



OEM Manual

**MODEL 1020-B™
5 DIGIT INDICATOR
INSTRUCTION MANUAL
V 5.0.0**

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 damage claims to 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 1020-B™ 5 Digit Indicator provides a means for weighing chemicals, controlling the processes of filling, or emptying containers placed on the scale. The Model 1020™ will monitor one scale base frame displaying the net weight and process steps on the backlit, LCD display. There is one, or two available control points that are configured as predetermined batching set point closures with panel mounted indicator lights for predetermined batching step control. The software offers three methods (Single, Dual, or Parallel) of pumping a batch from the container on the scale. The electronics are housed in a NEMA 4X, UL approved enclosure. The indicator plugs into a wall power source and operates on 120 / 240 VAC, at 50/60 Hz. **The Model 1020-B™ is recommended for use with any of our drum, tank, platform, and ton cylinder scale bases.**

Standard features

Indicator
Instruction Manual
4-20mA signal (for each active channel)

Available Options

Additional cable lengths as specified

II. **Specifications:**

Channel: 1 weighing channel with input / output controls

Input: up to (16) 350 Ohm load cells, total, on indicator

Display Units: pounds, kilograms, gallons, and liters, milliliters, or grams

Range: Maximum Reading: 99,999

LCD Display: alphanumeric display, 2 lines of 16 characters, backlit for easy reading

Keyboard: 6 Function keys

Connector: Power cable sealed with plastic strain relief

Enclosure: NEMA 4X, UL Approved Enclosure

Performance: Overall system accuracy 0.1% to 0.25% Full Scale

Power Rating:

Voltage: 120 / 240 VAC

Frequency: 50/60 Hz

Power: 0.10 / 0.05 A

MAINS Supply Operational Range: +/- 10% of Nominal VAC

Operational Temperature: 0 C - 40 C

Maximum Rated Altitude: 2000 m

Maximum Relative Humidity: 20% to 90% non-condensing

Pollution degree: 2

Weight of Indicator: approximately 7 lbs.

Dimensions of Indicator: 11.31" high, 9.31" wide, 5.43" deep

Recommended Indicator Location: This indicator should be located in a location that protects the indicator from being soaked with liquids or extreme weather locations. If the indicator is to be located outdoors, you must make sure not to exceed the operational temperature range, and it is recommended that you provide a covering to protect the indicator from the elements. Locations inside buildings should be at a height that protects it from chemical splashes and wash-down areas, but still allow for easy operation of keypad.

Please note: It is imperative that you read the instructions in the manual. Indicator is fully tested and programmed to the corresponding base at the factory. If you experience a problem with this equipment, please disconnect all accessories to this equipment to isolate the problem. As we have taken great care to be sure your equipment is fully functional within factory specifications before it leaves our facility, it is best to familiarize yourself with the manual for set-up and operation procedures before you begin using this equipment. All safety precautions need to be observed for the safe operation of this equipment. Failure to operate this equipment as instructed can result in damage to the equipment, and can possibly cause injury. Damage caused to equipment due to improper operation will not be considered for warranty coverage.

III. **Assembly and Start-up Instructions:**

Before you begin, please notice the programming sheet that comes in the box with your indicator and instructions. This page tells you the parameters to which your unit has been programmed. Your unit is programmed at the factory as it is ordered. If there are incorrect parameters, please refer to this manual to see how any changes you make will affect the other options, and the calibration of your unit. It is imperative that you correctly set the menus in order for this unit to work. Any changes in the units, decimals, count-by, resolution, and calibration of the unit will affect the output! If you make any changes to the set-up, you must record the menus you alter so that you can inform customer assistance if you call for technical help. Without the changes, our factory will be trying to advise you using the factory set-up!

Indicator Precautions:

The indicator is sent with a door latch, and the door will have two screws holding the door shut. Those screws are to be removed in order to insert the connections to the various connectors in the box. When connections are complete, and the indicator door is latched closed, you must reinstall the screws that hold the indicator door closed. The power cord is attached at the factory using a liquid tight fitting. Do not modify or restrict the ability to disconnect the power cord from the outlet. Connections for bases using other fittings or conduit must be made in the field. Please take care to not damage the internal components when drilling a hole in the indicator box. All holes drilled MUST be sealed so that gasses and liquids cannot penetrate the box and damage the internal electronics. Do not drill holes where the internal cables are located. If there is a gap or opening in the box that isn't sealed by the connector, use a silicon caulk to seal the opening from exposure. Please use fittings that are liquid tight fittings and are rated for NEMA 4X conditions. Do not use any type of conduit fitting or other fittings that do not have a tight seal to the indicator. Damage may occur if gasses and liquids have access to the electronics! The mounting location of the indicator should be at operational level, away from the floor. Indicator is a NEMA 4X rated enclosure; however, it is not designed to withstand wash-down procedures, or chemical contact beyond accidental exposure. Please choose a location that will protect the indicator from direct contact with chemicals, or regular soaking of water. Indicator is mounted to wall using the four holes in the tabs on the indicator box.

If the indicator is mounted in a way that does not comply to the standards above, the resulting damage will not be considered for warranty repair, and may cause substantial damage to the electronics.

If the indicator should require cleaning, a cloth damp with water would be recommended to wipe the display and keypad area, as long as the chemical conditions can allow for it. Due to the fact that the chemical environment in which the 1020-B™ may be located, can vary greatly, we cannot identify one specific cleaner to maintain the indicator. You must use your own discretion when cleaning with any substances. Mild cleaners should not affect the indicator

box. Harsh or abrasive cleaners are NOT recommended for use as they may etch or scratch the finish on the mylar or enclosure.

Before making connections, it is wise to plug the indicator into a power source to confirm that the indicator is in working order. If the indicator is functioning properly, you will see the LCD display flash a Model number and version number, and then after a few seconds, it will proceed to the Net Weight screen.

Please disconnect the power before making all internal wiring connections!

In order to start the Model 1020-B™ 5 Digit Indicator, you must first install the base according to their instructions. Please refer to the Base Installation portion of the Instruction Manual found on the front page of the manual, for the safe and correct installation of your new base. The Orientation Diagrams on page 20 will illustrate the layout of the area on the interface board where the wires need to be connected. If a “Remote Box” option is ordered, there will be instructions included for the wire connections at the remote box, and then to the Model 1020-B™.

After bases are secured, according to factory instructions, connect them to the indicator as shown on Diagram 1. **TB1** is the connection location for Channel #1. The wire color code is as follows: R = red, G = green, W = white, B = black, and S = shield (referring to the wires that come from the base to the indicator.) The terminal block is labeled with the letters to guide you. Please note that the shield wire will be labeled with a bright yellow sticker, and is often covered with violet colored shrink tube.

4-20mA Connection:

The 4-20 circuit for the Model 1020-B™ is a LOOP POWERED circuit, or externally supplied with power. The circuit is designed to work with a supply range of 18-30 VDC, but the nominal supply rating is 24 VDC.

The 4-20mA signal connection is located at the connector labeled: **TB9**. The connector is labeled with positive and negative respectively. Please refer to the 4-20mA connection diagram, on page 18, for proper connection of wires.

Set Point Connections:

The Model 1020-B™ has up to two relays rated for 5 VDC, 40mA, and coil resistance of 125 Ohms. Relays are SPST-NO + SPST-NC. These relays may be used to activate a control relay outside of the indicator that will control pumps.

The Set Point connections are located at the connectors labeled: **TB7, and TB8**. **TB7** is the connection site for the Fast Fill option, and **TB8** is the connection site for the Slow Fill option, only if it is being used in Dual or Parallel modes.

Now you are ready to plug the Model 1020-B™ indicator into the wall power supply source.

IV. General Information:

There are three usage modes for the batching system. The three modes are based on the speed at which the fill dispensing should occur. Single Mode is the slowest dispense method, using only the fast fill amount. Dual mode would be a dispense method using fast fill and then the slow fill to complete the dosing with a more controlled speed. The last method utilizes two controls for fast and slow dispensing simultaneously to provide the fastest dispense method, but will still complete the amount with slow fill for controlling the dosing.

The indicator is designed to provide the operator with clear information on the dosing operations as they occur. Following is a description of the modes and the information provided by the controller.

The first mode is SINGLE mode. This uses only the fast fill operation, and will dispense the amount specified. The operator presses dispense, and is prompted to adjust the number of the amount to dispense. After completing the menu and pressing dispense, the controller will initiate Fast fill. As dispense is completed, the 1020-B Fast fill relay will actuate, the Green light on the panel will extinguish, and the Red Stop LED will light.

The second mode option is the DUAL mode. In this mode, you will press the Dispense key and specify the Fast fill amount, and then the Slow fill amount. Pressing Dispense to activate, the Fast fill control will begin, and the Green LED will light. When the Fast fill amount has been dispensed, the Green light will extinguish, and automatically switch over to activate the SLOW fill where the Yellow LED will light. When the correct amount is dispensed, the SLOW fill will disengage, and the Yellow light will extinguish. The Red Light will be lit and the process will stop.

The third and last mode is PARALLEL. As the name suggests, the Fast and Slow fill will run together, simultaneously. When the user sets the parameters for filling both Fast and Slow, and presses dispense to start the process, both Fast fill (Green) and Slow fill (Yellow) will light and the relay will actuate. Near the completion of the filling process, the relay for Fast Fill will actuate and the Fast Fill process will be stopped while the Slow Fill continues until the dispense amount is satisfied. The Slow Fill relay will actuate to stop the filling process. The Red Stop light will be lit.

The Operator's Menu:

The Model 1020-B™ has a six button keypad that allows the user to navigate the operator's menu and control the batching process. There is a **Select** key * and up and down **arrow** keys ▲ ▼ that are used to select, or scroll, respectively. The arrow keys can be pushed and held to scroll. The longer the button is held, the faster the numbers will scroll. The remaining 3 buttons are for batching control. The **Abort** button immediately cancels the action in the current batch process with no way to resume action. The **Dispense** button will initiate the process. **Pause** is used to temporarily stop the process, with the ability to resume. It is also used during the reloading of a new tank when the supply is exhausted. The

unit is shipped from the factory fully calibrated and configured to the specifications on the purchase order, but values for 4-20mA are easily changed in the set up mode. Bases and indicators are matched and calibrated to a specific channel to provide the highest level of accuracy. After connections have been completed and the base installation and optional equipment is connected, please refer to the following procedure for start-up and general use directions.

To begin, determine your method of batching. Will you use a single speed to fill all the time, or need a fast and slow fill, either at the same time, or fast and then slow? Choose the proper method of use section and following the instructions.

***** Every 1020-B Controller has been pre-programmed to specifications at the time of purchase. If the information given to the factory is correct, there should not be any need to make alterations to the program. Please refer to the calibration sheet that is sent with the manual and other paperwork at the time of shipment to determine the settings. It is not advisable to make changes to certain menus as this can alter the calibration. Please call the factory to enquire about any changes you think may need to be made. Each base and indicator are matched at the factory and calibrated together. We mark these matched pairs so that you can connect them the same way in the field. When multiple bases and indicators are ordered, it is imperative that they be connected as labeled. *****

General Use:

Apply power to the indicator by plugging the indicator into a wall power source. When indicator is in start-up, it will flash a display that shows the Model number and the version of software. The indicator will then display the active channel in the format of NET WEIGHT. Please begin with the base empty (no tank loaded). Upon applying power, a flash screen will identify the model number and the version numbers for the unit, and then it will automatically proceed to the channel #1 and the weight reading, and below will be a bar graph display depicting a graphic representation of full (net weight) scale.

Press the Select key * to see the "Tare Adjust" screen for channel #1. If there is any residual weight displayed on the screen, begin by adjusting the arrow key to see zero. Next you will decide which method of tare you will use.

If you know the tare weight of the container you will be placing on the base, follow this procedure:

From the screen that says: #1 _ _ _ _ _ 0 _ (units) (Net), TARE ADJUST
You will use the arrow keys to set the screen to read, in the negative, the amount of tare weight you will apply to the scale. This may include any other equipment in addition to the empty container weight. Set the weight using the arrow keys to read that number negative, and then load the container onto the scale. The weight that appears on the display should now represent the NET (or contents) WEIGHT.

Press the Select key again * to see the gross weight screen. This will be the tare weight you adjusted PLUS the net weight.

If you are loading containers when the tare weight is not known, or if you prefer to use a known net weight, follow this procedure:

From the Net Weight Screen with bar graph, Press Select * key to see the TARE ADJUST screen. Place the container onto the scale base and adjust the net weight showing on the screen to the correct amount. Use the down arrow to

reduce the weight to that proper net weight amount. Press Select * once more

to see the Gross Weight screen. Press Select * one more time to return to the Net Weight display.

The following procedure is for applications where a container will remain on a scale base and be filled, or loaded, and emptied.

Single Method:

When operating in SINGLE mode, you will control a single relay circuit which will be referred to as FAST fill, indicated by the green LED on the front panel.

The indicator provides one relay contact that is SPST, NO & NC, rated for 5 VDC, 40mA, and has a coil resistance of 125 Ohms. ***If you are attempting to control pumps, you will need to implement a second set of control type relays outside of the indicator that are designed for switching equipment. The relays on the board are not designed for this. Please check your equipment that you will connect to make sure it is compatible with Scaleton equipment.*** The user identifies a preset amount to dispense, and when that amount of weight is removed from the scale, the relay will actuate and the process will stop. The user will complete the following procedure:

If the dispense weight is going to remain the same, the user can preset this amount in the setup menu so that it automatically appears during each dispense command. If the amount will vary, an amount that is close in value may be chosen to cut down on the amount of time it takes to scroll to the correct dispense value. Please see the section on SET UP Menu to program those settings.

1. Press the Dispense Key. The Red LED (Stop) will light and the LCD will prompt the user to assign the Fill amount. Use the arrow keys to program this

amount if it is not already set in the SET UP Menu. After the desired dispense amount is shown on the LCD screen, press the SELECT * key.

2. LCD screen will now read, "Press [Dispense] to start. Make sure that the equipment is ready to dispense into a container before pressing Dispense key. Once you press the dispense key, the relay will immediately actuate.
3. The Green light for the Fast Fill indication will light, and the relay will actuate at this time. Depending on the equipment you have connected to this circuit, you may have to perform other operations to start you dispensing equipment. This will vary by customer.
4. At the point where the specified dispense amount has been achieved, the relay will automatically switch, and the Red (STOP) LED will be lit.
5. At this point the process will repeat until you reach an amount that will not be able to be dispensed (contents weight is below preset amount to dispense). You will need to do one of two things to continue.
6. Option one: Press the SELECT * key to reload. Remove old tank and load a new full tank to continue process. Follow prompts. With new tank on scale, proceed to the process of adjusting the tare weight for the new tank. If you don't know the tare weight, use the net weight procedure of loading a new tank and adjust the tare adjust until you see the proper net weight reading. Now you may repeat Steps 1 to 4 until the tank contents are exhausted again.
7. Option two: Continue the dispense mode to use up as much as possible of the contents in the tank. Press the DISPENSE key anyway. LCD will read: "TANK LOW! PRESS * TO CONTINUE". Prepare equipment to dispense, and press SELECT * to continue. LCD prompt will read: "Press DISPENSE to start. Press Dispense key. Green LED "Fast Fill" light will light and relay will actuate. When the weight reaches 0 lbs., the LCD will alert the operator to "LOAD NEW TANK AND PRESS *".
8. Pressing SELECT * will prompt the operator to adjust the tare amount to show the proper NET weight of the new tank. The arrow keys are used to adjust the amount. To enter this amount, press SELECT again *. The LCD will prompt operator to Press DISPENSE to start. Operator will check all

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equipment is secured and ready to dispense. Upon pressing the button, the relay will actuate and Green LED (Fast Fill) will light to being dispense batch.

9. If the weight of the scale does not reach zero and there is still contents in the tank and the pump is not removing any more material from the tank, the operator will notice this and press the PAUSE button. Upon pressing pause, the Blue LED will light and the relay will disengage. The user will see the prompt: PRESS DISPENSE OR * TO RELOAD. At this time, the operator will press the SELECT key * to begin the process to reload a full tank. The operator will then load the tank, and adjust the tare weight setting using the arrow keys so the proper NET weight is showing. Press Select * and then Dispense to resume the dispense amount where you had paused. The relay will actuate at the place where you have completed the batch. Resume and follow the same procedure for usage.

Dual Method:

When operating in Dual Method, you will utilize the Fast Fill to a preset figure, and then Slow Fill will proceed until that preset figure is achieved. The circuits do not provide speed control of pumps, they are assigned in this fashion to turn on or off a circuit that may have that ability. The reason for the assignment of fast and slow is to allow a user to employ two different flow rated valves that may be comparably faster or slower to have a trickle fill effect where a tank or system may need to be filled slow towards the end of a fill cycle.

1. Press the Dispense Key. The Blue LED (Paused) will light and the LCD will prompt the user to assign the Fill amounts. Use the arrow keys to program this amount if it is not already set in the SET UP Menu. You will need to assign a Fast Fill amount, and a Slow Fill amount. First you will be asked to define the Fast Fill amount. After the desired dispense amount is shown on the LCD screen, press the SELECT * key. Repeat this process to assign the Slow Fill amount. Press the SELECT * key.
2. LCD screen will now read, "Press [Dispense] to start. Make sure that the equipment is ready to dispense into a container before pressing Dispense key. Once you press the dispense key, the relay will immediately actuate.
3. The Green light for the Fast Fill indication will light, and the relay will actuate at this time. Depending on the equipment you have connected to this circuit,

you may have to perform other operations to start you dispensing equipment. This will vary by customer.

4. After the condition is met for the Fast Fill, the unit will actuate the relay, turning off the Fast Fill circuit and Green LED, and the Slow Fill circuit will automatically energize and the Yellow LED will light.
5. At the point where the specified dispense amount has been achieved, the relay will automatically switch, and the Red (STOP) LED will be lit.
6. At this point the process will repeat until you reach an amount that will not be able to be dispensed (contents weight is below preset amount to dispense). You will need to do one of two things to continue.
7. Option one: Press the SELECT * key to reload. Remove old tank and load a new full tank to continue process. Follow prompts. Remove old tank and load a new full tank to continue process. With new tank on scale, proceed to the process of adjusting the tare weight for the new tank. If you don't know the tare weight, use the net weight procedure of loading a new tank and adjust the tare adjust until you see the proper net weight reading. Now you may repeat Steps 1 to 4 until the tank contents are exhausted again.
8. Option two: Continue the dispense mode to use up as much as possible of the contents in the tank. Press the DISPENSE key anyway. LCD will read: "TANK LOW! PRESS * TO CONTINUE". Prepare equipment to dispense, and press SELECT * to continue. LCD prompt will read: "Press DISPENSE to start. Press Dispense key. Green LED "Fast Fill" light will light and relay will actuate. When the weight reaches 0 lbs., the LCD will alert the operator to "LOAD NEW TANK AND PRESS *".
9. Pressing SELECT * will prompt the operator to adjust the tare amount to show the proper NET weight of the new tank. The arrow keys are used to adjust the amount. To enter this amount, press SELECT again *. The LCD will prompt operator to Press DISPENSE to start. Operator will check all equipment is secured and ready to dispense. Upon pressing the button, the relay will actuate and Green LED (Fast Fill) will light to being dispense batch.
10. If the weight of the scale does not reach zero and there is still contents in the tank and the pump is not removing any more material from the tank, the

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operator will notice this and press the PAUSE button. Upon pressing pause, the Blue LED will light and the relay will disengage. The user will see the

prompt: PRESS DISPENSE OR * TO RELOAD. At this time, the operator

will press the SELECT key * to begin the process to reload a full tank. The operator will then load the tank, and adjust the tare weight setting using the

arrow keys so the proper NET weight is showing. Press Select * and then Dispense to resume the dispense amount where you had paused. The relay will actuate at the place where you have completed the batch. Resume and follow the same procedure for usage.

Parallel Method:

The Parallel method will employ the Fast and Slow Fill circuits at the same time. There will be a small amount of fill from the Slow circuit that will extend beyond the time of the Fast Fill circuit so that in situations where a slow filling (trickle) is required to top off a cycle of dispensing, this method will accomplish that goal, and fill faster than if it was using Dual mode, and only would fill one circuit at a time. As the name suggests, the Fast and Slow will run together, and the Slow will complete the cycle.

1. Press the Dispense Key. The Blue LED (Paused) will light and the LCD will prompt the user to assign the Fill amount. Use the arrow keys to program this amount if it is not already set in the SET UP Menu. After the desired dispense amount is shown on the LCD screen, press the SELECT * key.
2. LCD screen will now read, "SLOW FILL AMOUNT x *" Use the arrow keys to adjust the amount for the slow fill if you have not already pre-programmed that amount in the SET UP Menu. Press the SELECT key *.
3. LCD screen will now read, "Press [Dispense] to start. Make sure that the equipment is ready to dispense into a container before pressing Dispense key. Once you press the dispense key, the relays will immediately actuate.

4. The Green light for the Fast Fill indication will light as well as the Yellow light for the Slow Fill. Both relays will actuate at this time. Depending on the equipment you have connected to this circuit, you may have to perform other operations to start you dispensing equipment. This will vary by customer.
5. At the point where the specified dispense amount for Fast Fill has been achieved, the relay will automatically switch, and the Green (Fast Fill) LED will extinguish. The Yellow Light for Slow Fill will continue until that condition has been met, and then the relay will actuate on that circuit as well. At this point, the Red LED will light as the relay actuates and the Slow Fill will cease.
6. At this point, the process will repeat until you reach an amount that will not be able to be dispensed (contents weight is below preset amount to dispense). You will need to do one of two things to continue.
7. Option one: Press the SELECT * key to reload. Remove old tank and load a new full tank to continue process. Follow prompts. Remove old tank and load a new full tank to continue process. With new tank on scale, proceed to the process of adjusting the tare weight for the new tank. If you don't know the tare weight, use the net weight procedure of loading a new tank and adjust the tare adjust until you see the proper net weight reading. Now you may repeat Steps 1 to 4 until the tank contents are exhausted again.
8. Option two: Continue the dispense mode to use up as much as possible of the contents in the tank. Press the DISPENSE key anyway. LCD will read: "TANK LOW! PRESS * TO CONTINUE". Prepare equipment to dispense, and press SELECT * to continue. LCD prompt will read: "Press DISPENSE to start. Press Dispense key. Green LED "Fast Fill" light will light and relay will actuate. When the weight reaches 0 lbs., the LCD will alert the operator to "LOAD NEW TANK AND PRESS *".
9. The operator must now load the new tank and attach accessory equipment before pressing the SELECT key. Pressing SELECT * will prompt the operator to adjust the tare amount to show the proper NET weight of the new tank. The arrow keys are used to adjust the amount. To enter this amount, press SELECT again *. The LCD will prompt operator to Press DISPENSE to start. Operator will check all equipment is secured and ready to dispense. Upon pressing the button, the relays will actuate and the Green LED (Fast Fill) and Yellow LED (Slow Fill) will light to being dispensing the batch.

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10. If the weight of the scale does not reach zero and there is still contents in the tank and the pump is not removing any more material from the tank, the operator will notice this and press the PAUSE button. Upon pressing pause, the Blue LED will light and the relay will disengage. The user will see the

prompt: PRESS DISPENSE OR * TO RELOAD. At this time, the operator

will press the SELECT key * to begin the process to reload a full tank. The operator will then load the tank, and adjust the tare weight setting using the

arrow keys so the proper NET weight is showing. Press Select * and then Dispense to resume the dispense amount where you had paused. The relay will actuate at the place where you have completed the batch. Resume and follow the same procedure for usage.

V. Set-Up Menu:

This menu should only be entered if there is a requirement to reset the factory calibration, or adjusting set points. Changing other settings will modify the calibration of the scale and will make the indicator appear to have “lost” calibration. Do not alter any settings unless you are sure that what you are changing is necessary!

In order to view this menu, you will need to place the jumper as seen on the orientation diagram of the display board, in the position JP1 (located at the bottom of the display board) in the position of the two pins to the left, closest to the “A” on the board.

1. Display automatically will show “DISPENSE MODE [*]”. Press the SELECT key [*]. The LCD screen will say: “DISPENSE MODE ▲▼ PARALLEL [*]” Using the arrow keys, the Mode will scroll between PARALLEL, SINGLE, and DUAL. Press the SELECT key [*] to select the mode. This will return you to the menu beginning. (LCD says “▲▼DISPENSE MODE [*]”).
2. Pressing the UP arrow key ▲ two times will take you to the “▲▼ FAST FILL [*]” Menu. Press SELECT key [*] to enter this menu. Using the arrows▲▼, adjust the desired Fast Fill amount. This may vary in use, or perhaps you will use the same amount every time. It is wise to set the

- amount to an averaged amount, even if it varies, to cut down on the amount of time it will take to set that Fast Fill amount during the batching process.
- When the number is set to the proper fill amount, press the SELECT key [*].
3. Press the Down arrow key ▼ to move to the SLOW FILL menu. Press SELECT key [*]. Use the arrow keys ▲▼ to adjust the amount of Slow Fill for your process. This amount is only used for the Parallel and Dual Modes, so if you are using Single mode, you may leave this amount at 0. When finished, press SELECT key [*].
 4. Press the down arrow key ▼ two times to pass the Dispense Mode menu (already programmed in step 1) and continue to next menu.
 5. The LCD will display the UNITS menu. Press the SELECT key [*] to access this menu. Use the arrow ▲▼ keys to change the units. You may select from pounds (LBS), milliliters (ml), grams (gm), liters (LTR), gallons (GAL), and kilograms (Kg). Select your unit of measure, and press the SELECT key [*].
 6. Press the down arrow ▼ key to advance. The LCD will display: ▲▼ DECIMAL PLACES [*]. Press the SELECT key [*]. Use the arrow keys ▲▼ to select the placement (XXXX.X = tenths), or absence (NONE) of decimal place. None will read in whole unit increments. Press SELECT key [*] to choose.
 7. Press the down arrow ▼ to advance. LCD will display: ▲▼ FIXED ZEROS [*]. A fixed zero is for the purpose of weighing very high values. This is only used when weighing something that has a value over 10,000 or higher and will read out in 10 unit increments, so there is always a zero in the ones place. It is referred to as a Dummy Zero because it is always a 0 in value. Unless you are reading a very high value, this would not be an option to choose. Press SELECT key [*] to enter this menu. Use the arrow keys ▲▼ to choose NONE, or XXXX0. None indicates this option is turned off. XXXX0 indicates it is turned on. Press SELECT key [*] to complete the menu.
 8. Press the down arrow ▼ key to advance. LCD screen will display ▲▼ COUNT BY [*]. Press the SELECT key [*] to access the menu. The

options for this menu are: Count by 1, 2, or 5. Choosing 1 will count the least significant digit in 1's, 2 will count by 2's, and 5 will count by 5's. This is not affected by the use of a decimal. Choose the amount you want your display to advance in units, and press the SELECT key [*].

9. Press the down arrow ▼ to advance. LCD screen will display ▲▼ RESOLUTION [*]. Press the SELECT key [*] to enter the menu. The resolution setting should be set to a number that exceeds the desired maximum reading that you wish to display. There are select numbers to choose from, so you must choose an amount that just exceeds the maximum weight or volume of the contents you are weighing. Press the SELECT key to see the options, and the arrow keys ▲▼ to scroll through the numbers: 32000, 16000, 8000, 4000, 3000, 2000, and 1000. Press the SELECT key [*] to choose the value.
10. Press the down arrow ▼ to advance. LCD screen will display ▲▼ DENSITY [*]. Unless you are reading a volume unit, you will not need to alter this menu. If you are displaying in Gallons, Liters, or milliliters, you will need to assign a value for the specific gravity of the contents in the tank. (The program assumes the weight of water to be 8.34 lbs per gallon.) Use the arrow keys ▲▼ to adjust this value, and press the SELECT key [*].
11. Press the arrow down key ▼ to advance. LCD screen will display ▲▼ 4-20MA SETUP [*]. Press the SELECT key [*] to enter the menu. Use the arrow keys ▲▼ to adjust the value of 20mA output at full scale of NET WEIGHT (weight of the contents in the container only, not the equipment and empty tank weight). Use the arrows to adjust the value and press the SELECT key [*].
12. Press the arrow down key ▼ to advance. LCD screen will display ▲▼ CALIBRATE [*]. ***It is not advisable to re-calibrate this scale unless completely necessary. Please contact the factory before completing this step to avoid needing to return the unit to be re-set. There are other menus whose values will affect calibration, including Count By, Resolution, and Decimal Place. You must also have a known Gross Weight that is more than 20% of the resolution setting.***

Press the SELECT key [*] to enter the menu. Make sure there are no containers or any equipment on the scale to start. LCD will say SCALE TO

- CAL. Press the SELECT key [*]. LCD will say: REMOVE WEIGHT AND PRESS [*]. When scale base is empty of all equipment and tank, press the SELECT key [*]. LCD will say: PLEASE WAIT..... At this time, do not push any buttons or touch the scale frame. When the readings are sampled, the display will automatically advance! LCD will advance to screen: LOAD CAL. WEIGHT AND PRESS [*]. At this time, load a known GROSS weight onto the scale frame. It must be more than 20% of the setting of the resolution. Press the SELECT key [*]. LCD will say: CALIBRATION WT. $\blacktriangle\blacktriangledown$ 0 [*]. Use the arrow keys $\blacktriangle\blacktriangledown$ to advance the reading to a proper calibration weight (the gross weight of the container on the base) and press the SELECT key [*]. LCD will automatically start sampling weight, and display will read: PLEASE WAIT..... And then automatically advance to CALIBRATION DONE (XXXXX) [*]. During the time of sampling, the weight must sit undisturbed on the scale frame. Do not push any buttons on the indicator during this time either. When the Calibration Done screen comes on, the calibration is complete. You may record the number of counts (in the parenthesis) and press the SELECT key [*].
13. Press the arrow down key \blacktriangledown to advance. LCD screen will display $\blacktriangle\blacktriangledown$ AVERAGE BY [*]. Press the SELECT key [*]. LCD will say: "AVERAGE BY $\blacktriangle\blacktriangledown$ " and give you the options for STANDARD, 100 Readings, 50 Readings, or 20 Readings. Use the arrow keys $\blacktriangle\blacktriangledown$ to select. This setting will change the amount of samples the A/D converter will average before returning a reading change on the display. The standard setting is 10 readings, so if you change this option, the response on the display will appear to be slower. This is an option if there is a lot of vibration where readings are jumping around. It works almost like a filter, or input averaging. Choose the selection, and press the SELECT key [*].
14. Press the arrow down key \blacktriangledown to advance. LCD screen will display $\blacktriangle\blacktriangledown$ BARGRAPH FULL SCALE [*]. This menu will change the bar graph that appears to reflect the percent of full scale. This is accessible from the operator's menu. Press the SELECT key [*]. LCD will say: FULL SCALE #1 $\blacktriangle\blacktriangledown$ 0 [*]. Use the arrow keys to adjust the reading to reflect full scale (net weight). Press the SELECT key [*] to complete.

15. Press the arrow down key ▼ to advance. LCD screen will display ▲▼
VERSION: X.X.X SOURCE: xxxxxxx. This is a read only menu.
16. Press the arrow down key ▼ to advance.

****With NO jumper installed in location JP3 on Display board, the next menu option will read:***

[RESERVED FOR FUTURE USE]

****With a jumper in location JP3 on the Display board, the display will show:***

16. The LCD will read: ▲▼ RESTORE FCTY CALIBRATION [*]. Press the Select key [*] to see: ARE YOU SURE? ▲▼ = NO, [*] = YES. If you wish to restore factory calibration, press the SELECT key [*]. Screen will show: RESTORE DONE ___ [*]. Press the SELECT key [*] again to return to beginning of menu. If you wish to abort the attempt to restore calibration, then press an arrow key ▲▼ instead.

Pressing an arrow key from prior screen returns you to the first menu option (FAST FILL). To leave the SET-UP MENU area, remove the jumper on JP1 from the A position, and move it to the right two pins, ("B") position. This will instantly return you to the OPERATOR'S MENU.

- V. Troubleshooting:** Please DO NOT ATTEMPT TO ALTER OR RE-CALIBRATE THIS INSTRUMENT ON YOUR OWN UNLESS INSTRUCTED TO DO SO. IT HAS BEEN CALIBRATED AND TESTED BEFORE IT LEAVES THE FACTORY. Should you experience trouble, please read the following for easy diagnosis, and then call the factory for assistance.

If "88888" appears for net weight: This is a condition of overload in weight. The most likely cause is that the weight on the scale exceeds the net weight that was configured for the base. Go through each step in the Set-up menu to verify that chosen options are correct.

If indicator is not receiving any power: DO NOT, AT ANY TIME, STICK ANYTHING INTO THE OPEN FRAME POWER SUPPLY OR TOUCH THE COMPONENTS! YOU CAN RECEIVE A SHOCK!!!! Check outlet for power. Check to see that scale is plugged into an outlet with the proper voltage. Check the small green light on the power supply board (on the top right corner of the Interface board in the back of the indicator box) to make sure it is lit (not blinking). If the light is completely out, or blinking, the problem exists in something **before** the power supply, or something is placing the power supply in

“current overload”. Try disconnecting power, and removing all other equipment other than the scale base wires and the power cord (this means 4-20 equipment and relay connections). Plug unit back into power to see if this fixes the situation. If it does, the problem is not with the 1020™. Check the 4-20mA hook-up to be sure that the power supply to the 4-20 circuit is within the correct range. Reconnect one piece at a time to isolate the problem. The power supply’s safety shut down will cause it to beep and blink the green light. If this starts to happen, remove power quickly and fix problem. If problem persists, call the factory about the problem and describe the condition to a technical advisor.

If the 4-20mA reading is incorrect: This 4-20 circuit is Loop powered, so a supply of power of 18-30 VDC must power the 1020™. Please refer to the diagram on page 19. Check to make sure the wire insulation is not pinched in the connector. Wires should stay in the connector even if you **gently** tug on the wires. Insert the wire so that it makes good connection. Check to make sure the scale has been configured properly in the SET-UP Menu. If the problem persists, please take note if you have a reading of 4mA or 20mA without changing regardless of weight, or if there is a reading of 0 mA. This will be important in diagnosing problem.

If the level indicating relay is not working: check to make sure the wire insulation is not pinched in the connector. Relay will be NO or NC depending on connection. Please refer to Orientation Diagram for relay connections. The front panel has four colored lights that should light when the related circuit is active. Please note if the LED lights, or does not. If problem persists, call the factory.

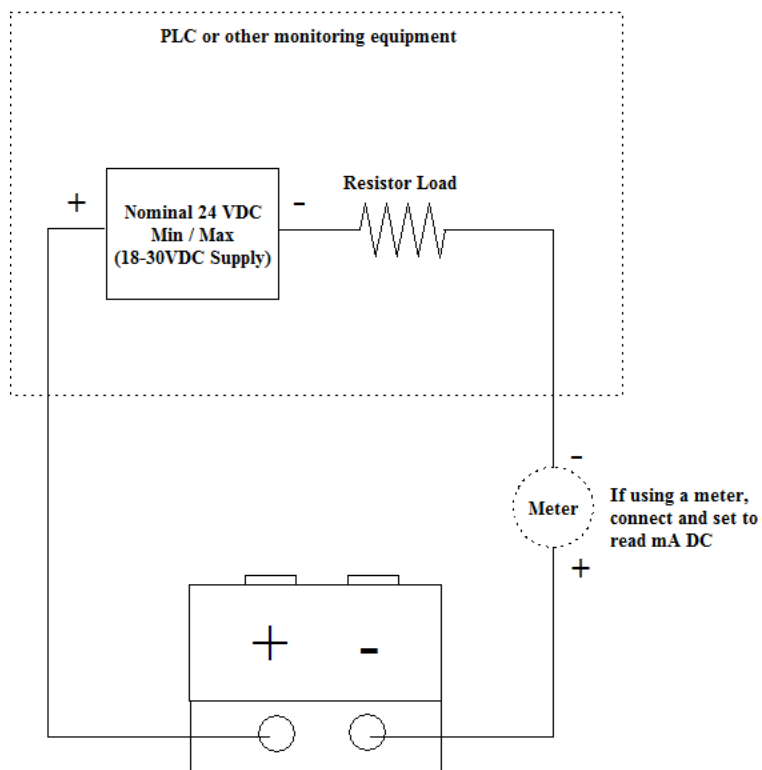
If a power failure occurs: If power is interrupted, and then is restored, the indicator will start up with the flash screen and then automatically switch to say: CONTINUE->[*] OR ->[ABORT]. This screen alerts the operator to either continue by pressing the Select Key [*] to finish the current batch that was interrupted, or press ABORT key to stop the operation and abandon the batch. Pressing ABORT will erase the data of the current batch, so this must only be pressed if the batch is to be abandoned with no chance to continue.

There is a “+” next to the units on the Net Weight screen: There was an increase in the weight after the DISPENSE button was pushed. This will not interfere with the operation of the scale and indicator. Whatever the weight is when the DISPENSE action is initiated, that is the weight that the indicator will use to calculate the endpoint of the batch. Make sure no weights are being added or removed at the time the DISPENSE action is initiated.

If problems persist, **PLEASE CALL THE FACTORY!** If in the U.S.A., call: 1 (800) 257-5911. Outside of the U.S.A. (215) 766-2670

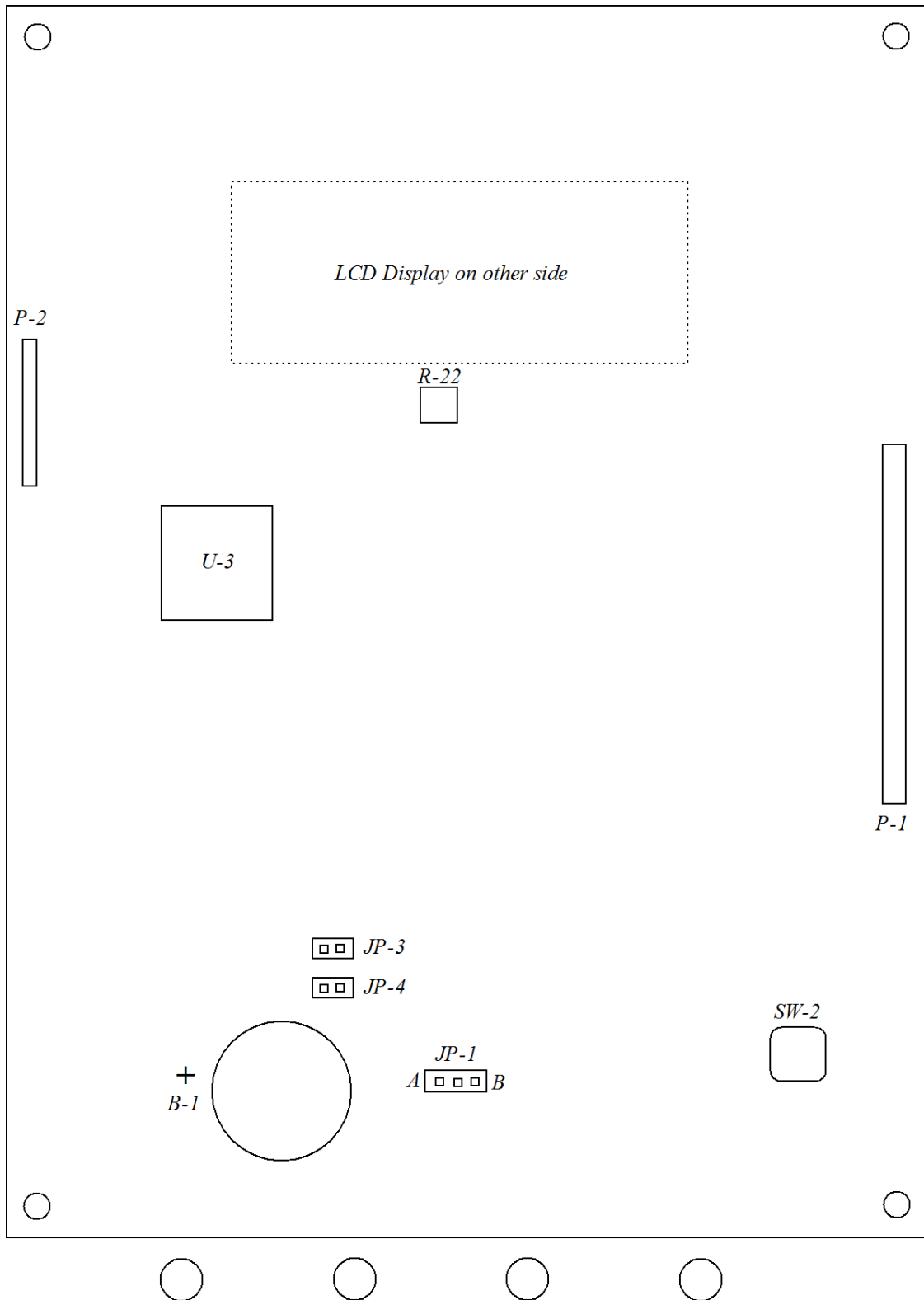
VI. Wiring Diagram for 4-20 mA connection:

Connection diagram for 4-20mA



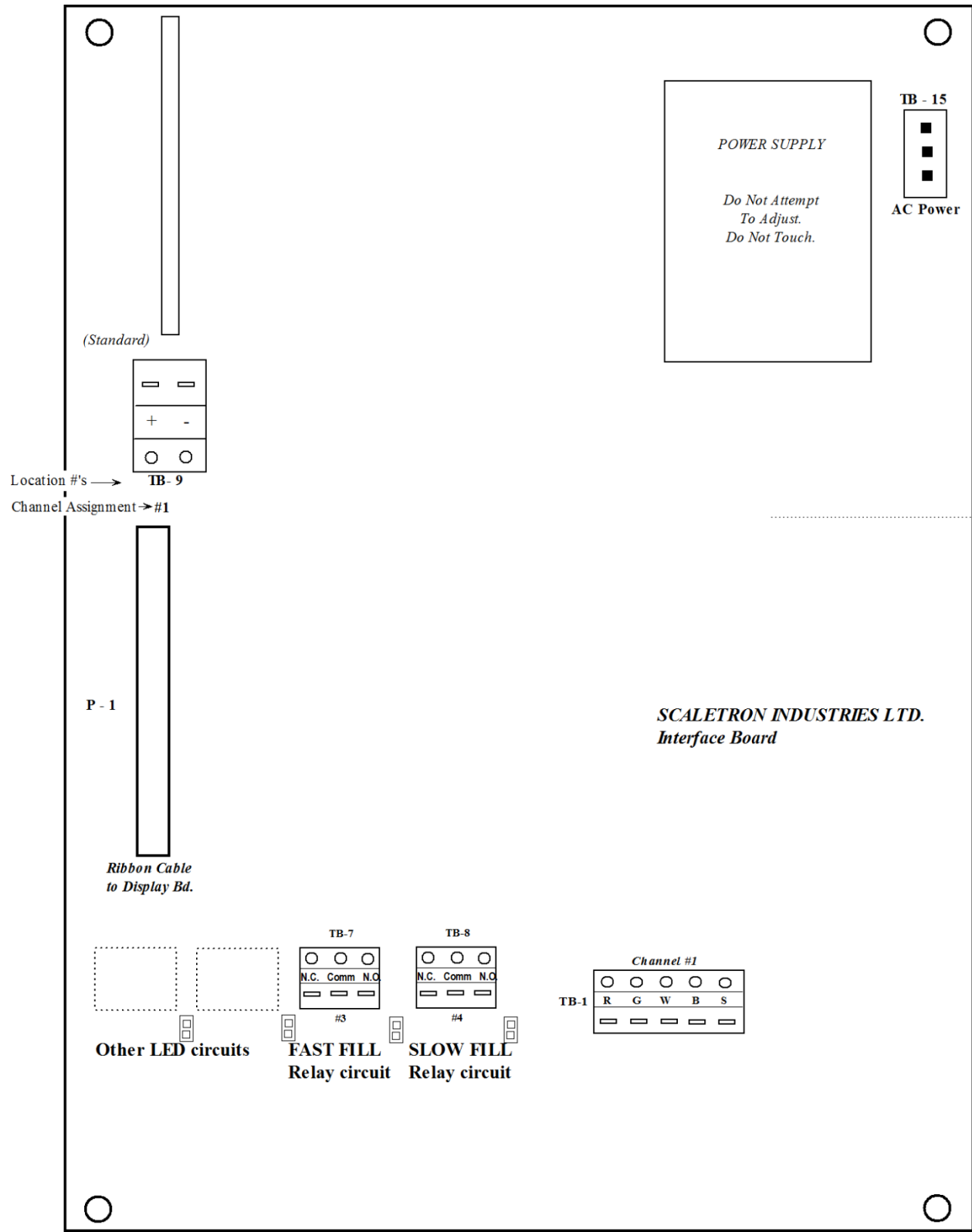
Please note that the power supply in this diagram can range in output from 18 to 30 VDC to supply power to the loop powered 4-20mA circuit. Typical supplies are around 24 VDC. If you have any questions regarding the connections of this unit, please notify the factory.

VII. Orientation Diagrams:



LED panel connections

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