

Analog Light Sensor Installation Instructions

Description

Novar's Analog Light Sensor (ALS) is a precision electronic sensor that responds to ambient light levels and provides a variable milliamp output signal. It uses an accurate photo diode device with a color-correcting filter to provide a spectral response approximating that of the human eye. The solid-state, light-sensing element is located within the metal case of the sensor.

The Analog Light Sensor is specifically designed for use with Novar's Logic One® Input/Output Module (IOM/2), Executive Controller (EC), or Savvy®. The device can also be used with the EP/2 (which can use either digital or analog sensors). Two models of the Analog Light Sensor are available:

- ALS-300 (used in most standard lighting applications) with a sensing range of 0–300 footcandles
- ALS-1.5K (used for special applications) with a sensing range of 0–1500 footcandles

This document provides instructions for mounting, wiring, and testing the sensor. The instructions apply to both models unless otherwise noted.

Specifications

Analog Output

4–20 mA, two-wire

Compliance Voltage

+16V to +35V

Operating Environment

Temperature: –40° to 158°F (–40° to 70°C)

Operating Range

ALS-300: Linear from 0–300 footcandles (19.25–4.25 mA)
ALS-1.5K: Linear from 0–1500 footcandles (19.25–4.25 mA)

Accuracy of Reading

ALS-300: 6.4 fc (0.320 mA)
ALS-1.5K: 32 fc (0.320 mA)

Physical Dimensions

Height: 2.375 inches
Length: 5 inches
Depth: 2.375 inches



Mounting the Sensor

The sensor should be mounted in a location that is high enough to prevent normal traffic from blocking or disrupting a good average reading. Novar recommends that the sensor face the Northern sky or horizon. It should be positioned so that the cable connector is at the bottom (Figure 1) and the sensor lens faces the area to be monitored.

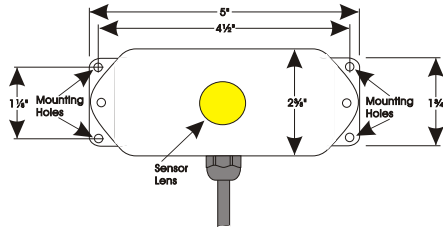


Figure 1. Analog Light Sensor

The performance characteristics graphs (Figure 2) can be used to help identify a location that will provide maximum sensing capability.

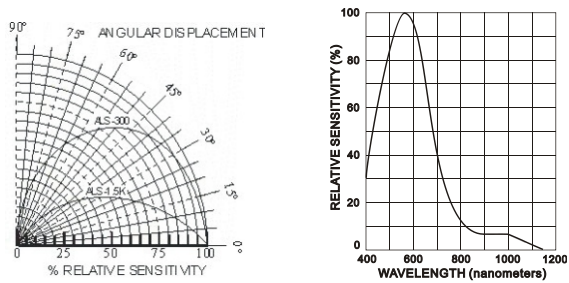


Figure 2. Directional sensitivity and relative spectral sensitivity

The following procedure should be used to mount the sensor (refer to Figure 1, as necessary).

Step	Procedure
1	Select a suitable mounting location for the sensor.
2	Position the sensor against the mounting surface and mark the surface to show the location of the four mounting holes.
3	Drill holes for the mounting screws in the locations marked and, if necessary, insert wall anchors (not included).
4	Position the sensor over the holes and insert and tighten the screws to secure the sensor.

Wiring the Sensor

Maximum recommended sensor wire length for connecting the temperature sensor is 1000 feet, using 22-gauge wire.

The sensor is equipped with a 20-foot shielded cable. If the cable length supplied with the unit is not long enough, splice an additional shielded two-conductor cable (Belden 8761, Novar WIR-1010, or equivalent) as follows:

- Connect white to white.
- Connect black to black.
- Connect shield to shield.

NOTE! Do not make any connections inside the case.

The sensor should be connected to the module as indicated in Table 1.

Table 1. Wiring the Analog Light Sensor	
MODULE	CONNECTIONS
IOM/2, EC IOM, or Savvy IOM	Connect the sensor to one of the Class 2, 4 to 20-mA inputs.
EP/2	Connect the sensor to the terminals labeled Outdoor Light Sensor. <ul style="list-style-type: none"> ■ Connect the cable's white wire to the positive (+) terminal. ■ Connect the cable's shield drain wire to the Shield terminal. ■ Connect the cable's black wire to the negative (-) terminal.
Savvy Transition Board without UL Label	<ul style="list-style-type: none"> ■ Connect the cable's white (+) wire to Terminal 62 (not Terminal 58). ■ Connect the cable's black (-) wire to Terminal 59 (+). ■ Connect the cable's shield wire to Terminal 61.
Savvy Transition Board with UL Label	<ul style="list-style-type: none"> ■ Connect the cable's white (+) wire to Terminal 59 (+). ■ Connect the cable's black (-) wire to Terminal 58 (-). ■ Connect the cable's shield wire to Terminal 61.

Scaling

The sensor regulates a 4- to 20-mA current signal and is scaled in Novar's software. It is linear with the light level. The current-to-light relationship is inverse.

- ALS-300 sensor range: 0–300 footcandles (19.25 to 4.25 mA)
 - ALS-1.5K sensor range: 0–1500 footcandles (19.25 to 4.25 mA)
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Checking the Installation

When the sensor has been mounted and the wiring connections have been completed, the following items should be checked to ensure proper operation.

- Remove the sensor's cover to check the power LED. If the LED is not lit, the circuit is open or the polarity to the sensor is reversed.

NOTE! Make wiring changes at the cable connection. Do *not* change the wiring inside the sensor case.

- Check the executive module's display to make sure the sensor is operating properly. Use the executive module's keypad to change settings and make sure the sensor responds accurately.
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Model/Part Numbers

The part numbers shown in Table 2 should be used to order Novar Parts.

PRODUCT	MODEL NO.	PART NO.
Analog Light Sensor (4–20 mA; sensing range 0–300 footcandles)	ALS	708100000
Analog Light Sensor (4–20 mA; sensing range 0–1500 footcandles)	ALS-1.5K	708101000
Two-conductor shielded cable (Belden #8761 equivalent)	WIR-1010	709001000

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