

TA100 and TA110 Tension Amplifiers

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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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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.

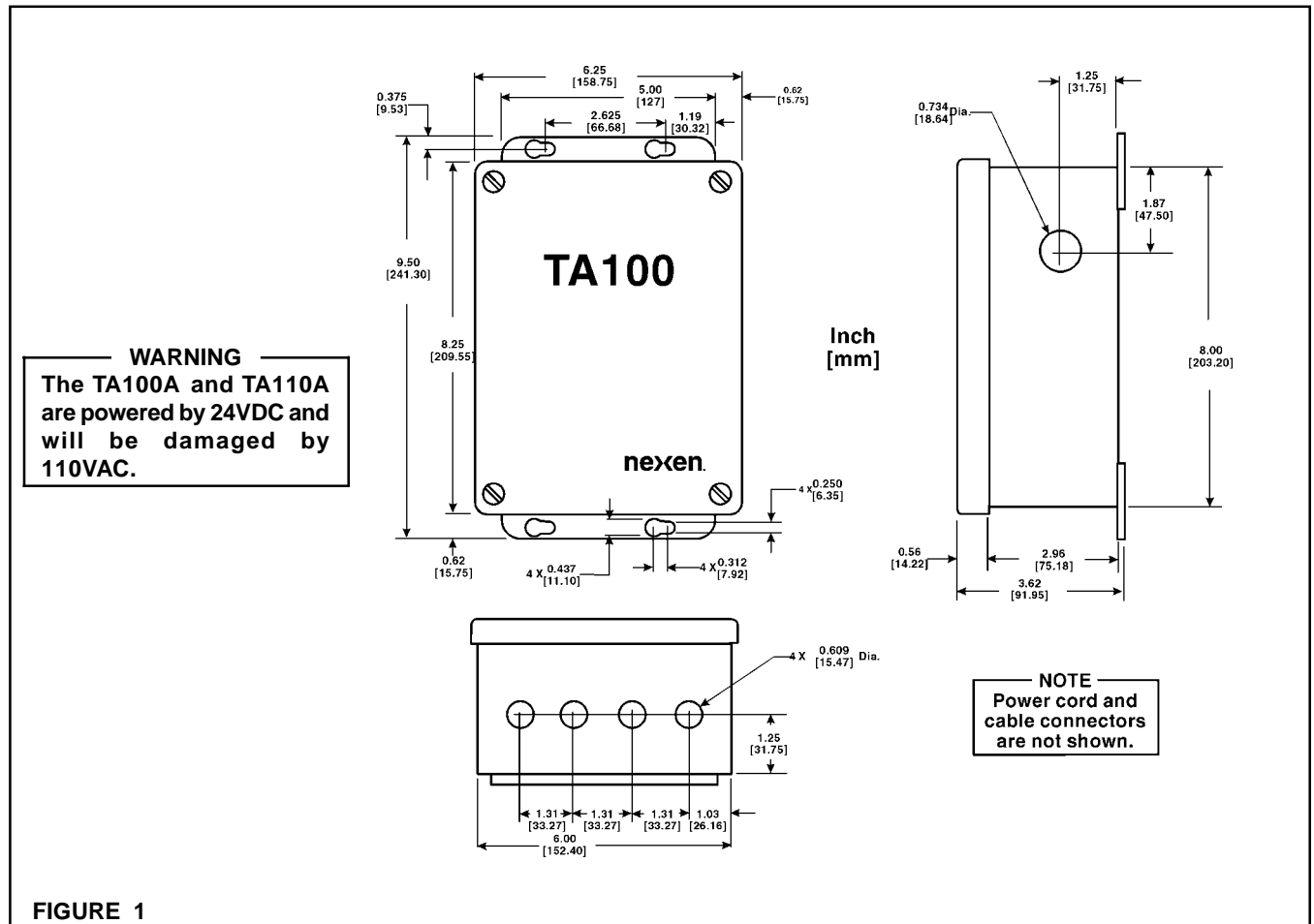
The TA100A and TA110A Tension Amplifiers are 24 Volt DC versions of the TA100 and TA110 Tension Amplifiers.

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



TA110 GENERAL DIMENSIONS

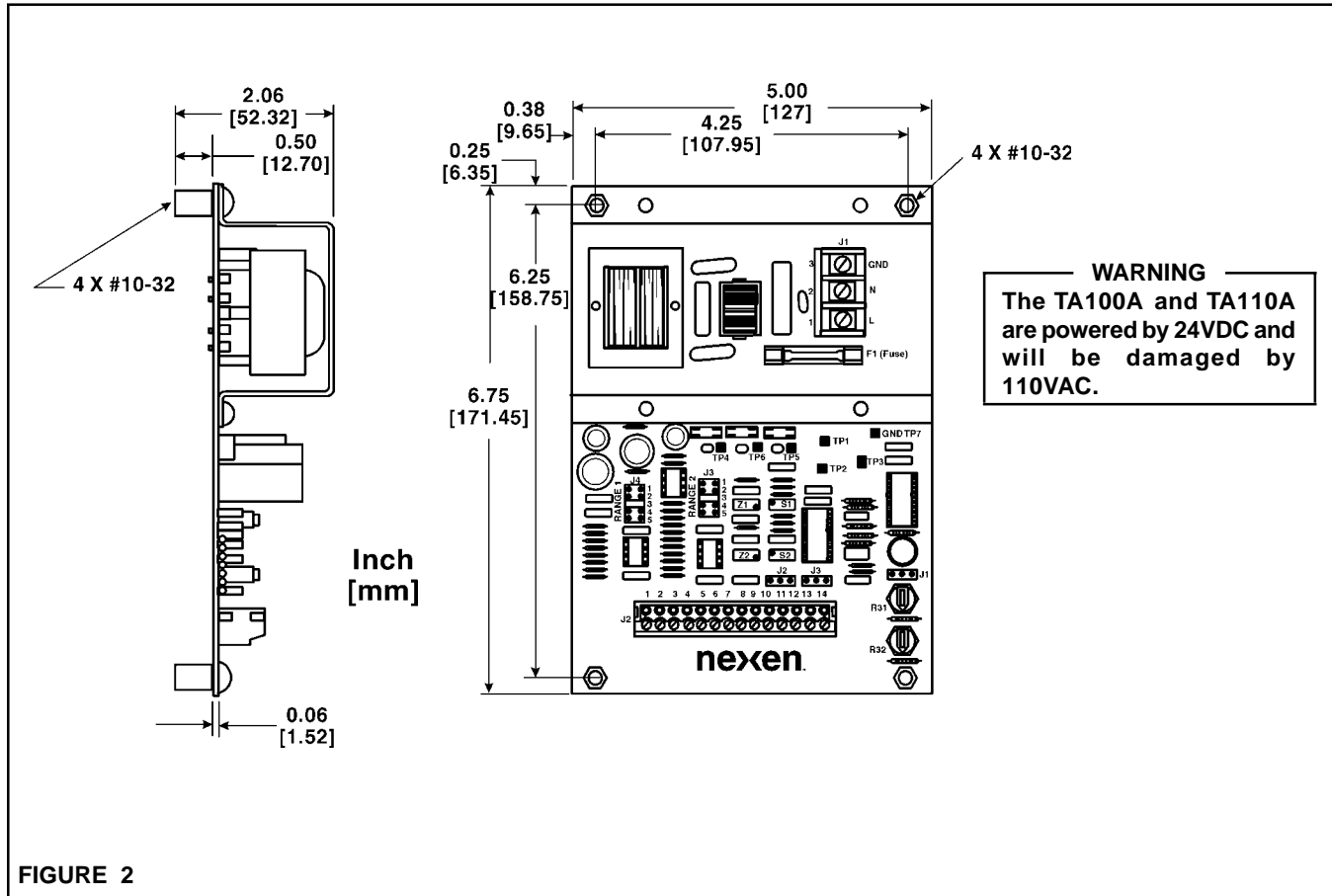


FIGURE 2

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.

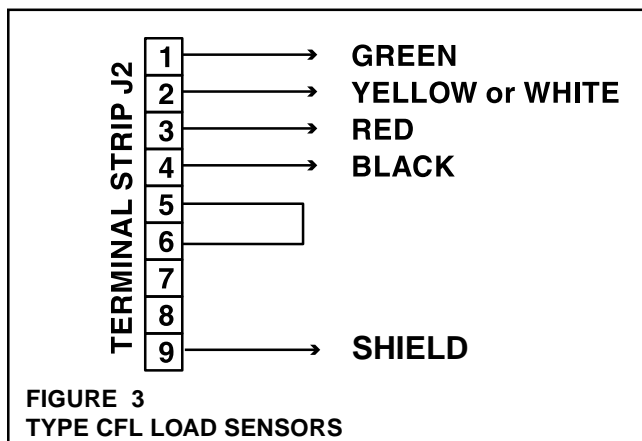


FIGURE 3
TYPE CFL LOAD SENSORS

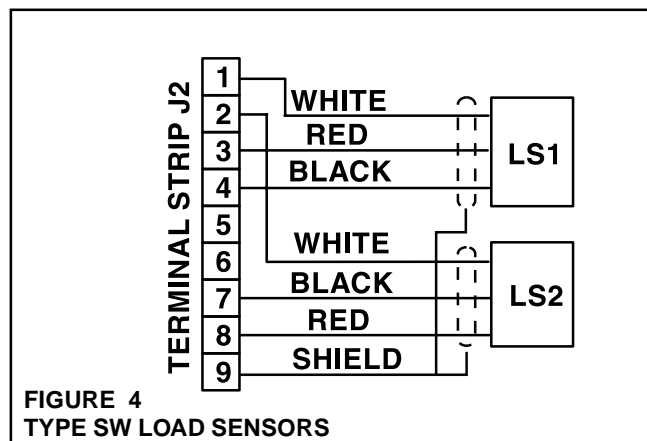
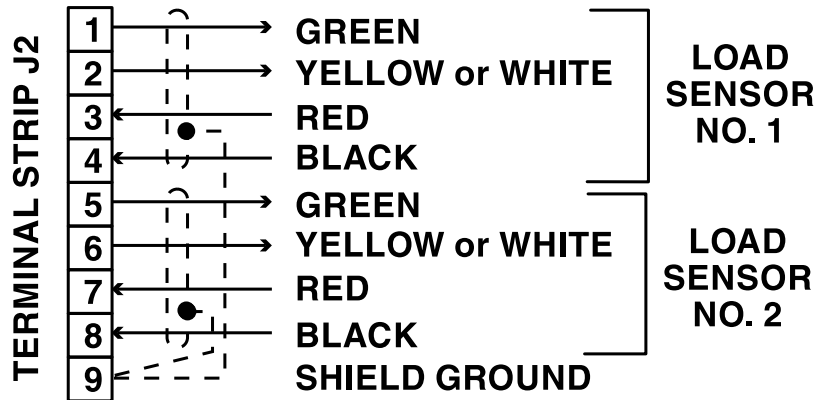


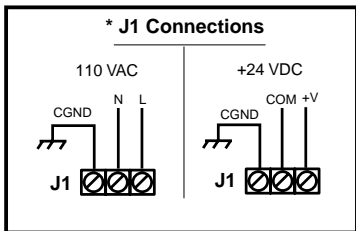
FIGURE 4
TYPE SW LOAD SENSORS



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

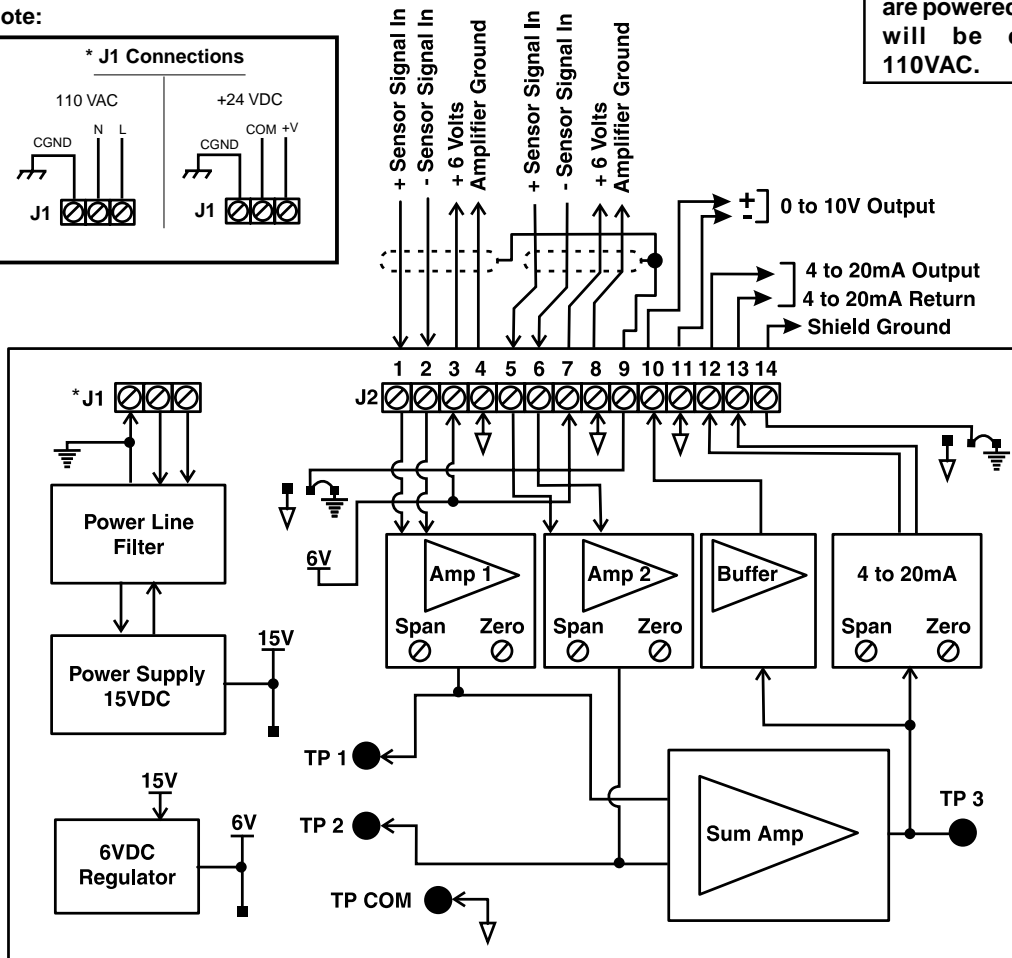
**FIGURE 5
MB STYLE LOAD SENSORS**

Note:



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).

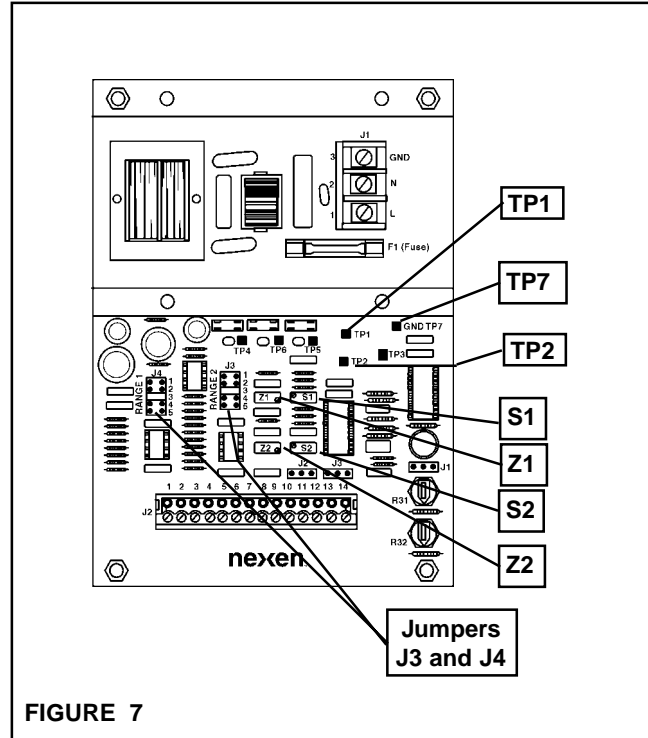


FIGURE 7

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).

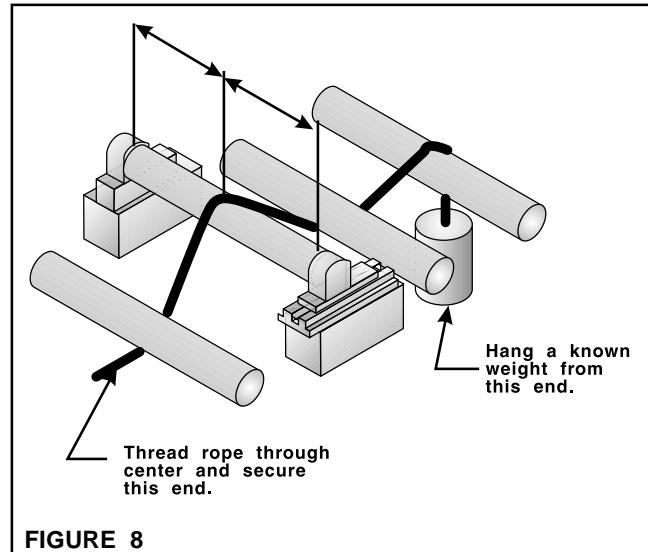


FIGURE 8

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.

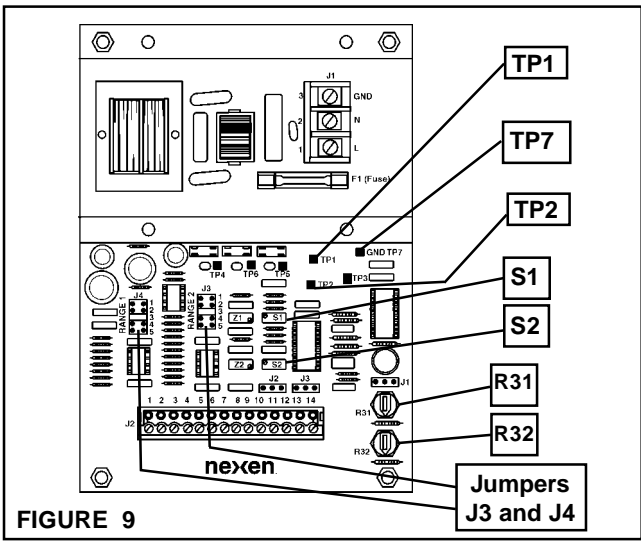


FIGURE 9

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.

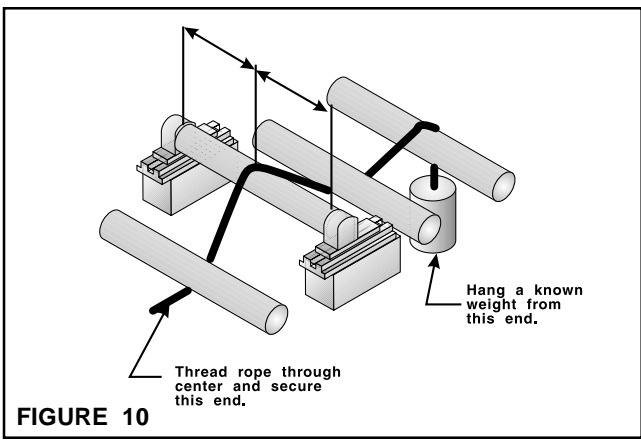


FIGURE 10

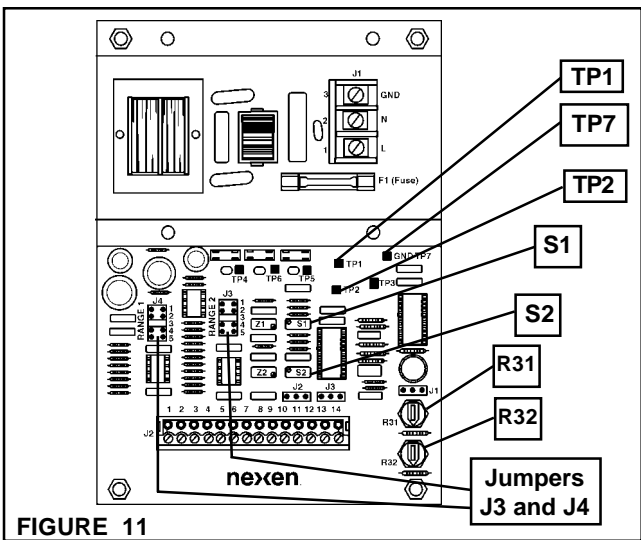


FIGURE 11

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).

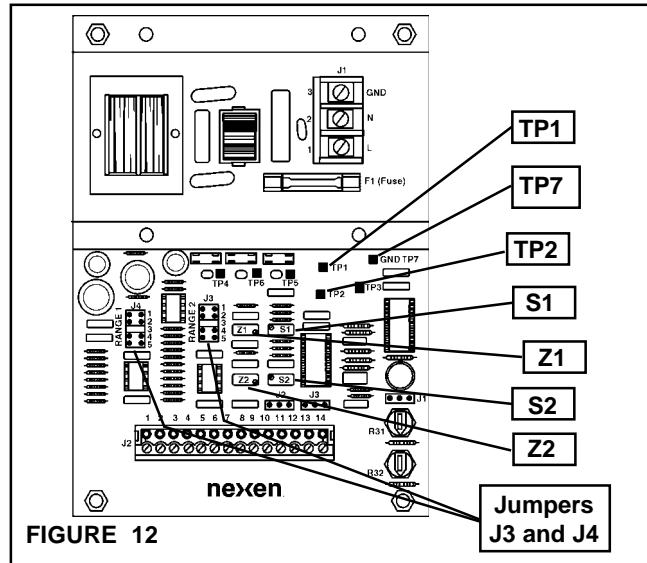


FIGURE 12

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.

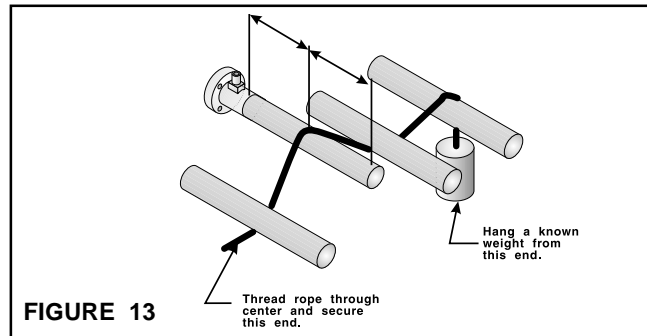


FIGURE 13

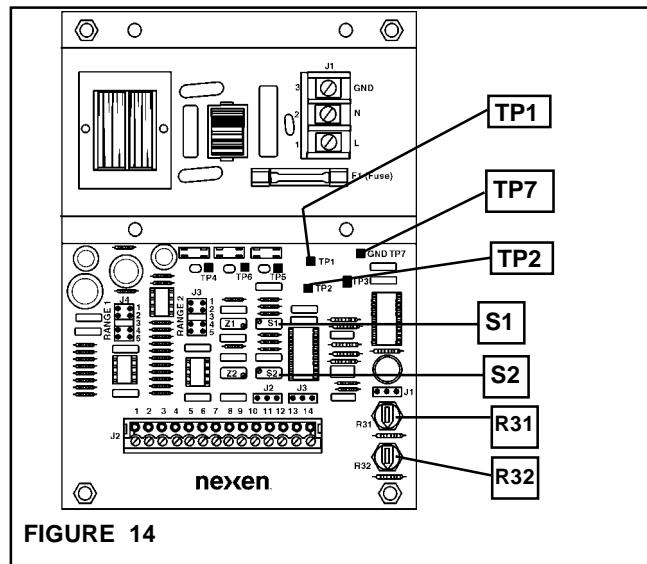


FIGURE 14

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).

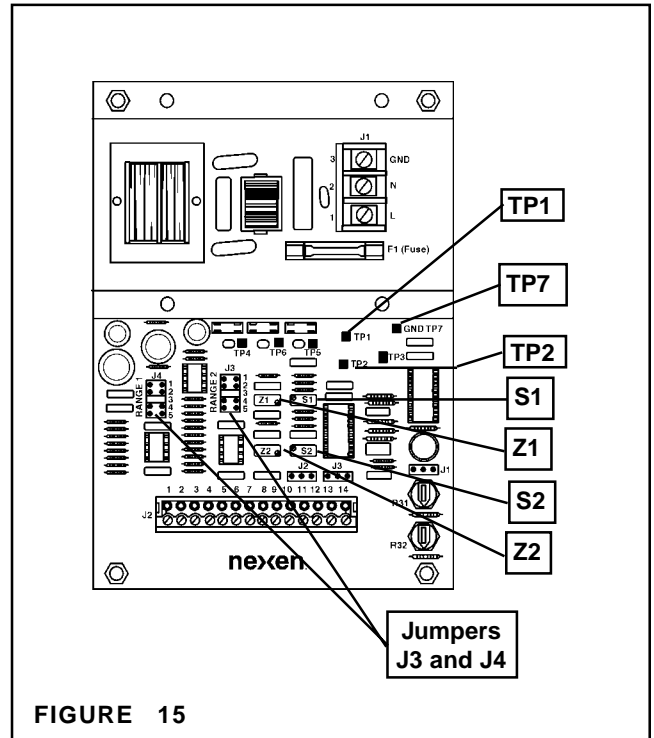


FIGURE 15

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).

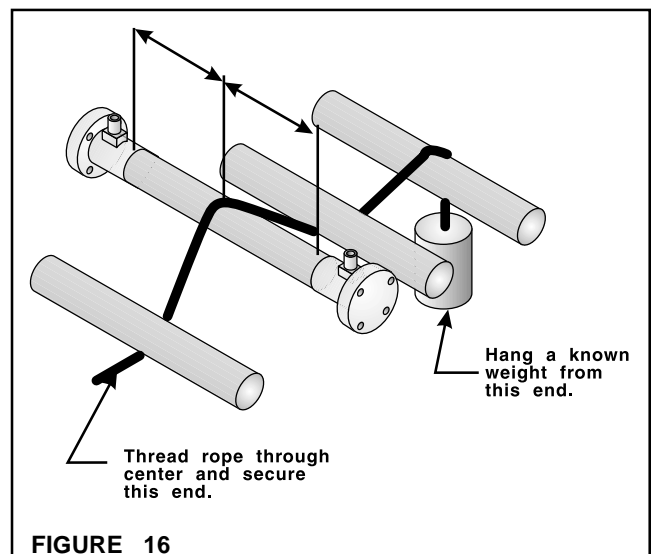


FIGURE 16

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.

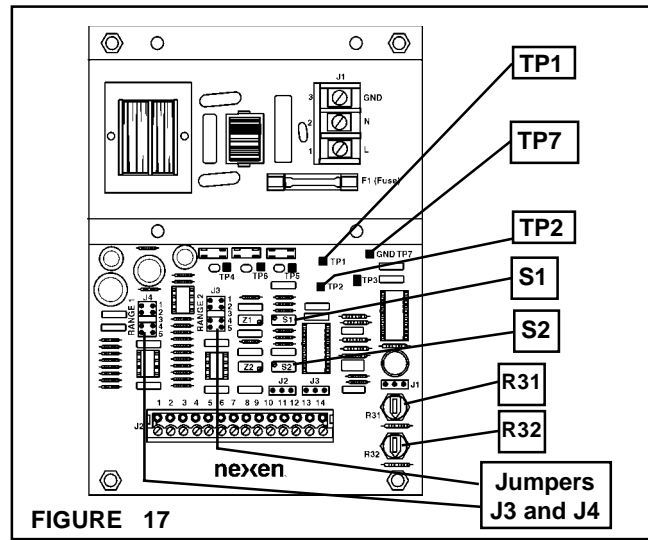


FIGURE 17

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.	Yes with proper mounting and cable sizes.	Yes with proper mounting.
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.

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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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.

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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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