

**DATA SHEET** page 1

Form 463-961001

Part Number	Description
B1	16-channel Digital Optomux Protocol Brain Board

**description**

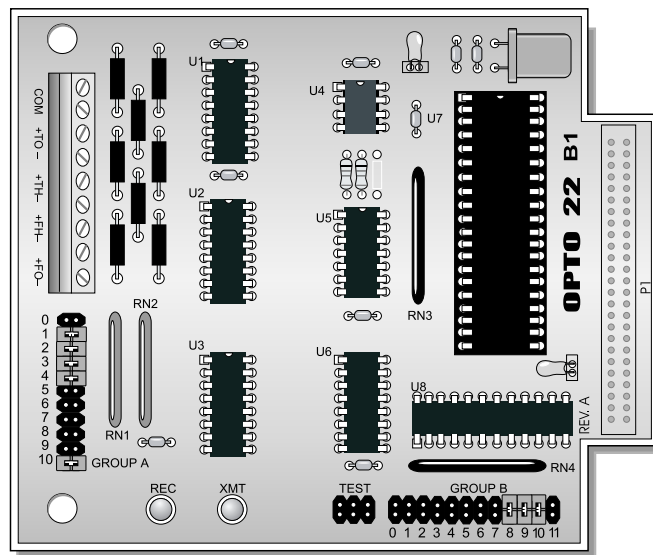
The B1 Digital Optomux brain board is an intelligent digital controller that operates as a slave device to a host computer. Each B1 contains a microprocessor that provides the necessary intelligence to carry out serial communications with a host computer and also perform control functions at each channel of I/O. The B1 brain boards are designed to mount on most Opto 22 I/O mounting racks that have header connectors. I/O mounting racks that accept single-channel Standard and G4 I/O modules, Quad Pak I/O modules, SNAP I/O modules or have built-in integrated I/O circuitry are all available.

When combined with an I/O mounting rack, the B1 brain board can perform the following functions:

- Read Inputs
- Write Outputs
- Latching
- Counting
- Pulse Measurement
- Time Delays
- Pulsed Outputs

Communication with a host computer is via an RS422/485 serial link composed of a dual twisted pair line that connects to each Optomux station. The serial data link operates at selectable baud rates from 300 to 38.4k baud. Optomux stations can be configured for either multidrop or repeat mode operation. In multidrop mode, up to 100 Optomux stations can be networked over a total line length of up to 5,000 feet. In repeat mode operation, up to 256 Optomux stations can be networked with up to 5,000 feet between stations.

**B1 DIGITAL BRAIN BOARD**



**DATA SHEET** page 2

Form 463-961001

**specifications**

**B1 Specifications**

Power Requirements	5 VDC $\pm$ 0.1 V @ 0.5 amps (includes module requirements)
Operating Temperature	0° C to 70° C 95% humidity, non-condensing
Interface	RS-422/485 communications 50-pin female header connector to I/O mounting rack
Data Rates	300, 600, 1200, 2400, 4800, 9600, 19200, and 38400 baud
Cable Length Multidrop  Repeat Mode	Up to 5,000 feet total length * 100 Optomux stations maximum * Up to 5,000 feet between stations 256 Optomux stations maximum
Communications	Full duplex, two twisted pairs, and a ground
Indicators	Power, receive, and transmit
Options Jumper selectable	Address (0 to 255) Baud rates Multidrop or repeat mode 2 or 4-pass protocol

\* Extend line length and/or number of OPTOMUX stations with the AC30A/B network adapter.

**ERROR CODES**

**Optomux Detected Errors:**

- 1 Power Up Clear Expected
- 2 Undefined Command
- 3 Checksum Error
- 4 Input Buffer Overrun
- 5 Non-printable ASCII Character Received
- 6 Data Field Error
- 7 Serial Watchdog Timeout
- 8 Invalid Limit Set

**OptoWare Driver Detected Errors:**

- 20 Invalid Command Number
- 21 Invalid Module Position
- 22 Data Range Error
- 23 Invalid First Modifier
- 24 Invalid Second Modifier
- 25 Invalid Address
- 27 Not Enough Return Data
- 28 Invalid Return Data
- 29 Turnaround Time Out (Optomux did not respond within the specified time interval)
- 30 Input Buffer Overrun
- 31 Checksum Error
- 33 Send Error (Message cannot be sent out; probable serial port problem)
- 34 Incorrect Command Echo In Four-Pass

**specifications** **DIGITAL COMMAND SET**

**System Commands**

POWER UP CLEAR  
RESET  
SET TURNAROUND DELAY  
SET DIGITAL WATCHDOG DELAY  
SET ENHANCED DIGITAL WATCHDOG TIMEOUT  
SET OPTOMUX PROTOCOL  
IDENTIFY OPTOMUX TYPE  
SET TIMER RESOLUTION

**Configure Commands**

CONFIGURE POSITIONS  
CONFIGURE AS INPUTS  
CONFIGURE AS OUTPUTS

**Read and Write Commands**

WRITE DIGITAL OUTPUTS  
WRITE BINARY OUTPUTS  
ACTIVATE DIGITAL OUTPUTS  
DEACTIVATE DIGITAL OUTPUTS  
READ ON/OFF STATUS  
READ BINARY ON/OFF STATUS  
READ CONFIGURATION

**Latch Commands**

SET LATCH EDGES  
SET OFF-TO-ON LATCHES  
SET ON-TO-OFF LATCHES  
READ LATCHES  
READ AND CLEAR LATCHES  
CLEAR LATCHES  
READ BINARY LATCHES  
READ AND CLEAR BINARY LATCHES

**Counting Commands**

START AND STOP COUNTERS  
START COUNTERS  
STOP COUNTERS  
READ COUNTERS  
READ AND CLEAR COUNTERS  
CLEAR COUNTERS

**Time Delay And Pulse Commands**

SET TIME DELAY  
INITIATE SQUARE WAVE  
TURN OFF TIME DELAY/SQUARE WAVE  
HIGH RESOLUTION SQUARE WAVE  
RETRIGGER TIME DELAY  
GENERATE N PULSES  
START ON PULSE  
START OFF PULSE

**Duration Measurement Commands**

SET PULSE TRIGGER POLARITY  
TRIGGER ON POSITIVE PULSE  
TRIGGER ON NEGATIVE PULSE  
READ PULSE COMPLETE BITS  
READ PULSE DURATION COUNTERS  
READ AND CLEAR DURATION COUNTERS  
CLEAR DURATION COUNTERS

**Driver Commands**

COMMAND NUMBERS  
SET DRIVER PROTOCOL  
SET TURNAROUND DELAY  
SET SERIAL PORT NUMBER  
SET NUMBER OF RETRIES  
CONFIGURE SERIAL PORT