d	24	24	24	25.5	27	27	27	27	27	27	27	27	27
Output power (dBm) 16QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24
Output power (dBm) 32QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24
Output power (dBm) 64QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24
Output power (dBm) 128QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24
Output power (dBm) 256QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24

* Output power excluding branching filter (necessary) - Branching filter loss: 0.5 dB Multi-channel vers. / 1.5 dB Single channel vers.

Working climatic conditions (ODU)		Working climatic conditions (IDU)	
Normal	-40° - +50°Celsius	Normal	+5° - +40°Celsius

Power supply (IDU)	
Transmitter side	85-264V$_{ac}$ +/- 10% 47- 63Hz 120W 10A and optional: 18- 36V$_{dc}$ or 36-72V$_{dc}$ (negative galvanic insulated)
Receiver side	85-264V$_{ac}$ +/- 10% 47- 63Hz 120W 10A and optional: 18- 36V$_{dc}$ or 36-72V$_{dc}$ (negative galvanic insulated)

RF Head (ODU) mechanical specifications			Rack (IDU) mechanical specifications		
Height	120 mm		Height	44 mm (1U)	
Width	80 mm		Width	482 mm (19")	
Depth	255 mm	Weight 3 Kg.	Depth	312 mm	Weight in function of boards inside it

A4D Out Door Unit (ODU) Multi-channel specification

Link section performance (-40 dBm at receiver input)	
Frequency band	1.98 - 2.1 GHz / 2.3 - 2.7 GHz / 3.2 - 3.8 GHz / 3.9 - 4.4 GHz / 4.4 - 4.9 GHz / 5.2 - 5.4 GHz / 5.9 ÷ 6.4 GHz / 6.4 - 7.2 GHz / 7 - 8 GHz/ 8 - 8.5 GHz/ 10 - 10.7 GHz / 10.7 - 11.7 GHz / 11.7 - 12.5 GHz / 12.7 - 13.3 GHz / 14.25 - 14.5 GHz / 17.7 - 19.7 GHz / 21.2 - 23.6 GHz
Noise Figure	< 3 dB @ – 40 dBm
FI band	from 60 - 80 MHz +/- 0.5 dB from 62 - 78 MHz within 3 nS
Output interface	Coaxial "N" female connector (2, 3, 4 GHz band)
	Waveguide Flange type PDR70 (5, 6, 7 GHz band)
	Waveguide Flange type PDR84 (8 GHz band)
	Waveguide Flange type PBR120 (10, 11, 12, 13, 14 GHz band)
	Waveguide Flange type PBR220 (18, 23 GHz band)
Input interface	Coaxial "N" or Lemo (optional) female connector

Freq. band (GHz)	1.98 - 2.1	2.3 - 2.7	3.2 - 3.8	3.9 - 4.4	4.4 - 4.9	5.2 - 5.4	5.9 - 6.4	6.4 - 7.2	7.0 - 8.0	8.0 - 8.5	10.0 - 10.7	10.7 - 11.7	11.7 - 12.5	12.7 - 13.3	14.2 - 14.5	17.7 - 19.7	21.2 - 23.6
Output power (dBm) QPSK*	t.b.d	t.b.d	24	24	24	25.5	27	27	27	27	27	27	27	27	27	24	24
Output power (dBm) 16QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24	21	21
Output power (dBm) 32QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24	21	21
Output power (dBm) 64QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24	21	21
Output power (dBm) 128QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24	21	21
Output power (dBm) 256QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24	21	21

* Output power excluding branching filter (necessary) - Branching filter loss: 0.5 dB Multi-channel version / 1.5 dB Single channel version

Working climatic conditions (ODU)		Working climatic conditions (IDU)	
Normal	-40° - +50°Celsius	Normal	+5° - +40°Celsius

Power supply (IDU)	
Transmitter side	85-264V$_{ac}$ +/- 10% 47- 63Hz 120W 10A and optional: 18- 36V$_{dc}$ or 36-72V$_{dc}$ (negative galvanic insulated)
Receiver side	85-264V$_{ac}$ +/- 10% 47- 63Hz 120W 10A and optional: 18- 36V$_{dc}$ or 36-72V$_{dc}$ (negative galvanic insulated)

RF Head (ODU) mechanical specifications			Rack (IDU) mechanical specifications		
Height	120 mm		Height	44 mm (1U)	
Width	80 mm		Width	482 mm (19")	
Depth	255 mm	Weight 3 Kg.	Depth	312 mm	Weight in function of boards inside it

MAINFRAME EK-MFR/2

The Mainframe is a flexible and modular platform which allows the use of different kind of boards inserted in inside it.

All the boards fitted inside the device are automatically identified by the operative system which fits the functions to the keyboard and to the visual information made reliable on the colour display placed on the front panel of the equipment.

The program of the function of each board can be done, either pressing on the keyboard or from remote control, thanks to an interface Ethernet 10/100 bT which allows a remote configuration also through the web.

Two other serial interfaces RS232 and six relay contacts complete the reliable interfaces. The power supply section can receive either alternate or continue tension (even if they are simultaneously) furthermore it can be removed completely from its location, together with the switch on, to permit easy maintenance.

The two cooling fans located in the power supply section varies their speed proportionally to the temperature of the modules/boards present in the device allowing an adequate cooling of the system. Finally the colour display makes reliable each function and parameter regarding any information about each board fitted inside the Mainframe.

Features

- Embedded Linux OS
- Complete modular system
- RTC for temporal reference
- Internal memory to store eventual alarms
- 6 slots to install any boards
- Colour front panel control
- Complete web Management

Applications

- Head End Systems: Mux/Demux/Remux, SFN Adapter, Network Adapter
- Digital Microwave Links: Out Door, In Door, Mobile version from 2÷23 GHz
- Backbone Systems
- DTV Transmitters
- HD/SD Single or Multiple Encoder / Decoder
- Modem QPSK/QAM/COFDM

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EK-MFR/5

HIGH DENSITY MULTI-SLOTS SYSTEM

EK-MFR/5 is a scalable, flexible and modular platform that allow to manage several cards in a completely reconfigurable way in function of customer's needs. The two units rack of the EK-MFR/5 allows to interconnect up to 10+2 cards managed by the controller card EK-CTR/5 based on Linux OS which allows to manage all the system functionality. The hardware of the EK-MFR/5 allows to located up to two controller cards in order to obtain a complete redundancy on the system management. The platform settings can be done, either pressing on the keyboard or from remote control, thanks to an interface Ethernet 10/100 BaseT which allows a remote configuration also through the web. Two other RS232 connections and six relay contacts complete the available interfaces. The hot-swap power supply section EK-PWS/5D can receive DC voltage (38÷75Vdc) and furthermore it can be unplugged to permit an easy maintenance. Three silent cooling fans, located back to the front panel, that vary their speed in function of the temperature of the modules/cards, warrant an adequate cooling of the system. Finally the 5" color touch-panel display makes available each function and parameter of all the cards fitted inside the frame. It is possible to have a version of the EK-MFR/5 without the display.

Features

- Single or redundant Linux OS Controller
- Modular & Scalable System
- RTC for time reference
- 10+2 slots to install any boards
- Integrated alarms management
- Redundant and hot-swappable power supply
- 5" touch screen color front panel control
- Available in White or Black color
- Complete WEB management

Applications

- Head End Systems: Mux/Demux/Remux, SFN Adapter, Network Adapter
- Digital Microwave Links: Out Door, In Door, Mobile version from 2÷23 GHz
- Backbone Systems
- DTV Transmitters
- HD/SD Single or Multiple Encoder / Decoder
- Modem QPSK/QAM/COFDM

Typical Application
(Radio Link Configuration)
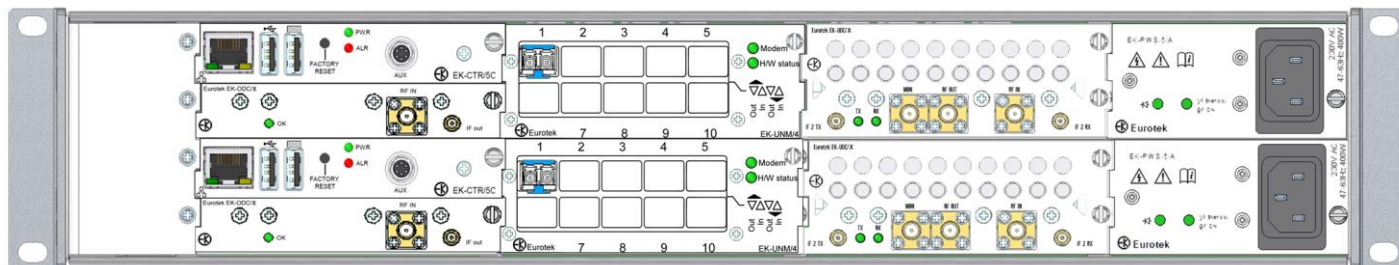
eNMS Management Software

Eurotek
Broadcast Solutions
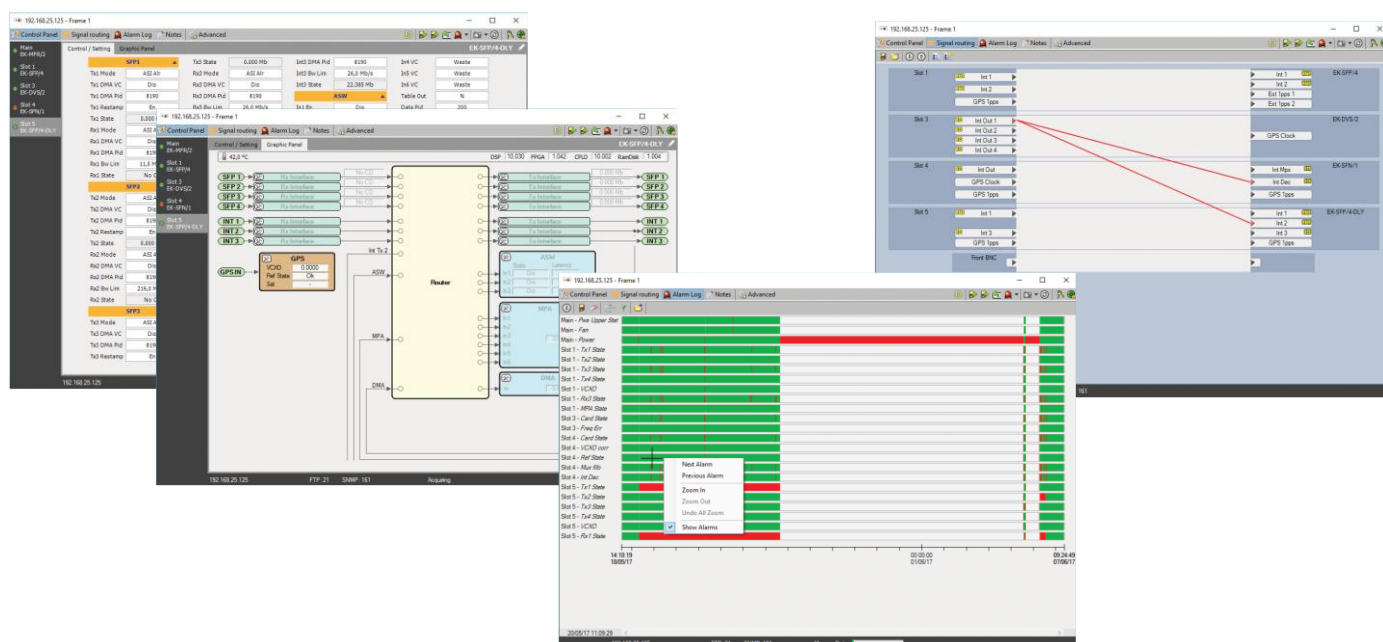
EK-MFR/5-ETSI

HIGH DENSITY MULTI-SLOTS SYSTEM

EK-MFR/5-ETSI is specifically designed to implement long-haul radio link systems in a scalable, flexible and modular platform. It comes from a long Eurotek radio link development history, it allows to manage several cards in a completely reconfigurable way in function of network configuration needs. The two units 19" rack is based on a double bus that allows to interconnect up to 10 cards on an common high speed data bus. Two FULL independent and redundant controller cards EK-CTR/5 (one optional) allows for NMS and Web browsing. Each single bus can be substituted leaving the other in operation without the use of any tool if there is rear system access. Two Ethernet ports even with just one controller allow to manage locally the frame without to remove the connection of the frame to the network. The hot-swap power supplies EK-PWS/5D & EK-PWS/5A can receive DC voltage (36÷75Vdc) or AC Voltage (85÷264Vac) and are fully monitored, any combination of power supplies is allowed. Two silent cooling fans and the air filter are hot-swappable. (as an option it is possible to order additional 1 Units rack to have inlet air on the front of the frame).
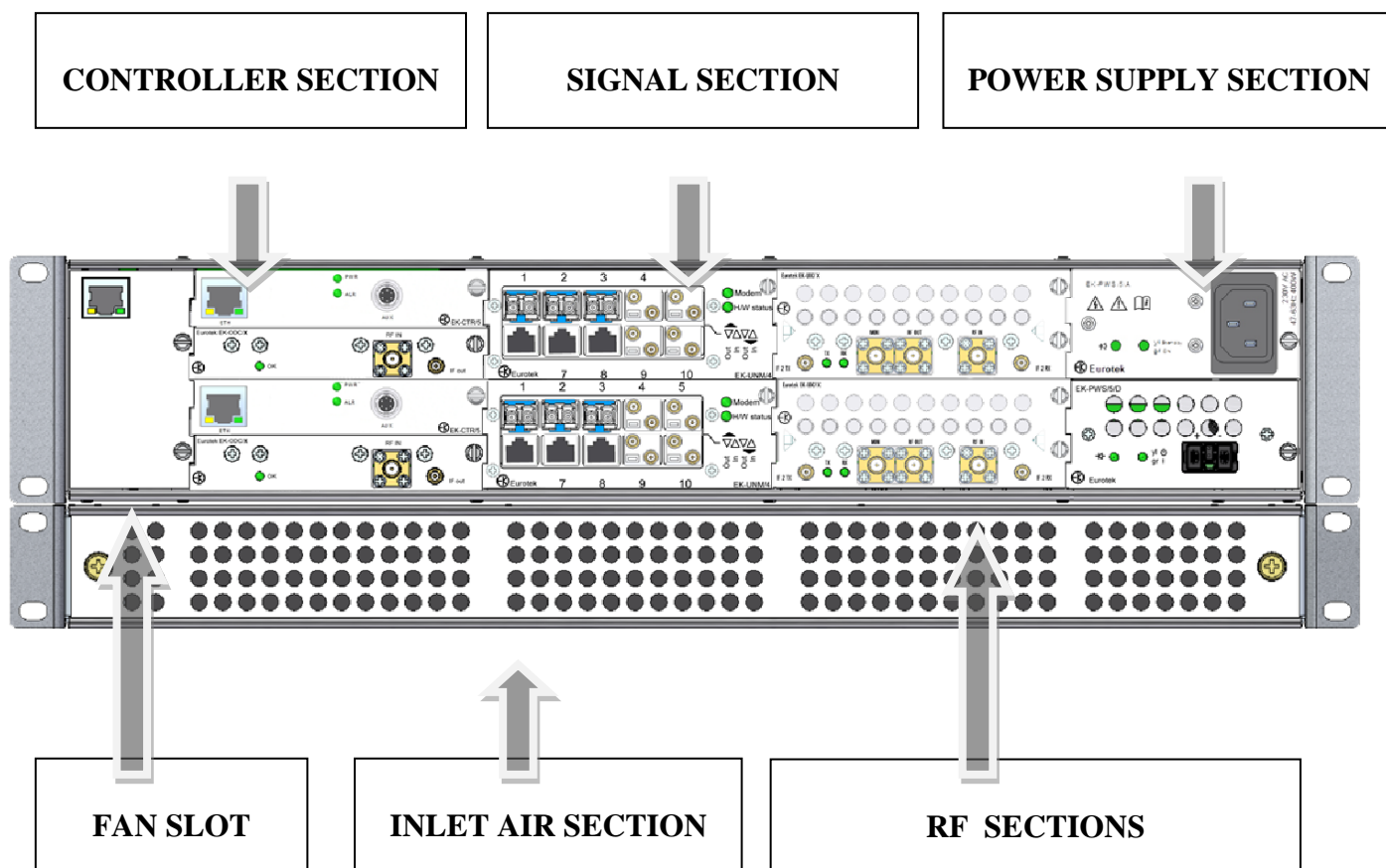
Features

- Single or redundant Linux OS Controller
- Modular & Scalable System
- RTC for time reference
- 10+2 slots to install any boards
- Integrated alarms management
- Redundant and hot-swappable power supply
- ETSI compliant
- Redundant and hot-swappable power supply
- Complete WEB management

Applications

- Digital Microwave Links Full In Door version
- SDH Network
- Backbone Systems

TYPICAL APPLICATION
2+0 RADIO LINK LONG-HAUL TRANSCEIVER

CONTROLLER SECTION	SIGNAL SECTION	POWER SUPPLY SECTION

FAN SLOT	INLET AIR SECTION	RF SECTIONS

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BOARD PLUG-IN EK-UNM/2
"TRANSMODEM"
DVB-S /DVB-T/DVB-H

The board EK-UNM/2 allows a versatility without precedents in the connection point to point in fact allows to modulate/demodulate signals on quadrature single carrier and also on OFDM.

The more innovative feature of this board is the possibility to use different types of modulation in reception and transmission, like for example receive a **DVB-S** signal from satellite and transmit the same or other signals with **DVB-T/H** mode.

When used in **DVB-S** configuration allows to carry, further than E3 signals, also of transport stream (TS) with Bit-rate up to 155 Mbit/s using constellations from QPSK to 256 QAM.

The settings allows a lot of configuration about modulation's parameters, for example the symbol rate is selectable to steps of 100 Kbit/s from 1 to 32 MSym/s. The board allows to manage also an aggregate signal for the telecontrol and the telemetry in all operation modalities (SFN excluded).

It is also possible a commutation between the internal signal IF 70 MHz generated, an external carrier (Clean Carrier) or external auxiliary one signal (digital or analogue) that can be used in order to obtain an automatic switch over.

Features

- Modulation: QPSK - 16/32/64/128QAM - COFDM
- DVB-ASI Input / Output
- E3 Input / Output
- IF 70MHz Input / Output
- DVB-S / DVB-T
- 6/7/8 MHz channel bandwidth
- Viterbi rate
- Reed Solomon
- Very good MER

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Terrestrial and satellite use
- Transceiver mode

TECHNICAL SPECIFICATION

	Digital Mo-Demodulator	
Common SPECS	BB Input selection	ASI Main, ASI Sec., E3, Internal , Baseband Remote Loop Back
	BB Output selection	Demodulator output, Baseband Local Loop Back
	Dem Input selection	Internal, IF2, Local Loop Back
	Mod output selection	Modulator, External, IF2, Clean Carrier (CW), Off
	Readings	Input bitrate / IF RX level /MSE / RS error rate/ Fifo status / RX Carrier Frequency error / Temperature
	IF frequency	70 MHz
	Frequency error	5 ppm
	Reference	External (10 MHz /1pps), Internal, Data
	Input level	-20 / 5 dBm
	Output Level	-15 / 0 dBm
DVB-S	Reference	EN 300 421 EN 301 210
	Constellation	QPSK (DVB-S std.), 16 QAM, 32 QAM, 64 QAM, 128 QAM
	Roll-off	0.15/ 0.20/ 0.25/ 0.35
	Viterbi rate	QPSK (1/2 2/3 3/4 5/6 7/8) 16 QAM (3/4 7/8) 32 QAM(9/10) 64 QAM (5/6 11/12) 128 QAM (6/7 13/14)
	Symnbol rate	1 – 31,5 MSym/s in 100 KSym/s steps
DVB-T	Reference	EN 300 744
	Constellation	QPSK 16 QAM 64 QAM
	Viterbi rate	1/2 2/3 3/4 5/6 7/8
	Guard interval	1/4 1/8 1/16 1/32
	Channel Bandwidth	6 MHz 7 MHz 8 MHz
	Carriers	2K, 4K, 8K
	Hierarchic Modes	Alfa1 Alfa2 Alfa4
	TPS cell	Editable

BOARD PLUG-IN EK-UNM/3
"GbE + ASI MODEM"

The revolutionary feature applied to this board is the possibility to use at the same time both **GbE and TS ASI** interfaces selecting the data rate preferred for each IN/OUT so it is possible combine ASI and IP technology in broadcasting activities and to prepare a complete migration to IP.

When used in single carrier it allows the transport of signals with bit-rate up to 203 Mbit/s using constellations selectable from QPSK to 256 QAM and thanks to a particular hardware architecture it is possible to carry, for example using two Radio Links, data rate up until to 400 Mbit/s. on a single GbE port.

Settings on the Transparent Mux / Demux section allow furthermore to use this new board together all the previously available boards like the Modem EK-UNM/2, 4 ASI Mux/Demux boards, E1/T1 board, ect.. and build in this way a **MULTI-FLOW** transport solutions.

The board EK-UNM/3 allows to carry simultaneously IP and two TS ASI signals with a versatility and flexibility without precedent in the connections made through Backbone Systems, Point to Point Radio Links and Satellite contribution / distribution Systems.

Features

- Modulation: QPSK - 16/32/64/128/256QAM, COFDM
- 2 DVB-ASI Input / Output
- GbE Input / Output
- TS Internal Input / Output
- Internal Transparent MUX/DEMUX
- IF 70 MHz Input / Output
- DVB-S / DVB-T
- 6/7/8 MHz channel bandwidth
- Viterbi rate
- Reed Solomon
- Very good MER
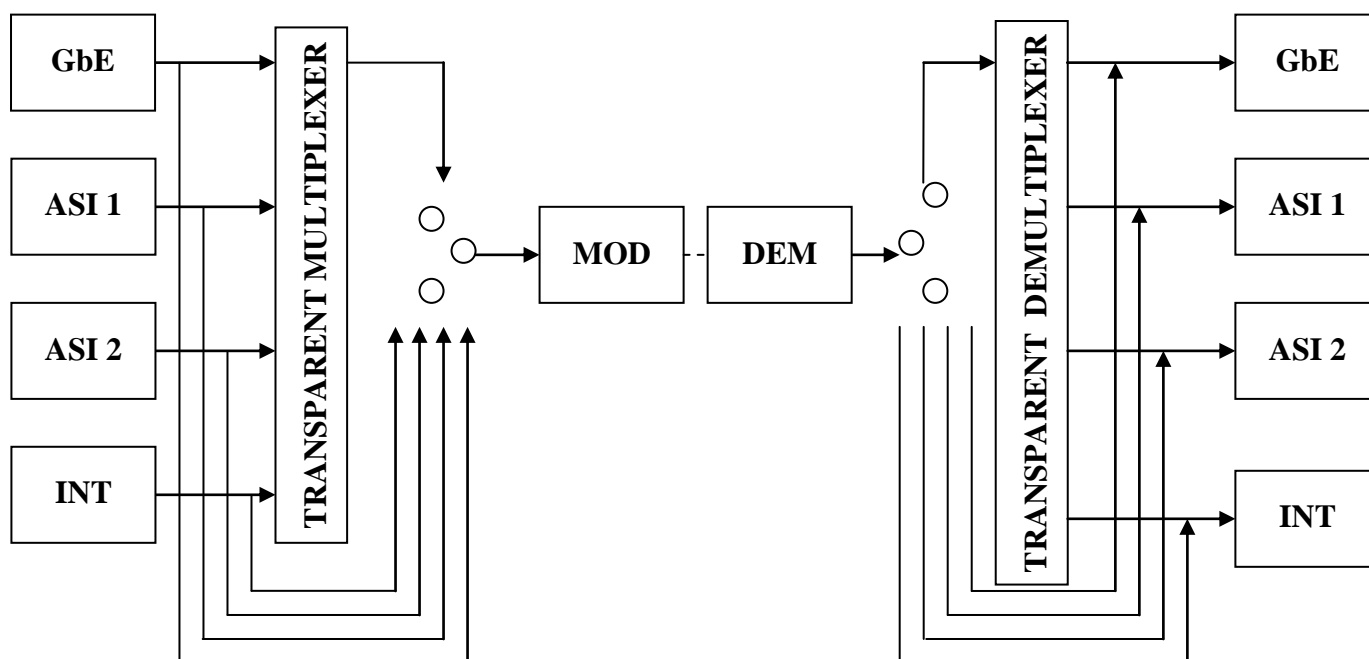- Transceiver mode

Applications

- Simultaneous ASI+IP Carrying
- Digital Microwave Radio Links
- Terrestrial and Satellite use
- IP Networking
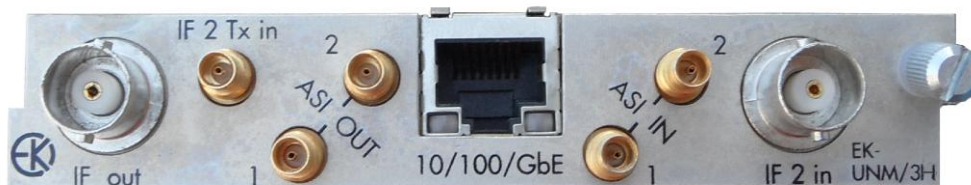- Two-way communication

TECHNICAL SPECIFICATION

		Digital Mo-Demodulator
Common SPECS	BB Input selection	GbE, 2 ASI , Internal , Baseband Remote Loop Back
	BB Output selection	Demodulator output, Baseband Local Loop Back
	Dem Input selection	Internal, IF2, Local Loop Back
	Mod output selection	Modulator, External, IF2, Clean Carrier (CW), Off
	Readings	ASI Inputs bitrate / IF RX level / MSE / RS error rate / Fifo status / RX Carrier Frequency error / Temperature
	IF frequency	70 MHz
	Frequency error	5 ppm
	Reference	External (10 MHz /1pps), Internal, Data
	Input level	-20 / 5 dBm
	Output Level	-15 / 0 dBm
DVB-S	Reference	EN 300 421 EN 301 210
	Constellation	QPSK (DVB-S std), 16 QAM, 32 QAM, 64 QAM, 128 QAM, 256 QAM
	Roll-off	0.15/ 0.20/ 0.25/ 0.35
	Viterbi rate	QPSK (1/2 2/3 3/4 5/6 7/8) 16 QAM (3/4 7/8) 32 QAM(9/10) 64 QAM (5/6 11/12) 128 QAM (6/7 13/14) 256 QAM (
	Symnbol rate	1 - 31,5 MSym/s in 100 KSym/s steps
DVB-T	Reference	EN 300 744
	Constellation	QPSK 16 QAM 64 QAM
	Viterbi rate	1/2 2/3 3/4 5/6 7/8
	Guard interval	1/4 1/8 1/16 1/32
	Channel Bandwidth	6 MHz 7 MHz 8 MHz
	Carriers	2K, 4K, 8K
	Hierarchic Modes	Alfa1 Alfa2 Alfa4
	TPS cell	Editable

BLOCK SCHEME

Eurotek
Broadcast Solutions

BOARD PLUG-IN EK-UNM/3H
"GbE + ASI MODEM"

The revolutionary feature applied to this board is the possibility to use at the same time both **GbE and TS ASI** interfaces selecting the data rate preferred for each IN/OUT so it is possible combine ASI and IP technology in broadcasting activities and to prepare a complete migration to IP.

When used in single carrier it allows the transport of signals with bit-rate up to 203 Mbit/s using constellations selectable from QPSK to 256 QAM and thanks to a particular hardware architecture it is possible to carry, for example using two Radio Links, data rate up until to 400 Mbit/s. on a single GbE port.

Settings on the Transparent Mux / Demux section allow furthermore to use this new board together all the previously available boards like the Modem EK-UNM/2, 4 ASI Mux/Demux boards, E1/T1 board, ect.. and build in this way a **MULTI-FLOW** transport solutions.

The board EK-UNM/3H allows to carry simultaneously IP and two TS ASI signals with a versatility and flexibility without precedent in the connections made through Backbone Systems, Point to Point Radio Links and Satellite contribution / distribution Systems.

Features

- Modulation: QPSK - 16/32/64/128/256QAM, COFDM
- 2 DVB-ASI Input / Output
- GbE Input / Output
- TS Internal Input / Output
- Internal Transparent MUX/DEMUX
- IF 140 MHz Input 350MHz Output
- DVB-S / DVB-T
- 6/7/8 MHz channel bandwidth
- Viterbi rate
- Reed Solomon
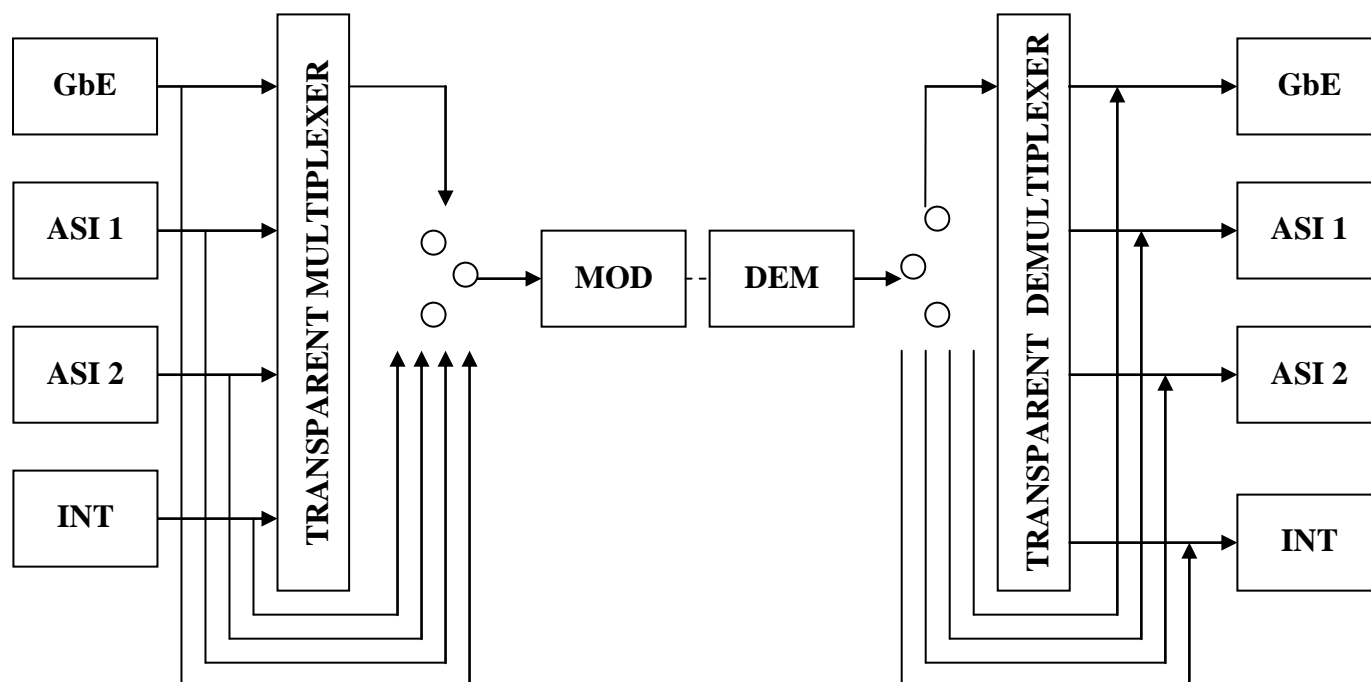- Very good MER
- Transceiver mode

Applications

- Simultaneous ASI+IP Carrying
- Digital Microwave Radio Links
- Terrestrial and Satellite use
- IP Networking
- Two-way communication

TECHNICAL SPECIFICATION

Digital Mo-Demodulator		
Common SPECS	BB Input selection	GbE, 2 ASI , Internal , Baseband Remote Loop Back
	BB Output selection	Demodulator output, Baseband Local Loop Back
	Dem Input selection	Internal, IF2, Local Loop Back
	Mod output selection	Modulator, External, IF2, Clean Carrier (CW), Off
	Readings	ASI Inputs bitrate / IF RX level / MSE / RS error rate / Fifo status / RX Carrier Frequency error / Temperature
	IF frequency	350 MHz Output 140MHz Input
	Frequency error	5 ppm
	Reference	External (10 MHz /1pps), Internal, Data
	Input level	-20 / 5 dBm
	Output Level	-15 / 0 dBm
DVB-S	Reference	EN 300 421 EN 301 210
	Constellation	QPSK (DVB-S std), 16 QAM, 32 QAM, 64 QAM, 128 QAM, 256 QAM
	Roll-off	0.15/ 0.20/ 0.25/ 0.35
	Viterbi rate	QPSK (1/2 2/3 3/4 5/6 7/8) 16 QAM (3/4 7/8) 32 QAM(9/10) 64 QAM (5/6 11/12) 128 QAM (6/7 13/14) 256 QAM (
	Symnbol rate	1 - 31,5 MSym/s in 100 KSym/s steps
DVB-T	Reference	EN 300 744
	Constellation	QPSK 16 QAM 64 QAM
	Viterbi rate	1/2 2/3 3/4 5/6 7/8
	Guard interval	1/4 1/8 1/16 1/32
	Channel Bandwidth	6 MHz 7 MHz 8 MHz
	Carriers	2K, 4K, 8K
	Hierarchic Modes	Alfa1 Alfa2 Alfa4
	TPS cell	Editable

BLOCK SCHEME

BOARD PLUG-IN EK-UNM/4
" MODEM"
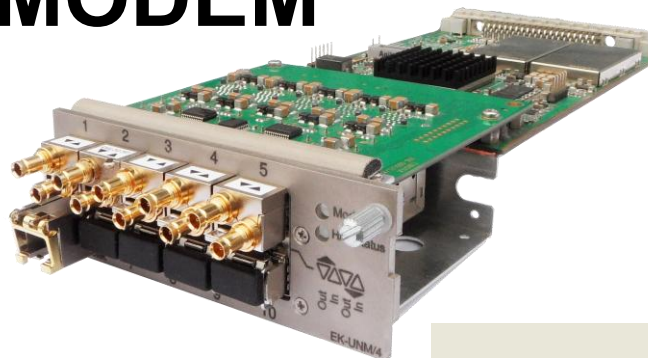
The EK-UNM/4 board is a digital single carrier modem with Adaptive Code Modulation that allows the conversion between the Base Band streams in a intermediate frequency and vice-versa. The card is designed to be inserted in all the versions of the EK-MFR/x frames that allow a completely management and configuration of it.

On the board panel are present 10 SFP physical interfaces:
- 6x IP Gbe ports
- 1x Optional XPIC Connection
- 1x STM-1 port
- 2 x Optional payload interface

The UNM/4 board works with ACM (Adaptive Coding and Modulation) that allows to vary the modulation scheme optimizing the transmission system at the path conditions maximizing the transported bit rate, modem is able to vary from QPSK constellation to 1024QAM constellation.
The card is composed by two demodulators to mitigate multi-path effect and to increase the received threshold, the overall system can work in frequency and space diversity.
The High performance Switch integrated in to the cards and the ACM feature guarantee high performance efficiency in all critical situation where require modulation reduction.

Weather Conditions

Automatic Modulation Down Shift   **Automatic Modulation Up Shift**

The Constellation Order will be selected on MER analysis and the Highest and lowest are user selectable.

Features

- Modulation: QPSK - To 1024 QAM with seamless switching
- STM1 Input / Output
- Ethernet ports
- IEEE 1588v2
- Full SFP connections
- High efficiency BCH FEC
- Single carrier modulation
- Integrated Ethernet switch
- Full digital modem solution
- Full duplex simplex and repeater mode
- Transceiver mode
- High performance Ethernet Switch :
  - VLAN Port based
  - QoS PCP/DSCP/Eth Typ
  - RSTP
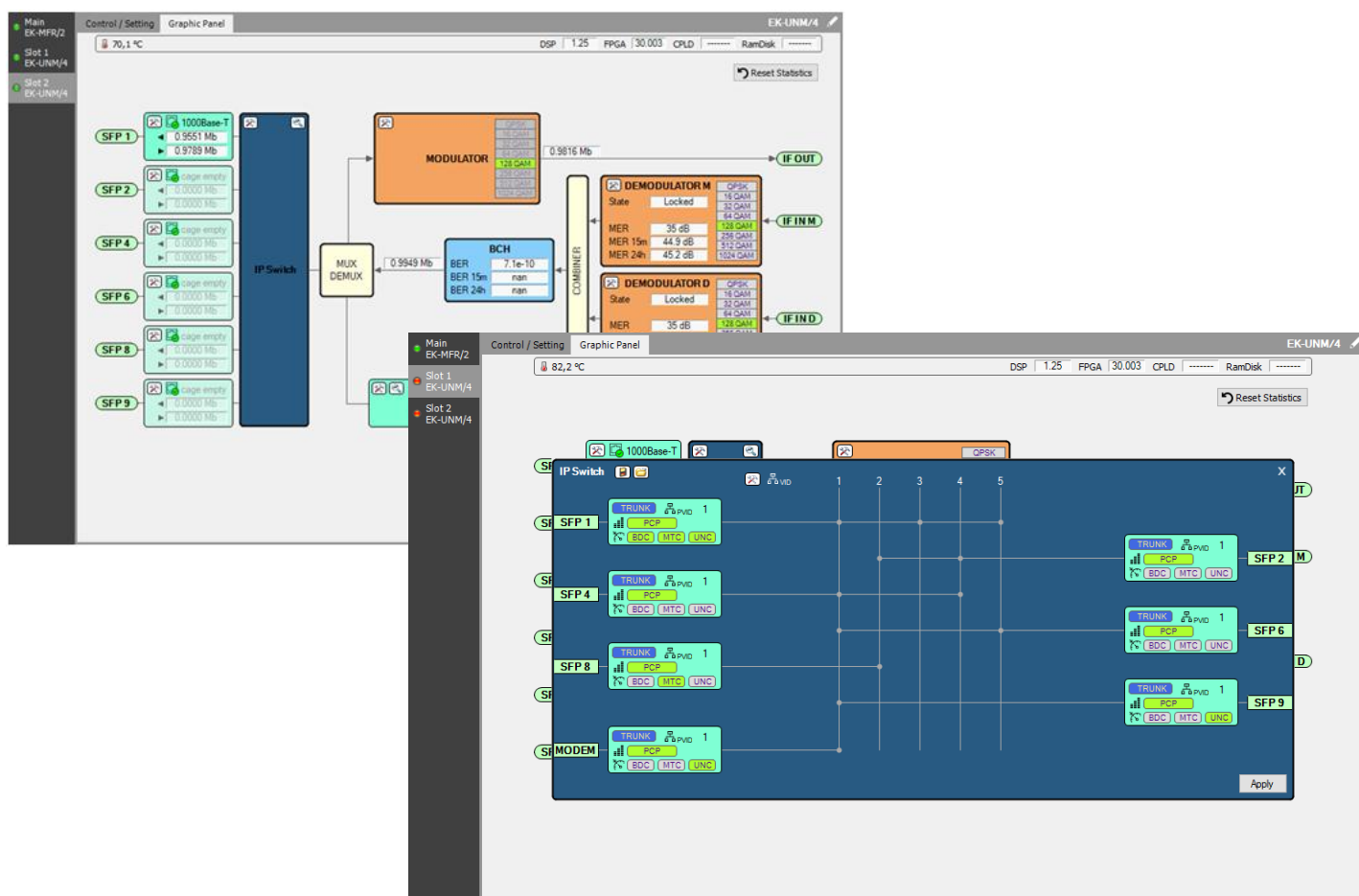 - Dynamic and Static MAC Table

Applications

- Long-Haul Radio Links
- Simultaneous ASI+IP Carrying

TECHNICAL SPECIFICATION

COMMON SPECIFICATIONS	
Inputs	GbE, STM-1
Inputs stream type	STM-1, Ethernet.
Outputs	Demodulator output, GBe, STM-1 Internal IF connection
Outputs stream type	STM-1, Ethernet.
SINGLE CARRIER mode	
Constellation	QPSK ,16QAM,32QAM,64QAM, 128QAM, 256QAM, 512QAM, 1024QAM
CLIMATIC CONDITIONS	
Temperature	-5°C ÷ + 70°C @ card level
Humidity	Max. 90%
Altitude	3000m 66kPa

Gui Interface

The graphical configuration interface of the Ethernet switch part allows the management of IP flows with a principle similar to video matrix, this allows a simplification in configuration and management of the part of networking.

This simplified interface allows setting the integrated Ethernet switch to users who are not particularly experienced in IP routing.

BOARD PLUG-IN EK-STA/10
" ASI-IP-STM-1 Seamless Gateway"

EK-STA/10

The EK-STA/10 card is a highly flexible gateway that allows you to deal with up to 5 ASI, 4 IP and 1 STM-1 signals.

In an easy way you can embed the ASI input TSs in IP or STM-1 signal, transport and de-embed it on the other side of the link, in order to retrieve the original TSs.

For example you can start with 5 ASI that feed two EK-STA/10 cards, embed them into 2 IP streams and transport them over 2 IP backbones.

Anywhere with an EK-STA/10 you can receive the 2 IP streams, seamless retrieve the 5 TSs and directly embed them in a STM-1 signal.

The STM-1 signal in turn can be transported with a radio link on another site where with an EK-STA/10 you can extract the 5 original ASI signals.

Application Example
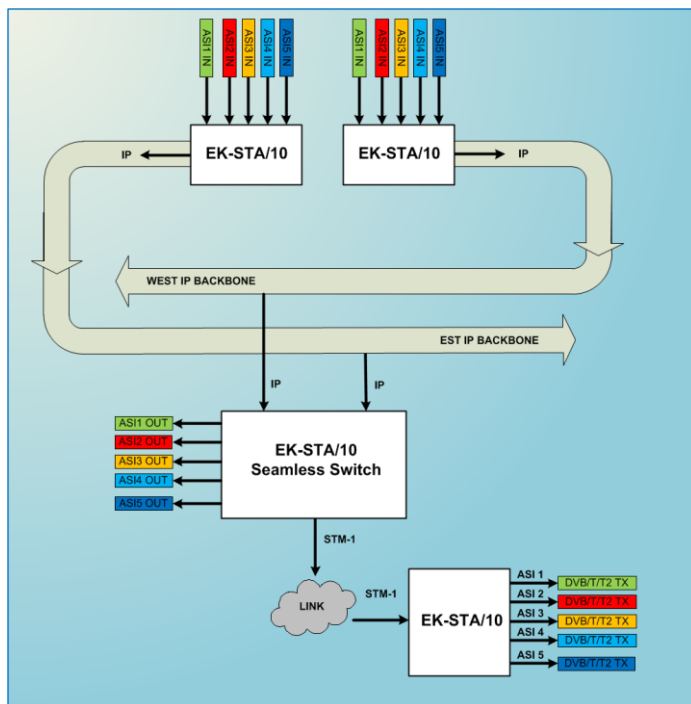
Features

- 4 Ethernet ports over SFP
- 5 ASI ports over SFP
- 1 STM-1 ports over SFP
- FEC CoP3 (opt.)
- Advanced RTP based clock recovery (up to 0.013 ppm accuracy)
- IGMP/ARP support
- Integrated Ethernet L2 switch
- High performance Ethernet Switch :
  - VLAN Port based
  - QoS PCP/DSCP/Eth Typ
  - RSTP
  - Dynamic and Static MAC Table

- Ethernet Statistics
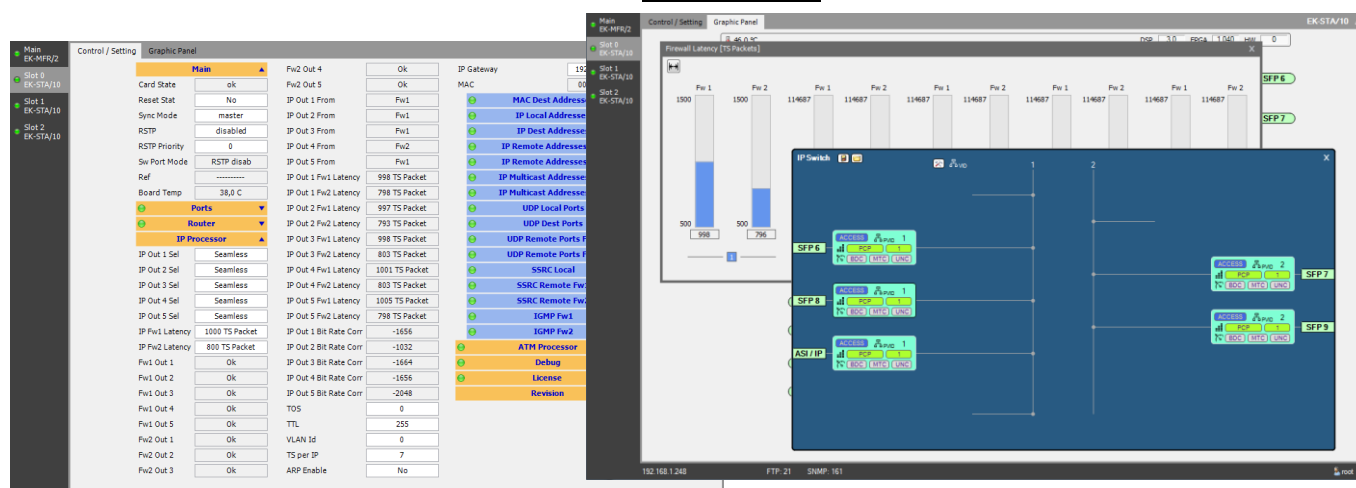- STM1 B1, B2, B3 BER readout & J1 text management

Applications

- Embed/De-embed up to 5 ASI to/from Ethernet or SMT-1
- Double Ethernet firewall with advanced seamless switch for receiver protection

TECHNICAL SPECIFICATION

ASI INTERFACE		
Physical	Electrical	Data
SFP Modules with 1.0/2.3 coaxial or LC optical connector	ISO/IEC 13818-1, EN 50083-9:2002 Annex B	Packet Size	188/204
		Frame Format	byte & packet
		TS Rate	Up to 213Mbps

ASI INTERFACE			
Physical	Electrical	Data	
SFP Modules with 1.0/2.3 coaxial or LC optical connector	ISO/IEC 13818-1, EN 50083-9:2002 Annex B	Packet Size	188/204
		Frame Format	byte & packet
		TS Rate	Up to 213Mbps

STM-1 INTERFACE			
Physical	Electrical	Data	
G.703 G.958 SFP Modules with 1.0/2.3 coaxial or LC optical connector	STM-1 G.707 S1-1,L1-1,L1-2 Depending on SFP Module	Bitrates	155,52Mbps
		Protocol	ETSI EN 300 814
		Encapsulation	T-REC-I.363.1 AAL1
		FEC	RS 128,124
		Errors Readout	B1, B2, B3, RS BER (Instantaneous, 15 Min and 24Hours)
		N° of streams	5

ETH INTERFACE			
Physical	Electrical	Data	
SFP Optical or electrical Module	GbE (IEEE 802.3-2002 and IEEE 802.3ab)	N° of streams	5
		VLAN	1..4096
		Encapsulation	SMPTE 2022-2 :2007
		FEC	CoP3 1D/2D Annex A and B, L=1..31, D=1..31 (opt.)
		Speed	10/100/1000 Base-T 1000 Base-LX
		Mode	Auto negotiation, crossing

CLIMATIC CONDITIONS	
Temperature	- 5°C ÷ + 70°C @ card level
Humidity	Max. 90%
Altitude	3000m 66kPa

GUI Interface

The graphical configuration interface of the Ethernet switch part allows the management of IP flows with a principle similar to video matrix, this allows a simplification in configuration and management of the part of networking.

This simplified interface allows setting the integrated Ethernet switch to users who are not particularly experienced in IP routing.

Eurotek
Broadcast Solutions

# BOARD PLUG-IN EK-GTW/10
" Multi-Conversion Gateway"

The new EK-GTW/10 card allows the transport of Ethernet and ASI signals in an STM-1 channel, with the configurable Ethernet switch optimal traffic management on all ports is obtained.

The ASI-IP network adapter allows the traffic of ASI signals in Ethernet.

All ports are SFP cages that allows the user the choice of a wide range of physical interfaces.
The card is part of ALL4DIGIT Eurotek family that can be inserted inside the various Mainframe solutions.

Block Scheme
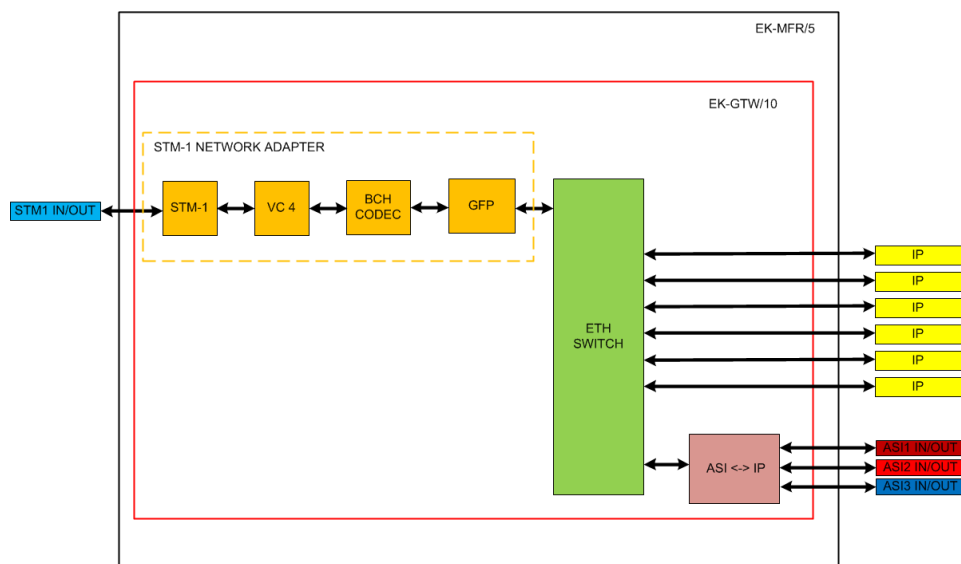
Features

- STM1 B1, B2, B3 BER readout & J1 text management
- 6 Ethernet ports
- 3 ASI ports
- SFP connections
- BCH FEC on VC-4 container for Video broadcast quality services
- Integrated Ethernet L2 switch
- Ethernet Statistics
- High performance Ethernet Switch :
  - VLAN Port based
  - QoS PCP/DSCP/Eth Typ
  - RSTP
  - Dynamic and Static MAC Table
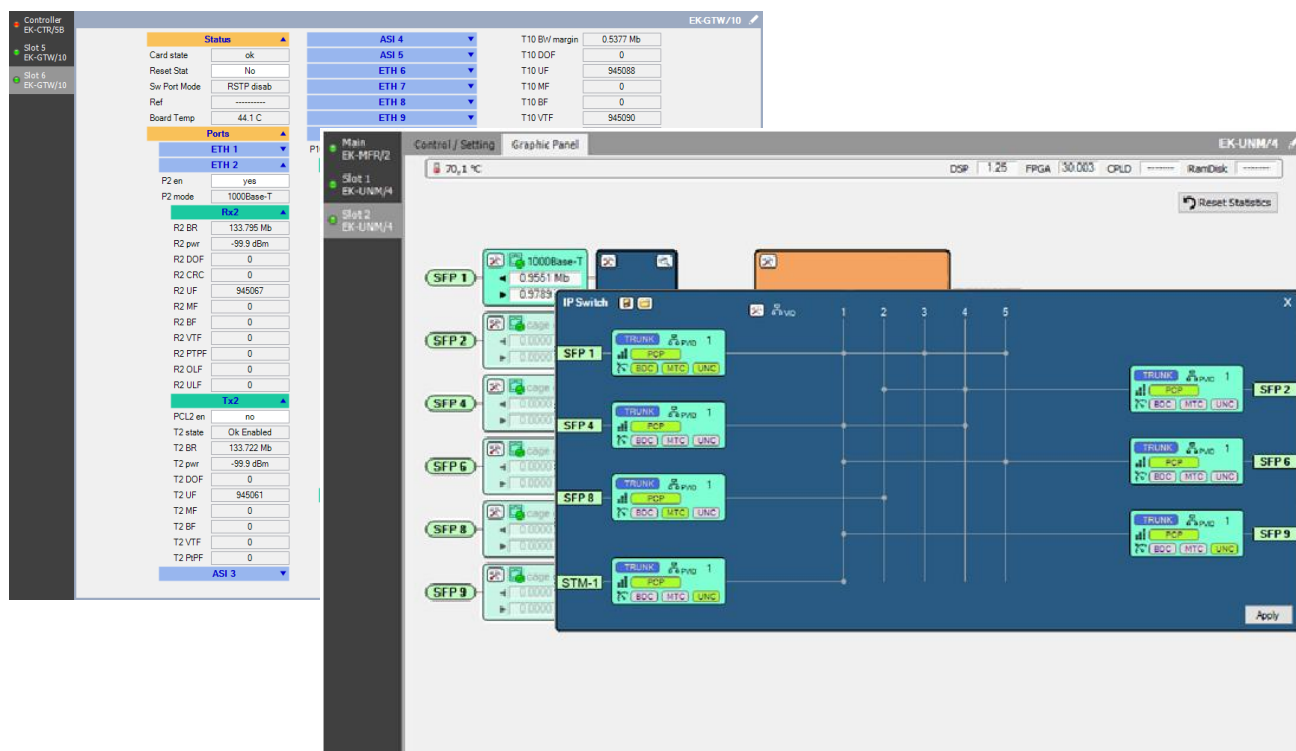 - IEEE 1588v2

Applications

- Simultaneous ASI+Ethernet payloads over STM-1 pipes

TECHNICAL SPECIFICATION

COMMON SPECIFICATIONS	
INPUTS/OUTPUTS	ASI (ISO/IEC 13818-1, EN 50083-9:2002)
	STM-1 (Electrical & Optical)
	GbE (IEEE 802.3-2002 and IEEE 802.3ab)
Ethernet Speed	10 Base-T, 100 Base-T, GbE
Ethernet MTU Max	9000 Byte
Ethernet Mode	Autonegotiation, crossing
Ethernet Reference	IEEE 802.3-2002 and IEEE 802.3ab
Ethernet Encapsulation	Generic Frame Procedure
ASI Encapsulation	Layer 3, UDP/RTP 1-7 packets or Layer 2
STM-1 Encapsulation	VC-4
FEC	BCH 261,16
Payload	134.6 Mb/s @ Layer 2
Errors Readout	B1, B2, B3, BCH (Instantaneous, 15 Min and 24Hours)
CLIMATIC CONDITIONS	
Temperature	- 5°C ÷ + 70°C @ card level
Humidity	Max. 90%
Altitude	3000m 66kPa

GUI Interface

The graphical configuration interface of the Ethernet switch part allows the management of IP flows with a principle similar to video matrix, this allows a simplification in configuration and management of the part of networking.

This simplified interface allows setting the integrated Ethernet switch to users who are not particularly experienced in IP routing.

BOARD PLUG-IN EK-ENR/1

"MPEG-4 HD/SD ENCODER"

The EK-ENR/1 card is an audio/video encoder. It is able to encode up to 1 video and 2 audio in a single output transport stream. This card must be used in an EK-MFR/x mainframe in order to configure it in the right way. The input/output connectors are on the back of the board and basically you have:

• 4 SFP connectors with input/output capability used for transport stream (SFP1, SFP2) and SDI or analogue video (in default configuration you have SFP3 for SDI video and SPF4 for analogue video)

• 1 RJ-45 connector used for analogue and AES3 audio

The video input can be in SDI or analogue format, with SD or HD resolution and it is encoded conforming to ISO/IEC14496-10 (H.264/AVC) standard.

The audio input can be sourced from SDI embedded, analogue or AES3 signal and it is encoded conforming to MPEG-1 Layer 2 standard.

The output transport stream is conform to ISO/IEC 13818-1 standard and it is present in ASI standard electrical format on the SFP1 and SFP2 connectors.

The transport stream can also be output through the mainframe's internal matrix in order to feed another card (i.e. the EK-UNM/3 modulator) without using an external cable.

The EK-ENR/1 is a flexible and highly configurable system. You can work with both SDI or analogue video signal and SDI embedded, analogue or AES3 audio signal.

The output multiplexer together with the Enable/Disable capabilities for the single encoder allows you to "build" the output TS with different combinations (1video+1audio, 1video+2audio).

The PCR and audio clocks are locked to the input video clock.

Features

- MPEG-4 (4:2:0)
- DVB-ASI Output
- NTSC/PAL compliant input
- MPEG-1 LAYER 1/2 audio encoding
- SDI digital video interface
- AES-EBU digital audio
- Analogue Audio Input/Output
- Multiplexer embedded
- SI table management
- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Terrestrial and satellite use

TECHNICAL SPECIFICATION

Video Input	
Number of input	1
Connector	SFP module COAXIAL DIN 1.0/2.3
Type	SDI / Analogue
Format	720x576 50i 720x480 59.94i 1920x1080 50i 1920x1080 59.94i 1920x1080 60i 1920x1080 24p 1920x1080 23.98p 1280x720 50p 1280x720 59.94p 1280x720 60p

Video Encoding	
Number of encoder	1
Standard	ISO/IEC 14496-10 (H.264/AVC) High Profile
Pixel Format	4:2:0, 8-bit, YCbCr
Bit Rate	2.0 - 24.0 Mb/s

Audio Input	
Number of input	Analogue: 2 mono balanced AES3: 1 stereo balanced and isolated from ground SDI audio embedded: 1
Connector	RJ-45 for analogue/AES3 SFP module COAXIAL DIN 1.0/2.3 for SDI audio embedded

Audio Encoding	
Number of encoder	1
Standard	MPEG-1 Layer2, 2-channels
Number of channel	2
Bit Rate	96, 112, 128, 160, 192, 224, 256, 320, 384 Kb/s

Output Transport Stream	
Type	MPEG2-TS conforming to ISO/IEC 13818-1

Climatic Condition	
Temperature	-5 / +70 °C
Humidity	Max 90%
Altitude	3000 m 66KPa

BOARD PLUG-IN EK-DCA/1

"MPEG-4 HD/SD DECODER"

The EK-DCA/1 card is an audio/video decoder. It is able to decode up to 1 video and 2 audio. This card must be used in a EK-MFR/x mainframe in order to configure it in the right way.
The input/output connectors are on the back of the board and basically you have:

• 4 SFP connectors with input/output capability used for transport stream (SFP1, SFP2) and SDI or analogue video (in default configuration you have SFP3 for SDI video and SPF4 for analogue video)
• 1 RJ-45 connector used for analogue and AES3 audio

The video output can be in SDI or analogue format, with SD or HD resolution and it is decoded conforming to ISO/IEC14496-10 (H.264/AVC) standard.
The audio output can be in SDI embedded, analogue or AES3 signal, the input transport stream must be is conform to ISO/IEC 13818-1 standard and it must be present in ASI standard electrical format on the SFP1 and SFP2 connectors.
The transport stream can also take through the mainframe's internal matrix in order to feed another card (i.e. the EK-UNM/3 modulator) without using an external cable.

The EK-DCA/1 is a flexible and highly configurable system.
You can work with both SDI or analogue video signal and SDI embedded, analogue or AES3 audio signal.
The audio and video output signal are locked to the selected PCR.

Features

- MPEG-4 (4:2:0)
- DVB-ASI Input
- NTSC/PAL compliant input
- MPEG-1 LAYER 1/2 audio decoding
- SDI digital video interface
- AES-EBU digital audio
- Analogue Audio Input/Output
- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Terrestrial and satellite use

TECHNICAL SPECIFICATION

Video Output	
Number of input	1
Connector	SFP module COAXIAL DIN 1.0/2.3
Type	SDI / Analogue
Format	720x576　　50i 720x480　　59.94i 1920x1080　　50i 1920x1080　　59.94i 1920x1080　　60i 1920x1080　　24p 1920x1080　　23.98p

Video Decoding	
Number of decoder	1
Standard	ISO/IEC 14496-10 (H.264/AVC) High Profile
Pixel Format	4:2:0, 8-bit, YCbCr

Audio Output	
Number of output	Analogue: 2 mono balanced AES3:　1 stereo balanced and isolated from ground SDI audio embedded: 1
Connector	RJ-45 for analogue/AES3 SFP module COAXIAL DIN 1.0/2.3 for SDI audio embedded

Input Transport Stream	
Type	MPEG2-TS conforming to ISO/IEC 13818-1

Climatic Condition	
Temperature	-5 / +70 °C
Humidity	Max 90%
Altitude	3000 m 66KPa

Eurotek
Broadcast Solutions

BOARD PLUG-IN EK-ENR/2
"MPEG-4 HD/SD DOUBLE ENCODER"

The EK-ENR/2 card is an audio/video double encoder. It is able to encode up to 2 video and 4 audio in a single output transport stream. This card must be used in an EK-MFR/x mainframe in order to configure it in the right way. The input/output connectors are on the back of the board and basically you have:

•   4 SFP connectors with input/output capability used for transport stream (SFP1, SFP2) and SDI or analogue video (in default configuration you have SFP3 for SDI video and SPF4 for analogue video)

•   1 RJ-45 connector used for analogue and AES3 audio

The video input can be in SDI or analogue format, with SD or HD resolution and it is encoded conforming to ISO/IEC14496-10 (H.264/AVC) standard.

The audio input can be sourced from SDI embedded, analogue or AES3 signal and it is encoded conforming to MPEG-1 Layer 2 standard.

The output transport stream is conform to ISO/IEC 13818-1 standard and it is present in ASI standard electrical format on the SFP1 and SFP2 connectors.

The transport stream can also be output through the mainframe's internal matrix in order to feed another card (i.e. the EK-UNM/3 modulator) without using an external cable.

The EK-ENR/1 is a flexible and highly configurable system.
You can work with both SDI or analogue video signal and SDI embedded, analogue or AES3 audio signal.
The PCR and audio clocks are locked to the input video clock.

Features

• MPEG-4 (4:2:0)
• DVB-ASI Output
• NTSC/PAL compliant input
• MPEG-1 LAYER 1/2 audio encoding
• SDI digital video interface
• AES-EBU digital audio
• Analogue Audio Input/Output
• Multiplexer embedded
• SI table management
• Complete web management

Applications

• Digital Microwave Links
• DTV, DVB-T, DVB-S
• Terrestrial and satellite use

TECHNICAL SPECIFICATION

Video Input	
Number of input	2
Connector	SFP module COAXIAL DIN 1.0/2.3
Type	SDI / Analogue
Format	720x576 50i 720x480 59.94i 1920x1080 50i 1920x1080 59.94i 1920x1080 60i 1920x1080 24p 1920x1080 23.98p 1280x720 50p 1280x720 59.94p 1280x720 60p

Video Encoding	
Number of encoder	2
Standard	ISO/IEC 14496-10 (H.264/AVC) High Profile
Pixel Format	4:2:0, 8-bit, YCbCr
Bit Rate	2.0 - 24.0 Mb/s

Audio Input	
Number of input	Analogue: 4 mono balanced AES3: 2 stereo balanced and isolated from ground SDI audio embedded: 1
Connector	RJ-45 for analogue/AES3 SFP module COAXIAL DIN 1.0/2.3 for SDI audio embedded

Audio Encoding	
Number of encoder	2
Standard	MPEG-1 Layer2, 2-channel
Number of channel	4
Bit Rate	96, 112, 128, 160, 192, 224, 256, 320, 384 Kb/s

Output Transport Stream	
Type	MPEG2-TS conforming to ISO/IEC 13818-1

Climatic Condition	
Temperature	-5 / +70 °C
Humidity	Max 90%
Altitude	3000 m 66KPa

Eurotek
Broadcast Solutions

BOARD PLUG-IN EK-DCA/2
"MPEG-4 HD/SD DOUBLE DECODER"

The EK-DCA/2 card is an audio/video double decoder. It is able to decode up to 2 video and 4 audio. This card must be used in a EK-MFR/x mainframe in order to configure it in the right way. The input/output connectors are on the back of the board and basically you have:

• 4 SFP connectors with input/output capability used for transport stream (SFP1, SFP2) and SDI or analogue video (in default configuration you have SFP3 for SDI video and SPF4 for analogue video)
• 1 RJ-45 connector used for analogue and AES3 audio

The video output can be in SDI or analogue format, with SD or HD resolution and it is decoded conforming to ISO/IEC14496-10 (H.264/AVC) standard.
The audio output can be in SDI embedded, analogue or AES3 signal, the input transport stream must be is conform to ISO/IEC 13818-1 standard and it must be present in ASI standard electrical format on the SFP1 and SFP2 connectors.
The transport stream can also take through the mainframe's internal matrix in order to feed another card (i.e. the EK-UNM/3 modulator) without using an external cable.

The EK-DCA/1 is a flexible and highly configurable system. You can work with both SDI or analogue video signal and SDI embedded, analogue or AES3 audio signal.
The audio and video output signal are locked to the selected PCR.

Features

- MPEG-4 (4:2:0)
- DVB-ASI Input
- NTSC/PAL compliant input
- MPEG-1 LAYER 1/2 audio decoding
- SDI digital video interface
- AES-EBU digital audio
- Analogue Audio Input/Output
- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Terrestrial and satellite use

ALL4DIGIT SYSTEM

DVB Digital Video Broadcasting

TECHNICAL SPECIFICATION

Video Output	
Number of input	2
Connector	SFP module COAXIAL DIN 1.0/2.3
Type	SDI / Analog
Format	720x576 50i 720x480 59.94i 1920x1080 50i 1920x1080 59.94i 1920x1080 60i 1920x1080 24p 1920x1080 23.98p

Video Decoding	
Number of decoder	2
Standard	ISO/IEC 14496-10 (H.264/AVC) High Profile
Pixel Format	4:2:0, 8-bit, YCbCr

Audio Output	
Number of output	Analogue: 4 mono balanced AES3: 2 stereo balanced and isolated from ground SDI audio embedded: 2
Connector	RJ-45 for analogue/AES3 SFP module COAXIAL DIN 1.0/2.3 for SDI audio embedded

Input Transport Stream	
Type	MPEG2-TS conforming to ISO/IEC 13818-1

Climatic Condition	
Temperature	-5 / +70 °C
Humidity	Max 90%
Altitude	3000 m 66KPa

Eurotek
Broadcast Solutions

BOARD PLUG-IN EK-EDH/1

"MPEG-4 HD/SD CODEC"

The EK-EDH/1 card is an audio/video codec. It is able to encode and decode 1 video and 2 audio in a single output transport stream. This card must be used in an EK-MFR/x mainframe in order to configure it in the right way. The input/output connectors are on the back of the board and basically you have:

•	4 SFP connectors with input/output capability used for transport stream (SFP1, SFP2) and SDI or analogue video (in default configuration you have SFP3 for SDI video and SPF4 for analogue video)

•	1 RJ-45 connector used for analogue and AES3 audio

The video input /output can be in SDI or analogue format, with SD or HD resolution and it is encoded conforming to ISO/IEC14496-10 (H.264/AVC) standard.
The audio input/output can be sourced from SDI embedded, analogue or AES3 signal and it is encoded conforming to MPEG-1 Layer 2 standard.
The output transport stream is conform to ISO/IEC 13818-1 standard and it is present in ASI standard electrical format on the SFP1 and SFP2 connectors.
The transport stream can also be output through the mainframe's internal matrix in order to feed another card (i.e. the EK-UNM/3 modulator) without using an external cable.

The EK-EDH/1 is a flexible and highly configurable system. You can work with both SDI or analogue video signal and SDI embedded, analogue or AES3 audio signal.
The output multiplexer together with the Enable/Disable capabilities for the single encoder allows you to "build" the output TS with different combinations (1video+1audio, 1video+2audio).
The PCR and audio clocks are locked to the input video clock.

Features

- MPEG-4 (4:2:0)
- DVB-ASI Output
- NTSC/PAL compliant input
- MPEG-1 LAYER 1/2 audio encoding
- SDI digital video interface
- AES-EBU digital audio
- Analogue Audio Input/Output
- Multiplexer embedded
- SI table management
- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Terrestrial and satellite use

TECHNICAL SPECIFICATION

Video Input/Output	
Number of input	1
Number of output	1
Connector	SFP module COAXIAL DIN 1.0/2.3
Type	SDI / Analog
Format	720x576 50i 720x480 59.94i 1920x1080 50i 1920x1080 59.94i 1920x1080 60i 1920x1080 24p 1920x1080 23.98p 1280x720 50p 1280x720 59.94p 1280x720 60p

Video Encoding / Decoding	
Number of encoder	1
Number of decoder	1
Standard	ISO/IEC 14496-10 (H.264/AVC) High Profile
Pixel Format	4:2:0, 8-bit, YCbCr
Bit Rate	2.0 - 24.0 Mb/s

Audio Input/Output	
Number of input	Analogue: 2 mono balanced AES3: 1 stereo balanced and isolated from ground SDI audio embedded: 1
Number of output	Analogue: 2 mono balanced AES3: 1 stereo balanced and isolated from ground SDI audio embedded: 2
Connector	RJ-45 for analogue/AES3 SFP module COAXIAL DIN 1.0/2.3 for SDI audio embedded

Audio Encoding	
Number of encoder	1
Standard	MPEG-1 Layer2, 2-channel
Number of channel	2
Bit Rate	96, 112, 128, 160, 192, 224, 256, 320, 384 Kb/s

Output Transport Stream	
Type	MPEG2-TS conforming to ISO/IEC 13818-1

Climatic Condition	
Temperature	-5 / +70 °C
Humidity	Max 90%
Altitude	3000 m 66KPa

BOARD PLUG-IN EK-CDC/2
"CODEC MPEG-2"

The board EK-CDC/2T allows to code and decode a video signal plus two audio channels in digital form according to specific MPEG-2 (Main profile@ Main level 4:2:0).

The encoder section has one analogue video input, two analogue audio input and one ASI interface that allows a direct connection to more DVB-T Transmitters. The decoder section has one analogue video output, two analogue audio output and one digital input on ASI interface (Asynchronous serial interface).

With the EK-CDC/2T version board it is possible to manage every teletext signal present inside of the video input.

The same input and output interfaces can be used with digital signals, SDI for the video signal and AES-EBU for audio signals. The main feature of this board is the standard availability of a multiplexer that allows to carry more video/audio channels simply inserting more EK-CDC/2T boards inside the same Mainframe.

Features

- MPEG-2 (4:2:0)
- DVB-ASI Input /Output
- NTSC/PAL compliant input
- MPEG-1 LAYER 1/2 audio encoding
- SDI digital video interface
- AES-EBU digital audio
- Analogue Audio Input/Output
- Multiplexer embedded
- Pid filtering function
- SI table management
- LCN function
- Teletext for CVBS input
- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Terrestrial and satellite use

TECHNICAL SPECIFICATION

Video input	
Video input format	Analogue: Composite PAL/NTSC
Composite video input	1 Vpp 75 Ohm with BNC socket
Digital video input	SDI
Video encoding	
Standard	ISO / IEC 13818-2 MP@ML (MPEG-2 4:2:0)
Bit-Rate	0.800 - 13.408 Mb/s
Supported resolution	Full D1, 3/4 D1, 2/3 D1, HD1, SIF
VBI processing	Teletext only on EK-CDC/2T Board
Audio input and encoding	
Analogue Audio input format	Two channels
Digital Audio input format	AES – EBU on Hirose 6 poles connector (XLR as option using a cable adapter)
Analogue Audio input level	Selectable between – 6 dB - 0.5 dB
Analogue Audio input impedance	Selectable between 600 Ohm - 10000 Ohm
Analogue Audio output level	Selectable between – 6 dB - 0.5 dB
Sampling frequency	32 KHz, 44.1 KHz, 48 KHz
Encoding Standard	ISO / IEC 11172-3 (MPEG-1 audio) layer 1/2 - compliant
Bit-Rate	32 Kb/s, 48 Kb/s, 56 Kb/s, 64 Kb/s, 80 Kb/s, 96 Kb/s, 112 Kb/s, 128 Kb/s, 160 Kb/s, 192 Kb/s, 224 Kb/s,256 Kb/s, 320 Kb/s, 384 Kb/s Max 384 Kb/s
Stream and interfaces	
Stream type	Transport stream on ASI interface
Stream multiplexing	ISO / IEC 13818-1 (MPEG-2)
System Bit-Rate	up to 45 Mb/s on 100 Kbit step
Multiplexing	
Tables	Add/ modify (NIT, SDT,PAT,PMT)
Settings	Fixed or by software via Ethernet 10/100 base T
Output digital interface	DVB - ASI

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BOARD PLUG-IN EK-ENS/1 EK-ENS/2
"ENCODER MPEG-2"
4:2:2 / 4:2:0
SDI WITH AUDIO EMB.

The board EK-ENS/1 allows to encode a video signal plus two audio channels in digital form according to specific MPEG-2 4:2:0 MP@ML or 4:2:2 P@ML. (EK-ENS/2 only 4:2:0 MP@ML)

The encoder section has one analogue video input, two analogue audio input and one ASI interface that allows a direct connection to more DVB-T Transmitters.

The same input interfaces can be used with digital signals, SDI for the video with audio embedded or AES-EBU for audio signals. The main characteristic is the standard availability of a multiplexer section that allows to transfer more video/audio channels only inserting several Encoder boards inside the same Mainframe.

Features

- **MPEG-2 4:2:2 / 4:2:0** (EK-ENS/1)
- **MPEG-2 4:2:0** (EK-ENS/2)
- **DVB-ASI Input / Output**
- **NTSC/PAL compliant input**
- **MPEG-1 LAYER 1/2 audio encoding**
- **SDI digital video interface with audio embedded**
- **AES-EBU digital audio**
- **Analogue Audio IN**
- **Multiplexer embedded**
- **Pid filtering function**
- **SI table management**
- **LCN function**
- **Complete web management**

Applications

- **Digital Microwave Links**
- **DTV, DVB-T, DVB-S**
- **Terrestrial and Satellite use**

TECHNICAL SPECIFICATION

Video input	
Analogue Video input	Analogue: Composite PAL/NTSC
Composite video input	1 Vpp 75 Ohm with BNC connector
Digital Video input	SDI with audio embedded

Video encoding		
Standard	EK-ENS/1	ISO / IEC 13818-2 MP@ML (MPEG-2 4:2:0) or P@ML (MPEG-2 4:2:2)
	EK-ENS/2	ISO / IEC 13818-2 MP@ML (MPEG-2 4:2:0)
Bit-Rate		2 - 15 Mb/s (4:2:0) or 3 - 50 Mb/s (4:2:2) EK-ENS/1
Supported resolution		Full D1, 3/4 D1, 2/3 D1, HD1, SIF

Audio input and encoding	
Analogue Audio input format	Two channels
Digital Audio input format	AES – EBU on Hirose 6 poles female connector (XLR as option using a cable adapter)
Analogue Audio input level	Selectable between – 6 dB - 0.5 dB
Analogue Audio input impedance	Selectable between 600 Ohm - 10000 Ohm
Sampling frequency	32 KHz, 44.1 KHz, 48 KHz
Encoding Standard	ISO / IEC 11172-3 (MPEG-1 audio) layer 1/2 - compliant
Bit-Rate	32 Kb/s, 48 Kb/s, 56 Kb/s, 64 Kb/s, 80 Kb/s, 96 Kb/s, 112 Kb/s, 128 Kb/s, 160 Kb/s, 192 Kb/s, 224 Kb/s, 256 Kb/s, 320 Kb/s, 384 Kb/s Max 384 Kb/s

Stream and interfaces	
Stream type	Transport stream on ASI interface
Stream multiplexing	ISO / IEC 13818-1 (MPEG-2)
System Bit-Rate	up to 215 Mb/s on 8 Kbit step

Multiplexing	
Tables	Add / modify (NIT, SDT, PAT, PMT)
Settings	Fixed or by software via Ethernet 10/100 base T
Output digital interface	DVB - ASI
Built-in Multiplexer for Encoder cascading	supply as standard
Passive Loop-through for cascading redundancy	supply as standard

Eurotek
Broadcast Solutions

BOARD PLUG-IN EK-DCS/1
"DECODER MPEG-2"
4:2:2 / 4:2:0

The board EK-DCS/1 allows to decode a video signal plus two audio channels in digital form according to specific MPEG-2 (4:2:0 MP@ML or 4:2:2 P@ML).

The decoder has one analogue video output, two analogue audio output and one digital input on ASI interface (Asynchronous serial interface).

The same output interfaces can be used in alternative with a digital signal SDI for the video signals with audio embedded or with AES-EBU for the audio signals.

The board has also one video and audio input that can be used as a Loop through for cascading redundancy.

Features

- MPEG-2 4:2:2 / 4:2:0
- DVB-ASI Input / Output
- NTSC/PAL compliant
- MPEG-1 LAYER 1/2 audio dencoding
- SDI digital video interface with Audio Embedded
- AES-EBU digital audio management
- Analogue Audio Output
- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S

TECHNICAL SPECIFICATION

Video output	
Analogue Video output	Analogue: Composite PAL/NTSC
Composite video output	1 Vpp 75 Ohm on BNC connector
Digital video output	SDI with audio embedded
Video decoding	
Standard	ISO / IEC 13818-2 MP@ML (MPEG-2 4:2:0) or P@ML (MPEG-2 4:2:2)
Audio output decoding	
Audio output format	Analogue: Two channels
Digital Audio output format	AES – EBU on Hirose 6 poles female connector (XLR as option using a cable adapter)
Audio output level	Selectable between – 6 dB - 0.5 dB
Audio output impedance	600 Ohm
Stream and interfaces	
Stream type	Transport stream on ASI interface

Eurotek
Broadcast Solutions

BOARD PLUG-IN EK-DCD/2 EK-DCD/3
"DECODER MPEG-2"

The board EK-DCD/2 EK-DCD/3 allows to decode a video signal plus two audio channels in digital form according to specific MPEG-2 (Main profile@ Main level 4:2:0).

The decoder section has one analogue video output, two analogue audio output and one digital input on ASI interface (Asynchronous serial interface). The same output interfaces can be used with digital signals, SDI for the video and AES-EBU for audio signals (SDI with audio embedded for board EK-DCD/3 board).

Furthermore the board allows to decode every teletext signal present inside the ASI input.

Features

- MPEG-2 (4:2:0)
- DVB-ASI Input
- NTSC/PAL compliant
- MPEG-1 LAYER 1/2 audio dencoding
- SDI digital video interface
- Audio Embedded (EK-DCD/3)
- AES-EBU digital audio management
- Analogue Audio Output
- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S

TECHNICAL SPECIFICATION

Video output	
Video output format	Analogue: Composite PAL
Composite video output	1 Vpp 75 Ohm with BNC socket
Digital video output	SDI
Video decoding	
Standard	ISO / IEC 13818-2 MP@ML (MPEG-2 4:2:0)
VBI processing	Teletext
Audio output decoding	
Audio output format	Analogue: Two channels
Digital Audio output format	AES – EBU on Hirose 6 poles female connector (XLR as option using cable adapter) Decode Audio embedded supported only on board EK-DCD/3
Audio output level	Selectable between – 6 dB - 0.5 dB
Audio output impedance	600 Ohm
Stream and interfaces	
Stream type	Transport stream on ASI interface

BOARD PLUG-IN EK-CDP/2
"COAX ADAPTER"
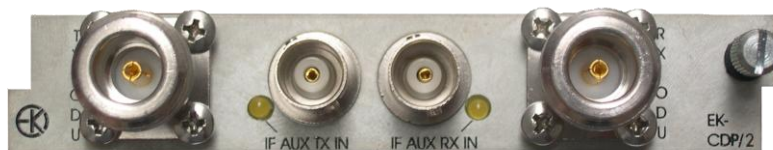
The board EK-CDP/2 allows to connect "ALL4DIGIT" system to SHF parts enclosed inside the Out Door Units (ODUs) and allows the use of any frequency bands at the moment available.

Thanks to the use of two N type connectors the board can manage simultaneously two external sections (ODUs) in completely independent way one from the other and it can be used also to make a bi-directional system.

The Board has also two auxiliary IF 70 MHz input that can be used as possible redundancy signals in both transmission and receiver sites.

Features

- RTX function
- IF received monitor
- External IF 70MHz input
- Complete web management

Applications

- Digital Microwave Links
- Transceiver mode
- ODUs connection

BOARD PLUG-IN EK-CDP/4
"COAX ADAPTER FOR RTX ODU"
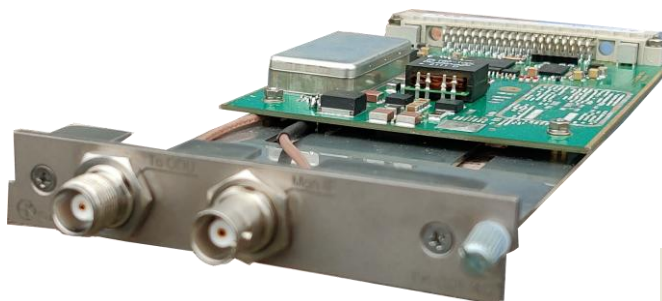
The board EK-CDP/4 allows to connect all the new RTX Outdoor units to the "ALL4DIGIT" systems..

This plug-in board can be supplied in different configurations that match any customer's needs. It is normally supplied with coaxial TNC type connector but can also be equipped with Triax, SMPTE 311 or optical connectors. The main feature of this board is that can drive at the same time one RTX Outdoor Unit (using the frequencies IF 140/350 MHz) and also using the second optional connector, an additional TX ODU or RX ODU.

There is always an IF connector that monitor completely the signals of the board.

Features

- RTX function
- IF 140/350 MHz Interface
- IF Monitor port
- Multiple configuration in a single board RTX +RX or TX
- Optical connection (as opt)
- Complete web management

Applications

- Digital Microwave Links
- Transceiver mode
- ODUs connection

CDP Identifier

EK-CDP/4 x y a

x	TX= Additional TX
	RX= Additional RX
	BLANK=RTX

Version Solution

| y | N = -48 Vdc |
| | BLANK= 48 Vdc |

ODU Power Supply Solution

a	T = Triax connector
	C= TNC
	S = SMPTE 311
	O = Optical + Electrical

Connectors Solution

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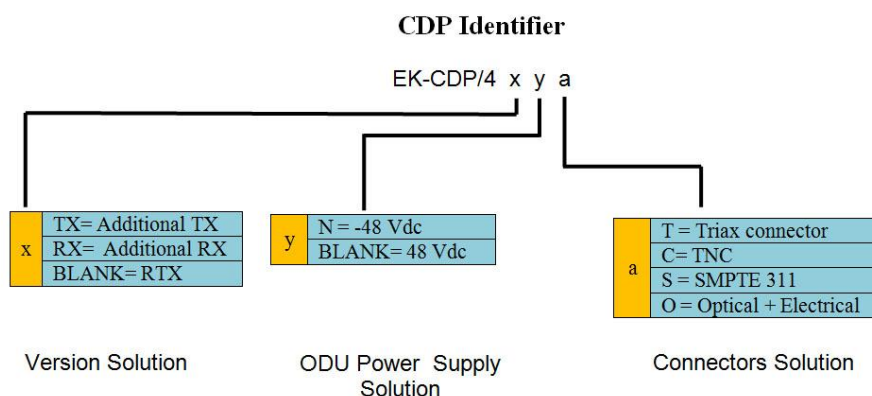
BOARD PLUG-IN EK-ETB/1
"ETHERNET BRIDGE"

The EK-ETB/1 (Ethernet bridge) board works as a LAN network extension. The figure in the next page shows a LAN 1 network connected, by a Ethernet 10 Base T interface, to the EK-ETB/1 board. The Transport stream input (TS input) is combined with the Ethernet packet from the LAN 1 identified by a PID and with the bit rate settled by the menu. The transport stream output of the first EK-ETB/1 is received by another EK-ETB/1 connected by a 10 base T interface with the LAN 2 network. So it is possible to send a Ethernet packet of the LAN 1 to the LAN 2. The MAC FILTER option allows, if it is on ("Yes" variable selected on the MAC filter menu) to send on the LAN 2 network only the Ethernet packet addressed by the LAN 1 network. It is possible because inside the EK-ETB/1 there is a circuit that revealed the Ethernet packet addressed from LAN 1 to LAN 2. If the MAC FILTER variable is settled on the "No" value, every Ethernet packet are received by the LAN 2 network. On the output of the EK-ETB/1 connected to the LAN 2 network, the transport stream (TS output) can filtered by the cleaned option and so the TS output is identical to the transport stream input.
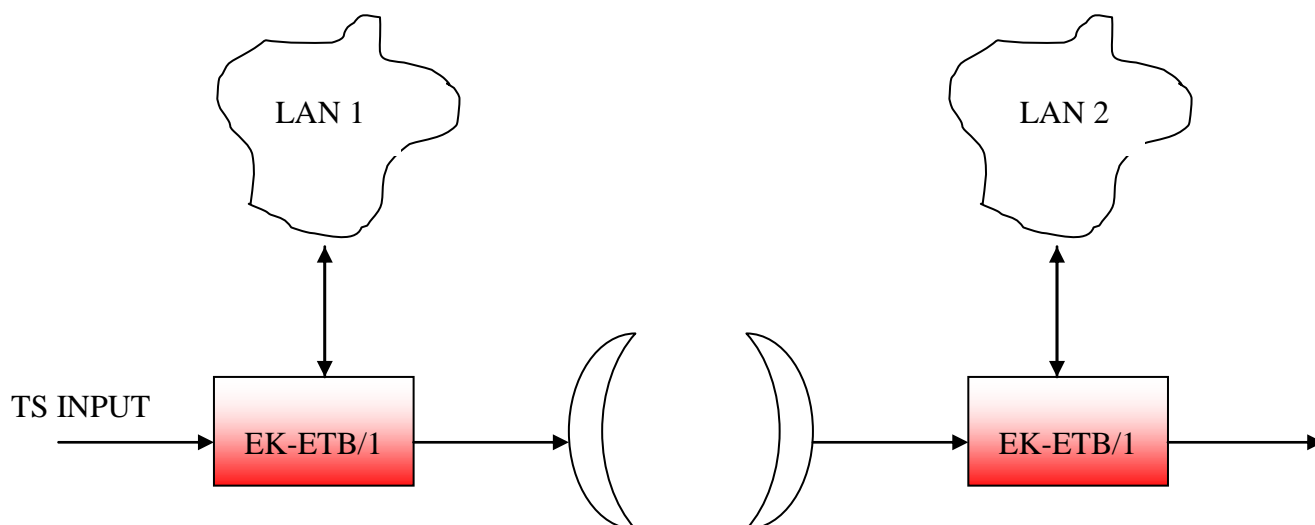
Features

- LAN network extension
- MAC FILTER managed
- IPTV
- Remote telecontrol
- Multiplexer embedded
- Complete web Management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Terrestrial and satellite use

GENERAL DESCRIPTION

LAN 1   LAN 2

TS INPUT → EK-ETB/1 →)(→ EK-ETB/1 →

Ethernet bridge	
Data ports input interface	ASI 1, ASI 2
Data ports output interface	ASI 1, ASI 2
Ethernet ports interface	10 BASE T
Transport stream bit rate	1.000 ÷ 54.000 Mb/s
Ethernet bit rate	0.000 ÷ 15.000 Mb/s
I/O data ports impedance and connector	75 Ohm with BNC socket

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BOARD PLUG-IN EK-SWO/X
"SWITCH OVER"

The EK-SWO/x board works as a RF switch and it is composed of a common output line and two input line.

The board can works in both way, automatic and manual mode.

A green led located on the board panel (board panel chapter) allows to see which input RF line is switched to the output common line.

The board can works with frequency signal at 2 GHz (EK-SWO/4) 5.9÷7.2 GHz (EK-SWO/6) 10÷15 GHz (EK-SWO/5)

Features

- Automatic/manual mode
- From 2 to 15 GHz
- Complete web management

Applications

- Digital Microwave Links
- 1+1 Radio Link Application

TECHNICAL SPECIFICATION

Number of inputs	2
Power Consumption	< 1W
Insertion loss	-0.5dB @ 800MHz, -1dB @1500MHz
Isolation	-50dB @ 800MHz, -30dB @1500MHz
Input / Output Connector	SMA FEMALE 75Ohm

BLOCK SCHEME
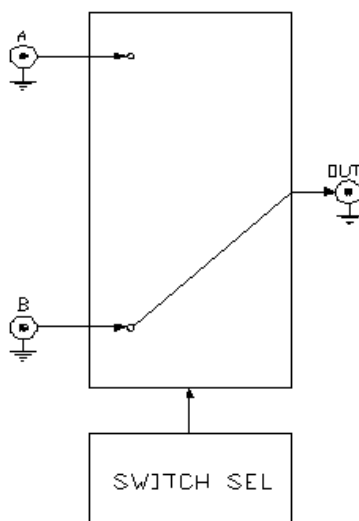
BOARD PLUG-IN EK-SWO/7
"SPDT SWITCH OVER"

The EK-SWO/7 works as SPDT switch and allows to switch, on the output connector, one of the two input signals present on the input connectors managing ASI any kind of signals.

A green LED located in the board panel indicates the status of the switch: if it is on, the B input is connected to central arm, if it is off the A input is connected to central arm.

When the board is powered off on the output is however always present the A input signal (bypass modality).
The EK-SWO/7 can works in automatic or manual mode.

Many kind of ways are available to operate on RF relay:

- Front panel
- Web page
- Eurotek MST application software
  (freely downloadable)
- SNMP command
- Analogue input

With Hot StandBy software facility from Condition Boulder application.

Features

- Automatic switch over
- Audio & Video , ASI,SDI, L-Band signal management
- Complete web management

Applications

- Digital Microwave Links
- 1+1 Radio Link application
- Redundancy application

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TECHNICAL SPECIFICATION

Connector type	BNC FEMALE 75 Ohm

Contact	Arrangement	1 Form C
	Contact material	Gold plating
	Contact resistance	Max. 100 mOhm
Rating	Nominal switching capacity	1W @ 2.5 GHz
	Contact carrying power	Max. 5W @ 3GHz
	Max. switching voltage	30 V DC
	Max. switching current	0.5 A DC
High frequency characteristics,	V.S.W.R.	Max. 1.15 @ 70MHz, Max. 1.4 @ 2.5GHz
	Insertion loss	Max. 0.10dB @ 70MHz, Max. 0.30dB @ 2.5 GHz
	Isolation	Min. 60dB @ 70MHz, Min. 45 dB @ 2.5 GHz
Expected life	Mechanical life	Min. 5*10e6 @ 1 switch per second
	Electrical life	Min. 3*10e5 (10mA 24V DC resistive load)
		Min. 3*10e5 (1W @ 3GHz 1 switch per minute
Power Consumption		< 1W

BLOCK SCHEME
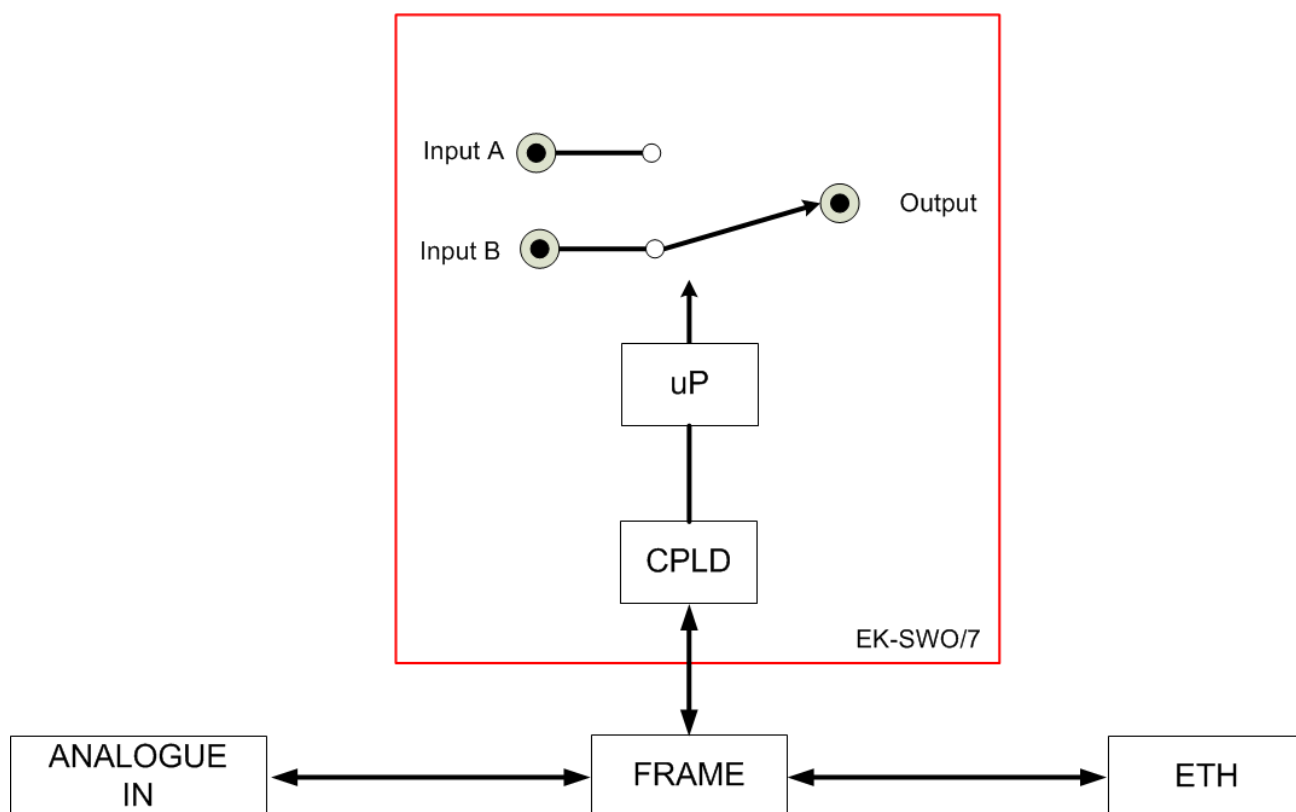
BOARD PLUG-IN EK-SWO/B
"SWITCH OVER"

The EK-SWO/B board works as a RF switch and it is composed of a common output line and two input line.
The board can works in both way, automatic and manual mode.
A green led located on the board panel (board panel chapter) allows to see which input RF line is switched to the output common line.
The board can works with frequency range between DC to 18 GHz

Features

- Automatic/manual mode
- From DC to 18 GHz
- Complete web management

Applications

- Digital Microwave Links
- Antenna switch applications

TECHNICAL SPECIFICATION

Arrangement	SPDT				
Function	Fail -Safe				
Rating	120 Watt@3 GHz, 30Watt@7 GHz				
Power Consumption	< 1W				
Expected Life	5x10E6 (Mechanical), 5x10E6 @ 5Watt @ 3GHz				
Breakdown Voltage	500 Vrms for 1 Minute open or close contact				
High Frequency characteristics		to 1 GHz	1 to 4 GHz	4 to 8 GHz	8 to 12,4 GHz	12,4 to 18 GHz
	V.S.W.R (Max.)	1,20	1,20	1,40	1,50	1,50
	Insertion loss (dB, max)	0,2	0,2	0,3	0,4	1,0
	Isolation (dB, min)	85	80	70	65	60
Input / Output Connector	SMA female 50 Ohm				

BLOCK SCHEME
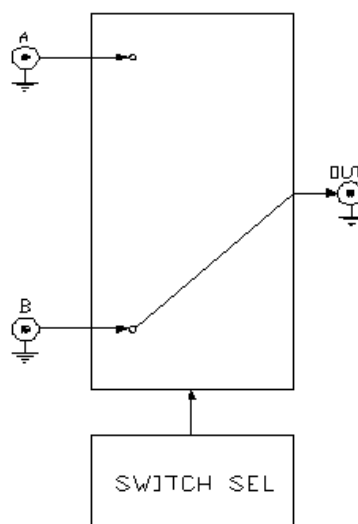
BOARD PLUG-IN EK-TAD/1
"E1 / T1 ADAPTER"

The EK-TAD/1 board works as a E1/T1 adapter. The board allows to carry one E1/T1 signal over a Transport Stream. Thanks to an internal multiplexer it is possible to multiplex this E1/T1 signal with 3 different ASI input, two at the input of the board on the BNC female connector (ASI in 1 and ASI in 2) and one ASI signal on the digital matrix present inside the Mainframe (EK-MFR/2).

Further in order to have a very complete and secure system it is also present a Bypass output, a mechanical relay allows to transfer the signal from ASI 1 input to ASI 1 output when the board is fault or not power supplied so we can build a 1+1 configuration on the ASI transmission side.

The board allows the same inverse conversion, ASI to E1/T1 so in this way we can do a complete point to point system over ASI.

Features

- E1 / T1 Adapter
- Baypass protection
- Remote telecontrol
- Multiplexer embedded
- Complete web Management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Terrestrial and satellite use

TECHNICAL SPECIFICATION

T1/E1 Adapter	
Data ports input interface	ASI 1, ASI 2, Int Dec, Int Mux
Data ports output interface	ASI 1, ASI 2, Int Out
Input stream type	ISO-IEC 13818
ASI i/o reference	EN 50083-9
T1 ports interface	T1 AMI, T1 B8ZS impedance 75 Ohm / 120 Ohm balanced
E1 ports interface	E1 HDB3 impedance 75 Ohm / 120 Ohm balanced
Haul	Short / Long
Internal Transport stream bit rate	0.000 ÷ 216.000 Mb/s
ASI Transport stream bit rate	0.000 ÷ 216.000 Mb/s

BLOCK SCHEME
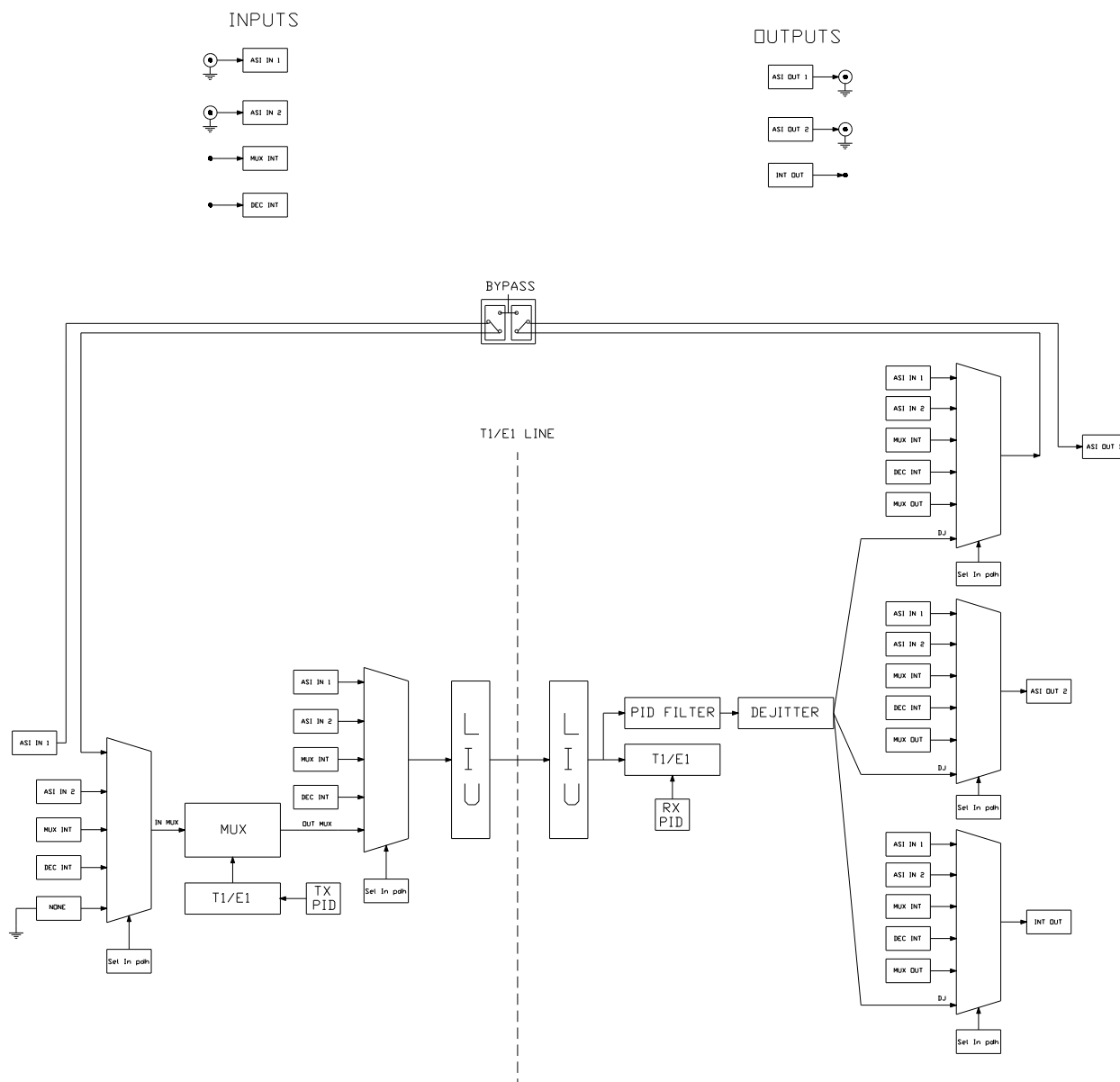
BOARD PLUG-IN EK-MPX/8
"8/E1 ADAPTER"

The EK-MPX/8 board is an 8E1 interface data flows that allows the multiplexer and demultiplexer operations between a transport stream and a 4E1 or 8E1 data flows.

The structure of the EK-MPX/8 can be divided in the multiplexer section and in the demultiplexer section as the block scheme showed in the next page.

In the multiplexer section, the input transport stream is switching by the Mux on/off, so we can have the stuffing signal generated by the stuffing generator or a transport stream coming from another board. The 4E1 mux blocks allows the multiplexer operation of the 4E1 data flows, the multiplexed signal is combined with the input transport stream and send to the modulator (EK-UNM/3).

In the demultiplexer section, the demodulated transport stream is selected by the sel in block. It is possible to select the transport stream coming from the demodulator (EK-UNM/3) located in the same EK-MFR/2 unit (IN 1) or a transport stream coming from the demodulator located in another EK-MFR/2 unit (IN 2). When the signal is selected, the data stream is send to the 4E1 demux blocks that extracts the information for every channel.

The software of the board allows to control the status of the unit; an alarm section gives the possibilities to obtain an a complete view of the system functional.

Features

- 8E1 Adapter
- Baypass protection
- Remote telecontrol
- Multiplexer embedded
- Complete web Management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Terrestrial and satellite use

TECHNICAL SPECIFICATION

8 Inputs E1	G.703 impedance 75/120 Ohm balanced bit rate tollerance +/- 100ppm
Overhead on transport stream	1.034 Mbit/sec
8 Output E1	G.703 impedance 75/120 Ohm balanced
Climatic Contidion	
Temperature	- 5°C ÷ + 45°C
Humidity	Max. 90 %
Altitude	3000 m 66kPa

BLOCK SCHEME

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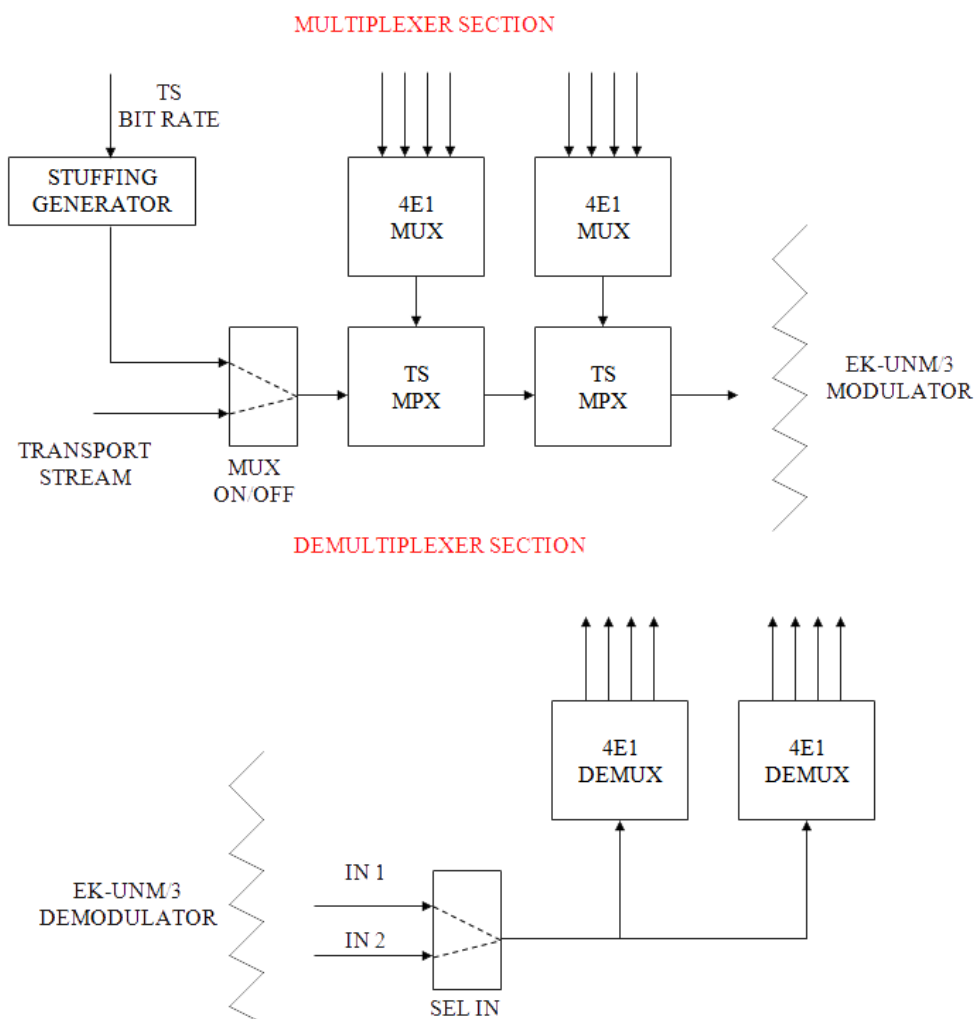
BOARD PLUG-IN
"2 GHZ FREQ. CONVERTERS"

TRANSCEIVER

TRANSMITTER

RECEIVER

The 2GHz frequency converter boards can works in 3 different mode: transmitter, receiver or transceiver.

Each board can made the conversion on different frequency band, in that way we will have various codes and different boards dependently to utilise and frequency band that we need (see the table in the rear page).

It has been realised using a lot of technologies for the synthesis of frequency with the result to have a programmability with steps of 500 KHz on all the band without the necessity to resetting also thanks to the use of a single conversion technique.

Features

- Full Duplex mode
- 2 GHz Band
- Completely agile
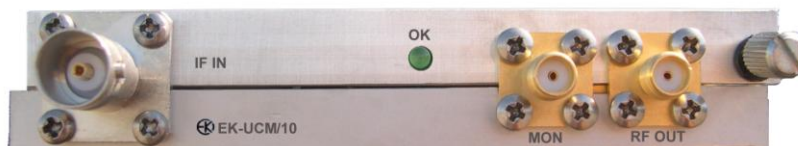- Single conversion
- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Transceiver mode

ALL4DIGIT SYSTEM

DVB Digital Video Broadcasting

BOARD IDENTIFIER

P/N	BOARD DESCRIPTION	FREQUENCY RANGE (MHz)
EK-TXH/2	2 GHz TRANSMITTER HIGH BAND	2400 - 2500
EK-TXL/2	2 GHz TRANSMITTER LOW BAND	1980 - 2110
EK-RXH/2	2 GHz RECEIVER HIGH BAND	2400 - 2500
EK-RXL/2	2 GHz RECEIVER LOW BAND	1980 - 2110
EK-RTH/2	2 GHz TRANSCEIVER HIGH BAND	2400 - 2500
EK-RTL/2	2 GHz TRANSCEIVER LOW BAND	1980 - 2110
EK-RHT/2	2 GHz TRANSCEIVER TX LOW BAND - RX HIGH BAND	1980 - 2500
EK-RLT/2	2 GHz TRANSCEIVER RX LOW BAND - TX HIGH BAND	1980 - 2500

Eurotek
Broadcast Solutions

BOARD PLUG-IN EK-UCM/X
"UP-CONVERTER"
FREQ. 2÷14 GHZ

The board EK-UCM/x constitutes the up conversion part and power amplifier of the new Radio Link series properly studied for the transmission of digital signals.

It has been realised using a lot of technologies for the synthesis of frequency, with the result to have a programmability with steps of 100 KHz on all the band without the necessity to resetting.

The two conversions of frequency allow the board utilisation with branching filter either band filters, keeping however excellent characteristics of harmonic and clean emission.

It is possible to control the gain of the board related to the power read on further power amplifier, or the detector inside allows to have a constant output power independently from the variation of input power, aspect extremely important in case of constellation that could arrive to 128QAM.

The system modularity allows an easy substitution, however all the parameters are memorised inside the mainframe so it isn't necessary to have specific knowledge to substitute the board.

All the working parameters are reachable from the Mainframe front panel and from remote.

Features

- From 2 GHz to 14 GHz Band
- Completely agile (100 KHz step)
- Double conversion
- ALC Function
- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Transceiver mode

ALL4DIGIT SYSTEM

DVB Digital Video Broadcasting

TECHNICAL SPECIFICATION

Model (EK-UCM/x)	19	2	4L	4H	4	5	59	6	7	8	10	11	12	13	14
Freq. band (GHz)	1.98 - 2.1	2.3 - 2.7	3.2 - 3.8	3.9 - 4.4	4.4 - 4.9	5.2 - 5.4	5.9 - 6.4	6.4 - 7.2	7.0 - 8.0	8.0 - 8.5	10.0 - 10.7	10.7 - 11.7	11.7 - 12.5	12.7 - 13.3	14.2 - 14.5
Output power (dBm) QPSK*	t.b.d	t.b.d	24	24	24	25.5	27	27	27	27	27	27	27	27	27
Output power (dBm) 16QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24
Output power (dBm) 32QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24
Output power (dBm) 64QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24
Output power (dBm) 128QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24
Output power (dBm) 256QAM*	t.b.d	t.b.d	21	21	21	22.5	24	24	24	24	24	24	24	24	24
ALC dynamic range (dBm)	t.b.d	t.b.d	24/21	24/21	24/21	22.5/22.5	27/24	27/24	27/24	27/24	27/24	27/24	27/24	27/24	27/24
Freq step	100 KHz														
MGC dynamic range	30 dB														
Monitor port	-30 dB +/- 5 dB														
IF inputs	1 internal, 1 rear BNC (remotely switchable)														

* Output power excluding branching filter (necessary)

Eurotek
Broadcast Solutions

BOARD PLUG-IN EK-DCM/X
"DOWN-CONVERTER"
FREQ. 2÷14 GHZ
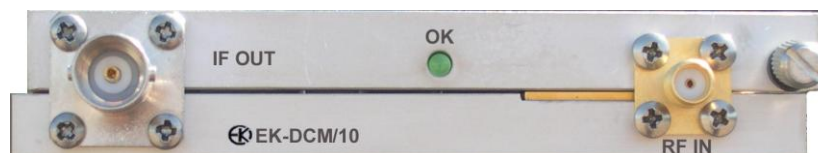
The board EK-DCM/x constitutes the downconversion part of the new Radio Link series properly studied for the transmission of digital signals.

It has been realised using a lot of technologies for the synthesis of frequency, with the result to have a programmability with steps of 100 KHz on all the band without the necessity to resetting ever with a phase noise and a spectrum purity with excellent quality.

The two conversions of frequency allow the board utilisation with branching filter either band filters, keeping however excellent characteristics of sensibility, selectivity and dynamic range.

The reading of received power is between -20 to -100 dBm, peculiar characteristic is the possibility to select different bandwidth of the filter IF in order to improve the services for the Symbol Rate chosen.

The system modularity allows an easy substitution, however all the parameters are memorised inside the mainframe so it isn't necessary to have specific knowledge to substitute the board.

All the working parameters are reachable from the Mainframe front panel and from remote.

Features

- From 2 GHz to 14 GHz Band
- Completely agile (100 KHz step)
- Double conversion
- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Transceiver mode

TECHNICAL SPECIFICATION

Model (EK-DCM/x)	19	2	4L	4H	4	5	59	6	7	8	10	11	12	13	14
Freq. band (GHz)	1.98 - 2.1	2.3 - 2.7	3.2 - 3.8	3.9 - 4.4	4.4 - 4.9	5.2 - 5.4	5.9 - 6.4	6.4 - 7.2	7.0 - 8.0	8.0 - 8.5	10.0 - 10.7	10.7 - 11.7	11.7 - 12.5	12.7 - 13.3	14.2 - 14.5
Freq step	100 KHz														
Dynamic range	-20/-100 dBm (bandwidth limited)														
IF Monitor Port	1 internal, 1 rear BNC 0 dBm														

* Noise Figure excluding branching filter (necessary)

BOARD PLUG-IN EK-AMP/X
"POWER AMPLIFIER"
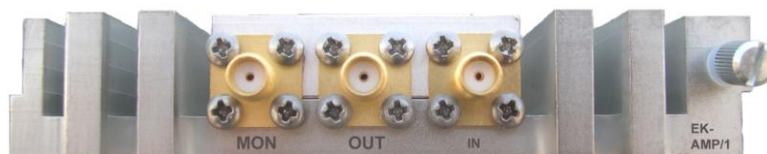
The board EK-AMP/x constitutes an option of the new Radio Link series properly studied for the transmission of digital signals.

Whenever the connection needs more edge to the flat fading it is possible using this amplifier with a gain on the fading edge of about 9 dB.

It has been given a lot of importance to the energetic efficiency using switch-mode power supply for the DSP in order to minimise the consumptions and consequently the warm dissipation, moreover the two fans are proportionally controlled to the module temperature. The same DSP manages the power sequencing and all what needs to the manage the GaAsFET supply in order to guaranty the maximum reliability. It is very easy to substitute the module since it is not needed tuning , no specific knowledge is necessary for the substitution.

All the working parameters are reachable from the Mainframe front panel and from remote.

Features

- From 5 GHz to 14 GHz Band
- Complete web Management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S

TECHNICAL SPECIFICATION

Model (EK-AMP/x)	5	59	6	7	8	1	12	13	14
Freq. band (GHz)	5.2/5.7	5.9/6.4	6.4/7.2	7.0/8.0	8.0/8.5	10.0/10.7	12.1/12.5	12.7/13.3	14.25/14.5
Saturated output power*	38.0 dBm	38.0 dBm	38.0 dBm	38.0 dBm	38.0 dBm	38.0 dBm	38.0 dBm	38.0 dBm	38.0 dBm
Output power QPSK	34.0 dBm	34.0 dBm	34.0 dBm	34.0 dBm	34.0 dBm	34.0 dBm	34.0 dBm	34.0 dBm	33.5 dBm
16QAM	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	30.5 dBm
32QAM	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	30.5 dBm
64QAM	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	30.5 dBm
128QAM	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	31.0 dBm	30.0 dBm	29.5 dBm
Linear Gain	15 +/- 3 dB	15 +/- 3 dB	15 +/- 3 dB	15 +/- 3 dB	15 +/- 3 dB	14 +/-2 dB	14 +/-2 dB	12 +/-2 dB	10 +/-2 dB
Monitor port		-30 dB +/- 5 dB							
Power Consumption		43 Watt							

* Output power excluding branching filter (necessary)

BOARD PLUG-IN EK-UDC/X

"HIGH POWER UP/DOWN-CONVERTER"
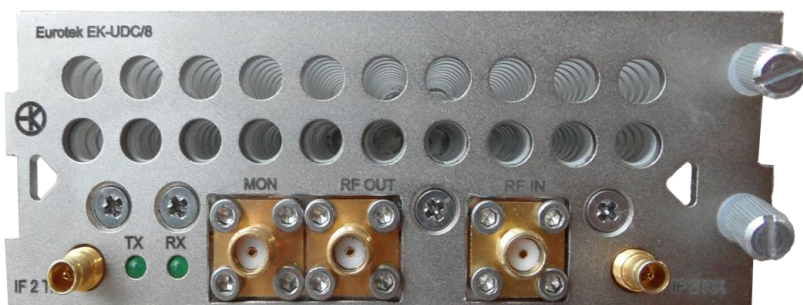
The EK-UDC/x (where x is the supported band) is a family of up and down converter boards able to works from C Band up to Ku Band with excellent performances in term of output power, linearity, sensitivity and spectral purity. The EK-UDC/x boards have been designed in order to guaranty a reliable connection in a point to point radio link and they can operate in indoor environment. The design has been carried out taking in consideration electrical and thermal performances, quality and long term reliability by using first class solid state devices, MLCC and in case of electrolytic capacitors only tantalum type are used, along with a careful choice of the design architecture.

The end user can easily access and monitor the boards trough the EK-MFR/x unit. The two conversions of frequency allow the board utilisation with branching filter either band filters, keeping however excellent characteristics of harmonic and clean emission.

It is possible to control the gain of the board related to the power read on further power amplifier, or the detector inside allows to have a constant output power independently from the variation of input power, aspect extremely important in case of constellation that could arrive to 128QAM.

Features

- From 5 GHz to 14 GHz Band
- High Power
- Completely agile (100 KHz step)
- Double conversion
- ALC Function
- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Transceiver mode

TECHNICAL SPECIFICATION

Up converter Section

Model (EK-UDC/x)	3	4	5	59	6	7	8	10	11	13	14	15
Freq. band (GHz)	3.6/4.2	4.4/4.9	5.3/5.9	5.9/6.4	6.4/7.2	7.0/8.0	7.7/8.5	10/10.9	10.7/11.7	12.7/13.3	13.7/14.5	14.5/15.25
Saturated output power* (dBm)	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0
Output power (dBm) QPSK	36.5	36.5	36.5	36.5	36.5	36.5	36.5	35.5	35.5	35.5	35.5	35.5
16QAM	34.5	34.5	34.5	34.5	34.5	34.5	34.5	33.5	33.5	33.5	33.5	33.5
32QAM	34.5	34.5	34.5	34.5	34.5	34.5	34.5	33.5	33.5	33.5	33.5	33.5
64QAM	34.5	34.5	34.5	34.5	34.5	34.5	34.5	33.5	33.5	33.5	33.5	33.5
128QAM	32.5	32.5	32.5	32.5	32.5	32.5	32.5	31.5	31.5	31.5	31.5	31.5
Linear Gain(db)	15 +/- 3	15 +/- 3	15 +/- 3	15 +/- 3	15 +/- 3	15 +/- 3	15 +/- 3	14 +/- 2	14 +/- 2	12 +/- 2	10 +/- 2	10 +/- 2
Monitor port	-30 dB +/- 5 dB											
Power Consumption	60Watt											

* Output power excluding branching filter (necessary)

Down converter Section

Model (EK-UDC/x)	3	4	5	59	6	7	8	10	11	13	14	15
Freq. band (GHz)	3.6/4.2	4.4/4.9	5.3/5.9	5.9/6.4	6.4/7.2	7.0/8.0	7.7/8.5	10/10.9	10.7/11.7	12.7/13.3	13.7/14.5	14.5/15.25
Freq step	100 KHz											
Dynamic range	-20/-100 dBm (bandwidth limited)											
IF Monitor Port	1 internal, 1 rear 0 dBm											

* Noise Figure excluding branching filter (necessary)

Eurotek
Broadcast Solutions

BOARD PLUG-IN EK-AMP/2
"2 GHZ POWER MPLIFIER"

The board EK-AMP/2 constitutes an option of the new Radio Link series properly studied for the transmission of digital signals.

Whenever the connection needs more edge to the flat fading it is possible using this amplifier with a gain on the fading edge of about 9 dB.

It has been given a lot of importance to the energetic efficiency using switch-mode power supply for the DSP in order to minimise the consumptions and consequently the warm dissipation, moreover the two fans are proportionally controlled to the module temperature. The same DSP manages the power sequencing and all what needs to the manage the GaAsFET supply in order to guaranty the maximum reliability. It is very easy to substitute the module since it is not needed tuning , no specific knowledge is necessary for the substitution.

All the working parameters are reachable from the Mainframe front panel and from remote.

Features

- 2 GHz Band
- Complete web Management

Applications

- Digital Microwave Links
- ENG Systems
- DTV, DVB-T,

TECHNICAL SPECIFICATION

Model (EK-AMP/x)	2
Freq. band (GHz)	1980/2250
Saturated output power*	47.0 dBm
COFDM Output power	37.0 dBm
Gain	37 +/- 1 dB
Monitor port	-40 dBc +/- 3 dB
Power Consumption	70 Watt

BOARD PLUG-IN EK-AMH/X
"HIGH POWER AMPLIFIER"

The module EK-AMH/x constitutes an option of the new Radio Link series properly studied for the transmission of digital signals.

Whenever the connection needs more edge to the flat fading it is possible using this amplifier with a gain on the fading edge of about 15 dB.

It has been given a lot of importance to the energetic efficiency using switch-mode power supply for the DSP in order to minimise the consumption and consequently the warm dissipation, moreover the two fans are proportionally controlled to the module temperature. The same DSP manages the power sequencing and all what needs to the manage the GaAsFET supply in order to guaranty the maximum reliability. It is very easy to substitute the module since it is not needed tuning and no specific knowledge is necessary for the replacement however since that this module has an high power consumption it must be placed inside a dedicated Mainframe.

All the working parameters are reachable from the Mainframe front panel and from remote location too.

Features

- From 5 GHz to 7 GHz Band
- Complete web Management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S

TECHNICAL SPECIFICATION

Model (EK-AMH/x)	59	6
Freq. band (GHz)	5.9/6.4	6.4/7.2
Saturated output power*	43.0 dBm	43.0 dBm
QPSK	39.0 dBm	39.0 dBm
16QAM	36.0 dBm	36.0 dBm
32QAM	36.0 dBm	36.0 dBm
64QAM	36.0 dBm	36.0 dBm
128QAM	35.0 dBm	35.0 dBm
Linear Gain	15 +/- 3 dB	15 +/- 3 dB
Monitor port	-30 dB +/- 5 dB	
Power Consumption	110 Watt	

* Output power excluding branching filter (necessary)

BOARD PLUG-IN EK-AMS/6
"HIGH POWER AMPLIFIER"

The module EK-AMS/x constitutes an option of the new Radio Link series properly studied for the transmission of digital signals.

Whenever the connection needs more edge to the flat fading it is possible using this amplifier module with a gain on the fading edge of about 16 dB.

It has been given a lot of importance to the energetic efficiency using switch-mode power supply for the DSP in order to minimise the consumption and consequently the warm dissipation.

The same DSP manages the power sequencing and all what needs to the manage the GaN supply in order to guaranty the maximum reliability. It is very easy to replace the module since it is not needed specific tuning and no knowledge is necessary for the replacement. Since that this module has an high power consumption it must be placed inside a dedicated Mainframe.

All the working parameters are reachable from the Mainframe front panel and from remote location too.

Features

- 6 GHz Band
- Complete web Management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S

TECHNICAL SPECIFICATION

Model (EK-AMS/x)	6
Freq. band (GHz)	6.4/7.2
Saturated output power*	47.0 dBm
QPSK	43.0 dBm
16QAM	40.0 dBm
32QAM	40.0 dBm
64QAM	40.0 dBm
128QAM	39.0 dBm
Linear Gain	16 +/- 3 dB
Monitor port	-30 dB +/- 5 dB
Power Consumption	135 Watt

* Output power excluding branching filter (necessary)

BOARD PLUG-IN EK-ASW/6
"ASI SWITCH HITLESS"

The EK-ASW/6 board is an ASI Switch (see EK-ASW/6 block scheme) that can commutate between a maximum of six transport stream inputs into two outputs. The board can works in automatic mode or manual mode. In "automatic mode" the system analyzes the input transport streams and decide which data flow must be sent to the transport stream outputs according with the status on the selected transport stream input and input priority. If the Alignment Src option is enabled the system switch between inputs that are previously aligned from digital delay lines. This permits to have an hitless switch also when there is a delay between inputs up to 16 packets. In order to use the Alignment Src option it is necessary to have inputs with the same transport stream. Moreover in Automatic mode and Alignment Src the system is able to works like a diversity receiver since it analyses the Transport Stream Error Indicator bit to switch, this bit is managed by the EK-UNM/2 and EK-UNM/3 modems and indicates if a packet is currupt or not. In "manual mode" user's selects which transport stream must be sent to the outputs and switch in a packet by packet manner. A particular hardware permits during a faults, or when the board isn't powered up, to carry out the transport stream present on the ASI 1 input to the ASI OUT M output (bypass mode). Output transport stream is present on the ASI OUT S connector only if the board is powered up. Finally, an alarm section allows to control the status on the input ASI transport stream selected.

Features

- 4+2 different ASI input
- Automatic or manual mode
- Delay balance
- Hitless switch
- Bypass output mode
- Complete web management

Applications

- 1+1 Redundancy System
- Digital Microwave Links

TECHNICAL SPECIFICATION

Number of Asi input	4 + 2 (internal) input
Input Stream type	ISO / IEC 13818-1
Output Stream Type	ISO / IEC 13818-1 Compliant
ASI Data-Rate	1÷216 Mbit/s
Internal Data-Rate	1÷64 Mbit/s
Reference	ETR 101290 / EN 50083-9
Power Consumption	< 10 W
Input / Output Connector	BNC FEMALE 75Ohm

BLOCK SCHEME
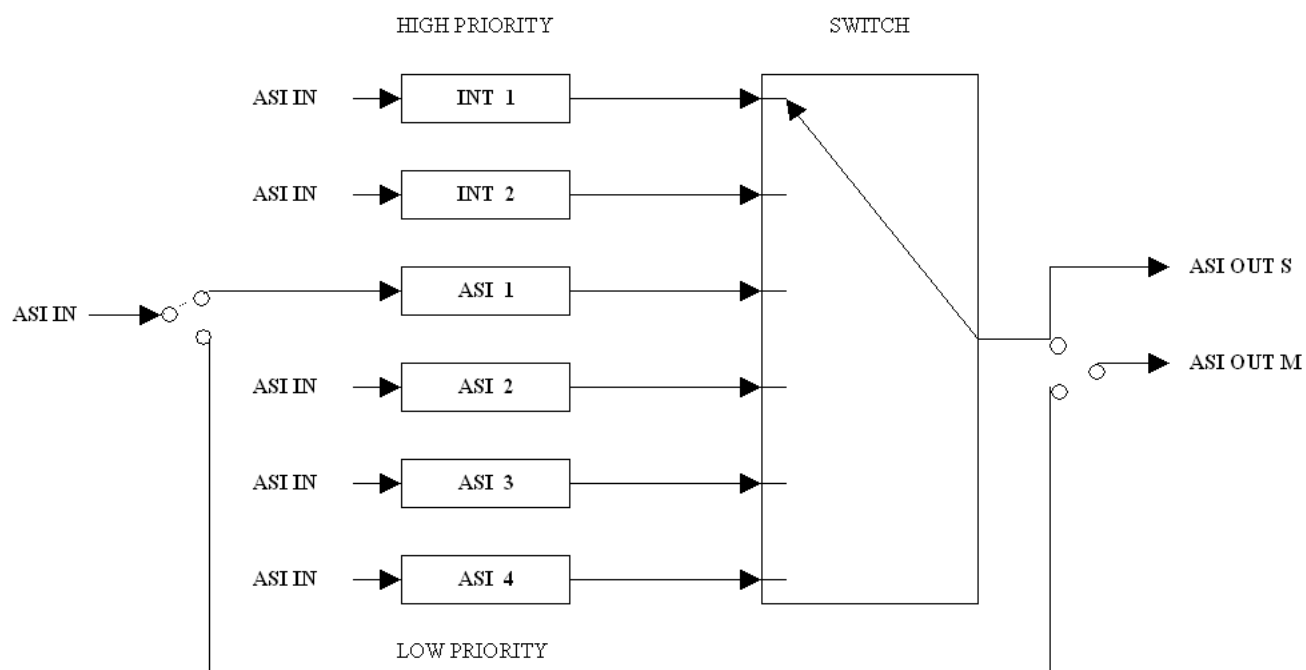
BOARD PLUG-IN EK-MPA/4
"ASI TRANSPARENT MULTIPLEXER"

The EK-MPA/4 board is a 4 ASI to ASI transparent multiplexer (see EK-MPA/4 block scheme) and it is composed by four physical input represented by the four input BNC connectors located in the board panel, plus two internal inputs that are directly connected with the EK-MFR/2 by the internal connections matrix line (located in the EK-MFR/2).All the inputs are interfaced with the VC mapper unit so the transport stream present on a particular input can be mapped to one of the eight Virtual Channels (VC1 – VC8) of the VC mapper. If an input is not used it can be connected, by the menu, to the Waste container. After the mapping procedure between the input transport streams and the desiderated Virtual Channels an unique transport stream is generated with the data PID assigned by the menu. If the insertion of the SI TABLE is required the transport stream is multiplexed with the signals of the table generator and sent to the output module. The output module is directly connected with the two physical output connectors, represented by the two BNC connectors reported on the board panel, plus an internal output signal connected to the EK-MFR/2 between the internal matrix line connection (located in the EK-MFR/2). A particular hardware permits during a fault or when the board is not powered up, to carry out the transport stream present on the ASI input BNC "IN1" to the ASI output BNC "OUT M" connector (bypass mode). While on the "OUT S" BNC connector the output transport stream is present if the board in powered up only. For a correct functioning of EK-MPA/4 board must be utilized in relation with the EK-DMA/4 board.

Features

- 4+2 different ASI input
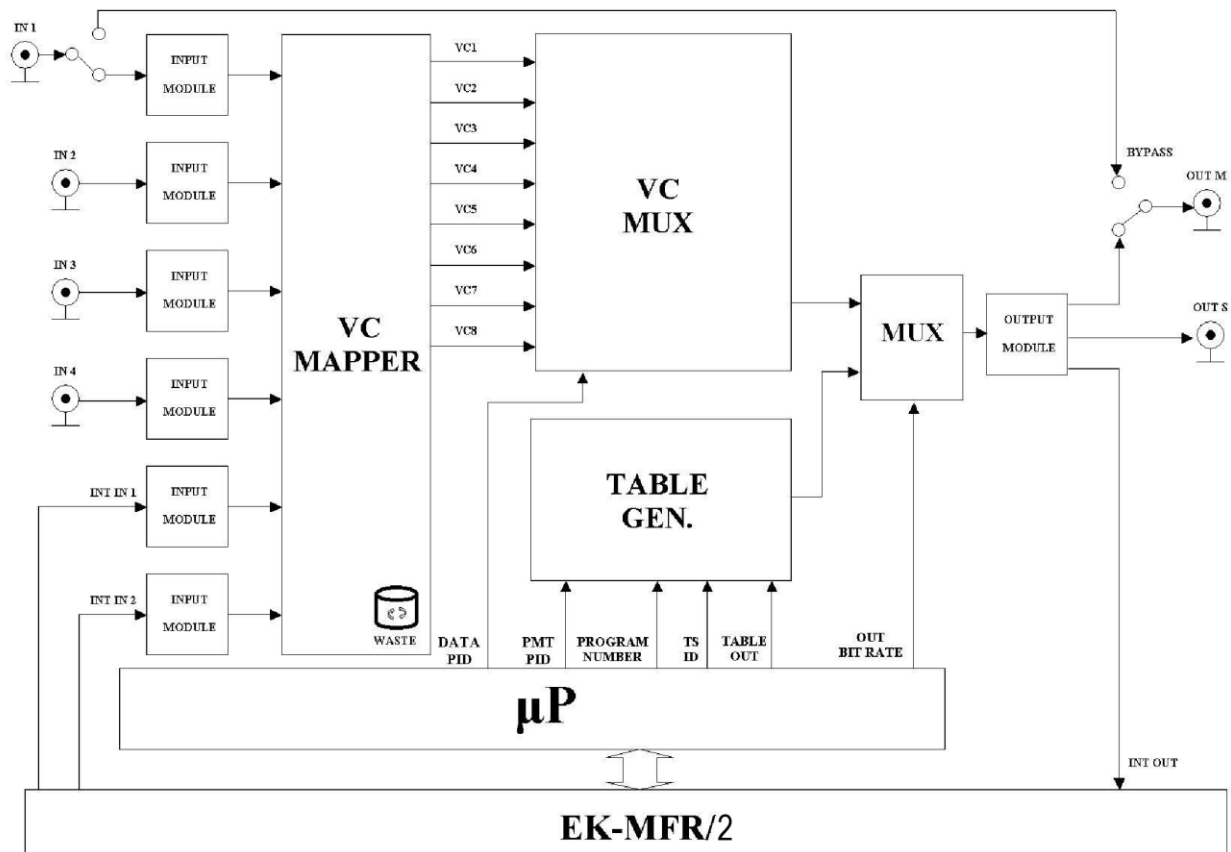- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Management of several ASI signals

TECHNICAL SPECIFICATION

Inputs	4 ASI + 2 internal
Input Stream type	ISO / IEC 13818-1
Outputs	2 ASI+ 1 internal
Output Stream Type	ISO / IEC 13818-1 Compliant with payload in one program private data
ASI Data-Rate	1-206 Mbit/s
Internal Data-Rate	1-54 Mbit/s
Performance / Overall jitter	ETR 101290
ASI i/o Reference	EN 50083-9
Max. Input cable length	200 m Belden 8281 except when in bypass mode
Power Consumption	7 W
Input / Output Connector	BNC FEMALE 75 Ohm

BLOCK SCHEME

BOARD PLUG-IN EK-DMA/4
"ASI TRANSPARENT DEMULTIPLEXER"

The EK-DMA/4 board is an ASI to 4 ASI transparent demultiplexer (see EK-DMA/4 block scheme) and it is composed by two physical inputs, represented by the two input BNC connectors located in the board panel, plus one internal input that is directly connected with the EK-MFR/2 between the internal connection matrix line (located in the EK-MFR/2).

The three inputs are connected to a selector controlled by the SEL IN parameter. By the menu it is possible to change the value of the SEL IN parameter to decide which input signal must be processed by the board. If the "AUTO" value is load on the SEL IN sub-menu the system automatically switch on the first valid transport stream input in according to the priority: IN1, IN2, INT IN.

The selected input transport stream is sent to the packet selector module that filters out all the packets except those with the selected DATA PID. The transport stream is then sent to the VC demapper in order to send any different virtual channels (VC1-VC8) to a different selected outputs.

The outputs of the EK-DMA/4 are six, four physical, represented by the four BNC located in the board panel (see EK-DMA/4 board panel) plus two internal directly connected to the EK-MFR/2 by the internal connection matrix line (located in the EK-MFR/2). For a correct functioning the EK-DMA/4 board must be utilized in relation with EK-MPA/4 board.

Features

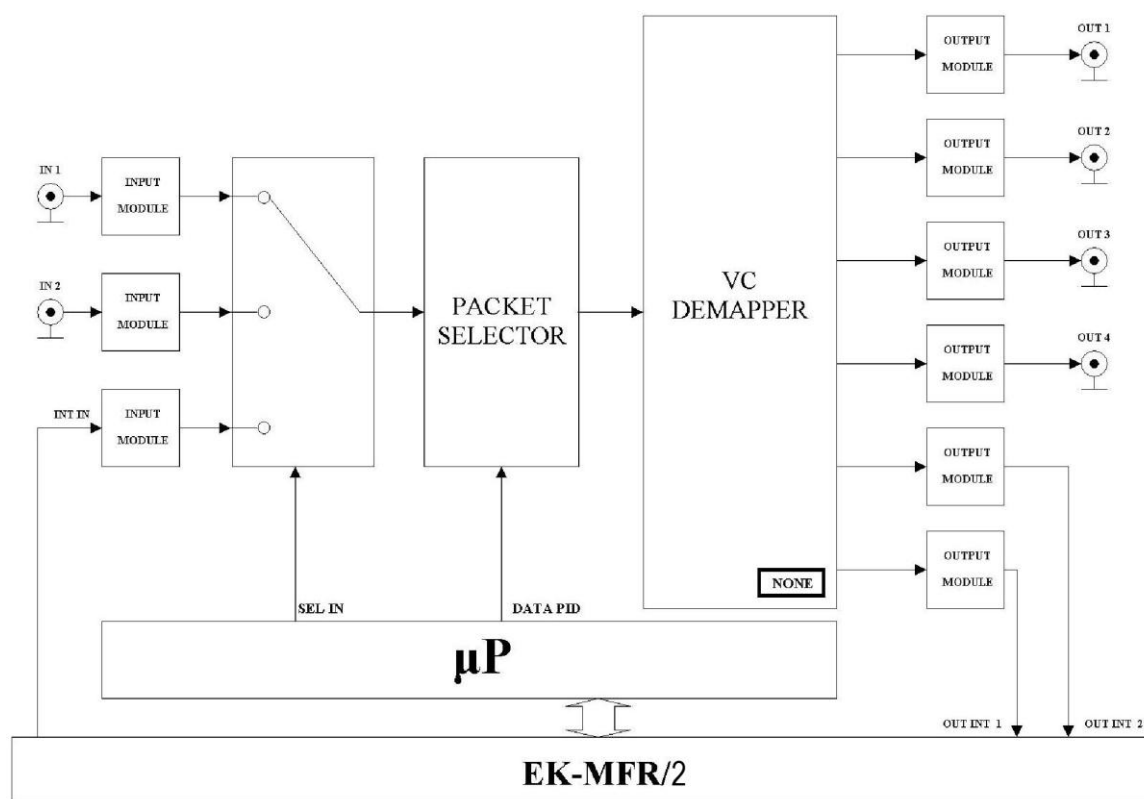- 4+2 different ASI output
- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S
- Management of several ASI signals

TECHNICAL SPECIFICATION

Inputs	2 ASI+ 1 internal
Input Stream type	ISO / IEC 13818-1
Outputs	4 ASI + 2 internal
Output Stream Type	ISO / IEC 13818-1 Compliant with payload in one program private data
ASI Data-Rate	1÷206 Mbit/s
Internal Data-Rate	1÷54 Mbit/s
Performance / Overall jitter	ETR 101290
ASI i/o Reference	EN 50083-9
Max. Input cable length	200 m Belden 8281 except when in bypass mode
Power Consumption	7 W
Input / Output Connector	BNC FEMALE 75 Ohm

BLOCK SCHEME

The EK-AMX/4 board is an FPGA based 6 to 1 TS Re-multiplexer with output Table Generation and Conditional Access Table (CA) management. The maximum input and output TS bit rate is 216 Mb/s and it is not dependent on the complexity of the incoming streams. The input TS come from external ASI or as well from others EK-MFR/2 internal cards (e.g: from a Eurotek A/V Codec or Demodulator). For each input an "Input Module" checks the input

bit rate and the presence of a correct TS and these informations are reported on the EK-AMX/4 Status menu. The "Pid Filter" and the "Pid Remap" modules allows to filter and remap the input packets in order to multiplex the input TSs and generating in this way the required output TS. By means of the "Pcr Restamp" module all the input PCR data are moreover correctly restamped.

The microprocessor programs the table generator using the SI table info from the incoming TSs. The multiplexed output TS is present on the internal EK-MFR/2 connections and on both ASI output BNC connectors moreover during a fault, or when the board is not powered up, the TS present on the ASI 1 input is carried out on the "OUT M" BNC connector. Basically the EK-AMX/4 can be used in Auto or Manual mode.

In "Auto" mode all the input packets are carried on the outputs and the EK-AMX/4 automatically generates the output tables also managing the Conditional Access descriptors. It is also possible to filter input packets by means the Eurotek Software Suite. In "Manual" mode, using the Eurotek Software Suite the user has the full control on the mux and through a simple drag & drop it is possible to build up the output TS from the input TSs.

Features

- 6 different TS input
- 2 different TS output
- Man/Auto Table Generation
- CA management
- TS Output up to 216Mb/s
- Complete web/SNMP management

Applications

- Head End Systems
- DTV, DVB-T, DVB-S
- Terrestrial and satellite TS router

TECHNICAL SPECIFICATION

Inputs	4 ASI + 2 internal (for each EK-AMX/4 board)
Input Stream type	ISO / IEC 13818-1
Outputs	2 ASI + 1 internal
Output Stream Type	ISO / IEC 13818-1 Compliant
Input ASI Bit-Rate	1-216 Mb/s
Max Output ASI Bit-Rate	216 Mb/s
Internal Bit-Rate	1-53,5 Mb/s
Performance / Overall jitter	ETR 101290
ASI i/o Reference	EN 50083-9
Max. Input cable length	200 m Belden 8281 except when in bypass mode
Power Consumption	7 W
Input / Output Connector	75Ω BNC female
Output SI TABLE t	Automatic/Manual/Freeze with Conditional Access management

BLOCK SCHEME

Eurotek
Broadcast Solutions
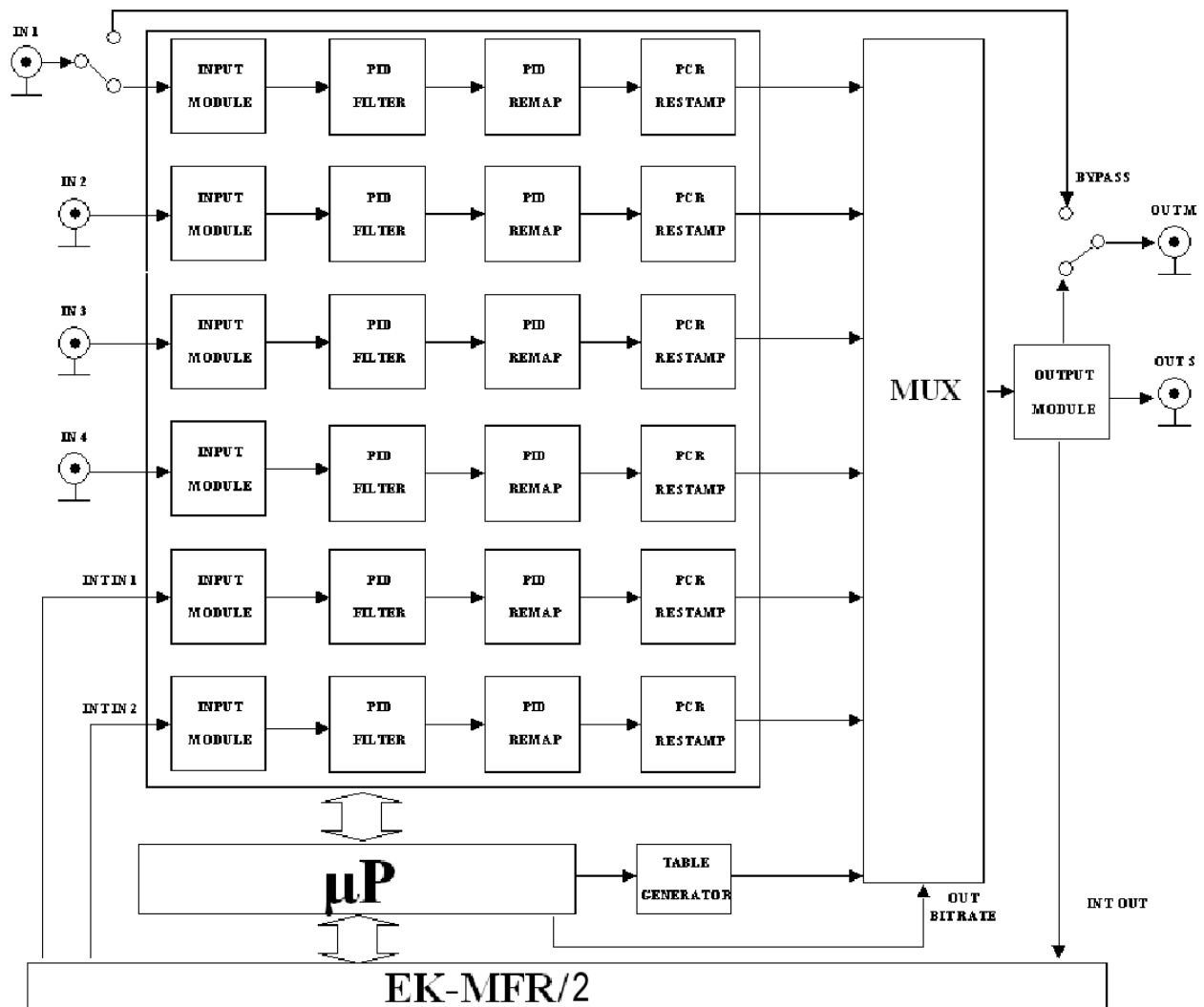
BOARD PLUG-IN EK-DTX/2
"DVB-T2 MODULATOR"

The EK-DTX/2 is a new board able to manage DVB-T2 modulation. As always this board can be inserted into our universal platform "All4Digit" and build in this way any DVB-T2 Transmitter present in our product portfolio.

Thanks to a revolutionary future-proof design, based on use of SFP connectors, customers can choose type of interfaces to use either coaxial or optical, ASI or IP and furthermore, using a direct modulation, the output of the board is delivered on a user selectable frequency in the range 30÷860 MHz in steps of 1 Hz.

The spectrum bandwidth is selectable between 8, 7, 6 and 5 MHz and with our Adaptive Pre-corrector solution (UHF band) the users can enhance the operation further by providing continuous automatic optimisation of the transmitters performance which results in very high MER value as well as a superior shoulder level suppression.

Onboard GPS professional receiver warrants a perfect SFN functionality and an integrated RMS detector allows the use of additional Power Amplifier Modules (ALC function).

Finally, as all the devices of "All4Digit" platform, also the EK-DTX/2 allows the selection of each configuration in several way: locally by the keyboard on the front panel of the Mainframe, using our GUI interface or remotely via SNMP command.

Features

- VHF/UHF agile MODULATION
- 2 SFP Cage Input (Electrical and Optical)
- GbE Input
- MFN/SFN Operation Mode
- MISO processing
- Single and Multiple PLP
- Manual & Adaptive pre-corrections
- Integrated GPS professional receiver
- Very good MER
- RMS Detector for additional POWER AMPLIFIER Modules (ALC)
- Full management by SNMP

Applications

- DVB-T2 digital broadcast
- DVB-T/H digital broadcast
- OEM Solutions (HW+SW+FW)

TECHNICAL SPECIFICATIONS

Digital Modulator			
INPUT	2 SFP Cage	ASI	Electrical
			Optical (EN 60793-2-10, EN 60793-2-50, ITU-T Rec.G.654)
		GbE (option) (PRO-MPEG, IEE 802.3)	100 BASE-T over Copper
			1000 BASE-SX over Optical Fiber
			1000 BASE-LX over Optical Fiber
	Internal	TS max 270 Mbit/s	
		1pps	
	GPS	75 Ohm, +5V/50mA, > -159 dBm	
	RF	-12 ÷ +3 dBm 470 ÷ 865 MHz	
OUTPUT	RF	-15 ÷ +15 dBm 35 ÷ 865 MHz	
	Internal	TS max 270 Mbit/s	
		1 pps	
DVB-T2 FEATURES	DVB-T2 Standard ETSI 302 755 V1.1.3	MFN / SFN	
		Multi PLP	
		SISO / MISO	
		Bandwith 5, 6, 7 and 8 MHz	
		Constellation Rotation	
	Parameters setting	From T2-MI Content	
		Fixed (front panel, web SNMP, MST)	
	Redundancy	Input streams auto switch	
	Precorrection	Manual	
		Adaptive	
ANALOGUE FEATURES	Standard	B,G	
	Modulation	C3F Neg, F3E	
	Colour system	PAL, NTSC	
	Video Interface	BNC Female Through SDI Interface	
	Audio Interface	BNC Female Through SDI Interface	

BLOCK DIAGRAM

Eurotek
Broadcast Solutions
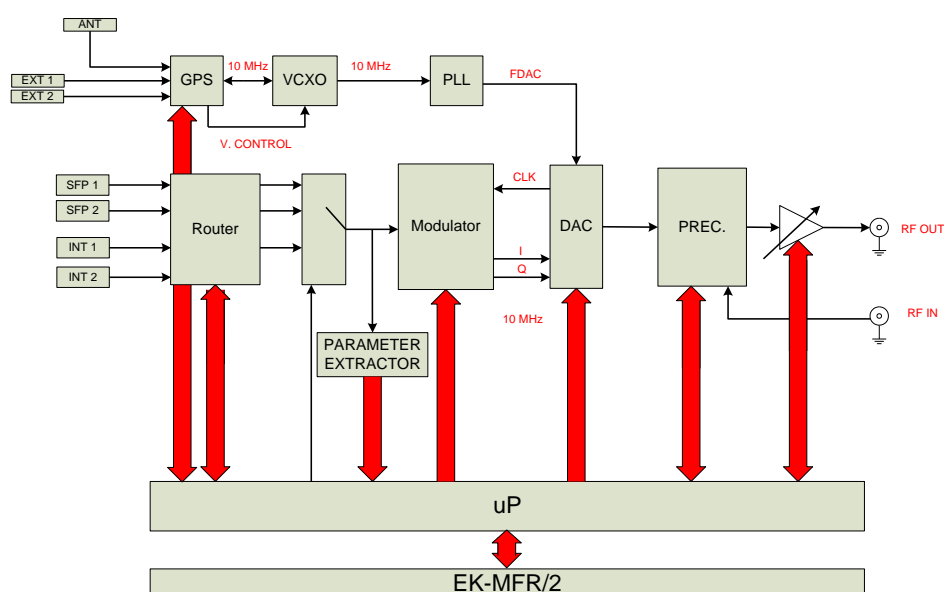
BOARD PLUG-IN EK-AMU/1
"POWER AMPLIFIER"

The EK-AMU/1 module works as 4 Watt UHF power amplifier for digital television transmission signals.

It has been given a lot of importance to the energetic efficiency using switch-mode power supply for the DSP in order to minimize the consumptions and consequently the warm dissipation, moreover the two fans, located in the boards, are proportionally controlled to the module temperature.

The same DSP manages the power sequencing and all what needs to the manage the GaAsFET supply in order to guaranty the maximum reliability. It is very easy to substitute the module since it is not needed tuning, no specific knowledge it is necessary for the substitution.

All the working parameters are reachable from the EK-MFR/2 front panel and/or from remote site.

Features

- From 470 to 860 MHz Band
- Complete web Management

Applications
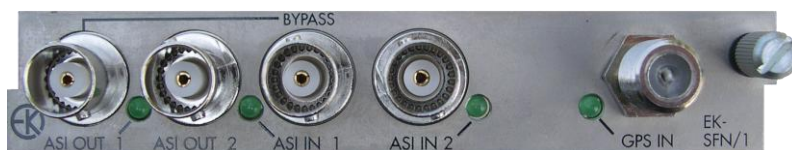
- Digital Transmitters
- DTV, Analogue

TECHNICAL SPECIFICATION

Parameter	Min.	Typ.	Max.	Units	Note
Frequency range	470		860	MHz	Full band
Power Gain	32	34	36	dB	
DVBT Nominal Power	3.8	4.0	4.2	Wrms	
Shoulder		< -35		dBc	@ Nominal Power, without precorrection

* Output power excluding branching filter (necessary)

BOARD PLUG-IN EK-SFN/1
"SFN ADAPTER"

The EK-SFN/1 works as an SFN adapter. The board is composed by four ASI input (2 physical + 2 internal), two ASI output and one GPS input. The block scheme of the EK-SFN/1 is depicted on the next page. The user can selects, by the menu, the ASI input to send to the MUX unit (see EK-SFN/1 block scheme). It is possible to select the ASI input present on the BNC 1 connector (ASI IN 1), the ASI input present on the BNC2 connector (ASI IN 2) or the ASI transport stream coming from the internal lines connections (INT MPX or INT DEC).

It is also possible to set the Auto parameter that send on the Mux unit, the first ASI input that is not in alarm conditions in according with the following priority : ASI 1, ASI 2, Int Mpx and Int Dec. The ASI input transport stream coming from the input selector, is muxed with the transport stream coming from the MIP section that it is synchronized with GPS receiver (1 pps signal).

The MUX unit, delete the stuffing from the input transport stream, insert the MIP table with data based on the GPS signal and re-insert the stuffing signal (Bit rate generator) to generate the correct out bit-rate on the two ASI OUTPUT connector (ASI OUT 1 and ASI OUT 2).

The output bit rate (Mb/sec) is automatically adjusted in according with the DVBT parameter setted by the user (see Settings menu).

The value of the output bit rate must be greater than the sum of the input transport stream present on the MUX unit input and the bit rate of the MIP table. If this relationship is not verified, an alarm occurs (Fifo full).At the power-off or if the board in not running correctly the ASI IN 1 is routed through mechanical switch directly to ASI OUT 1. During normal working condition, if the GPS signal is unlocked and the "bypass if fail" variable is switched to Yes (see Settings menu),the ASI IN 1 is routed on the ASI OUT 1.

Features

- 4 different TS input
- GPS Reference
- SFN Time and Freq. Sync
- Hierarchical mode
- TS Output up to 215Mbit/s
- Complete web/SNMP management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S

TECHNICAL SPECIFICATION

TS Ports	ASI
GPS Antenna	Voltage = 5V
	Max. allowed current = 50 mA
	Input impedance = 50 Ohm
Input Stream type	ISO / IEC 13818-1
ASI Data-Rate	1-215 Mbit/s
Internal Data-Rate	1-54 Mbit/s
ASI i/o Reference	EN 50083-9
Power Consumption	< 7.5 W
Input Connector ASI	BNC FEMALE 75 Ohm
Input Connector GPS	F FEMALE
Output Connector ASI	BNC FEMALE 75 Ohm

BLOCK SCHEME
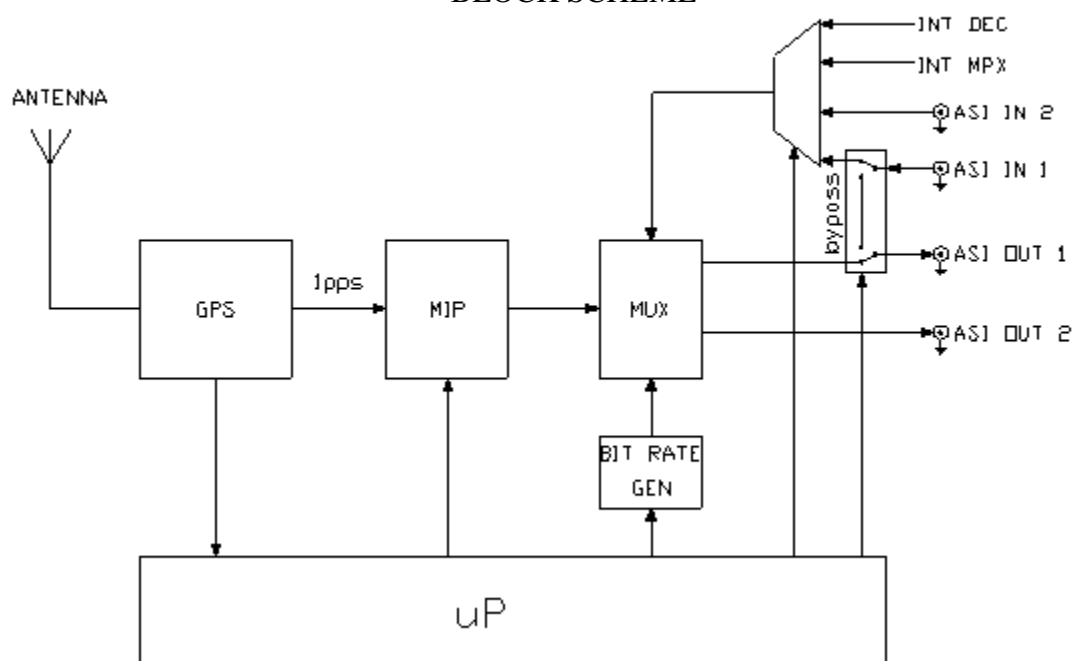
BOARD PLUG-IN EK-NAE/3
"NETWORK ADAPTER"

The EK-NAE/3 board is a 2 ASI to E3 transparent multiplexer/network adapter, and E3 to 2 ASI network adapter/transparent demultiplexer (see EK-NAE/3 block scheme). It is composed by two physical input represented by the two input BNC connectors located in the board panel (see EK-NAE/3 board panel description),

plus two internal inputs that are directly connected with the Mainframe by the internal connections matrix line (see EK-MFR/2 user's manual). The same composition is mirrored for the other way. All the TS inputs are interfaced with the VC mapper unit, the transport stream present on a particular input can be mapped to one of the four Virtual Channels (VC1 ÷ VC4) of the VC mapper. If an input is not used it can be connected by the menu to the waste container. After the mapping procedure between the input transport streams and the desidered Virtual Channels, an unique stream is generated. After that optionally it is possible to add RS correction code bits, the insertion of the RS encoder limits the bit rate capability of the system.

The next step is to serialize the stream at the fixed bit rate of the E3 output port.

On the other way the incoming E3 signal is clock recovered and then deserialized, the optional RS decoder performs the error correction and then the demapper unit extracts the packets for each output. The architecture of the system permits to use the processed TS for SFN network because never in the chain of the incoming packets is modified and anyway the time position of the packets at the outputs of the transparent demultiplexer is related to the inputs.

Features

- E3 to ASI & ASI to E3 Adapter
- 4 different ASI input
- Bypass output function
- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S

TECHNICAL SPECIFICATION

TS Ports	ASI
PDH Ports	G.703
Input Stream type	ISO / IEC 13818-1
ASI Data-Rate	1-216 Mbit/s
Internal Data-Rate	1-216 Mbit/s
Performance/overall jitter	ETR 101290
ASI i/o Reference	EN 50083-9
Max. Input cable length	200 m Belden 8281 except when in bypass mode
Power Consumption	5 W
Input / Output Connector	BNC FEMALE 75 Ohm

BLOCK SCHEME
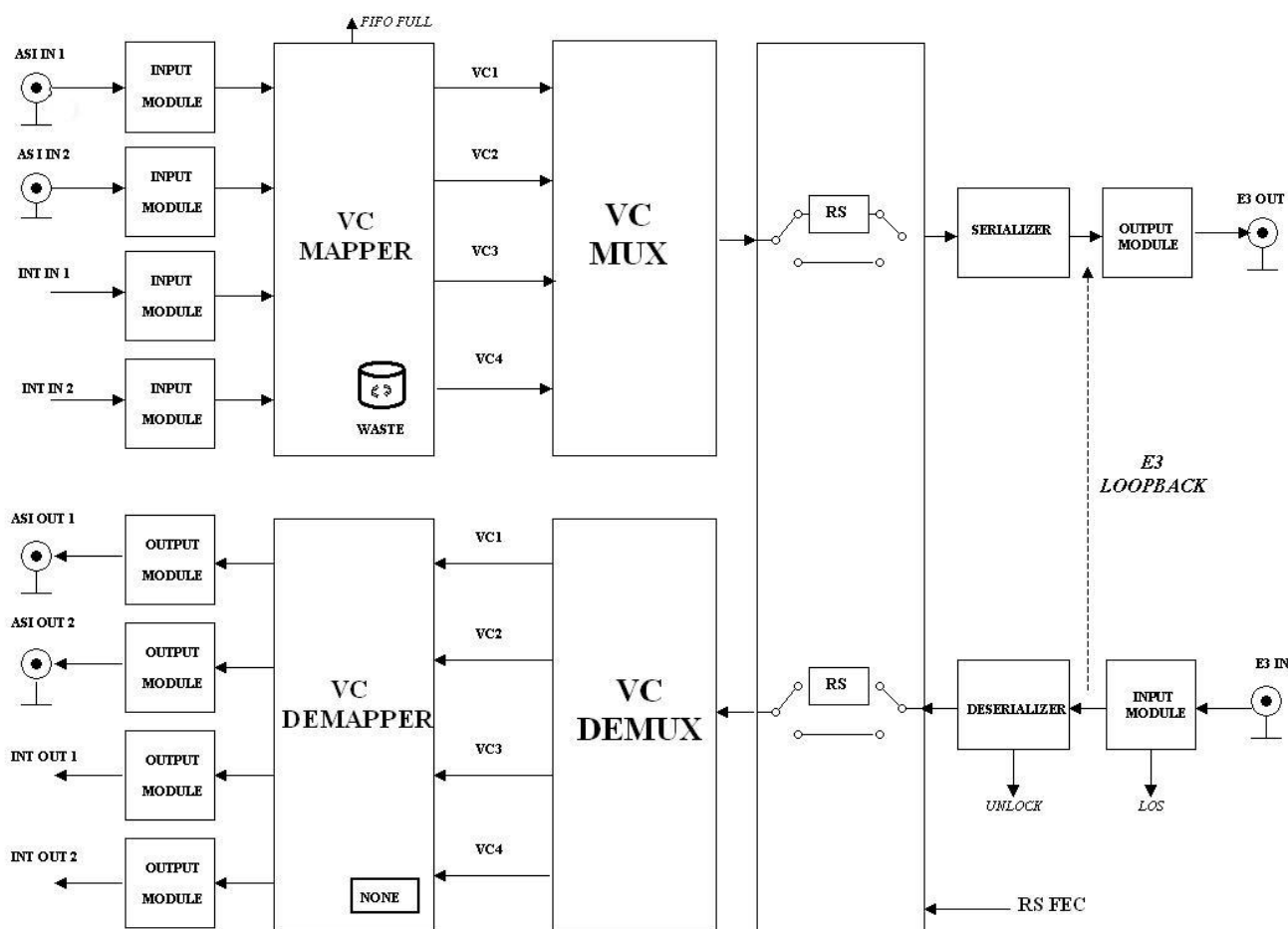
BOARD PLUG-IN EK-SFP/4
"ASI/SMPTE 310M TRANSPARENT MUX/DEMUX SEAMLESS SWITCH"
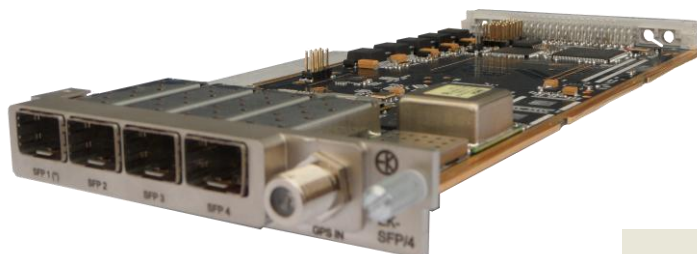
This software define revolutionary board allows to integrate more function in a single hardware platform with consequential costs reduction and performance maximization. Thanks to this feature the EK-SFP/4 can works as ASI Multiplexer / Demultiplexer / Hit-Less Switch and SMPTE310M Converter.

The EK-SFP/4 Board uses 4 SFP modules that allows an incredible modularity and flexibility thus being able to increase features of the board in any time and change the interfaces between Coaxial, Fiber or RJ45 simply changing the relative SFP modules.

A by-pass capability, integrated inside the SFP module, permits also redundancy applications without electromechanical components. Furthermore an integrated GPS receiver allows also to lock the internal reference to the GPS signal.

Features

- ASI / SMPTE310M Converter
- Transparent Multiplexer
- Transparent Demultiplexer
- ASI Seamless Switch
- 4 different ASI input
- 4 different ASI Output
- GPS Reference
- By-pass output function
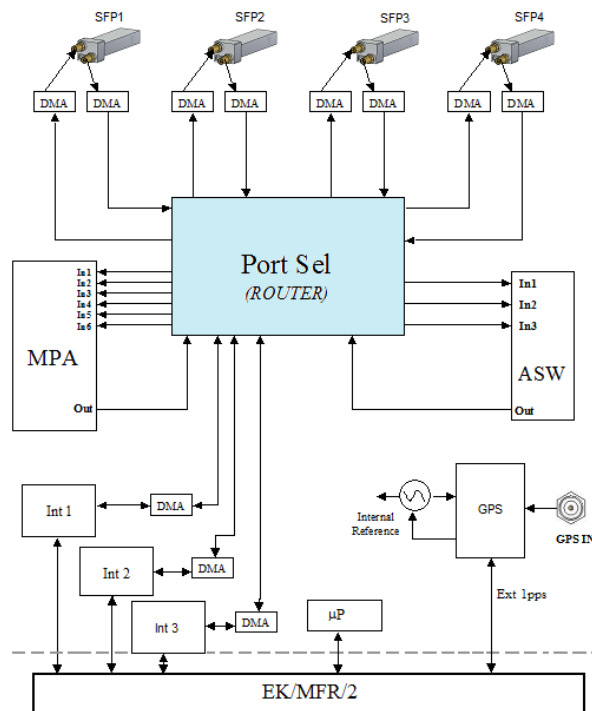- Complete web management

Applications

- Digital Microwave Links
- DTV, DVB-T2/T/H
- DVB-S/S2

TECHNICAL SPECIFICATION

Inputs	4 SFP + 3 Internal + 2 Internal 1pps Reference
Input Stream Type	ASI 188 Byte and 204 Byte terminated ASI/SMPTE/SDI
Outputs	4 SFP + 3 Internal + 1 Internal 1pps Reference
Output Stream Type	ASI ISO/IEC 13818-1, EN 50083-9:2002 SMPTE SMPTE 310M-2010
ASI characteristics	1÷216 Mbit/s
SMPTE characteristics	8VSB (19.39 Mbit/s) 16VSB (38.78 Mbit/s)
Internal Data-Rate	1÷270 Mbit/s
GPS	Antenna supply Voltage = 5V Max. allowed current = 50 mA Input impedance = 75 Ohm Connector = F female
Climatic conditions	
Temperature	- 5°C ÷ + 45°C
Humidity	Max. 90 %
Altitude	3000m 66kPa

BLOCK SCHEME

Eurotek
Broadcast Solutions

BOARD PLUG-IN EK-SFP/4 ASI/IP CONVERTER
"GBE/ASI CONVERTER"

This software define revolutionary board allows to integrate more function in a single hardware platform with consequential costs reduction and performance maximization. Thanks to this feature the EK-SFP/4 can works also as ASI to IP and IP to ASI Converter.

The EK-SFP/4 Board uses up to 4 SFP modules that allows an incredible modularity and flexibility thus being able to increase or change features of the board in any time simply changing the relative SFP modules and manage up to 3 ASI IN/OUT on the coaxial connectors plus other 3 ASI/OUT internal (e.g.: generated from and HD/SD Encoder and Decoder boards).

When used as DVB-ASI to IP Bridge this board satisfy all requirements of MPEG Transport Stream distribution through an IP network also in bi-directional mode.

Furthermore, as always, this board can be managed and checked locally or remotely through our Network Management System EK-MST®, GUI, Telnet and SNMP.

Features

- ASI <=> IP Converter
- Up to 3+3 ASI IN/OUT
- Bi-directional operation
- IP Multicast support
- IP Unicast support
- Automatic input MPEG TS packet size detection (188/204 byte)
- High protection against Jitter and Delay
- RDP/UDP support
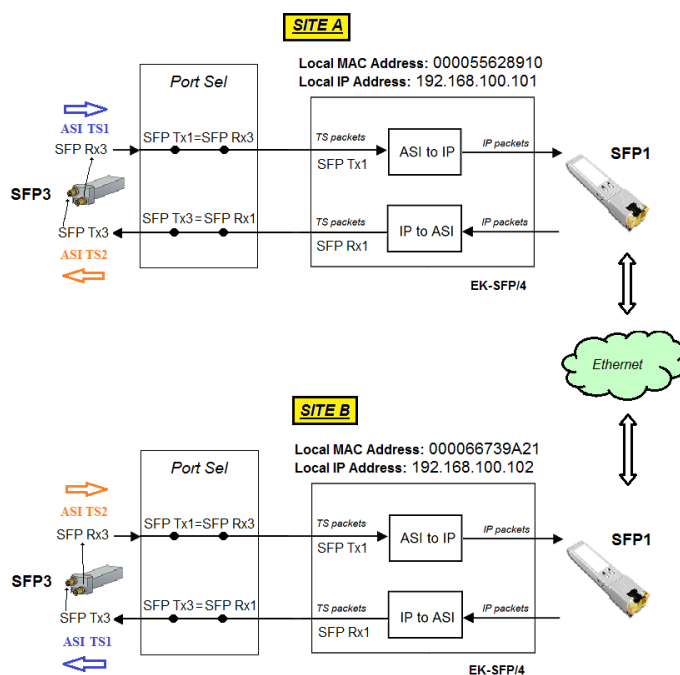- Complete web management

Applications

- Professional Broadcast Contribution & Distribution
- Video services over IP
- DVB-T/H distribution over IP

TECHNICAL SPECIFICATION

Inputs	4 SFP + 3 Internal + 1 Internal 1pps Reference
Input Stream Type	ASI 188 Byte and 204 Byte terminated ASI/SMPTE/SDI/GbE
Outputs	4 SFP + 3 Internal + 1 Internal 1pps Reference
Output Stream Type	ASI ISO/IEC 13818-1, EN 50083-9:2002 SMPTE SMPTE 310M-2010 Ethernet IEEE 802.3
ASI characteristics	1÷216 Mbit/s
SMPTE characteristics	8VSB (19.39 Mbit/s) 16VSB (38.78 Mbit/s)
GbE characteristics	10BASE-T over Copper 100BASE-T over Copper 1000BASE-T over Copper 1000BASE-SX over Optical Fiber 1000BASE-LX over Optical Fiber
Internal Data-Rate	1÷270 Mbit/s
GPS	Antenna supply Voltage = 5V Max. allowed current = 50 mA Input impedance = 75 Ohm Connector = F female
Climatic conditions	
Temperature	- 5°C ÷ + 45°C
Humidity	Max. 90 %
Altitude	3000m 66kPa

TYPICAL APPLICATION

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Broadcast Solutions

BOARD PLUG-IN EK-SFP/4-ETH
"ASI/SMPTE 310M/ETH TRANSPARENT MUX/DEMUX SEAMLESS SWITCH"

This software define revolutionary board allows to integrate more function in a single hardware platform with consequential costs reduction and performance maximization. Thanks to this feature the EK-SFP/4 can works as ASI Multiplexer / Demultiplexer / Hit-Less Switch.

This board allows to use at the same time both **ETH and TS ASI/SMPTE 310M** interfaces selecting the data rate preferred for each IN/OUT so it is possible combine ASI and IP technology in broadcasting activities and to prepare a complete migration to IP.

The EK-SFP/4 Board uses 4 SFP modules that allows an incredible modularity and flexibility thus being able to increase features of the board in any time and change the interfaces between Coaxial, Fiber or RJ45 simply changing the relative SFP modules.

A by-pass capability, integrated inside the SFP module, permits also redundancy applications

Features
- ASI Input / Output
- ETH Input / Output
- SMPTE 310M Input / Output
- ASI / SMPTE310M/ETH Converter configurable
- TS Internal Input / Output
- Transparent Multiplexer
- Transparent Demultiplexer
- ASI Seamless Switch
- 4 different SFP input
- 4 different SFP Output
- GPS Reference
- By-pass output function
- Complete web management
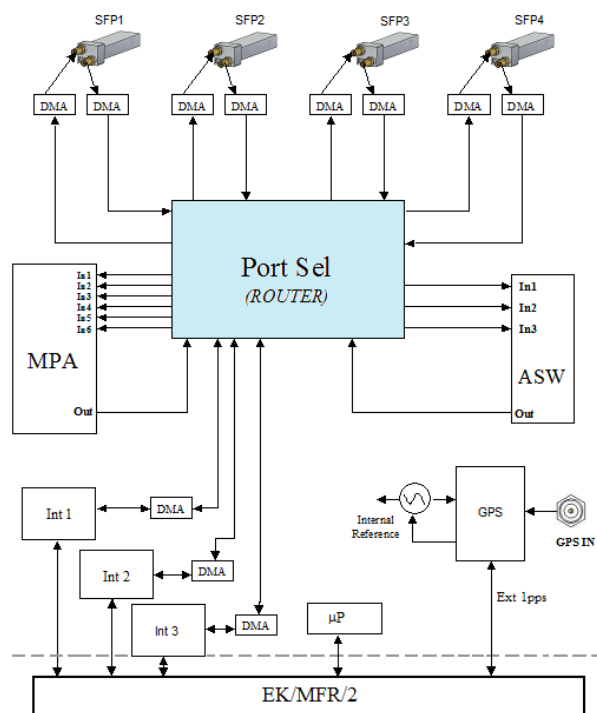
Applications
- Digital Microwave Links
- DTV, DVB-T2/T/H
- DVB-S/S2
- Professional Broadcast Contribution & Distribution
- Video services over IP
- DVB-T distribution over IP

TECHNICAL SPECIFICATION

Inputs	4 SFP + 3 Internal + 1 Internal 1pps Reference
Input Stream Type	ASI 188 Byte and 204 Byte terminated ASI/SMPTE/SDI/GbE
Outputs	4 SFP + 3 Internal + 1 Internal 1pps Reference
Output Stream Type	ASI ISO/IEC 13818-1, EN 50083-9:2002 SMPTE SMPTE 310M-2010 Ethernet IEEE 802.3
ASI characteristics	1÷216 Mbit/s
SMPTE characteristics	8VSB (19.39 Mbit/s) 16VSB (38.78 Mbit/s)
GbE characteristics	10BASE-T over Copper 100BASE-T over Copper 1000BASE-T over Copper 1000BASE-SX over Optical Fiber 1000BASE-LX over Optical Fiber
Internal Data-Rate	1÷270 Mbit/s
GPS	Antenna supply Voltage = 5V Max. allowed current = 50 mA Input impedance = 75 Ohm Connector = F female
Climatic conditions	
Temperature	- 10°C ÷ + 55°C
Humidity	Max. 90 %
Altitude	3000m 66kPa

BLOCK SCHEME

BOARD PLUG-IN EK-DSA/4
"ASI ACTIVE SPLITTER"

The board EK-DSA / 4 work as ASI active splitter with two inputs and five outputs, in ASI input IN1 is also present the "BYPASS" functionality that in case. of failure of the board still allows the transit of the ASI input signal to one exit. The card, being an integral part of the product family ALL4DIGIT, can be inserted inside the Mainframe as always ensuring the modularity and flexibility of use typical of these products.

Features

- Low jitter
- 2 Input 5 Output
- In/ Out impedance 75 Ohm
- Return Loss > 15 dB DC to 270 MHz
- In/ Out DVB ASI @ 270 Mbps

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S

SPECIFICHE TECNICHE

Ingressi	2 ASI + 1 interno
Tipi di flusso in ingresso	Transport stream ISO/IEC 13818-1
Uscite	4 ASI + 1 interno
Tipi di flusso in uscita	Transport stream ISO/IEC 13818-1, EN 50083-9:2002
Bit rate ASI	1-216 Mbit/s
Bit rate interno	1-270 Mbit/s
Lunghezza massima cavo	200 mt. Belden 1694A

SCHEMA A BLOCCHI
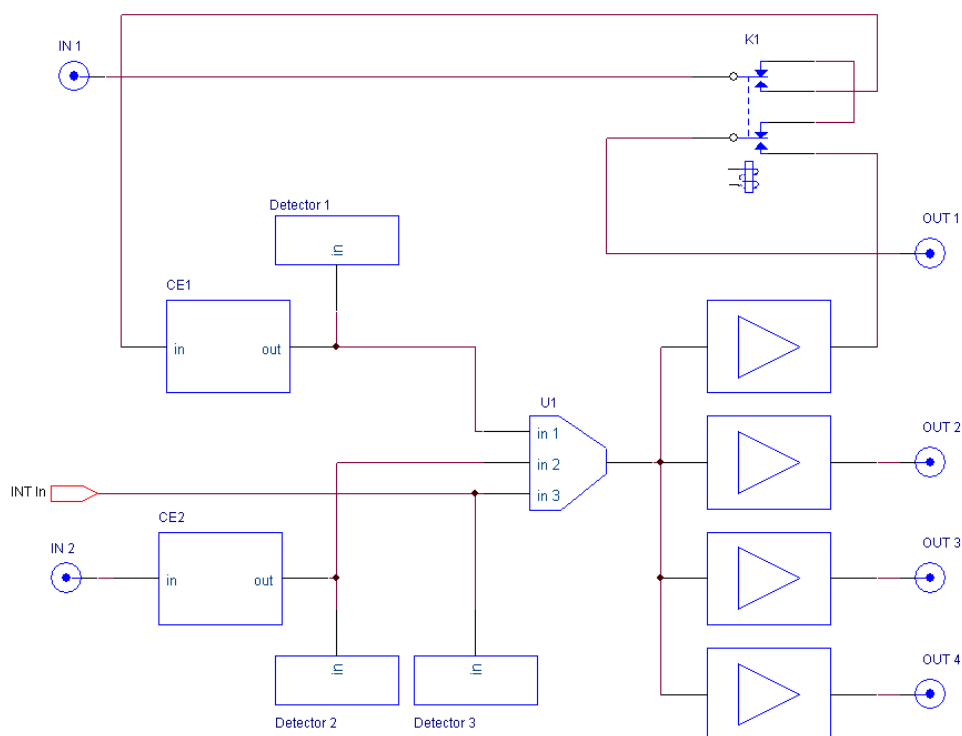
FIXED CHANNEL ANALOGUE MICROWAVE RADIO LINK - FULL INDOOR VERSION EK-XG/1

Frequency modulation radio links, projected for the transport of point to point analogue signal. They allows the transfer of a video signal up four audio channels (2options).

Realized in EIA 19" 1U sub-rack they permit a fast and easy integration with existing telecommunications systems in the full respect of the levels, of the modulations and of the impedances. A particular care has been used in the realization of telecontrol devices which allows an accurate diagnostic and a quick verification of possible troubles. A further characterizing aspect in the insertion possibility of a transmission carrier helping the modulator or alternately the reinsertion of an auxiliary IF.

Features

- RF monitor socket
- OL monitor socket
- IF monitor socket
- Double power supply
- Remote control
- Band equalizer
- Sectioning BB-IF outside
- From 5 to 14 GHz

Applications

- Analogue Microwave Links
- STL / TSL
- Backbone Analogue System

TECHNICAL SPECIFICATION

Links performances (-40 dBm at receiver input)	
Frequency band	**5,2 ÷ 5,89 GHz / **5,9 ÷ 6,5 GHz / 6,4 ÷ 7,2 GHz / 7,1 ÷ 8,5 GHz 10 ÷ 10,7 GHz / 11,7 ÷ 12,5 GHz / 12,7 ÷ 13,3 GHz / 14,25 ÷ 14,5 GHz
Output power	+30 dBm
Noise configuration	Better then 6 dB at –40 dBm
Video channel band	From 25 Hz to 5 MHz within 0,5 db
Video channel deflection	8 MHz p.p
Differential gain	2%
Differential phase	2degree
Video emphasis	CCIR 405-1 (disconnectable)
Video interface	1 Vpp 75 Ohm with 1.6/5.6 female connector
Audio channel band	80 Hz - 12KHz +/- 0,5 db
Deflection on subcarrier	1 channel 300KHz eff 2 or more 200KHz eff.
Audio subcarrier deflection	70 KHz eff. +9 dBm 600Ohm
Audio subcarriers frequencies*	7020 & 7500 kHz → using EK-DES/1 e EK-MDS/1 8065 & 8590 kHz → using EK-DES/2 e EK-MDS/2 7500 & 8065 kHz → using EK-DES/3 e EK-MDS/3 7500 & 8590 kHz → using EK-DES/4 e EK-MDS/4
Audio emphasis	50µS (disconnectable)
FI band	from 60 to 80 MHz +/- 0,5 dB from 62 to 78 MHz within 3 nS
FI connections	+5 dBm at 75 Ohm with 1.6/5.6 female connectors

Working climatic conditions	
Normal	+5°÷ +40°Celsius
Extreme	-5° ÷ +45°Celsius

Rack mechanical specifications	
Height	44 mm (1U)
Width	482 mm (19")
Depth	312 mm

Power supply	
Transmitter side	110/220V$_{ac}$ +/- 10% 50 Hz 30 W and 24 V$_{dc}$ –30% +20% (negative not galvanic insulated)
Receiver side	110/220V$_{ac}$ +/- 10% 50 Hz 30 W and 24 V$_{dc}$ –30% +20% (negative not galvanic insulated)

*You can choose audio subcarrier frequencies among the four listed using the indicated internal Boards, for further two audio channels another sub rack 19" is necessary (EK- MA/1;EK-DA/1).
** The EK-5G/11 and EK-6G/11 Radio links series, will be supplied with N type female output connector.

FIXED CHANNEL ANALOGUE MICROWAVE RADIO LINK - SPLIT-MOUNT VERSION EK-EXG/1

Modulator: EK-EMD7/1

Demodulator: EK-EDM7/1

Radio Links designed to carry point to point FM signals; they allows the transmission of one video signal and four audio channels (two are optional). The radio link is made by two units; an indoor unit (IDU) supplied in a small rack 19"1U containing mo/demodulator part and an outdoor unit (ODU) in aerial head containing RF part. The two sections are connected by a coaxial cable and the communication between them is managed by a microprocessor system that transfers moreover possible alarms inherently the outdoor unit to the indoor unit. A small control module (optional) can be connected to the external units and allows a fine positioning of the antennas. Thanks to the reduced dimensions and waterproof configuration of the outdoor unit the system can be used in semifixed and mobile configurations.

Features

- Outdoor and Mobile version
- Reduced dimension
- Double power supply
- Remote control
- Band equalizer
- Sectioning BB-IF outside
- From 2 to 14 GHz

Applications

- Analogue Microwave Links
- Backbone Analogue Systems
- STL / TSL

TECHNICAL SPECIFICATION

Link performances (-40 dBm at receiver input)	
Frequency band	2,3 - 2,7 GHz / 5,2 - 5,4 GHz / 5,9 - 6,4 GHz / 6,4 - 7,2 GHz / 7 - 8 GHz 10 - 10,7 GHz / 11,7 - 12,4 GHz / 12,1 - 12,5 GHz / 12,7 - 13,3 GHz / 14,25 - 14,5 GHz / 21.2 - 23,6 GHz
Noise configuration	Better then 6 dB at –40 dBm
Video channel band	From 25 Hz to 5 MHz within 0,5 dB
Video channel deflection	8 MHz p.p
Differential gain	2 %
Differential phase	2 degree
Video emphasis	CCIR 405-1 (disconnectable)
Video interface	1 Vp.p. 75 Ohm with 1.6/5.6 female or BNC female
Audio channel band	80 Hz - 12KHz +/- 0,5 db
Deflection on subcarrier	1 channel 300 KHz eff 2 or more 200 KHz eff.
Audio sub-carrier deflection	70 KHz eff. +9 dBm 600 Ohm
Audio sub-carriers frequencies*	7020 & 7500 kHz → utilizzando / using EK-DES/1 e EK-MDS/1 8065 & 8590 kHz → utilizzando / using EK-DES/2 e EK-MDS/2 7500 & 8065 kHz → utilizzando / using EK-DES/3 e EK-MDS/3 7500 & 8590 kHz → utilizzando / using EK-DES/4 e EK-MDS/4
Audio emphasis	50 µS (escludibile) 50 µS (disconnectable)
FI band	From 60 to 80 MHz +/- 0,5 dB from 62 to 78 MHz within 3 nS
FI connections	+5 dBm at 75 Ohm with 1.6/5.6 female connectors
Outdoor connections	By coax cable type RG 216 (max 100 mt)
Output interface	"N" female connector (2 GHz band)
	Waveguide Flange type PDR 70 (5,6,7 GHz band)
	Waveguide Flange type PDR 84 (8 GHz band)
	Waveguide Flange type UBR 120 (10,11,12,13,14 GHz band)

Freq. band (GHz)	2.3 / 2.7	5.2/5.4	5.9/6.4	6.4/7.2	7.0/8.0	8.0/8.5	10.0/10.7	11.7/12.4	12.1/12.5	12.7/13.3	14.2/14.5
Output power (dBm) @ 1dB c.p	33	27.5	29.5	29.5	30.5	30.5	30.5	28.5	28.5	28.5	30.5

Working climatic conditions	
Normal	+5°/ +40°Celsius (IDU) -20° / +40°Celsius (ODU)
Extreme	-5° / +45°Celsius (IDU) -30° / +50 Celsius (ODU)

Power supply	
Transmitter side	110/220V$_{ac}$ +/- 10% 50 Hz 30 W and 24 V$_{dc}$ –30% +20% (negative not galvanic insulated)
Receiver side	110/220V$_{ac}$ +/- 10% 50 Hz 30 W and 24 V$_{dc}$ –30% +20% (negative not galvanic insulated)

Rack mechanical specifications		Heads mechanical specifications	
Height	44 mm (1U)	Diameter	110 mm
Width	482 mm (19")	Depth	300 mm
Depth	312 mm	weight	2 Kg

*You can choose audio subcarrier frequencies among the four listed using the indicated internal devices, for further two audio channels another sub rack 19" is necessary (EK- MA/1;EK-DA/1).

MULTI CHANNEL ANALOGUE MICROWAVE RADIO LINK - OUTDOOR VERSION EK-ESXG/X

Radio Links designed to transfer point to point FM signals; they allow the transmission of one video signal and four audio channels of which two are optional. The system is synthesized at sixteen channels and operates in double conversion in order to obtain RF channel (triple for 23 GHz). The radio link is made of two units; an indoor unit (IDU) supplied in a small rack 19"1U containing mo/demodulator part and an outdoor unit (ODU) in aerial head containing SHF part. The two sections are connected by only a coaxial cable and communication between of they is managed by a microprocessor system that transfers moreover possible alarms inherently the outdoor unit to the indoor unit. A small control module (opt.) to be connected to the external units permits a fine positioning of the antennas. Thanks to the reduced dimensions and waterproof configuration of the outdoor unit the system can be used in semifixed and mobile configurations.

Features

- Mobile version
- Reduced dimension
- Double power supply
- Remote control
- Band equalizer
- Sectioning BB-IF outside
- From 2 to 23 GHz
- Fully syntesized

Applications

- Analogue Microwave Links
- Backbone Analogue System
- STL / TSL

TECHNICAL SPECIFICATION

Prestazioni della tratta – Link performances (-40 dBm at receiver input)	
Frequency band	2,3 ÷ 2,7 GHz / 5,2 ÷ 5,4 GHz / 5,9 ÷ 6,4 GHz / 6,4 ÷ 7,2 GHz / 7 ÷ 8 GHz /10 ÷ 10,7 GHz 11,7 ÷ 12,4 GHz / 12,1 ÷ 12,5 GHz / 12,7 ÷ 13,3 GHz / 14,25 ÷ 14,5 GHz / 22 ÷ 23,6 GHz
Noise configuration	Better then 5 dB at –40 dBm
Video channel band	From 25 Hz to 5 MHz within 0,5 db
Video channel deflection	8MHz p.p
Differential gain	2%
Differential phase	2 degree
Video emphasis	CCIR 405-1 (disconnectable)
Video interface	1 Vp.p. 75 Ohm with 1.6/5.6 female connector
Audio channel band	80 Hz - 12KHz +/- 0,5 db
Deflection on subcarrier	1 channel 300KHz eff 2 or more 200KHz eff.
Audio subcarriers deflection	70 KHz eff. +9 dBm 600Ohm
Audio subcarriers frequencies*	7020 & 7500 kHz → using EK-DES/1 e EK-MDS/1 8065 & 8590 kHz → using EK-DES/2 e EK-MDS/2 7500 & 8065 kHz → using EK-DES/3 e EK-MDS/3 7500 & 8590 kHz → using EK-DES/4 e EK-MDS/4
Audio emphasis	50µS (disconnectable)
FI band	From 60 to 80 MHz +/- 0,5 dB from 62 to 78 MHz within 3 nS
FI connections	+5 dBm at 75 Ohn with 1.6/5.6 female connectors
Outdoor connections	By coax cable type RG216 (max 100 mt)
ODU output	N type female connector
Output interface	"N" female connector (2 GHz band)
	Flange type PDR70 (5,6,7 GHz band)
	Flange type PDR84 (8 GHz band)
	Flange type UBR120 (10,11,12,13,14 GHz band)
	Flange type PBR220 (23 GHz band)

Freq. band (GHz)	2.3 - 2.7	5.2 - 5.4	5.9 - 6.4	6.4 - 7.2	7.0 - 8.0	8.0 - 8.5	10.0 - 10.7	11.7 - 12.4	12.1 - 12.5	12.7 - 13.3	14.2 - 14.5	22 - 23.6
Output power (dBm) @ 1dB c.p	33	28.5	30.5	30.5	31.5	31.5	31.5	29.5	29.5	29.5	31.5	27

Working climatic conditions	
Normal	+5°÷ +40°Celsius (IDU) -20° ÷ +40°Celsius (ODU)
Extreme	-5° ÷ +45°Celsius (IDU) -30° ÷ +50 Celsius (ODU)

Power supply	
Transmitter side	110/220V$_{ac}$ +/- 10% 50 Hz 30 W and 24 V$_{dc}$ –30% +20% (negative not galvanic insulated)
Receiver side	110/220V$_{ac}$ +/- 10% 50 Hz 30 W and 24 V$_{dc}$ –30% +20% (negative not galvanic insulated)

Rack mechanical specifications		Heads mechanical specifications	
Height	44 mm (1U)	Diameter	110 mm
Width	482 mm (19")	Depth	300 mm
Depth	312 mm	Weight	2 Kg

*You can choose audio subcarrier frequencies among the four listed using the indicated internal devices, for further two audio channels another sub rack 19" is necessary (EK- MA/1;EK-DA/1).

ASI DISTRIBUTOR
EK-DAS/1

The ASI distributor (EK-DAS/1) is compact and reliable and is suitable to divide the input signal into 8 output signals with no loss and high insulation.

This device, supplied in a 19" rack frame 1 unit, is equipped with a ASI monitory socket mounted on the front panel that can be used also as a further output, and with a BNC female connectors (others by request).

Features

- Low jitter
- 1 Input 8 Output
- In/ Out impedance 75 Ohm
- Return Loss > 15 dB DC to 270 MHz
- In/ Out DVB ASI @ 270 Mbps
- Triple power supply (110/220 Vac, + 24 / +12 Vdc)

Applications

- Digital Microwave Links
- DTV, DVB-T, DVB-S

IF 70 MHZ DISTRIBUTOR EK-DIF/1

70 MHz IF distributor is compact and reliable and is suitable to divide the input signal in 7 output signals with not insertion loss and high insulation.

This device, supplied in a 19" rack frame 1 unit, is equipped with a IF monitory socket mounted on the front panel that can be used also as a further output, and with a 1.6/5.6 female connectors (other by request).

Features

- Triple power supply (110/220 Vac, + 24 Vdc, +12 Vdc)
- 1 input 8 output
- Insulation 50 dB
- Amplitude/Frequency response 60÷80 MHz 0.15dB
- Gain 0 dB
- Insertion Loss 0 dB

Applications

- Analogue Microwave Links

STANDARD TRIPOD EK-TR/1

The tripod is a fundamental accessory in the mobile radio link utilize and it has a basic order in the pointing between two parabolic reflector, if the system present vibrations, little stability and torsion ,you could put out of order the connection.

The tripod EK-TR/1 presents a big capacity to absorb the vibrations, an highly adaptation on all grounds, and a careful appearance. These qualities make it very trust, and for its structure the tripod it is very compact.

The stalks are combined by tubular in two sections, the first one in aluminum and the second one in chromium-plated steel what finish with particular ferrule in conical or gummed formable to offer an optimal capture either on soft grounds or an hard ones.

The opening of the stalks is regulated by tie-rods in aluminum that contributes at the big stability of the tripod, moreover there are handles anti-slide that permits to transport the tripod with optimal capture.

Features

- Heavy duty
- Tripod legs height adjustable
- Feet with rubber antislip
- Equipped with system level control

Applications

- Mobile Microwave Links

TECHNICAL SPECIFICATION

Technicals features	
Structure	Singol flowing tube
Minimum operativ elevation from eartth	78 cm
Maximum operativ elevation from eartth	158 cm
Tripod weight	8.0 Kg
Diameter leg	40 mm
DiaDiameter terminal	35 mm
Maximum load	30 Kg
Height when it's close	94 cm
Material leg	Aluminium
Material terminal leg	Chromium plated steel
Foot	Reversible with conical tip or foot antivibration in rubber.
Pulling	Adjustable in alluminium
Particular characteristic	Handles in rubber antislide

PROFESSIONAL TRIPOD EK-TR/2

The tripod is a fundamental accessory in the mobile Radio Link connections and it has a basic part in the pointing between two parabolic reflectors, if the system present vibrations, little stability and/or torsion you could put out of order the connection. The tripod EK-TR/2 presents a big capacity to absorb the vibrations an highly adaptation on all grounds and also careful appearance. These qualities make it very trust and for its structure the tripod it is very compact. The stalks are combined by a two sections in aluminum and the second one in chromium-plated steel what finish with particular baseplates in order to offer an optimal capture either on soft grounds or an hard ones. The opening of the stalks is regulated by tie-rods in aluminum that contributes at the big stability of the tripod.

Features

- Heavy duty
- Tripod legs height adjustable
- Feet with rubber antislip

- Equipped with system level control
- Min. height = 1100 mm
- Max height = 1800 mm
- Max load = 50 Kg

Applications

- Mobile Microwave Links

TECHNICAL SPECIFICATION

Caratteristiche tecniche – *Technicals features*	
Elevation	*±15°*
Rotation	*360°*
Maximum height	*180 cm*
Minimum height (tripod only)	*110 cm*
Panoramic head dimensions	*230x180 mm*
Tripod weight	*14 kg*
Head weight	*10.5 kg*
Max load	*50 kg*
Tripod Material	*Aluminium*
Head Material	*Steel*

Eurotek
Broadcast Solutions

2 WAY ASI SPLITTER

2 WAY 75 OHM 0.25 TO 300 MHZ

EK-DVS/4

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	1W max.
Internal Dissipation	0.125W max.

STANDARD

OPTION "B"
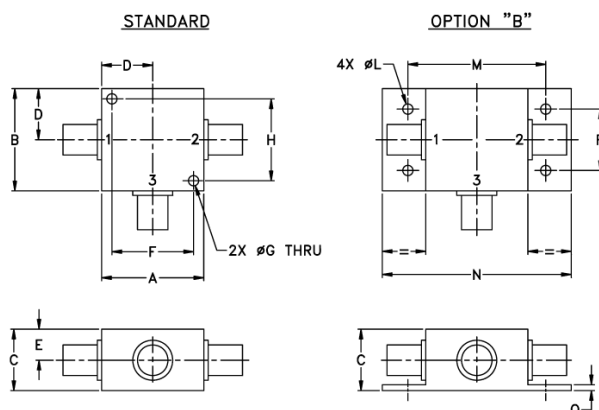
Outline dimensions (inch /mm)

A	B	C	D	E	F	G	H
1.25	1.25	.75	.63	.38	1.00	.125	1.000
31.75	31.75	19.05	16.00	9.65	25.40	3.18	25.40

J	K	L	M	N	P	Q	wt
--	--	.125	1.688	2.18	.75	.07	grams
--	--	3.18	42.88	55.37	19.05	1.78	70.0

Features

- Low insertion loss, 0.4 dB typ.
- high isolation, 30 dB typ.
- excellent amplitude unbalance, 0.1 dB typ.
- excellent phase unbalance, 0.2 deg. typ.response 60÷80 MHz 0.15dB
- very good return loss, VSWR, 1.15:1 typ.
- rugged shielded case

Applications

- ASI SPLITTER
- IF 70 MHz SPLITTER

ALL4DIGIT SYSTEM

DVB Digital Video Broadcasting

ELECTRICAL SPECIFICATION

FREQ. RANGE (MHz)	ISOLATION (dB)			INSERTION LOSS (dB) ABOVE 3.0 dB			PHASE UNBALANCE (Degrees)			AMPLITUDE UNBALANCE (dB)		
	L	M	U	L	M	U	L	M	U	L	M	U
f_L-f_U	Typ. Min.	Typ. Min.	Typ. Min.	Typ. Max.	Typ. Max.	Typ. Max.	Max.	Max.	Max.	Max.	Max.	Max.
0.25-300	20 15	30 25	25 20	0.4 0.75	0.4 0.75	0.4 1.0	2	3	5	0.15	0.2	0.3

L = low range [f_L to 10 f_L]   M = mid range [10 f_L to f_U/2]   U= upper range [f_U/2 to f_U]

TYPICAL PERFORMANCE DATA

Frequency (MHz)	Total Loss[1] (dB) S-1	Total Loss[1] (dB) S-2	Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
0.25	3.23	3.23	0.00	19.70	0.01	1.18	1.49	1.49
1.10	3.20	3.20	0.00	32.56	0.02	1.10	1.17	1.17
1.80	3.18	3.18	0.00	34.82	0.02	1.10	1.15	1.15
2.50	3.17	3.17	0.01	35.51	0.02	1.10	1.14	1.14
6.00	3.15	3.15	0.00	36.11	0.00	1.10	1.12	1.12
9.00	3.17	3.16	0.01	36.18	0.08	1.10	1.12	1.11
38.00	3.19	3.18	0.01	35.33	0.06	1.10	1.11	1.11
94.00	3.21	3.21	0.01	32.50	0.01	1.10	1.12	1.12
150.00	3.22	3.23	0.01	29.91	0.12	1.12	1.12	1.12
194.00	3.25	3.26	0.01	28.27	0.12	1.12	1.13	1.13
238.00	3.24	3.26	0.02	26.88	0.18	1.13	1.15	1.14
270.00	3.26	3.29	0.02	26.03	0.10	1.14	1.15	1.15
280.00	3.25	3.29	0.03	25.76	0.07	1.14	1.15	1.15
290.00	3.25	3.29	0.04	25.53	0.14	1.14	1.15	1.15
300.00	3.27	3.31	0.04	25.30	0.12	1.14	1.16	1.16

1. Total Loss = Insertion Loss + 3dB splitter loss.

TOTAL LOSS

ISOLATION

VSWR

Eurotek
Broadcast Solutions
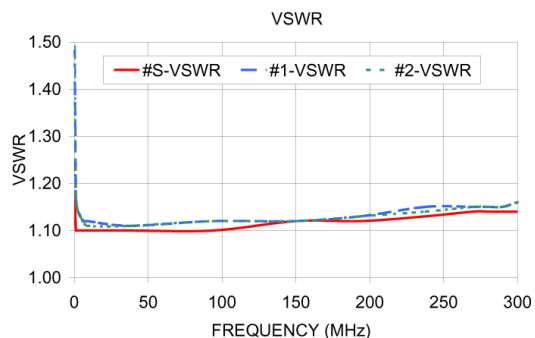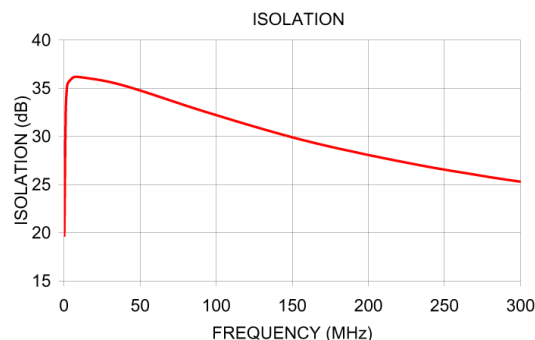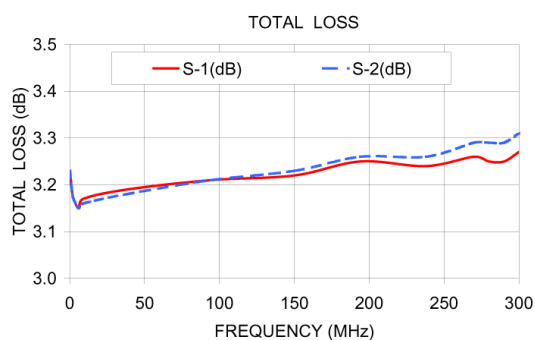
2 WAY RF SPLITTER

2 WAY 50 OHM 1700 ÷TO 9000 MHZ
EK-DVS/5

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	10W max.
Internal Dissipation	0.125W max.

Features

- very wideband, 1700 to 9000 MHz
- low insertion loss, 0.5 dB typ.
- good isolation, 22 dB typ.
- up to 10W power input as splitter
- excellent amplitude unbalance, 0.1 dB typ.
- excellent phase unbalance, 1 deg. typ.
- rugged shielded case
- SMA female connectors

Applications

- RF SPLITTER
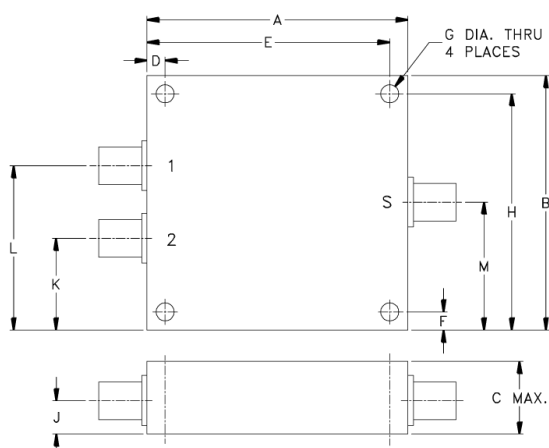
Outline dimensions (inch /mm)

A	B	C	D	E	F	G
1.80	1.75	.66	.125	1.675	.125	.125
45.72	44.45	16.76	3.18	42.55	3.18	3.18

H	J	K	L	M		wt
1.625	.31	.63	1.13	.88		grams
41.28	7.87	16.00	28.70	22.35		34

ELECTRICAL SPECIFICATION

FREQ. RANGE (MHz)	ISOLATION (dB)		INSERTION LOSS(dB) ABOVE 3.0 dB		PHASE UNBALANCE (Degrees)	AMPLITUDE UNBALANCE (dB)	VSWR (:1)			
							S		OUT	
f_L-f_U	Typ.	Min.	Typ.	Max.	Max.	Max.	Typ.	Max.	Typ.	Max.
1700-9000	22	15	0.5	1.4	4	0.6	—	—	—	—

TYPICAL PERFORMANCE DATA

Frequency (MHz)	Total Loss[1] (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
1700.00	3.42	3.41	0.01	17.93	0.12	1.47	1.11	1.11
2200.00	3.31	3.33	0.02	27.76	0.12	1.15	1.06	1.06
2700.00	3.42	3.41	0.01	24.71	0.27	1.20	1.15	1.14
3700.00	3.70	3.70	0.00	20.67	0.32	1.66	1.42	1.41
4200.00	3.69	3.68	0.01	23.57	0.43	1.60	1.40	1.40
4700.00	3.57	3.54	0.03	29.47	0.39	1.38	1.30	1.32
5200.00	3.52	3.51	0.01	46.41	0.43	1.23	1.20	1.22
5700.00	3.57	3.57	0.00	28.00	0.49	1.17	1.12	1.15
6200.00	3.63	3.62	0.01	23.68	0.52	1.21	1.13	1.15
6700.00	3.62	3.64	0.02	24.46	0.28	1.28	1.12	1.12
7200.00	3.61	3.62	0.01	23.63	0.44	1.26	1.18	1.16
7700.00	3.70	3.65	0.05	28.05	0.68	1.24	1.18	1.11
8200.00	3.79	3.76	0.03	25.09	0.72	1.27	1.27	1.19
8700.00	3.87	3.81	0.06	28.49	1.10	1.30	1.42	1.33
9000.00	3.86	3.88	0.03	28.80	0.94	1.30	1.45	1.41

1. Total Loss = Insertion Loss + 3dB splitter loss.

TOTAL LOSS

ISOLATION

VSWR
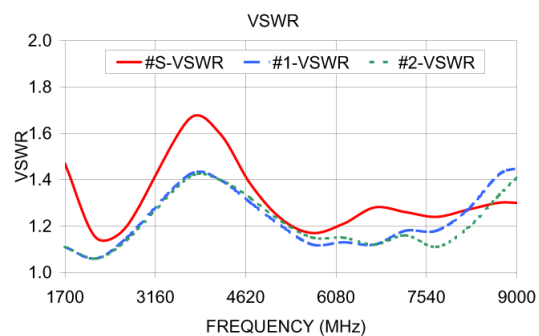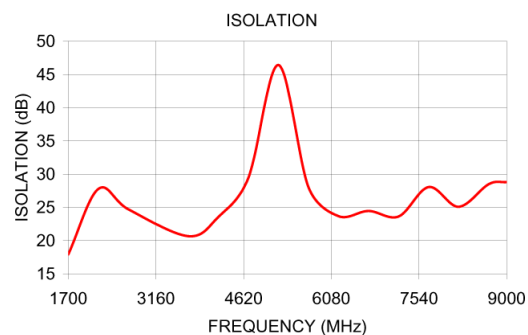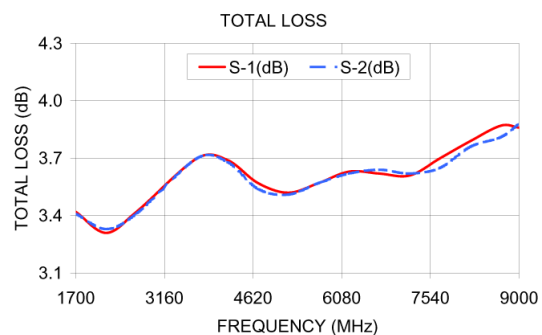
2 WAY RF SPLITTER

2 WAY 50 OHM 8000 TO 19.700 MHZ
EK-DVS/6

Maximum Ratings

Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 85°C
Power Input (as a splitter)	30W max.
Internal Dissipation	0.125W max.

Outline dimensions (mm)
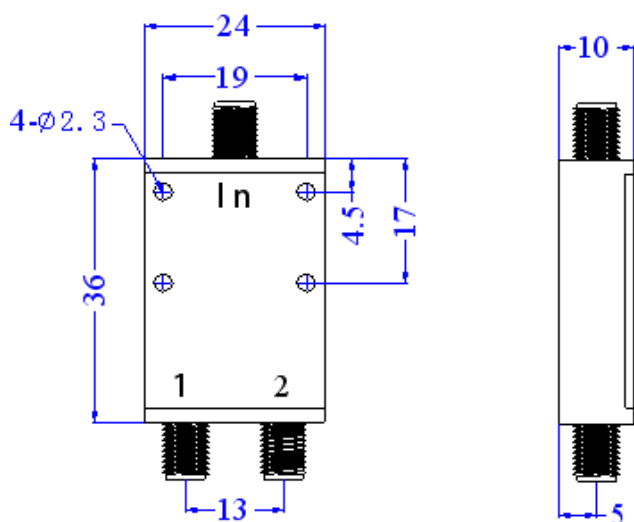
Features

- very wideband, 800 to 1970 MHz
- low insertion loss, 0.7 dB typ.
- good isolation, 18 dB typ.
- up to 30W power input as splitter
- excellent amplitude unbalance, 0.2 dB typ.
- rugged shielded case

Applications

- RF SPLITTER

ELECTRICAL SPECIFICATION

Parameter	Minimum	Typical	Maximum	Units
Frequency range	8	-	19.7	Ghz
Isolation	18	-	-	dB
Insertion Loss	-	-	0.7	dB
VSWR input			1.5	
VSWR output			1.5	
Phase Unbalance			+/-4	°
Amplitude Unbalance			+/-0.2	dB
Forward Power			30	W cw
Reverse Power			2	W cw
Operating Temperature Range	-55	-	+85	˚C
Impedance	-	50	-	Ω

Eurotek
Broadcast Solutions

GPS TIMING REFERENCE ANTENNA

EK-GPS/1

antenna

captive screw

set screw

mounting bracket
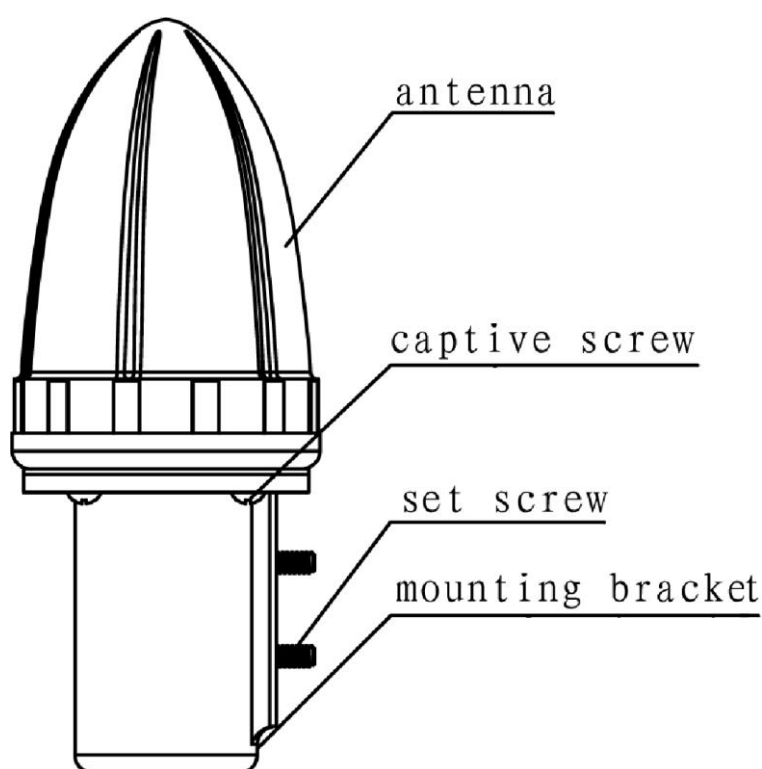
Features

- Gain 4 dbi
- 5 Volt operation
- GPS Frequency L1 (1575.42 MHz)
- UV- resistant plastic radome
- High strength direct mount

Applications

- GPS, GLONASS Synchronization
- SFN Network

ALL4DIGIT SYSTEM

DVB Digital Video Broadcasting

ELECTRICAL SPECIFICATION

|	
Frequency Range (MHz)	1575.42 ± 10
Polarization	Right Hand circular
Volatage Supply	4 - 6
DC Current (mA)	≤ 40
Connector	N (F)
Typical Gain	4 dBi (at 0°)
Input Impedance (ohm)	50
VSWR	≤ 2.5 dB
Amplifier Gain (db)	44
Amplifier Input IP3 (dBm)	≥ -10
Amplifier Noise Figure (db)	≤ 2.5 (at 26 °C) ≤ 3.5 (entire frequency range)
Amplifier Filtering	Typical 3 db bandwidth 20 MHz ≥ 55db (1575 ±50MHz)

MECHANICAL SPECIFICATION

Radome material	Radome color	Antenna dimension	Antenna Weight
ASA	WHITE	81 x 142,5 mm	0.28 Kg

ENVIRONMENTAL SPECIFICATION

Operating Temperature	Reposition Temperature	Operating Humidity	Operating Wind Speed	Rated Wind speed
-40 / +75 C°	-55 / +75 C°	95%	135 Km/h	200 Km/h

GPS TIMING REFERENCE ANTENNA

EK-GPS/1B

78

Ø60.5

70°

Ø46
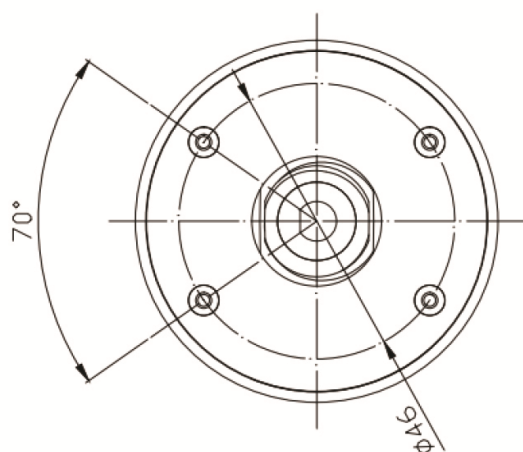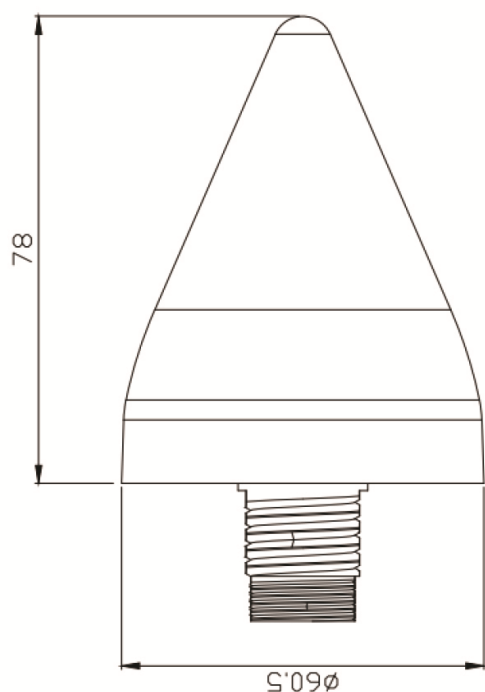
Features

- Gain 2 dbi
- 5 Volt operation
- GPS Frequency L1 (1575.42 MHz)
- UV- resistant plastic radome
- High strength direct mount

Applications

- GPS, GLONASS, Galileo, Beidou Synchronization
- SFN Network

Physical Condition	
Construction:	Polycarbonate radome detachable cable/connector for easy mount, rubber-O-ring between top radome and screw base for waterproof.
Dimension:	60.5 mm in diameter x 78mm in height.
Color	Standard in ivory with 0.8 inch threaded wing nut (standard accessory)
Mounting:	Plastic pole mounting kit
Connector	
Connector Available:	TNC Female Bulkhead
Antenna Element	
Polarization:	R.H.C.P. (Right Hand Circular Polarization)

Gain at Zenith:	1575.42 MHz	2dBic typical
	1561 MHz	-0.5dBic typical
	1598~1606 MHz	0.6 dBic typical
	Mounted on the 70mm x 70mm square ground plane	

Axial Ratio:	3 dB max. Mounted on the 70mm x 70mm square ground plane

Low Noise Amplifier	
Gain:	35dB @ 5V typically(1575MHz)
Band Width:	51 MHz min. @ S11≤-10 dB
Noise Figure:	1.6 dBTypical
Supply Voltage:	3~5.5V DC
VSWR:	2.0 max.
Current Consumption:	12 mA Typical
Out of band rejection	f0=1586Mhz，f0±50Mhz:≧34dB f0±60Mhz:≧60dB

OVERALL PERFORMANCE (Antenna Element, LNA & Cable)	
Center Frequency:	1575.42 MHz & 1561 MHz & 1598~1606 MHz
Gain:	At 90° 35± 3dB (Cable loss) note:1. Mounted on the 70mm x 70mm square ground plane
VSWR:	2.0 max.
Output Impedance:	50 ohm

Environmental conditions	
Operating Temperature:	-40°C~+85°C
Storage Temperature:	-40°C~+90°C
Relative Humidity:	95% non-condensing
Waterproof Level	IP67

2 WAY GPS SPLITTER

EK-DVS/9

Features

- Low insertion loss.
- High isolation
- Very good return loss,
- Rugged shielded case

Applications

- GPS SPLITTER
- Multiple GPS synchronization distribution

ELECTRICAL SPECIFICATION

Frequency Range (MHz)	1575 MHz ± 20MHz
Impedance	50 Ohm
Insertion Loss	- 4.5 dB
Isolation min	19 dB
Input RL min	- 12 dB
Output RL min	- 15 dB
DC Voltage	15 Vdc Max
DC Current on BIAS Output	400 mA Max
DC Current Consumption	-

MECHANICAL SPECIFICATION

Dimension	67mm x 35mm x 17mm
Weight	75 gr.
Connector Type	TNC
Outputs	2

ENVIRONMENTAL SPECIFICATION

OperatingTemperature	- 40 / + 75 C°
Operating Humidity	95%
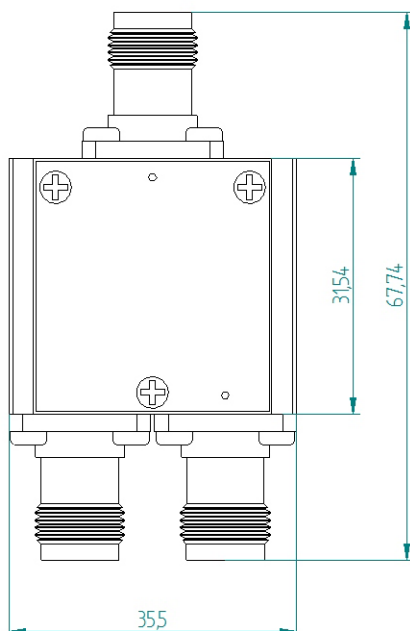
4 WAY GPS ACTIVE DISTIBUTOR

EK-DAS/4

Features

- Low insertion loss
- High isolation
- Amplified to offset splitter losses
- Very good return loss,
- Rugged shielded case

Applications

- GPS SPLITTER
- Multiple GPS synchronization distribution

ELECTRICAL SPECIFICATION

Frequency Range (MHz)	1575 MHz ± 20MHz
Impedance	50 Ohm
Gain	2.1 dB
Isolation min	25 dB
Input RL min	- 20 dB
Output RL min	- 20 dB
DC Voltage	5 Vdc Max
DC Current on BIAS Output	260 mA Max
DC Current Consumption	140 mA Max

MECHANICAL SPECIFICATION

Dimension	67mm x 70mm x 17mm
Weight	140 gr.
Connector Type	TNC
Outputs	4

ENVIRONMENTAL SPECIFICATION

OperatingTemperature	- 40 / + 75 C°
Operating Humidity	95%
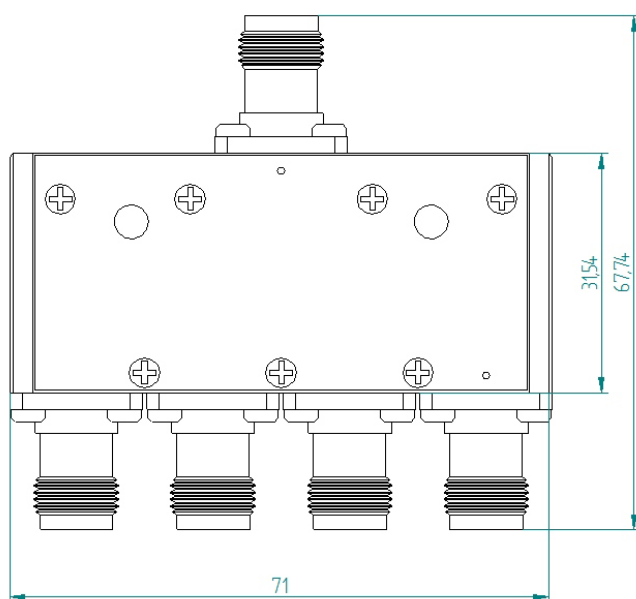
UHF SWITCH OVER

EK-SWU/4
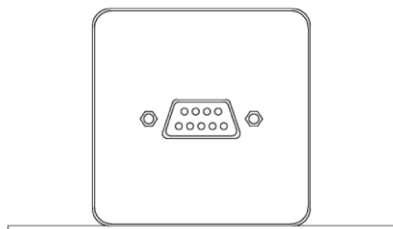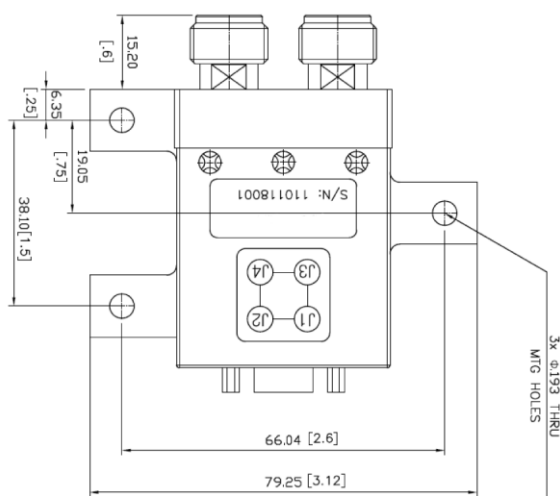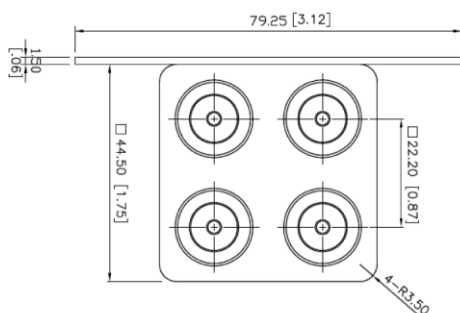
Features

- very wideband, DC to 12 GHz
- low insertion loss
- good isolation
- up to 300W power input

Applications

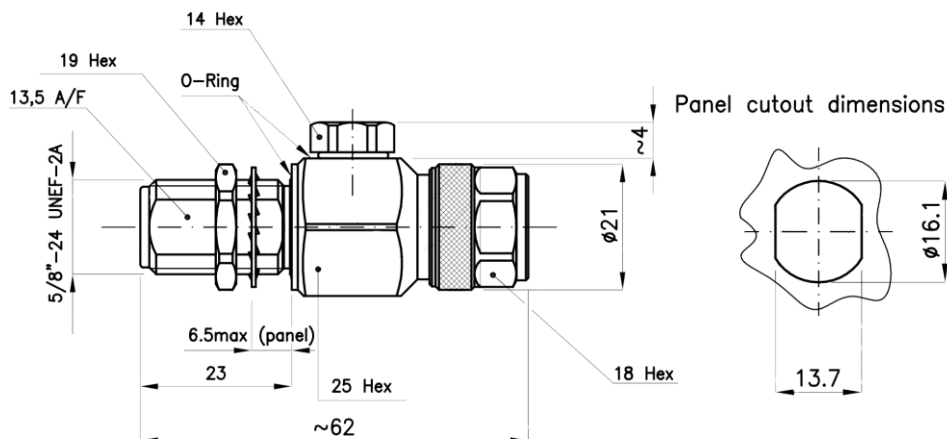- RF Fail Safe Switch for N+1 Systems

ELECTRICAL SPECIFICATION

Characteristics	Value			Units
Frequency range	DC-3	3-8	8-12	GHz
Insertion Loss	0.2	0.3	0.4	dB (Max) @ +25C°
VSWR	1.15:1	1.3	1.4	dB (Min) @ +25C°
Isolation	80	70	60	dB (Min)
Power	300	150	100	Watts (Max)
Actuation Voltage	12			VDC
Actuation Current	450 mA			@15VDC +25C°
Switching Time	20			ms
Impedance	50			Ohm
Actuation	TTL Fail Safe			
RF Connector	N-Type			Female
DC Connector	D-SUB 9 Pins			Female

MAXIMUM RATINGS

Characteristics	Rating
Operating Temperature	-20C° - +80C°
Operating Temperature	5% - 80%
Life Cycles	1.000000
RF Contacts	Break before make

SURGE ARRESTER

P/N: 005-2751

14 Hex
19 Hex
13,5 A/F
O-Ring
5/8"-24 UNEF-2A
6.5max (panel)
23
25 Hex
~62
18 Hex

Panel cutout dimensions
≈4
Ø21
Ø16.1
13.7

Features

- very small dimension
- IP 68 Protection
- DC to 2.5GHz

Applications

Odu overvoltage protection

CHARACTERISTICS

Interface dimensions........................... acc. to IEC 60169-16; CECC 122210

Material and finishings

Body.................................... Brass-ternary alloy plated
Center contact:
—Jack side... Spring bronze-gold plated
—Plug side.. Brass-gold plated
Insulator... PTFE
Other metal parts............................ Brass-ternary alloy plated
Gasket.. Silicone rubber

Electrical

Impedance... 50Ω
Frequency range................................ DC-2.5GHz
V.S.W.R.. ≤1,10 (26,4dB) DC-2,5GHz
Insertion loss..................................... ≤0,1dB DC-1GHz
Insulation resistance.......................... ≥5GΩ
Center contact resistance (initial).... ≤1mΩ
Outer contact resistance (initial)...... ≤0.25mΩ
DC sparkover voltage......................... 230V±20%
Nominal impulse discharge current... 20KA,wave 8/20μs
Rated discharge current.......................20A
Nominal AC-Sparkover-voltage...........≤700V

Mechanical

Coupling nut proof torque................ 1.7Nm
Recommended coupling nut torque.. 0.7Nm to 1.1Nm
Coupling nut retention....................... ≥450N
Mating cycles..................................... ≥500

Environmental

Operating temperature....................... −40°C to +90°C
Thermal shock.................................... as per CECC 122210 clause 4.6.7
Corrosion(salt mist)............................ as per CECC 122210 clause 4.6.10
Vibration.. as per CECC 122210 clause 4.6.3
Shock... as per CECC 122210 clause 4.6.4
Protection degree (mated pair).........IP68(0.1bar,24h at 20°C) acc. to spec. CEI EN60529

"PARABOLIC REFLECTOR FOR MOBILE RADIO LINKS

EK-T60L/7

Developed and realized to be used in the frequency band for mobile radio link systems (7.0 – 8.0 GHz) this reflector guarantees high front to back ratio.

The parabolic mirror is realized by means a new and very advanced technology capable to assure a very accurate and precise mechanical construction.

The antenna is planned to be used in mobile configuration, moreover it is possible to connect our ODU directly to it without use of wave guide connection.

Features

- **Diameter 0.6 mt (2 FT)**
- **Anodized Aluminium**
- **Quick Installation**
- **Freq. From 7.0 to 8.0 GHz**

Applications

- **Mobile Radio Links**
- **ENG Systems**

ALL4DIGIT SYSTEM

DVB Digital Video Broadcasting

TECHNICAL SPECIFICATIONS

Caratteristiche Meccaniche – *Technical specifications*	
Diameter of dish	**60 cm.(2FT)**
F/D	**0.35**
DEP	**107 mm**
Focal length:	**21 cm**
Accuracy of construction:	**+/- 0.5 mm r.m.s.**
Adjustment of polarization	**360°**
Material	**Anodized Aluminium**
Thickness	**3 mm**
Diameter of the fixing pole	**40÷114 mm**
Setting of fine bearings on the horizontal plane	**+/- 7°**
Max surface facing facing the wind	**+/- 7°**
Resistance to the wind up to	**200 km/h**
Weight of parabolic reflector	**5 Kg**
Frequency	**7.0÷8.0 Ghz**
Polarization	**H/V**
Gain	**30 db**

LENS HORN ANTENNAS

This series of Lens Horn antenna are designed to be used where bigger antenna are not allowed.

The radome is at the same time a lens that allows for gain improvement and side lobe rejection, the beam width between 20 and 10 degrees allows for a simple alignment and slight antenna movement.

Features

- Frequency: from 6.4 ÷ 19.7 GHz
- Compact size
- Rugged Construction

Applications

- Backbone Systems
- STL/TSL connection
- Mobile Systems

MODEL	FREQUENCY RANGE	NOMINAL GAIN			RETURN LOSS	EFFECTIVE APERTURE DIAMETER
		Low	Mid	High		
EK-TRB/7	6.4-7.2 GHz	15.5 dB	16 dB	16.3 dB	17 dB	100 mm
EK-TRB/1	10.0-12.0 GHz	19.3 dB	20.1 dB	20.9 dB	17 dB	100 mm
EK-TRB/13	12.0 / 13.5 GHz	20.9 dB	21.4 dB	21.9 dB	18 dB	100 mm
EK-TRB/14	13.2-15.00 GHz	21.7 dB	22.3 dB	22.8 dB	18 dB	100 mm
EK-TRB/18	17.7-19.7 GHz	24.2 dB	24.7 dB	25.2 dB	20 dB	100 mm

Mechanical Specifications	
Diameter	138 mm
Length without adapter	230 mm
Antenna Color	White RAL9001
Radome Options	PTFE
Azimuth Adjustment	360 °
Elevation Adjustment	±0°
Weight	1.5 Kg
Horn mechanical accuracy	± 0.1 mm. r.m.s.
Diameter of Mounting Pole	51~114 mm
Wind Velocity Operational with EK-ST/1	70 m/s
Operational Temperature	-45~+70 °C

Accessories	
Single polarization EK-TRB/1 to UBR 120 adapter	601-000712
Single polarization EK-TRB/13 to UBR 120 adapter	601-000712
Single polarization EK-TRB/14 to UBR 120 adapter	601-000712
Single polarization EK-TRB/18 to UBR 220 adapter	601-001604
Support and protection cover with pole fastening	EK-ST/1

MOD.EK-TPN/120

PANORAMIC HEAD

The EK-TPN/120 is an high performance and versatile panoramic head designed for airborne/UAV and terrestrial mobile tracking in high reliability applications. The head allows to obtain a continuous rotation on both axis, vertical and horizontal. Every axis has gears and gaskets to allow a smooth movement and high protection to water entrance, humidity and temperature sensors permit the monitoring of the head for a early alarm process. In case of failure it is possible to control manually the head with knobs to be installed in the head body. The EK-TPN/120 can be controlled and monitored using Modbus protocol on RS485 electrically insulated interface, power supply lines has 90V gas discharge for surge protection.

All the electrical part are fitted in a panel that is easily and completely removable allowing for an easy replacement, a led on this panel allows for an easy verification of the communication with the controller.

Key Features

- Rudgged construction
- Whaterproof
- Fully rotation on both axis
- No mechanical switches
- Manual knobs for emergency operations
- ModBus protocol
- RS-485 interface
- Very easy maintenance for electronic parts
- Many options for receivers, transmitters and antennas
- Optional FastLock for Tripods

Applications

- Airborne/UAV tracking
- Terrestrial Mobile tracking

TECHNICAL SPECIFICATION	
Operating voltage range	36 – 52 VDC
Speed Rotation	1-10 rpm
Rotation Range	Continuous rotation (Slip Ring)
Static Capacity	1000 N/m in every direction
Dynamic Capacity	50 N/m
Power Consumption	Standby: 0.7A@36VDC Rotation: 2A@36VDC
Control Protocol	ModBus RS485
Connector Interface	Hirschmann CA7 Male
Connector RF	SMA Female on H & V plate 0-18 GHz
Dimensions	Height: 296mm Width: 204 mm Depth: 140 mm
Weight	16 Kg
Climatic conditions	
Temperature	- 35°C ÷ + 55°C
Humidity	Max. 100 %
Altitude	5000m

EMERGENCY
KNOB
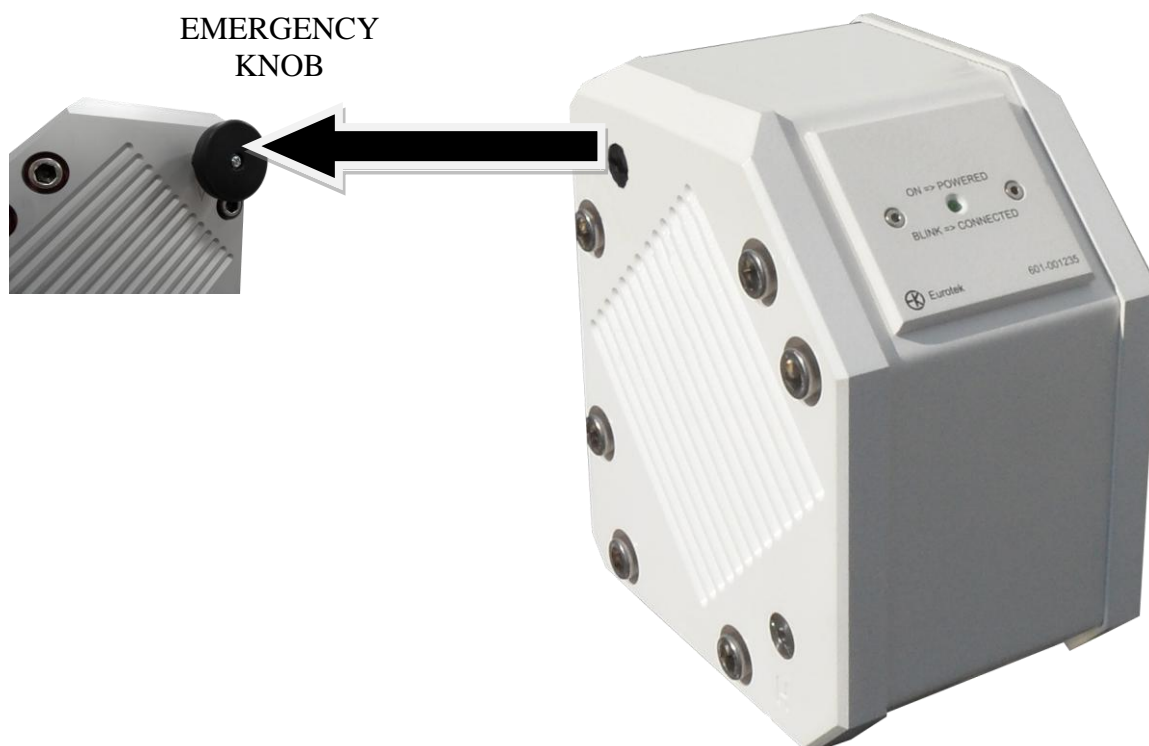
"6U BAND OMNI-DIRECTIONAL ANTENNA"

EK-OA7/H

The EK-OA7/H Omni-directional antenna, thanks to its compact size and low weight, can be used for helicopters applications in Electronic News Gathering Systems.

The radiation lobe has been shaped so as to keep the received level constant on +/- 20° Helicopter tilt, furthermore it has been designed to not have excessive downward gain when the aircraft is close to the vertical reception point.

Features

- Omni-directional
- Anodized Aluminium
- Quick Installation
- Freq. Range 6.4 ÷ 7.1 GHz
- UV- resistant Teflon
- High strength direct mount
- Compact size for reduced air resistance
- Designed for mounting on all airborne systems

Applications

- Mobile Radio Links
- ENG Systems
- Video Surveillance
- Live Events
- Security Applications

Technical specifications	
Gain	3.5dB ISO @ 7100 MHz
Polarization	Vertical
Frequency Range	6400 MHz ÷ 7100 MHz
H Flatness	+/- 1 dB over 360°
H Flatness	+/- 2 dB over +/- 20° @ 6400 MHz
V Flatness	+/- 2 dB over +/- 20° @ 6800 MHz
V Flatness	+/- 1.5 dB over +/- 20° @ 7100 MHz
Impedance	50 ohm
Temperature	-50°to +70° C
Return Loss	better then 8.5 dB from 6.4 to 7.1 GHz
Material	Teflon, EN AW-6082
Output Connector	N Female
IP Rating	IP 67
Mass	1050 gr
Power Rating	40W rms, 400W Peak

Radiation Pattern @ 6800 MHz
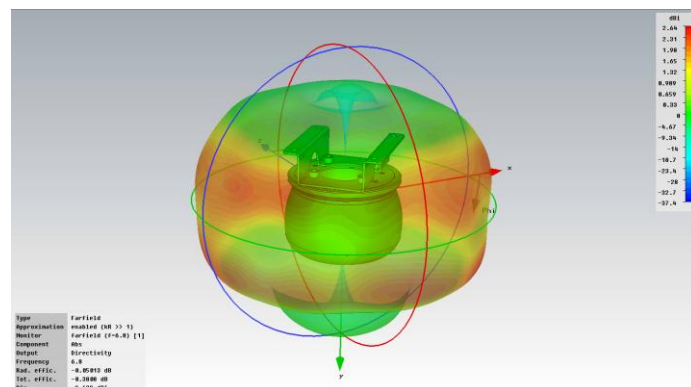
Radiation Pattern @ 7100 MHz
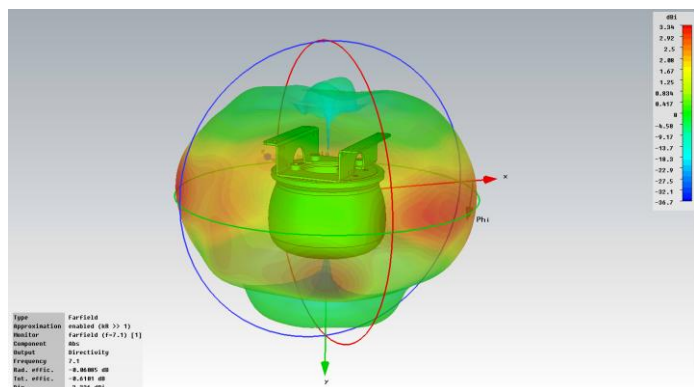
"6U BAND OMNI-DIRECTIONAL ANTENNA"

EK-OA7/A

The EK-OA7/A Omni-directional antenna, thanks to its compact size and low weight, can be used for many application in point to point Radio Links.

The antenna has Circular polarization which makes it very flexible in the use of ENG systems.

Features

- Omni-directional
- Anodized Aluminium
- Quick Installation
- Freq. Range 6.4 ÷7.1 GHz
- UV- resistant Teflon
- High strength direct mount
- Compact size for reduced air resistance
- Designed for mounting on all airborne systems

Applications

- Mobile Radio Links
- ENG Systems
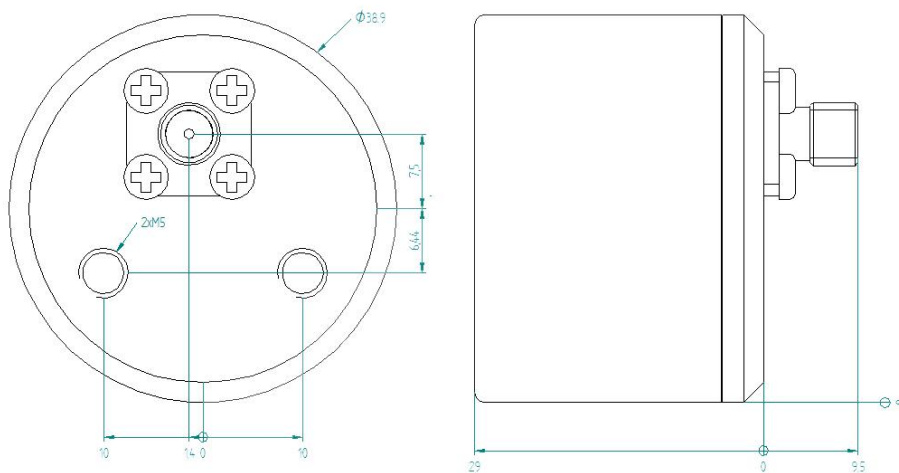- Video Surveillance
- Live Events
- Security Applications

Technical specifications	
Gain	7.2dB ISO @ 6800 MHz
Polarization	Circular
Frequency Range	6400 MHz ÷ 7100 MHz
Beamwidth 3 dB	92° @ 6800 MHz
Impedance	50 ohm
Temperature	-50°to +70° C
Return Loss	better then 8.5 dB from 6.4 to 7.1 GHz
Material	Teflon, EN AW-6082
Output Connector	SMA Female
IP Rating	IP 67
Mass	50 gr
Power Rating	5W rms, 50W Peak

Technical Specification

Radiation Pattern