



INSTRUCTION MANUAL INTRINSICALLY SAFE WEB LOAD CELL AMPLIFIER MODEL IS-2

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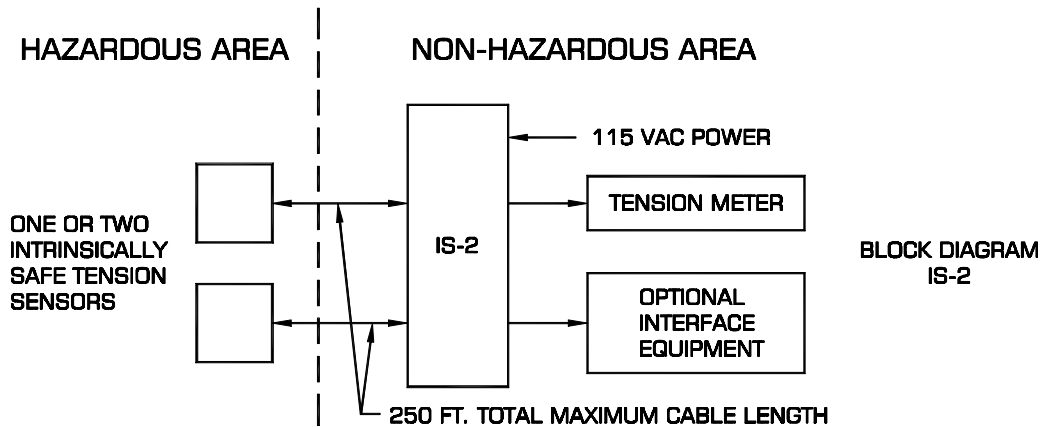
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INTRODUCTION

The MAGPOWR Model IS-2 Tension Readout Amplifier provides intrinsically safe circuits for intrinsically safe load cells. As shown in the block diagram, an intrinsically safe tension readout system consists of the IS-2 amplifier, one or two intrinsically safe load cells, and a tension readout meter. The IS-2 may also be interfaced with other equipment. **CAUTION:** Equipment interfaced with the IS-2, including the tension readout meter, may not be powered by voltages greater than 250 vrms.

NOTE: Only the intrinsically safe sensors may be located in the hazardous area.



When used with the IS-2 Tension Readout Amplifier, MAGPOWR load cells tabulated in Table 1 are UL listed for use in the following hazardous locations: Class I, Division I, Groups A, B, C and D; Class II, Division I, Groups E, F and G; and Class III, Division I.

INSTALLATION

Refer to the individual MAGPOWR load cells instruction manuals for installation of load cells.

WARNING: Improper installation can jeopardize the intrinsic safety of the circuits. Installation should be made per ISA-RP-12.6 Installation of Intrinsically Safe Systems in Class I Hazardous Locations and the National Electric Code.

CAUTION: Equipment interfaced to the IS-2 must not be supplied by voltages greater than the maximum safe area voltages of 250 vrms.

1. Install the IS-2 in a **non**-hazardous location. The IS-2 **cannot** be installed in the hazardous location. The IS-2 only provides intrinsically safe circuits so that intrinsically safe load cells can be installed in the above listed hazardous locations.

2. Grounding

- a) Connect TB1-5 to the intrinsically safe ground buss through a #12 AWG wire.
- b) Connect the ground stud on the enclosure to the plant system ground through a #12 AWG or larger wire. This conductor should be distinct from and insulated from the wire used for the above intrinsically safe ground.

3. Hazardous Location Wiring (Load cell Cables)

CAUTION: Load cell cables longer than 250 ft. cannot be used. Intrinsic safety can be impaired.

Connect load cell cables to TB1 terminals 1-4. Matching the color coding on TB1 with MAGPOWR supplied cables insures proper connections. For two sensor applications, the load cells are wired in parallel (both red wires to 1, both green wires to 2, etc.). **WARNING:** These cables must be isolated physically and electrically from any non-intrinsically safe wiring or intrinsic safety will be affected. These cables must be located only on the TB1 side of the enclosure separator.

4. Non-Hazardous Location Wiring. **WARNING:** This wiring must be isolated physically and electrically from any intrinsically safe wiring or intrinsic safety will be affected. This wiring must be located only on the TB2 side of the enclosure separator.

CAUTION: Equipment interfaced to the IS-2 must not be supplied by voltages greater than the maximum safe area voltage of 250 vrms.

- a) Connect 115 vac +/- 20% power line to TB2 terminals 6 and 7, also marked "AC WHT." and "AC BLK."
NOTE: If one of the incoming leads is grounded, connect it to terminal 6.
- b) Connect 0 to 1 mdc meter between TB2 terminal 3 (+) and TB2 terminal 5 (-). If a dual scale meter will be used, connect TB2 terminal 4 to the "+" terminal of the meter through a user supplied range select switch (close for low scale).
- c) A 0 to 10 vdc signal proportional to tension is available between TB2 terminal 1 (+) and TB2 terminal 2 (COM). This signal is not isolated from ground. Minimum load resistance is 10 kohms.

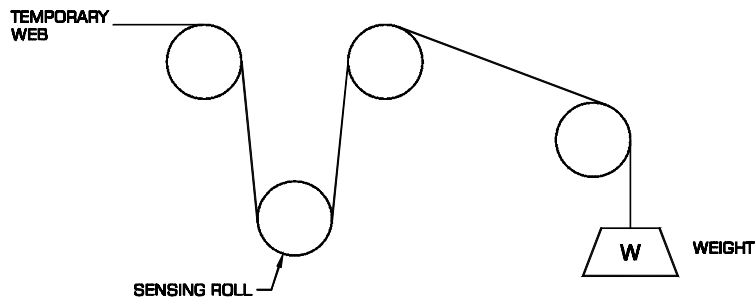
5. Proceed with calibration.

CALIBRATION

Tension Readout calibration is accomplished by two adjustments: ZERO and GAIN.

The ZERO adjustment is used to cancel the weight of the sensing roll so that the meter reads "0" with zero tension. The ZERO adjustment is therefore made with sensing roll unloaded (i.e. without web on the sensing roll).

The GAIN adjustment is made with a known load on the sensing roll. The known force may be applied using an accurate spring scale or (more accurately) by using a known dead weight. In either case the known force should be applied using a temporary web threaded as the web would normally be threaded in the machine to insure the same wrap angles. In wide web applications, the known force should be applied near the center of the sensing roll using the temporary web (a rope is satisfactory).



SCALE ADJ. is a secondary adjustment used to calibrate the low scale when a dual scale meter is used.

1. Insure that the meter is mechanically zeroed and then apply power.
2. Unload the sensing roll.
3. If a user supplied dual scale switch is used, set it to the "LOW" scale setting.
4. Adjust the 22 turn ZERO pot for zero meter reading. NOTE: These 22 turn pots have clutches and cannot be damaged by over rotation. Full CW or CCW rotation causes a faint clicking sound.
5. If a user supplied dual scale switch is used, set it to the "HIGH" setting.
6. Load the sensing roll with a known force as described above and adjust the 22 turn GAIN pot for a meter reading equal to that of the known force.
7. If a user supplied dual scale switch is used:
 - a) Load the sensing roll with a known force that is within the range of the low scale.
 - b) Set the user supplied dual scale switch to the "LOW" setting.
 - c) Adjust the 22 turn SCALE ADJ. pot for a meter reading equal to that of the known force.

REPAIR PARTS LIST

WARNING: Substitution of parts can impair intrinsic safety.

PART NUMBER	DESCRIPTION
3C106-1	Amplifier Printed Circuit Board Assembly
3C107-1	Barrier Module (Caution: Not repairable. Replace entire module when failed)

BARRIER MODULE CHECKS

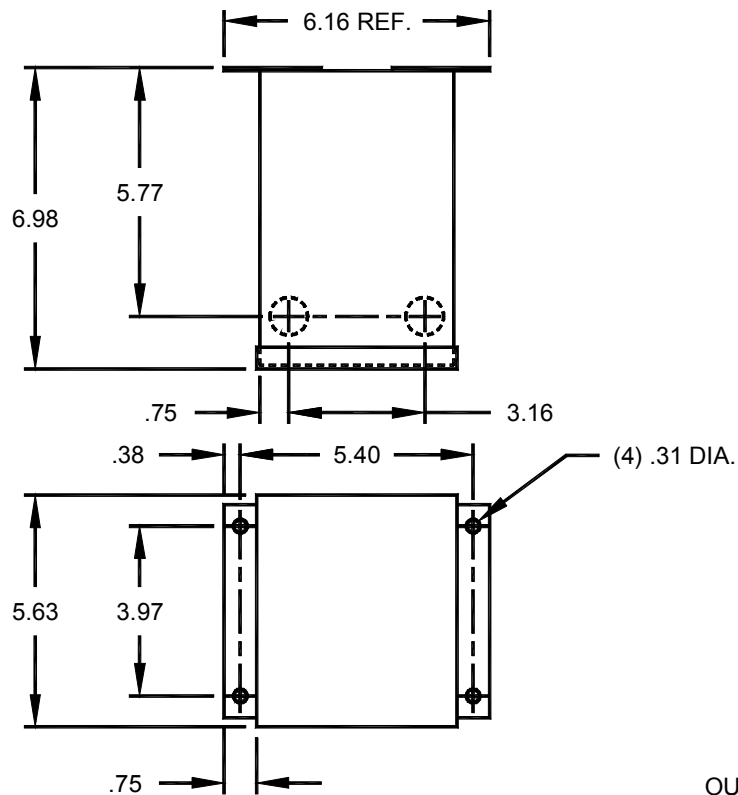
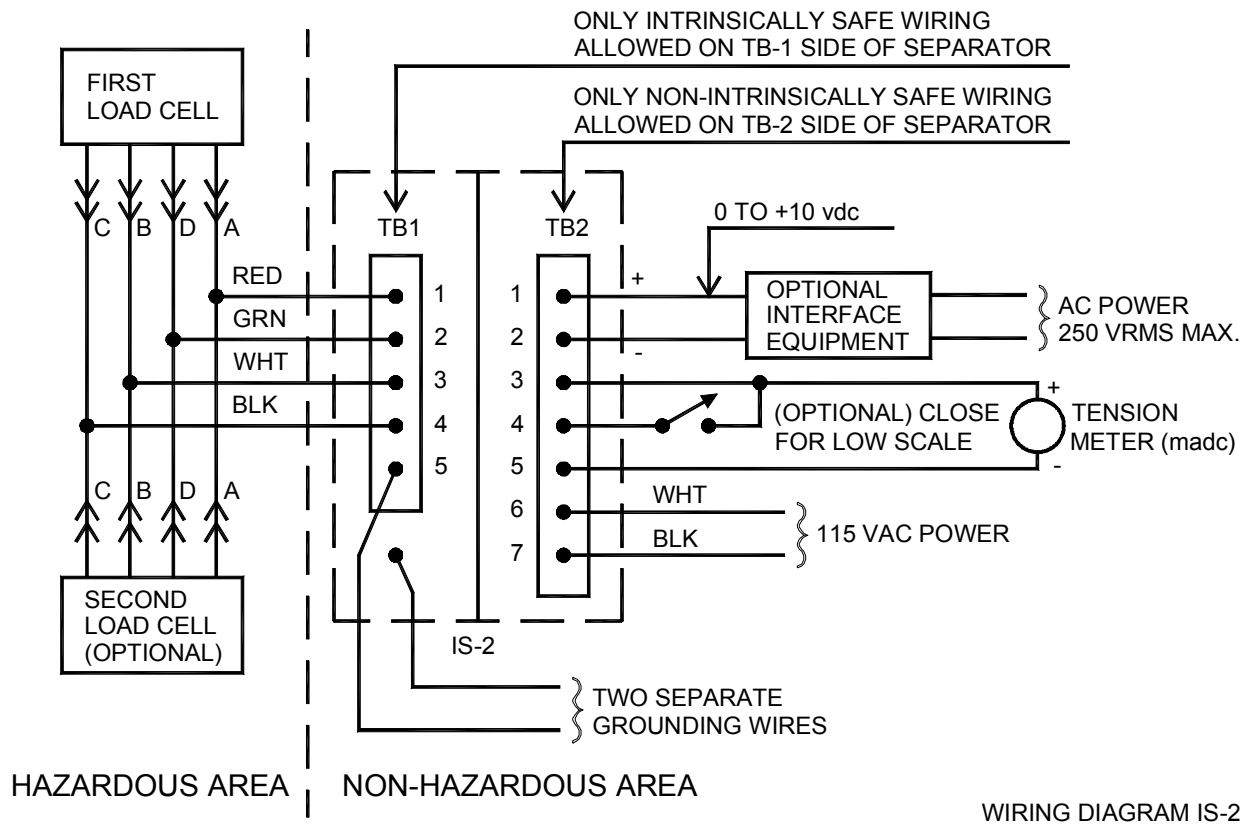
CAUTION: Disconnect load cell cables from TB1 before making barrier module checks. Completely remove the barrier from the IS-2 enclosure so you can access terminal 1 pins. The barrier module is failed if resistance checks differ from the following chart. Replace the entire module with an identical module when failed. Attempting to repair the module will jeopardize intrinsic safety.

TB1 Terminal No.	P1 Pin No.	Resistance (+/- 5%)
1	5	60 ohms
2	1	60 ohms
3	4	570 ohms
4	2	570 ohms
5	3	Short

Pin 1 of P1 and terminal 1 of TB1 are both closest to the top edge of module.

**TABLE 1
UL LISTED INTRINSICALLY SAFE LOAD CELLS**

<u>MODEL</u>	<u>MODEL</u>	<u>MODEL</u>
CL1-5	SSTS15	TSS150
CL1-15	SSTS15S1	TSS500
CL1-50	SSTSC150	TSU1-150L
CL2-15	SSTSC500	TSU1-150R
CL2-50	SSTSP150	TSU1-25L
CL2-150	SSTSP50	TSU1-25R
CL2-500	SSTSP500	TSU1-50L
GTSA11	SSTSS150	TSU1-50R
GTSA22	SSTSS50	TSU2-1000L
GTSA55	SSTSS500	TSU2-1000R
GTSA110	TS15	TSU2-150L
GTSA5M	TS5	TSU2-150R
GTSA10M	TS50FC	TSU2-500L
GTSA25M	TS50FR	TSU2-500R
GTSA50M	TS50FW	TSU3-1000L
GTSB220	TS50PC	TSU3-1000R
GTSB550	TS50PR	TSU3-2500L
GTSB1100	TS50PW	TSU3-2500R
GTSB2200	TS50SC	TSU3-5000L
GTSB100M	TS50SR	TSU3-5000R
GTSB250M	TS50SW	
GTSB500M	TS150FC	
GTSB100M	TS150FR	
SMCL5	TS150FW	
SMCL15	TS150PC	
SMCL50	TS150PR	
SMCL150	TS150PW	
SMCL500	TS150SC	
SMCL2M	TS150SR	
SMCL10M	TS150SW	
SMCL25M	TS500FC	
SMCL50M	TS500FR	
SMCL100M	TS500FW	
SMCL250M	TS500PC	
SMTS5	TS500PR	
SMTS15	TS500PW	
SMTS50	TS500SC	
SMTS150	TS500SR	
SMTS500	TS500SW	
SMTS2M	TSC150	
SMTS10M	TSC50	
SMTS25M	TSC500	
SMTS50M	TSF150	
SMTS100M	TSF50	
SMTS250M	TSF500	
	TSP150	
	TSP500	



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