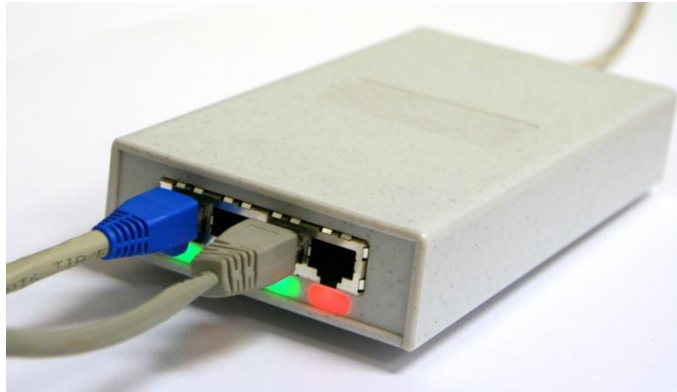


E1UC - Portable E1 USB Data Capture

Real-time capture, routing and grooming of E1/PRI
(G.703/G.704) 2,048 Kbits/s bitstreams.



E1UC provides real-time interfacing to E1, PRI and G.703 signal systems on a PC via USB.

Up to 4 bi-directional bitstreams can be transferred to and from disk, routed to any other E1 stream, duplicated or groomed to a single stream.

All input streams can be simultaneously recorded in all splitter/router modes.

Software solutions are available for real-time signal surveillance, E1 and DAB ensemble monitoring, recording, archiving, analysis and processing applications.

E1UC supports the capture and creation of quad-stream unframed and/or framed 2,048 kbits/s applications (ITU G.703/G.704) of 120ohm/75 ohm balanced data interfaces via RJ-45 connectors.

E1UC provides input and output data transfer of complete G.703/G.704 frames, including signalling, framing and alarm information. There is no need to specify data format or protocol since all types of messaging or other signals carried within the 2,048 kbits/s stream are supported.

Real-time data can be recorded on standard PC fixed or removable hard disks. Once captured, bitstreams are available for processing or storing-to-disk as frame-aligned or unframed binary data.

Power can be taken directly from a standard USB2.0 connector or provided externally for stand-alone operation.

SomerData supports OEM, developer and system integrator applications, including the provision of programming information with code examples. For application software development, comprehensive Programmer's Reference Guides and code examples are available with a .NET API.

E1/PRI Recorder, Replayer, Routing and Grooming application software is available for use with **E1UC**, running under Windows™ 7 to Windows™ 10, 32 and 64-bit.

Typical Applications: Portable analysis, cross-point switching, timeslot grooming, lawful intercept recording, digital audio multiplexing, drop and insert, store/forward, DAB Ensemble monitoring and diagnostic.

Specifications

4 port Signal Interface

G.703, 2,048 kbits/s * 4

Signal Characteristics

Pulse shape: :As ITU-T G.703 pulse mask

Line code: HDB3

Data type: G.704 framed or unframed

Input sensitivity:-13.6dB

Nominal amplitude: ±3.00 V, 120 Ω interface

Loss of Input Signal Threshold::300 mV

Data Decision Threshold:43% to 57% peak

Input Pulse Width: 230 ns to 260 ns

Output Pulse Width: 244 ±20 ns (at mid level)

Input / Output Impedance

120 Ω/75 Ω balanced

selectable high-impedance input (40 kΩ)

Input / Output Jitter Attenuation

45 dB at 40 kHz (typical)

20 dB / decade attenuation above the 10 kHz corner frequency

Jitter attenuation is applied to the input signal for input data transfers and to the output signal when the input signal is used as an external clock reference for output data transfers.

Input jitter tolerance

1200 UI at 10 kHz

14 UI at 750 Hz

0.4 UI at 10 kHz – 100 kHz

Output Pulse-to-Pulse Jitter

<100ns using internal clock

<32ns using clock recovered from an external E1/HDB3 signal

Signal Input / Output Connectors

Crosspoint/Capture:

Four RJ-45 connectors (Input/Output)

Grooming:

One RJ-45 connectors (Output only)

USB Interface Compatibility

USB 2.0.(Full speed)

USB connector type: Mini

Physical

Length: 170 mm

Width: 90 mm

Height: 30 mm

Power

5VDC at 380mA (external) or

USB 5VDC, consumption 1.9W

Application Software

Crosspoint/Router Selection

Routes any input to 1 or more outputs, selectable by stream.

Routing functions are stored in non-volatile memory and are restored on power resumption.

Grooming

Routes timeslots from any input to a single E1 output.

Recording/Replaying

Record any E1 Stream pair to disk or stream to other applications.

Data transfers across the USB take place by reading or writing blocked data in the form of discrete frames. Each block is identified and timestamped for future retrieval and to ensure coherence between Tx and Rx pairs.

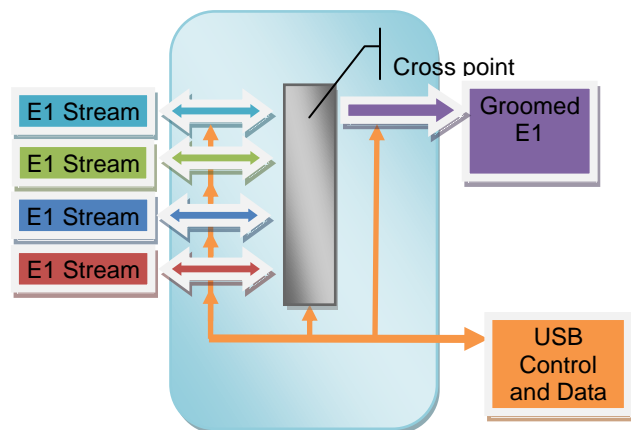
DAB Ensemble monitoring and decoding,

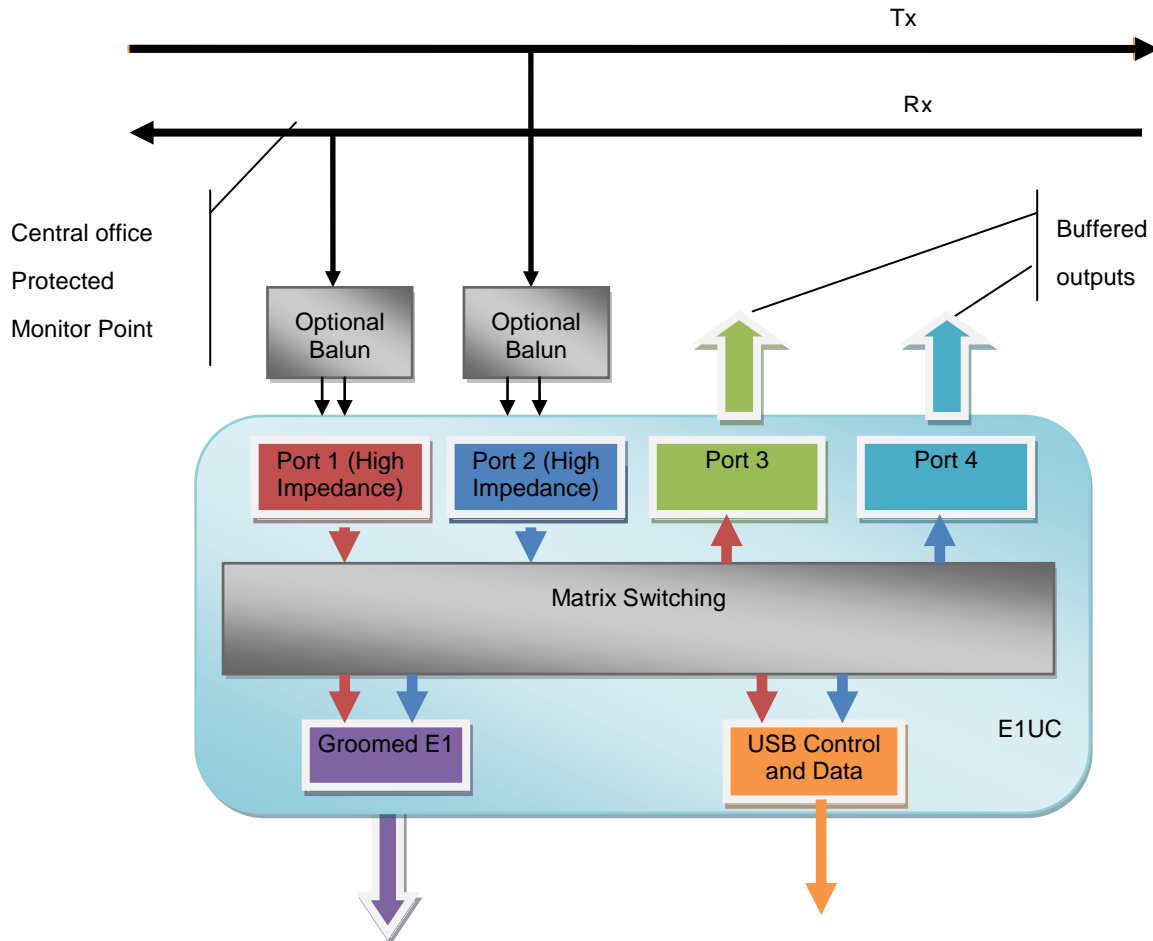
G.704 NA and G.703 NI

DAB Network layer statistics: NA/NI type, Corrected and Uncorrected errors, Timestamp, Frame count and length, Number of substreams, Ensemble ID and label,DAB Mode.

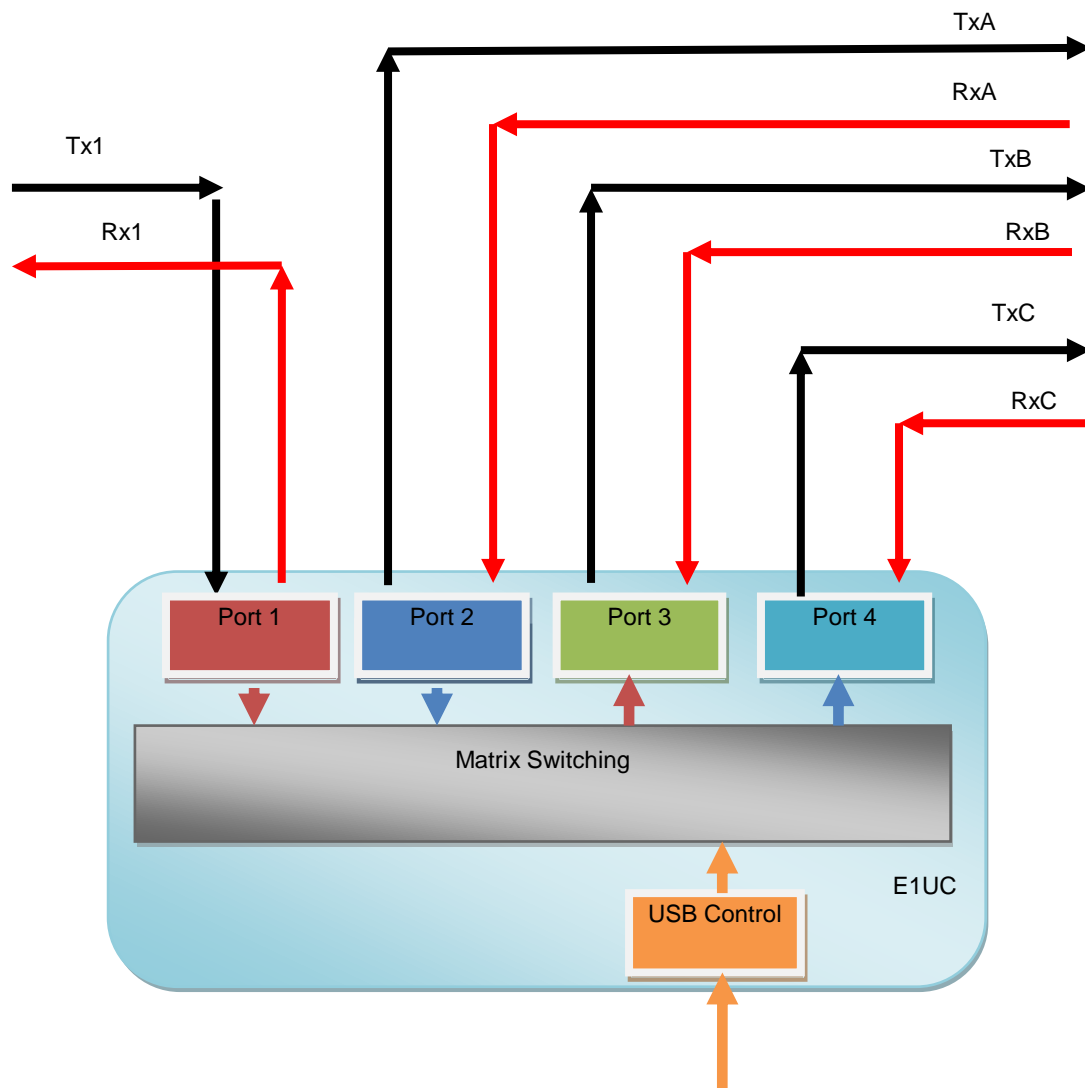


Functional Block Diagram



Applications Information**Monitoring and Capture**

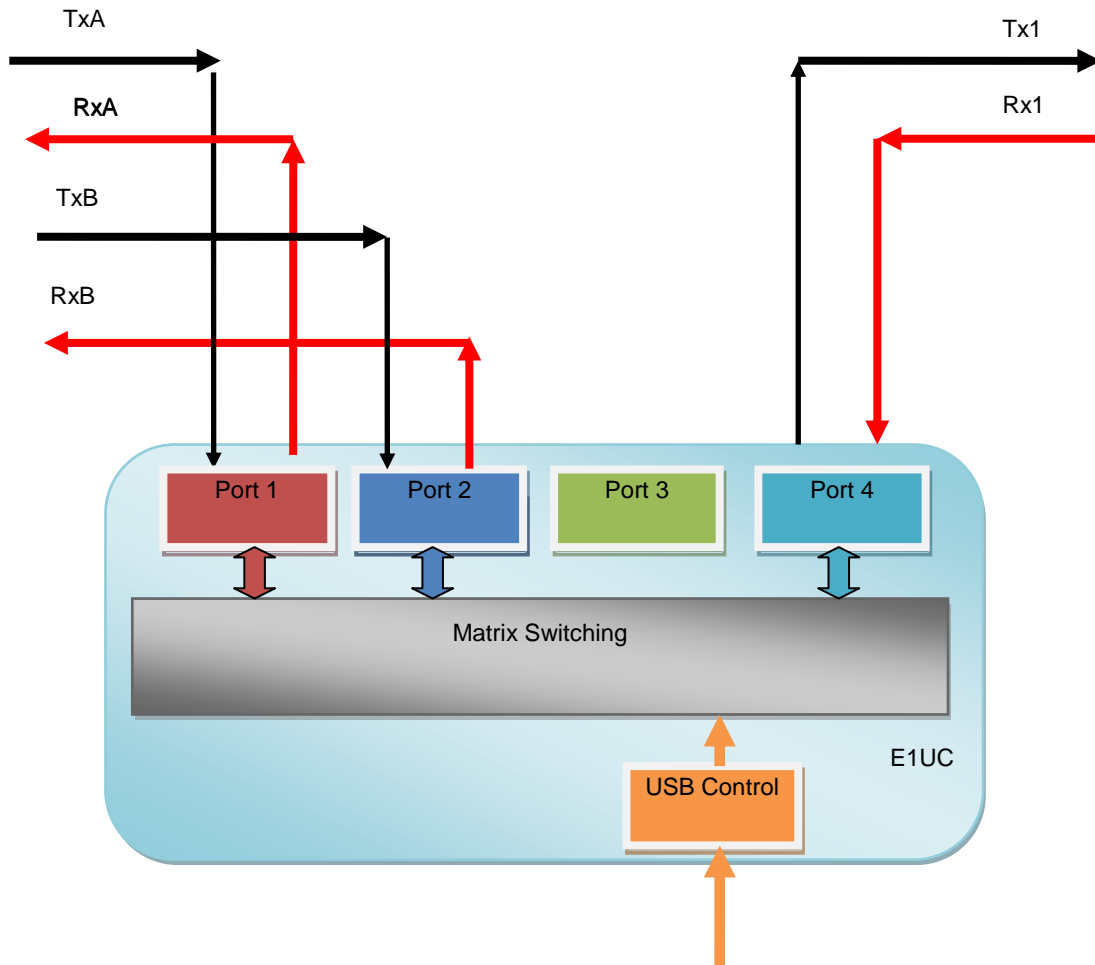
Central office protected monitoring points are connected via optional baluns to Ports 1 and 2. These can be selected in high impedance mode if required. Selected timeslots from each can be groomed to a remote E1 monitor and/or the data captured via the USB port to a local pc platform. In addition the data can be re-buffered for use in other downstream equipment.

Switching

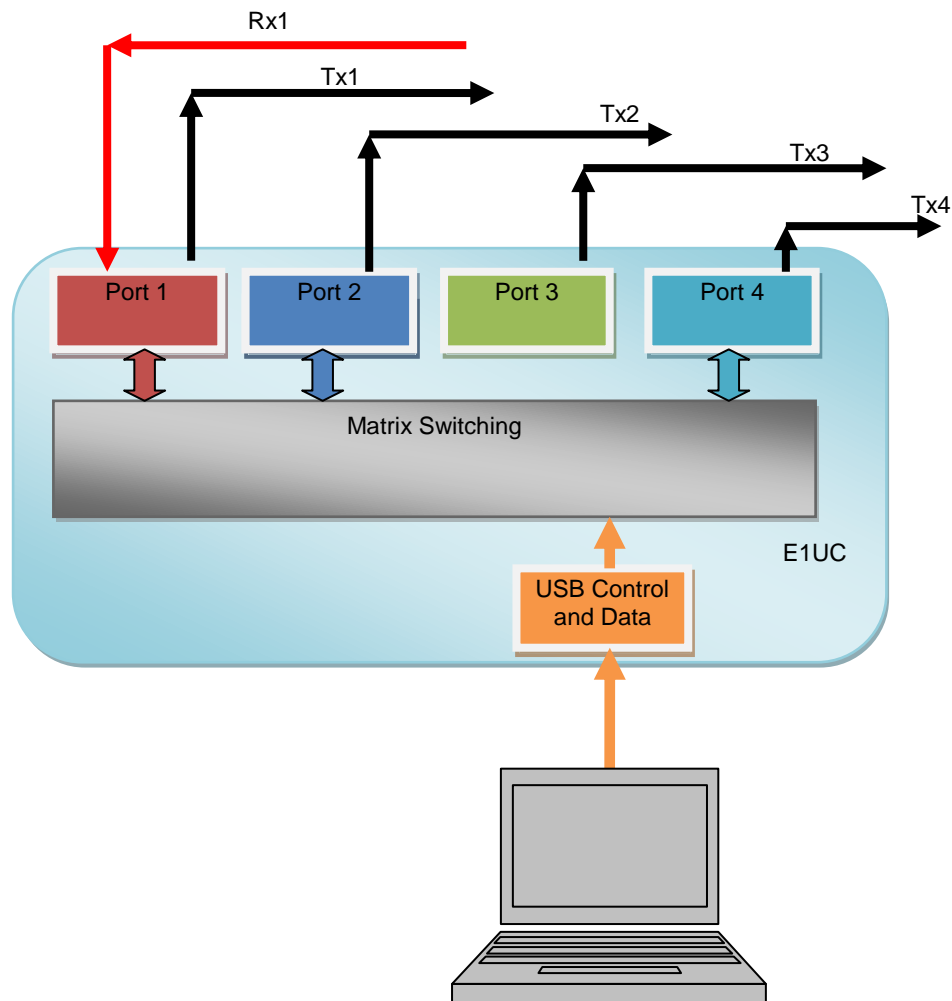
Streams can be switched between E1 lines for backup line failure protection.

If line A fails data can be switched to line B or Line C. A permanent mapping can be stored that will re-establish after power re-connection.

Selection

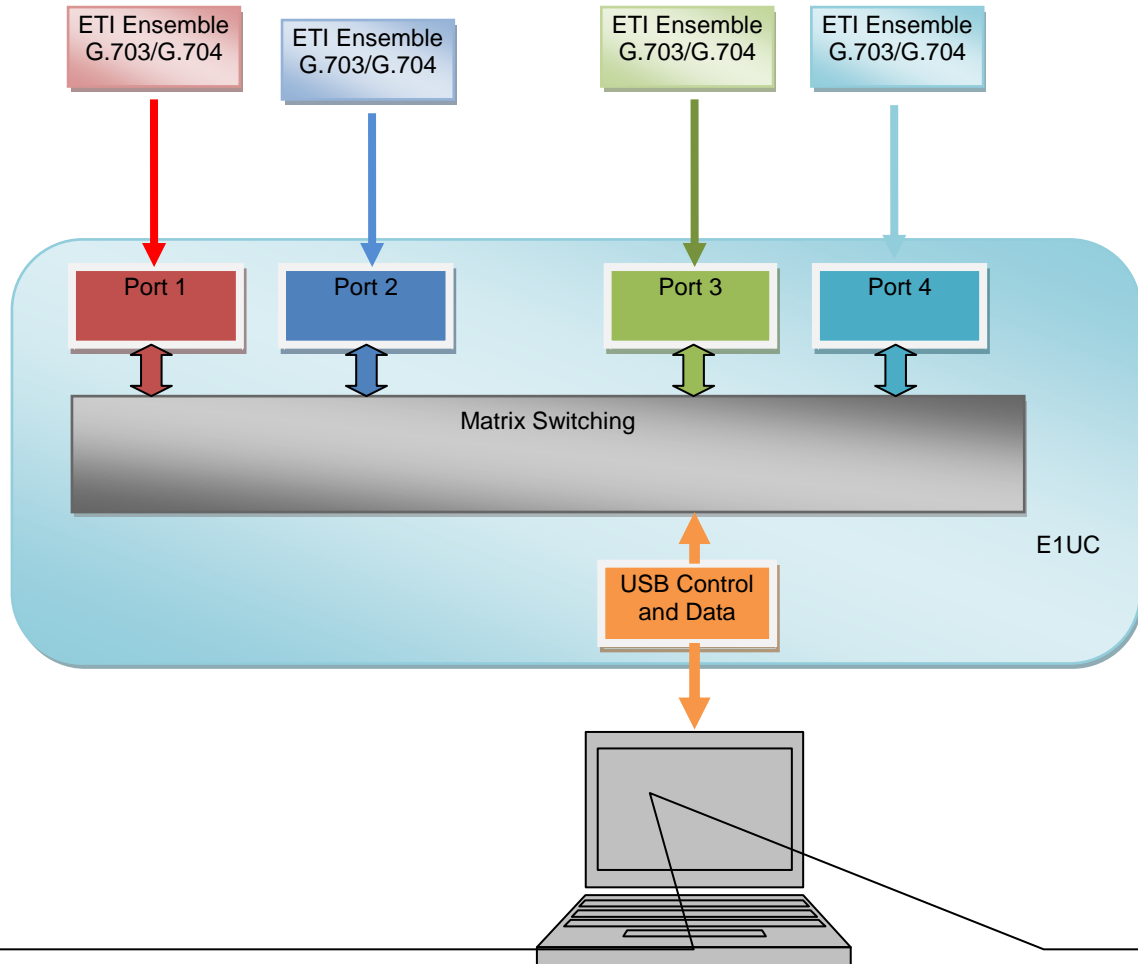


One stream can be selected from many to switch sources of data. Line 1 can take Line A or Line B as its source/destination.

Multiplexing

Data is created from a file or stream source from a pc, The streams are clocked using the Rx1 input clock to maintain system frequency, or by the internally E1UC- generated clock.

DAB Ensemble Monitoring



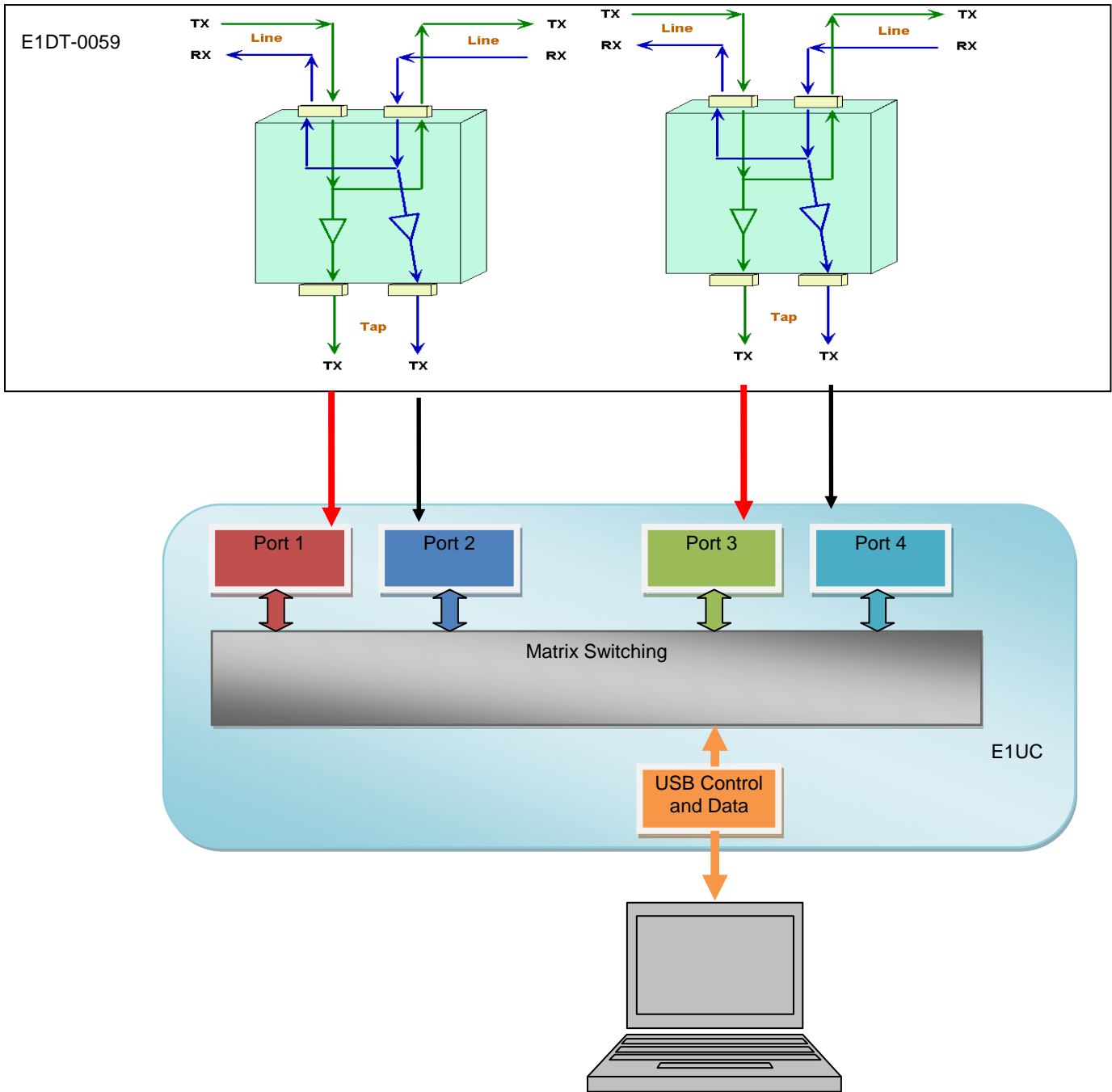
Port 1
Pause Display DAB Statistics 2518

Port 1

Transport Layer	Current Frame	Ensemble
NA Frame Type G704_5376	Frame Count 173	Ensemble BBC National DAB
NA Timestamp 733 mS	FIC Present True	Country Id 0
Corrected Errors 0	SubStreams 9	Ensemble Id E15
Uncorrected Errors 0	DAB Mode 1	
	Frame Length 910	

Identifier	Protection	Stream Length	Start Address
1	18	72	0
2	18	72	140
3	18	72	24
4	18	72	164
5	18	36	48
8	18	30	118

Recording and Analysis



Up to 2 E1 pairs can be recorded simultaneously, optionally through Somerdata E1 data taps. These provide non-invasive connection to E1 lines and buffered outputs to drive the E1UC. The 4 streams of E1 data are recorded to pc disk synchronously. Data files can be replayed for later analysis using standard network tools, or examined using file analysis tools. Data files thus created contain timestamps, stream origin, signal condition and framing information as metadata for simplified searching.