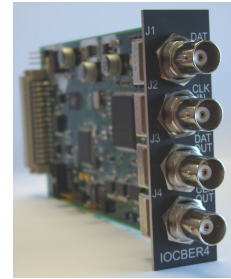




## IOCBER4/5 HIGH FREQUENCY BERT MODULE



**IOCBER4/5**

### FEATURES

- Operates from 100 bps to 50 Mbps
  - ◊ Adjustable in 1 bps steps
  - ◊ Accuracy +/- 50 ppm
- Selectable input / output Data and Clock polarities
- Error insertion capability
- Selectable PRN patterns
- Remote control capability
- Round trip Link Delay measurement

### OVERVIEW

The Model IOCBER4/5 and AL2873 Configurable Interface Unit was developed in response to the need for a wide range of multichannel systems. The unit can contain up to fourteen totally independent and pluggable full duplex BERT modules. The IOCBER4/5 and AL2873 chassis can be configured and controlled by either the AL2873 front panel or via Ethernet.

The transmitter generates a test data stream of pseudo random noise (PRN) using industry standard sequences for input to the system under test. The IOCBER4/5 has the capability to insert errors into the data stream to verify end-to-end test setup.

The recovered channel data from the system under test is then input to the IOCBER4/5 receiver section. Each receiver automatically synchronizes to the input stream (no operator intervention for bit alignment is required) and functions independently from the transmitter (for testing PRN received from a remote site). Bit errors in the received stream are detected and counted. The processor section collects this information and formats it for the front panel display and remote readout.

The front panel provides information on total bits received, total bit errors received, total bit slips encountered, total ones in error, total seconds, and bit error rate (B.E.R). When enabled, the round trip link delay is measured and displayed. Received bit rate is also displayed. An overview display is also provided which shows the current B.E.R or total bit errors for all channels simultaneously.

A Summary Display page is also provided which shows the STATUS and BER measurement for all IOCBER4/5 modules in the unit simultaneously.

## SPECIFICATIONS

### TRANSMITTER

- Codes: 2<sup>7</sup>-1, 2<sup>9</sup>-1, 2<sup>11</sup>-1, 2<sup>15</sup>-1, 2<sup>20</sup>-1, 2<sup>23</sup>-1 and 2<sup>31</sup>-1 PRN patterns
- Rate: 100 bps to 80 Mbps in 1 bps steps (+/-50 ppm accuracy)
- Output: selectable data and clock polarity (normal / inverted); NRZ-L coded with 0° clock (min 40 / 60 symmetry); TTL, BNC connectors per signal (IOCBER4); RS-422, Triax connectors per signal (IOCBER5)
- Output Control: On/Off
- Error insertion: 1 bit slip; 1 bit error; 10e-3 BER
- Delay Marker (8 consecutive bit errors every 1 sec = D-MARK)

### RECEIVER

- Codes: 2<sup>7</sup>-1, 2<sup>9</sup>-1, 2<sup>11</sup>-1, 2<sup>15</sup>-1, 2<sup>20</sup>-1, 2<sup>23</sup>-1 and 2<sup>31</sup>-1 PRN patterns
- Rate: 100 bps to 80 Mbps in 1 bps steps (+/-50 ppm accuracy)
- Input: selectable source (local transmitter / external TTL / RS-422 input); chassis Internal Daisy Chain Bus; selectable data and clock polarity (normal / inverted); NRZ-L coded with 0° clock (min 30 / 70 symmetry); TTL connectors per signal
- Sync acquisition: automatic, adaptive loop versus closed loop error rate based
- Counter Measurements:
  - Accum Mode Display
    - bits received
    - bits in error
    - 1-bits in error
    - bit error rate
    - errored seconds
    - bit slips
    - received bit rate in bps (+/-50 ppm accuracy)
- BER Measurement type:
 

Accumulate mode: Counts until Operator performs Reset. A freeze-display control is provided to view intermediate results, counters continue to count in background mode.

Automatic reset: Counts errors for selected interval, then calculates & displays results 10<sup>3</sup> up to 10<sup>11</sup> bit test lengths provided
- Link Delay Measurement (Insert: D-MARKS to enable)
  - Auto-measure every 1 second
  - Range: 0 to 9.99 seconds
  - Resolution: 33ns +/- 1 bit time
  - Accuracy: +/- 50 ppm +/- 1 bit time
- Receive Bit Rate
  - Measures and Displays Selected Rx

### FRONT PANEL DISPLAY FORMAT

- Bit Oriented test results are displayed as 1.2345e+12
- Slips, Errored Seconds and Rx Frequency are displayed as 123456789
- Results as 1.23 e-4 seconds
- Input Resolution 1 bps
- Accuracy +/- 50 ppm +/- 1 bit time
- Bit rate 12345678 bps
- Bit error rate is displayed as 1.23e-08
- Control: reset to zero control is provided to restart tests
- Status: Synchronization (Search/Lock) Data, Clock (Present/LOS)

### REMOTE CONTROL

- Via 10 BaseT Ethernet

### ENVIRONMENTAL

- Operating temperature: 0° to 50° C
- Relative humidity: 15% to 95%; non-condensing
- Altitude: Sea level to 10,000 feet

### POWER

- +5V input / 5.5 watts

### MEAN TIME BETWEEN FAILURES

- ~ 100,000 hours