

IoE1

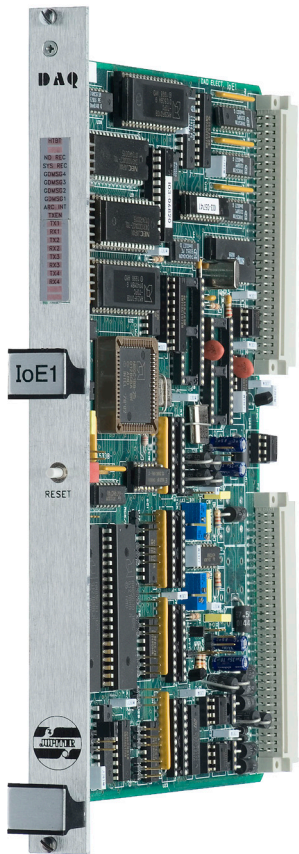
Serial Processing Module

HIGH-SPEED COMMUNICATIONS / DATA MANAGEMENT

The IoE1 module serves as the communications node in the Callisto™ network, managing data from other Callisto nodes as well as information received from intelligent electronic devices (IEDs). Data can be processed locally using powerful utility applications provided by the CallistoView™ software package, including programmable logic and SOE recording, or passed to one or more master stations.

The IoE1 offers four configurable, on-board serial data ports that may be physically presented as RS485 or RS232 circuits. Two ports can be linked for operation via an on-board Bell 202, 1200-baud modem, with one optionally configured for operation over a dial-up network. Supported communication options include both synchronous and asynchronous, byte or bit-oriented protocols. To accommodate the need for additional ports, multiple IoE1 nodes may be combined within a Callisto remote.

A library of supported protocols enables the IoE1 to communicate with devices in their native language, providing an automation solution that is open in design and manufacturer independent. IoE technology also forms the core of DAQ's Intelligent Communication Processor (ICP), a communication gateway used in substation networks to automate and manage large amounts of information from multiple sources.



With processing features designed for streamlined IED data management and a broad library of protocols, the Callisto IoE1 module offers a dynamic communications solution for today's SCADA networks.

KEY FEATURES

- Multi-port communications with master stations and IEDs
 - 4 serial ports
 - Flexible configurations
- User-configurable automation applications, including programmable logic, file archiving, and SOE recording
- Open solutions approach allows simple integration of devices from multiple manufacturers
- Interface to real-time clock or global positioning system (GPS)
- Communication with remotely-sited satellite RTUs over modem lines, radio, fiber, packet radio, or dial-up networks
- Extensive protocol library
- Pass-Thru-Port (PTP) for seamless configuration of third party devices
- Local printer support for alarm logging and SOE recording

PROCESSING

Processor

- 25MHz Intel 80C188 Microcontroller
 - 8 bit data bus
 - 20 bit address bus
 - 2 DMA channels
 - Direct addressing to 1MB memory and 64KB I/O

Operating System

- Industry standard Nucleus RTX real-time, multi-tasking system
- Simple integration of user-defined applications and algorithms

Memory

- Intel 80C188
 - 128K x 8 Flash Memory
 - 128K x 8 EPROM
 - 128K x 8 RAM (2)
 - 1K x 1 Serial EEPROM

Time Synchronization

- Real time clock maintains time and date during loss of power
- 12.288 MHz Crystal Oscillator
- 1ppm crystal accuracy (1ms per 15 minute interval)
- Real time synchronization for all nodes on the LAN
- Maintains 1ms time-tagging accuracy for all events on the network

COMMUNICATIONS

Serial Input/Output

- 4 independent serial communications ports, individually configurable as RS232 or RS485
- Up to 19.2 kbps, individually configurable per port
- Byte or bit-oriented, synchronous or asynchronous protocols
- On-board Bell 202 and CCITT V231200 baud modem for private circuit operation
- Support for external modems over leased line and/or PSTN circuits
- Fiber, radio, trunked radio, and packet radio media also supported
- Modem isolation: 2w/4w 500V transformer isolation with 300V gas tubes in primary
- Protocols operate independently per port

Local Area Network

- DAQ Voyager protocol operating on Callisto standard ArcNET LAN at speeds up to 2.5 megabits per second

Configuration

- Via CallistoView software package from any Callisto host node

PROTOCOL SUPPORT

Master Station and IED

- Conitel
- DNP 3.0
- Modicon MODBus
- PMS-91
- QUICS IV
- SES-92
- Landis & Gyr 8979

Master Station

- CDC Type I and Type II
- Harris 5000/6000
- IEC 870-5 Profile 103
- PG&E 2179

IED

- Cooper 2179
- Eaton Incom
- IEC 870-5 Profile 101 (Siemens)
- JEM 1
- PSE Quad 4 Meter
- Quantum Qdip
- Schweitzer Relay Protocol (221/251/351)
- SPABUS
- Transdata Mark V Meter

In addition to the protocols listed, DAQ can also accommodate special user requirements

ADDITIONAL SPECIFICATIONS

Power

- 340mA @ 5VDC
- 10mA @ 12VDC
- 25mA @ -12VDC

Isolation

- Surge withstand: 5kV ANSI/IEEE C37.90.2002 SWC using IoE1, IoET1
- Electrical interference
 - Insulation/isolation: IEC 255-5
 - High frequency disturbance: IEC 255-22-1
 - Fast transient/burst: IEC 801-4
 - Electrostatic discharge: IEC 801-2

Environmental

- Operating range: -20 to +70°C
- Storage range: -20 to +70°C
- Relative humidity: 5 to 95% non-condensing
- Vibration: 5 to 65Hz

Dimensions

- Standard 4-layer Double EuroCard PCB
- 6 ¼" x 9 ¼" (160mm x 235mm)

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262B Old New Brunswick Road
Piscataway, NJ 08854 USA
T 732.981.0050 F 732.981.0058
www.daq.net