

# IoE2 Serial Processing Module

## NEXT-GEN COMMUNICATIONS AND DATA MANAGEMENT

The IoE2 module serves as a 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 IoE2 offers a 10/100MB IP Ethernet connection and four configurable, on-board serial data ports that may be physically presented as RS485 or RS232 circuits. Supported communication options include both byte and bit-oriented protocols. To accommodate the need for additional ports, multiple IoE2 nodes may be combined within a Callisto remote. A library of supported protocols enables the IoE2 to communicate with devices in their native language, providing an automation solution that is open in design and manufacturer independent. IoE2 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 enhanced processing speed, expanded memory, and Ethernet compatibility, the Callisto IoE2 module offers state-of-the-art technology for high-speed data management.

## KEY FEATURES

- Multi-port communications with master stations and IEDs
  - 4 serial ports
  - IP Ethernet connection
  - Flexible configurations
- 10/100MB interface supports SCADA protocols over TCP/IP
- User-configurable automation applications, including programmable logic, file archiving, and SOE recording
- Extensive protocol library
- Open solutions approach allows simple integration of devices from multiple manufacturers
- Communication with remotely-sited satellite RTUs over modem lines, radio, fiber, packet radio, or dial-up networks
- Pass-Thru-Port (PTP) for seamless configuration of third party devices
- Local printer support for alarm logging and SOE recording
- Historical file storage for retrieval using file transfer protocol (FTP)
- Interface to real-time clock or global positioning system (GPS)





## TECHNICAL SPECIFICATIONS

### PROCESSING

#### Processor

- 50MHz Intel 386Ex Processor
  - 16 bit data bus
  - 24 bit address bus
  - 2 DMA channels
  - Internal watchdog timer

#### Operating System

- OSX real-time, multi-tasking system
- Simple integration of user-defined applications and algorithms

#### Memory

- Intel 386Ex
  - 1MB Flash Memory
  - Up to 5MB battery-backed SRAM
  - Memory expansion via Disk on Chip

#### Time Synchronization

- Real time clock maintains time and date during loss of power
- 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

### PROTOCOL SUPPORT

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

#### 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

### DIMENSIONS

#### Printed Circuit Board

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

### COMMUNICATIONS

#### Serial Input/Output

- 1 10/100MB Ethernet port
- 4 independent serial communications ports, individually configurable as RS232 or RS485
- Up to 115200 baud, individually configurable per serial port
- Byte or bit-oriented protocols
- Support for external modems over leased line and/or PSTN circuits
- Fiber, radio, trunked radio, and packet radio media also supported
- 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 from any host node

#### Connections

- All connections available via RJ45 terminals on the front of the module
- Optionally, serial port connections can be made available via DB-9 connections at the rear of a chassis with an external IoE termination module (IoET1)

### ADDITIONAL SPECIFICATIONS

#### Isolation

- Surge withstand: 5kV ANSI/IEEE C37.90.2002 SWC using IoE2, 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

#### Power

- 500mA @ 5VDC
- 50mA @ 12VDC
- 50mA @ -12VDC

#### Environmental

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



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