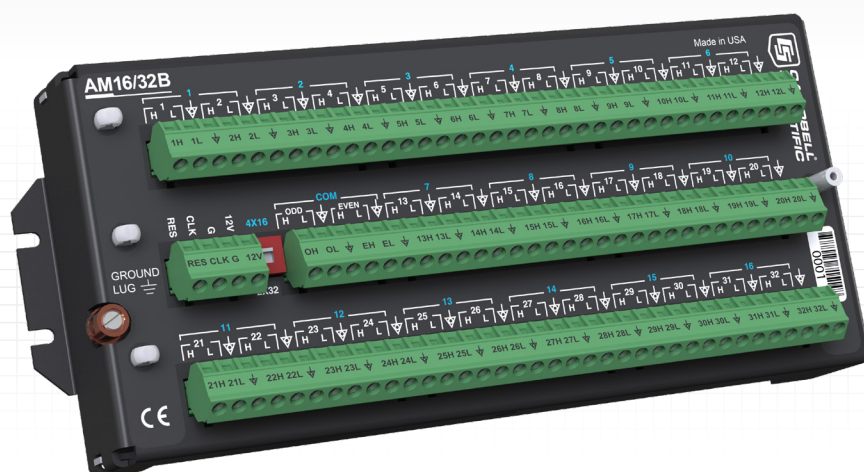




AM16/32B

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 set-

ting allows the AM16/32B to multiplex 32 groups of two lines (also a total of 64 lines) through two COM terminals. Several AM16/32Bs may be connected to one datalogger depending on the number of control ports and analog inputs available.

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

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

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www.campbellsci.com.au/am16-32b

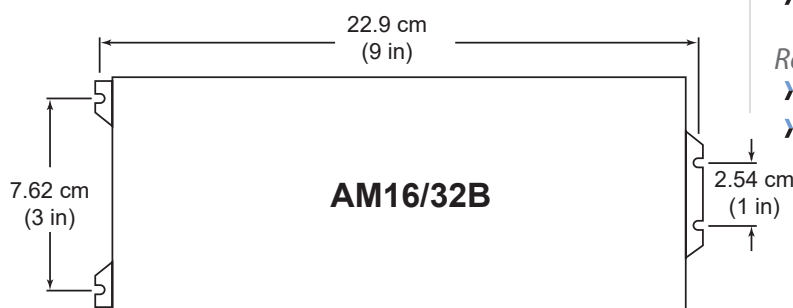
Power Considerations

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.

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
AM16/32B Cover	
19237	AM16/32B cover that helps reduce thermal gradients across the input terminals and protects the input connections from unintended jostling.
Cables	
<i>For the cables below, enter cable length, in feet, after the -L. Must choose a cable termination option (see below).</i>	
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.



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: 5 x 10⁷ closures
- View the EU Declaration of Conformity documents at: www.campbellsci.com/am16-32b and www.campbellsci.com/p19237
- 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

ESD

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

Current Drain (typical)

- Quiescent: < 210 μ A
- Active: 6 mA

Reset Levels

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

^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.