



## AL4000 Ruggedized Multiplexer/Demultiplexer



### FEATURES

- Modular and scalable design
- Four (4) cubic inch modules (2.5" x 4" x 0.4")
- Composite data rates up to 35 Mbps
- Full duplex or simplex operation
- Channel interfaces for: PCM, voice, video, Ethernet, avionic bus, asynchronous & others
- Serial input/output stream (TTL or RS-422)
- Optional Bit Sync module
- Control ports include Ethernet and RS-485
- Web page access provided (no software required)
- Command line control via RS-485 port

### OVERVIEW

The AL4000 Multiplexer/Demultiplexer is a ruggedized version of our popular AL4300 series multiplexer/demultiplexer. The AL4000 is a field configurable system for merging multiple data sources into a composite stream (multiplexing) for transmission over communication data paths and separating and reconstructing the composite stream back to the original data sources (demultiplexing). The unit is configurable to accommodate full duplex requirements (multiplexing and demultiplexing in one chassis) and also simplex requirements in which it will perform either the multiplexing or demultiplexing functions. The AL4000 can merge together virtually any signals that can be converted into a digital format, including serial digital (PCM Telemetry), voice, time code, asynchronous, avionic bus, and video. The data are then transmitted at data rates of up to 35Mbps over a serial data and clock pair which commonly is the source for an RF transmitter or an onboard data recorder. Moreover, the multiplexing process implemented in the AL4300 is compliant with the NASA's CCSDS packetizing concept.

Modularity and scalability are integral elements of the AL4000 design, making the unit easy to use and expand. The AL4000 can be configured to address specific application requirements and the plug-in modules are easily installed into the chassis, permitting ease of expansion or reconfiguration in the application. Each time a card is installed in the chassis, initial power-on tests are performed, the card slots are read to detect the presence of a card, and the installed cards automatically initialize and re-activate the last programmed settings. Additionally, since the required control and monitoring software is included on each module, once the user inserts the modules and restores power, the remote control functions become active. Control options include command line via the RS-485 port and web browser via the Ethernet port.

A typical system will have an AL4000 installed in a vehicle where various data types are multiplexed and demultiplexed to and from a remote facility in conjunction with our AL4300 series rack mount multiplexer/demultiplexer.

**SPECIFICATIONS**

**ENVIRONMENTAL**

- -55°C to +85°C operational
- -55°C to +125°C non-operational
- Conforms to MIL-STD-810D

**POWER SUPPLY**

- 28 Volts nominal (range 18V to 36V)
- Power capacity of 65 watts
- APS controller 5 watt power consumption

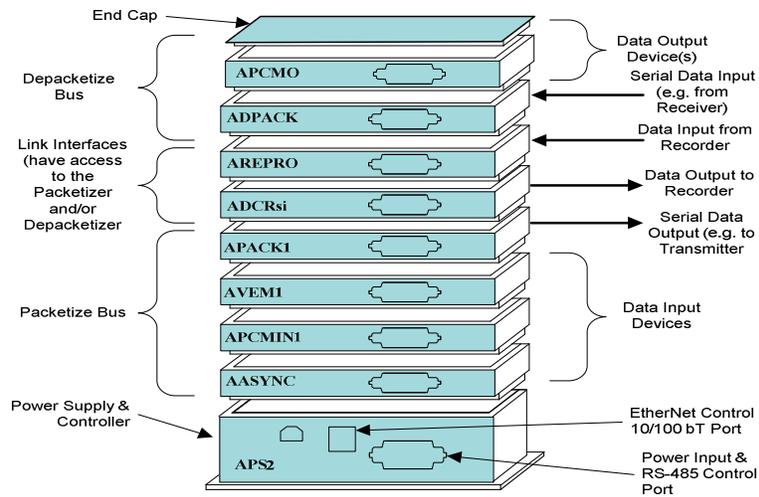
**SIZE / WEIGHT**

- Modules: 0.4" x 2.5" x 4.0" stacked; weight: < 4 oz
- End cap: 0.2" x 2.5" x 4.0" stacked; weight < 2 oz
- Power module: 1.0" x 2.5" x 4.0" body with 0.30" mounting flange; weight typically < 11 oz

**CONTROL**

- 10 base-T Ethernet on RJ-45 connector
- RS-485 on DB-9 connector
- TCP/IP; ARP

**APPLICATION DIAGRAMS**



**APPLICATION OVERVIEW**

*In airborne applications, the AL4000 merges multiple data sources (such as audio, video, and 1553) into a composite stream for transmission to ground stations via an RF link. The multiplexed data are then reconstructed back to the original data sources via an AL4300 Multiplexer/Demultiplexer (or an AL4000). In the application below, Apogee Labs' Model 9101 COFDM Telemetry Transmitter interfaces with the AL4000 to convert the data into an RF signal for transmission to the ground, the AL9201 COFDM Telemetry Receiver converts the RF signal back to a digital signal.*

