DAB-4c

EDI/ETI Converter and Switch

Highlights

- Multi-format EDI/ETI and ETI/EDI converter for up to 4 channels
- High-density DAB distribution inserter
- EDI/ETI redundancy switch

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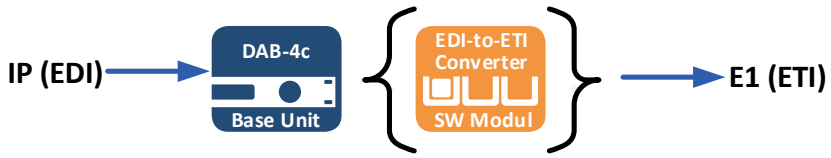
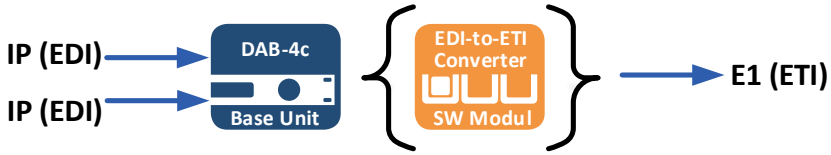
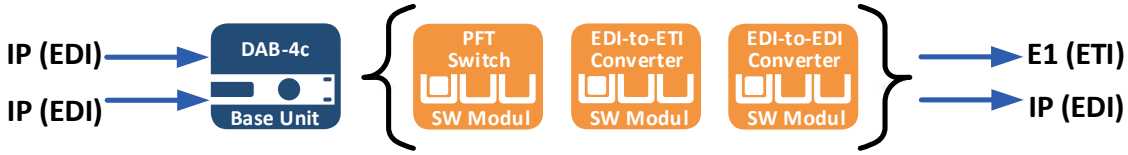
DAB-4c: Configurations possible of the basic unit



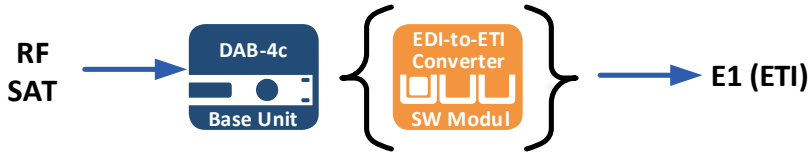
EDI-to-ETI converter, Base Functionality



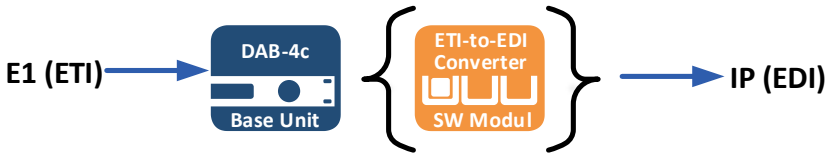
EDI-to-ETI converter with EDI PFT Seamless Switching



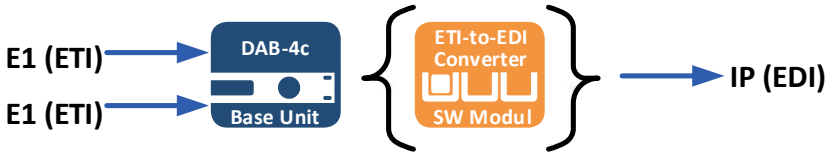
EDI-to-ETI converter with EDI PFT Seamless Switching and EDI-to-EDI



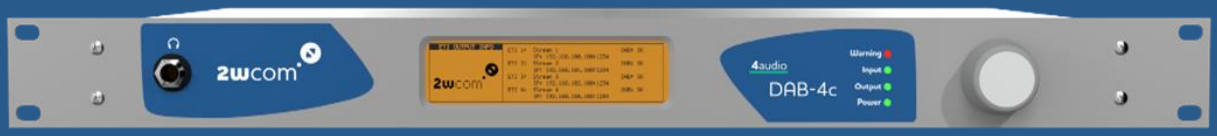
SAT receiver + EDI-to-ETI converter



ETI-to-EDI converter, Base Functionality



ETI-to-EDI converter with ETI Redundancy



DAB-4c – EDI/ETI Converter and Switch

General

The DAB-4c is a professional DAB distribution extractor and inserter, EDI/ETI conversion and ETI/EDI conversion and EDI level conversion for up to 4 DAB multiplexes. The DAB-4c can be configured as a 4 x EDI/ETI converter or a 4 x ETI/EDI converter or a 4 x EDI Level converter. Additionally it monitors all EDI / ETI streams. A pair of input sources ETI/EDI can work together in a redundant master / slave configuration.

EDI/ETI and ETI/EDI converter

- 2 Data interfaces for EDI in / out
- 8 BNC E1 G703 / G704 Interfaces for ETI in / out
- 1 BNC 10 MHz for reference clock
- ASI in / out for ETI (MPEG2-TS)
- SAT-input for EDI / ETI (MPEG2-TS or GSE)*
- DAB tuner input*

EDI level converter

- FEC level conversion for outgoing IP EDI streams

ETI/EDI redundancy switch

- ETI link and EDI Stream redundancy
- Seamless switching and alarming for 2 redundant inputs (master / slave)
- Redundancy on device level

Control

- Remote control with various possibilities: HTTP/S, FTP, SSH, NMS, SNMP
- Revised configuration via web user interface for easier setup
- Relays, inputs

* This function is optional. Please find the complete list of options at the end of the document.

Technical details (1/4)

In- and outputs

RF / SAT (optional)

Input	F-jack female
Data	MPEG TS (EDI MPE) MPEG TS (ETI SC/PC, MC/PC) GSE (EDI)
Frequency	950 – 2.150 MHz
Input level	-75 – -20 dBm
LNB control	13 V vertical, 18 V horizontal 0 kHz low band, 22kHz high band
RF-DAB (optional)	1 unbalanced, BNC (optional)
Impedance	50 Ω
Frequency range	168 – 240 MHz (DAB Band III)
RF sensitivity	10 dBµV
Max. RF input	100 dBµV

ASI

Data	MPEG TS (ETI)
Connector	BNC 270 Mbps
EDI to ETI	4x EDI/ETI converter
ETI to EDI	4x ETI/EDI converter
EDI to EDI	4x EDI level converter

Technical details (2/4)

SAT

	Basic Single Tuner (optional)	Dual Tuner (optional)
Connector RF1	F connector female (input)	F connector female (input)
Connector RF2	F connector female (loop-through)	F connector female (2nd input)
Frequency range	950 … 2.150 MHz, step 1 kHz All LNB oscillator frequencies possible	950 ... 2.150 MHz, step 1 kHz All LNB oscillator frequencies possible
Input level, impedance	-75 – -20 dBm, 75 Ω	-75 – -20 dBm, 75 Ω
LNB Control	13 V vertical, 18 V horizontal, off 0 kHz low band, 22kHz high band	13 V vertical, 18 V horizontal, off 0 kHz low band, 22kHz high band
Noise figure	Typical 6dB, max. 12 dB	Typical 6dB, max. 12 dB
DVB-S demodulation/ Decoding	QPSK CCM VITERBI and Reed-Solomon decoder 1/2, 2/3, 3/4, 5/6, 6/7, 7/8	QPSK CCM VITERBI and Reed-Solomon decoder 1/2, 2/3, 3/4, 5/6, 6/7, 7/8
DVB-S2 demodulation/ Decoding	QPSK and 8PSK CCM LDPC and BCH decoder	QPSK, 8PSK, 16APSK and 32APSK CCM, VCM and ACM LDPC and BCH decoder 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
Symbol rates	0.128 … 45 MSym/s	1 – 45 MSym/s
Data processing	MPEG TS (EDI MPE); MPEG TS (ETI SC/PC, MC/PC); GSE (EDI)*	MPEG TS (EDI MPE) MPEG TS (ETI SC/PC, MC/PC)
PL scrambling	ID 0 – 262144	ID 0 – 262144
IF Filter bandwidth	Automatic selection	Automatic selection
MPEG decoding	according to ETSI TR 101 154	according to ETSI TR 101 154

Technical details (3/4)

Interfaces

ETI

ETI in	4x BNC E1/ETI in
ETI out	4x BNC E1/ETI out

Ethernet

Data	EDI, serial data and GPIO transmission, controlling and setup functions
Connector	3x RJ45 (2x data, 1x ctrl)
Type	Auto switching 10/100/1000 BASE-T
Protocol	EDI, UDP, IGMP, ICMP, DHCP, HTTPS, FTPS, SNMP, NTP, PTPv2

Serial

Interface	8x RS-232C (rear) Sub D-15
Data	Private data, MPEG ancillary data, UECP/RDS (acc. to TR 101 154)e
Transmission rate	1200 to 115200 baud, asynchronous
USB	1x USB 2.0 interface

Time synchronization (optional)

PTPv2	Network synchronization according to IEEE 1588-2008
10MHz	BNC connector

Internal storage (optional)

Size	7 GB (optional 1000 GB)
Type	eMMC (optional SSD)

Contact closure

Inputs	8x 26 pole sub-D male
Outputs	7+1 floating relays 7 relays SPST (Form A) 1 relay SPDT (Form C) (for DC: max. 30 V, 1 A, 10W) 26 pole sub-D male

Technical details (4/4)

Front panel

Display: LCD	Graphical, 264x64 pixel
Jog wheel	Impulse, enter button
4 Duo LEDs	Power, input, output, warning

Advanced processing functions (optional)

Modulation/symbol rate	32 APSK (0.064 .. 38 MSym/s)
Modulation type	VCM, ACM
Transport stream processing	Single and multiple transport stream / single and multiple generic stream (GSE)
Modulation/symbol rate	32 APSK (0.064 .. 38 MSym/s)

All tuners

IF filter bandwidth	Automatic selection

General data

Power consumption	< 20 W
Case dimensions	19'', 1 RU, depth: 310 mm, width: 424 mm, front panel: 484 mm
Weight	< 5 kg
Material	Steel plate (aluminum-zinc coated)
Operating temp. range	0 – +45°C
Storage temp. range	-40 – +70°C
Languages	English

Power supply

Standard AC	1 internal IEC power connector voltage range 90 – 260 VAC (nominal 100 – 240 VAC) frequency range 47 – 63 Hz (nominal 50 – 60 Hz)
Standard DC (optional)	1 internal (Neutrik powerCON) voltage range -40 – -60 VDC (nominal -48 VDC)
Dual internal (optional)	Two internal redundant power supplies (AC or DC) automatic switchover and prioritization AC: 90 – 260 VAC (nominal 100 – 240 VAC), 47 – 63 Hz (nominal 50 – 60 Hz) DC: -40 – -60 VDC (nominal -48 VDC)
Dual hot-plug (optional)	Two hot-swappable redundant power supplies (AC or DC) automatic switchover and prioritization AC: 90 – 260 VAC (nominal 100 – 240 VAC), 47 – 63 Hz (nominal 50 – 60 Hz) DC: -40 – -60 VDC (nominal -48 VDC)

Options (1/2)

DAB-4c base unit variations

One converter of your choice (VER64023/VER64024) is included in the base unit. Please inform us when ordering. You can choose between the following base unit variations:

Article no.	Name
VER64001	Base unit DAB-4c with 1x internal AC power supply
VER64002	Base unit DAB-4c with 2x internal AC power supplies
VER64003	Base unit DAB-4c with slot for 2x hot-plug power supply ▶ 2x hot-plug power supplies AC / DC not included. ▶ Please order 2 hot-plug power supplies AC (VER45851) or DC (VER45852).
VER64004	Base unit DAB-4c with 1x AC / 1x DC (DC leading) internal power supplies

DAB-4c hardware options

Please note that hardware options are installed at the factory in Flensburg, Germany, and can only be retrofitted independently in individual cases.

Article no.	Name	Description
VER64030	Dual satellite tuner(*)	DVB-S/S2 Dual-tuner module ▶ QPSK, 8PSK, 16APSK, 32APSK ▶ Supported symbol rates: 1 MSym/s - 45 MSym/s
VER64037	Basic single satellite tuner	DVB-S/S2 single tuner module with additional loop-through output ▶ QPSK, 8PSK, 16APSK, 32APSK ▶ Supported symbol rates: 128 kSym/s - 45 MSym/s
VER64031	DAB dual tuner (*)	DAB multi-band tuner for monitoring & control ▶ Up to 2 DAB-tuners may be activated ▶ Dual tuner with 75Ω F-Type connector input ▶ Alarm messages via SNMP or relay
VER64032	ASI output	ASI output for DAB multiplex (MPEG2-TS).
VER64035	Dual ASI out (mirrored output)(*)	The ASI signal gets mirrored to two outputs. (*) Excludes option sat tuner (VER64037).
VER45851	Hot-plug AC power supply	Power supply with automatic switch over in case of failure. ▶ 90 – 260 VAC (nominal 100 – 240 VAC), 47 – 63 Hz (nominal 50 – 60 Hz)
VER45852	Hot-plug DC power supply	Power supply with automatic switch over in case of failure. 40 – -60 VDC (nominal -48 VDC)

Options (2/2)

DAB-4c software options

Please note that software options can be retrofitted remotely.

Article no.	Name	Description
VER64023	EDI to ETI/EDI conversion	Converts an EDI input (ETSI TS 102 693) to an ETI output (ETI-NI, ETI-NA 5592, ETI-NA 5376) or an EDI output (ETSI TS 102 693). Up to 4 converters may be activated (1st converter VER64023 or VER64024 included in base unit).
VER64024	ETI to EDI conversion	Converts an ETI input (ETI-NI, ETI-NA 5592, ETI-NA 5376) to an EDI output (ETSI TS 102 693). Up to 4 converters may be activated (1st converter VER64023 or VER64024 included in base unit).
VER64020	EDI PFT seamless switching	▶ Decoding and seamless switching between two EDI PFT input streams. ▶ Alarming in case of EDI PFT sync loss. Price per unit.
VER64021	ETI hardware mirroring	▶ Define the 4 ETI inputs as additional outputs. ▶ Define loops to copy the input signals to defined outputs of the device. Price per unit.
VER64022	Additional backup (*)	Define a backup source for automatic backup switching in case of main source failures. (*) On request
VER64025	ETI switch (*)	Automatic and seamless switching between two ETI input streams to one ETI output stream. In combination with option ETI to EDI a parallel conversion to EDI is possible. (*) On request
VER64026	PTP synchronization	Synchronization Protocol for Networked Measurement and Control Systems. According to IEEE 1588-2008 - IEEE Standard for a Precision Clock. Price per activated converter.
VER64033	MPEG-TS encoder	Converts the ETI/EDI input signals to MPEG2-TS. Price per activated converter.
VER64034	TS MPE IP forwarding	IP forwarding Transport Stream with MPE Price per activated converter.
VER640xx	Advanced GSE processing.	▶ GSE decapsulation, ▶ GSE IP forwarding Price per activated converter.
VER64036	ARG/Scientific Atlanta encapsulation	Support of alternative TS encapsulation scheme for EDI/ETI converter output. Price per unit.