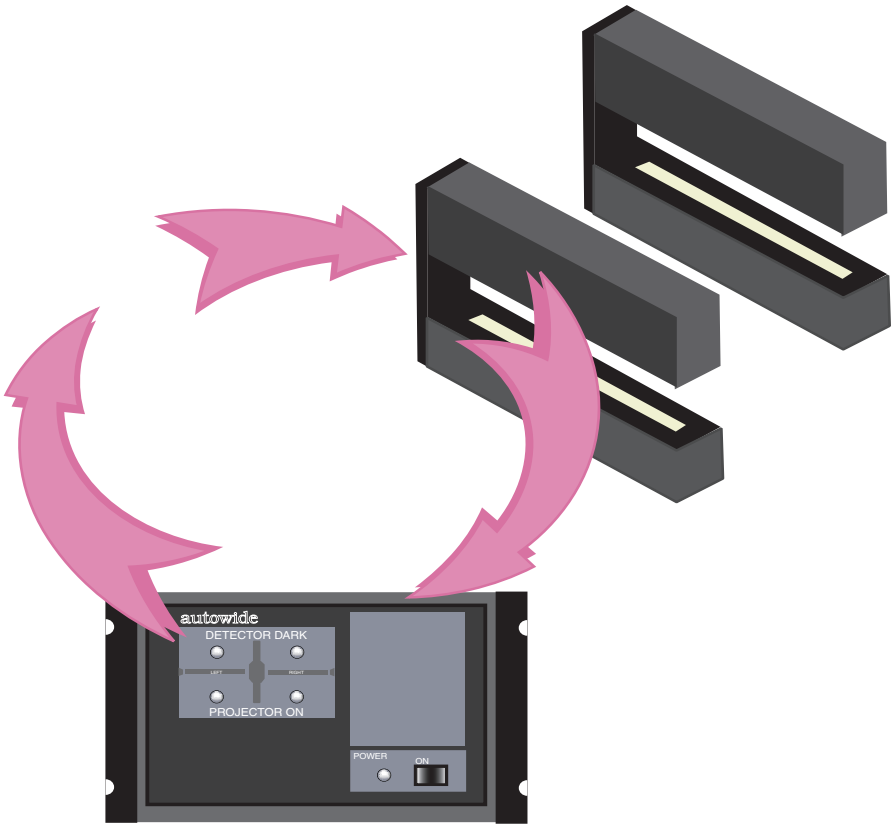
nexen

WEB CONTROL PRODUCTS

User Manual

WEB GUIDE SENSOR SYSTEM
with
AWL280 Sensors
AS10-D Amplifier

User Guide



“Web Controls”

FORM NO. L-20219-B-1212

In accordance with Nexen's established policy of constant product improvement, the specifications contained in this manual are subject to change without notice. Technical data listed in this manual are based on the latest information available at the time of printing and are also subject to change without notice.

Technical Support: 800-843-7445
(651) 484-5900

www.nexengroup.com

CAUTION

Read this manual carefully before installation and operation.

Follow Nexen's instructions and integrate this unit into your system with care.

This unit should be installed, operated and maintained by qualified personnel ONLY.

Improper installation can cause an interruption in service.

Comply with all applicable codes.

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560 Oak Grove Parkway
Vadnais Heights, Minnesota 55127

ISO 9001 Certified

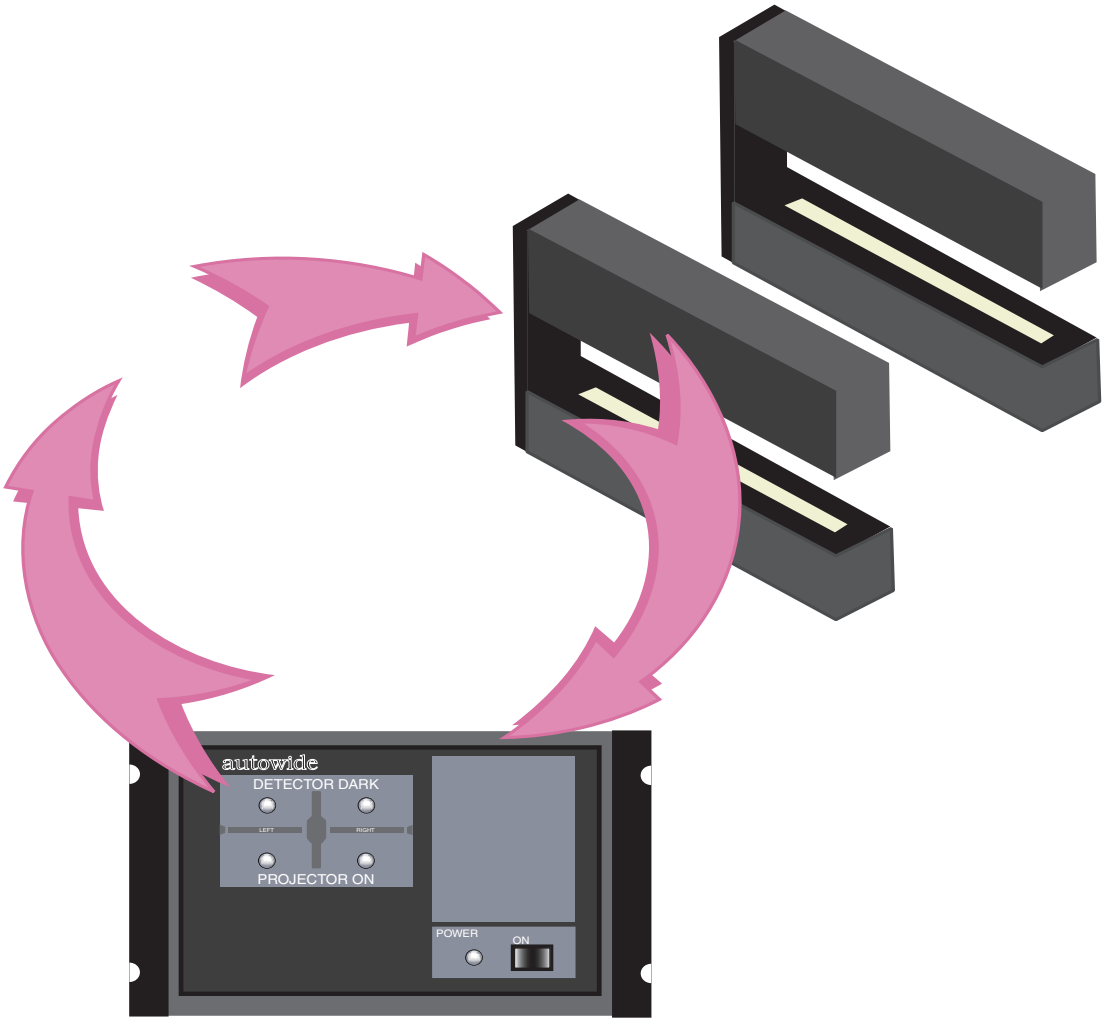
Table of Contents

INTRODUCTION

Nexen's Web Guide Sensor System is used for web control applications. The Web Guide Sensor System consists of two AWL280 Sensors, an AS10-D Amplifier and a Web Guide Controller.

The AWL280 Sensors are placed at opposite edges of the web and work in tandem to track the position of the web. The AWL280 Sensors send an infrared light from the projector housing across a gap to the detector housing. A web passing through the gap blocks the light. The electrical output signal from the sensor to the AS10-D Amplifier will change in response to the changes in the infrared light.

The ASD10-D Amplifier is the excitation signal for the sensors. The ASD10-D Amplifier conditions the sensor output for transmission to the Web Guide Controller. The sensors transmit data to the Web Guide Controller which in turn, generates a control output signal. This control output signal moves a mechanical element (e.g., roll stand, guide roll steering mechanism) which keeps the center of the web at the center line of the machine. This type of closed-loop web guiding is called "Center Guiding" or "Center Position Control" (CPC).



SENSOR INSTALLATION

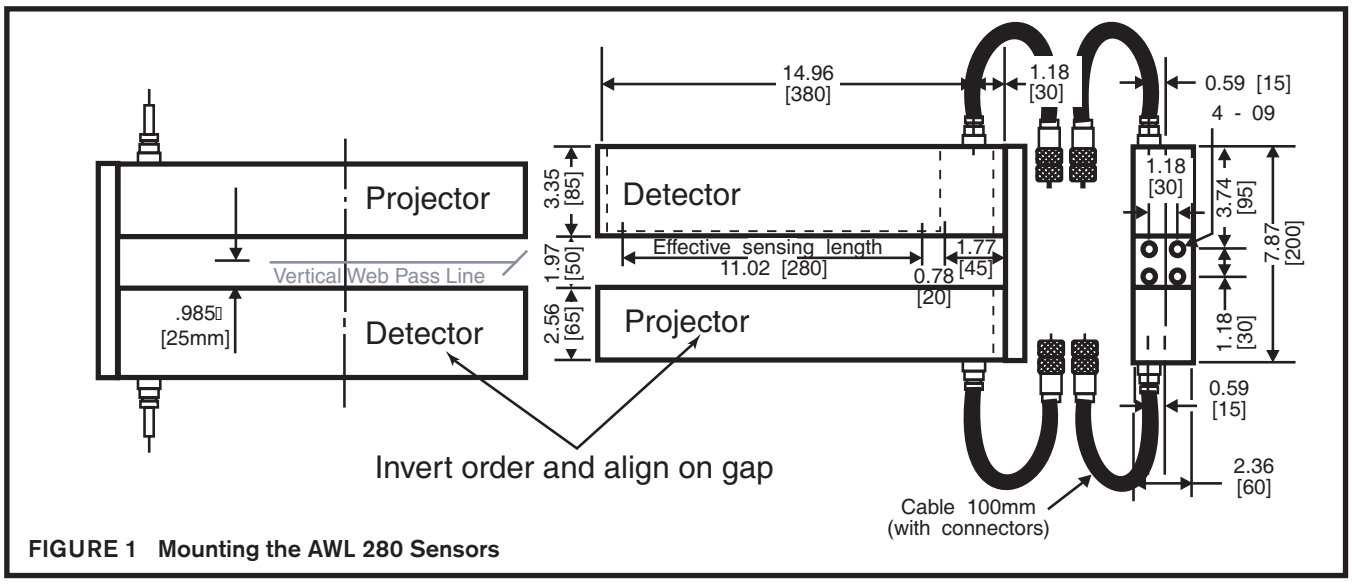


FIGURE 1 Mounting the AWL 280 Sensors

NOTE: Refer to Figures 1 and 2.

1. Install the two AWL280 Sensors in inverted order to each other; one sensor with the projector side up and one sensor with the detector side up. Because the detector housing is larger (3.35 inches / 85 mm) than the projector housing (2.56 inches/ 65 mm), the sensor with the detector side up will sit higher than the sensor with the projector side up.

2. The web must be centered on both the vertical and horizontal plane. Center the web on the vertical plane at the vertical web pass line between the projector and detector (.985 inch [25 mm]). Center the web on the horizontal plane between the left and right sensor.

3. The projector and detector housings may be removed from the steel bar and mounted separately if your application requires a gap that is wider than 1.978 [50] or if the sides must be open. The housings must be aligned both vertically and horizontally when mounted separately. The gap from the projector lens to the detector lens must not exceed 10 inches [250 mm].

4. The sensing length in the sensor window measures 11.02 inches [280 mm]. This sensing length is indicated by arrows that are located on either side of the sensor window. However, for the most effective use of this sensing area, the web should not extend to the full outer edge of the sensing length. The optimum width of the web is 1/2 of the total sensing area of 22.04 inches plus "B" (which is 11.02 inches [280 mm] plus "B"). The web width should not exceed 22.04 inches plus "B" nor should the web width fall below the width of "B". Mount the sensors so that the maximum and minimum web widths fall within this range. In addition, mount each sensor an equal distance (A) from the center line of the machine.

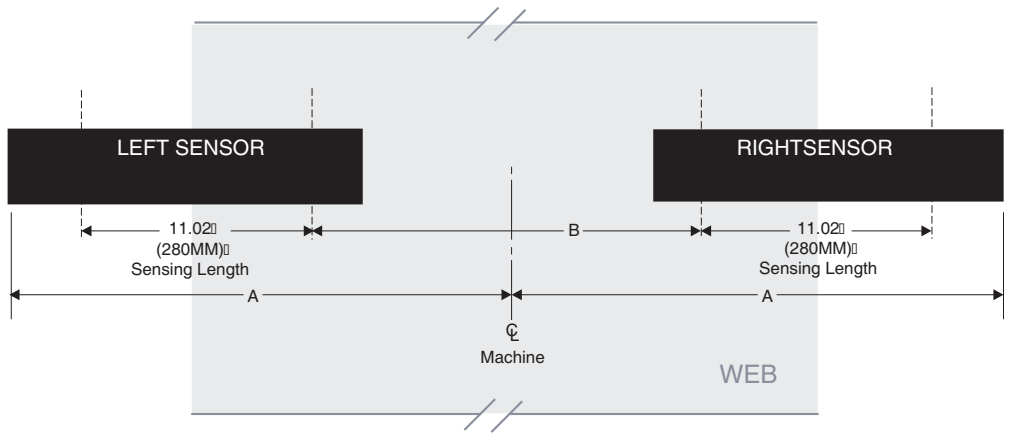


FIGURE 2 Sensor Viewing Area

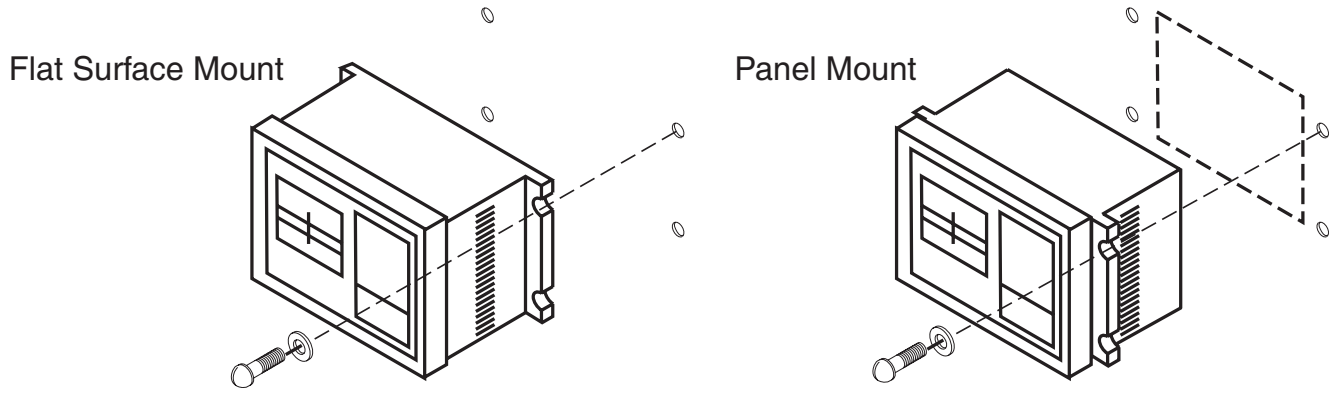


FIGURE 3 Mounting the AS10-D Amplifier

1. Mount the AS10-D Amplifier on either a flat surface or in a panel. To mount the AS10-D Amplifier in a panel, position the mounting brackets to the front of the amplifier. To mount the AS10-D Amplifier on a flat surface, position the mounting brackets to the rear of the amplifier (default).

CAUTION

Mount the AS10-D Amplifier in a dry, dust free, shock and vibration free area with an ambient temperature greater than 32° F [0° C] but less than 122° F [50° C].

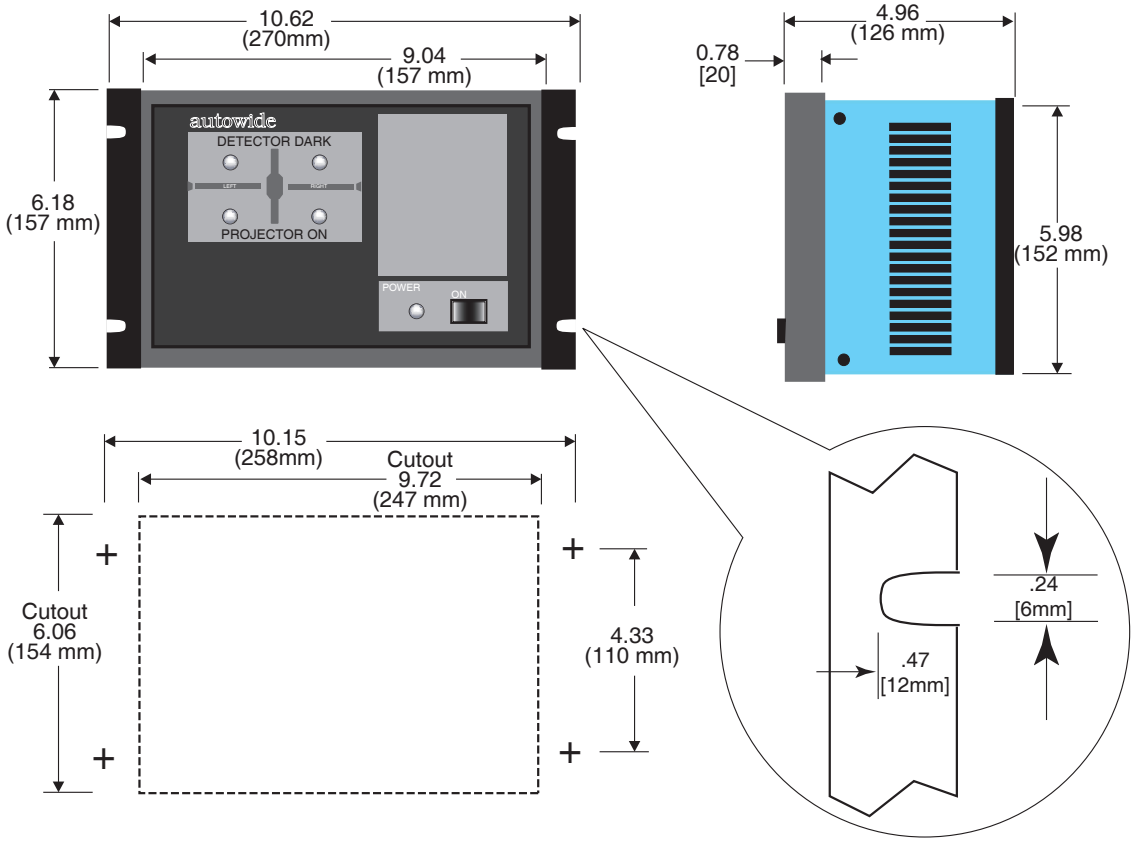


FIGURE 4 AS10-D Amplifier Cutout Dimensions

ELECTRICAL CONNECTIONS

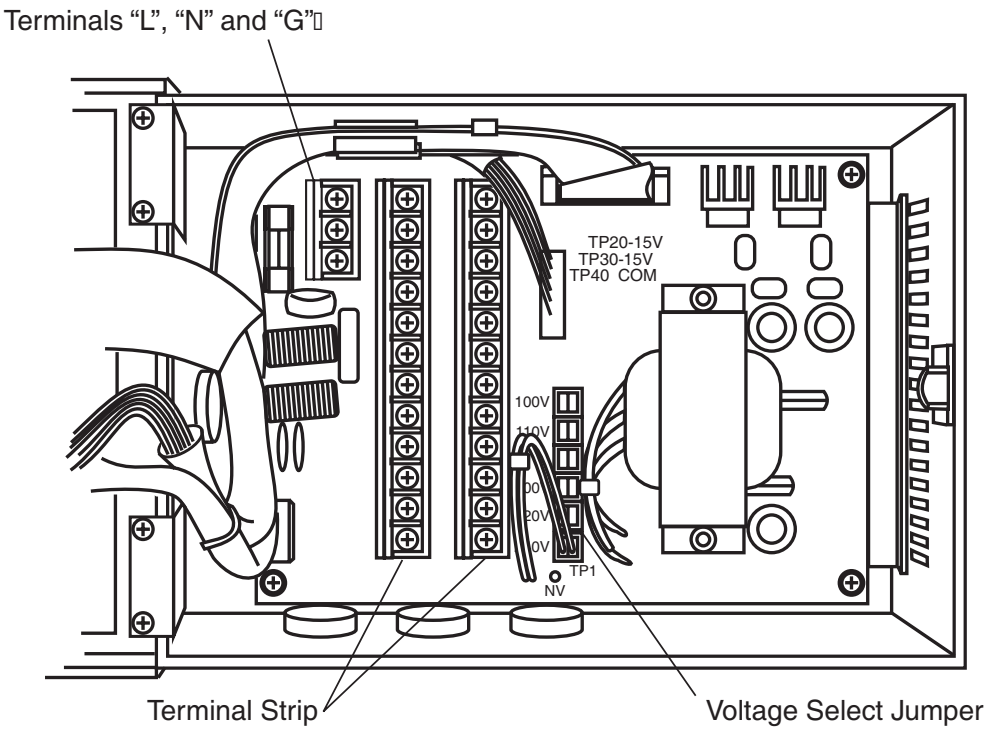


FIGURE 5 Power Supply Printed Circuit Board

DANGER
Disconnect all power to the units
BEFORE
you begin.

CAUTION
Verify that the voltage select jumper on the power supply is set to match the voltage supplied to Terminals "L" and "N".

Disconnect all power to the units BEFORE you begin.

NOTE: Refer to Figures 5 and 6.

1. Use the 16 foot (5 meter) cables that are shipped with the sensors to connect the AWL 280 Sensors to the AS10-D Amplifier. The quick disconnect plugs on the AWL Sensor's Projector and Detector have different connectors. The terminal end of the Projector cable has a six pin connector. The Detector cable has a five pin connector.
   NOTE: To avoid overlapping or mixing up the left and right cables, Nexen recommends that you connect one side (left or right) at a time.

2. Connect your 50/60 Hz / Single Phase 100, 110 or 120 volt power source to terminals "L" and "N". A power source that is 50/60 Hz / Single Phase with either 200, 220 or 240 volt will have "L1" and "L2" lines which will connect to terminals "L" and "N". Find the voltage select jumper that is located on the power supply printed circuit board and set the voltage select jumper to match the voltage of your power source. Connect a low resistance earth ground to terminal "G"

3. Verify that the AS10-D output voltage is compatible with the Web Guide Controller BEFORE you connect them together (refer to the Specifications section, page 10). After you have verified compatibility, connect the AS10-D amplifier terminals "10", "11", "23" and "24" (See Fig. 6) to the Web Guide Controller.

4. The alarm relay changes state when the sensor lens becomes dirty and needs to be cleaned. Wire the alarm relay terminal "25" for Normally Open (N.O.) and terminal "13" for Normally Closed (N.C.). The contacts are rated at 2 amp at 240 VAC or 2 amp at 24 VDC. Refer to the Calibration section to calibrate the sensitivity level of the alarm relay.

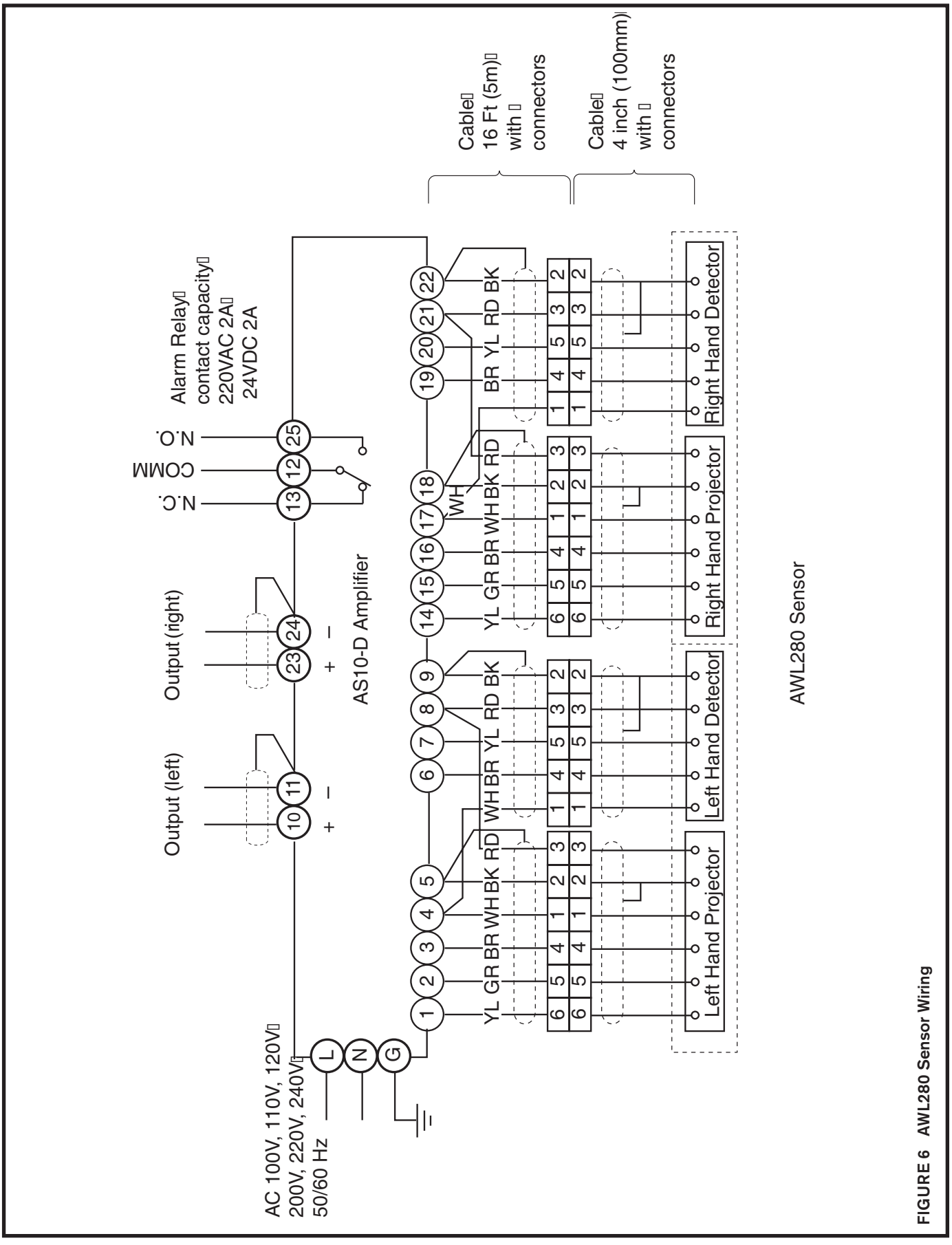


FIGURE 6 AWL280 Sensor Wiring

CONFIGURATION

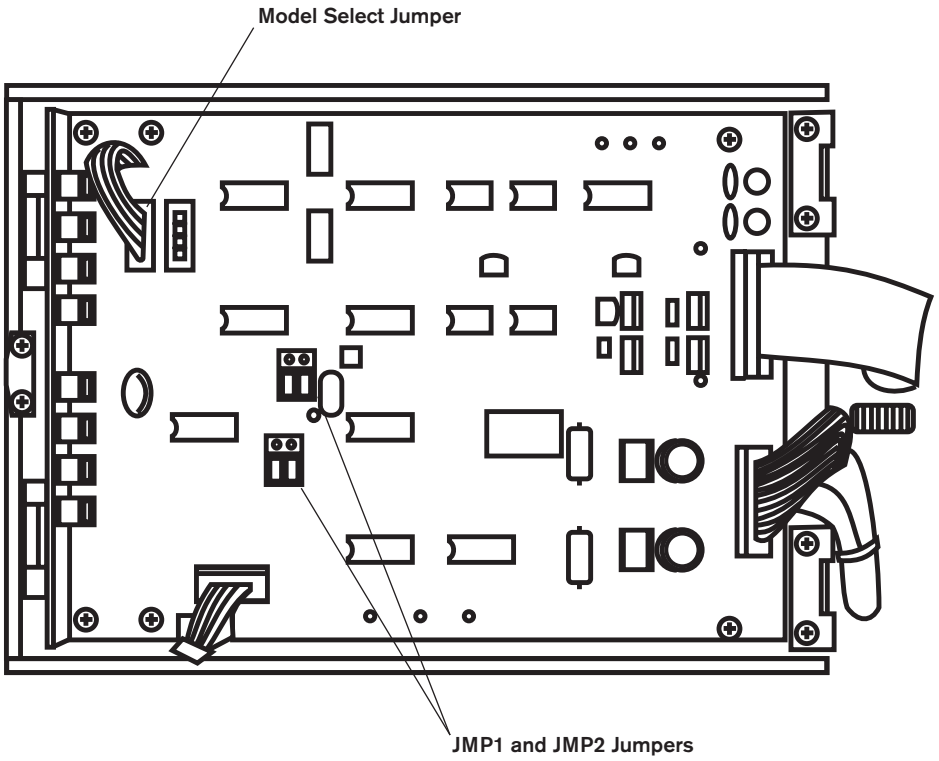


FIGURE 7 AS10-D Amplifier Main Printed Circuit Board

NOTE: Refer to Figure 7

1. Set the model select jumper to left position for the AWL280 sensors.
2. Set jumpers "JMP1" and "JMP2" to the lower position for the AWL280 sensors.

CALIBRATION

Refer to figures 8, 9, 10 and 11.

Left Hand Calibration

LEFT HAND SENSOR CALIBRATION.

Use an opaque sheet of material to completely block light projection from the projector to the detector of the left sensor (see Fig 8).

Connect the negative lead of a DMM to the "COM" test pin on the main printed circuit board. Connect the positive lead to the "OUT-L" test pin on the main printed circuit board (See Fig. 9).

Adjust the "BIAS-L" trim pot until the DMM indicates +4 ± 0.1 VDC (See Fig. 11).

Remove opaque material.

Adjust the "GAIN-L" trim pot until the DMM indicates –4 ± 0.1 VDC (See Fig. 11).

If you can not achieve –4 ± 0.1 VDC, then increase the intensity of the projector LEDs by adjusting the LED-L trim pot ↻ clockwise until –4 ± 0.1 VDC is achieved and then recheck the sensor calibration.

NOTE: If your web application has required that you increase the gap beyond the standard 1.95 [50 mm], then you may need to increase the intensity of the projector LEDs in order to achieve –4 ± 0.1 VDC.

LEFT HAND SENSOR ALARM CIRCUIT ADJUSTMENT.

↻ Turn the "ALARM-L" trim pot fully counter clockwise. The left LED on AS10-D front panel that is labeled "Detector Dark" will turn "Off"

↻ Turn the "ALARM-L" trim pot clockwise until the LED comes "ON".

↻ Turn the "ALARM-L" trim pot counter clockwise slowly and stop when the LED goes out.

To test the circuit, insert four or five sheets of clear film about 2 inches [50 mm] wide into the alarm sensor's light path (See Fig. 10). The left LED on AS10-D front panel that is labeled "Detector Dark" will turn "ON".

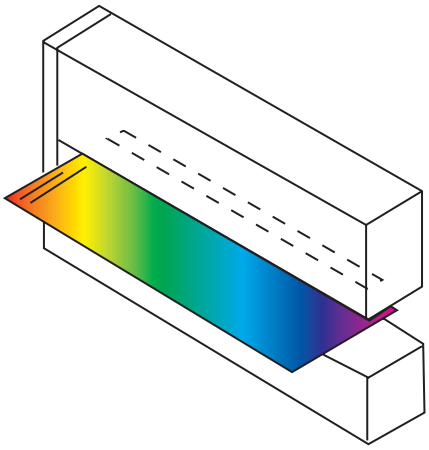


FIGURE 8 Sensor Calibration

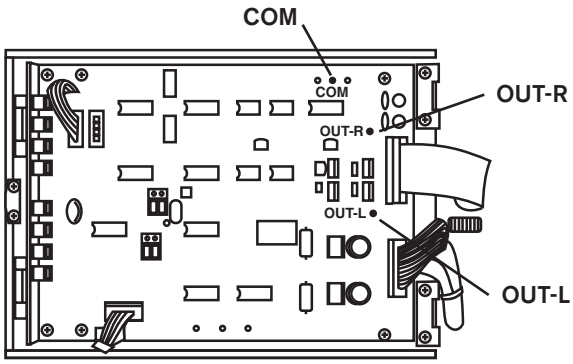


FIGURE 9 AS10-D Amplifier Main Circuit Board

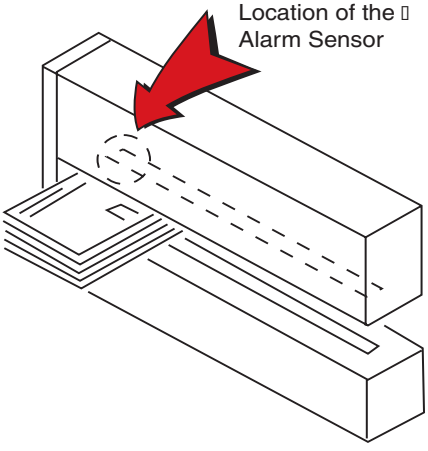


FIGURE 10 Testing the Alarm-L Circuit

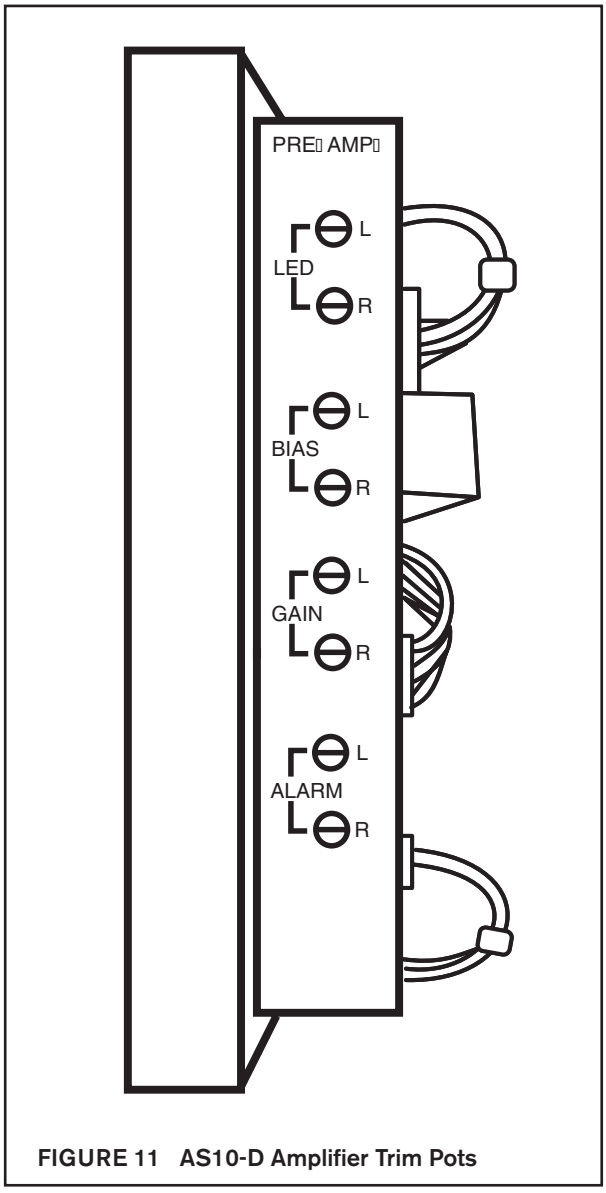


FIGURE 11 AS10-D Amplifier Trim Pots

Refer to figures 8, 9, 10 and 11.

Right Hand Calibration

RIGHT HAND SENSOR CALIBRATION.

Use an opaque sheet of material to completely block light projection from the projector to the detector of the right sensor (see Fig 8).

Connect the negative lead of a DMM to the "COM" test pin on the main printed circuit board. Connect the positive lead to the "OUT-R" test pin on the main printed circuit board (See Fig. 9).

Adjust the "BIAS-R" trim pot until the DMM indicates +4 ± 0.1 VDC (See Fig. 11).

Remove opaque material.

Adjust the "GAIN-R" trim pot until the DMM indicates –4 ± 0.1 VDC (See Fig. 11).

If you can not achieve –4 ± 0.1 VDC, then increase the intensity of the projector LEDs by adjusting the LED-R trim pot ↻ clockwise until –4 ± 0.1 VDC is achieved and then recheck the sensor calibration.

NOTE: If your web application has required that you increase the gap beyond the standard 1.95 [50 mm], then you may need to increase the intensity of the projector LEDs in order to achieve –4 ± 0.1 VDC.

Right HAND SENSOR ALARM CIRCUIT ADJUSTMENT.

↺ Turn the "ALARM-R" trim pot fully counter clockwise. The right LED on AS10-D front panel that is labeled "Detector Dark" will turn "Off"

↻ Turn the "ALARM-R" trim pot clockwise until the LED comes "ON".

↺ Turn the "ALARM-R" trim pot counter clockwise slowly and stop when the LED goes out.

To test the circuit, insert four or five sheets of clear film about 2 inches [50 mm] wide into the alarm sensor's light path (See Fig. 10). The right LED on AS10-D front panel that is labeled "Detector Dark" will turn "ON".

MAINTENANCE

AS10-D Amplifier
The AS10-D Amplifier is shipped with two replacement AGC1, fast blowing, 250V, 1A fuses. The replacement fuses are located to the left of the main printed circuit board (See Fig.12).

AWL280 Sensors
The sensor's detection sensitivity is reduced when paper dust or other material gathers on the lens of the AWL280 Sensor. The sensor alarm relay changes state and the LED on AS10-D front panel that is labeled "Detector Dark" will turn "ON". Gently wipe the dust from the surface of the lens and take care not to scratch the lens surface. See Figure 6 for wiring information. Refer to the Calibration section for setup.

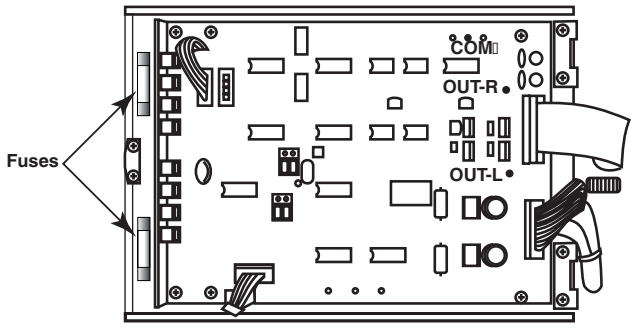


FIGURE 12 Replacement Fuses / AS10-D Amplifier

REPLACEMENT PARTS

Detector Cable (AWL280)	3559
Projector Cable (AWL280)	3560
AWL280 Sensor	912662
AS10-D Amplifier	912663

SPECIFICATIONS

Effective Sensing Length (Each Side)	11.02 in. [280 mm]
Sensor Gap	1.87 in. [50 mm]
Light Source	Pulsed LED
Wave Length	800 nm
Frequency Response	15 Hz
Linearity	± 1.5% F.S.
AS10-D Output Voltage	±4 VDC ± 0.1VDC
Power Supply	100,110, 120, 200, 220, 240 VAC 50/60 Hz
Power Consumption	15 VA
AWL 280 Sensor weight	11 lb. [5 Kg]
AS10-D Amplifier weight	6.5 lb. [3 Kg]
Warning Relay	220 VAC @2A, 24VDC@2A

WARRANTY

Warranties
Nexen warrants that the Products will (a) be free from any defects in material or workmanship for a period of 12 months from the date of shipment, and (b) will meet and perform in accordance with the specifications in any engineering drawing specifically for the Product that is in Nexen's current product catalogue, or that is accessible at the Nexen website, or that is attached to this Quotation and that specifically refers to this Quotation by its number, subject in all cases to any limitations and exclusions set out in the drawing. NEXEN MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. This warranty applies only if: (a) the Product has been installed, used and maintained in accordance with any applicable Nexen installation or maintenance manual for the Product; (b) the alleged defect is not attributable to normal wear and tear; (c) the Product has not been altered, misused or used for purposes other than those for which it was intended; and (d) Buyer has given written notice of the alleged defect to Nexen, and delivered the allegedly defective Product to Nexen, within one year of the date of shipment.

Exclusive Remedy
The exclusive remedy for the Buyer for any breach of any warranties provided in connection with this agreement will be, at the election of Nexen: (a) repair or replacement with new, serviceably used, or reconditioned parts or products; or (b) issuance of credit in the amount of the purchase price paid to Nexen by the Buyer for the Products.

Agent's Authority
Buyer agrees that no agent, employee or representative of Nexen has authority to bind Nexen to any affirmation, representation, or warranty concerning the Products other than those warranties expressly set forth herein.

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TO THE EXTENT PERMITTED BY LAW NEXEN SHALL HAVE NO LIABILITY TO BUYER OR ANY OTHER PERSON FOR INCIDENTAL DAMAGES, SPECIAL DAMAGES, CONSEQUENTIAL DAMAGES OR OTHER DAMAGES OF ANY KIND OR NATURE WHATSOEVER, WHETHER ARISING OUT OF BREACH OF WARRANTY OR OTHER BREACH OF CONTRACT, NEGLIGENCE OR OTHER TORT, OR OTHERWISE, EVEN IF NEXEN SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OR LIKELIHOOD OF SUCH POTENTIAL LOSS OR DAMAGE. For all of the purposes hereof, the term "consequential damages" shall include lost profits, penalties, delay damages, liquidated damages or other damages and liabilities which Buyer shall be obligated to pay or which Buyer may incur based upon, related to or arising out of its contracts with its customers or other third parties. In no event shall Nexen be liable for any amount of damages in excess of amounts paid by Buyer for Products or services as to which a breach of contract has been determined to exist. The parties expressly agree that the price for the Products and the services was determined in consideration of the limitation on damages set forth herein and such limitation has been specifically bargained for and constitutes an agreed allocation of risk which shall survive the determination of any court of competent jurisdiction that any remedy herein fails of its essential purpose.

Inspection
Buyer shall inspect all shipments of Products upon arrival and shall notify Nexen in writing, of any shortages or other failures to conform to these terms and conditions which are reasonably discoverable upon arrival without opening any carton or box in which the Products are contained. Such notice shall be sent within 14 days following arrival. All notifications shall be accompanied by packing slips, inspection reports and other documents necessary to support Buyer's claims. In addition to the foregoing obligations, in the event that Buyer receives Products that Buyer did not order, Buyer shall return the erroneously shipped Products to Nexen within thirty (30) days of the date of the invoice for such Products; Nexen will pay reasonable freight charges for the timely return of the erroneously shipped Products, and issue a credit to Buyer for the returned Products at the price Buyer paid for them, including any shipping expenses that Nexen charged Buyer. All shortages, overages and nonconformities not reported to Nexen as required by this section will be deemed waived.

Limitation on Actions
No action, regardless of form, arising out of any transaction to which these terms and conditions are applicable may be brought by the Buyer more than one year after the cause of action has accrued.

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