2816 Accessory
Hazardous Area Power Supply
For 2800 Series Instruments

Instruction and Installation Bulletin 3/19

A. Introduction

Fairbanks 2816 Accessory (24213) Hazardous Area Power Supply is intended for use with Fairbanks 2800 Series Intrinsically Safe Instruments. The 2816 Accessory (24213) Hazardous Area Power Supply is Factory Mutual Approved for use in the following hazardous area locations:

Explosion Proof w / I.S. outputs, CL I, DIV. I, GP. CD, T6
Dust – Ignition Proof w / I.S. outputs, CL II / III, DIV. I, GP EFG, T6
Explosion Proof w / I.S. outputs, CL I, Zone 1, GP. IIB, T6

W A R N I N G

The 2816 is NOT approved for Group A & B locations.

B. Description

The 2816 Accessory consists of an explosion proof (flame proof) box housing the power supply, with two ¾" NPT Killark conduit seals (see figure 1).

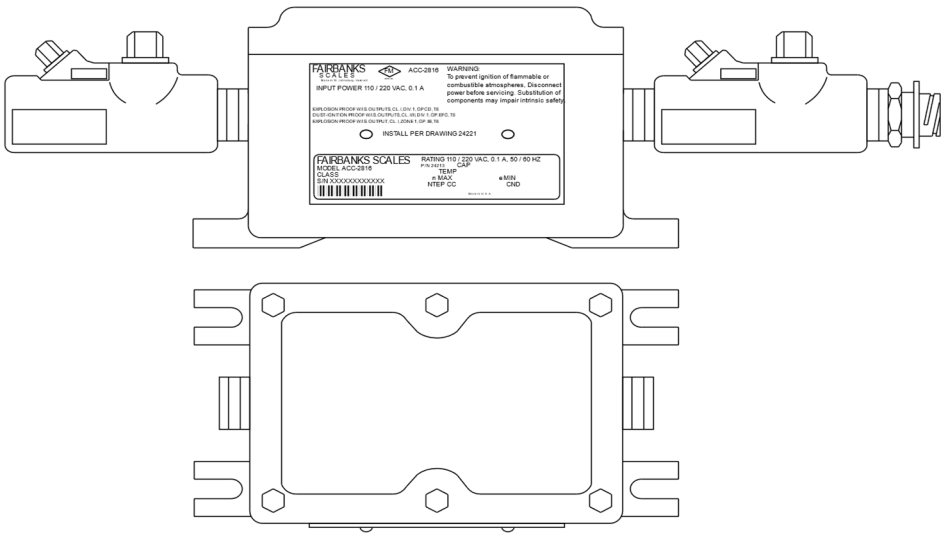


Figure 1

C. Specification

The 2816 Accessory Power Supply provides intrinsically safe outputs for powering the 2800 Intrinsically Safe Instrument and is approved for groups C, D, E, F, and G. These outputs will withstand a direct short to ground for short periods of time without becoming a hazard in the hazardous (classified) area and without sustaining damage. Prolonged shorts will trip fuses located on the power supply printed circuit board inside of the 2816 Accessory enclosure. Replacement fuses are available and are listed in the repair parts section of this document.

N O T I C E

Only Fairbanks parts may be used. Any use of non-Fairbanks parts may compromise the products safety and Factory Mutual approvals.

D. Preparing for Installation

Up to two (2) 2800 Series Instruments can be powered from a single 2816 Accessory. There is a maximum number of loadcells that can be connected depending upon the type of AC source voltage being used. You MUST determine your application current draw requirements before you begin installation.

Refer to the charts below for specifics.

One (1) 2800 with Intalogix Interface (2802 ISC)
loadcell configuration current draw in mA.

Number of load cells	350 ohm	700 ohm	1000 ohm
1	80	77	75
2	92	83	80
3	105	88	84
4	116	94	89
6	179	146	137
8	204	157	152
10	264	209	194
12	286	220	202
14	349	272	251
16	371	283	259

One (1) 2800 with Analog Interface (2880)
loadcell configuration current draw in mA.

Number of load cells	350 ohm	700 ohm	1000 ohm
1	50	46	42
2	59	52	45
3	66	57	49
4	72	62	52
5	76	65	55
6	80	69	57
7	83	71	59
8	86	74	53

- **117 VAC applications can NOT total more than 150 mA DC current draw per 2816.**
- **220 VAC applications can NOT total more than 500 mA DC current draw per 2816.**
- **For dual 2800 Instrument configurations, add the two current draw figures from the charts above to calculate the combined current draw for your application.**
- **The current draw limitation does NOT increase in dual 2800 applications.**
- **There is a MAXIMUM of 8 load cells in 2880 Analog Interface applications.**

Thoroughly read through the entire Installation and Final Assembly instructions before beginning.

Before proceeding with the installation:

1) Ensure that there is no electrical power in the conduit to which the 2816 Accessory will be attached.

2) Have the plant engineer render the installation site non-hazardous.

N O T E

The installation of the 2816 Accessory must be performed by a qualified and properly licensed electrician.

The conduit to which the accessory will be connected must be rigid metal conduit terminating with a 3/4" NPT male thread. The conduit connections are made with ¾" NPT nipples. **Each end of each nipple and seal must have at least 5 full threads of engagement and wrench tight. When joining the conduit seal to the rigid metal conduit carrying the AC power to the accessory 2816, ensure that at least 5 full threads are engaged and wrench tight.**

The 2816 Accessory is intended to be installed vertically, with the AC power input on top, and the 2800 instrument power output on the bottom. Fasten the enclosure to the wall or other support using appropriately sized bolts or fasteners.

Note: The 2816 Accessory cannot be installed with the 2800 instrument power output above the AC power input conduit seal. This would not allow for proper pouring of the conduit seals. The accessory could be mounted horizontally if absolutely necessary and seals are poured in a vertical position beforehand.

E. Installation

Thoroughly read through the entire Installation and Final Assembly instructions before beginning.

1) Remove the cover from the 2816 Accessory enclosure. The cover has protection devices mounted to it that are connected to the circuit board in the base with a four (4) wire cable. **Use care when removing the cover.** Gently remove the enclosure cover, unplugging the cable as you do.

2) Set the cover aside and ensure that the machined surfaces are kept clean and free from damage in order to maintain the integrity of the enclosure.

N O T E

Keep the machined mating surfaces of the Explosion Proof enclosure lid and body clean and free from damage and scratches to maintain it's flameproof integrity.

3) Route the wires from the supply conduit through the conduit seal and into the 2816 Accessory enclosure field wiring compartment.

4) Thread the end of the conduit into the 2816 conduit seal (**at least 5 full threads**).

5) Verify the JP1 jumper settings on the circuit board to select either 117 VAC or 220 VAC configuration as necessary.

117 VAC operation is selected by placing jumpers on pins 1 & 3 (position A) and 9 & 11 (position C) – see figure 2.

220 VAC operation is selected by placing jumpers on pins 5 & 7 ONLY (position B) – see figure 2.

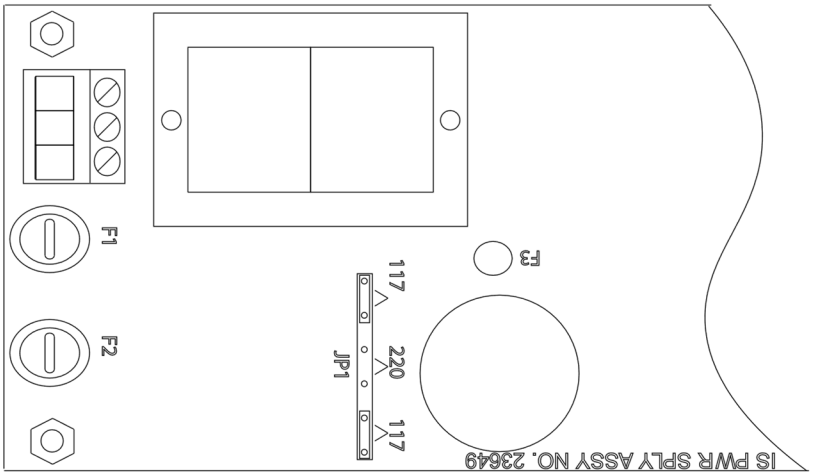


Figure 2

6) Connect the AC input power to the interface block labeled **L1**, **L2**, and **Ground** in the following manner. (see figure 3 and Appendix I)

117 VAC applications:

Ground: (typically green) directly to case at the lug provided.
Line 1: (typically black) to L1.
Line 2: (typically white) to L2.

220 VAC applications:

Ground: (typically green) directly to case at the lug provided.
Line 1: (typically black) to L1.
Line 2: (typically red) to L2.

7) Recheck all connections and jumper settings before proceeding.

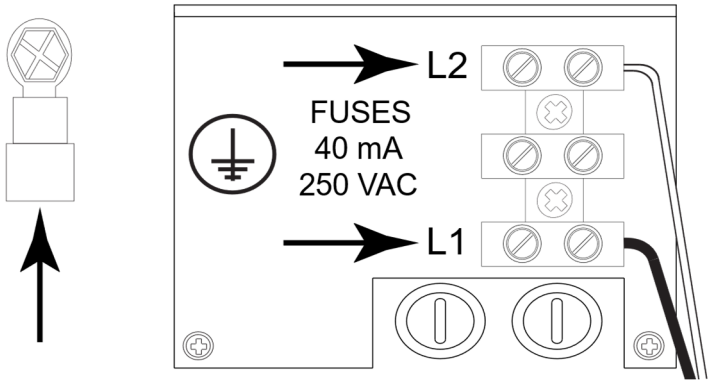


Figure 3

F. Final Assembly and Testing

Thoroughly read through the entire Installation and Final Assembly instructions before beginning.

1) Install cover plate, being certain to reconnect the keyed diode cable assembly to the power circuit board at the JP3 location (see figure 4).

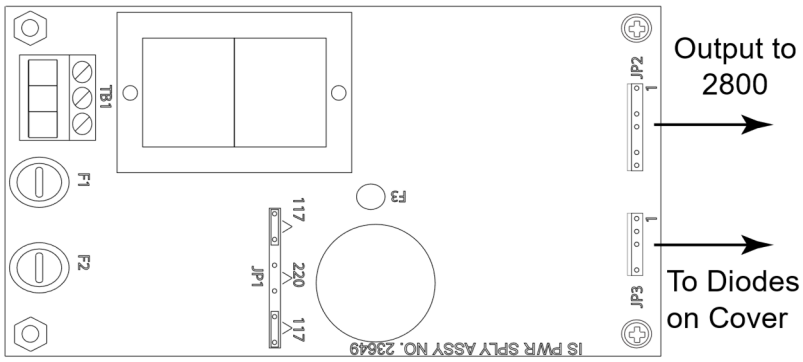


Figure 4

2) The explosion proof housing and the cover plate must be clean, undamaged and unscratched, and free of any dirt and debris, and without the addition of any grease or gasket material.

N O T E

Keep the machined mating surfaces of the Explosion Proof enclosure lid and body clean and free from damage and scratches to maintain it's flameproof integrity.

3) Install 2 bolts loosely to temporarily hold the cover in place.

4) Have the AC power supply to the 2816 accessory turned on.

NOTE: The area must STILL be non-hazardous

5) With power turned on, measure the DC voltage at the output connector pin 7 (+) to pin 3 (-). The reading should be 6.9 to 7.2 VDC. If the voltage readings are incorrect, check the connections and verify the incoming AC supply voltage.

6) Install the remaining bolts in the cover and tighten all 6 bolts wrench tight.

7) Seal each conduit seal using only Killark SA sealing compound and Killark PF packing fiber.

8) Follow the instructions supplied with the compound and fiber. Both may be obtained from a local electrical supply distributor.

G. 2800 Instrument Connection

The connection from the 2816 Accessory power supply to the 2800 Series Instrument is made with the following selections of factory assembled and manufactured plug and play cable assemblies.

Part Number	Description
24222	10 foot Cable interface with connectors
24223	25 foot Cable interface with connectors
24224	50 foot Cable interface with connectors
24257	Cable “Y” adapter for dual 2800 Instrument connectivity (for use with the cables listed above)

1) Connect the selected cable to the battery interface pig-tail cable (21125) that is supplied with the 2800 Series Instrument.

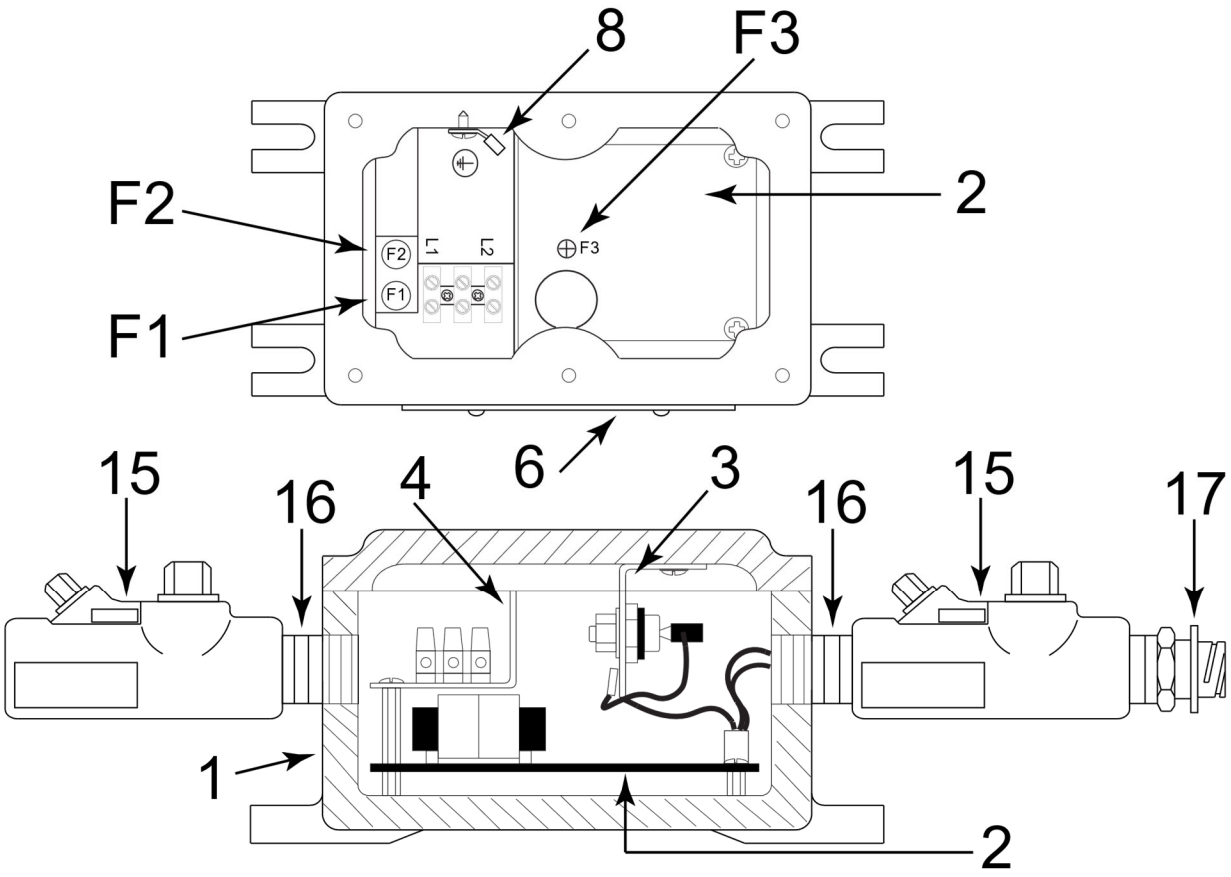
2) Route the cable in such a manner so as to avoid interference and damage from traffic.

N O T E

Field repairs to any of these factory manufactured cable assemblies is not permitted and will void the Factory Mutual approvals.

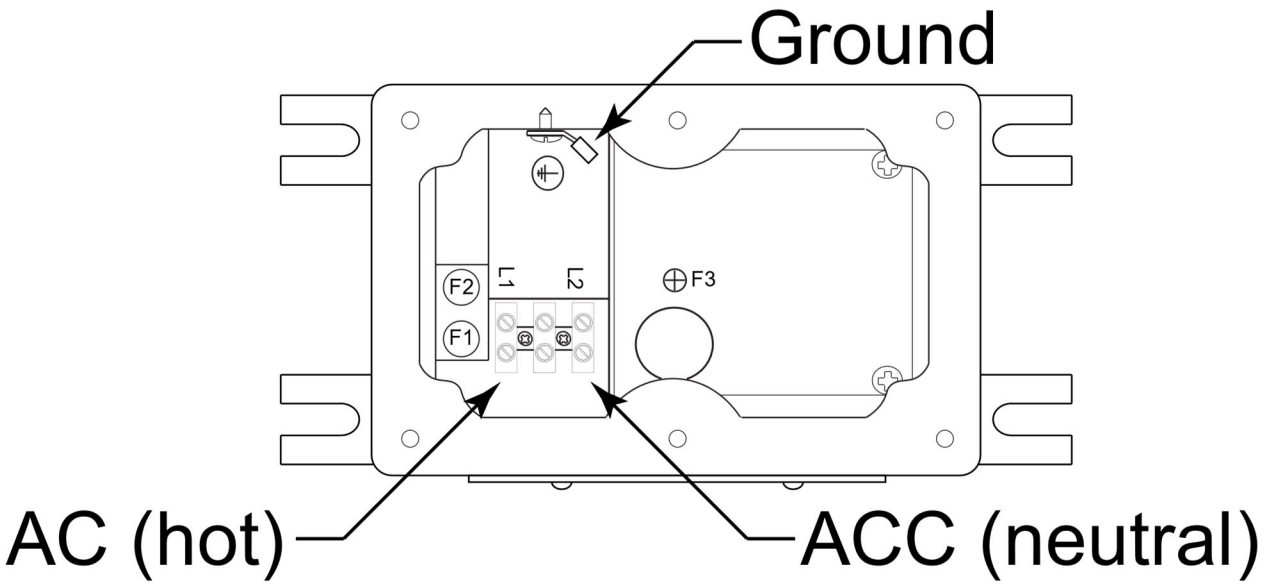
H. Parts

Item Number	Part Number	Description
1	-----	Enclosure, Ex Proof, w lid and 6 bolts (ref only, not field replaceable)
2	23649	PCB Assembly, I.S. Power Supply
3	24226	Diode Bracket Assembly
4	24215	AC Mounting Bracket
6	-----	Nameplate (ref only, not field replaceable)
8	-----	Ground Lug, No. 10 (ref only, not field replaceable)
15	14141	Fitting, Sealing (0.75-14 NPT)
16	14144	Nipple
17	24225	Cable Assembly
F1 & F2	24694	Fuse – AC 40 mA – (location F1 & F2)
F3	18699	Fuse – DC 0.5 amp – (location F3)

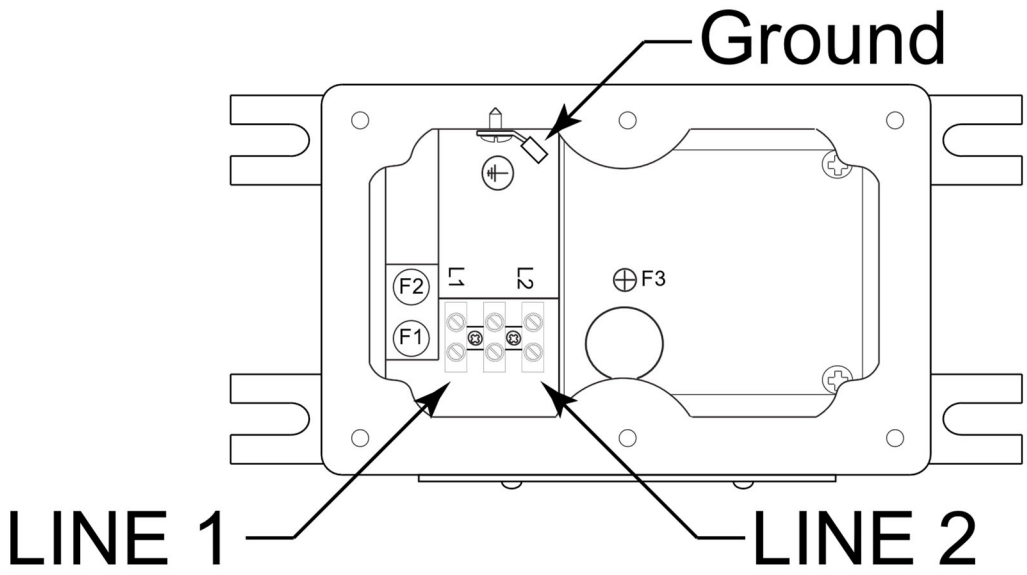


Appendix I

117 VAC Incoming Supply Wiring

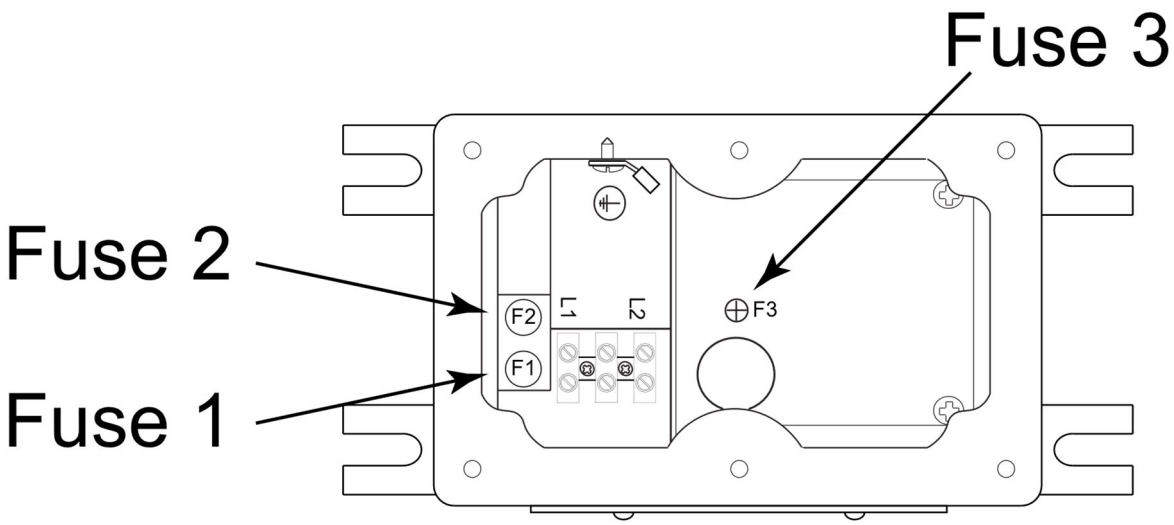


220 VAC Incoming Supply Wiring

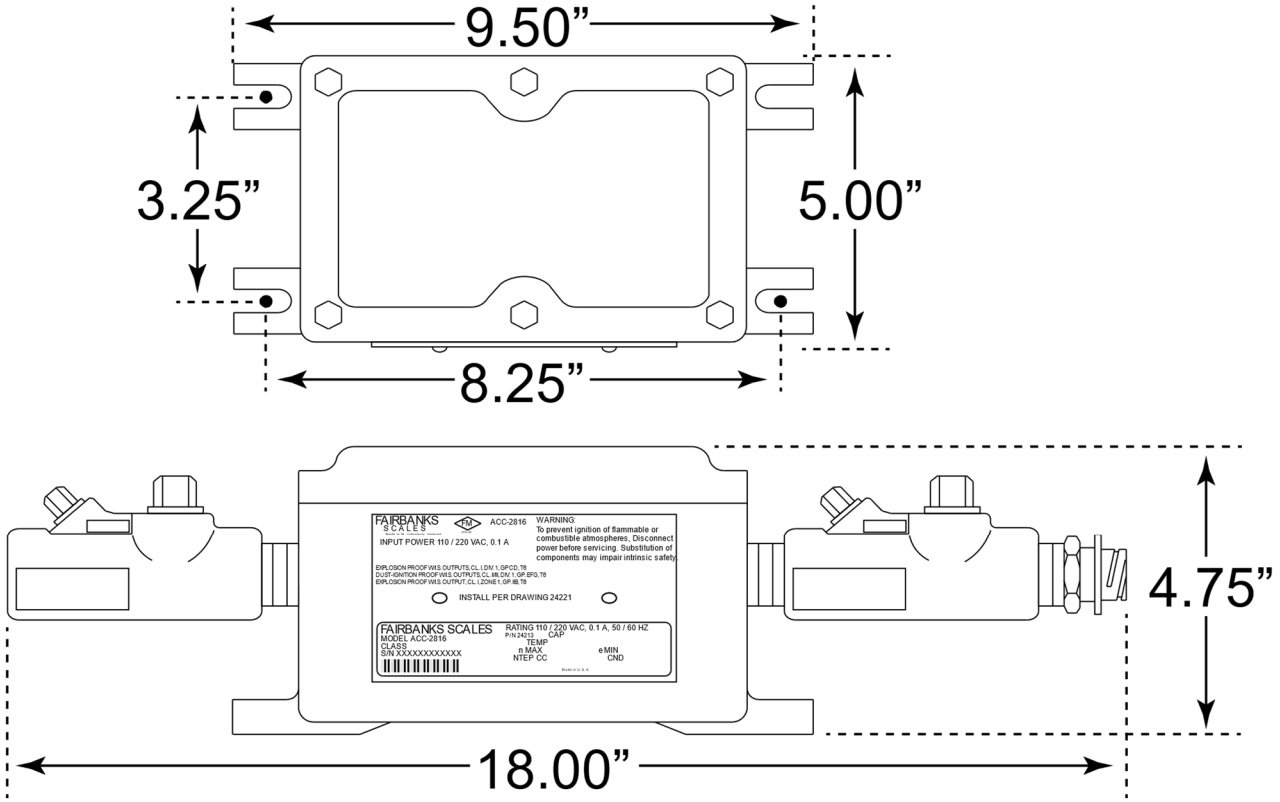


Appendix II

Fuse Locations

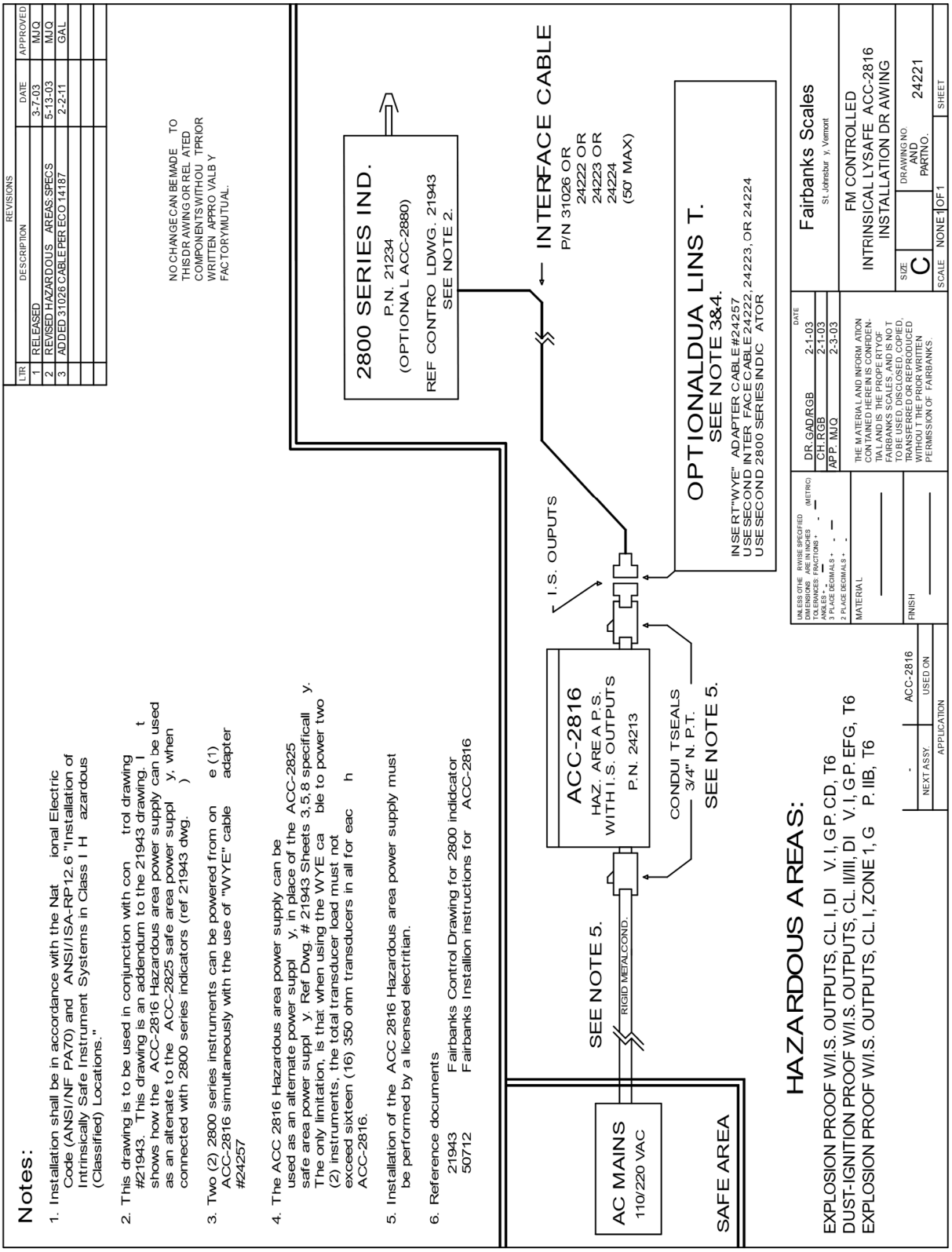


Mounting Dimensions



Appendix III

Factory Mutual Control Drawing



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