



# OEM Manual

MODEL 4010™ - 4 ½ Digit  
TANK SCALE

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These instructions generally describe the installation, operation, and maintenance of subject equipment. The manufacturer reserves the right to make engineering refinements that have not been described herein. Should any questions arise that may not be answered specifically by these instructions, they should be directed to SCALETRON INDUSTRIES, LTD., or our sales agent for a response.

All possible precautions were taken in packaging each equipment item to prevent shipping damage. Carefully inspect each equipment item and report any damage immediately. Report damage claims to shipping agent involved for equipment shipped F.O.B. job site. Do Not Install Any Damaged Equipment.

All instruction given on any labels, or attached tags, should be followed. Carefully inspect all packing material before discarding to prevent loss of accessories, mounting hardware, spare parts, or instructions.

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**I. General Description:**

The Model 4010™ with 4 1/2 Digit Indicator was designed specifically for permanently mounting a tank, or drum, and pumping in and out. The strain gage load cell system provides ease of locating the digital indicator in a remote location. The four conductor shielded cable required can be run through conduit to a location within 200 ft. from the base. A current output signal of 4-20 mA, 0-20 mA, or +12 mA, - 8 mA, is standard. It is also selectable as active or passive. There are two independently adjustable dry contacts for use as low level alarm, or automatic dialer equipment, as required. The printed circuit board contains a power supply section and separate zero and span controls. The weigh meter electronics are housed in a NEMA 4X fiberglass enclosure.

**II. Specifications:**

- Display:** LED, 4 ½ Digit with minus sign, 0.56 inch high, seven segment
- Resolution:** Indicator: 1999 lb x 0.1 lb, or 2000 to 19999 lb. x 1.0 lb
- Load Cell Excitation:** 16 VDC Power
- Zero Adjustment:** Internal potentiometer, R-25 med., and R-23 fine. DIP switches SW-B 1-6 for course adjust, jumper J-8 to change polarity of adjustment
- Span Adjustment:** Internal potentiometer R-12 for med., and R-13 for fine. DIP switches SW-A 1-6 for course, 7 & 8 no effect, not used
- Current Output Adjustment:** Potentiometer R-43 adjusts 4-20 mA active, or passive. 220 Ohm Load max.
- Overload:** Blanks with “0” (or if decimal, “0.0”) on the display
- Accuracy:** +/- 0.5% full capacity
- Power:** 120 Volt, 50/60 Hz single phase, 0.5 amps. 240 Volt available with jumpers on board.
- Dimensions:** Indicator: 10” H x 6” D x 8” W, *Base sizes:* Various sizes available.

### III. **Assembly & Start-Up:**

The SCALETRON Model 4010™ is designed specifically for weighing corrosive liquids on fixed tanks. The scale base has two adjustable feet on one side, and a load cell to sense the weight on the other side. The cell also has a stainless steel leveling foot.

**The set up procedure is as follows:**

1. Locate a solid, relatively level spot on the floor to install scale platform.
2. Place platform on this location and adjust leveling feet until deck is level.
3. Tighten locknuts on leveling feet.
4. If conduit is used, about 2' of flexible conduit, mounted horizontally, should be connected to frame before using rigid conduit.
5. Measure bottom diameter of drum to be used. Adjust stops so that drum is centered on scale deck, and check, by measuring the distance from blocks to end of slots. Adjust restraints so that drum will remain centered.
6. It is very important that the deck is level and the drum is centered. **The scale is calibrated at the factory with certified test weights and should not need calibrating when installing!** However, for scale to be accurate, the deck must be level, and the drum centered.
7. Mount digital indicator to wall and attach conduit for load cell cable and output signals as required.
8. Connect load cell cable from load cell, or junction box, to TB-1 as follows:

**TB-1**

- 1: Low Level set pt. 1 (REED relay, contact closure to pin 2: common)
- 2: Common
- 3: Low Level set pt. 2 (REED relay, contact closure to pin 2: common)
- \* 4: 4-20 LOOP Powered (4 is common and 5 is supply)
- \* 5:
- \* 6: 4-20 SCALE Powered (5 is common and 6 is supply)
- 7: - Sense (optional)
- 8: - Excitation (BLACK)
- 9: + Sense (optional)
- 10: + Excitation (RED)
- 11: -Signal (WHITE)
- 12: +Signal (GREEN)

\*Make 4-20mA connections at this location. Determine if 4-20 mA signal is to be scale powered, or if it is loop powered (powered by SCADA or PLC). Refer to page 5, Jumper labeled J-4 for proper settings of scale or loop powered 4-20mA.

**Note:** If sense leads are used from load cell to indicator, jumpers J-5 & J-6 must be cut on the PC board. If sense leads are not required, then jumpers must be installed. Sense leads are **only** required if the distance between scale base and digital indicator is in excess of 100'.

### IV. **General Use Instructions:**

Please refer to these instructions for daily use of this scale. These instructions simulate the procedure for every day usage.

***To start with a new, EMPTY tank, please follow these steps:***

Load the new, empty tank on to the platform. Center this tank on the base. Tighten the centering blocks on the base. Be sure to connect all equipment to the tank that may apply weight to the scale. This too should be centered from front to back (load cell to hinge plates). With this weight applied, turn the black tare knob located on the outside, front of the indicator, until the digital reading says zero. This means that your digital reading will show net weight, or

the weight of the contents alone. As you fill the tank for the first time, the scale shows the current weight at all times. Do not readjust the tare weight unless you are starting with a dry, new, empty tank. Any residual weight will reflect what is left in the tank, and should not be changed unless a new tank is put on the base.

**To start with a new, FULL tank, please follow these steps:**

You must know the weight of your empty tank, and any other equipment mounted on to the tank that will affect the weight. Add this weight together, and turn the black tare knob on the front of the indicator until it reads that number in the negative. Turn the knob counter-clockwise in order to achieve negative numbers. Once that negative tare weight is set, you may load and center the tank, and apply other equipment on that tank. The weight that registers on the scale indicator is the NET WEIGHT, or weight of the contents. At this point you will not change the black tare knob unless you are loading on a new tank. As you use the contents, the weight decreases, and then when you are ready to fill again, the weight will show the amount left in the tank and how much you put in as you fill.

When tank is empty, or close to it, you may refill the tank, and do not need to adjust the black knob at all. The only time you will change the tare knob is upon the loading of a new tank onto the base.

**V. Calibration Procedure:**

The Model 4010™ Tank Scale is **pre-calibrated at the factory to within specified accuracy and is calibrated to standards traceable to the Bureau of Weights and Measures. No further calibration should be necessary. If the electronics or load cells in the base are being replaced, the following procedure should be used.**

1. Once scale is leveled with no weight on scale, it is ready for calibration. Turn tare pot **on front panel** fully clockwise, then turn back counter-clockwise one full turn. (This will assure enough tare adjustment when calibration is completed.) Adjust SW-B zero switches 1-6 and R-25 to obtain a zero reading on digital display. Do not move shorting pin on J-8 unless SW-B 1-6 and R-25 adjustments cannot reach a zero reading. J-8 will reverse the adjustment polarity and thus double the range of the adjustments.
2. After a zero reading is obtained a known weight (such as a certified test weight) should be placed on the scale and carefully centered.
 

**Note:** Calibration is done at the factory and should only need adjustment of R-12, or slight switch change to set span to desired weight. Wait for a minute so a reading can be obtained. Adjust R-12 or SW-A 1-6 span switches to obtain gross weight desired.
3. Adjustment of span interacts with the zero setting previously made and Step (1) must be repeated, followed by the repeat of Step (2) until both readings remain correct with weight on or off scale without adjustment.
4. Analog output is selectable as scale powered, or loop powered. If scale is to supply the power for the loop, J-4 must be in the "S" (scale) position. The 4-20 mA output will be available at TB-1 Terminal 5 & 6. (5= -) & (6= +) 220 Ohm load max.
 

If the device connected to the scale is to supply power for the loop, then the jumper, J-4 must be in the "L" (loop) position and the signal will be available at TB-1 terminals 4 (common) and 5 (+1). (220 Ohm load at 15 VDC, or 440 Ohm load at 30 VDC max.)

**Note:** Output is selectable as 4-20 mA, 0-20 mA, or +12 mA, -8 mA, with jumper, J-7. Two pins closest to R-43 are for 0-20 mA, two center pins are for 4-20 mA, and the two pins farthest from R-43 are for +12mA, -8mA.
5. Connect device to be connected to output terminals required. Install milliamp meter **in loop**

to measure **current**.

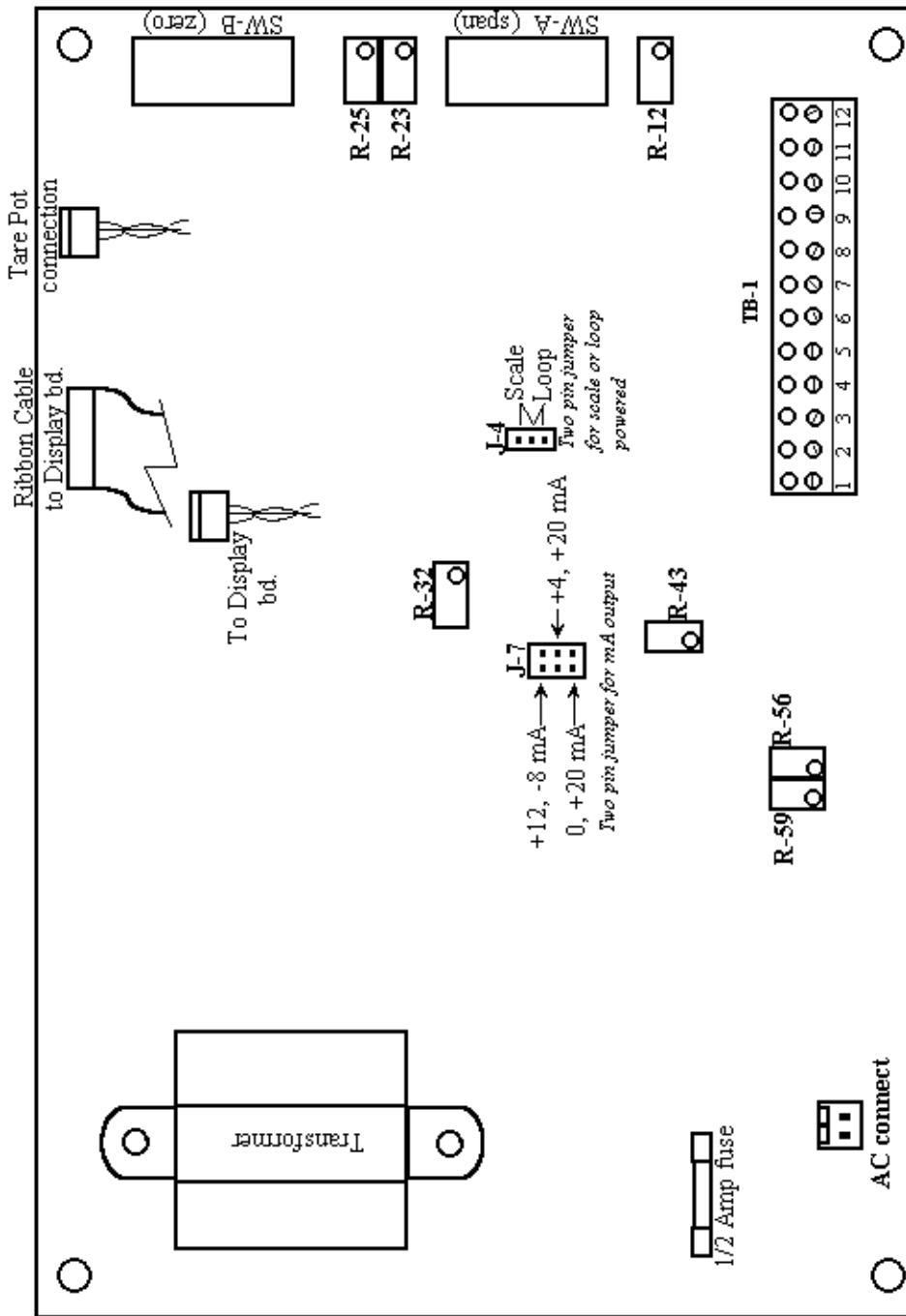
6. Adjust R-43 for full load setting. (No load should be correct when digital indicator is reading "0").
7. Two set points are available for contact closure at two different points in range of scale. Use R-59 to adjust SP 1, and R-56 to adjust SP 2. SP 1 is available at TB 1 terminal 1 and 2. SP 2 is available at TB 1 terminal 2 and 3. Relay rated for 12 VDC 1.5 amp max load. (Contacts are closed below set point.)

**VI. Troubleshooting:** Please contact the factory:  
**USA & Canada Toll-Free: (800) 257-5911**  
**Tel: (+1) 215-766-2670 ♦ Fax: (+1) 215-766-2672**

**Notice: Do not return any equipment without first contacting the factory. A return authorization number will be issued and it must be marked on all materials returned to the factory, accompanying a letter that explains the problem specifically. A Serial Number will also be required. It is located inside the indicator box.**

VII. Board Diagram:

# 4 1/2 Digit Analog Board



- TB-1**
- 1 = Low level set point 1 (REED relay contact closure to pin 2 common)
  - 2 = Common
  - 3 = Low level set point 2 (REED relay contact closure to pin 2 common)
  - 4 = 4-20mA Loop Powered
  - 5 = 4-20mA Scale Powered
  - 6 = - Sense (optional)
  - 7 = - Sense (optional)
  - 8 = Black
  - 9 = + Sense (optional)
  - 10 = Red
  - 11 = White
  - 12 = Green