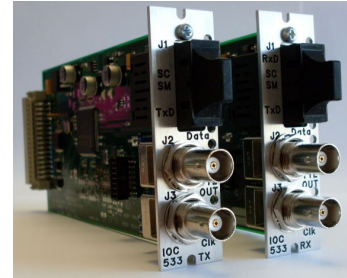




**IOC536  
FIBEROPTIC / RS-422  
FULL DUPLEX MODULE**



**IOC533 TX/RX Shown**

**FEATURES**

- RS-422 data and clock input / output (DB9)
- Full Duplex Operation
- 100 bps to 30 Mbps data rate
- Single fiber moves both data and clock signals
- DC isolated link
- Inputs illuminate front panel indicators (A and B LED)
- Remote control and status (2873 Chassis)
- Input/Output code - NRZ-L, 0 Degree Clock
- Low latency
- Supports Daisy Chain Bus Functions
- Input Termination (124 or 75) ohm

**FUNCTIONAL OVERVIEW**

The IOC536 Pluggable Interface Module (PIM) provides the ability to transfer electrical signals over optical cables. These modules are used to provide a DC isolated data link, provide a medium length (up to a few miles) data path, and reduce radiated emissions. The IOC536 functions in a full duplex mode, it receives and transmits in a fully isolated operation, 2 unique RS-422 serial synchronous data streams (data and clock). The fiber optics are fully isolated between the receive and transmit sections. Modules are fully functional in simplex mode. The basic function of the IOC536 is to convert Synchronous data and clock at RS-422 levels which are present at the DB9 rear panel connector or the Daisy Chain Bus (module in adjacent lower slot) into an optical signal which is received by an IOC536 and converts it back to RS422 data and clock. The Daisy Chain bus outputs from the IOC536 are also driven by the converted optical signal. The IOC536 performs both optical transmit and receive functions. The IOC536 uses industry standard DB-9 and SC connectors, operates from 100 bps to 30Mbps, and requires one of the 14 available slots in the AL2073, AL2873, or AL1073 chassis. Also support by the single-slot AL2073-S "brick" chassis.

## CONFIGURATION

### J2 PINOUT

- Standard 9 PIN D type (PINS)
 

PIN	RS-422
1	+ DATA INPUT
6	- DATA INPUT
2	+ CLOCK INPUT
7	- CLOCK INPUT
3	SIGNAL GROUND
8	- DATA OUTPUT
4	+ DATA OUTPUT
9	- CLOCK OUTPUT
5	+ CLOCK OUTPUT

### J1 FIBER OPTIC I/O

- Standard SC 1x9 Optical Transceiver
  - RxD, Received Optics Input Signal
  - TxD, Transmitted Optics Output Signal
- 15 to -10dB Optical output power
- 35dB Optical Receive Sensitivity
- 1310nm Wavelength (CWDM OPTIONAL)

### DAISY CHAIN BUS FUNCTION

Daisy Chain Output—Converted Data and Clock from Received Optical Signal

Daisy Chain Input, Data and Clock from adjacent module.

### 2873 CONTROL

The IOC536 has local remote control setup and status vis the AL2873 or AL6600 chassis.

Local/remote setup includes the following:

Data and Clk Input Polarity

Data and Clock Output Polarity

Input Data and Clock Source (Daisy Chain or DB9)

### JUMPERS

#### INPUT TERMINATION SETTINGS

J10, CLOCK INPUT **1-2** 75OHM, **2-3** 124OHM

J11, DATA INPUT **1-2** 75OHM, **2-3** 124OHM

- NOTE:** Following Jumper Settings ACTIVE when installed in 1073, 2073 and 2073-S chassis only.

#### RS-422 DATA I/O Polarity

JP3, RS-422 Data Input, 1-2 INV, 2-3 NORMAL

JP4, RS-422 Clock Input, 1-2 INV, 2-3 NORMAL

JP5, RS-422 Data Output, 1-2 INV, 2-3 NORMAL

JP6, RS-422 Clock Output, 1-2 INV, 2-3 NORMAL

#### INPUT DATA and CLOCK SOURCE

TP6, TP5 — SHORT, Selects Daisy Chain Input

TP6, TP5 — OPEN, Selects J2 RS-422 Inputs

### LED STATUS INDICATORS

- A and B Front Panel LED

**OFF** = NOT INPUTS, Optics or RS-422

**B LED Flashing**—Fiber Optic Input Detected

**B LED Solid ON**—Fiber Optic Input

w/ embedded RS-422 Data and Clock Detected

**A LED Flashing**—RS-422 Clock

Input Detected

**A LED Solid On**—RS-422 Clock and Data

Input Detected

### 2873 STATUS

The IOC536 has local/remote control setup and status via the AL2873 or AL6600 chassis.

Status

Fiber Link present

Data and Clock present on Fiber Link

Data Rate of Data and Clock on Fiber Link

Data and Clock input present

Data Rate of Input Data and Clock

**SETUP AND OPERATION**

Bit Error Test using two IOC536 modules labeled Card 1 and Card 2

Set JP3—JP6 to the NORMAL positions. Be sure that a jumper is not installed on TP6 and TP5 unless using the Daisy Chain Input of the IOC536 module to drive the fiber optical signal. (Adjacent next lower slot)

Setup of the IOC536 modules is accomplished by connecting together the TX and RX between Card 1 and 2 fiber optic transceivers using single mode fiber optic cable (2 single cables required). The B LED will be flashing on the front panel of the 2073 or 1073 chassis when an optical signal is detected.

Connect an RS-422 Data and Clock signal at 5megabits with 2-15 PN pattern Input signal to the DB9 connector per pinout above to Card 1. The A LED on Card 1 and the B LED on Card 2 will be solid on. Connect the RS-422 output Data and Clock signals on Card 2 to a Bit Error Receiver with pattern set to 2-15.

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## SPECIFICATIONS

### GENERAL

- DB9 connector
- SC fiber connectors
- Single slot ( 3" x 6" x 0.9" )
- Singlemode
- Model AL2873 pluggable interface module (PIM)

### ELECTRICAL SIGNAL INPUT

- RS-422
- 75Ω, 124Ω jumper selectable termination
- Single slot ( 3" x 6" x 0.9" )
- Singlemode
- Model AL2073 pluggable interface module (PIM)

### LINK LATENCY

The following represent the latency from input of the IOC536.

54 mS at	10 Kbps
5.4 mS at	100 Kbps
540 uS at	1 Mbps
100 uS at	5 Mbps
57 uS at	10 Mbps
39 uS at	15 Mbps
30 uS at	20 Mbps
21 uS at	30 Mbps

## APPLICATION INFORMATION

The IOC536 is used to distribute data across long lengths (15km) of fiber cable. It utilizes industry standards for both the electrical and optical signal interfaces. The units are self adjusting to any data rate within its specified range. Setup of signal polarity is available on the front panel of the 2873 chassis or via jumpers JP3—JP6.

The AL2073 Chassis Front Panel LEDs which correspond to a specific IOC536 module offers a quick look status of the module's operation. When installed in the AL2873 chassis, RS-422 data/clock and Fiber status will be available on the front panel and via remote control port.

This module can also be plugged into Apogee Models:

AL2873

AL2073

AL2073-S

AL1073

### ELECTRICAL SIGNAL OUTPUT

- RS-422
- High current

### OPTICAL SIGNAL I/O

- SC type connectors
- Singlemode
- 1300 nm wavelength