

# Instructions to Install Ethernet Cabling between Dual-Configuration Electronic Heads



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# 1 Instructions to install Ethernet cabling

## 1.1 Scope

To provide instructions for installing ethernet cabling between dual-configuration electronic heads on Rosemount 3415, 3416 or 3417 gas ultrasonic meters using either an armored conduit cabling or rigid explosion proof conduit.

## 1.2 Kits Bill of Materials

1. **1-504-90-061 KIT, DUAL-CONFIG ARMORED ASSEMBLY UL/C-UL/ATEX/IECEX RATED W/ EXPANSION I/O, CABLE**
  - 1-360-03-026-3410/3810 EXPANSION MODULE USM ASSY/BOM NG
  - 1-360-03-058-ETHERNET CABLE ASSEMBLY USM EXPANSION I/O
  - 1-504-90-071-ASSY, DUAL-CONFIG ARMORED ASSEMBLY UL/C-UL/ATEX/IECEX RATED
  
2. **2.2 1-504-90-060 KIT, DUAL-CONFIG RIGID CONDUIT UL/C-UL RATED W/ EXPANSION I/O, CABLE**
  - 1-504-02-157-CROUSE HINDS NPL75CL CLOSE CONDUIT NIPPLE
  - 1-504-02-156-CROUSE HINDS UNY205 UNION FITTING
  - 1-360-03-026-3410/3810 EXPANSION MODULE USM ASSY/BOM NG
  - 1-360-03-058- ETHERENET CABLE ASSEMBLY USM EXPANSION I/O
  - 1-504-02-155-CROUSE HINDS EYS216 ¾-in. NPT MALE AND FEMALE HUB
  
3. **1-504-90-062 KIT, DUAL-CONFIG RIGID CONDUIT UL/C-UL RATED**
  - 1-504-02-157-CROUSE HINDS NPL75CL CLOSE CONDUIT NIPPLE
  - 1-504-02-156-CROUSE HINDS UNY205 UNION FITTING
  - 1-504-02-155-CROUSE HINDS EYS216 ¾-in. NPT MALE AND FEMALE HUB

## 1.3 Tools required

Figure 1-1: Tools required



- A. 5/16-in. Allen key
- B. 7/16-in. Wrench
- C. Flat head screw driver
- D. 2.5 mm Flat head screw driver
- E. Torque wrench adjustable to 65 in-lb
- F. 7/16-in. Socket

## 1.4 Materials required

Cat 5 Ethernet cable 25 in. (.63 m) required for rigid conduit kits.

## 1.5 Instructions

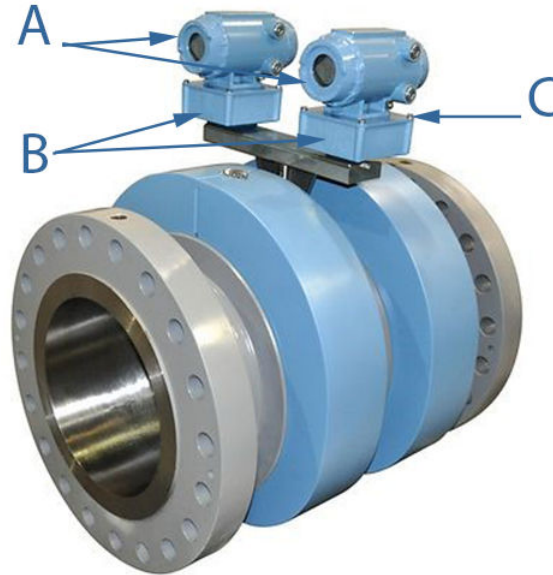
### 1.5.1 Installation of armored cabling between the dual-configuration electronic heads

#### Procedure

1. Remove the electronic heads from the base enclosures by unscrewing the four ¼-20 bolts with wire seal.

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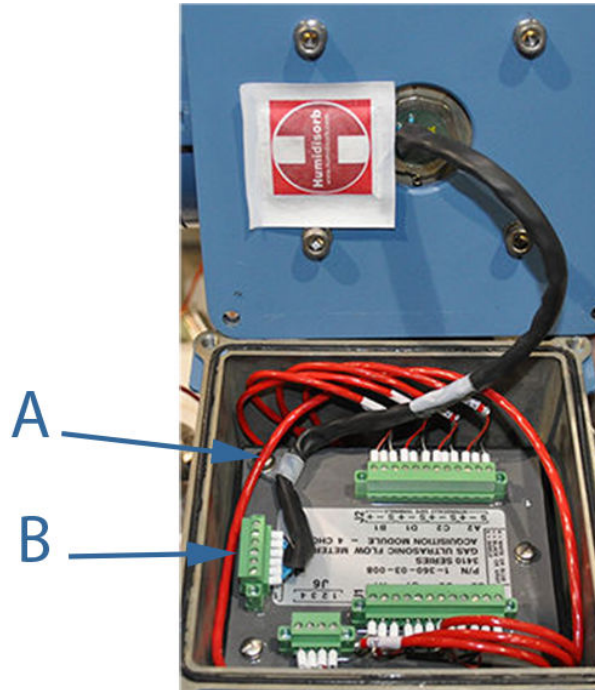
**Figure 1-2: Dual Configuration Meter with Electronic Heads**



- A. *Electronic heads*
- B. *Base enclosures*
- C. *¼-20 bolts*

2. Unscrew the 6-pin connector acquisition cable and cable clamp from the base enclosures.

**Figure 1-3: Electronic Head with Acquisition Cable and Cable Clamp**



- A. Cable clamp
- B. Acquisition cable 6-pin connector

3. Remove the  $\frac{3}{4}$ -in. NPT steel plugs from each electronic head. Remove the electronic head covers.

**Figure 1-4: Electronic Heads**

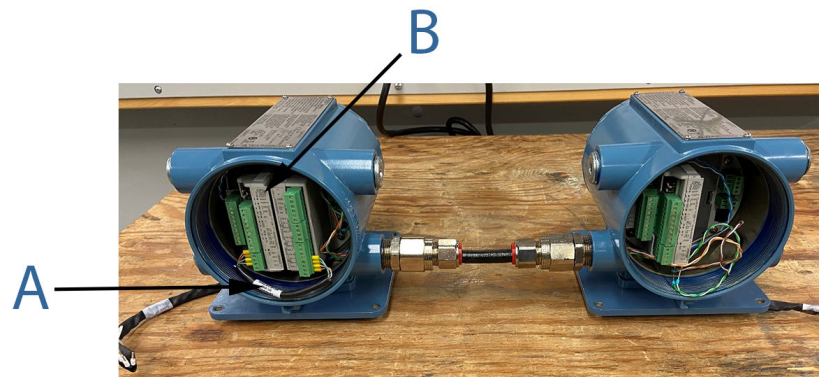


- A.  $\frac{3}{4}$ -in. NPT Steel plugs



4. Remove the electronic heads covers. Screw in the armored cable assembly on both heads. Remove the blanking cover and replace it with the expansion module and wire the Ethernet Cable Assembly from CPU module on head 1 ethernet port to EXP IO ethernet port 3 as shown in [Figure 1-5](#) and [Figure 1-6](#) block diagram.

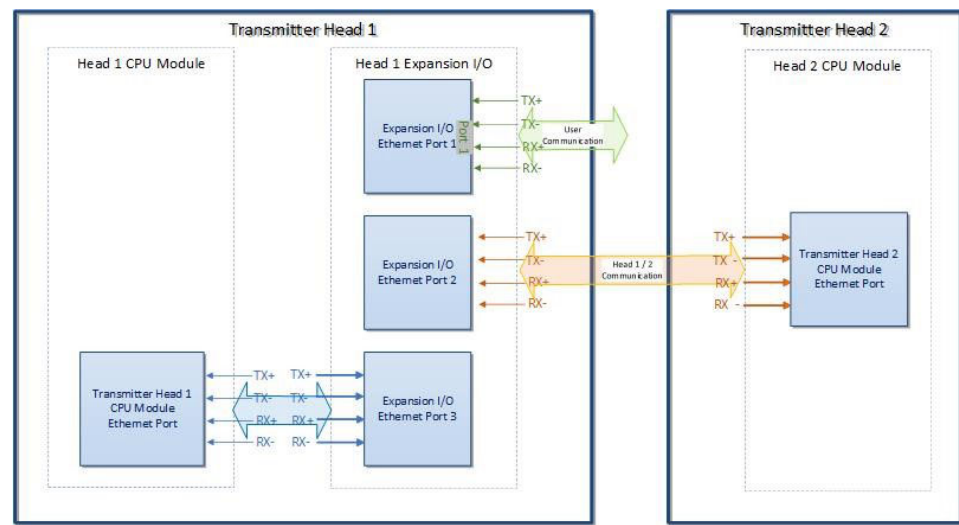
**Figure 1-5: Electronic Heads with Expansion Module and Ethernet Cable assembly**



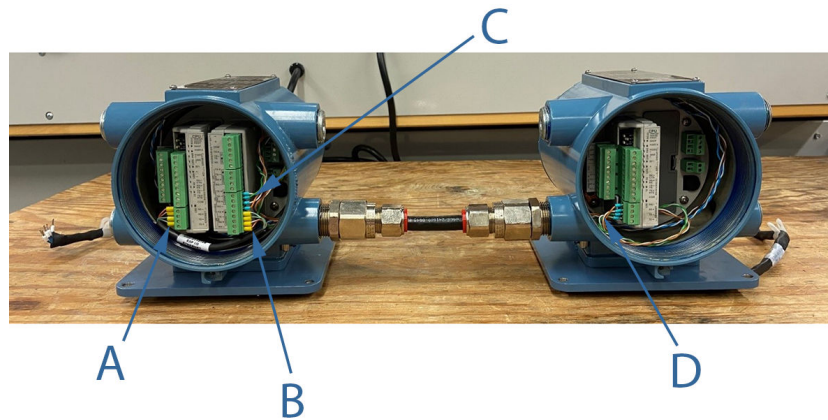
- A. Ethernet cable assembly
- B. Expansion I/O module

5. Wire the ethernet cable using the block diagram in [Figure 1-6](#) showing wiring the EXP IO Ethernet port 2 from Head 1 to Transmitter Head 2 CPU. [Figure 1-7](#) shows wired ethernet cable between both heads.

**Figure 1-6: Head 1 and Head 2 block diagram**



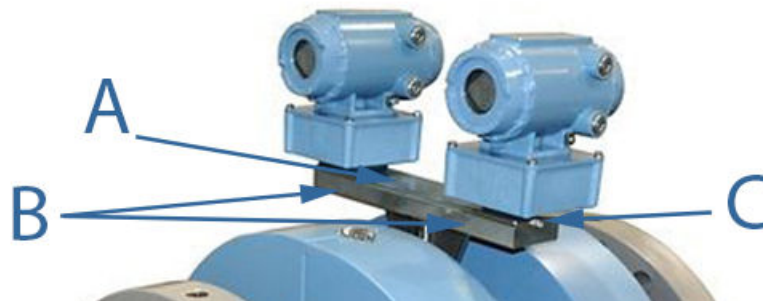
**Figure 1-7: Head 1 and Head 2 showing wired Ethernet cable**



- A. Ethernet connection from Expansion I/O module
- B. Ethernet connection from CPU module
- C. Ethernet connection from Head 2
- D. Ethernet connection from Head 1

6. Remove the electronic bracket covers by unscrewing the captive screw and sliding the electronic bracket covers off the electronic bracket.

**Figure 1-8: Electronic bracket with covers**



- A. Electronic bracket
- B. Electronic bracket covers
- C. Captive screw

7. Loosen the three ¼-20 bolts underneath the electronic bracket head that are attached to the base enclosures so that each base enclosure can slide in the electronic bracket slots when the electronic heads are screwed back in place on the base enclosure after the armored conduit cable is installed. Do not fully remove the screws.

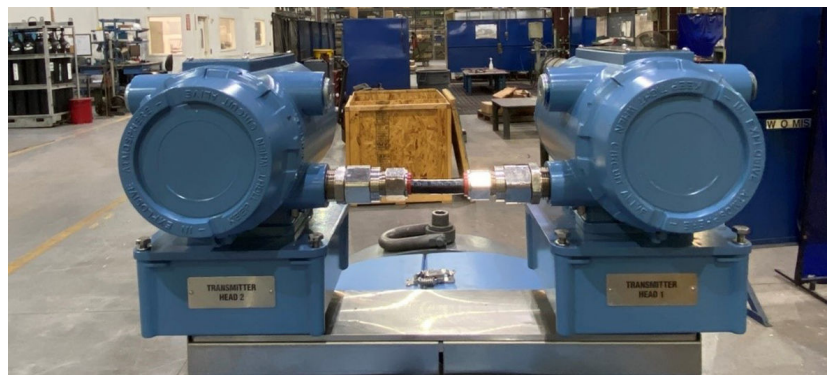
**Figure 1-9: Electronic bracket with bolts for Base Enclosure**



*A. ¼-20 bolts*

8. Reattach the acquisition cable to the acquisition module and securing it with the cable clamp. Replace the electronic heads end covers and screw the electronic heads on top of the base enclosures with the ¼-20 bolts. Make sure the O-ring on each base enclosure is properly seated before putting the lid on.
9. Tighten the three ¼-20 bolts underneath the electronic bracket head that are attached to each base enclosure by torquing them to 65 in-lb and replace the electronic bracket covers and tighten the captive screw.

**Figure 1-10: Head 1 and Head 2 armored cable fully assembled**



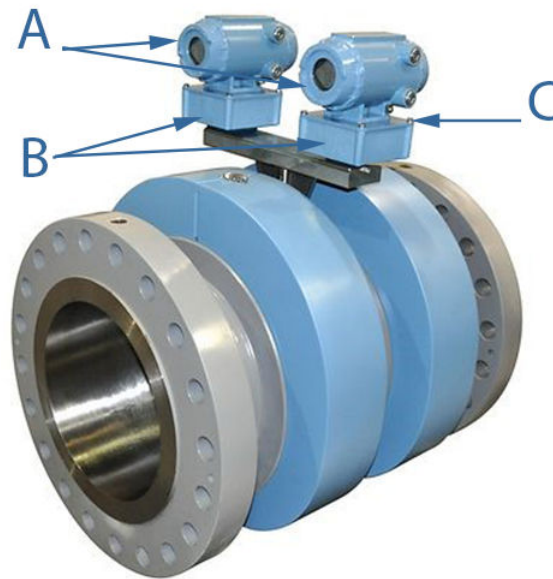
## 1.5.2 Instructions to install rigid explosion proof conduit between the dual config electronic heads

### Procedure

1. Remove the electronic heads from the base enclosures by unscrewing the ¼-20 bolts with wire seal.

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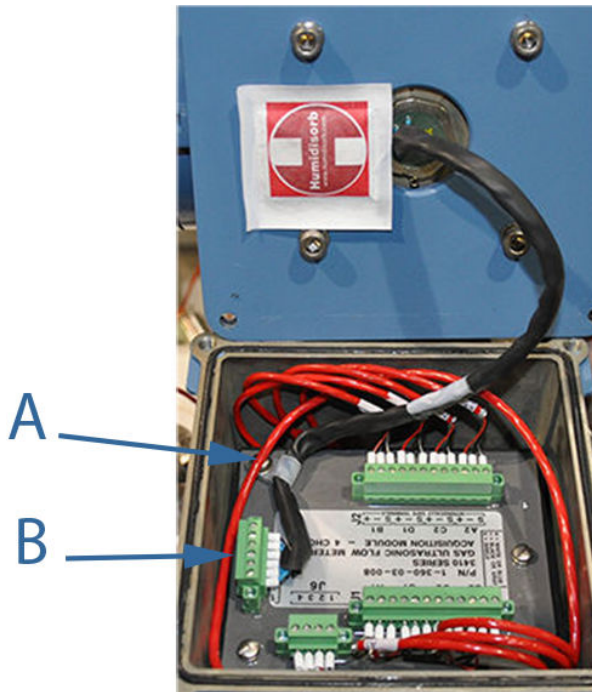
**Figure 1-11: Dual Configuration Meter with Electronic Heads**



- A. *Electronic heads*
  - B. *Base enclosures*
  - C. *¼-20 bolts*
-

2. Unscrew the 6-pin connector acquisition cable and cable clamp from the base enclosures.

**Figure 1-12: Electronic head with Acquisition cable and cable clamp**



- A. Cable clamp
- B. Acquisition cable 6-pin connector

3. Remove the 3/4-in. NPT conduit plugs from the head.

**Figure 1-13: Electronic heads**

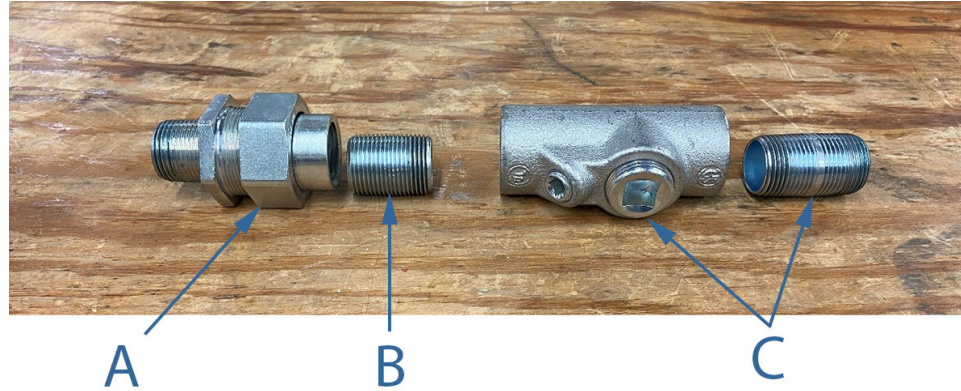


- A. 3/4-in. NPT Steel plugs



4. [Figure 1-13](#) shows rigid explosion proof conduit components. When installing the conduit fittings, make sure to have the minimum thread engagement required by the national electric code (typically 4.5 minimum threads).

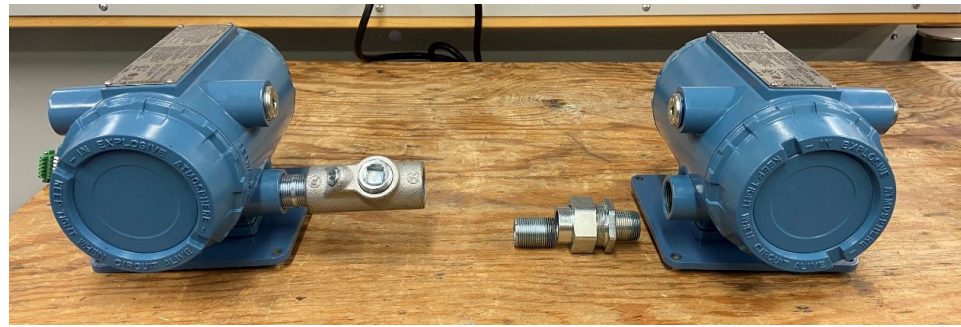
**Figure 1-14: Rigid Explosion Proof Conduit Components**



- A. Crouse hinds UNY205 union fitting
- B. Crouse hinds NPL75 CL close conduit nipple
- C. Crouse hinds EYS216 3/4-in. NPT male to female hub

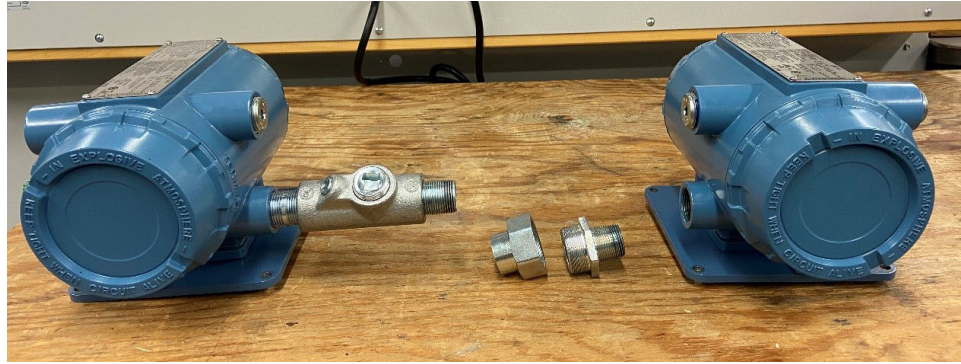
5. Install the close conduit nipple and 3/4-in. NPT hub on one electronic head first as shown in [Figure 1-15](#).

**Figure 1-15: Electronic Head assembled with conduit nipple and hub**



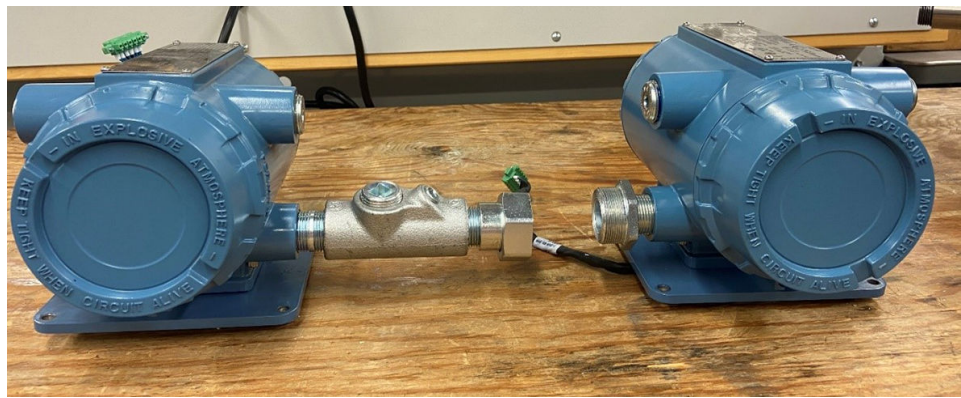
6. Screw the close conduit nipple from the union on to the other end of 3/4-in. NPT hub and unscrew the union fitting male and female end as shown in [Figure 1-16](#).

**Figure 1-16: Electronic Head assembled hub and union conduit nipple**



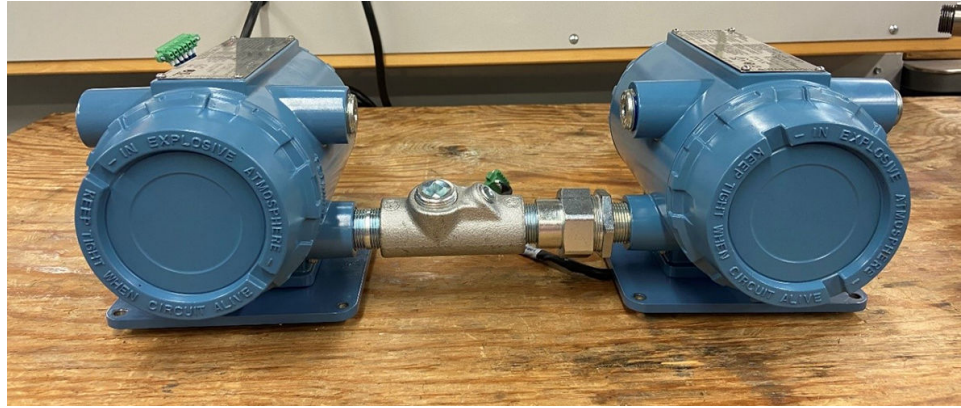
7. Install the female half of the union on the close conduit nipple and the male end on the second electronic head as shown in [Figure 1-17](#).

**Figure 1-17: Electronic Heads assembled with hub and union fitting**



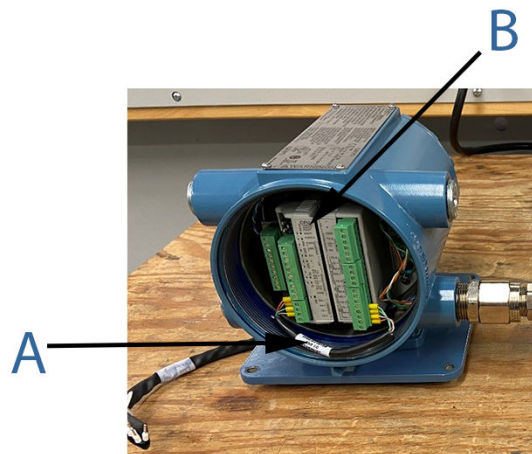
- Slip the union half with nut over the male half of the union and tighten the nut to complete the assembly.

**Figure 1-18: Electronic Heads with rigid explosion proof conduit assembled in each head**



- Remove the electronic heads covers. Remove the blanking cover and replace it with the expansion module. Wire the Ethernet Cable Assembly from CPU module on head 1 ethernet port to EXP IO ethernet port 3 as shown in [Figure 1-19](#) for rigid explosion proof conduit with expansion module, part number 1-504-90-060. For rigid explosion proof conduit without expansion module, part number 1-504-90-062, this step will not be required.

**Figure 1-19: Electronic Head 1 with expansion module and Ethernet cable assembly**

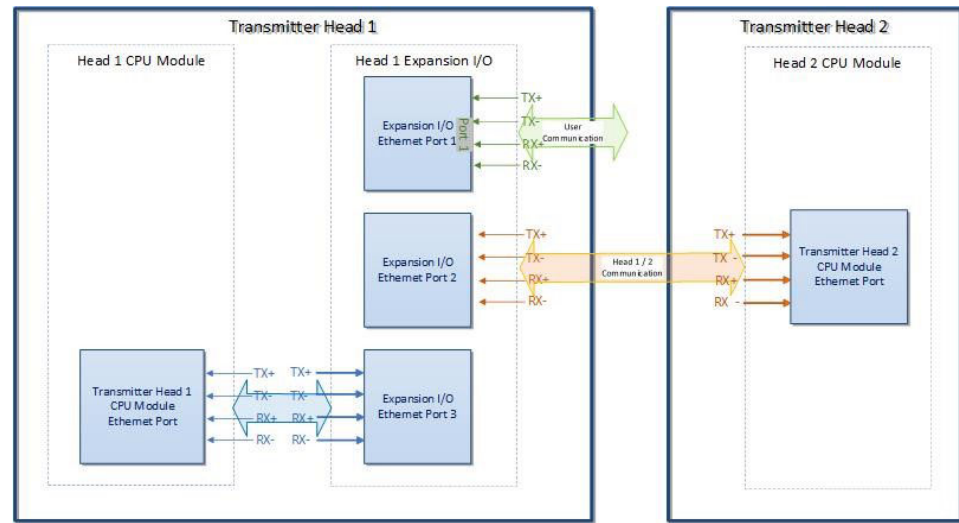


- A. Ethernet cable assembly
- B. Expansion I/O module



- Route Ethernet cable through explosion proof conduit and Wire the ethernet cable using the block diagram in [Figure 1-20](#) showing wiring the EXP IO Ethernet port 2 from Head 1 to Transmitter Head 2 CPU below.

**Figure 1-20: Head 1 and Head 2 block diagram**



- Loosen the three ¼-20 bolts underneath the electronic bracket heads that are attached to each base enclosure as shown on [Figure 1-8](#) so that the base enclosures can slide in the electronic bracket slots when the electronic heads are screwed back in place on the base enclosure after the armored conduit cable is installed. Do not fully remove the screws.
- Reattach the acquisition cable to the acquisition module and securing it with the cable clamp. Replace the electronic heads end covers and screw the electronic heads on top of the base enclosures with the ¼-20 bolts. Make sure the O-ring on each base enclosure is properly seated before putting the lid on.
- Tighten the three ¼-20 bolts underneath the electronic bracket head that are attached to each base enclosure by torquing them to 65 in-lb and replace the electronic bracket covers and tighten the captive screw.

14. Pour explosion proof conduit seal per national electric code requirements.

**Figure 1-21: Explosion proof conduit screwed in each head**







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