20 AUG 1997

MULTISPEED SYNC MODEM ELIMINATOR. MODEL TB1014-R2

PSU : INPUT 230 AC, 50 Hz, 60mA
OUTPUT 9V AC, 600mA

CUSTOMER SUPPORT INFORMATION

Call our Technical Support Specialists to discuss your application.
For technical support: Call **(0118) 931 2233** or Fax: (0118) 931 1727
To order: Call **(0118) 965 5100**
Black Box Catalogue Ltd, 15 Cradock Road, Reading, Berks. RG2 0JT

1. General Description

The facility is provided to connect two synchronous Data Terminal Equipment (DTE) devices fitted with the CCITT X.21 (V11) interface.

Nineteen data speeds are selectable by a DIL switch on the rear panel. The data paths are completely symmetrical, so that data, timing and control signals are identical in both directions.

The two ports are presented on standard 15 way D type female connectors, named J1 and J2, and are configured as Data Communications Equipment (DCE).

Each port has "TRANSMIT DATA", "RECEIVE DATA", "SIGNAL TIMING", "CONTROL" and "INDICATION" signals at standard RS422 balanced voltage levels. These are all interfaced by industry standard RS422 line driver and receiver integrated circuits, so that maximum cable lengths are dependent on cable type and data speed.

The "CONTROL" signal on each port is fed back to the "INDICATION" signal on the same port, via an optional time delay. Alternatively the "INDICATION" signal may be held permanently in the active state.

The time delay between driving "CONTROL" active, and "INDICATION" going active may be set by a switch, to give a choice of 80 microseconds, 10 milliseconds or "INDICATION" held permanently active.

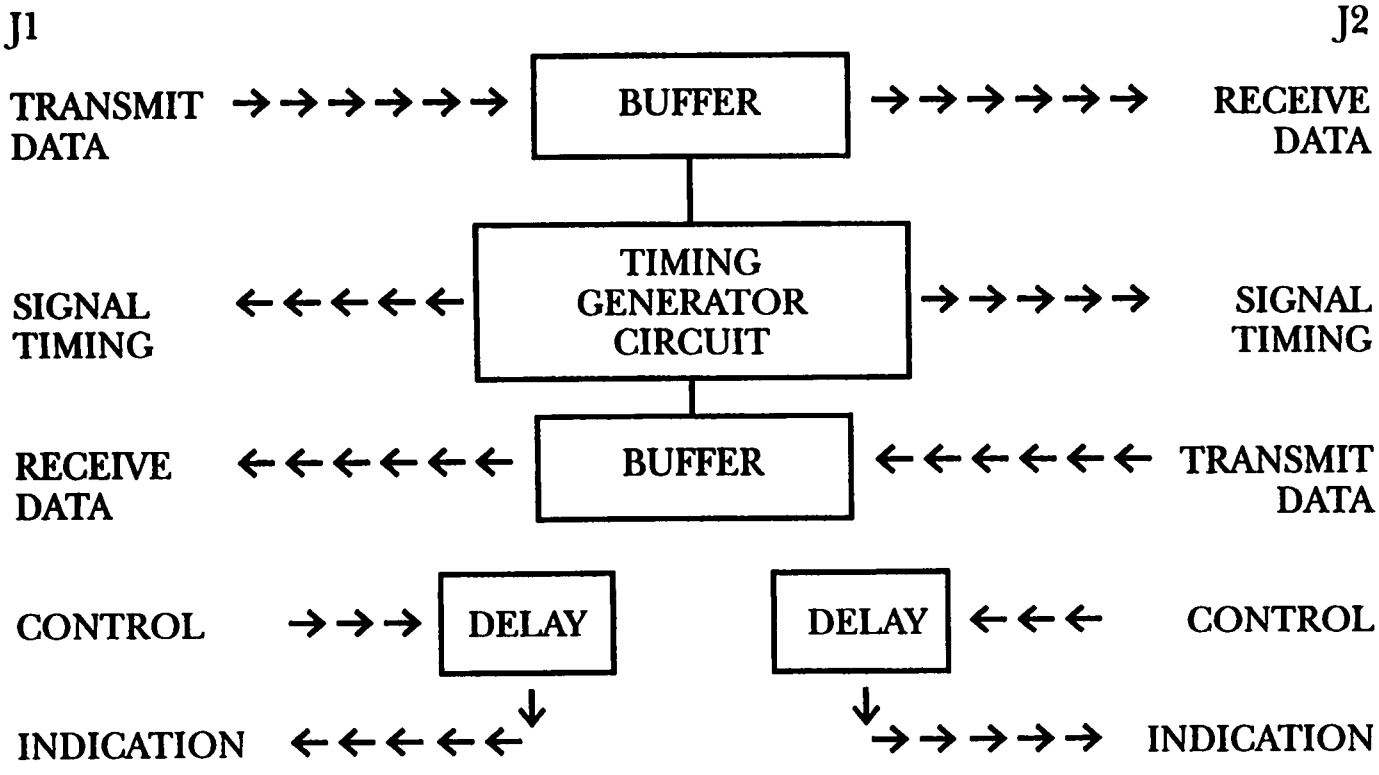
Four front panel push button switches permit selection of test modes independently for each direction of data.
These test modes enable the data to be set to mark idle condition, or looped back, and the clock to be deleted.

Front panel LEDs indicate "TEST MODE" and "POWER ON".

An LED marked "E" flashes if any of the test modes are selected, and acts as an easily observed warning of the unit being in a test mode.

A second LED marked "PWR" indicates that the unit is in the powered up condition.

2. Block Diagram

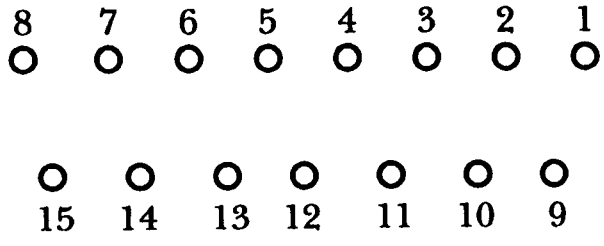


PIN NUMBERING ON J1 AND J2

TRANSMIT DATA A	2
TRANSMIT DATA B	9
RECEIVE DATA A	4
RECEIVE DATA B	11
SIGNAL TIMING A	6
SIGNAL TIMING B	13
CONTROL A	3
CONTROL B	10
INDICATION A	5
INDICATION B	12
SIGNAL GROUND	8

SIGNAL TIMING IS SOMETIMES REFERRED TO AS CLOCK

PIN LAYOUT ON J1 AND J2 AS VIEWED BY MATING CONNECTOR



3. Operation

3.1 Set the data speed to the value required by means of the DIL switch mounted at the rear panel.

3.2 Set the "CONTROL TO INDICATION" time delay to the required value by means of DIL switch mounted at the rear panel.

3.3 Connect the cables to the the two connectors J1 and J2.

3.4 Connect the plug mounted power supply module to the socket on the SME rear panel, and to a suitable mains supply.

IMPORTANT

Ensure that the mains supply is of the same voltage as that marked on the plug mounted power supply module.

3.5 Observe the LED marked "PWR" is on to indicate that the power supply module is connected and functioning correctly.

3.6 In order to comply with the E C Directives for Electromatic Compatability it is essential that all data cables connected to this product are screened and of approved quality, and that the screens be correctly bonded to the system ground of the installation.

4. Selection of Data Speed

The data speed is selected by the rear panel DIL switch according to the table below.

SPEED DIL SWITCH SETTING VIEWED THROUGH REAR PANEL

Kbps	1	2	3	4	5	6	
		O		O	O	O	OFF
48	O		O				ON
	O			O	O	O	OFF
56		O	O				ON
				O	O	O	OFF
64	O	O	O				ON
		O	O		O	O	OFF
128	O			O			ON
		O		O	O		OFF
192	O		O			O	ON
				O	O		OFF
256	O	O	O			O	ON
		O	O	O			OFF
320	O				O	O	ON
			O	O			OFF
384	O	O			O	O	ON
		O		O			OFF
448	O		O		O	O	ON
				O			OFF
512	O	O	O		O	O	ON

Kbps	1	2	3	4	5	6	
	O	O	O				OFF
576				O	O	O	ON
		O	O				OFF
640	O			O	O	O	ON
	O		O				OFF
704		O		O	O	O	ON
			O				OFF
768	O	O		O	O	O	ON
	O	O					OFF
832			O	O	O	O	ON
		O					OFF
896	O		O	O	O	O	ON
	O						OFF
960		O	O	O	O	O	ON
							OFF
1024	O	O	O	O	O	O	ON
						O	OFF
2048	O	O	O	O	O		ON

DIL SWITCH POLES 7 AND 8 DO NOT AFFECT DATA SPEED

5. Selection of test modes

Three test modes are available each independently selectable for each direction of data. This is achieved by the operation of four push button switches mounted on the front panel.

An LED marked "E" flashes if any of the test modes are selected, and acts as an easily observed warning of the unit being in a test mode.

OUT 1	OUT 2	OUT 3	OUT 4	"E" LED IS OFF

SME IN NORMAL OPERATION.
THIS IS NOT A TEST MODE

IN 1	OUT 2	OUT 3	OUT 4	"E" LED IS FLASHING

J1 SIGNAL TIMING IS NORMAL
J2 SIGNAL TIMING IS NORMAL
J2 TRANSMIT DATA IS LOOPED BACK TO J2 RECEIVE DATA, AND SENT THROUGH TO J1 RECEIVE DATA.
J1 TRANSMIT DATA IS SENT NOWHERE

OUT 1	IN 2	OUT 3	OUT 4	"E" LED IS FLASHING

J1 SIGNAL TIMING IS NORMAL
J2 SIGNAL TIMING IS NORMAL
J2 TRANSMIT DATA IS SENT THROUGH TO J1 RECEIVE DATA.
J2 RECEIVE DATA IS SET TO THE MARK IDLE CONDITION.
J1 TRANSMIT DATA IS SENT NOWHERE

IN 1	IN 2	OUT 3	OUT 4	"E" LED IS FLASHING

J1 SIGNAL TIMING IS NORMAL
J2 SIGNAL TIMING IS DELETED
J2 TRANSMIT DATA IS SENT THROUGH TO J1 RECEIVE DATA.
J2 RECEIVE DATA IS SET TO THE MARK IDLE CONDITION.
J1 TRANSMIT DATA IS SENT NOWHERE

OUT 1	OUT 2	IN 3	OUT 4	"E" LED IS FLASHING

J1 SIGNAL TIMING IS NORMAL
J2 SIGNAL TIMING IS NORMAL
J1 TRANSMIT DATA IS LOOPED BACK TO J1 RECEIVE DATA, AND SENT THROUGH TO J2 RECEIVE DATA
J2 TRANSMIT DATA IS SENT NOWHERE

OUT 1	OUT 2	OUT 3	IN 4	"E" LED IS FLASHING

J1 SIGNAL TIMING IS NORMAL
J2 SIGNAL TIMING IS NORMAL
J1 TRANSMIT DATA IS SENT THROUGH TO J2 RECEIVE DATA.
J1 RECEIVE DATA IS SET TO THE MARK IDLE CONDITION.

OUT 1	OUT 2	IN 3	IN 4	"E" LED IS FLASHING

J2 SIGNAL TIMING IS NORMAL
J1 SIGNAL TIMING IS DELETED
J1 TRANSMIT DATA IS CONNECTED THROUGH TO J2 RECEIVE DATA.
J1 RECEIVE DATA IS SET TO THE MARK IDLE CONDITION.
J2 TRANSMIT DATA IS SENT NOWHERE

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6. Selection of 'Control' to 'Indication' delay

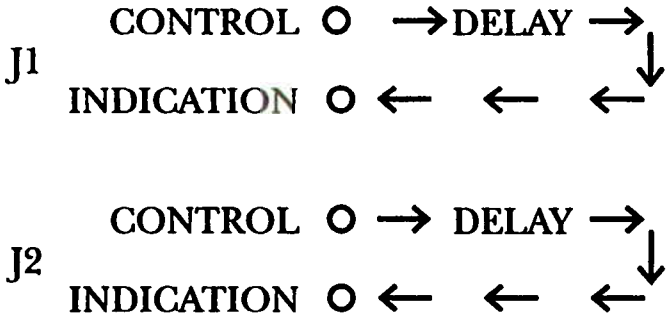
DIL SWITCH POLES 1, 2, 3, 4, 5, AND 6 DO NOT AFFECT " CONTROL TO INDICATION " DELAY VALUE

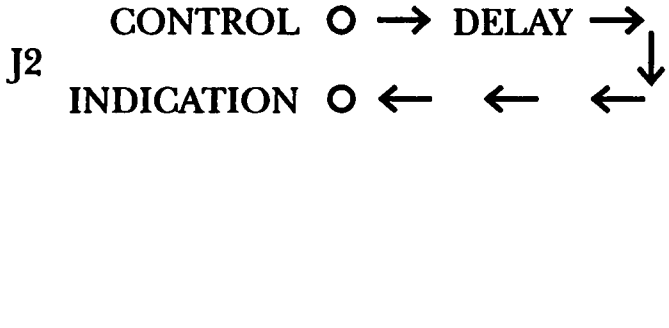
DIL SWITCH SETTING VIEWED THROUGH REAR PANEL

	7	8	
INDICATION IS HELD PERMANENTLY ACTIVE	O	O	OFF ON
INDICATION WILL GO ACTIVE 80 MICROSECONDS AFTER CONTROL IS DRIVEN ACTIVE	O	O	OFF ON
INDICATION WILL GO ACTIVE 10 MILLISECONDS AFTER CONTROL IS DRIVEN ACTIVE	O	O	OFF ON

These time delays have a +- 20% tolerance

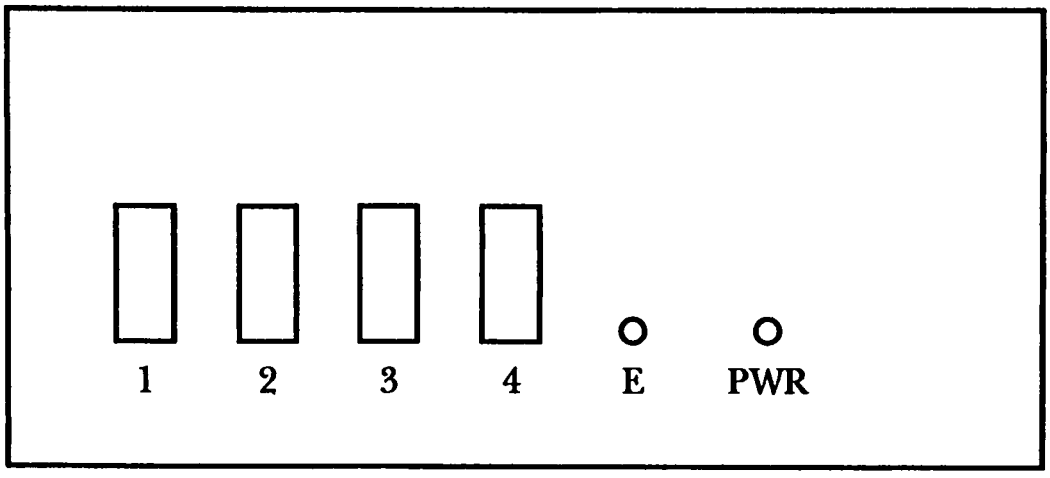
These DIL switch settings affect connectors J1 and J2 identically.





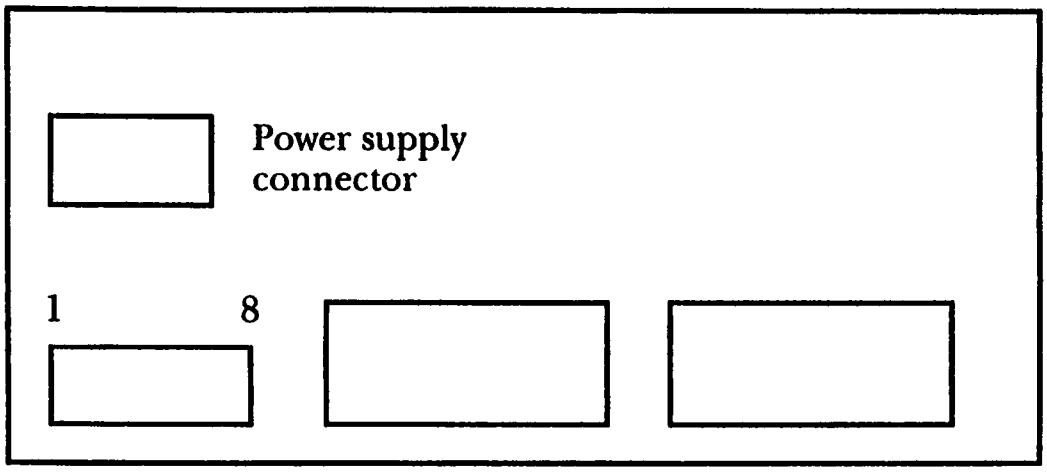
7. Panel layouts

FRONT PANEL



Four push button switches Two LED indicators

REAR PANEL



DIL switch Connector J1 Connector J2

8. Maintenance

Maintenance should only be carried out by suitably trained staff, or by returning the unit to the supplier.

9. Specifications

Total weight:	Unit 0.6 kg Plug-mounted PSU 0.5kg.
Dimensions:	5H x 13W x 15D cms
Mains supply:	230 VAC + - 10% 50 HZ6 VA (UK) Other voltages available
Ambient temperature:	0 to 40 degrees C
Relative humidity:	5 to 95 % non condensing
Connectors:	Two DB15S female
Interface:	X21 (V11)
Speeds:	48, 56, 64, 128, 192, 256, 320, 384, 448, 512, 576, 640, 704, 768, 832, 896, 960, 1024, 2048 Kbps.
Power supply module:	Plug mounted.Conforms to EN60950.

We reserve the right to change the specifications, performance, and circuitry of the product without notice.