RSW100
Redundancy Switch

Redundancy Switch for DAB/DAB⁺/DMB Multiplexers and Transmission Networks

RSW100 is a 1:1 Redundancy Switch for use in DAB transmission networks to provide redundancy protection.

The RSW100 can be operated in automatic mode or manual mode. In automatic mode, the output from the RSW100 is determined by the status of System 1 and System 2 equipment chains. If a fault is detected, the RSW100 will automatically select the proper input signal. In manual mode the user can designate the selected input source either from the interactive front panel, via a remote web interface or via SNMP.

The switching does not cause any interruptions in the transmission, i.e. the COFDM will not lose synchronisation to the incoming ETI stream. This is achieved by preserving the frame phase of the ETI stream and by updating the timestamp values before transmitting. The RSW100 will also preserve the frame counter if the input signals are aligned within certain limits.

Typical Applications

1. After two redundant DAB multiplexers (EMX100 or SMX100).
2. Before a COFDM if dual transmission paths are used to feed the transmitter network from the multiplexer site.
3. After two redundant DAB multiplexers (EMX100 or SMX100) and dual transmission paths are used to feed the transmitter network from the multiplexer site. The two RSW100 work in a redundant pair, i.e. if one of the RSW100 performs a changeover the other one will follow.

Redundant DAB multiplexers.

Dual transmission on paths from multiplexer site.
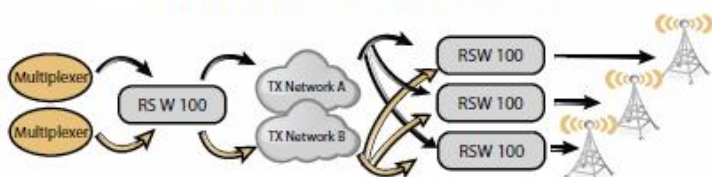
System set-up with two redundant RSW 100.

RSW100 Key Features

Supports ETI (ETS 300 799), STI (ETS 300 797) and FEP (Factum ETI over IP) formats.

Performs frame aligned switching between input streams

Timestamp of outgoing ETI frames

Automatic or manual Input channel selection

Two RSW100 can be setup in a redundant pair

Web interface is provided for monitoring and control

G.703(NI)/G.704(NA) interface (both input and output)

Support for G.704 variants (NA, G.704 $_{5592}$) and (NA, G.704 $_{5376}$) (transmitting and receiving variant are independent)

G.704 CRC-4 and FAS error counters

Can be used to convert FEP (Factum ETI over IP) to ETI and ETI to FEP

CRC calculation according to DAB standards

Input bypass on power-loss

SNMP v2 monitoring and control

External or internal clock synchronisation

CRC Detector:

For incoming data the system checks the CRC provided and reports errors.

Polynomials, etc., comply with the ETI (or STI) specification.

Reed-Solomon Encoder/Decoder:

The system performs Reed-Solomon byte de-interleaving and decoding for received NA frames (G.704).

Detected errors are corrected for transmitted NA frames, if possible, and the system performs interleaving and Reed-Solomon encoding.

Polynomials, block length, etc., comply with the ETI (or STI) specification.

Oscillator Features and Bit-rates:

The Internal clock can run freely or be locked to an external clock reference source.

The external 1PPS clock may set the output clock phase.

Accuracy Better than ±15 ppm when using internal reference (free running). Equal to external source accuracy when using an external reference (10MHz or G.703/G.704).

Automatic Input Selection

Input signal present (carrier loss)

Synchronisation to DAB frames

CRC fields in ETI frame

Syntax in received ETI (or STI) frames, e.g. frame counter must increase with 1 each frame

Alarms and Security

Relay contact

SNMP v2

One or both input streams contains errors

CRC error detected, Reed-Solomon error detected, G.703 carrier loss, loss of 1PPS signal, PLL lock error, over-temperature, etc.

Power watchdog and timer watchdog on PCB automatically generates reset of the system if an error condition is detected

Specifications

Inputs

Data:	STI-D over FEP *
	ETI
Number of Inputs:	2

Outputs

Data:	STI over FEP *
	ETI
Number of Outputs:	2

STI/ETI Interfaces

Format:	HDB3 encoded G.703/G.704
Input Impedance:	75 Ohms, unbalanced
Output Impedance:	75 Ohms, unbalanced
Bit-rate:	2048 kbits/s
Connectors:	BNC female
Jitter Tolerance and Generation:	Meets G,832
Jitter Attenuation:	Meets ETS 300 011, TBR12 and ITU G.7xx
Insulation:	1.5kV (rms) Over-current protected
ESD and Transient Protection:	1.5kV (rms)

Remote Control and STI/ETI over IP

Interface:	Ethernet (http or SNMP v2) 10/100-BaseTx, auto-negotiation or 10/100 Mbit/s with half/full duplex.
Connector:	RJ-45

* Factum Encapsulation Protocol

10MHz Clock Input

Signal Type:	TTL or sinewave
Input Level:	>0.5V_{pp} (±14V max)
Input Impedance:	50 Ohms
Maximum common mode voltage:	±7V
ESD Protection:	6.5kV
Connector:	BNC female

1PPS Input

Signal Type:	TTL
Input Level:	>1.2V_{pp} (±7V max)
Input Impedance:	50 Ohms
Maximum common mode voltage:	±7V
ESD Protection:	6.5kV
Connector:	BNC female

Chassis

Type:	19" rack-mounting
Local Controls:	Front panel display
Dimensions:	44mm (h) x 483mm (w) x 269mm (d)
Weight:	3kg

Redundant Power Input

Connector Type:	IEC
Input Voltage:	85V – 264V AC
Input Frequency:	47Hz – 63Hz
Power Consumption:	10W typical

Environmental

Operating Temperature:	+5° to +50°
Storage Temperature:	-5° to +85°
Operating Humidity:	0% to 95% non-condensing
Storage Humidity:	0% to 90% non-condensing