



application note

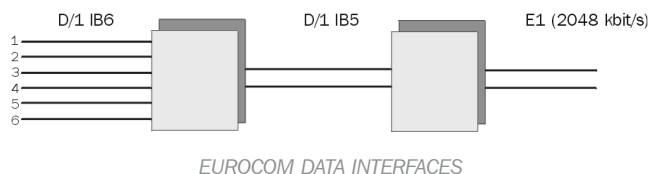
Eurocom data interfaces in the 2850 series

By Paul Blakemore



Eurocom is a data communications standard in common use within NATO armed forces. It is framed to allow channelization of compressed speech or low rate data, with provision for encryption if required. Speech compression is by delta coding with syllabic companding giving channel rates of 16 or 32 kbit/s.

Data channel rates are typically 2.4 or 9.6 kbit/s. There are three standard transmission bit rates of 256, 512 and 1024 kbit/s with three different interfaces over which the data can be transported. These are shown below. Some countries also use non-standard rates. 285X can provide all of these three interfaces, with IB5 and IB6 as options, and Bit Error Rate Testing can be carried out. However, there is no provision for framed Eurocom, nor for encryption. Encryption can normally be turned off on the EUROCOM equipment for test purposes.



The main characteristics of the Eurocom data interfaces are as below.

D/1 IB6

This interface is 100% AMI with a signal amplitude 50% that of the standard 64 kbit/s codirectional signal, ie 0.5 V peak. The lines are:

- Line 1 - Data input
- Line 2 - Clock associated with Line 1
- Line 3 - Data output
- Line 4 - Clock associated with Line 3
- Line 5 - Alignment command for link encryption (optional)
- Line 6 - Crypto alignment (optional)

Data rates are 256, 512 and 1024 kbit/s, which are selectable on the 285X.

Other rates are possible from 32 to 2048 kbit/s in 1 Hz steps.

The interface is provided via the 15 way D-type used for the 64 kbit/s codirectional and contradirectional interface.

D/1 IB5

This interface is HDB3 with a signal amplitude of the standard 2048 kbit/s HDB3. The lines shown are Tx and Rx data, with clock being recovered from the data.

Data rates are 256, 512 and 1024 kbit/s, which are selectable on the 285X.

The interface is provided via the standard 2 Mbit/s BNC and CF connectors.

E1 (2048 kbit/s)

This interface is the standard 2048 kbit/s HDB3. The required data rates of 256, 512 and 1024 kbit/s are carried as nx64 kbit/s channels within the normal frame structure. This is standard within the 285X.

2850 SERIES EUROCOM OPTIONS

- Option 22 - D/1 IB6.
- Option 25 - D/1 IB5 and D/1 IB6.
- Standard - E1 (2048 kbit/s).

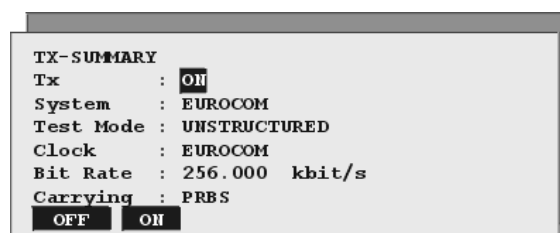
Options 22 and 25 are available on all versions of the 2850 series for maximum flexibility of application.

2850 SERIES EUROCOM SET UP

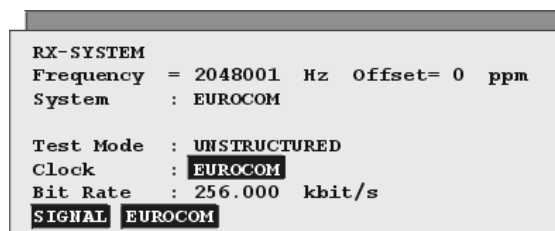
D/1 IB6

Set Tx and Rx to:

MODE: DATA.
System: EUROCOM.
Clock: EUROCOM (or as required).
Bit Rate: 256, 512 or 1024 kbit/s (other rates available).



TX-DATA SUMMARY Page



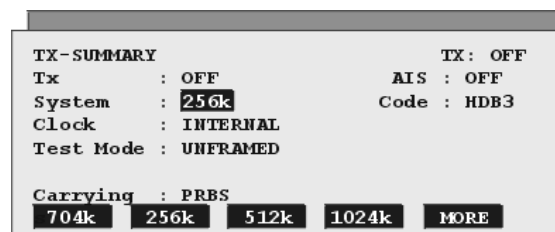
RX-DATA SYSTEM Page

Connect to system via 64 kbit/s 15 way D-type data connector (see data sheet for connector pinout).

D/1 IB5

Set Tx and Rx to:

MODE: PCM.
System: 256, 512 or 1024 kbit/s (as required).



TX-PCM SUMMARY Page

```

RX-SYSTEM
Frequency = 2048001 Hz Offset= 0 ppm
System   : 256k
Input    : TERMINATED   Code : HDB3
Test Mode : UNFRAMED

704k  256k  512k  1024k  MORE

```

RX-PCM SYSTEM Page

Connect to system via BNC (75 Ω unbalanced) or CF (120 Ω balanced) connectors.

E1 (2048 kbit/s)

Set Tx and Rx to:

MODE: PCM.
 System: 2M or 2M/noMF (as required).
 Test Mode: N x 64.
 Nx64 Channels: 1-4 for 256 kbit/s, 1-8 for 512 kbit/s or 1-16 for 1024 kbit/s as required.

```

TX-SUMMARY
Tx      : OFF      AIS : OFF
System  : 2M       Code : HDB3
Clock   : INTERNAL
Test Mode : N x 64
          (N = 4)
Carrying : PRBS
UNFRMD  FRAMED  SINGLE  N x 64

```

TX-PCM SUMMARY Page

```

TX-Nx64 CHANNELS

GROUP  1  2  3  4  5  6  7  8  9 10
      11 12 13 14 15 16 17 18 19 20
      21 22 23 24 25 26 27 28 29 30

SET N  RESET N  CLEAR  Tx->Rx  CURSOR

```

TX-NX64 CHANNELS Page

```

RX-SYSTEM
Frequency = 2048001 Hz Offset= 0 ppm
System   : 2M
Input    : TERMINATED   Code : HDB3
Test Mode : N x 64
          (N = 4)

UNFRMD  FRAMED  SINGLE  N x 64

```

RX-PCM SYSTEM Page

Connect to system via BNC (75 Ω unbalanced) or CF (120 Ω balanced) connectors.

Error Performance Test

Run Bit Error Rate Test for error performance analysis of EUROCOM link, loopback or end-to-end using one or two instruments as appropriate.



End-to-End Error Performance Test



Loopback Error Performance Test



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