

**Broadband Testing Products**

**TS<sup>o</sup>400 E1 Probe**  
**TS<sup>o</sup>410 E1 Transceiver**

Alarm & Error

Transceiver and Monitor



**TS400 E1 Probe**

The TS400 E1Probe is a PCM Alarm and Error monitor; a versatile, battery powered probe, which can monitor, bridge or terminate 2Mbit/s PCM transmission systems to identify the error and alarm status on any section.

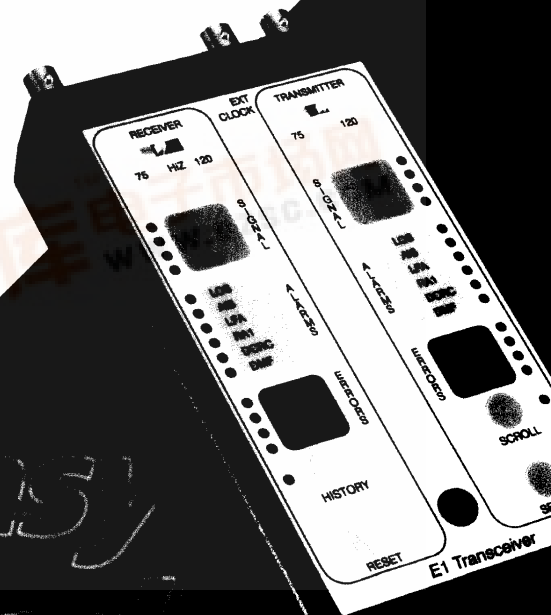
The TS400 requires no set up and is extremely easy to use. Its 14 LEDs provide clear identification of signal, alarm and error conditions. The unit is powered by a 9 volt battery giving up to 40 hours continuous operation. Alternatively, a plug top mains PSU can be used.

The TS400 is extremely versatile and ideal for transmission equipment commissioning and maintenance, and locating a fault in cable sections. It performs non intrusive error monitoring, end to end BER testing, and switch and multiplexer alarm testing.

**TS410 E1 Transceiver**

The TS410 E1 Transceiver is a 2Mbit/s PCM Signal, Alarm and Error transceiver and monitor. Primarily a PCM tester, the TS410 can monitor, bridge or terminate 2Mbit/s PCM transmission systems to identify and send signal, alarm and error conditions.

The TS410 is battery powered, and requires no configuration other than setting the impedance switch. It is extremely easy to use. Its LEDs provide clear identification of signal, alarm and error conditions. The transmitter is configured using the Scroll and Select keys. Any allowable combination of signal, alarm and error conditions can be transmitted. 2 AA alkaline batteries give up to 20 hours continuous operation. Alternatively, a plug top mains PSU may be used.



easy  
broack

**TS400 Features & Specifications**

**Terminating modes**

120ohm balanced; 75ohm unbalanced  
monitor point or terminated; or hi Z bridged

**Signal frame status indicators**

G.704 frame sync; CRC4 detect;  
CAS signaling; PRBS BERT pattern

**Alarm indicators** (real time and latched history)

LOS - loss of signal, AIS - all 1s,  
LFA - loss of frame alignment,  
DA - distant alarm,  
DCRC - distant CRC4 alarm,  
DMF - distant multi frame alarm

**Error indicators** (real time and latched history)

FAS-framing alignment word error; CRC-CRC4  
coding error;  
CODE - bipolar line code error;  
PRBS unframed, BER > 1 in 10<sup>7</sup> orange fast flash  
or BER > 1 in 10<sup>3</sup> red fast flash

**Major Alarm sounder**

9 volt battery or plug top 240VAC power supply

**Test modes**

2.048 Mbit/s G.704 error and alarm monitor.

Monitor High impedance bridge or  
attenuated monitor point.

Receive Terminates a G.704 PCM  
transmission line.

PRBS receive or monitor mode synchronising to a  
2<sup>15</sup>-1 pseudo random binary sequence pattern.

**Receive signal level**

AGC in the range 0dB to -30dB flat loss

**Audible Alarm**

LOS, LFA, PRBS > 1 in 10<sup>3</sup>

**Push buttons**

ON/OFF toggle - powers the unit on and off

History - lights an appropriate LED if an alarm  
or error has occurred

Reset - initializes unit and clears alarm/error  
history latches

Battery - 9.0 VDC PP3

Mains PSU - 2.5mm 4.5VDC >100mA regulated

**TS410 Features & Specifications**

**Terminating modes**

120ohm balanced or 75ohm unbalanced  
or Hi Z monitor

**Signal Indicators**

G.704 2Mbit/s framed signal;  
CRC4 multi frame; CAS signalling multi frame;  
PRBS fill pattern if G.704 ON; PRBS unframed  
BERT pattern if G.704 is OFF

**Alarms**

LOS - loss of signal, AIS - all 1s,  
LFA - loss of frame alignment (all 0s),  
DA - distant alarm, DCRC - distant CRC4  
alarm (E bits) , DMF - distant multi frame alarm

**Errors**

FAS - framing word errors; CRC - CRC4  
coding errors; CODE - bipolar line code errors;  
PRBS unframed BER 1 in 10<sup>7</sup> orange flash  
or BER 1 in 10<sup>3</sup> red flash

**E1 PCM Interface**

Transmitter - BNC connector.

Receiver - BNC connector

Transmit line frequency: 2.048MHz (25ppm)

Receiver phase locked loop

Line code - HDB3. Line code - HDB3

Unbalanced 75ohm 2.37v pk.

AGC 0 to -30 dB flat loss

Balanced 120ohm 3.0v pk

AGC 0 to -30dB flat loss

**External Clock Input**

BNC connector TTL or CMOS level input square  
wave

**Buttons**

ON/OFF - Press>1 second ON; press > 1 second OFF

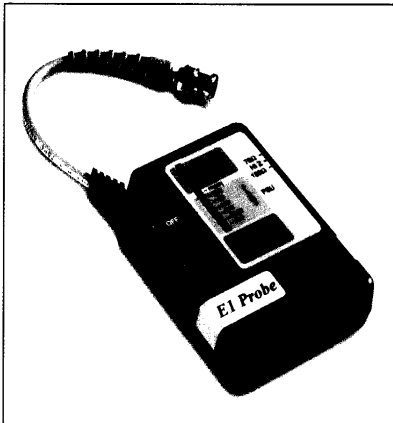
Scroll - Lights LED continuously on function to be  
selected. Short press moves down one function

Select - Short press Selects continuous LED  
highlighted function

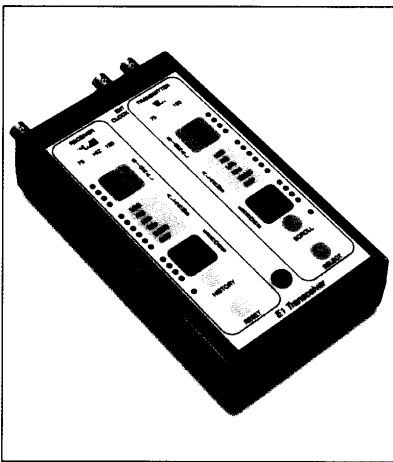
History - Press to display latched alarm and  
error conditions

Reset - Press to reset latched alarm and error  
conditions

Battery - 9.0 VDC PP3



The TS400 E1Probe is a PCM Alarm and Error monitor; a versatile, battery powered probe



The TS410 E1 Transceiver is a 2Mbit/s PCM Signal, Alarm and Error transceiver and monitor.

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