



# OEM Manual

MODEL 4041™ 4 ½ DIGIT  
ULTRA LOW PROFILE 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 **Scaleton Industries Ltd., Or Our Sales Agent** for a response.

All possible precautions were taken in packaging each piece of equipment to prevent shipping damage. Carefully inspect each item and report damages immediately. Report all damage claims to the shipping agent involved for equipment shipped F.O.B. job site. Do not install any damaged equipment.

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

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I. **General Description:**

The Model 4041™ Ultra Low Profile Platform Scale is designed specifically for regular on and off loading of a tank or drum. Off center loading or solid materials do not affect the scale accuracy due to the four cell design. Mixers and pumps may be used with this base design. The base sizes available are 24 in by 24 in, or 30 in by 30 in. The maximum net weight is 1999 lb./ or kg. with 0.1 lb/ or kg resolution, or with a maximum net weight exceeding 1999, the decimal is blanked at the factory, and the display can read 19999 lb/ or kg. on the 4 ½ Digit indicator, however the total weight limit on this base is 1500 lb. (680 kg). Typically, weights exceeding 1000 lb. / kg do not read in tenths of a unit. This indicator may be necessary for the low level set points that are standard, or the LED display that sets it apart from the 3 ½ Digit LCD.

The design of the platform includes sturdy four point support, with a ½” PVC deck. The base is protected from scratches by the PVC decking, and the base is coated with dry polyester powder coating to prevent corrosion. Scale has four NTEP stainless steel temperature compensated strain gauge transducers.

**Standard Parts**

- |                 |                           |
|-----------------|---------------------------|
| 1 Base assembly | 1 Weigh Meter (indicator) |
| 1 Power Cord    | 1 Technical Manual        |

**Available Options**

- A. Remote mounting of standard enclosure

## B. Load Cell Cable

### 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, 4 Load cells

**Zero Adjustment:** Internal potentiometer, External tare knob

**Span Adjustment:** Internal potentiometer R-12 for med. 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:** *Base sizes: 24"x24", or 30"x30"*

### III. Assembly and Start-Up:

**The Model 4041™ Ultra Low Profile Platform Scale is shipped partially disassembled.**

Assembly instructions are as follows:

The load cells are secured to the base. All wire connections in the base have been made and sealed at the factory. The digital weigh meter is assembled and calibrated to the base at the factory. The customer must mount the indicator on the wall. The base should be roughly leveled using the adjustable feet in the load cell while making sure there is clearance between the base and floor. The wires must be run through the strain relief and connected to the connector before scale is operated. Steps are as follows:

**Step 1:** Remove all parts from box and inspect for damage – bent metal, broken wires, cracks in indicator, etc. Any shipping damage must be reported **to carrier!**

**Step 2:** Place the scale on a solid, dry, and even surface. Clear the area of all debris where the scale base will be anchored. The "feet" in the load cells are adjustable with a nut to tighten. Level the base by adjusting these feet, and then use the nut to tighten the feet so that they cannot move. Make sure that the base frame is not hitting the floor in any way. This will cause an inaccurate reading.

**Step 3:** If conduit is to be used, we recommend at least 2 feet of FLEXIBLE conduit mounted horizontally as to not interfere with free movement of the base for accurate measurement. Feed the wire up through the conduit, and apply a fitting.

**Step 4:** Drill a hole in the indicator, being sure to avoid the PC board, and completely seal the hole with the fitting. ***If ANY SPACE exists around the fitting allowing gas into the box, the equipment will be damaged. You MUST SEAL any openings with a flexible caulk, such as silicon!*** Fasten the indicator to the wall. Connect the wires into the connector using the following code:

**TB1: 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.

Insert the wire, being sure not to crimp the insulation in the connector. Using a small screwdriver, unscrew the wire clamp to insert the wire into the proper hole and then tighten this screw firmly, but take care not to strip the threads inside the connector.

The connector holes are numbered according to the code above.

**Step 5:** Allow approximately 15 minutes warm up time before using the scale.

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

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

##### **ON AND OFF LOADING USAGE:**

***To start with a new, FULL tank that will be loaded on & off, please follow these steps:***

Please choose a method of usage by Tare or Net Weight:

**TARE:** 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 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. When the tank is at zero, or close to it, you will begin again by removing the empty tank, setting the tare weight with the black knob (for the new tank + equipment), and begin using the material again.

**NET:** If you do not know the tare weight (it is not stamped on the tank), you may know the Net Weight (contents in the tank). If this is the case, you will use this procedure:

Load on your full tank and attach any equipment that affects the weight on the scale. Turn the black tare knob on the front of the indicator until it reads the known NET WEIGHT (weight of contents only) on the indicator. Clockwise will increase the readings and counter-clockwise will decrease the readings. When the weight is set for the contents in the tank, do not adjust this again until you load on a new tank. The reading will decrease until you have used all the contents in the cylinder, where it will read 0 lb./kg. Start a new tank by removing the old empty tank, loading on a new full tank, and attaching equipment, and set tare knob to Net weight again.

##### **For use when FILLING the TANK instead of on & off loading:**

***To start with a new, EMPTY tank that will be filled while on the scale base, please follow these steps:***

Load the new, empty tank on to the platform. Be sure to connect all equipment to the tank that may apply weight to the scale. 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.

## V. Calibration Procedure:

The Model 4041™ Ultra Low Profile Platform 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.  
**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. Shorting jumper J-9 can be moved to Hi Lo position if SW-A 1-6 and R-12 cannot reach desired weight.
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:

Consult the Factory!

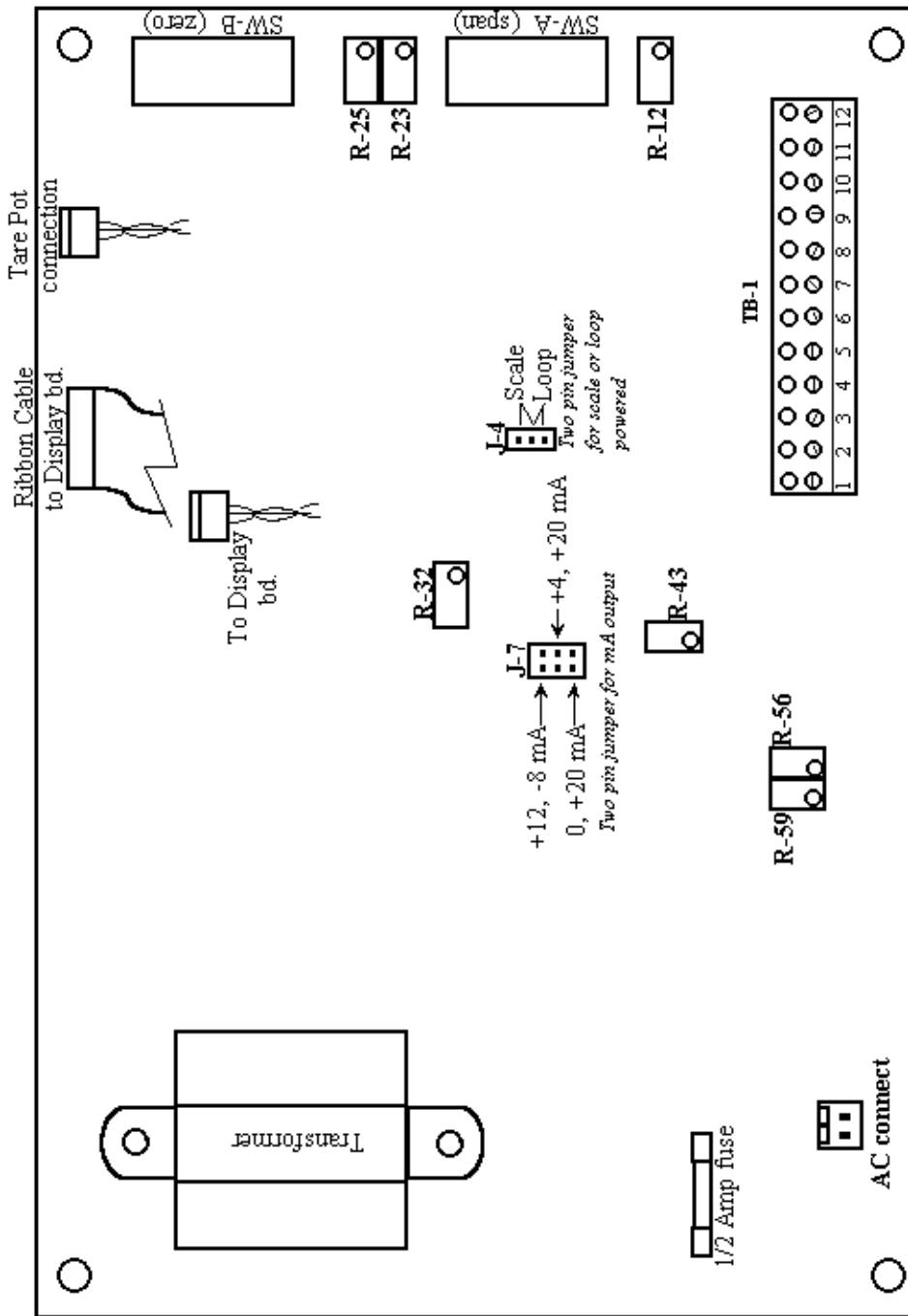
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**Notice: Do not return any equipment without first contacting the factory. A return authorization number will be issued and it must be marked on all materials returned to the factory, accompanying a letter that explains the problem specifically. A 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