

# IoE3 Communications Module

## CONNECTIVITY, DATA MANAGEMENT, AND SECURITY

The IoE3 communications module is a powerful addition to the Callisto™ network, designed to efficiently process data from other Callisto nodes and connected IEDs while adding a new layer of security to your SCADA system. Data can be transferred to one or more master stations or managed locally using advanced utility applications provided within the CallistoView™ software package, including programmable logic and SOE recording. Built-in security features include remote authentication, secure passwords, encrypted protocols (OpenVPN, HTTPS, SSH, SFTP), firewall protection, and syslog event management. Connected to an Active Directory authentication system, the IoE3 provides logging for audits.

The IoE3 offers dual Gigabit Ethernet connections 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 IoE3 nodes may be combined within a Callisto remote. A library of supported protocols enables the IoE3 to communicate with devices in their native language, providing an automation solution that is open in design and manufacturer independent.

IoE3 technology also forms the core of DAQ's IoG3, a secured data communications gateway used in substation networks to automate and manage large amounts of information from multiple sources.



With optimized processing speed, Ethernet compatibility, and a focus on security, the Callisto IoE3 module offers state-of-the-art technology for high-speed data management. To minimize rack space, the IoE3 can be configured in a 1U rack-mount option.

## KEY FEATURES

- Multi-port communications with master stations/IEDs
  - 4 serial ports
  - Dual Gigabit Ethernet ports
  - Flexible configurations
- Gigabyte Ethernet interface supports SCADA protocols over TCP/IP
- Secured integration to Active Directory authentication system for user management, including LDAP and SAML
- Built-in USB port for event retrieval/ storage
- 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, dial-up networks, or on-board cellular
- GPS time sync using IRIG codes
- Historical file storage for retrieval using file transfer protocol (FTP)





## PROCESSING

### Processor

- 1000 MHz ARM Cortex A9

### Operating System

- Embedded Linux

### Memory

- 512 MB RAM
- 512 MB Flash

### Database

- Embedded SQL Lite

### 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 system/network
- Maintains 1ms time-tagging accuracy for all events on the network

## PROTOCOL SUPPORT

### The IoE3 comes equipped with:

- DNP 3.0, IP and Secure Authentication V5
- MODBus

### Additional protocols are available upon request, including:

- Conitel, CDC Type I and Type II, Cooper 2179, Eaton Incom, Harris 5000/6000, IEC 870-5 Profile 101 and 103, Landis & Gyr 8979, PG&E 2179, PMS-91, QUICS IV, SES-92, Transdata Mark V Meter

DAQ can also accommodate special user requirements

## DIMENSIONS

### Printed Circuit Board

- Standard 6-layer Double EuroCard PCB
- 6 1/4" x 9 1/4" (160mm x 235mm)

## PACKAGING

- Into Callisto processor Euro bin
- 1U rack-mount enclosure

## TECHNICAL SPECIFICATIONS

## COMMUNICATIONS

### Serial Input/Output

- Dual Gigabit Ethernet ports
- 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
- On-board cellular communication
- 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 add-on 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



## CONTACT

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