

Intrinsically Safe Controller 18451

Factory Mutual™ Approval

Revision 8

10/19

Introduction

The 2801 accessory, Intrinsically Safe Controller (ISC), is used for interfacing up to four (4) analog load cells while installed in a Hazardous Area.

It operates through an Intrinsically Safe Interface Box (ISIB) located in the Safe Area next to the instrument with Intalogix technology.

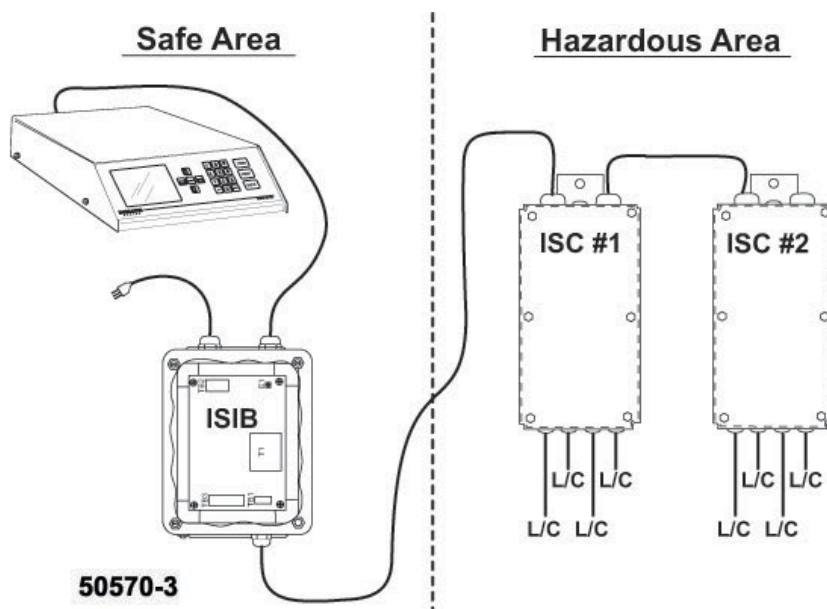
NOTE: *The 2801 ISCs are **NOT COMPATIBLE** with Q Series Instruments*

Description

The ISC is contained in a stainless steel box with six (6) gland bushings for load cells and interconnection cables. The ISC PC board assemblies have connections for "daisy-chaining" other ISC boxes to a maximum of four (4), allowing 16 cells [up to four (4) scales].

Installation

A. General Layout



NOTE: *Factory Mutual approval is issued with strict guidelines. DO NOT, under any circumstances change or modify any FM-approved equipment, cable, or procedure. Installations in Hazardous areas MUST BE discussed with the customer's plant engineer.*

B. Wiring Load Cells

Mount the ISC in the Hazardous area where it is accessible and protected. Number each analog load cell and bring the properly routed cables through the gland bushings for TB3 thru TB6. Use TB3 for cell #1, TB4 for cell #2, TB5 for cell #3, TB6 for cell #4.

Connect as follows: **TB 3, 4, 5, & 6**

TB3-1 (-) EXC

TB3-2 (+) EXC

TB3-3 SHIELD

TB3-4 (+) SIG

TB3-5 (-) SIG

- When using multiple ISCs, you **MUST** use consecutive cell terminals.
Example: There are 2 ISCs with 2 scales, Total of 6 Load Cells. Use all 4 terminals of ISC #1, and the first 2 terminals (TB3 and TB4) of the second ISC.
- Unused gland bushings **MUST** have a plug in them and be secure. All cabling should have a "drip loop" at the cell and box to help prevent liquid entry. On all boxes, the gland bushings have "O" rings that can be forced out of position if the bushing itself is not tight. To prevent this, first tighten the inner nut securing the gland bushing in the hole, then insert the cable and carefully tighten the gland nut with pliers.

Do not over-tighten where the gland bushing 'turns'.

- The cover **MUST** be secured with ALL screws tightened properly (18-20 in/lbs) for protection against moisture and for Factory Mutual specifications.

C. Wiring ISC to ISIB

ISCs may be connected as follows:

- A single ISC assembly may be interfaced to a single ISIB.
- 2 each IS Splice Box Assemblies may be connected to an ISC as in a scale.
- A maximum of 4 ISCs may be "daisy chained" for up to 16 load cells (up to 4 scales) and connected to a single ISIB.

TB1 is used to interface the ISC to the ISIB.

It is also used in "daisy chaining" the boxes where more than four load cells are used. Only cable 21737 (2875 accessory) is to be used for connections between the ISIB and first ISC, then between all ISCs used.

D. Maximum Cable Lengths: ISIB to the FIRST ISC (up to 4 ISCs)

1. ISIB to the FIRST ISC (up to 4 ISCs)

<u># of ISCs</u>	<u>350 Ohm Cells</u>	<u>1000 Ohm Cells</u>
1	400 ft	500 ft
2	300 ft	400 ft
3	180 ft	300 ft
4	maximum of 3 ISCs	180 ft

2. Instrument to ISIB: 50 feet
3. Any ISC to the next ISC: 31 feet
4. Load Cell Cables: 75 feet

NOTE: Cable Lengths are nominal and may need to be reduced for proper operation. Do NOT exceed maximum lengths.

E. ISC Switch Settings

ISC Box #	S1-1	S1-2	S1-3	S1-4
ISC 1	ON	ON	UNUSED	ON (*see note)
ISC 2	OFF	ON	UNUSED	ON (*see note)
ISC 3	ON	OFF	UNUSED	ON (*see note)
ISC 4	OFF	OFF	UNUSED	ON (*see note)

*** NOTE:** S1-4 OFF = 60 HZ / S1-4 ON = 60HZ

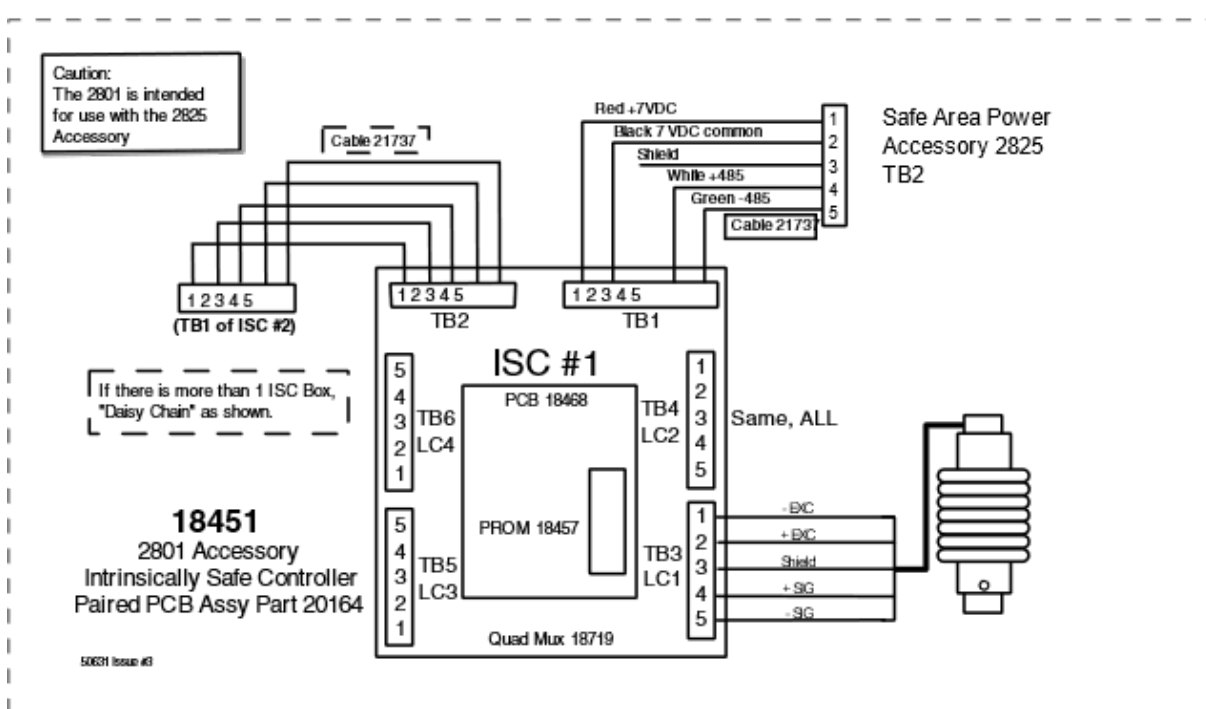
F. Completion

Once all connections are complete, tighten all gland bushings with pliers. Be certain gasket is in proper position then secure box cover with all screws torqued to 18-20 inch/lbs.

G. Grounding

If ISC(s) are NOT mounted to a metal frame which is properly and securely grounded to a local ground, ground the ISC(s) to a good local ground using a mounting stud and minimum size AWG #12 wire.

NOTE: 24176 ISC mounting bracket is recommended for all truck scale installations.

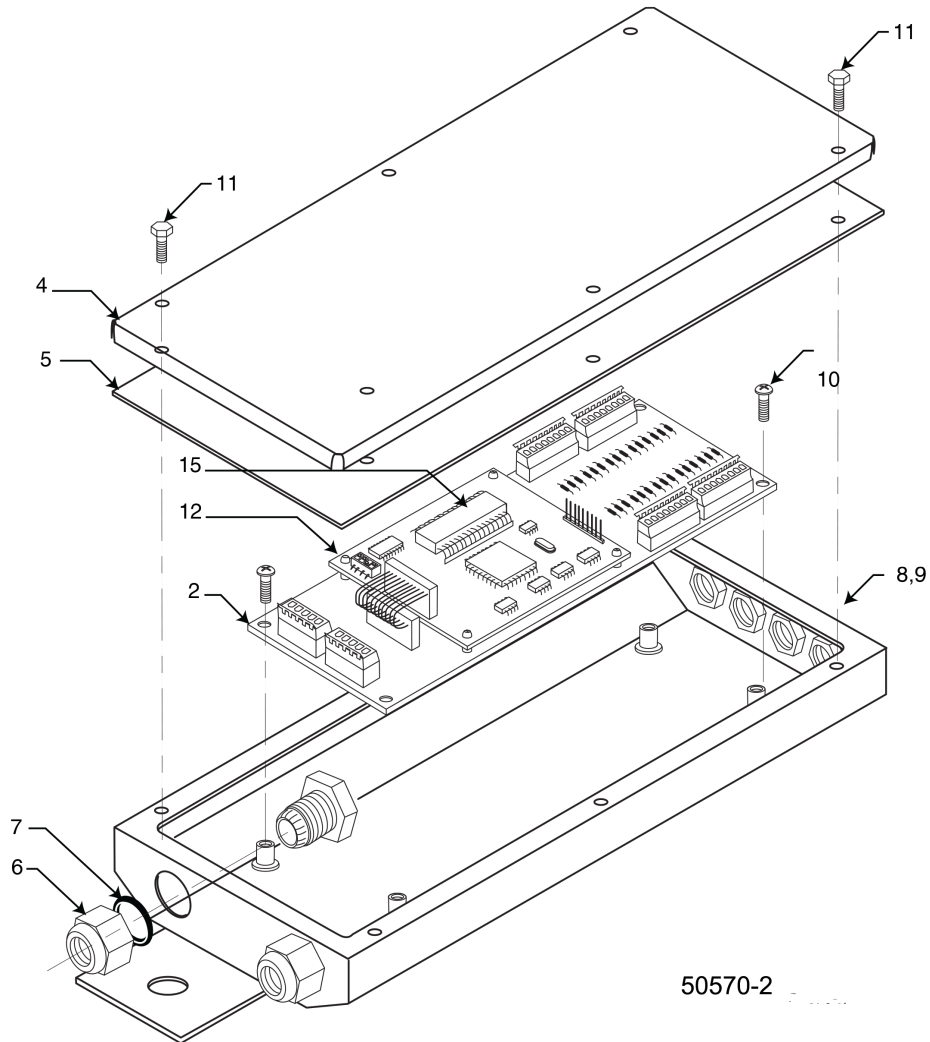


Parts List

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	18460	Box Assembly
2	20164	Paired PCB Assy, IS Sect Controller
4	18461	Cover
5	18462	Gasket
6	18455	Connector, Liquid-Tight (2 ea)
7	18454	"O" Ring (2 ea)
8	17533	Connector, Liquid-Tight (4 ea)
9	15652	"O" Ring (4 ea)

10	11153	Screw-Mach-Ph-Phil (4 ea)	6-32 x .25
11	14083	Sealing Screw (6 ea)	10-32 x .50
12	11495	Plain Washer (6 ea, Nylon)	
13	11191	Lock Washer, Ext Tooth, #6	
14	12011	Nylon Rod (1 ea)	
15	12609	Nylon Rod (2 ea)	
23	12189	Seal, Wire	
25	11131	Jam Nut, 1/4-20	
26	11091	Lock Washer, Med-Spring 1/4"	
27	50631	Label, ISC	

A. Diagram



Appendix I: Control Drawings

	REV	DESCRIPTION	DATE	APP
	3		05-08-00	

NOTES:

1. Installation shall be in accordance with the National Electrical Code(ANSI/NFPA 70) and ANSI/ISA-RP12.6 'Installation of Intrinsically Safe Instrument Systems in Class I Hazardous (Classified) Locations.'
2. Size of wires in cables between the interface and the sectional controllers or between sectional controllers shall not be larger than 16 AWG wire.
3. Strain gage based transducers must be FM approved for the hazardous locations in which they are installed and have appropriate entity parameters.

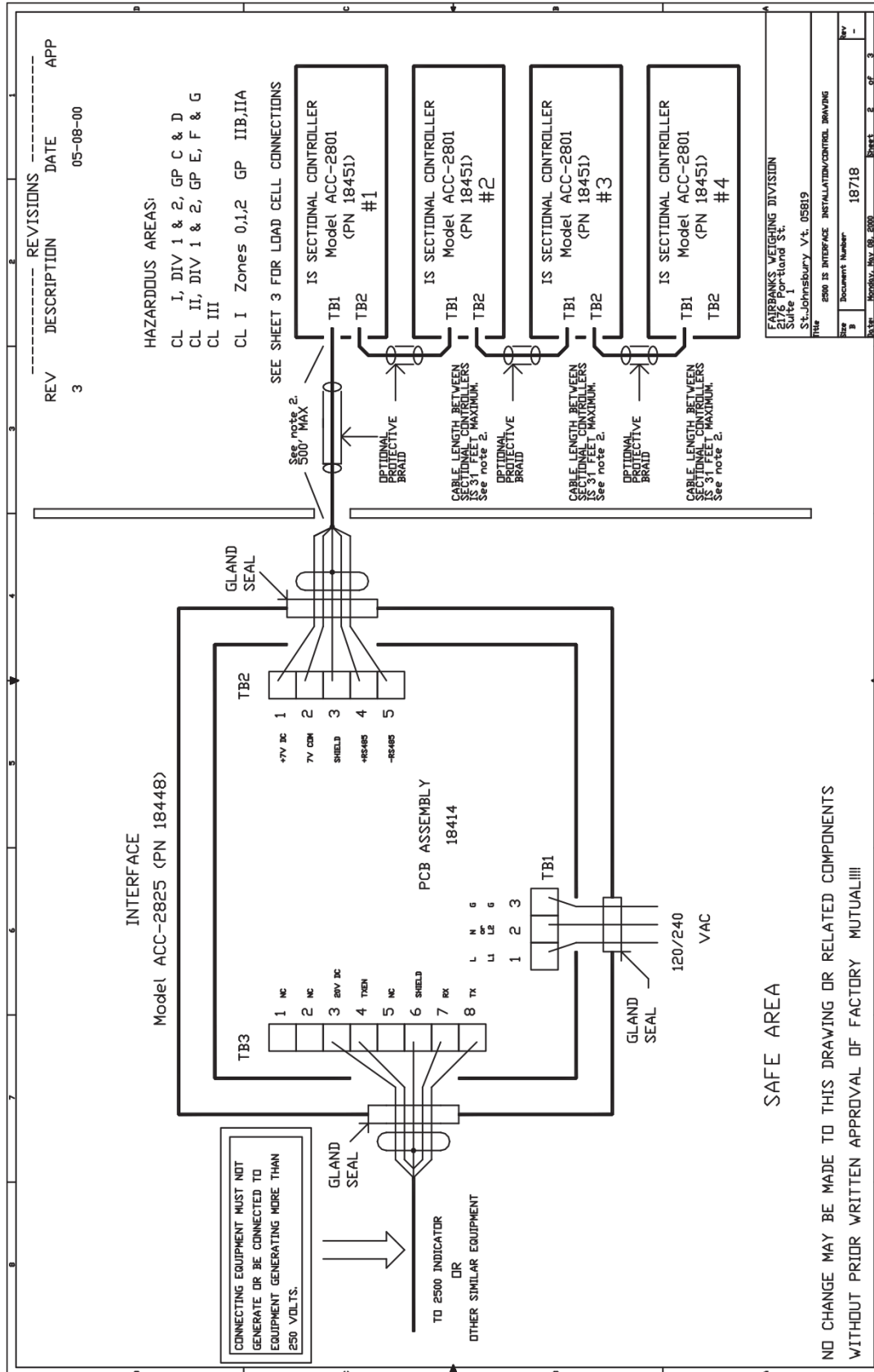
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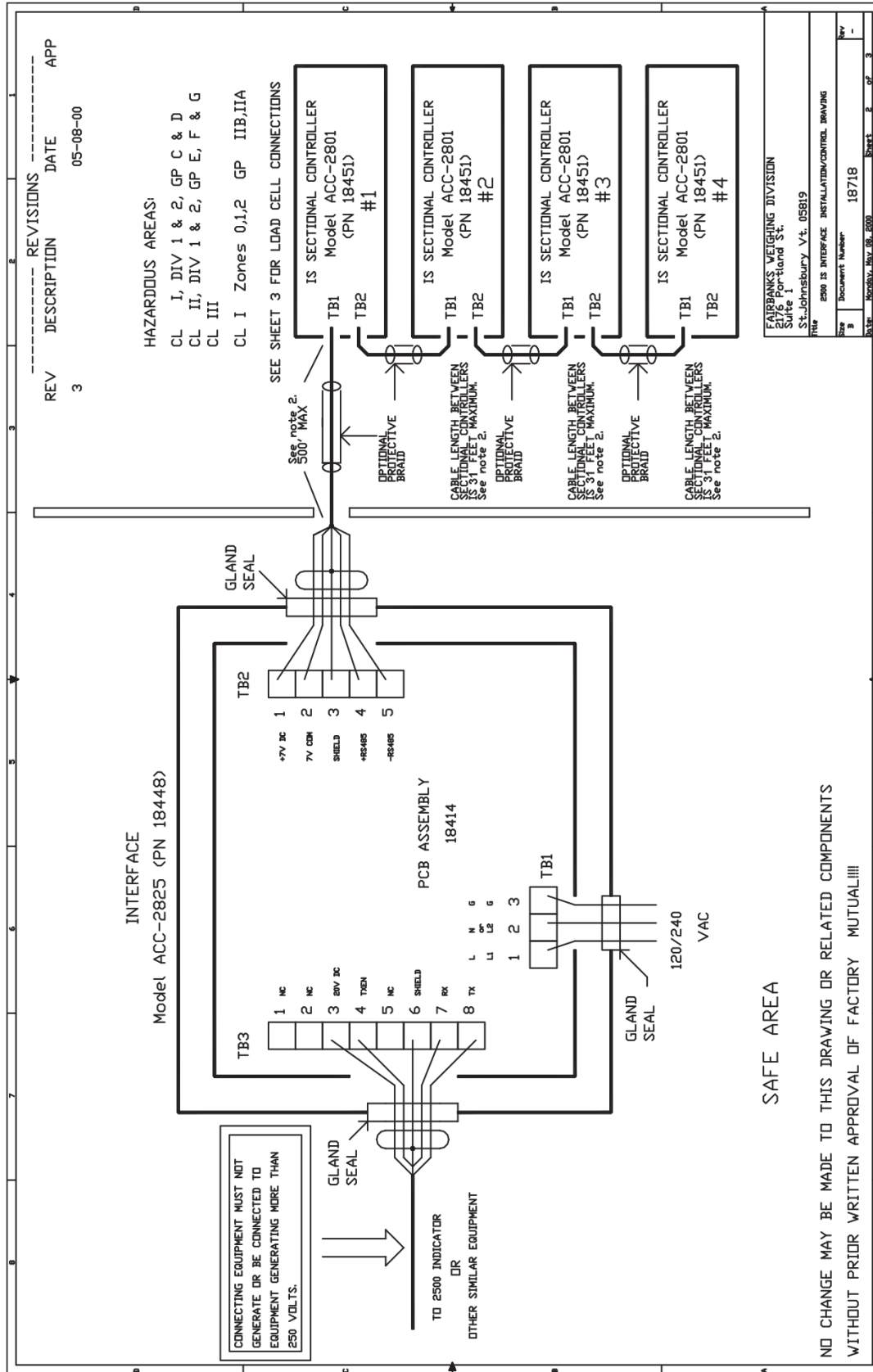
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