nexen

WEB CONTROL PRODUCTS

USER MANUAL

TA100 and TA110
Tension Amplifiers

FORM NO. L-20292-D-1115

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.

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This document is the original, non-translated, version.

Conformity Declaration: In accordance with Appendix II B of CE Machinery Directive (2006/42/EC):

A Declaration of Incorporation of Partly Completed Machinery evaluation for the applicable EU directives was carried out for this product in accordance with the Machinery Directive. The declaration of incorporation is set out in writing in a separate document and can be requested if required.

This machinery is incomplete and must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the applicable provisions of the Directive.

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ISO 9001 Certified

Table of Contents

INTRODUCTION

NOTE

The TA100A and TA110A Tension Amplifiers are 24 Volt DC versions of the TA100 and TA110 Tension Amplifiers.

When TA100 is referenced in this manual, the information relates to both the TA100 and TA100A Tension Amplifiers.

When the TA110 is referenced in this manual, the information relates to both the TA110 and TA110A Tension Amplifiers.

The TA100 and TA110 Tension Amplifiers interface with load cells to measure tension in a continuous web strip or strand of material during converting or printing. This material can be paper, film, foil, rubber, wire, metal strip, non-woven, or textiles used in any continuous process.

Used with any Nexen MB, CFL or SW type sensor, Nexen Tension Amplifiers provide an excitation signal to the sensor and then separately amplify the return signals from each sensor. These signals from both sensors are then added to provide the 0-10VDC or 4-20mA proportional tension output.

The TA100 is complete with a NEMA-12 enclosure for adding to an existing tension control drive or other retrofit installation.

The TA110 is chassis-mounted for OEM installations in cabinets or enclosures.

The TA100A and TA110A Tension Amplifiers are 24 Volt DC versions of the TA100 and TA110 Tension Amplifiers.

INSTALLATION

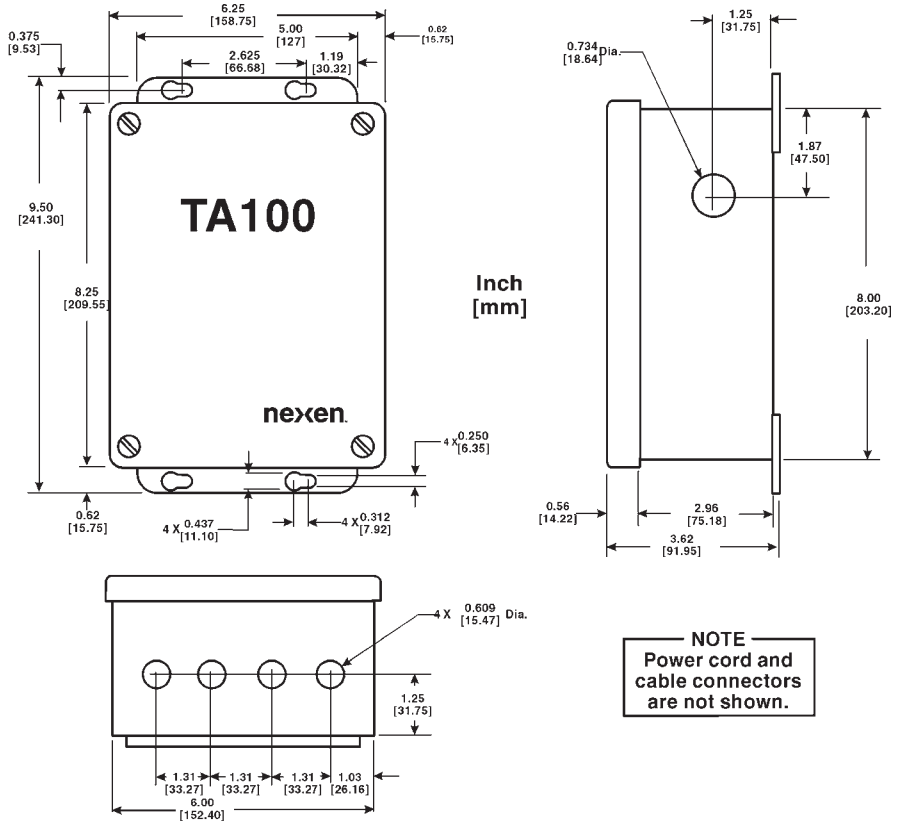
NOTE

The TA100 and TA110 Tension Amplifiers are electronic components and should be mounted 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].

TA100/TA100A GENERAL DIMENSIONS

WARNING

The TA100A and TA110A are powered by 24VDC and will be damaged by 110VAC.

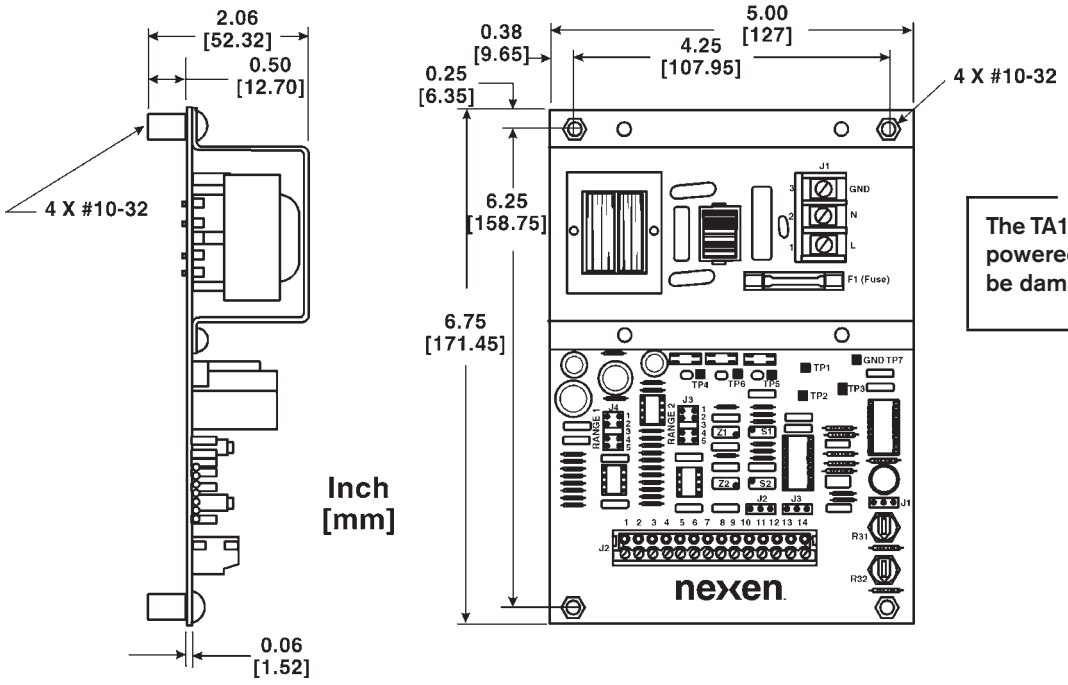


NOTE

Power cord and cable connectors are not shown.

FIGURE 1

TA110 GENERAL DIMENSIONS



WARNING

The TA100A and TA110A are powered by 24VDC and will be damaged by 110VAC.

FIGURE 2

ELECTRICAL CONNECTIONS

NOTE

Make electrical connections as shown in Figures 3 through 6 for the type of load sensor used. To maintain NEMA 12 strain relief ratings, the cables must have a diameter in the range of 0.161-0.314 inches. Unused strain relief holes must be plugged.

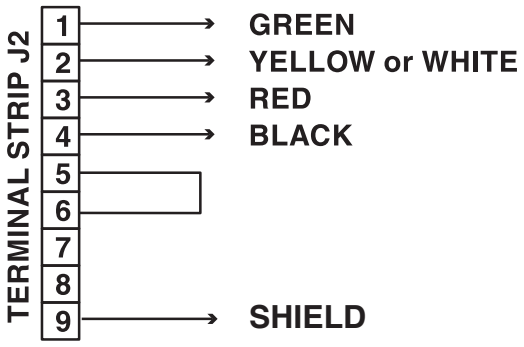


FIGURE 3
TYPE CFL LOAD SENSORS

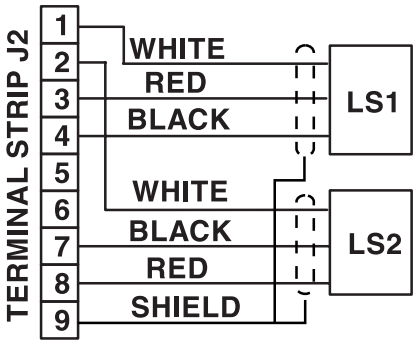
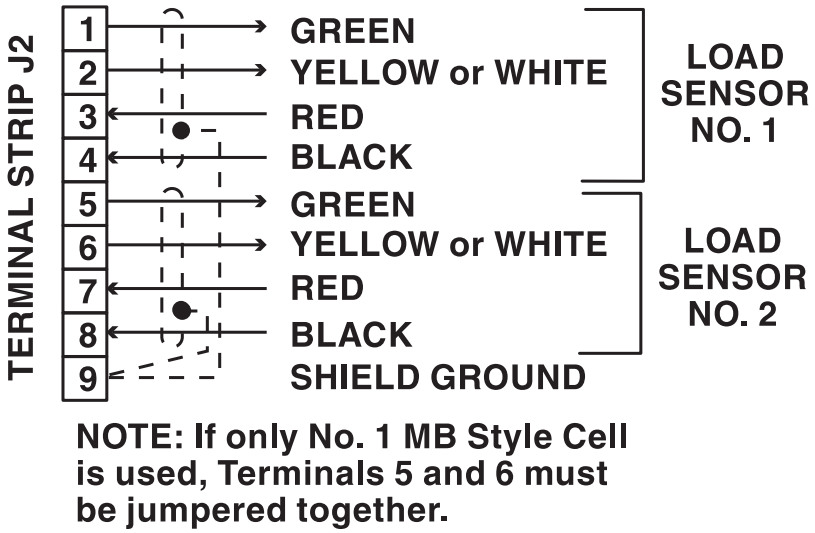


FIGURE 4
TYPE SW LOAD SENSORS



NOTE: If only No. 1 MB Style Cell is used, Terminals 5 and 6 must be jumpered together.

FIGURE 5
MB STYLE LOAD SENSORS

WARNING
The TA100A and TA110A are powered by 24VDC and will be damaged by 110VAC.

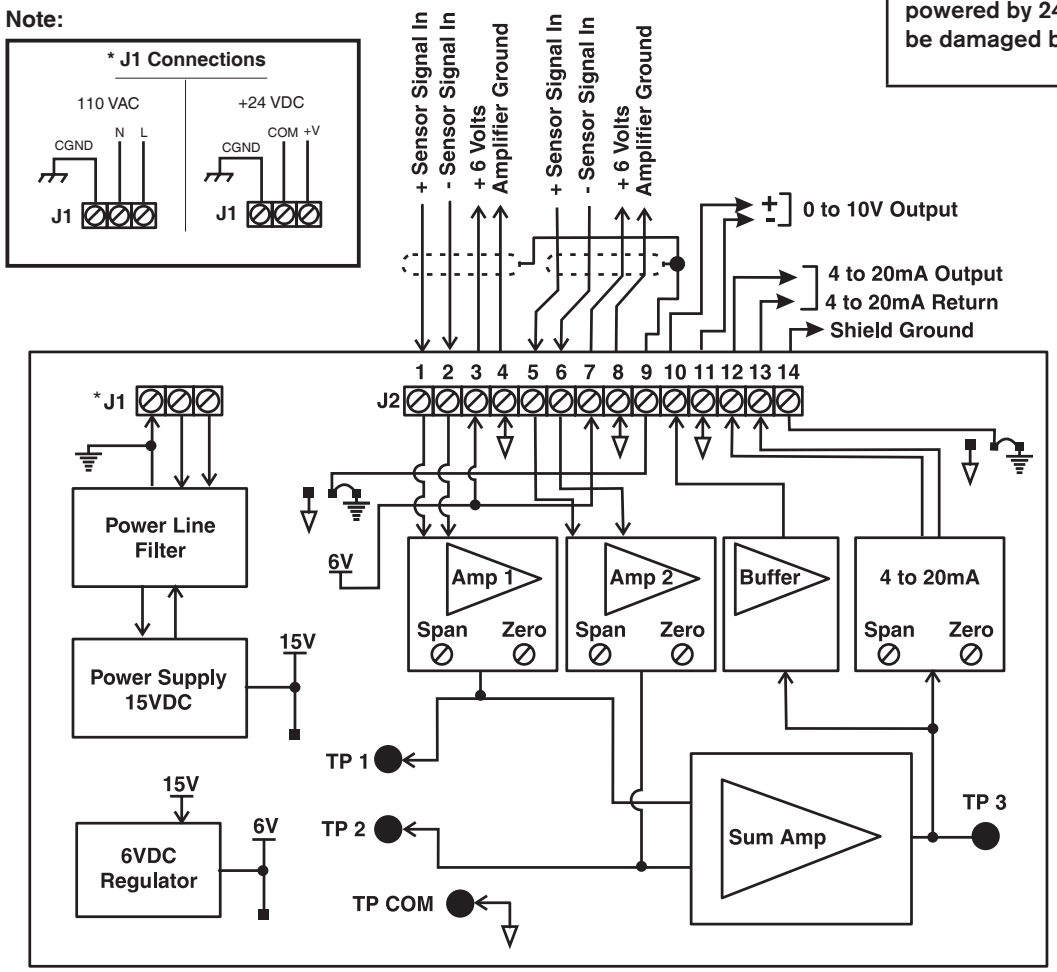


FIGURE 6
TA100 AND TA110 ELECTRICAL DIAGRAM

CALIBRATION FOR MB STYLE LOAD SENSORS

NOTE

Prior to calibration, make sure jumpers J3 and J4 are set to the No. 3 position for MB Sensors.

ZERO ADJUSTMENT (WITH ONE OR TWO MB TENSION SENSORS)

NOTE

If using one MB Tension Sensor, Terminals 5 and 6 must be jumpered together.

NOTE

Make sure the sensor roll is mounted to the MB Tension Sensor as described in the MB Tension Sensor Instruction Manual.

1. Set the Power Switch to **ON**.
2. Make sure the web has been removed and no other objects are sitting or resting on the sensor roll.
3. Rotate both **S1** and **S2** counterclockwise to minimum (See Figure 7).
4. Connect a voltmeter to **TP7** (**COM**) and **TP1** (See Figure 7).
5. Rotate **Z1** to read 0.00VDC at **TP1** (See Figure 7).
6. Connect a voltmeter to **TP7** (**COM**) and **TP2** (See Figure 7).
7. Rotate **Z2** to read 0.00VDC at **TP2** (See Figure 7).

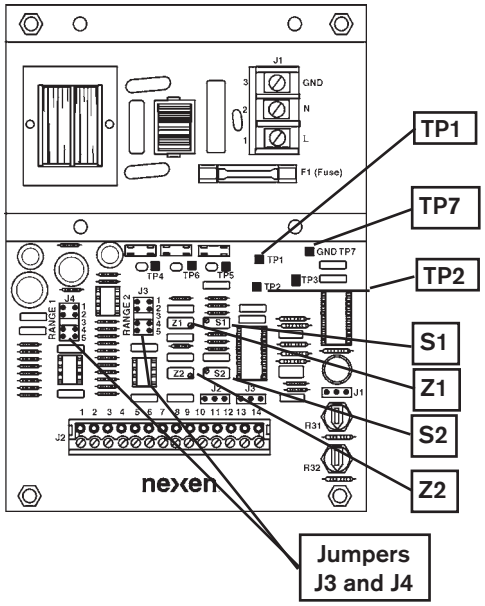


FIGURE 7

SPAN ADJUSTMENT (WITH ONE MB TENSION SENSOR)

NOTE

Before making any Span adjustments, the output voltage level needs to represent the tension levels required. The maximum tension level needs to be calculated (Example: Maximum Tension = 100 Lbs.).

NOTE

When using one MB Tension Sensor, Terminals 5 and 6 must be jumpered together.

1. Thread a rope or narrow web over the Sensor Roll in the normal path. Be sure the rope or web is at the center of the Sensor roll; then, hang a known weight (within the range of the system) on one end of the rope or web (Example: Maximum Tension = 100 Lbs., hang a 50 Lb. weight) (See Figure 8).

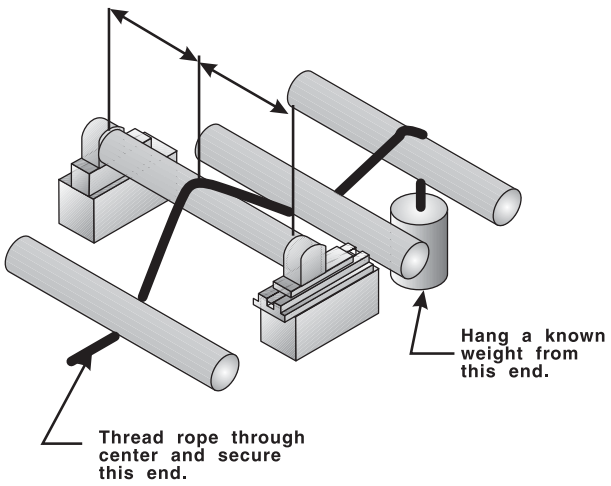


FIGURE 8

2. Connect a voltmeter to **TP7** (**COM**) and **TP1** (See Figure 9).

3. Rotate **S1** clockwise to ____ VDC, increasing the reading at **TP1** (Example: Maximum Tension = 100 Lbs. with a 50 Lb. weight, adjust the output for 5.0 VDC) (See Figure 9).

NOTE

R31 and R32 are factory adjustments only. R31 is a fine adjustment for the 0-10 VDC. R32 is a fine adjustment for the 4-20mA.

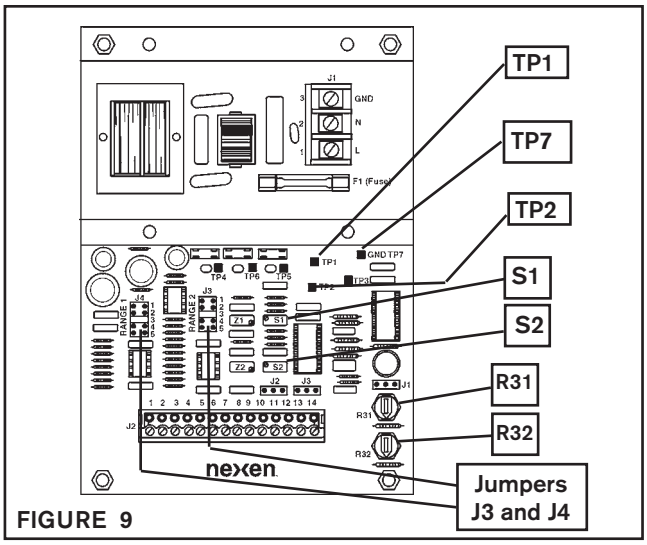


FIGURE 9

SPAN ADJUSTMENT (WITH TWO MB TENSION SENSORS)

1. Thread a rope or narrow web over the Sensor Roll in the normal path. Be sure the rope or web is at the center of the Sensor roll; then, hang a known weight (within the range of the system) on one end of the rope or web (Example: Maximum Tension = 100 Lbs. hang a 50 Lb. weight) (See Figure 10).

2. Connect a voltmeter to **TP7** (**COM**) and **TP1** (See Figure 11).

3. Rotate **S1** clockwise to ____ VDC, increasing the reading at **TP1** (Example: Maximum Tension = 100 Lbs. with a 50 Lb. weight, adjust the output for 2.5 VDC) (See Figure 11).

4. Connect a voltmeter to **TP7** (**COM**) and **TP2** (See Figure 11).

5. Rotate **S2** counterclockwise until the voltmeter reads _____ VDC at **TP2** (Example: Maximum Tension = 100 Lbs. with a 50 Lb. weight, adjust the output for 2.5VDC) (See Figure 11).

NOTE

R31 and R32 are factory adjustments only. R31 is a fine adjustment for the 0-10 VDC. R32 is a fine adjustment for the 4-20mA.

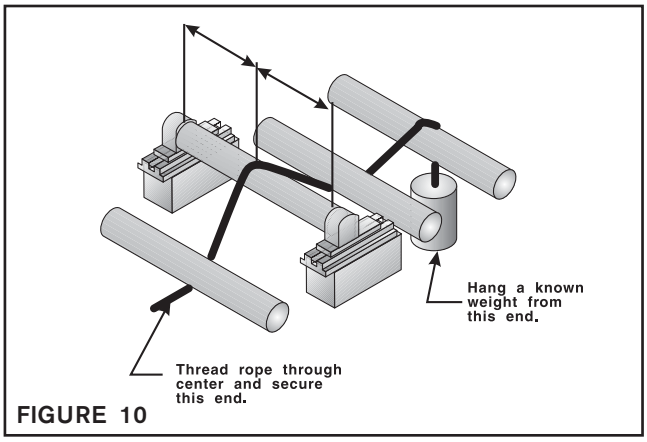


FIGURE 10

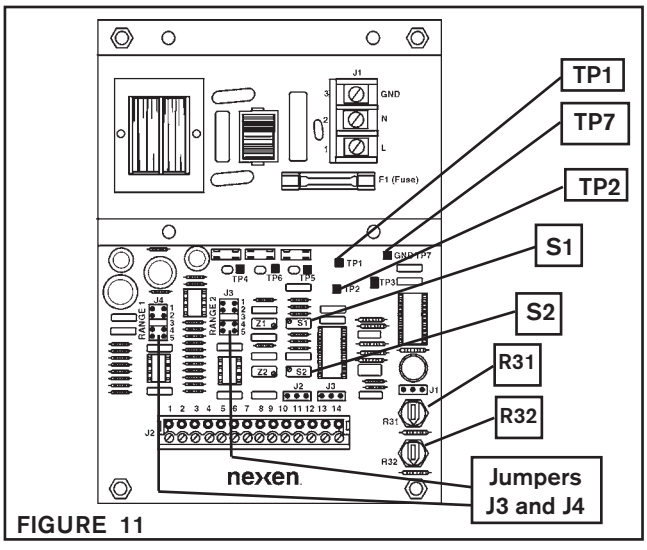


FIGURE 11

CALIBRATION FOR TYPE CFL STYLE LOAD SENSORS

NOTE

Prior to calibration, make sure jumpers J3 and J4 are set to the No. 4 position for Type CFL Sensors. Terminals 5 and 6 must be jumpered together.

ZERO ADJUSTMENT

NOTE

Before making any Span adjustments, the output voltage level needs to represent the tension levels required. The maximum tension level needs to be calculated (Example: Maximum Tension = 100 Lbs.).

1. Set the Power Switch to **ON**.
2. Make sure the web has been removed and no other objects are sitting or resting on the sensor roll.
3. Rotate both **S1** and **S2** counterclockwise to minimum (See Figure 12).
4. Connect a voltmeter to **TP7** (**COM**) and **TP1** (See Figure 12).
5. Rotate **Z1** to 0.0VDC at **TP1** (See Figure 12).
6. Connect a voltmeter to **TP7** (**COM**) and **TP1** (See Figure 12).
7. Rotate **Z2** to 0.0VDC at **TP2** (See Figure 12).

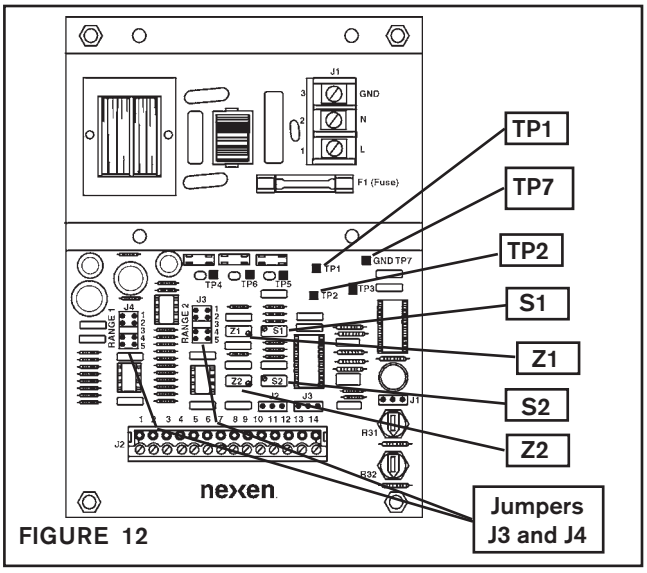


FIGURE 12

SPAN ADJUSTMENT

NOTE

Before making any Span adjustments, the output voltage level needs to represent the tension levels required. The maximum tension level needs to be calculated (Example: Maximum tension = 100 Lbs.).

1. Thread a rope or narrow web over the Sensor Roll in the normal path. Be sure the rope or web is at the center of the Sensor Roll; then, hang a known weight (within the tension range of the system) on one end of the rope or web (Example: Maximum tension = 100 Lbs., hang a 50 Lb. weight) (See Figure 13).
2. Connect a voltmeter to **TP7** (**COM**) and **TP1** (See Figure 14).
3. Rotate **S1** clockwise to ____ VDC, increasing the reading at **TP1** (Example: Maximum tension = 100 Lbs. with a 50 Lb. weight, adjust the output for 5.0VDC) (See Figure 14).

NOTE

R31 and R32 are factory adjustments only. R31 is a fine adjustment for the 0-10 VDC. R32 is a fine adjustment for the 4-20mA.

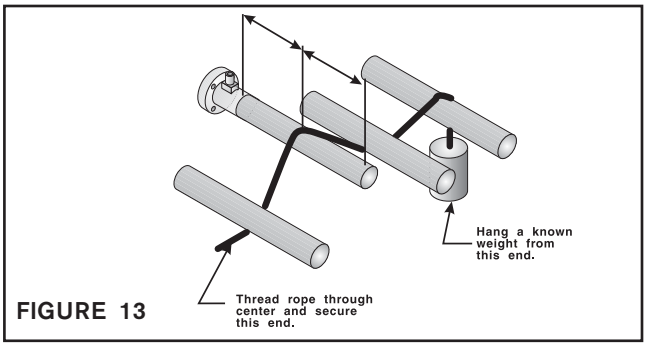


FIGURE 13

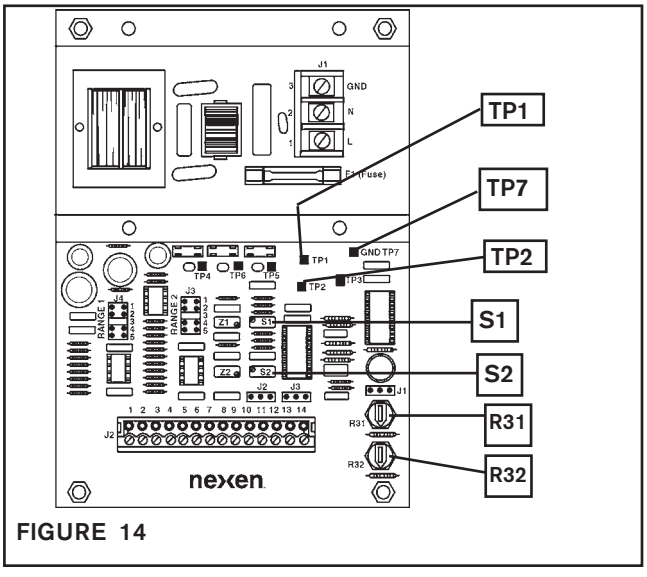


FIGURE 14

CALIBRATION FOR TYPE SW STYLE LOAD SENSORS

NOTE

Prior to calibration, make sure jumpers J3 and J4 are set to the No. 4 position for TYPE SW Sensors.

ZERO ADJUSTMENT (WITH ONE OR TWO TYPE SW TENSION SENSORS)

NOTE

If using one Type SW Tension Sensor, Terminals 5 and 6 must be jumpered together.

1. Set the Power Switch to **ON**.
2. Make sure the web has been removed and no other objects are sitting or resting on the sensor roll.
3. Rotate both **S1** and **S2** counterclockwise to minimum (See Figure 15).
4. Connect a voltmeter to **TP7** (**COM**) and **TP1** (See Figure 15).
5. Rotate **Z1** to read 0.00VDC at **TP1** (See Figure 15).

NOTE

If two Type SW Tension Sensors are used, proceed with Steps 6 and 7.

6. Connect a voltmeter to **TP7** (**COM**) and **TP2** (See Figure 15).
7. Rotate **Z2** to read 0.00VDC at **TP2** (See Figure 15).

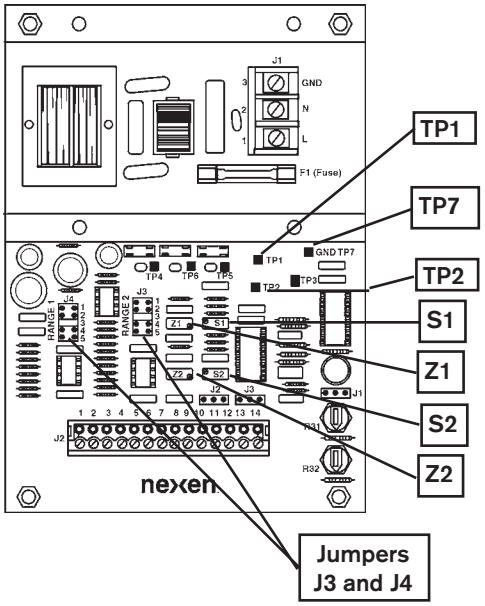


FIGURE 15

SPAN ADJUSTMENT (WITH ONE OR TWO TYPE SW TENSION SENSORS)

NOTE

Before making any Span adjustments, the output voltage level needs to represent the tension levels required. The maximum tension level needs to be calculated (Example: Maximum Tension = 100 Lbs.).

NOTE

When using one Type SW Tension Sensor, Terminals 5 and 6 must be jumpered together.

1. Thread a rope or narrow web over the Sensor Roll in the normal path. Be sure the rope or web is at the center of the Sensor roll; then, hang a known weight (within the range of the system) on one end of the rope or web (Example: Maximum Tension = 100 Lbs., hang a 50 Lb. weight) (See Figure 16).

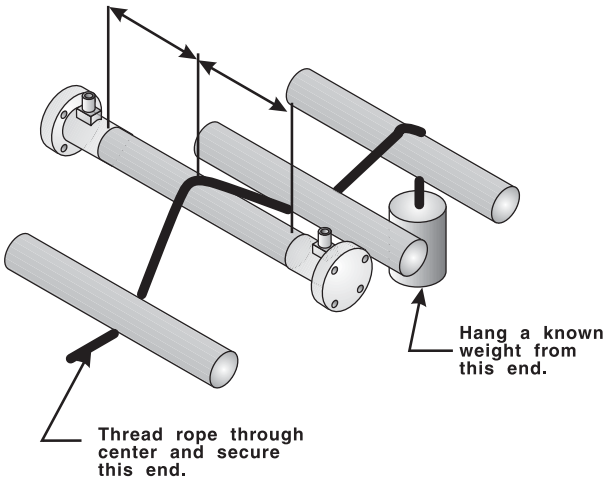


FIGURE 16

2. Connect a voltmeter to **TP7** (**COM**) and **TP1** (See Figure 17).

3. Rotate **S1** clockwise to _____VDC, increasing the reading at **TP1** (Example: Maximum Tension = 100 Lbs. with a 50 Lb. weight, adjust the output for 5.0VDC) (See Figure 17).

NOTE

R31 and R32 are factory adjustments only. R31 is a fine adjustment for the 0-10 VDC. R32 is a fine adjustment for the 4-20mA.

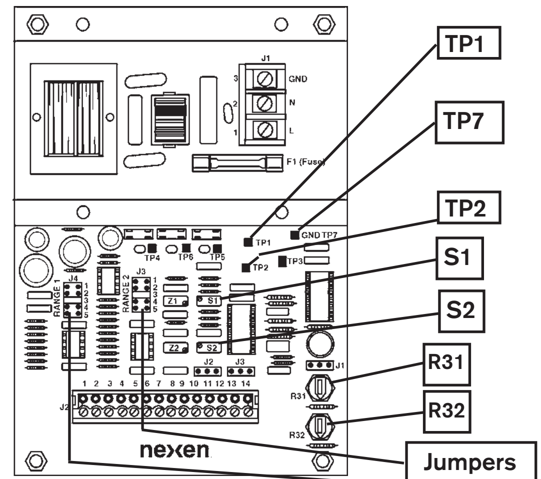


FIGURE 17

SPECIFICATIONS

	TA100	TA110	TA100A	TA110A
Input Power	Pre-wired 8 Ft. Power cord for 110VAC (fused).	Terminals for connecting 110VAC (fused).	24VDC.	24VDC.
UL Listed	Yes with proper mounting and cable sizes.	Yes with proper mounting.	No	No
Sensor compatibility	Any Nexen MB, CFL, or SW type sensor.	Any Nexen MB, CFL, or SW type sensor.	Any Nexen MB, CFL, or SW type sensor.	Any Nexen MB, CFL, or SW type sensor.
Size	Box (8.25 In. X 6.25 In. X 3.75 In.) with captive cover screws (Add 0.75 In. mounting flange top and bottom).	Card (6.75 In. X 5.00 In. X 12.06 In.) includes power supply shield.	Box (8.25 In. X 6.25 In. X 3.75 In.) with captive cover screws (Add 0.75 In. mounting flange top and bottom).	Card (6.75 In. X 5.00 In. X 2.06 In.) includes power supply and shield.
Outputs	0-10VDC 4-20mA Removable connector provided for wiring of sensor and output signal.	0-10VDC 4-20mA Removable connector provided for wiring of sensor and output signal.	0-10VDC 4-20mA Removable connector provided for wiring of sensor and output signal.	0-10VDC 4-20mA Removable connector provided for wiring of sensor and output signal.
Product Number	964400	964401	964411	964412
Set-up	Span and Zero adjustment for each Load Cell or Strain Gauge Sensor. Test points provided for set-up. Jumpers are provided to select MB, CFL, or SW sensor excitation. Units are factory set for MB Load Cells. Span and Zero adjustments for 4-20mA come factory set and do not need adjustment.	Span and Zero adjustment for each Load Cell or Strain Gauge Sensor. Test points provided for set-up. Jumpers are provided to select MB, CFL, or SW sensor excitation. Units are factory set for MB Load Cells. Span and Zero adjustments for 4-20mA come factory set and do not need adjustment.	Span and Zero adjustment for each Load Cell or Strain Gauge Sensor. Test points provided for set-up. Jumpers are provided to select MB, CFL, or SW sensor excitation. Units are factory set for MB Load Cells. Span and Zero adjustments for 4-20mA come factory set and do not need adjustment.	Span and Zero adjustment for each Load Cell or Strain Gauge Sensor. Test points provided for set-up. Jumpers are provided to select MB, CFL, or SW sensor excitation. Units are factory set for MB Load Cells. Span and Zero adjustments for 4-20mA come factory set and do not need adjustment.

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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