

Photo Head Amplifier System PA100

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



WARNING

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 damage your system or cause injury or death.

Comply with all applicable codes.

Nexen Group, Inc.
560 Oak Grove Parkway
Vadnais Heights, Minnesota 55127

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INTRODUCTION

Read this manual carefully, making full use of its explanations and instructions. The "Know How" of safe, continuous, trouble-free operation depends on the degree of your understanding of the system and your willingness to keep all components in proper operating condition. Pay particular attention to all NOTES, CAUTIONS, and WARNINGS to avoid the risk of personal injury or property damage. It is important to understand that these NOTES, CAUTIONS, and WARNINGS are not exhaustive. Nexen cannot possibly know or evaluate all conceivable methods in which service may be performed, or the possible hazardous consequences of each method. Accordingly, anyone who uses a procedure that is not recommended by Nexen must first satisfy themselves that neither their safety or the safety of the product will be jeopardized by the service method selected.

THEORY OF OPERATION

Nexen's PA100 Photo Head Amplifier System consists of two component parts: the PA100 Photo Head Amplifier and either a PH16, PH21, or PH23 Photo Head.

The Photo Head senses the movement of an opaque web edge by means of a pulsed LED in the near infrared range, and generates a signal proportional to the web position.

PA100 provides the excitation signal for the Photo Head and receives the proportional feed back signal generated by the Photo Head. This feedback signal is amplified by the PA100 to a bipolar $\pm 12\text{VDC}$ output signal.

Nexen's PA100 has an eleven segment LED web edge position indicator. The center segment is green to indicate that the web is centered in the light pattern of the Photo Head. To the left and right of the green LED are five red LEDs. Each LED represents approximately 0.004 inches [0.10 mm] of error.

INSTALLATION

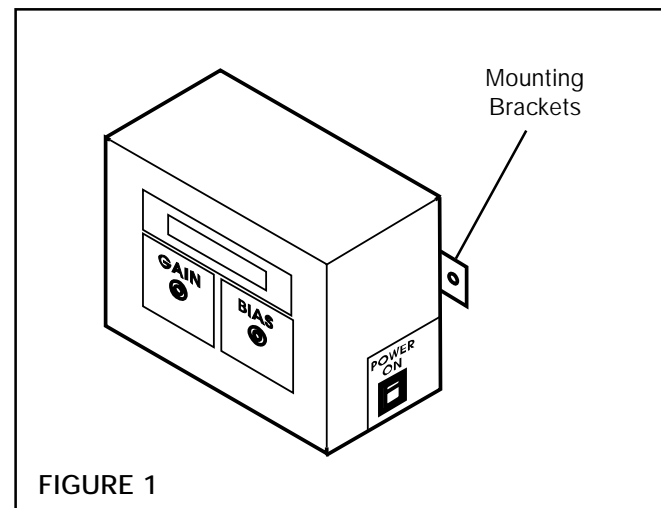
PA100

NOTE: PA100 is an electronic component and should be mounted in a shock, vibration, and moisture free area, with an ambient temperature greater than 32°F [0°C] but less than 122°F [50°C].

Use the attached Mounting Brackets to mount the PA100 against a vertical surface (See Figure 1).

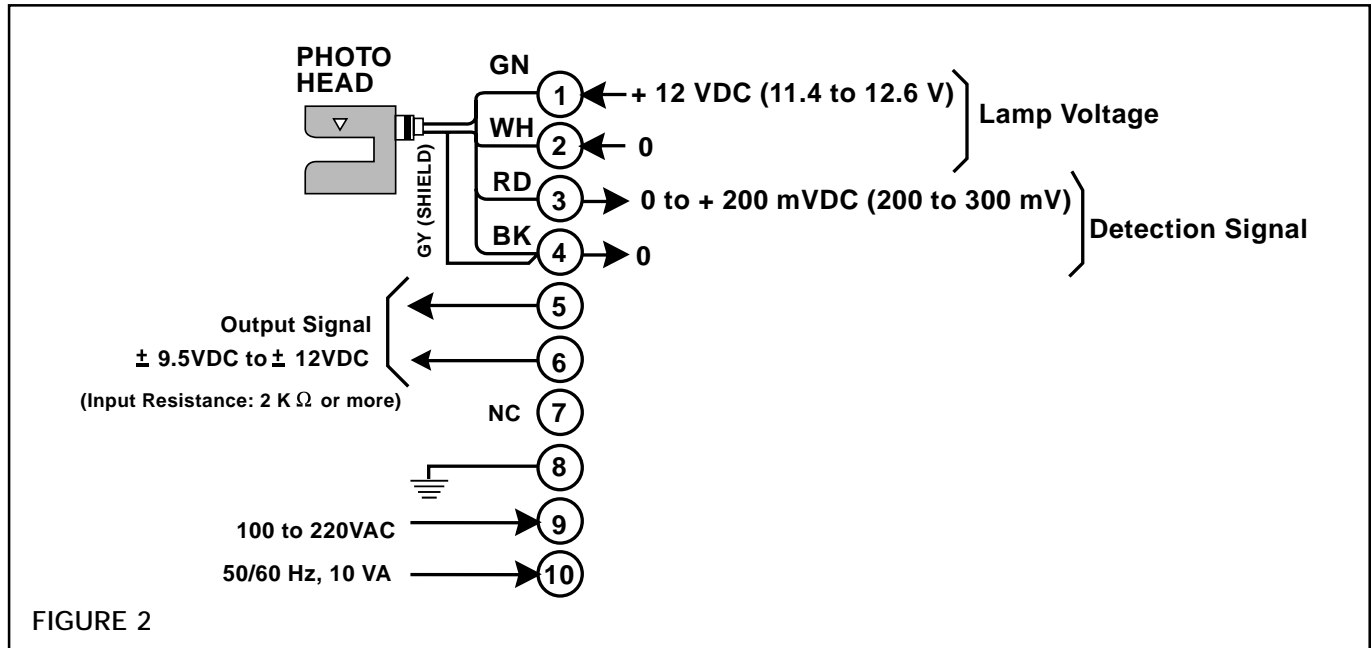
PHOTO HEAD

Install the Photo Head as described in Maintenance Instructions provided with it.



ELECTRICAL CONNECTIONS

1. Refer to Figure 2 for electrical connections.
2. Supply 110 to 220VAC at Terminals 9 and 10, with Earth ground to Terminal 8.



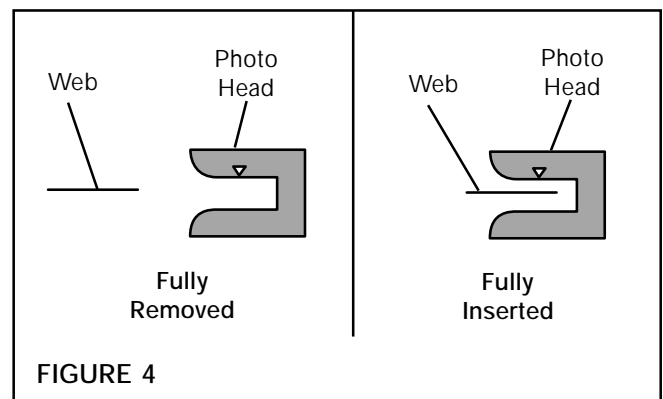
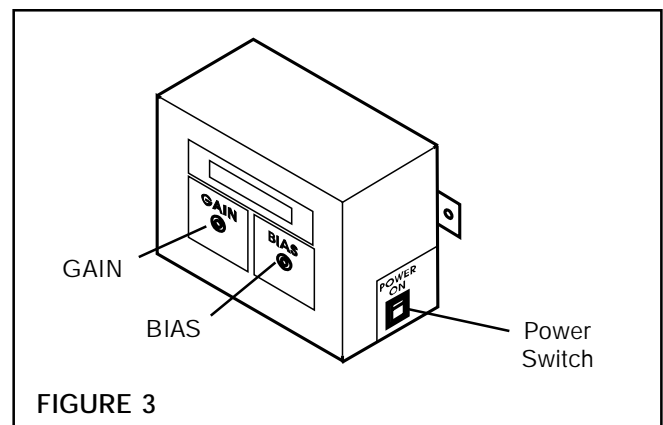
CALIBRATION

FIELD ADJUSTMENT WITH A VOLTMETER

1. Adjust voltmeter to proper range for 12VDC.
2. Connect negative lead to Terminal 6 and positive lead to Terminal 5.
3. Set GAIN and BIAS Pots to midrange (See Figure 3).
4. Set POWER Switch to **ON** (See Figure 3).
5. Insert an opaque web to block the light path of Photo Head, then completely remove the web (See Figure 4).

NOTE: This will cause the signal to the voltmeter to vary from positive to negative.

6. Alternately insert and remove the opaque web, blocking the light path of the Photo Head and adjust the BIAS Pot until the plus and minus signals are equal.
7. Adjust GAIN Pot until output varies between ± 9.5VDC and ± 12VDC equally.
8. Set POWER Switch to **OFF**.
9. Remove voltmeter leads from Terminals 5 and 6.



FIELD ADJUSTMENT WITHOUT A VOLTMETER

- 1. Set GAIN and BIAS Pots to midrange (See Figure 3).
- 2. Set POWER Switch to ON (See Figure 3).
- 3. Insert an opaque web or sample to block the light path of Photo Head, then completely remove the web or sample (See Figure 4).

NOTE: Insertion and removal will cause the eleven segment LED to vary from the left hand red lights through the green center light to the right hand red lights (See Figure 5).

- 4. Adjust BIAS Pot to balance the number of LEDs displayed for complete light blockage and complete web removal.
- 5. Adjust GAIN Pot so that four right LEDs are illuminated during complete web or sample insertion, and four left LEDs are illuminated for complete web or sample removal.

NOTE: This yields an output of ± 9.5 to ± 12 VDC.

- 6. Set POWER Switch to OFF.

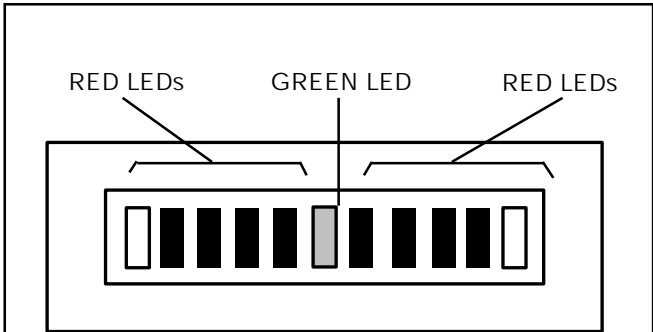


FIGURE 5

MAINTENANCE

Although there is no required maintenance for PA100 or the Photo Head, periodically clean light transmitting and receiving lenses using a clean, dry cloth.

Refer to Maintenance Instructions supplied with the Photo Head for replacement parts.

SPECIFICATIONS

PA100

| | |
|---------------------|--------------------------------------|
| Power Supply | 100 to 240VAC, 50/60 Hz Single Phase |
| Power Consumption | 10 W |
| Input from PH16 | 0 to 200 mV |
| Input Resistance | 2K Ohms |
| Ambient Temperature | 32° to 122° F [0° to 50° C] |
| Output Voltage | ± 12 VDC |

MOUNTING DIMENSIONS

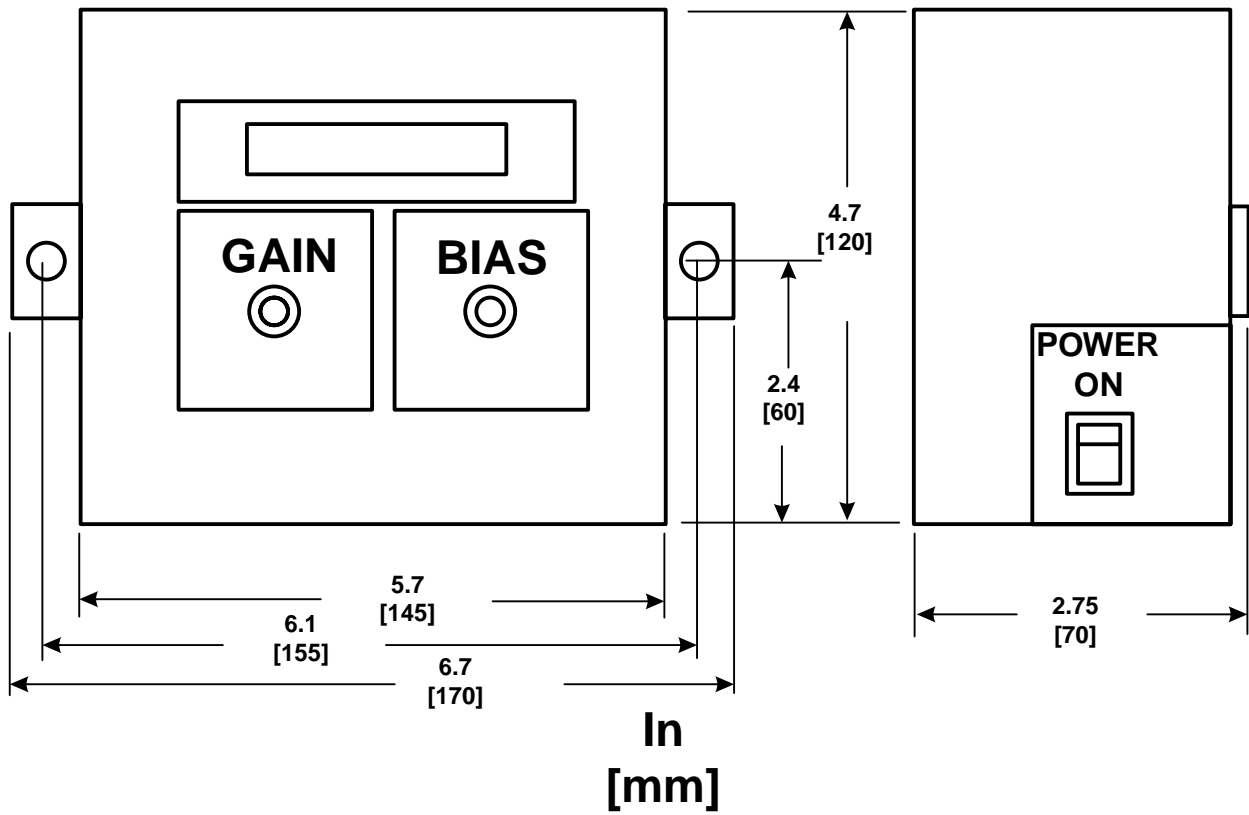


FIGURE 6

WARRANTIES

Warranties

Nexen warrants that the Products will be free from any defects in material or workmanship for a period of 12 months from the date of shipment. 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 of the Buyer for any breach of the warranties set out above will be, at the sole discretion of Nexen, a repair or replacement with new, serviceably used or reconditioned Product, or issuance of credit in the amount of the purchase price paid to Nexen by the Buyer for the Products.

Limitation of Nexen's Liability

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.

Limitation of Damages

In no event shall Nexen be liable for any consequential, indirect, incidental, or special damages of any nature whatsoever, including without limitation, lost profits arising from the sale or use of the Products.

Warranty Claim Procedures

To make a claim under this warranty, the claimant must give written notice of the alleged defect to whom the Product was purchased from and deliver the Product to same within one year of the date on which the alleged defect first became apparent.

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Nexen Group, Inc.
560 Oak Grove Parkway
Vadnais Heights, MN 55127

800.843.7445
Fax: 651.286.1099
www.nexengroup.com

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