

ACL1
OPTO-ISOLATED AC LINE MONITOR
INSTRUCTION MANUAL

REVISION: ACL1.IM-1 3/87

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OPTO-ISOLATED AC LINE MONITOR

GENERAL:

The AC line monitor outputs a DC voltage signal in response to the presence or absence of an AC voltage. The DC signal is compatible with Campbell Scientific's CR21, CR7 and 21X dataloggers. The line monitor is often used to signal the datalogger that an AC powered device has turned on or off.

The ACL1 is powered only by +5 V DC. The +5 V DC is supplied by the +5 V supply on the panel of the CR21 or from either the CA0 channels or the control ports on the CR7 and 21X. The CA0 channels or control ports must be turned on using instructions contained in the CR7 or 21X (Instructions 20 & 21). If all the control ports and CA0 channels are full, consult the factory for a modification to power the ACL1 with +12 V DC.

SETTING THE LOGIC JUMPER:

The ACL1 has two logic modes depending on the setting of a Jumper. The line monitor outputs a logical "0" by outputting a DC voltage signal less than 0.8 volts. The monitor outputs a logical "1" by outputting a DC voltage greater than 3.70 volts but less than 5.1 volts.

Normal Logic - When the jumper at location C8 is shorting pins 1 and 2 (pin 1 is marked with a dot) the line monitor outputs logical "1" when 95 to 240 volts at 50 or 60 Hertz AC is applied to the AC line sensor inputs. When that voltage is not applied, then the AC line sensor outputs a logical "0". Normal logic is selected when the unit leaves the factory.

Reverse Logic - When the jumper at location C8 is shorting pins 2 and 3 (pin 1 is marked with a dot) the logic is reversed. The line monitor outputs logical "0" when 95 to 240 volts at 50 or 60 Hertz AC is applied to the AC line sensor inputs. When that voltage is not applied, then the AC line sensor outputs a logical "1".

AC VOLTAGE RATING:

The input to the AC line sensor should be between 95 and 240 volts rms. The AC line is optically isolated with an opto-isolator. The voltage isolation of the opto-isolator is greater than 1500 volts.

CURRENT RATING:

The quiescent current required from a +5 V DC supply is typically less than 200 microamps. The peak current taken from the AC line is typically less than 6 milliamperes.

CONNECTIONS:

Two wires (one black and one white) should be connected across the load, such as a motor, so that the 95 - 240 volts will be applied to the sensor at the same time that it is applied to the load. In other words the AC line sensor is connected the same way as a voltmeter would be connected, in parallel with the load. Black is connected to the hot side of the AC line and white is connected to the neutral side of the AC line.

The three wire group (one red, one black and one orange) should be connected as follows: The red should be connected to the +5 V DC supply, the black to ground, and the orange to either a single ended input channel in the CR7 and 21X or to the input ports on the CR21.