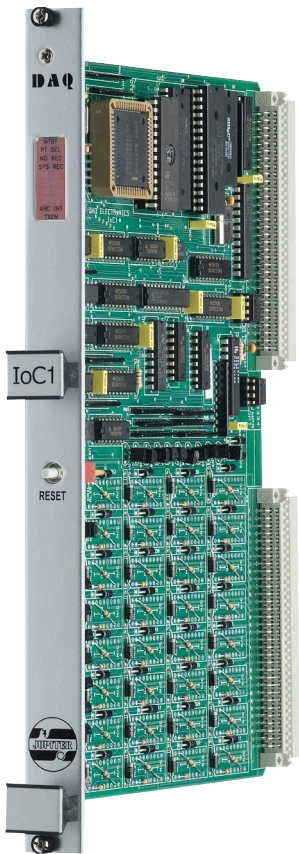# IoC1

Command Processing Module
EFFICIENT, SECURE MANAGEMENT OF RELAY CONTROLS

The IoC1 module serves as the command processing node in the Callisto™ network and is capable of controlling up to 32 relay outputs, configurable as 16 on/off pairs with select-before-operate protection, 16 latch/reset relays, or 32 direct-operate commands. To accommodate additional control outputs, multiple IoC1 nodes may be combined within a Callisto remote.

In a basic configuration, relays are mounted directly on the IoC1 module to provide a single Form A or Form B contact output per point. Alternately, to incorporate relays of virtually any type or rating, the IoC1 can be configured to directly drive external relay coils installed on command output termination cards. Each termination card provides physical connections for output wiring along with signal protection and has the capacity for eight momentary relays or four latching relays.

The contact closure duration for each relay is user-definable and can be utilized for raise/lower functionality, with the output relay operate time loaded within the command message.

With flexible configuration options, the Callisto IoC1 module provides a control processing platform that meets diverse application requirements.

KEY FEATURES

- Capacity for up to 32 command relay outputs, configurable as:
  - 16 on/off pairs
  - 16 latch/reset relays
  - 32 direct-operate commands
- Associated termination cards to accommodate any relay contact arrangement and rating

- Full select-before-operate capability
- User-definable pulse duration on a per point basis

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PROCESSING

Processor
- 12MHz 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
  - 1K x 1 Serial EEPROM

COMMANDS

Control Outputs
- Up to 32 outputs using on-board relays or via termination cards
- Configurations: 16 on/off pairs with select-check-execute security
- Relay types:
  - 30VDC, 5A resistive, 1.5A inductive (on-board relays) with 1 Form A, 1 Form B, or mixture 150VDC, 10A resistive, inductive (on termination cards)
  - 1 form X (other options available)
- Pulse durations: configurable per point between 20 milliseconds and 10 minutes
- Operate time: 3ms with on-board relay
- Release time: 1ms with on-board relay

Configuration
- Via CallistoView™ software package from any Callisto host node

ADDITIONAL SPECIFICATIONS

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

Power
- 290mA @ 5VDC
- 1.5mA @ 12VDC plus 35mA when command relay energizes (not including power for external relays when used)

Isolation
- 2.2kV AC, coil to contact and contact to contact (off-board relays): 1000V rms contact to coil (on-board relays)
- Surge withstand: 5kV ANSI/IEEE C37.90.2002 SWC using IoC1, IoCT2, IoCT3, IoCT5
- 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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