



Magnetic Power Systems, Inc.

1626 Manufacturers Drive. Fenton, MO 63026

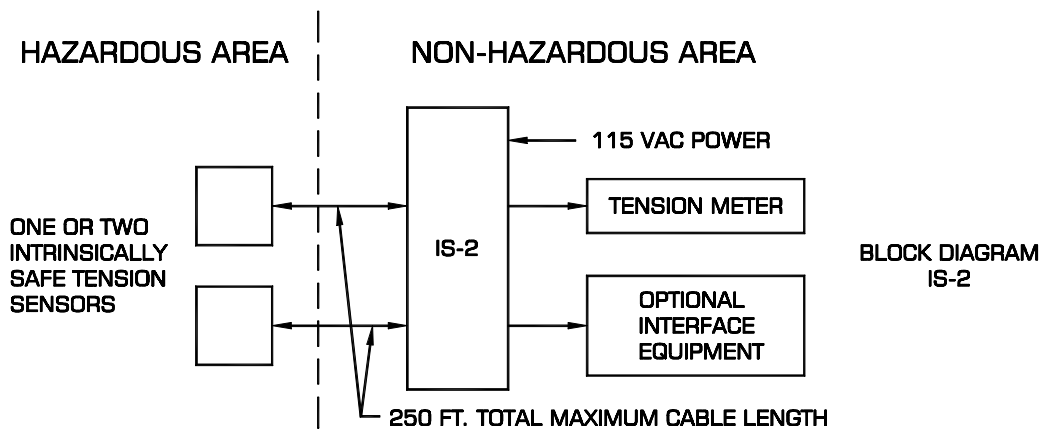
Tel: 636.343.5550 | Fax: 636.326.0608 | magpowr@magpowr.com

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

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 that only the intrinsically safe sensors may be located in the hazardous area.



When used with the IS-2 Tension Readout Amplifier, the MAGPOWR Model TS, SSTS, GTS, LC, TSU, SM and CL 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 MAGPOWER 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.

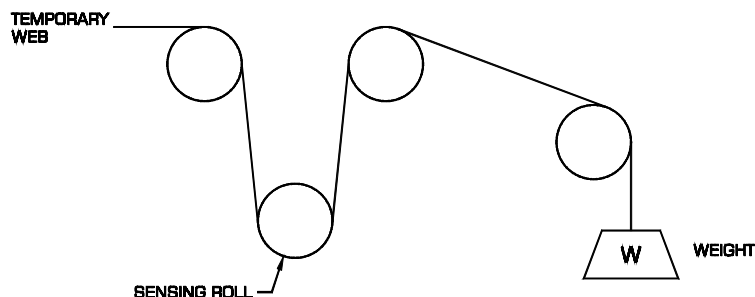
5. Proceed with calibration.

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**

MODEL	MODEL	MODEL
CL1-5	SSTS15	TS150FW
CL1-15	SSTS15S1	TS500SC
CL1-50	SSTSC150	TS500PC
CL2-15	SSTSC500	TS500FC
CL2-50	SSTSP150	TS500SR
CL2-150	SSTSP50	TS500PR
CL2-500	SSTSP500	TS500FR
GTSA11	SSTSS150	TS500SW
GTSA22	SSTSS50	TS500PW
GTSA55	SSTSS500	TS500FW
GTSA110	TS15	TSC150
GTSA5M	TS5	TSC50
GTSA10M	TS2SCM	TSC500
GTSA25M	TS2PCM	TSF150
GTSA50M	TS2FCM	TSF50
GTSB220	TS2SRM	TSF500
GTSB550	TS2PRM	TSP150
GTSB1100	TS2FRM	TSP500
GTSB2200	TS2SWM	TSS150
GTSB100M	TS2PWM	TSS50
GTSB250M	TS2FWM	TSS500
GTSB500M	TS5SC	TSU1-150L
GTSB100M	TS5PC	TSU1-150R
LC500G	TS5FC	TSU1-25L
LC500GS1	TS5SR	TSU1-25R
SMCL5	TS5PR	TSU1-50L
SMCL15	TS5FR	TSU1-50R
SMCL50	TS5SW	TSU2-1000L
SMCL150	TS5PW	TSU2-1000R
SMCL500	TS5FW	TSU2-150L
SMCL2M	TS50SC	TSU2-150R
SMCL10M	TS50PC	TSU2-500L
SMCL25M	TS50FC	TSU2-500R
SMCL50M	TS50SR	TSU3-1000L
SMCL100M	TS50PR	TSU3-1000R
SMCL250M	TS50FR	TSU3-2500L
SMTS5	TS50SW	TSU3-2500R
SMTS15	TS50PW	TSU3-5000L
SMTS50	TS50FW	TSU3-5000R
SMTS150	TS150SC	
SMTS500	TS150PC	
SMTS2M	TS150FC	
SMTS10M	TS150SR	
SMTS25M	TS150PR	
SMTS50M	TS150FR	
SMTS100M	TS150SW	
SMTS250M	TS150PW	

