



**VISHAY  
PRECISION  
GROUP**

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**BLH**

**MODEL 308A, 306, and 304  
Installation Instructions**

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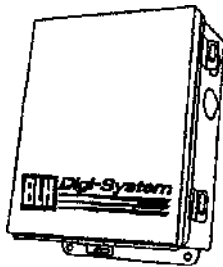
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## SECTION 1. Introduction

### 1.1 General

BLH junction box products (Figure 1-1) provide easy, accurate interfacing between transducers and BLH indicator/transmitters. A wide range of enclosure options are available for washdown, corrosive, and hazardous environment applications. Model 308 and 306 units perform the multiple tasks of distributing excitation current, summing transducer output signals, providing termination for remote sensing close to the transducers, and protecting wiring connections. The 304 extension box is used primarily to extend cable length without signal degradation.

#### 1.1.1 Model 308A



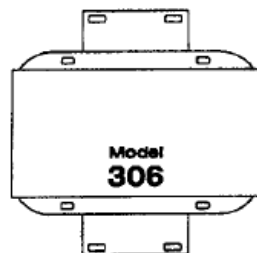
The Model 308A junction box is capable of internally summing up to eight 350-ohm transducers. A unique circuit design minimizes the effect of system unbalance and leakage. Reduced leakage effect is accomplished by using

a guard circuit on the pc board. The signal leads of the 308A are grouped apart from the power leads and connected to the guard shield through matched 10K-ohm resistors. If leakage should occur, both signals are shifted equally, thereby maintaining balance. This added protection is beneficial when equipment is located in a moist or corrosive atmosphere.

Standard units ship in either NEMA 4 or optional NEMA 4X enclosures depending upon ordering specifications.

#### 1.1.2 Model 306

Model 306 junction boxes are capable of internally summing up to four 350-ohm transducers. Two 306



units can be connected together to accommodate up to eight 350-ohm transducers. Model 306 units offer precision summing accuracy in a compact, standard NEMA 4X enclosure.

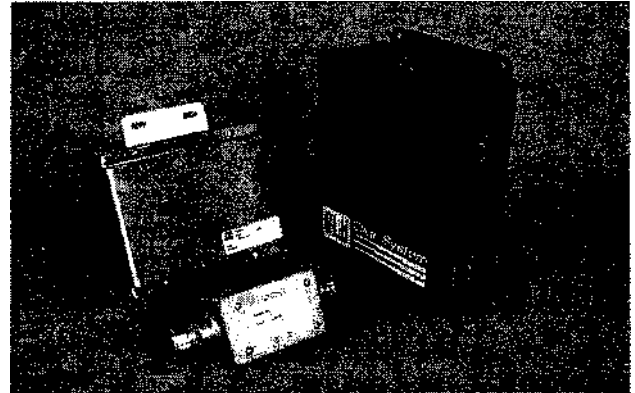
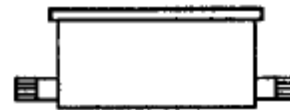


Figure 1-1. BLH Junction Box Family

#### 1.1.3 Model 304

Model 304 extension boxes are used whenever transducer cables are not long enough to reach the summing unit or system instrumentation. The internal terminal



block or other connection method provides for either a four wire or six wire (remote sensing) hook-up.

Standard units ship in either NEMA 4 or optional NEMA 4X enclosures depending upon ordering specifications.

### 1.2 ENCLOSURE OPTIONS

Model 308A and 304 units can be ordered in explosion-proof enclosures suitable for use in Div. 1, Class 11, group E, F, and G environments. For details regarding safe electronic weighing in hazardous areas, request BLH technical document TD-076.

### 1.3 WARRANTY POLICY

BLH warrants the products covered hereby to be free from defects in material and workmanship. BLH's liability under this guarantee shall be limited

to repairing or furnishing parts to replace, f.o.b. point of manufacture, any parts which, within three (3) years from date of shipment of said product(s) from BLH's plant, fail because of defective workmanship or material performed or furnished by BLH. As a condition hereof, such defects must be brought to BLH's attention for verification when first discovered, and the material or parts alleged to be defective shall be returned to BLH if requested. BLH shall not be liable for transportation or installation charges, for expenses of Buyer for repairs or replacements or for any damages from delay or loss of use for other indirect or consequential damages of any kind. BLH may use improved designs of the parts to be replaced. This guarantee shall not apply to any material which shall have been repaired or altered outside of BLH's plant in any way, so as in BLH's judgment, to affect its strength, performance, or reliability, or to any defect due in any part to misuse, negligence, accident or any cause other than normal and reasonable use, nor shall it apply beyond their normal span of life to any materials whose normal span of life is shorter than the

applicable period stated herein. In consideration of the forgoing guarantees, all implied warranties are waived by the Buyer, BLH does not guarantee quality of material or parts specified or furnished by Buyer, or by other parties designated by buyer, if not manufactured by BLH. If any modifications or repairs are made to this equipment without prior factory approval, the above warranty can become null and void.

#### **1.4 FIELD ENGINEERING**

Authorized BLH Field Service Engineers are available around the world to install weigh systems and/or train factory personnel to do so. The field service department at BLH is the most important tool to assure the best performance from your application. Field service phone numbers are listed below.

**Factory: (Main Number) (781) 298-2000**

**Midwest: (219) 838-2833**

**Canada: (416) 251-2690 or (800) 567-6098**

## **SECTION 2. Model 308A Installation**

### **2.1 LOCATION CONSIDERATIONS**

Install the 308A junction box within reach of all transducer cables if possible. If a transducer cable does not reach the 308A, consider using a 304 box and BLH supplied extension cable.

The installation location should be reasonably clean and moisture free. Mount NEMA 414X units in accordance with dimensions provided in Figure 2-1 and explosion-proof units according to Figure 2-2.

NOTE: Load cells installed in Div.1 hazardous locations must be protected with intrinsic safety barriers. Explosion-proof enclosures are not required in intrinsically safe systems.

### **2.2 WIRING CONSIDERATIONS**

After the unit is mounted, remove the plastic enclosure hole plugs and replace with appropriate conduit fittings. Trim the tinned lead ends of the transducer cables to 1/4" (maximum). Connect

transducer leads as shown in the Figure 2-3 wiring diagram. Before tightening terminal screws, make certain that exposed transducer lead ends are completely free of insulation. Good lead contact prevents needless trouble shooting during system start-up. After installing all transducers, connect the leads of the 6 conductor instrument cable as shown in Figure 2-3 (next page).

### **2.3 RESISTOR REMOVAL**

Some BLH indicators/transmitters feature mV/V calibration. In order for mV/V calibration to function properly, 10K-ohm resistors R1 and R2 must be removed. Figure 2-4 (next page) shows the location of these two components. Note, however, that the 'guard' circuit is no longer effective when these resistors are disconnected (see paragraph 1.1.1).

### **2.4 CLOSING UP**

After installation and wiring is complete, tighten all cable entry/exit fittings and then close and tighten the 308A junction box cover.

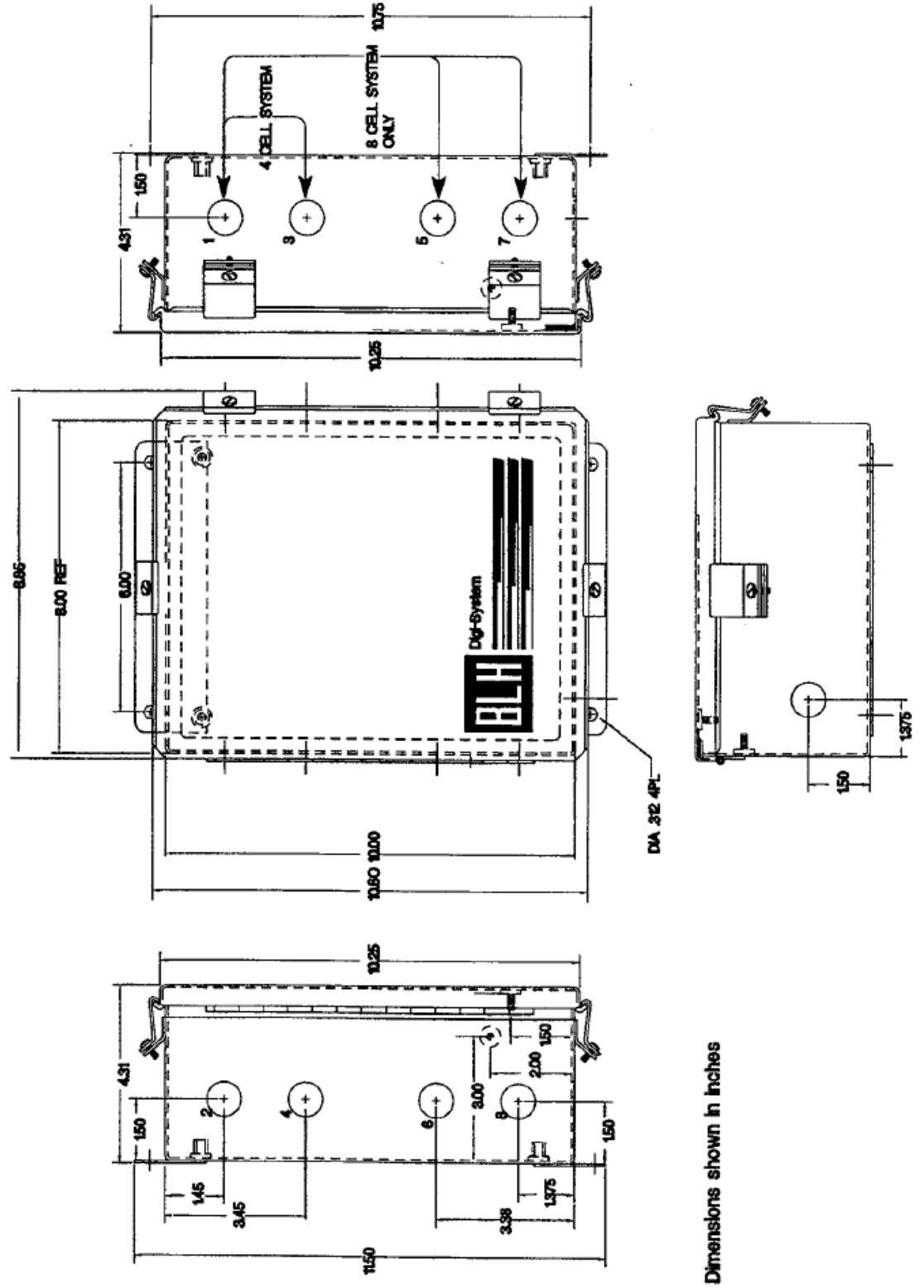


Figure 2-1. Model 308A NEMA Enclosure Outline

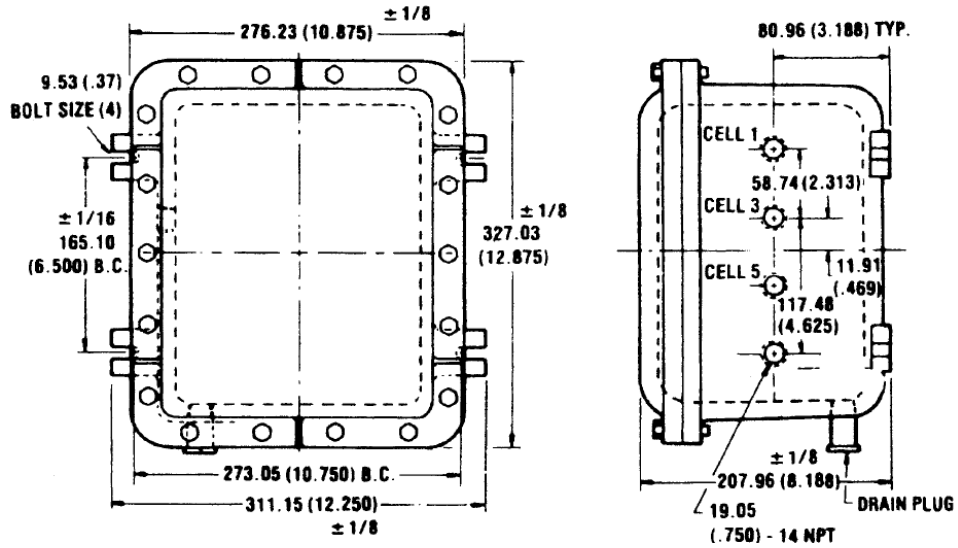
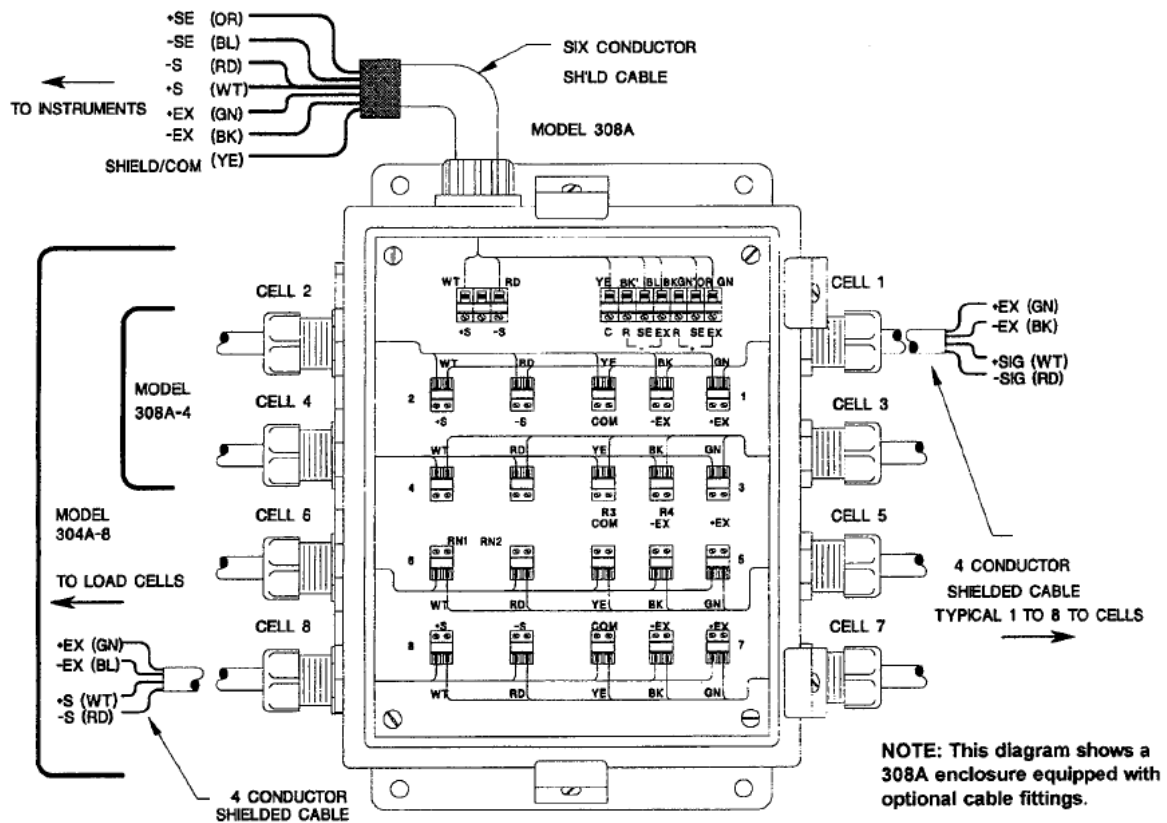


Figure 2-2. Model 308A Explosion-Proof Outline.



- A CONNECT LOAD CELLS TO JUNCTION BOXES PER COLOR CODE AS SHOWN
- B CONNECT SIX CONDUCTOR CABLES PER COLOR CODE AS SHOWN
- C YELLOW LEAD IS CABLE SHIELD
- D LOAD CELL SIGNAL LEADS POLARITY IS REVERSED WHEN USED WITH UNIVERSAL OR TENSION TYPE LOAD CELLS

Figure 2-3. Model 308A Wiring Diagram.



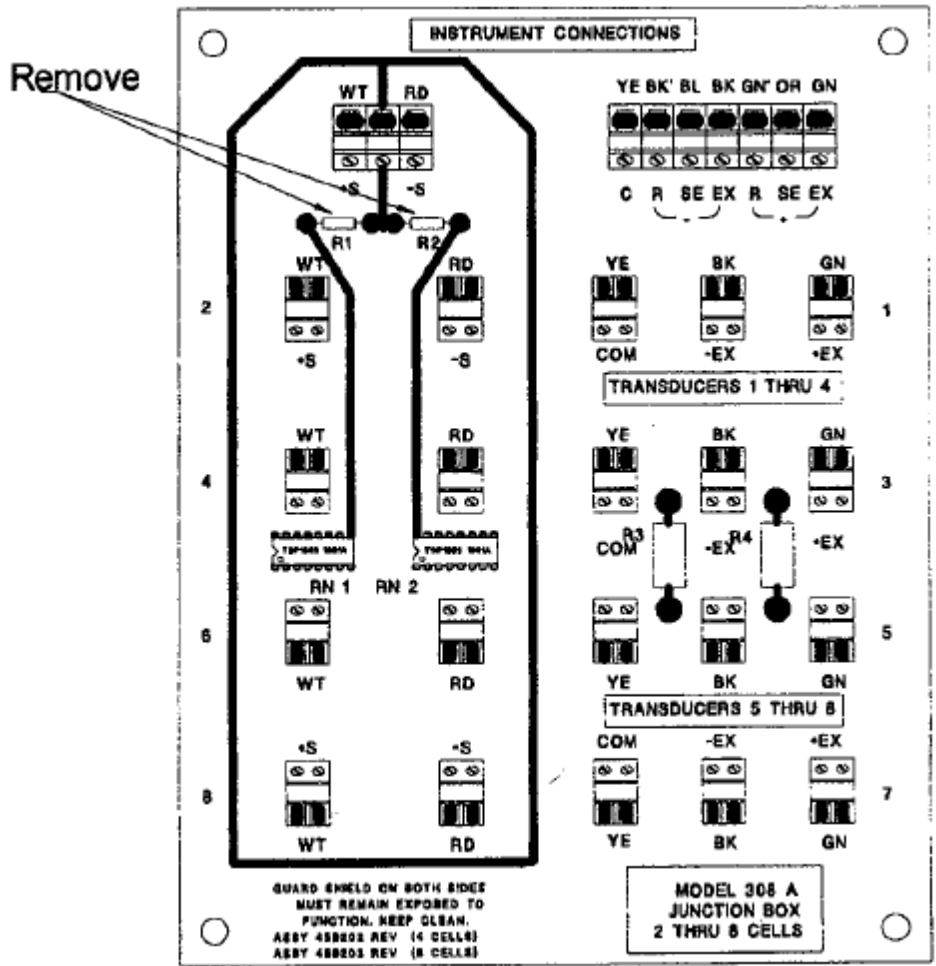
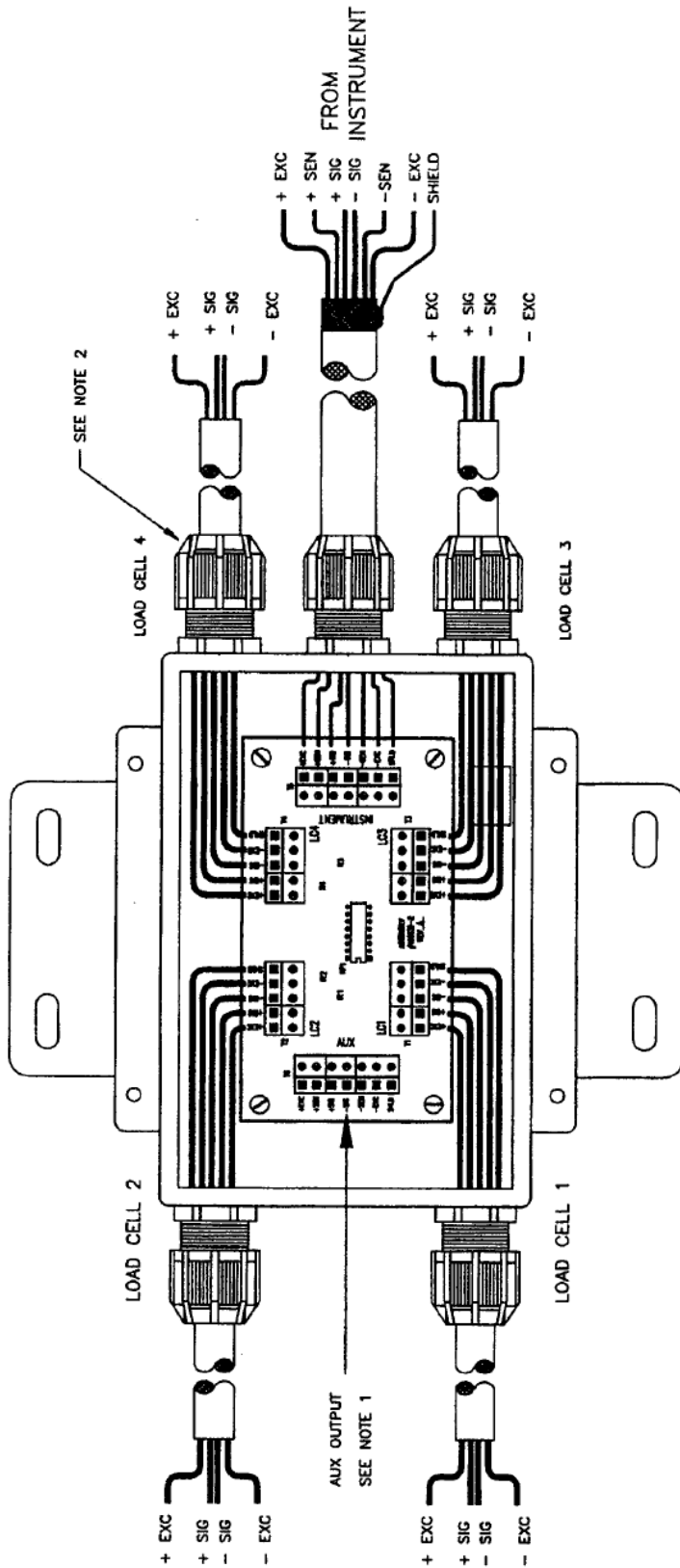


Figure 2-4. R1 and R2 Resistor Locations.





- NOTES
1. AUX OUTPUT TO CONNECT ADDITIONAL 306 SUMMING BOXES (NO OPENING IN ENCLOSURE PROVIDED)
  2. CABLE/CONDUIT CONNECTIONS NOT PROVIDED.

Figure 3-2. Model 306 Wiring Diagram.

## SECTION 4. Model 304 Installation

### 4.1 GENERAL

Model 304 extension junction boxes are used when the transducer cable is not long enough to connect directly to the instrument in a single-cell system or the summing junction box in multi-cell systems. The 304 box has terminals for interfacing the 4-wire transducer cable with a 6-wire cable and for remote sensing close to the transducer location.

Standard 304 boxes are zinc plated or optional stainless steel depending upon ordering specifications. Optional explosion-proof units are suitable for use in Div. 1, Class II, Group E, F, and G environments. Mounting dimensions for both enclosures are shown in Figure 4-1.

### 4.2 LOCATION

Model 304 units typically install in-line with the cable conduit. Locate the box in a reasonably clean, dry place between the transducer and instrument/summing junction box.

### 4.3 WIRING and CLOSING

Note that when a 4 to 6 conductor transition is implemented, jumpers (not supplied) must be added between the orange and green and black and blue terminals. Replace unit cover and tighten securely Using the color code printed on the internal p.c. board, connect cables as shown in Figure 4-1.

NOTE: Load cells installed in Div. 1 hazardous locations must be protected with intrinsic safety barriers. Explosion-proof enclosures are not required in intrinsically safe systems.

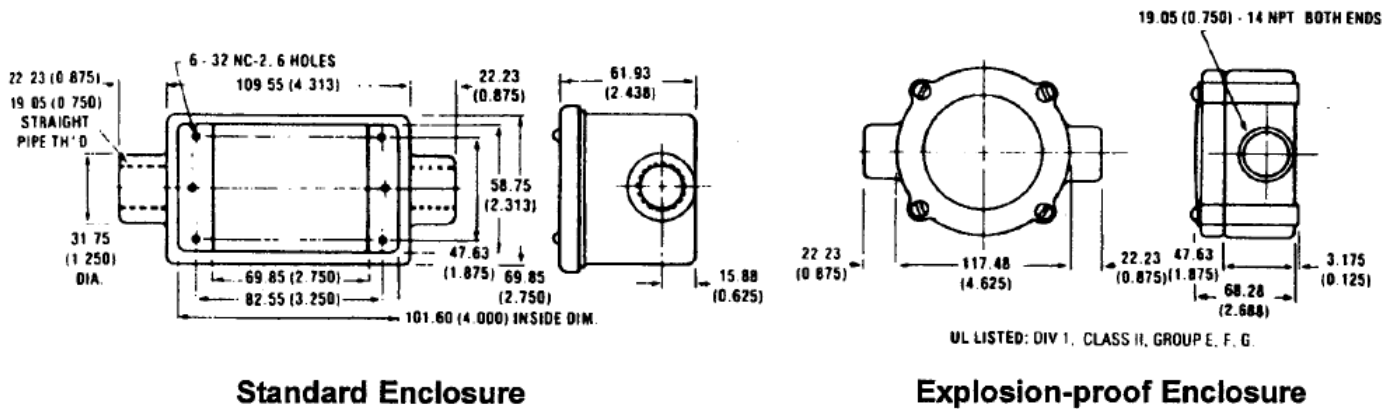


Figure 4-1. Model 304 Outline Dimensions.

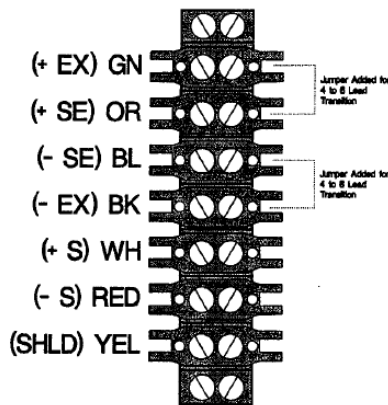


Figure 4-2. Model 304-CP Wiring Diagram. (Wiring shown for standard units only, explosion-proof units use special wire nuts for cable terminations.)



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