Datasheet **A560**

Real-time Controller with Multiple Fiber-Optic Loop Control and System Interlocks

Features

- Standard Ethernet interface supporting TCP/IP and UDP.
- Allows over 100 devices to be connected to a standard PC through a single Ethernet port
- PTC DiagnosticG2 host software allows PTC fiber-optic loop devices to be connected through the A560
- High performance on-board A60 processors and memory for data buffering and real-time calculations.
- Built-in hardware interlock system for safety-critical systems
- Software interfaces available for various host systems.
- xml scripting allows coordinated data output and input across multiple devices
- Python scripting allows complex sequence control across multiple devices, for example to tune a beamline automatically.

Applications

- Applications that require real-time deterministic control of multiple distributed devices and/or real-time data processing.
- Applications that require robust safety interlocking.
- Large-scale, high-performance fiber optic loop systems.
- Data acquisition and control systems for noisy environments.
- Data acquisition and control systems that must communicate across high-voltage gaps.

Specifications

Processors	Ethernet processor NIOS II/f 110 MHz Fiber-optic loop processor NIOS II/f 100 MHz
Memory	32 MB of 32b x 110 MHz RAM for Ethernet processor 16 MB flash memory for Ethernet processor 1 MB 32b x 50 MHz RAM shared memory
Operating system	uCLinux 2.6 with high speed FPU instruction block in Ethernet processor. Embedded C (deterministic) with high speed FPU instruction block in fiber optic loop processor.
Ethernet	Fully transformer isolated. Auto negotiation 1000/100/10 Mbps, MDIX capability. TCP/IP and UDP. Static or DHCP IP4 address assignment.
Fiber-optic ports	Ten loop ports, each a transmitter / receiver pair, rear panel. Up to fifteen devices per port. Peer-to-peer A560 communication available through loop ports.
Gate in	TTL levels 10 kohm input impedance
Gate out	TTL levels Able to drive 50 ohm load
Interlocks	Hardware interlock system coordinated by dual redundant CPLDs. Relays can be configured for current loop or 24 volt logic. Watchdog monitoring of the A560 processor health, plus software-definable analysis of real-time data incoming. Front-panel keyswitch allows selection of normal running mode or diagnostic mode. +24 VDC 200 mA fused provided on three outputs for 24 V logic operation. Interlock relay: potential-free n/o contact pair safety-rated SR4D4 relay. Status relay: potential-free n/o contact pair. Enabled output: potential-free n/o contact pair. Enable input: opto-isolator input (anode and cathode), 2.5 kohm current limiting resistor.

Specifications (continued)

Power input	+24V (+/- 2V) DC, 500 mA. Fused with 1.1A PTC fuse.
Controls	Keyswitch for Interlocking mode, front panel. Key is retained when in Diagnostic mode. Joystick for LCD display selection, front panel. Processor reset button, rear panel.
Displays	2 by 40 character backlit LCD on front panel for POST messages and connection status. One front panel LED yellow to indicate keyswitch is in Diagnostic mode. Four rear panel LEDs green for power, device status and Ethernet baud rate.
Case	19” rack mounting, 1U. Stainless steel sheet, with aluminium front panel,
Weight	2.0 kg (4.4 lb)
Operating environment	10 to 35C, < 80% humidity, non-condensing, vibration < 0.1g all axes, 1 to 100Hz
Storage environment	0 to 50C, < 80% humidity, non-condensing, vibration < 2g all axes, 1 to 100Hz

Interfacing

Interfaces	To host system: Ethernet 1000/100/10baseT, TCP/IP and UDP messaging. To front-end devices: Fiber-optic loop, 10 Mbit/sec serial, 9 bit asynchronous binary.
Host computer	PTC DiagnosticG2 host software provided. Libraries available for Win32 and Linux.
User programming	User scripting environment provided for real-time processing (output map processing and data gathering) via xml files. User scripting environment provided for decision-based asynchronous processing (such as beamline tuning) via Python coding.

Connectors

Ethernet — RJ-45 socket, suitable for standard Ethernet 8-way plug and CAT5 or higher cable.

Fiber optics — Ten pairs, 1mm Avago HFBR ST bayonet.

Enable — Weidmuller Omnimate SL 179348000 8 pin 3.81 mm male

1	24 V rtn	5	Enabled out relay contact
2	24 VDC out fused	6	Enabled out relay contact
3	Enable in opto anode	7	Override switch sense contact
4	Enable in opto cathode	8	Override switch sense contact

Interlock — Weidmuller Omnimate SL 179345000 5 pin 3.81 mm male

1	24 V rtn	4	Safety relay contact
2	24 VDC out fused	5	n/c
3	Safety relay contact		

Relay output — Weidmuller Omnimate SL 179344000 4 pin 3.81 mm male

1	24 V rtn	3	Relay contact
2	24 VDC out fused	4	Relay contact

Gate in — BNC jack, isolated from chassis.

Gate out — BNC jack, isolated from chassis.

Power in — Lemo Redel PXG.M0.2GG.NG two-pin locking connector, UL rated. Mates with Redel PAG.M0.2 type or PFG.M0.2 type free plugs.

1	+24 VDC	2	Return

Ground connection — M4 threaded stud

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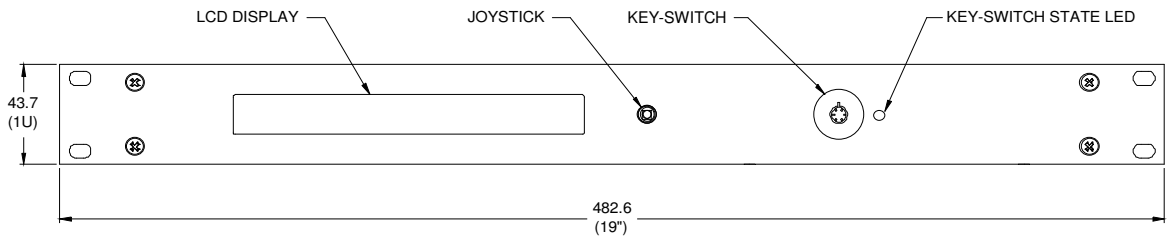
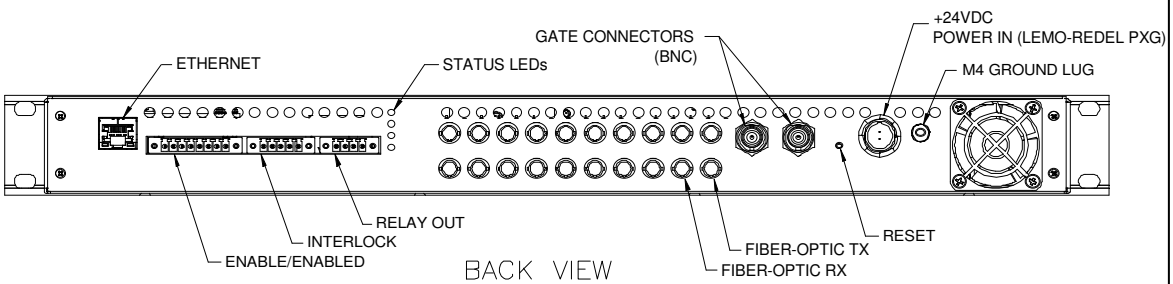


FRONT VIEW



BACK VIEW
(ROTATED)

Dims mm

Ordering information

A560	A560 with ten fiber-optic loop ports and hardware interlocks.

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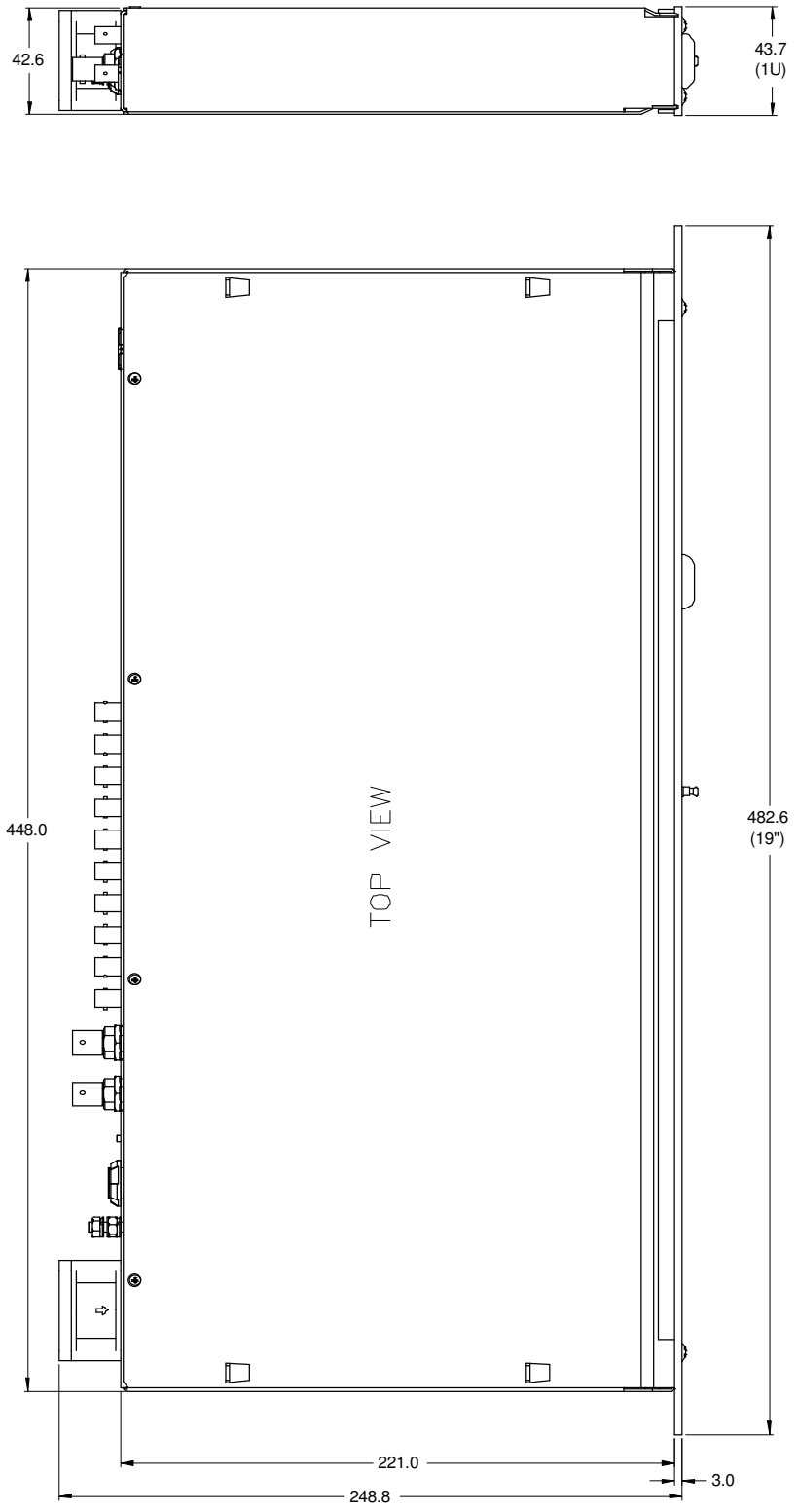

Dims mm