

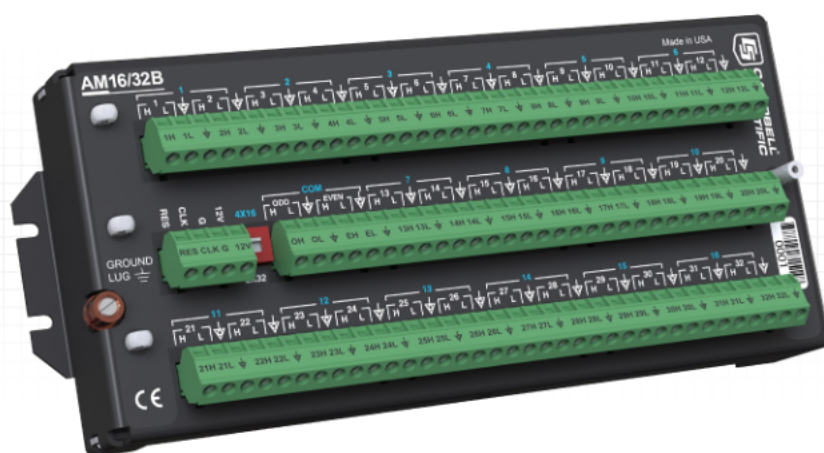


AM16/32B

16- or 32-Channel Relay Multiplexer

Greatly Increases Sensor Capacity

Connects many sensors to a single datalogger



Overview

The AM16/32B multiplexer significantly increases the number of sensors that can be measured by a Campbell Scientific datalogger. It multiplexes 16 groups of four lines (a total of 64 lines)

through four common (COM) terminals. Alternatively, a manual switch setting allows the AM16/32B to multiplex 32 groups of two lines (also a total of 64 lines) through two COM terminals.

Benefits and Features

- Significantly increases the number of sensors the datalogger can measure
- Multiplexes up to 32 sensors at a time
- Supports many types of sensors including thermistors, potentiometers, strain gages, vibrating wires, reflectometers, and soil moisture blocks
- Eliminates the requirement for dc blocking capacitors for gypsum soil moisture blocks, significantly reducing sensor cost
- Decreases the cost of cabling individual sensors on long wire runs
- Allows a relay address to be used to go directly to a specific channel—reducing power consumption and wear on the relay switches
- Protects the equipment from electrical surges by including gas tubes on all of the inputs and having a ground lug
- Prevents sensor-cable damage by providing strain relief for sensor leads and independent routing for sensor shield lines

Power Considerations

The AM16/32B draws less than 210 μ A quiescent, 6 mA active—so power considerations are heavily tied to the percentage of time in quiescent versus active states. Use of a relay address can reduce power consumption by minimizing the time spent in an active state.

In most applications, the datalogger's sealed rechargeable power supply should be more than sufficient; the datalogger's alkaline power supply can be used in applications where the multiplexer is activated infrequently



Scanning Multiple AM16/32Bs

Several AM16/32Bs may be connected to one logger depending on the number of control ports and analog inputs available.

Maximum Number of Sensor Connections

The maximum number of sensors multiplexed through one AM16/32B depends on the type(s) of sensors measured. For example, assuming identical sensors, the AM16/32B can multiplex:

- › Up to 32 single-ended or differential sensors that require two wires (e.g., thermistors, half bridges)
- › Up to 16 single-ended or differential sensors that require four wires (e.g., full bridges, four-wire half bridges)
- › Up to 32 vibrating wire sensors (16 with temperature) in conjunction with an AVW200-series vibrating wire interface
- › Up to 48 half-bridge measurements (assumes common excitation and completion resistors at the datalogger)
- › Up to 48 CS616 Water Content Reflectometers (assumes common excitation)
- › Up to 32 gypsum soil moisture blocks (model 223 or 253). The AM16/32B eliminates the requirement for dc blocking capacitors, significantly reducing sensor cost

Specifications

- › Power:^a 9.6 to 16 Vdc (under load)
- › Scan Advance: Occurs on the leading edge of the clock pulse transition (from below 1.5 V to above 3.3 V)
- › Minimum Clock Pulse Width: 1 ms
- › Maximum Actuation Time for Relay: 20 ms
- › Relay Operation: break before make
- › Initial Relay Resistance, Closed: 0.1 Ω
- › Maximum Switching Current:^b 500 mA
- › Maximum Switching Voltage:^c 50 Vdc
- › Minimum Contact Life: 10⁷ closures
- › CE Compliance: EN 61326: 1998 EN 55022: 1998 Class B
- › Surge: Complies with IEC61000-4-5, test level 3 (± 2 kV, 2 Ω coupling impedance)
- › Weight: 680 g (1.5 lb)
- › Dimensions: 22.0 x 10.1 x 6.6 cm (8.7 x 4.0 x 2.6 in)

Clock Levels

- › Scan Advance: Occurs on the leading edge of the clock pulse transition (from below 1.5 V to above 3.3 V)
- › Maximum Voltage: 8 Vdc

Ordering Information

Multiplexer

AM16/32B 16 or 32 Channel Relay Multiplexer

Temperature Ranges (choose one)

- ST Tested -25° to +50°C
- XT Tested -55° to +85°C

Cables

For the cables below, enter cable length, in feet, after the -L. Must choose a cable termination option (see below).

- CABLE3CBL-L** 3-conductor, 22-AWG cable recommended for COM terminal connections when used in a 2 x 32 mode.
- CABLE4CBL-L** 4-conductor, 22-AWG cable for power and control connections. This cable can also be used for COM terminal connections when used in the 4 x 16 mode.
- CABLE5CBL-L** 5-conductor, 24-AWG cable for COM terminal connections when used in the 4 x 16 mode and it is desirable to connect both shields.

Cable Termination Options (choose one)

- PT Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.
- PW Cable terminates in connector for attachment to a prewired enclosure.

ESD

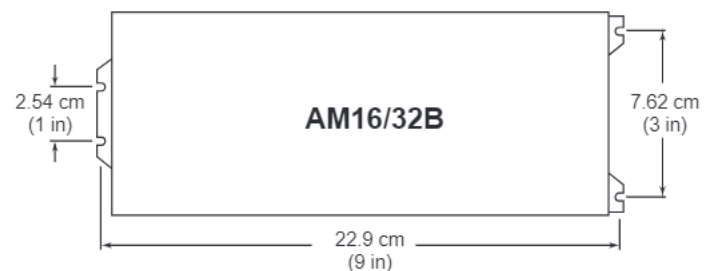
- › Air Discharge: Complies with IEC61000-4-2, test level 4 (± 15 kV)
- › Contact Discharge: Complies with IEC61000-4-2, test level 4 (± 8 kV)

Current Drain (typical)

- › Quiescent: < 210 μ A
- › Active: 6 mA

Reset Levels

- › Inactive: < 0.9 V
- › Active: 3.3 to 8 V



Mounting bracket dimensions

^aThe power requirements for AM16/32B multiplexers with serial numbers less than 5056 were 11.3 to 16 Vdc (under load; -25° to +50°C) and 11.8 to 16 Vdc (under load; -55° to +85°C).

^bSwitching currents greater than 30 mA (occasional 50 mA acceptable) degrade the suitability of that channel for switching low-voltage signals.

^cA voltage divider such as the VDIV10:1 may be needed between the AM16/32B and the datalogger to stay within the input limits of the datalogger channel.

