CARDINAL®

825 Gen2 INDICATOR

SMARTCELL® DIGITAL LOAD CELLS

Model 825D

Weight Indicator for Digital Scales
Installation and Technical Manual

INTRODUCTION

The Cardinal Model 825D Weight Indicator for Digital Scales, available in Desktop (825D-D), Stainless Steel (825D-S), and No Screen (825D-NS) versions, has been designed for use with Cardinal digital scales and digital conversion systems. Each system includes a Gen2 825 Weight Indicator and an 825-DLC (Digital Load Cell) interface card installed in the indicator's card slot. The software in the 825D provides in-depth diagnostics, simplified calibration, and easy maintenance.

To communicate with the 825D Weight Indicator for Digital Scales, the scale must be equipped with Cardinal Scale's SCBD SmartCells, DC Digital Load Cells, or a SMARTCAN Digital Conversion System.

This manual provides setup, configuration, and diagnostic instructions for the Gen2 Model 825D Weight Indicator for Digital Scales. To ensure proper installation and operation, it should be used alongside the following manuals:

- Gen2 825 Desktop Installation and Technical Manual (8545-1151-0M)
- Gen2 825 Stainless Steel Installation and Technical Manual (8545-M838-O1)
- Gen2 825 No Screen Installation and Technical Manual (8545-1197-0M).

Please review both this manual and the applicable standard manual before installing your Gen2 Model 825D indicator, and keep them available for future reference.

This manual applies to the Gen2 Model 825D-D, 825D-S, and 825D-NS Weight Indicators for Digital Scales.

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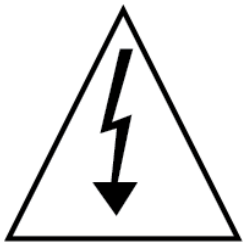
DISCLAIMER

While every precaution has been taken in the preparation of this manual, the Seller assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein. All instructions and diagrams have been checked for accuracy and ease of application; however, success and safety in working with tools depend largely upon the individual's accuracy, skill, and caution. For this reason, the Seller is not able to guarantee the result of any procedure contained herein. Nor can they assume responsibility for any damage to property or injury to persons occasioned from the procedures. Persons engaging in the procedures do so entirely at their own risk.

SAFETY AND WARNINGS

Before using this indicator, read this manual and pay special attention to all "NOTIFICATION" symbols.

Avant d'utiliser cet indicateur, lisez ce manuel et portez une attention particulière à tous les symboles "NOTIFICATION".



ELECTRICAL WARNING

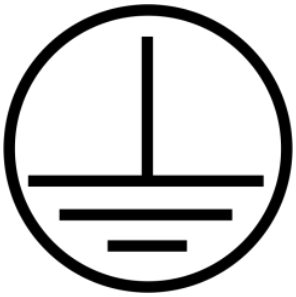
AVERTISSEMENT ÉLECTRIQUE

IMPORTANT

IMPORTANT

STATIC SENSITIVE

SENSIBLE À L'ÉLECTRICITÉ STATIQUE



The protective conductor terminal (Earth Ground) is signified by this symbol. It must be properly connected to earth ground per local electrical codes.

La borne du conducteur de protection (mise à la terre) est représentée par ce symbole. Elle doit être correctement connectée à la terre conformément aux codes électriques locaux.

WARNING

WARNING: RISK OF ELECTRICAL SHOCK. DO NOT REMOVE COVER, NO USER-SERVICEABLE PARTS INSIDE. DEVICE IS ONLY TO BE SERVICED BY TRAINED SERVICE PERSONNEL OR AUTHORIZED CARDINAL SCALE SERVICE PERSONNEL.

AVERTISSEMENT: RISQUE DE CHOC ÉLECTRIQUE. NE PAS RETIRER LE COUVERCLE, AUCUNE PIÈCE RÉPARABLE PAR L'UTILISATEUR À L'INTÉRIEUR. L'APPAREIL NE DOIT ÊTRE ENTRETENU QUE PAR UN PERSONNEL DE SERVICE QUALIFIÉ OU PAR LE PERSONNEL AGRÉÉ DE CARDINAL SCALE.

WARNING

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Si l'équipement est utilisé d'une manière non spécifiée par le fabricant, la protection fournie par l'équipement peut être compromise.

PROPER DISPOSAL

When this device reaches the end of its useful life, it must be properly disposed of. It must not be disposed of as unsorted municipal waste. Within the European Union, this device should be returned to the distributor from where it was purchased for proper disposal. This is in accordance with EU Directive 2002/96/EC. Within North America, the device should be disposed of in accordance with the local laws regarding the disposal of waste electrical and electronic equipment.

It is everyone's responsibility to help maintain the environment and to reduce the effects of hazardous substances contained in electrical and electronic equipment on human health. Please do your part by making certain that this device is properly disposed of. The symbol shown to the right indicates that this device must not be disposed of in unsorted municipal waste programs.

CAUTION

CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

ATTENTION: RISQUE D'EXPLOSION SI LA BATTERIES EST REMPLACE'E PAR UN TYPE INCORRECT. REJETEZ LES BATTERIES UTILISE'ES SELON LES INSTRUCTIONS.

Contains FCC ID: 2AC7Z-ESP32WROVERE

1. This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC RADIATION EXPOSURE STATEMENT

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

TABLE OF CONTENTS

SPECIFICATIONS

Enclosure Type:	
825D-D	Painted Mild Steel Desktop Mount
825D-S	NEMA 4X/IP66 rated Stainless Steel Outdoor wall or desk mount
825D-NS	Painted Mild Steel
Enclosure Size:	
825D-D	14.25 in W x 10.5 in H x 11.75 in D (36.2 cm W x 26.7 cm H x 29.9 cm D
825D-S	14.25 in W x 11.5 in H x 5.63 in D (36.2 cm W x 29.2 cm H x 14.3 cm D)
825D-NS	12.25 in W x 5.25 in H x 11.25 in D (31.1 cm W x 13.3 cm H x 28.6 cm D)
Net Weight:	
825D-D	15 lb (6.5 kg)
825D-S	18 lb (8.2 kg)
825D-NS	11 lb (4.9 kg)
Shipping Weight:	
825D-D	17 lb (7.7 kg)
825D-S	20 lb (9 kg)
825D-NS	13 lb (5.9 kg)
Power Requirements:	100 to 240 VAC (50/60 Hz) at 1A Max.
Operating Environment:	Temperature: 14 to 104 ºF (-10 to +40 ºC) Humidity: 90% non-condensing (maximum)
Display Size:	
825D-D and 825D-S	12.1 in (307 mm) Diagonal Active Area: 10.3 in W x 6.4 in H (261 mm W x 163 mm H)
Display Resolution:	
825D-D and 825D-S	1280 x 800 Color Graphics TFT LCD w/ LED Backlight
Display Connectivity:	HDMI (multi-directional interaction) or USB (readout only) The 825 supports HDMI V2.0a up to 4K 60 Hz. *(User-supplied display required on 825D-NS)*
Division Value:	Commercial: 1, 2, or 5 x 10, 1, 0.1, 0.01, 0.001, and 0.0001 Non-commercial: 0 to 99
Sensitivity:	
NON-COMMERCIAL	0.15 uV/e
NTEP	0.3uV/e (Class III/IIIL)
CANADA	0.3uV/e (Class III/IIIHD)
OIML	0.5 uV/e (Class III)
Scale Divisions:	
NON-COMMERCIAL	100 to 240,000
NTEP	100 to 10,000 (Class III/IIIL)
CANADA	100 to 10,000 (Class III/IIIHD)
OIML	100 to 10,000 (Class III), 1,000 (Class IIII)

SPECIFICATIONS, CONT.

Internal Resolution:	> 100,000 Counts
Tare Capacity:	Six Digits (999,999)
Sample Rate:	1 to 200 samples per second, selectable
Auto Zero Range:	0.5 or 1 through 9 divisions
Weighing Units:	Tons, Pounds, Tonnes (Metric Tons), and Kilograms
Keypad: 825D-D and 825D-S 825D-NS	 Interactive touchscreen User-supplied Touchscreen or USB keyboard
Standard I/O:	(1) Bi-directional RS-232 port (1) Bi-directional RS-232/20mA port (1) Bi-directional RS-232/RS-485 port (1) 10/100/1000 Base-T Ethernet (4) Isolated input/output (2) USB 3.0 ports, (1) USB 2.0 port, and (1) USB-C port (1) HDMI port 802.11b/g/n Wi-Fi Bluetooth v4.2 BR/EDR/BLE
825-DLC Connections:	Homerun Cable - 5-position spring cage clamp (24 to 16-gauge wire) Ethernet Port for iSite – (1) RJ-45 Micro USB port – Used for firmware updates to the 825-DLC card
Homerun Cable Length:	Consult the factory for requirements.
Number of Load Cells:	Up to 20 Cardinal Digital Load Cells with POWER-DLC

825-DLC CONTROLLER CARD

Jumpers, Connectors, and LEDs

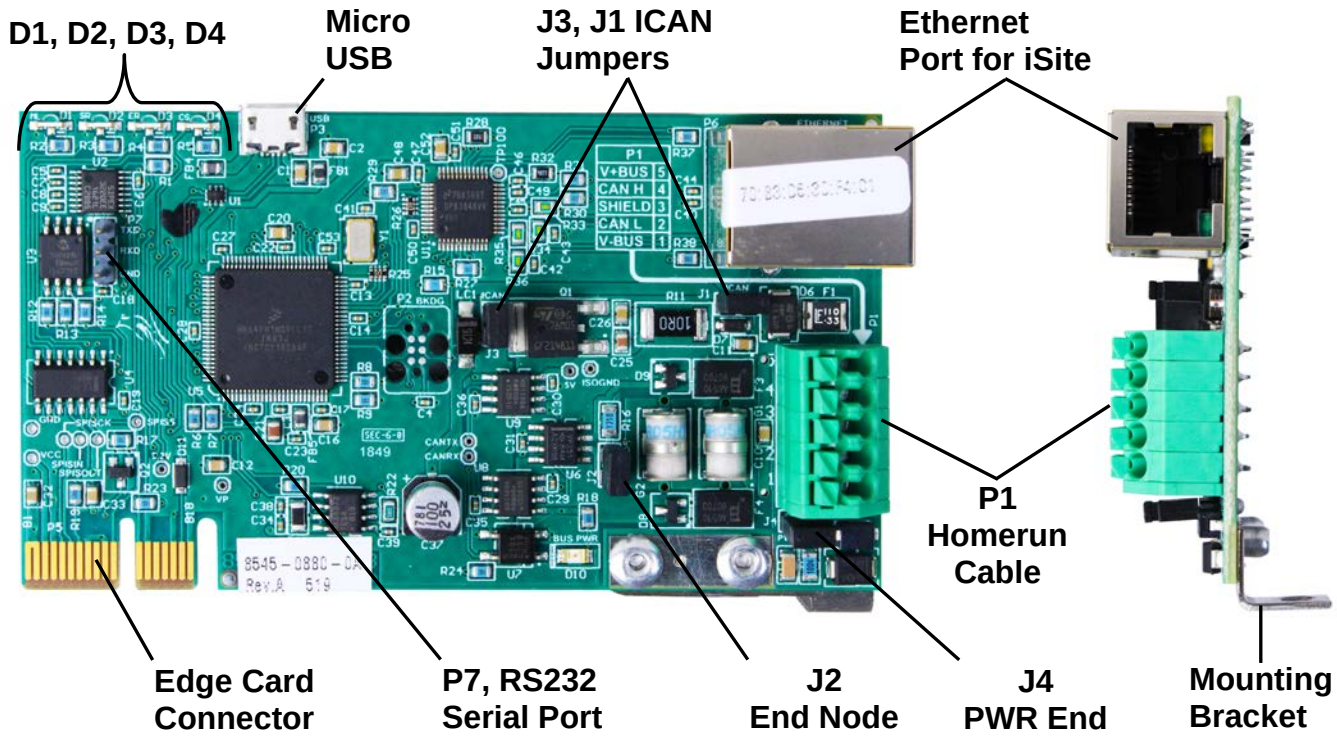


Figure No. 1

J2, End Node Jumper

Jumper J2 is the CAN bus END NODE jumper and ***must*** be installed for the 825D communications to the scale to operate.

J1, J3 ICAN Jumpers

When ON (installed), these jumpers allow the 825D indicator to supply (source) 12V DC to the digital load cells in the scale. For operation using an external power source, such as the POWER-DLC 24 VDC power supply/noise filter for digital load cell systems or a customer-supplied 12–24 VDC power supply, the jumpers must be OFF (on one pin only or removed).

IMPORTANT! When using an external power source, the J1, J3 ICAN jumpers must be OFF (on one pin only or removed). A 12–24 VDC supply must then be connected to the **V+BUS** terminal, with the ground return connected to the **V-BUS** terminal of the P1 terminal block.

J4, PWR END

This jumper should be installed if the power to the digital load cells in the scale over the CAN bus cable (Homerun Cable) is provided by the 825D and not an external power source.

825-DLC CONTROLLER CARD, CONT.

Jumpers, Connectors, and LEDs Cont.

P1, CAN Connection to Scale (Homerun Cable)

The P1 terminal block is used to connect the homerun cable between the 825D indicator and the first load cell in the loop (Start Node in the scale). Refer to the table below for terminal connections.

Homerun Cable Connection to P1 Terminal Block

Board Label	Homerun Cable Wire Color	Wire Color if using a Load Cell Cable
V-BUS	BLACK	BLUE
CAN L	BLUE or LIGHT BLUE	GRAY
SHIELD	GRAY	BROWN
CAN H	WHITE	BLACK
V+BUS	RED	WHITE

Micro USB

This connector is used to perform firmware updates to the 825-DLC controller card.

P6, Ethernet

This connector is used to connect the 825D to your network to send information to iSite.

P7, RS232 Serial Port

The P7 pins are used to connect to Legacy iCAN and for future connections.

LED 1-4

The LEDs are used for diagnostic purposes. For a complete explanation of their function, refer to the DIGITAL SCALE DIAGNOSTICS, Hardware Diagnostics section of this manual.

HOMERUN CABLE INSTALLATION

Homerun Cable Installation

The Homerun Cable is a five-conductor, shielded PVC cable. On the indicator side, a short section connects to the INDICATOR terminal block in the POWER-DLC and terminates at the P1 terminal block on the 825-DLC Controller Card. On the load cell side, the main cable section connects to the SCALE terminal block in the POWER-DLC, with the load cell end terminated using a 5-pin actuation lever-type connector from the Home Run Cable Connector Pack. For more information, see the Load Cell Connection section of this manual and refer to the table below for cable and connector specifications.

Cable and Connector Information Table

ITEM and DESCRIPTION	CARDINAL PART NO.
HOMERUN CABLE, 5 CONDUCTORS, SHIELDED PVC (CONTAINS 2 x 18AWG, 2 x 22AWG, AND 1 x 22AWG)	6980-1092
CONNECTOR PACK, HOME RUN CABLE (INCLUDES 5-PIN SPRING CAGE CONNECTOR, 6610-1258)	3502-0681-0A
RECOMMENDED HOMERUN CABLE BELDEN 5303FE, 18 AWG, 5 CONDUCTORS	SUPPLIED BY DEALER

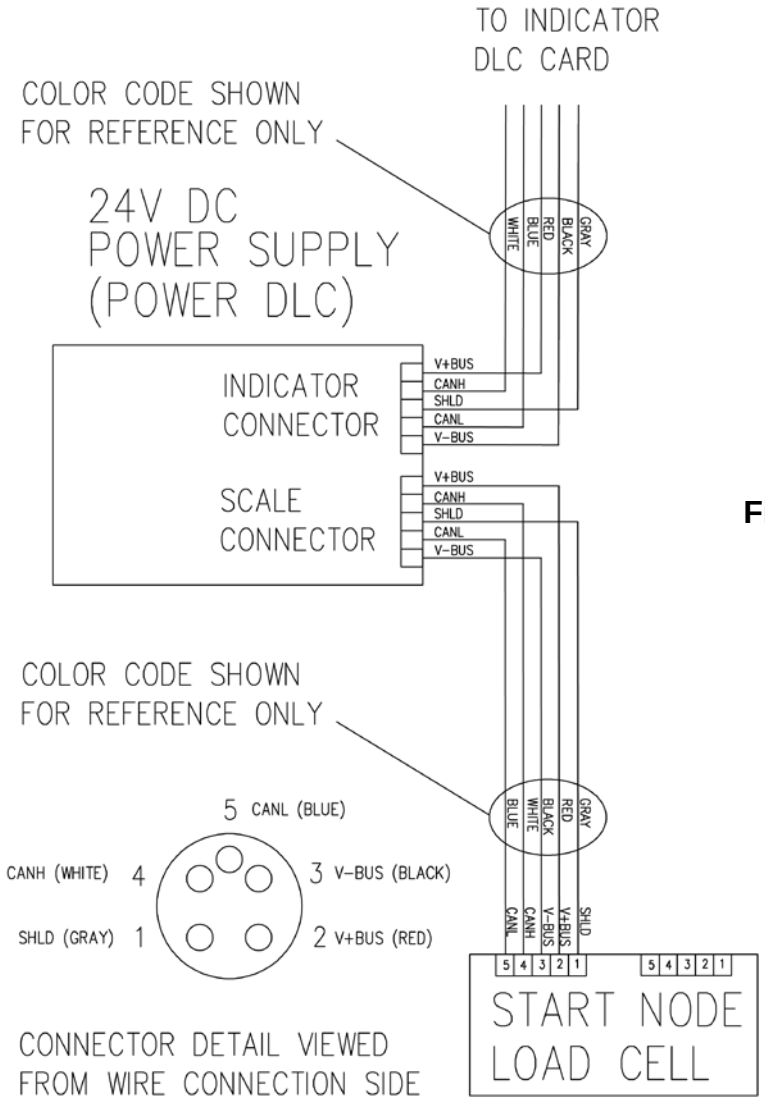


Figure No. 2

HOMERUN CABLE INSTALLATION, CONT.

POWER-DLC Internal Connections

The main (longer) section of the Homerun Cable is connected to the first load cell in the loop (the Start Node) and the SCALE terminal block in POWER-DLC. A (shorter) section of Homerun Cable is connected to the INDICATOR terminal block in the POWER-DLC and the P1 terminal block on the 825-DLC Controller Card.

IMPORTANT! MAKE SURE THE ICAN JUMPERS (*J1 AND J3 ON THE 825-DLC CARD*) ARE REMOVED BEFORE APPLYING POWER!

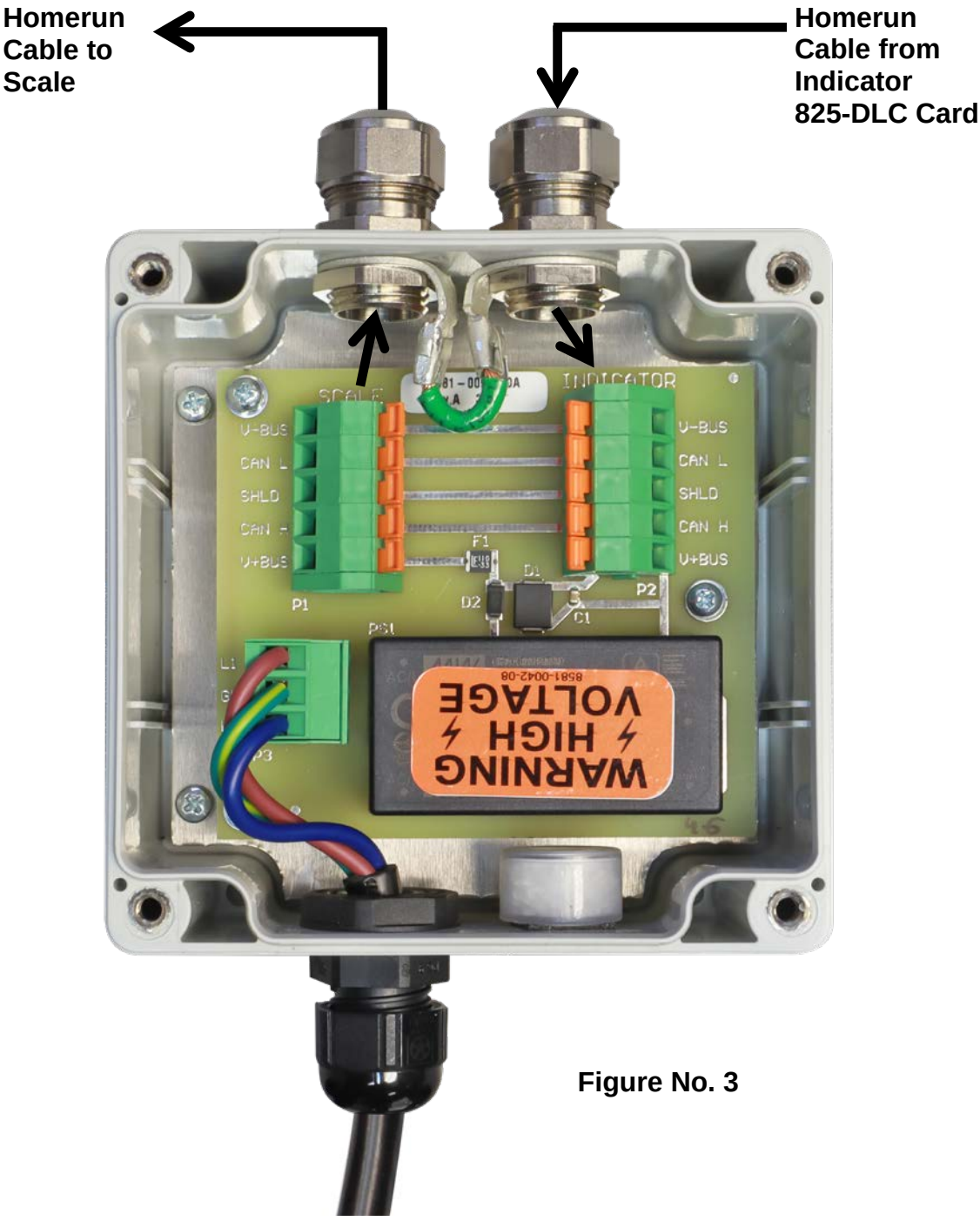


Figure No. 3

HOMERUN CABLE INSTALLATION, CONT.

POWER-DLC to Scale Connection

The homerun cable to the scale should be routed through the special metallic gland connector in the POWER-DLC, and the homerun cable shield connected to the metal gland connector for grounding. Refer to Figure No. 3 for the POWER-DLC gland connector layout.

1. Remove the four screws securing the cover of the POWER-DLC.

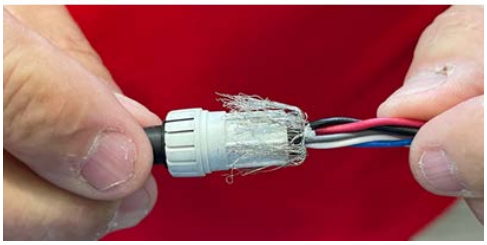
2. Loosen and remove the metal gland connector nut, then remove the plastic insert.

3. Slip the homerun cable to the scale through the nut and plastic insert.

4. Remove approximately 3.0 inches (76 mm) of the homerun cable outer jacket, exposing the cable shield and internal wires.

5. Cut the cable shield so it extends past the outer jacket approximately 3/4 inches (19 mm).

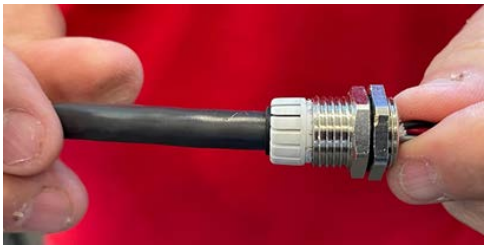
6. Next, remove approximately 1/4 inch (6 mm) of the insulation from each of the five wires.



7. Slide the plastic insert up the cable and fold the cable shield back over the plastic insert.

8. Insert the plastic insert (with the cable shield) into the metal gland connector for the scale. The cable shield will be secured when tightening the gland connector nut.

9. Make sure the gland connector nut is tight, but do not over-tighten it.



10. With the homerun cable to the scale routed into the POWER-DLC, refer to the table below (or the circuit board) for terminal connections, and connect each wire to the SCALE terminal block on the POWER-DLC board.

POWER-DLC SCALE Connector Terminal Connections

Board Label	Homerun Cable Wire Color	Wire Color if using a Load Cell Cable
V-BUS	BLACK	BLUE
CAN L	BLUE or LIGHT BLUE	GRAY
SHIELD	GRAY	BROWN
CAN H	WHITE	BLACK
V+BUS	RED	WHITE

11. Using a small flat-blade screwdriver, press down on the release bar for the terminal, insert the wire into the opening, and then remove the screwdriver. The release bar will return to its original position, locking the wire in place.

12. Repeat steps 10 and 11 until all five wires of the homerun cable to the scale are installed in the SCALE terminal block on the POWER-DLC board.

HOMERUN CABLE INSTALLATION, CONT.

POWER-DLC to 825-DLC Controller Card Connection

The homerun cable from the 825-DLC controller card should be routed through the special metallic gland connectors in the POWER-DLC, and the cable shield from the cable connected to the metal gland connector for grounding. Refer to Figure No. 3 for the POWER-DLC gland connector layout and the images on the previous page for installing the homerun cable shield in the gland connector.

1. With the cover off from the previous operation, loosen and remove the metal gland connector nut, then remove the plastic insert.

2. Slip the homerun cable from the 825-DLC controller card through the nut and plastic insert.

3. Remove approximately 3.0 inches (76 mm) of the homerun cable outer jacket, exposing the cable shield and internal wires.

4. Cut the cable shield so it extends past the outer jacket approximately 3/4 inches (19 mm).

5. Next, remove approximately 1/4 inch (6 mm) of the insulation from each of the five wires.

6. Slide the plastic insert up the cable and fold the cable shield back over the plastic insert.

7. Insert the plastic insert (with the cable shield) into the metal gland connector for the indicator. The cable shield will be secured when tightening the gland connector nut.

8. Make sure the gland connector nut is tight, but do not over-tighten it.

9. With the homerun cable from the 825-DLC controller card routed into the POWER-DLC, refer to the table below (or the circuit board) for terminal connections, and connect each wire to the INDICATOR terminal block on the POWER-DLC board.

POWER-DLC TERMINAL Connector Terminal Connections

Board Label	Homerun Cable Wire Color	Wire Color if using a Load Cell Cable
V-BUS	BLACK	BLUE
CAN L	BLUE or LIGHT BLUE	GRAY
SHIELD	GRAY	BROWN
CAN H	WHITE	BLACK
V+BUS	RED	WHITE

10. Using a small flat-blade screwdriver, press down on the release bar for the terminal, insert the wire into the opening, and then remove the screwdriver. The release bar will return to its original position, locking the wire in place.

11. Repeat steps 9 and 10 until all five wires of the homerun cable to the scale are installed in the SCALE terminal block on the POWER-DLC board.

Re-Installing the POWER-DLC Cover

1. After all connections to the SCALE and INDICATOR terminal blocks have been made, secure the POWER-DLC cover with the four screws removed earlier, following a diagonal pattern when tightening the screws.

2. Using a torque wrench, tighten the metal gland connectors to 33 in-lb (3.7 Nm).

HOMERUN CABLE INSTALLATION, CONT.

POWER-DLC to 825D Indicator Connection

825D-D Desktop Indicator

The short section of Homerun Cable from the INDICATOR terminal block in the POWER-DLC should be routed through the metallic gland connector, identified as **Digital Scale**, in Figure No. 4, 825D-D Gland Connector Layout.

825D-D Gland Connector Layout

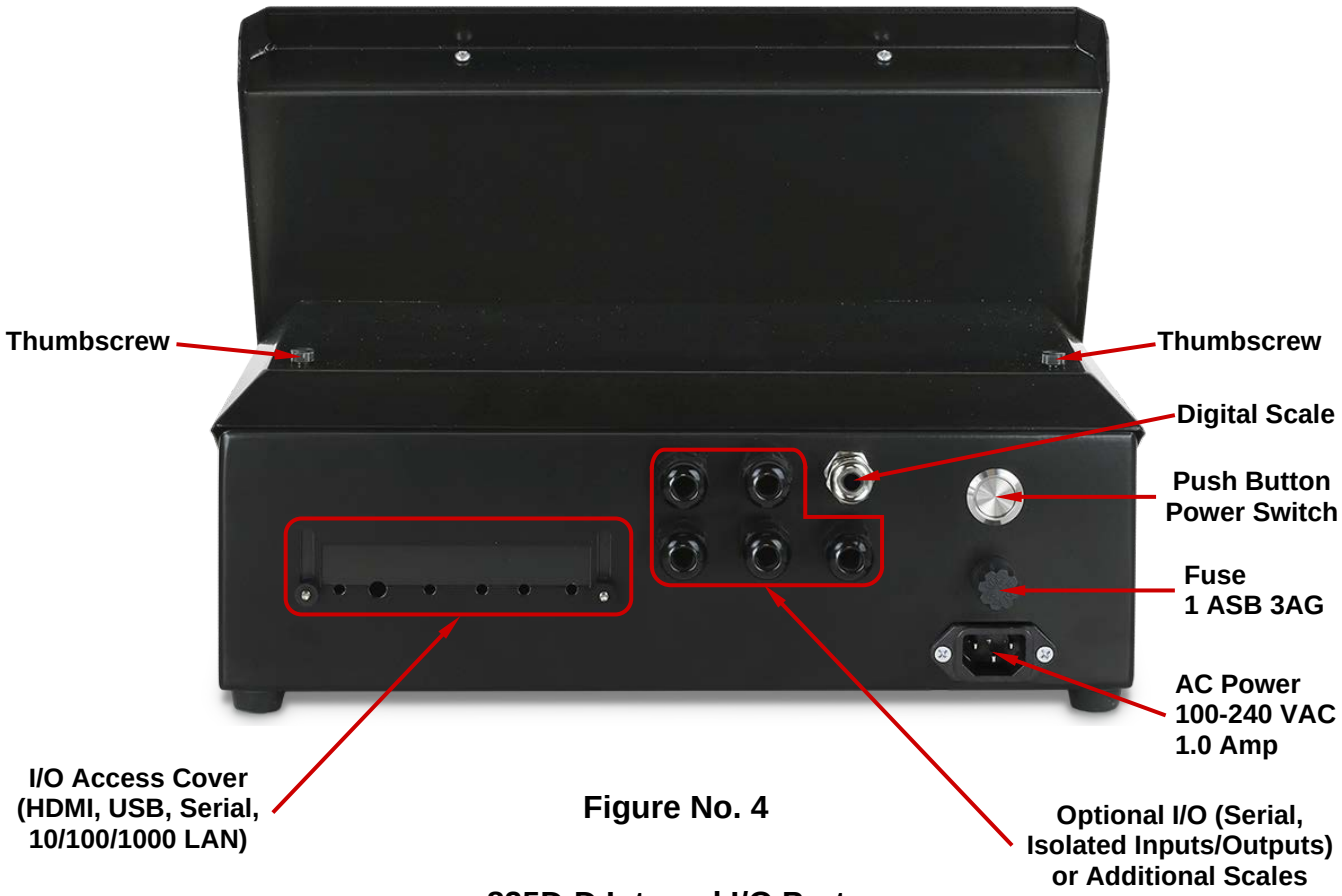


Figure No. 4

825D-D Internal I/O Ports

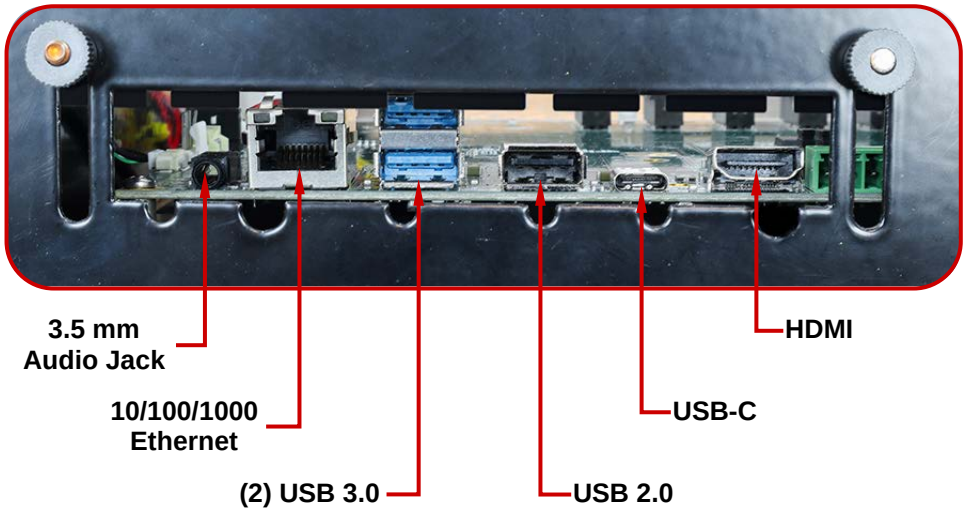


Figure No. 5

HOMERUN CABLE INSTALLATION, CONT.

POWER-DLC to 825D Indicator Connection, Cont.

825D-D Desktop Indicator, Cont.

ATTENTION! OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES!

1. Referring to Figure No. 4, remove the two (2) thumbscrews securing the hinged front display panel to the base enclosure. Next, referring to Figure No. 6, pull forward on the panel and then lower the front display panel until it is completely opened. See Figure No. 7.

Figure No.6

Figure No. 7

2. Loosen and remove the metal gland connector nut, and then remove the plastic insert.
3. Route the homerun cable from the INDICATOR terminal block in the POWER-DLC through the nut and plastic insert and into the enclosure.
4. Proceed to Step 5 on Page 15 to complete installing the homerun cable.

HOMERUN CABLE INSTALLATION, CONT.

POWER-DLC to 825D Indicator Connection, Cont.

825D-S Stainless Steel Indicator

The short section of Homerun Cable from the INDICATOR terminal block in the POWER-DLC should be routed through the metallic gland connector, identified as **Digital Scale**, in Figure No. 8, 825D-S Gland Connector Layout.

825D-S Gland Connector Layout

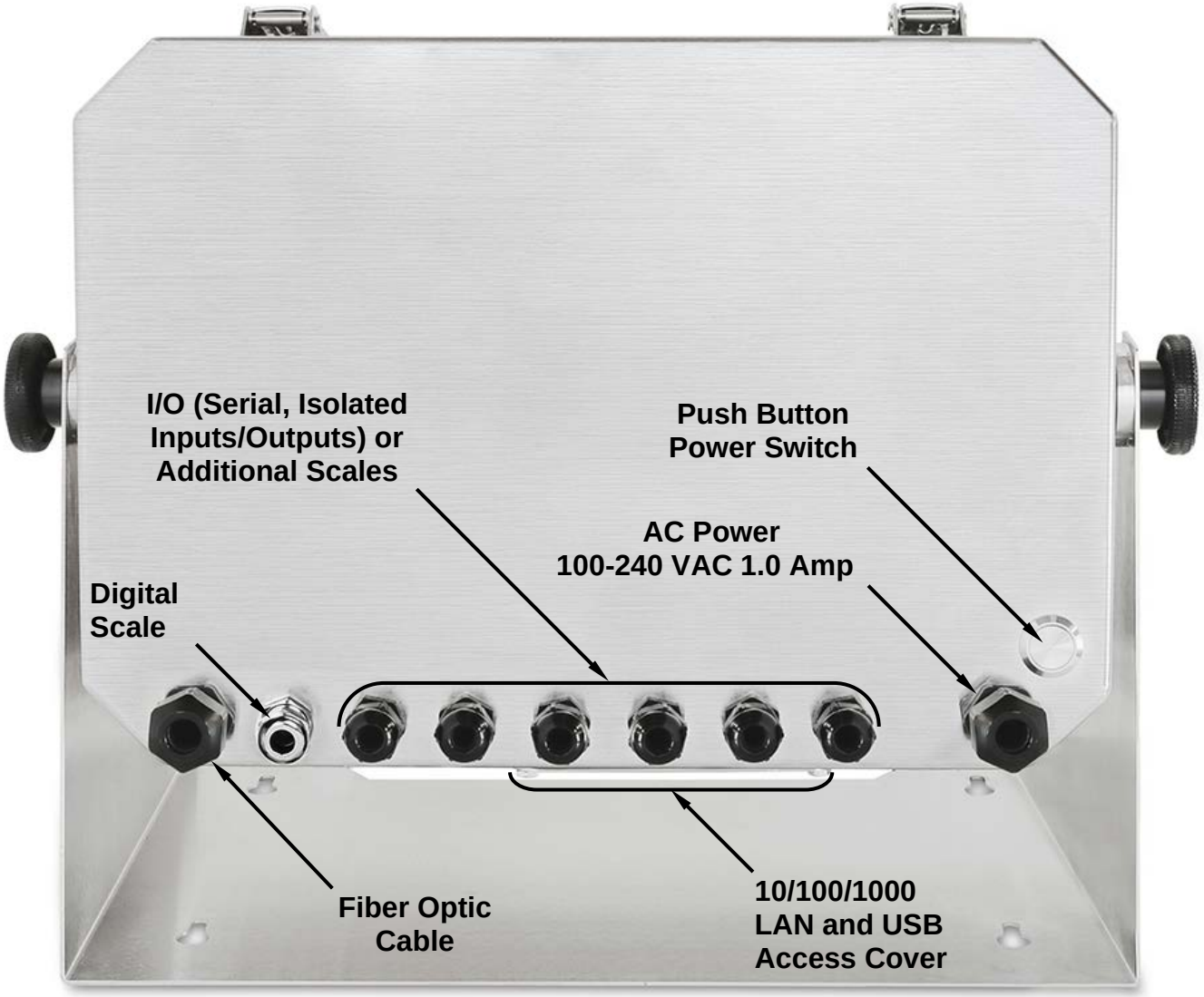


Figure No. 8

HOMERUN CABLE INSTALLATION, CONT.

POWER-DLC to 825D Indicator Connection, Cont.

825D-S Stainless Steel Indicator, Cont.

ATTENTION! OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES!

1. Referring to Figure No. 9, unsnap the four draw latches (two on top and two on bottom) securing the front display panel to the rear enclosure, and then lower the hinged front display panel. See Figure No. 10.

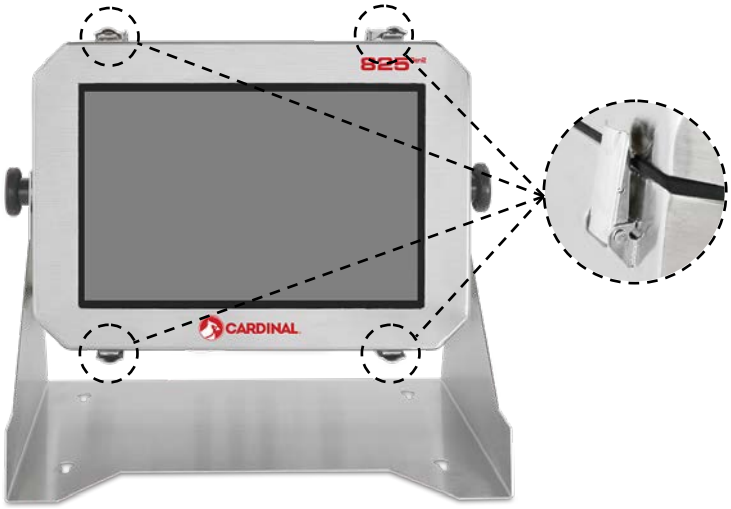


Figure No.9

Figure No. 10

2. Loosen and remove the metal gland connector nut, and then remove the plastic insert.
3. Route the homerun cable from the INDICATOR terminal block in the POWER-DLC through the nut and plastic insert and into the enclosure.
4. Proceed to Step 5 on Page 15 to complete installing the homerun cable.

HOMERUN CABLE INSTALLATION, CONT.

POWER-DLC to 825D Indicator Connection, Cont.

825D-NS No Screen Indicator

The short section of Homerun Cable from the INDICATOR terminal block in the POWER-DLC should be routed through the metallic gland connector, identified as **Digital Scale**, in Figure No. 11, 825D-NS Gland Connector Layout.

825D-NS Gland Connector Layout

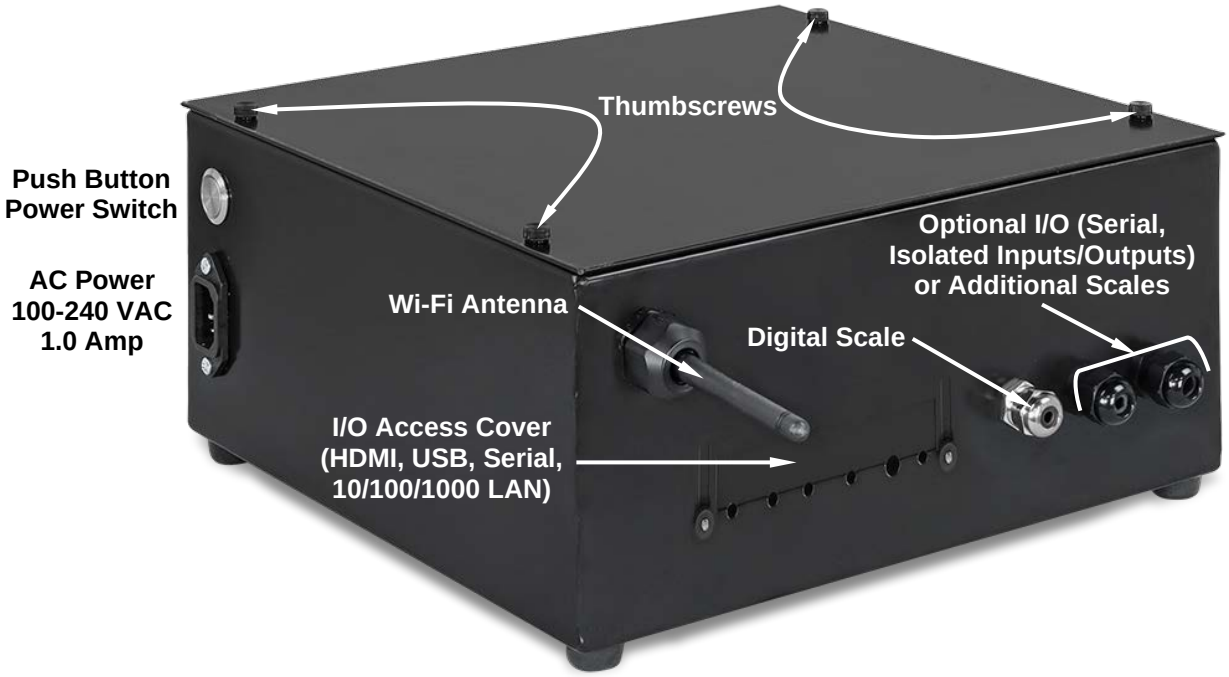


Figure No. 11

825D-NS Internal I/O Ports

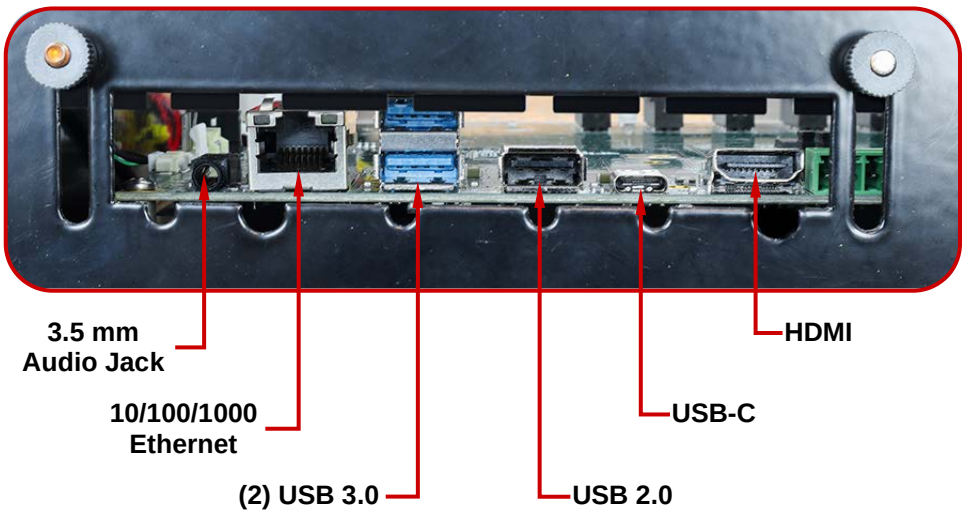


Figure No. 12

HOMERUN CABLE INSTALLATION, CONT.

POWER-DLC to 825D Indicator Connection, Cont.

825D-NS No Screen Indicator, Cont.

ATTENTION! OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES!

1. Referring to Figures No. 11 and 13, remove the four (4) thumbscrews securing the top plate to the base enclosure, and then remove the top plate, exposing the main PC board in the base enclosure. See Figure No. 14.

Figure No.13

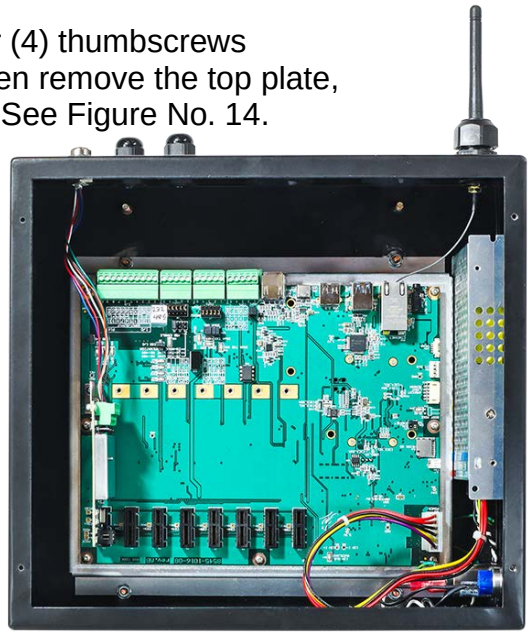


Figure No. 14

2. Loosen and remove the metal gland connector nut, and then remove the plastic insert.

3. Route the homerun cable from the INDICATOR terminal block in the POWER-DLC through the nut and plastic insert and into the enclosure.

4. Proceed to Step 5 on Page 15 to complete installing the homerun cable.

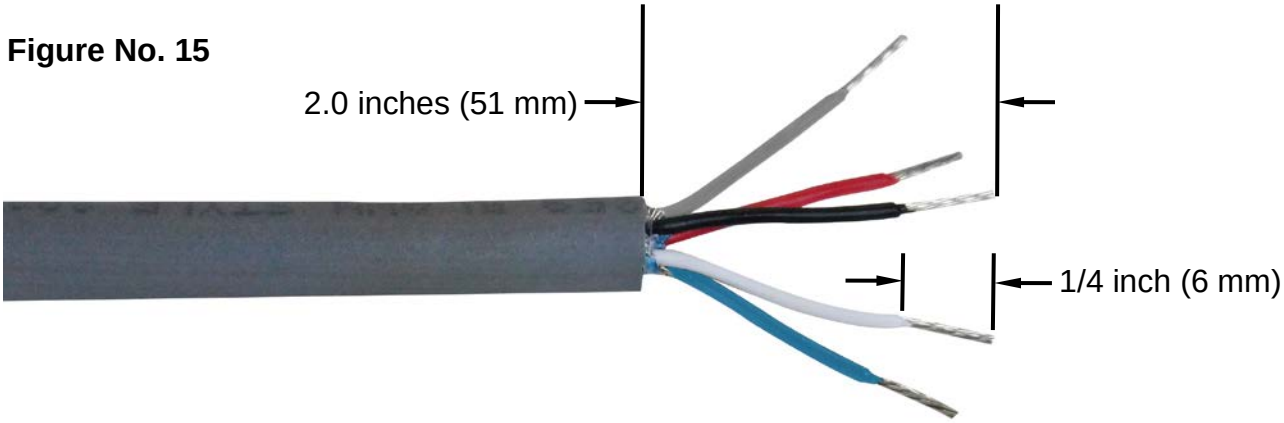
HOMERUN CABLE INSTALLATION, CONT.

POWER-DLC to 825D Indicator Connection, Cont.

5. With the homerun cable routed into the enclosure, referring to Figure No. 15, remove approximately 2.0 inches (51 mm) of the cables' outer jacket, exposing the internal wires.

6. Next, remove approximately 1/4 inch (6 mm) of insulation from each of the five wires.

Figure No. 15



7. Remove the screw securing the 825-DLC Controller to the 825D main PC board, and then lift the 825-DLC straight up to remove it from the enclosure.

8. Referring to the table below (or on the circuit board) for terminal connections, connect each wire to terminal block P1 on the 825-DLC Controller.

825-DLC Controller Card P1 Terminal Connections

Board Label	Homerun Cable Wire Color	Wire Color if using a Load Cell Cable
V-BUS	BLACK	BLUE
CAN L	BLUE or LIGHT BLUE	GRAY
SHIELD	GRAY	BROWN
CAN H	WHITE	BLACK
V+BUS	RED	WHITE

9. Referring to Figure No. 16, use a small flat-blade screwdriver to press down on the release for the terminal, insert the wire into the opening, and then remove the screwdriver. The release will return to its original position, locking the wire in place.

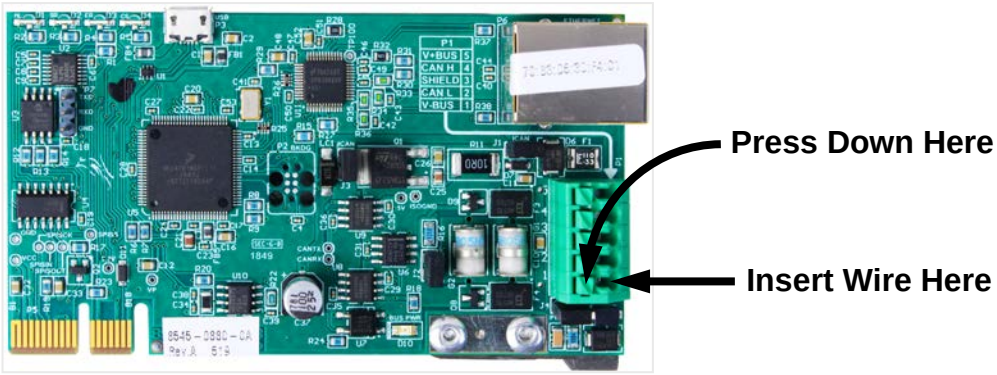


Figure No. 16

HOMERUN CABLE INSTALLATION, CONT.

POWER-DLC to 825D Indicator Connection, Cont.

10. Repeat steps 8 and 9 until all five wires of the homerun cable are installed in the P1 terminal block on the 825-DLC controller card.

11. After all terminations have been made, remove the excess homerun cable from the indicator enclosure.

12. Insert the plastic insert into the metal gland connector, and finger-tighten the metal gland connector nut and each of the black gland connectors.

13. Ensure any unused gland connectors are plugged, and any other excess cable has been removed from the indicator enclosure. Securely tighten each of the cable gland connectors.

- Do not overtighten the gland connectors, but make certain they are snug.

14. Completing the indicator homerun cable connection is dependent on the indicator model:

All models (825D-D, 825D-S, and 825D-NS):

Reinstall the 825-DLC into the enclosure and secure it to the main PC board with the screw removed earlier.

825D-D Desktop Indicator:

Close the hinged front display panel by lifting it until it is against the base enclosure, and then secure the front display panel to the base enclosure with the 2 thumbscrews removed earlier.

825D-S Stainless Steel Indicator:

Close the hinged front display panel by lifting it until it is against the rear enclosure. Next, place the catch of the draw latches over the latch hooks on the front panel (two on top and two on bottom) and then snap the latches in place, ensuring the front display panel is tightly closed against the rear enclosure.

825D-NS No Screen Indicator:

Place the top plate on the base enclosure and secure the top plate to the base enclosure with the four (4) thumbscrews removed earlier.

HOMERUN CABLE INSTALLATION, CONT.

POWER-DLC to Load Cell Connection

The main (longer) section of the Homerun Cable is connected to the first load cell in the loop (the Start Node) and the SCALE terminal block in POWER-DLC. It is made from five conductors, shielded PVC cable, and terminated with the *included* 5-pin actuation lever-type connector from the Homerun Cable Connector Pack. Refer to the table below for cable and connector information.

Cable and Connector Information Table

ITEM and DESCRIPTION	CARDINAL PART NO.
HOMERUN CABLE, 5 CONDUCTORS, SHIELDED PVC (CONTAINS 2 x 18AWG, 2 x 22AWG, AND 1 x 22AWG)	6980-1092
CONNECTOR PACK, HOME RUN CABLE (INCLUDES 5-PIN SPRING CAGE CONNECTOR, 6610-1258)	3502-0681-0A
RECOMMENDED HOMERUN CABLE BELDEN 5303FE, 18 AWG, 5 CONDUCTORS	SUPPLIED BY DEALER

IMPORTANT: Clean the load cell connectors and the homerun connector plug with electrical contact cleaner, and then apply dielectric grease to the homerun connector plug before installing it into the load cell connector.

1. Disassemble the connector (unscrew the black plastic part of the connector from the metal part), and then slide the black plastic part onto the homerun cable. See Figure No. 17.

Figure No. 17

2. With the homerun cable routed through the black plastic part of the connector, remove approximately 1 inch (25 mm) of the cable's outer jacket, exposing the internal wires.
3. Next, referring to Figure No. 18, remove approximately 5/16 inches (8 mm) of insulation from each of the five wires. ***NOTE:*** *The hex part of the black plastic cable clamp is approximately 5/16 inches (8 mm) and can be used as a guide for stripping the wires.*

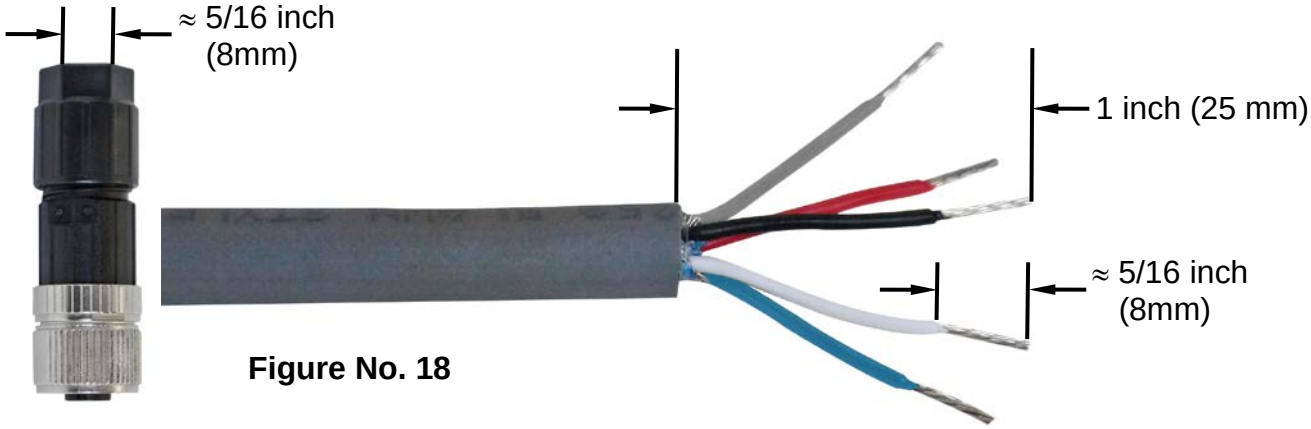


Figure No. 18

HOMERUN CABLE INSTALLATION, CONT.

POWER-DLC to Load Cell Connection, Cont.

IMPORTANT! Refer to the Homerun Connector Wiring Color Code Table below when performing steps 4 through 7.

Homerun Connector Wiring Color Code Table

Connector		Signal	Homerun Cable Wire Color	Wire Color if using a Load Cell Cable
Pin Number	Lever Color			
1	BROWN	SHLD	GRAY	BROWN
2	WHITE	V+BUS	RED	WHITE
3	BLUE	V-BUS	BLACK	BLUE
4	BLACK	CAN H	WHITE	BLACK
5	GRAY	CAN L	BLUE or LIGHT BLUE	GRAY

Refer to Figure No. 19 below when performing steps 4, 5, and 6.

4. Looking at the end of the metal part of the connector where the wires are inserted, use your fingernail and gently pull the wire clamp lever down away from the body of the connector.

5. Insert the wire into the appropriate connector opening, and then close the wire clamp lever.

6. Verify that the wire is being held securely in the connector by lightly pulling on the wire.

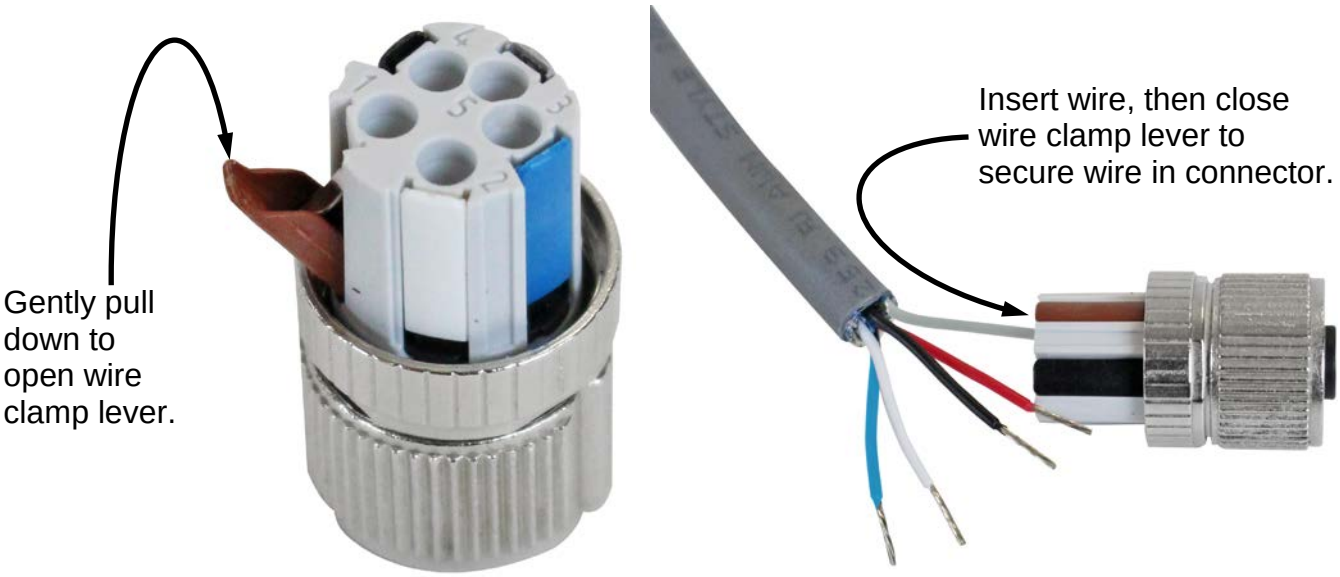


Figure No. 19

7. Repeat steps 4 through 6 until all five wires of the homerun cable are installed in the metal part of the connector.

HOMERUN CABLE INSTALLATION, CONT.

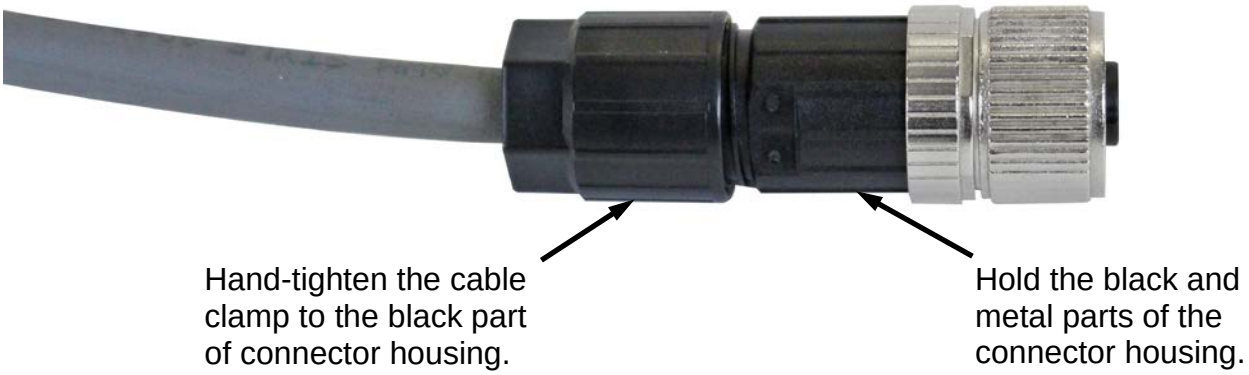
POWER-DLC to Load Cell Connection, Cont.

8. After all connections have been made, slide the black plastic and metal connector parts together, then hand-tighten to screw them together. See Figure No. 20.

Figure No. 20

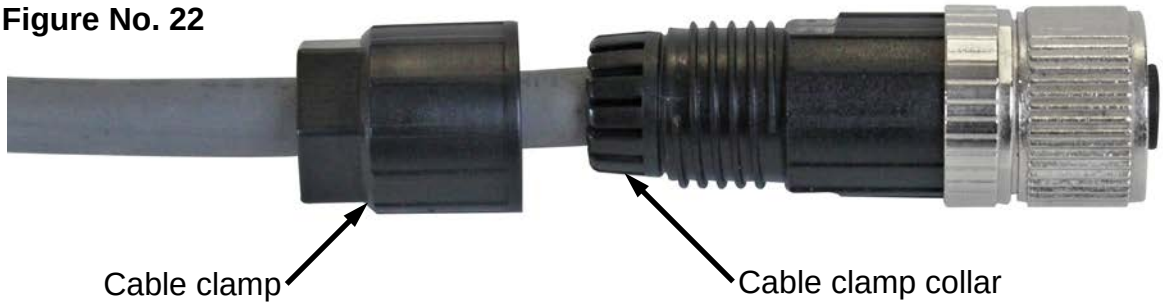
9. Referring to Figure No. 21, complete the assembly by holding both the black and metal parts of the connector housing, then hand-tightening the cable clamp to the black plastic part of the connector housing.

Figure No. 21



10. NOTE: The image in Figure No. 22 shows the cable clamp separated from the connector housing to illustrate the cable clamp collar.

Figure No. 22



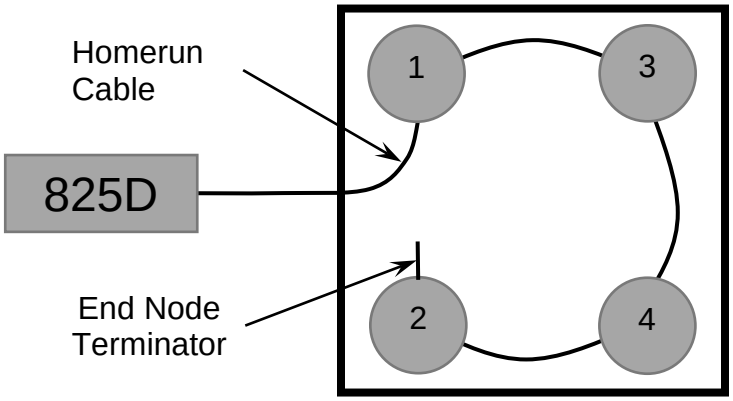
SETUP AND CONFIGURATION

All digital scales using Cardinal Scale's SCBD SmartCell® or DC digital load cells are connected with a daisy-chained CAN (Controller Area Network) cable. The load cell connection loop can begin at any load cell and may continue clockwise as shown or counter-clockwise if preferred. Note that in the tank/hopper example below (Figure No. 23), there is no connection between cells 1 and 2, and in the truck scale example (Figure No. 24), there is no connection between cells 4 and 6.

NOTE: Be sure to insert the end node termination plug on the load cell at the end of the loop, as shown in both examples.

Example: Typical Tank/Hopper Configuration

Figure No. 23



NOTE: If the loop were run in the other direction, the sequence would then be 2-4-3-1, with load cell 1 having the End Node Terminator installed on it.

Example: Typical Truck Scale Configuration

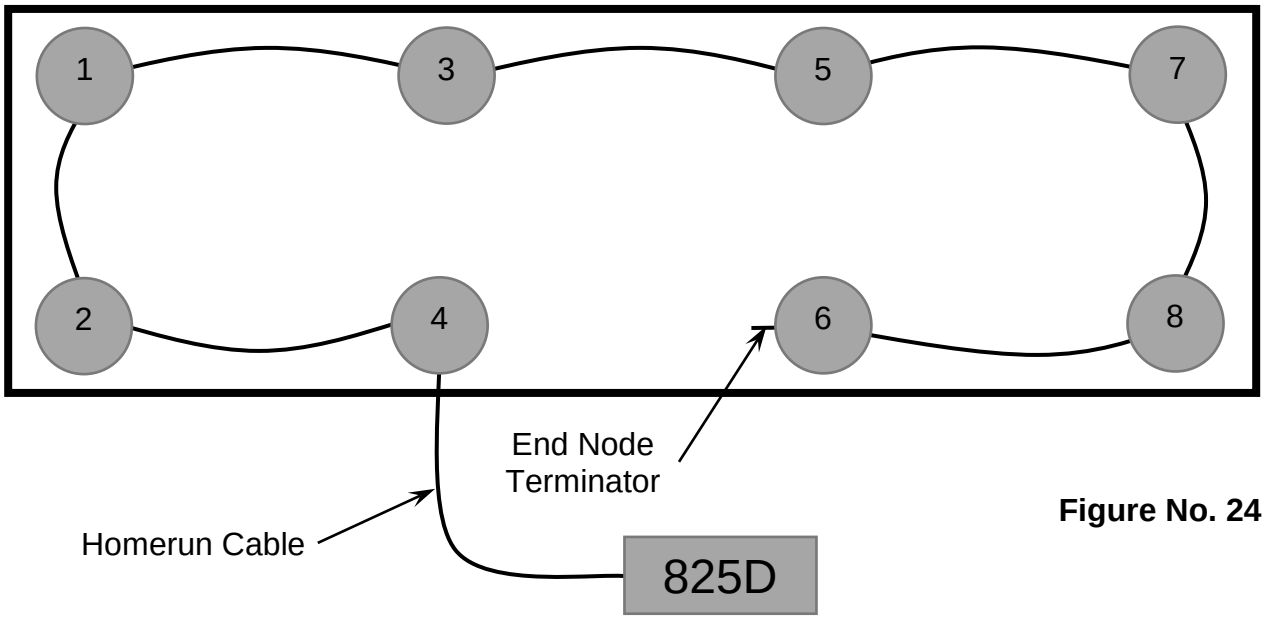


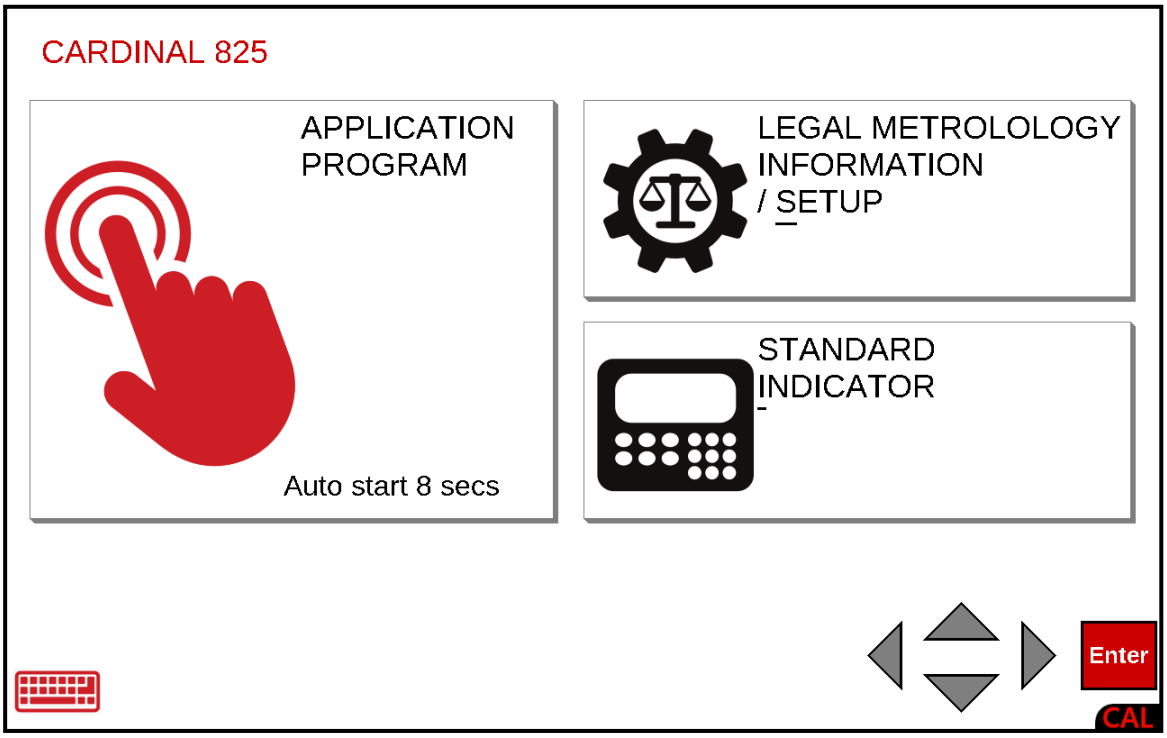
Figure No. 24

NOTE: If the loop were run in the other direction, the sequence would then be 6-8-7-5-3-1-2-4 with load cell 4 having the End Node Terminator installed on it.

SETUP AND CONFIGURATION

To Begin Setup and Configuration

1. Press the Push Button Power Switch on the rear enclosure of the 825 to turn it on. The display will perform a short self-test and then change to the **Start-Up** screen.



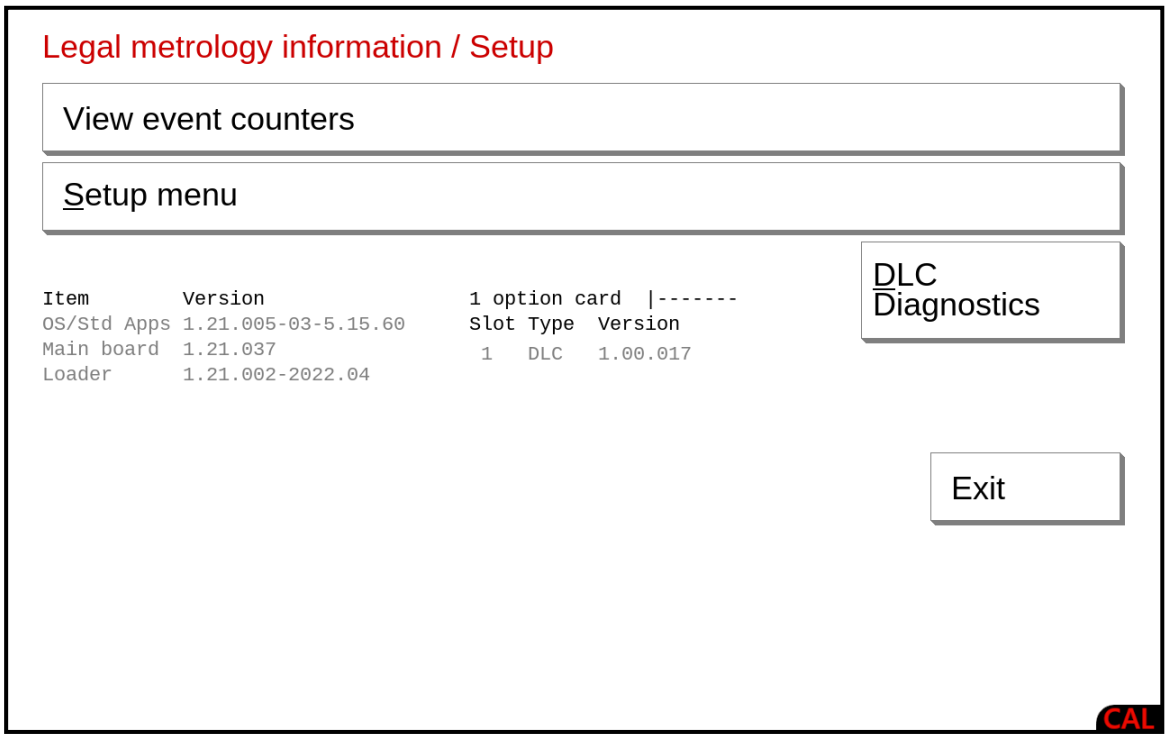
NOTE: When the 825 is initially started, an Auto-start countdown beginning at 8 seconds will appear on the APPLICATION PROGRAM selection. When the countdown is complete, the application program mode will automatically start.

2. With the **Start-Up** screen displayed, select the LEGAL METROLOGY INFORMATION / SETUP selection on the touchscreen or, if using a USB keyboard, press the **S** key to select LEGAL METROLOGY INFORMATION / SETUP or use the Navigation Keys ► Right Arrow to (highlight) the selection and press the **ENTER** key.

SETUP AND CONFIGURATION, CONT.

To Begin Setup and Configuration, Cont.

3. The display will change to show the **Legal metrology information / Setup** screen.



Note that the lower portion of this screen shows the software versions of the main PC board and option cards installed, as well as a representation of the slot the option card is installed in.

DLC Diagnostics

The **DLC Diagnostics** selection on the **Legal Metrology Information/Setup** screen provides a faster way to access the 825D diagnostic tools. It bypasses the login, password, and setup menu steps, allowing technicians to quickly view detailed information about each load cell.

Refer to the **DIGITAL SCALE DIAGNOSTICS**, **DLC Diagnostics** section of this manual for details about the available diagnostic tools.

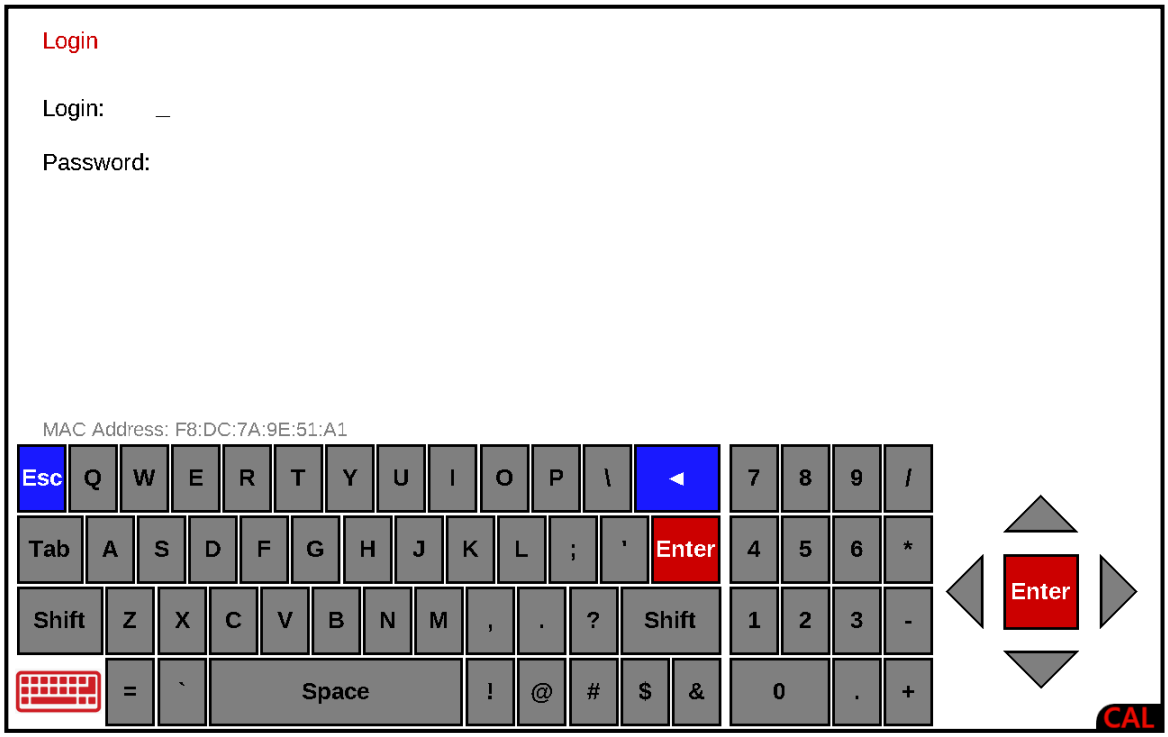
Exit

The **Exit** selection is used to return to the **Start-Up** screen.

SETUP AND CONFIGURATION, CONT.

Login

With the **Legal metrology information / Setup** screen displayed, select the Setup menu option, or if using a USB keyboard, press **S** to select the Setup menu option. The display will change to show the **Login** screen and prompt for the Login and Password.



With the **Login** screen and prompt displayed, use the onscreen QWERTY keyboard to enter the login and press the ▼ Down Arrow to advance to the password prompt.

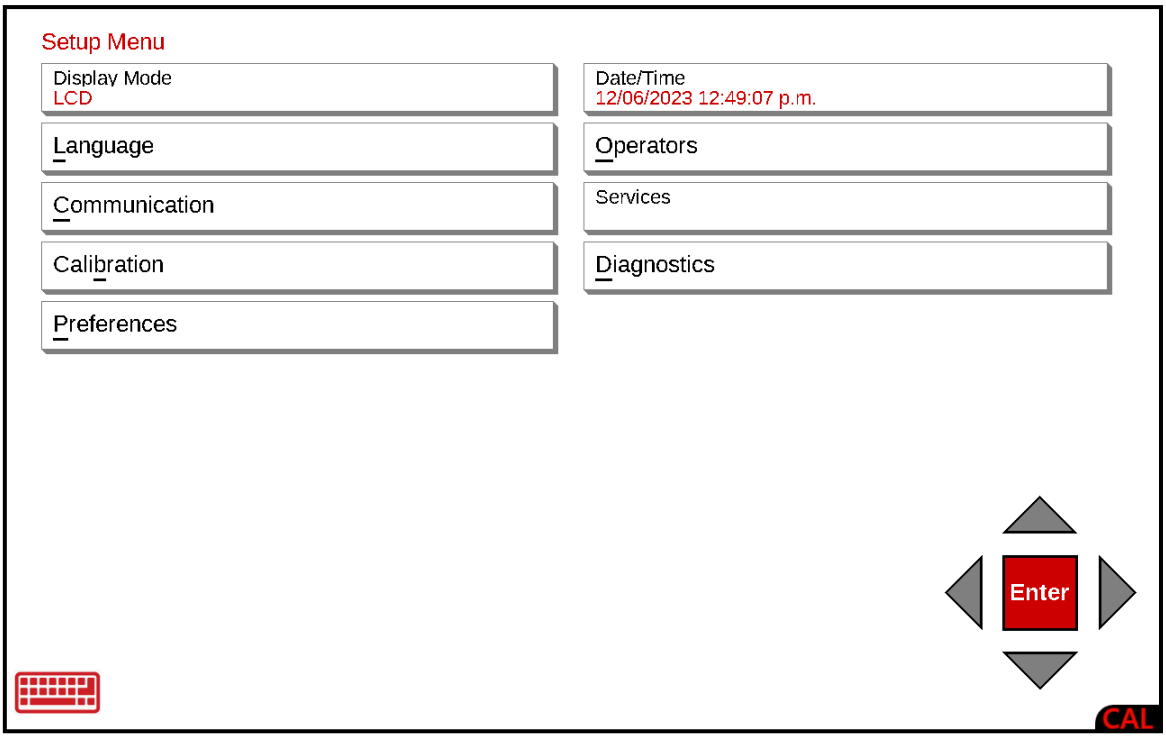
Enter the password using the onscreen numeric keys and press the **ENTER** key to proceed with Setup and Configuration.

NOTE: The 825 will arrive from the factory with the calibration access locked by the "login" and "password" prompts protection. The factory default login and password are "ADMIN" and "81440".

SETUP AND CONFIGURATION, CONT.

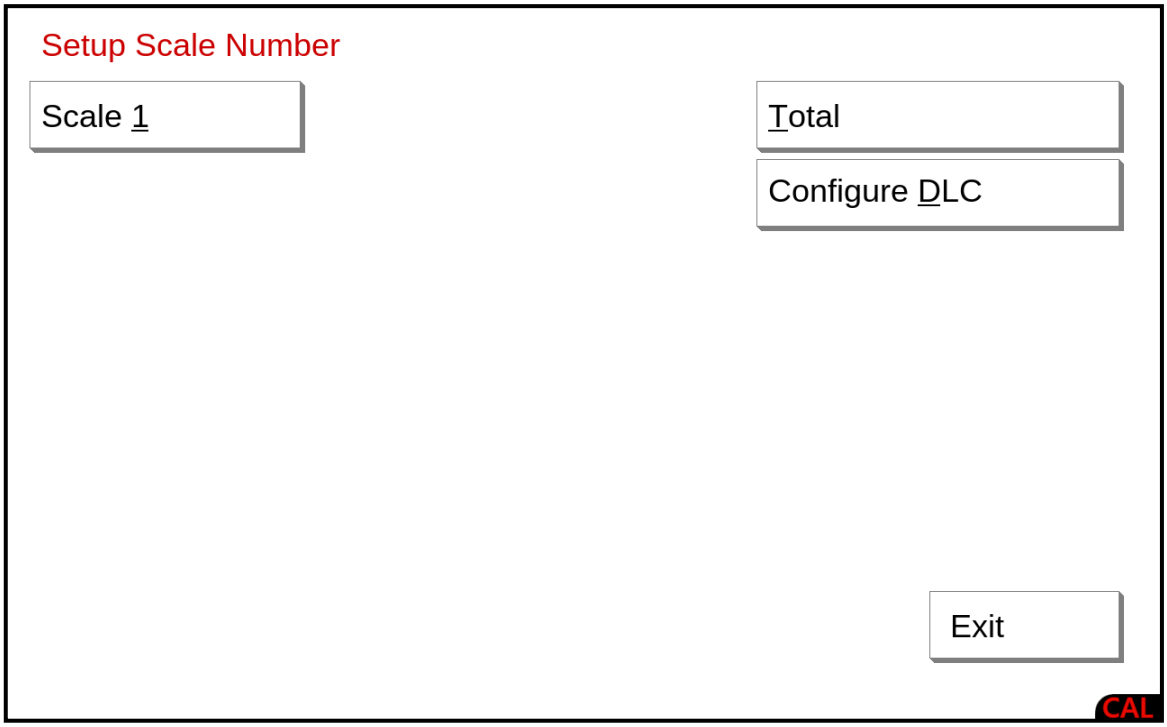
Setup Menu

After logging in, the display will change to the **Setup Menu** screen.



Calibration

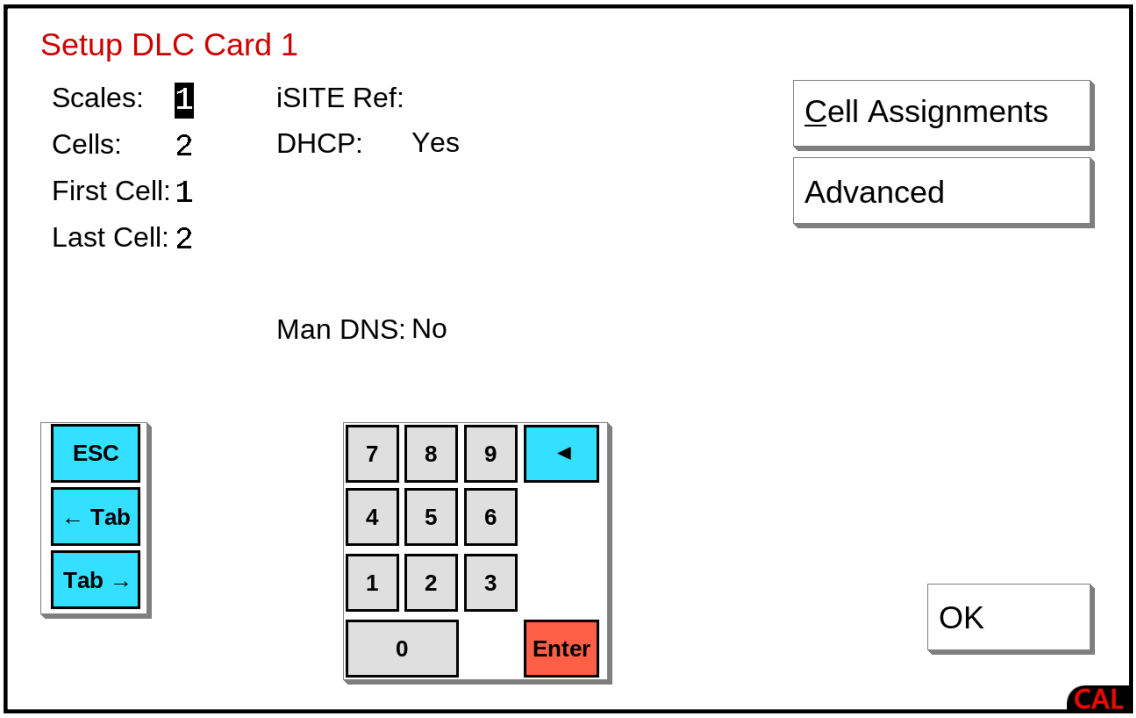
With the **Setup Menu** screen displayed, select the Calibration menu option, or if using a USB keyboard, press **b** to select Calibration. The display will change to show the **Setup Scale Number** screen.



SETUP AND CONFIGURATION, CONT.

Setup Scale Number

With the **Setup Scale Number** screen displayed, select the Configure DLC menu option, or if using a USB keyboard, press **D** to select Configure DLC. The display will change to show the **Setup DLC Card1** screen.



Setup DLC Card 1

With the **Setup DLC Card 1** screen displayed, select the parameter to change, and then use the numeric keys to enter the desired value. Press the **ENTER** key to save the setting and proceed to the next parameter.

Scales: – Set the number of scales.

Cells: – Set the total number of cells.

First Cell: – Set the cell number that is connected to the 825D indicator.

Last Cell: – Set the cell number of the end of the chain of load cells.

iSITE Ref: – Set Sales Order or another identifier for communications link to iSite cloud.

DHCP: – Set to **Yes** for automatic configuration of the DLC card Ethernet parameters from a DHCP server.

Set to **No** for manual configuration.

If **DHCP:** = **No**, the following prompts will be visible:

IP: – Set the IP address.

Netmask: – Set the netmask.

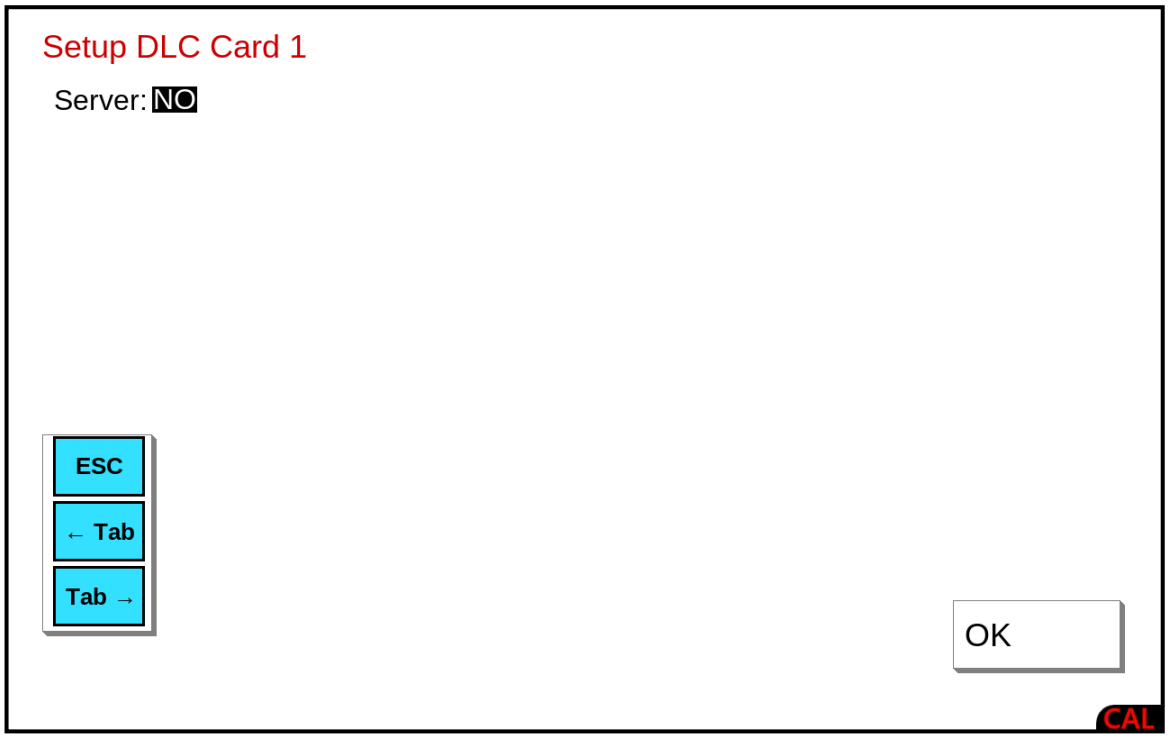
Gateway: – Set the network gateway setting.

Man DNS: – Set to **No** to manually input domain server addresses.

SETUP AND CONFIGURATION, CONT.

Setup DLC Card 1 – Advanced Screen

With the **Setup DLC Card 1** screen displayed, select the Advanced menu option. The display will change to the **Setup DLC Card1** screen with the **Server:** parameter shown.



With the **Server:** parameter displayed, select it to toggle the displayed value.

Server – Set to **No**. This is the default setting for the Server parameter.

Set to **Yes** to perform diagnostic server function (similar to old-style iSite).

If **Server** is set to **Yes**, the **Port:** parameter will be shown.

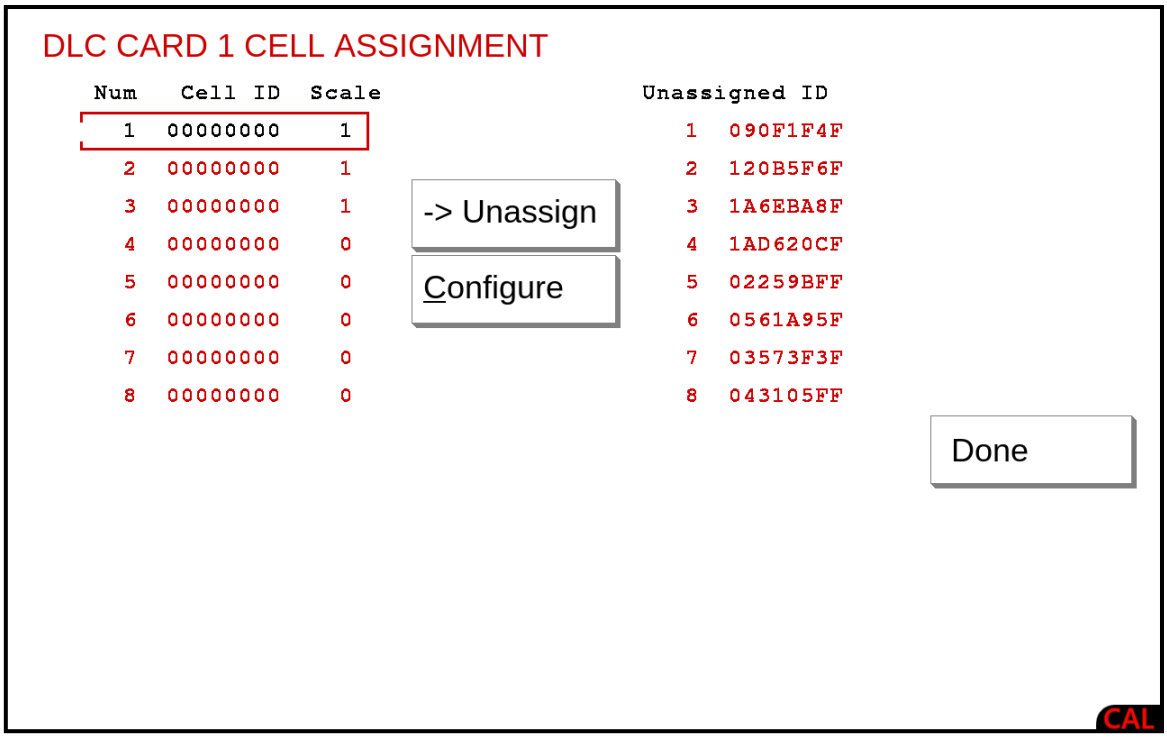
Press **Port:** and then use the numeric keys to enter the **Port:** address. *Note that the Port: parameter defaults to 10001*.

Press **OK** to save any changes and return to the **Setup DLC Card 1** screen.

SETUP AND CONFIGURATION, CONT.

DLC Card 1 Cell Assignment

With the **Setup DLC Card 1** screen displayed, press the Cell Assignments menu option, or if using a USB keyboard, press **C** to proceed to the cell assignments. The display will change to the **DLC CARD 1 CELL ASSIGNMENT** screen.



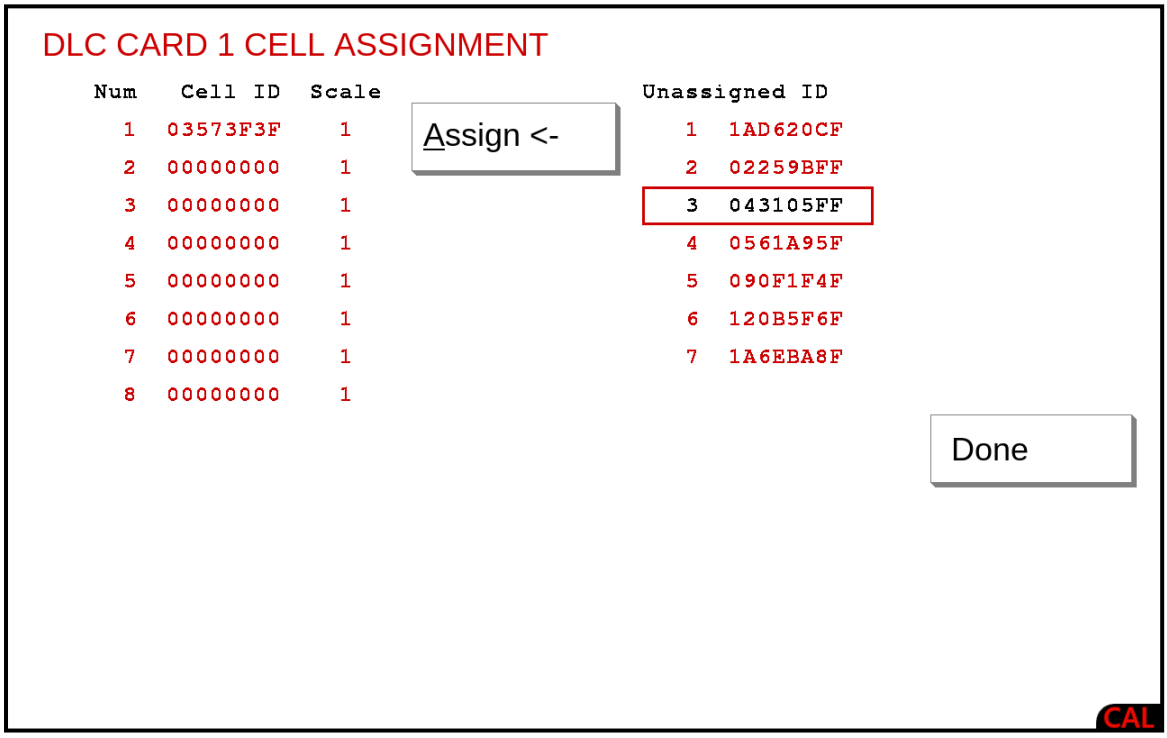
The column on the left side of the screen shows any existing programmed Cell IDs and the scale number assigned for each cell.

Cells that are detected on the bus that are not assigned will show in the right column under the **Unassigned ID** heading.

SETUP AND CONFIGURATION, CONT.

Assign Cell

With the **DLC CARD 1 CELL ASSIGNMENT** screen displayed, select the cell to assign from the **Unassigned ID** column (right side) and then press the **Assign <-** key to move the cell ID to the first available unassigned cell number. The cell ID will then appear on the assigned list column (left side) in the first position.



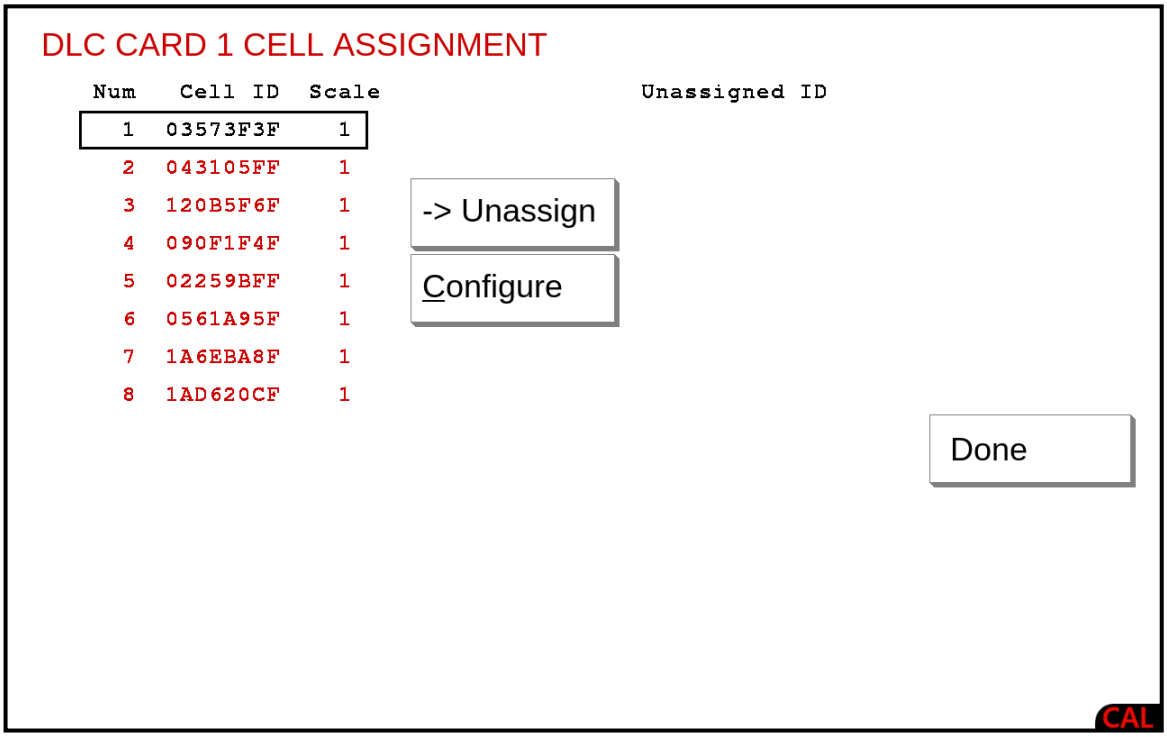
Select the next cell ID to assign from the **Unassigned ID** column (right side) and then press the **Assign <-** key to move the cell ID to the next available unassigned cell number. The cell ID will then appear on the assigned list column (left side) in the second position.

SETUP AND CONFIGURATION, CONT.

DLC Card 1 Cell Assignment, Cont.

Assign Cell, Cont.

Continue selecting the cell IDs to assign from the **Unassigned ID** column (right side) and pressing the **Assign <-** key to move each cell ID to the next available unassigned cell number. Repeat this process until all unassigned cell IDs are assigned and appear on the assigned list column (left side).



Press **Done** to save the cell assignments and return to the **Setup DLC Card 1** screen.

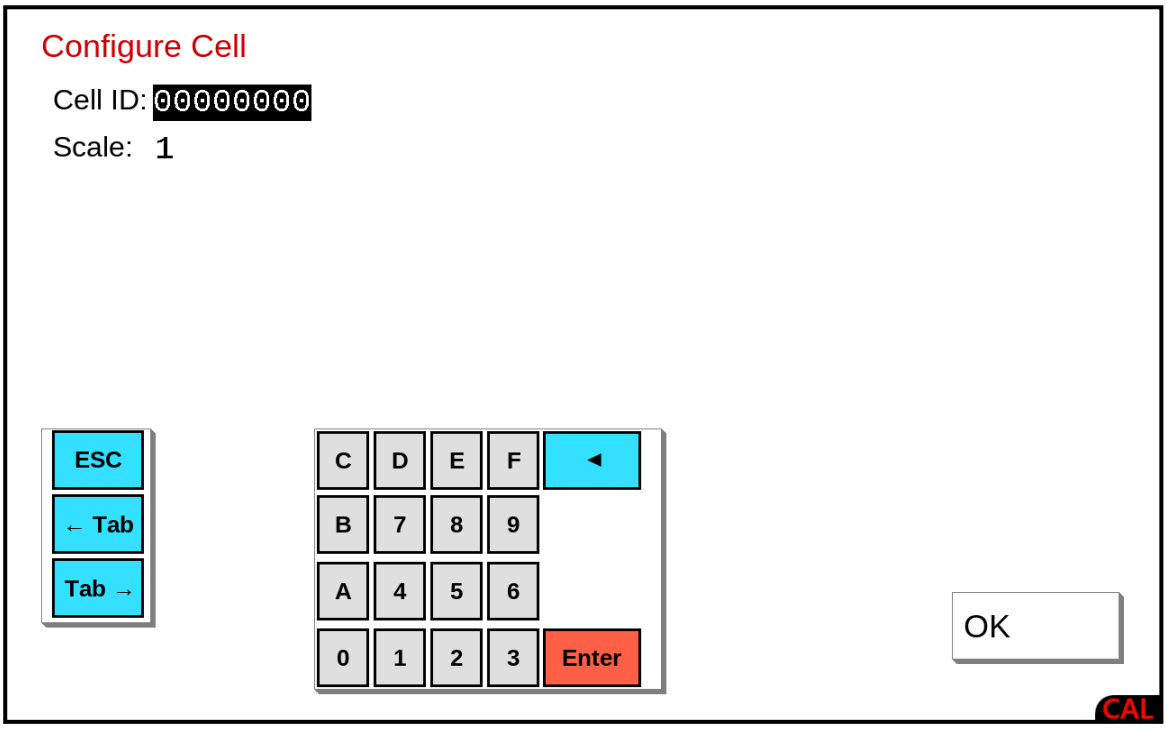
SETUP AND CONFIGURATION, CONT.

DLC Card 1 Cell Assignment, Cont.

Manually Assign (or Modify) Cell ID/Scale Number

Cell IDs and the scales associated with them can be manually entered or modified in the assigned list as needed. This allows updating or correcting both the cell ID and its corresponding scale.

With the **DLC CARD 1 CELL ASSIGNMENT** screen displayed, select the cell number to manually enter or modify, and then press the **Configure** menu option, or if using a USB keyboard, press **C** to proceed. The display will change to the **Configure Cell** screen.



Cell ID:
With the **Configure Cell** screen displayed, the current setting will be shown. If the setting displayed is acceptable, proceed to the **Scale:** parameter.

Otherwise, use the onscreen hexadecimal keys to enter the cell ID and press the **ENTER** key to save the setting and proceed to the **Scale:** parameter.

Scale:
With the **Configure Cell** screen displayed, the current setting will be shown. If the setting displayed is acceptable, press **OK** to return to the **DLC CARD 1 ASSIGNMENT** screen.

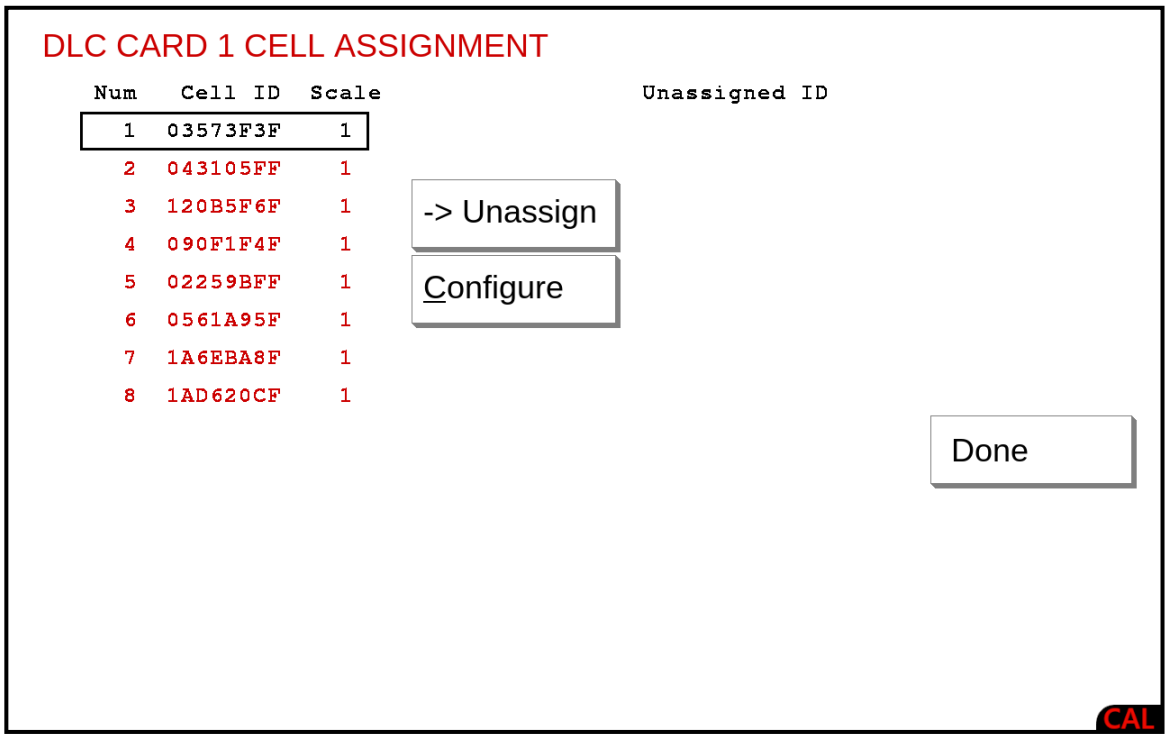
Otherwise, use the onscreen numeric keys to enter the Scale: number, and press the **ENTER** key to save the setting. Press **OK** to return to the **DLC CARD 1 ASSIGNMENT** screen.

NOTE: If the DLC configuration changes have changed the number of scales in the 825D, the power should be turned off, and then, after a brief delay, turned back on.

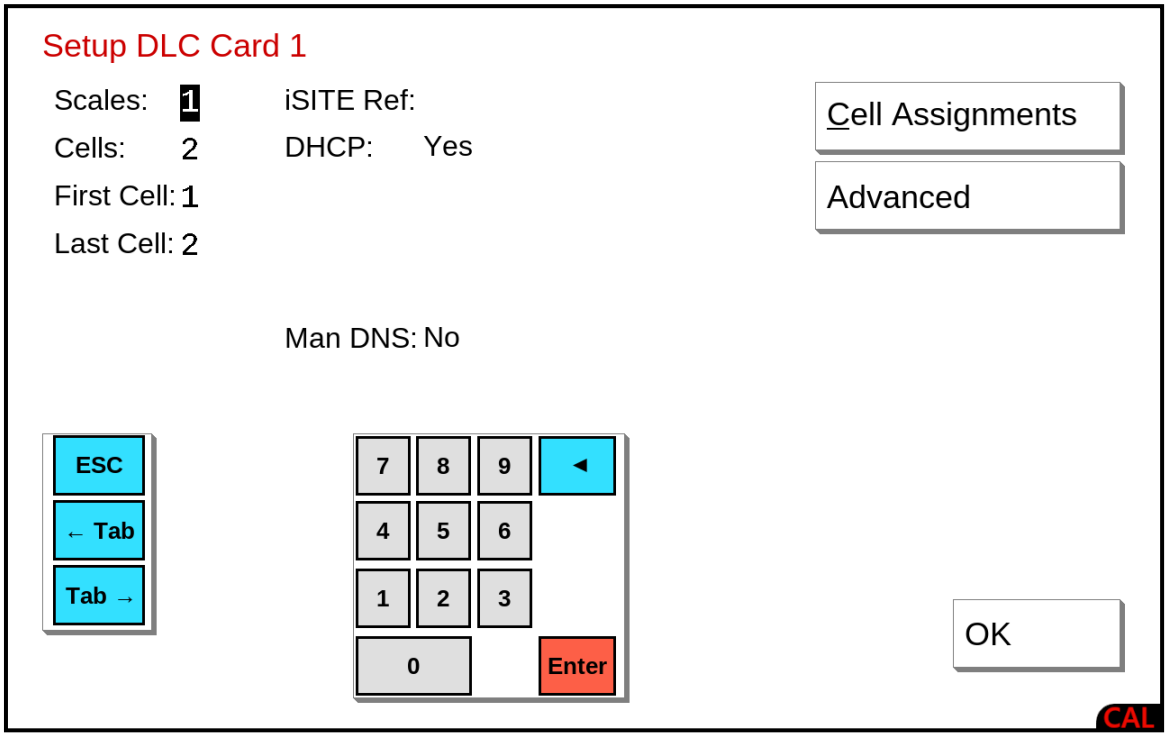
SETUP AND CONFIGURATION, CONT.

DLC Card 1 Cell Assignment Complete

With the **DLC CARD 1 CELL ASSIGNMENT** screen displayed, press **Done** to return to the **Setup DLC Card 1** screen.



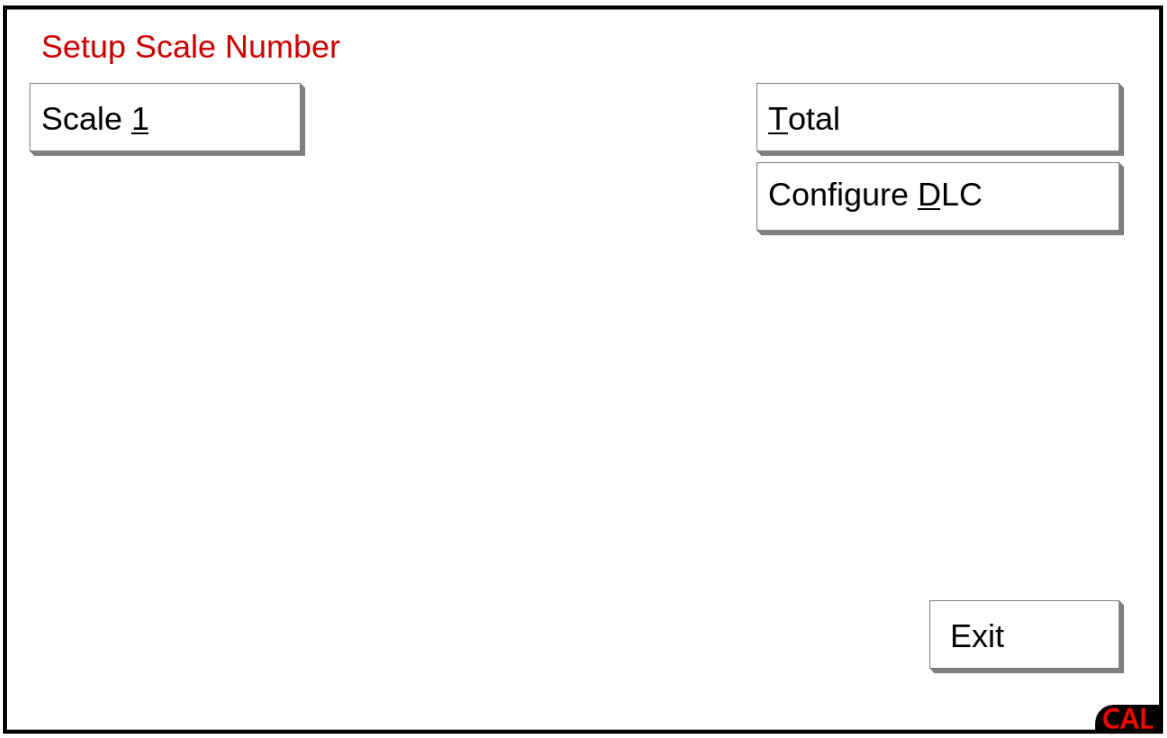
With the **Setup DLC Card 1** screen displayed, press **OK** to return to the **Setup Scale Number** screen.



SETUP AND CONFIGURATION, CONT.

DLC Card 1 Cell Assignment Complete, Cont.

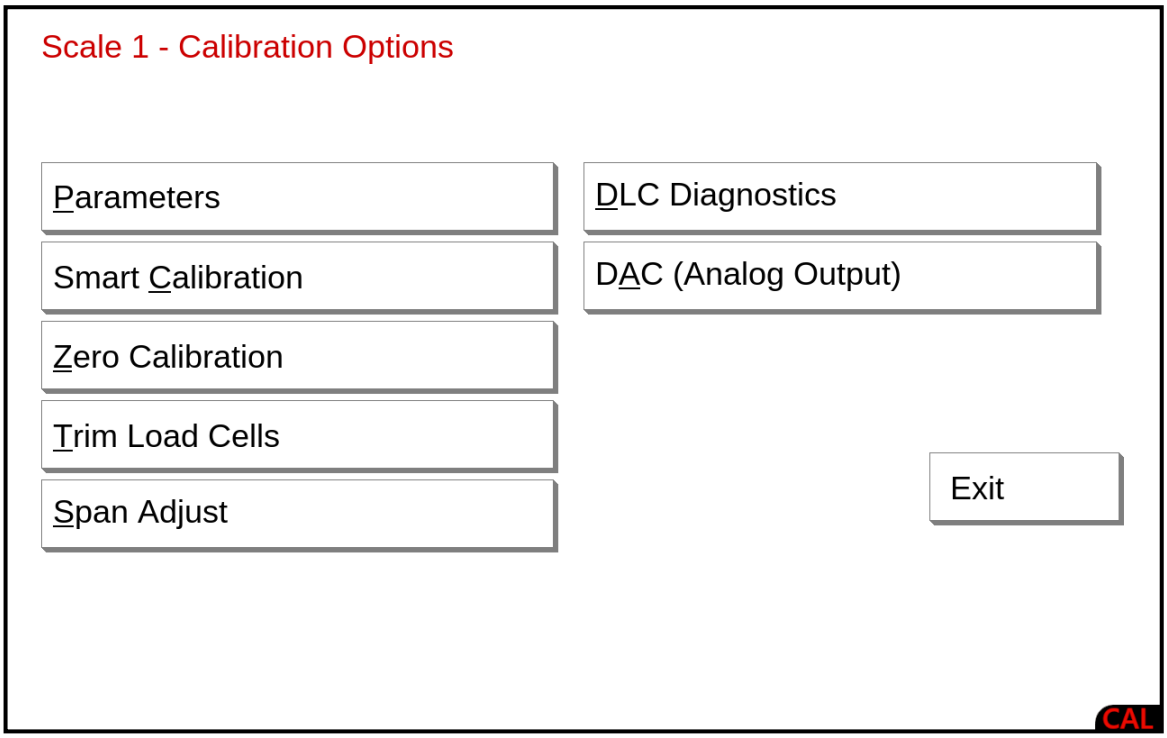
With the **Setup Scale Number** screen displayed, press **Scale 1** or, if using a USB keyboard, press **1** to proceed to the **Scale 1 – Calibration Options**.



SETUP AND CONFIGURATION, CONT.

Smart Calibration

With the **Scale 1 – Calibration Options** screen displayed, press **Smart Calibration** or, if using a USB keyboard, press **C**. The display will change to the **Scale 1 – Smart Calibration** screen.



SETUP AND CONFIGURATION, CONT.

Smart Calibration

IMPORTANT! For scales with more than four load cells and an even total number of load cells (such as an eight-cell scale), the calibration pattern is:

- Odd-numbered load cells in ascending order
- Then, the even-numbered load cells in descending order

This pattern facilitates easier movement of the weight cart.

Example (8-cell scale):

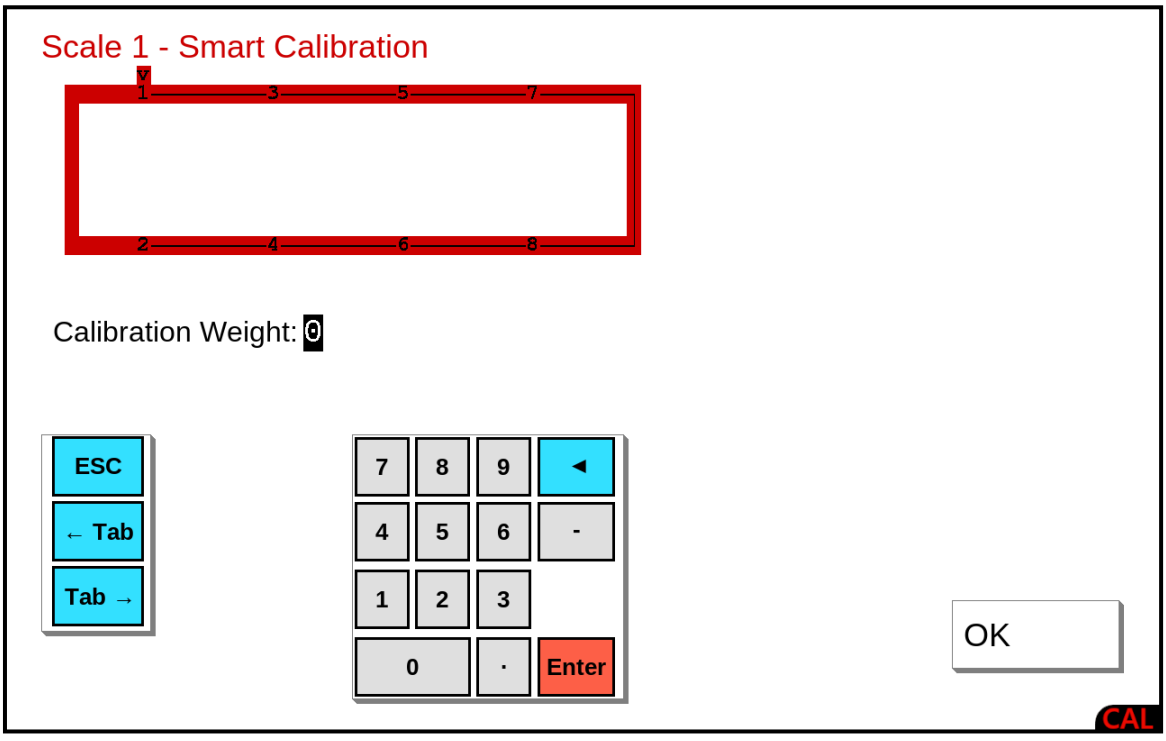
1, 3, 5, 7, 8, 6, 4, 2

When a scale has four load cells or fewer (such as a tank scale), the calibration pattern will be sequential.

1, 2, 3, 4

With the **Scale 1 – Smart Calibration** screen displayed, the prompt to enter the value of the Calibration Weight (test weight) will be shown.

Use the onscreen numeric keys to enter the value of the Calibration Weight (test weight) to be used for calibration, and then press **OK**.

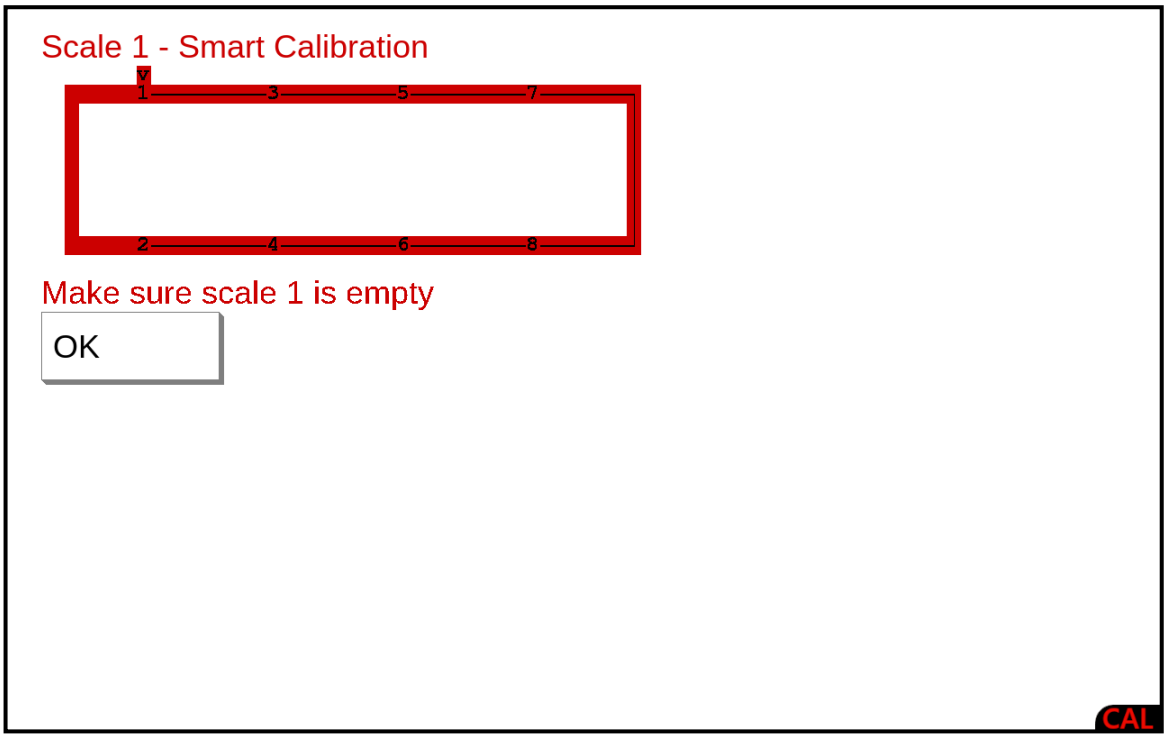


The 825D display will change to prompt you to confirm that the scale is empty.

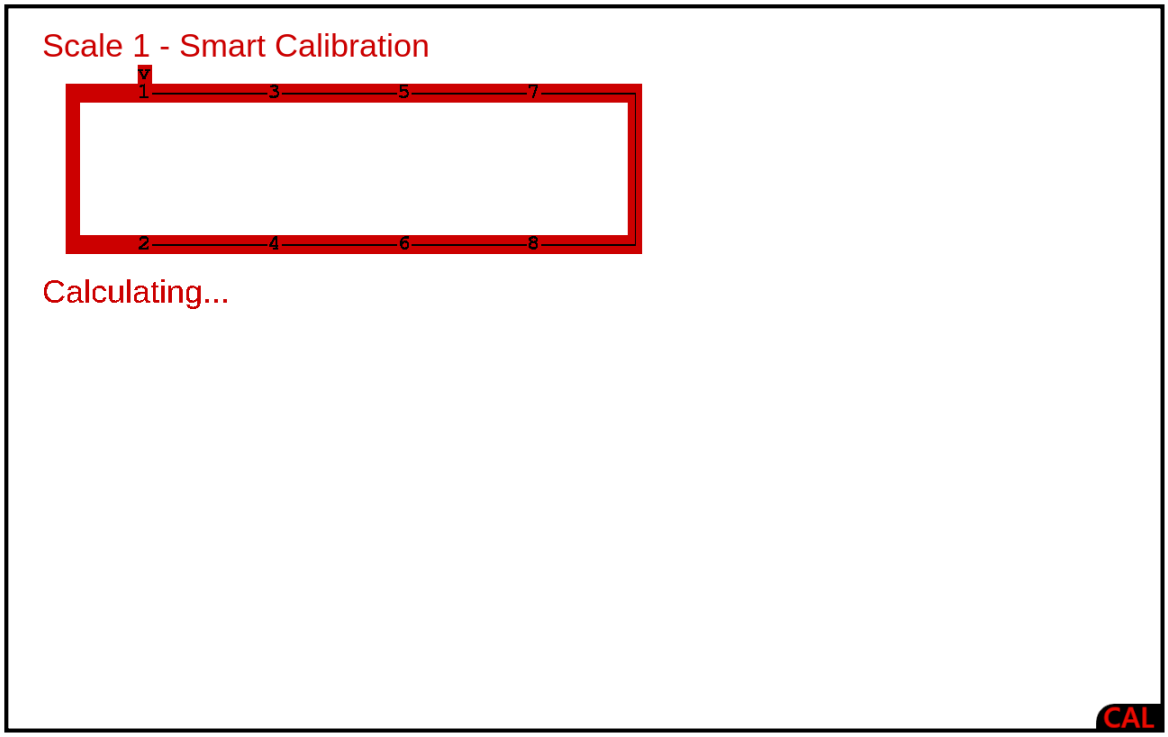
SETUP AND CONFIGURATION, CONT.

Smart Calibration, Cont.

Make sure the scale is empty, then press **OK**. This will capture the calibrated dead load weight (empty weight) of the scale.



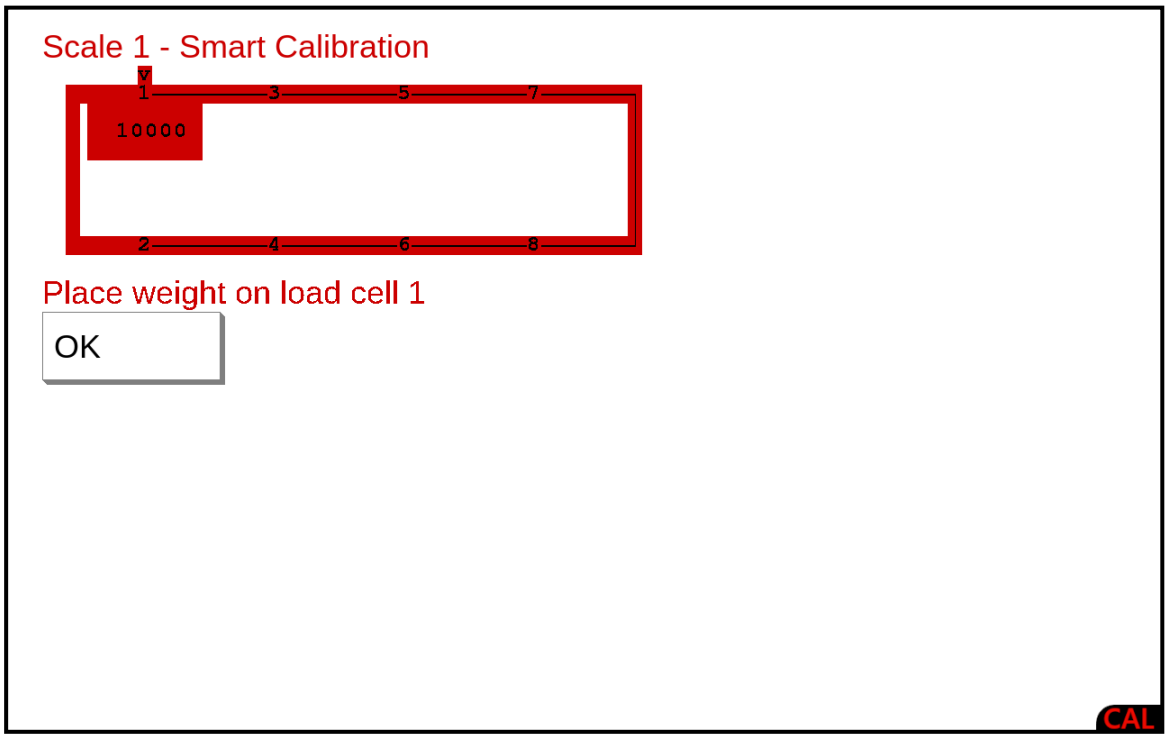
The 825D display will change to indicate that it is calculating the dead load (empty weight) and then prompt you to place a weight on Load Cell 1.



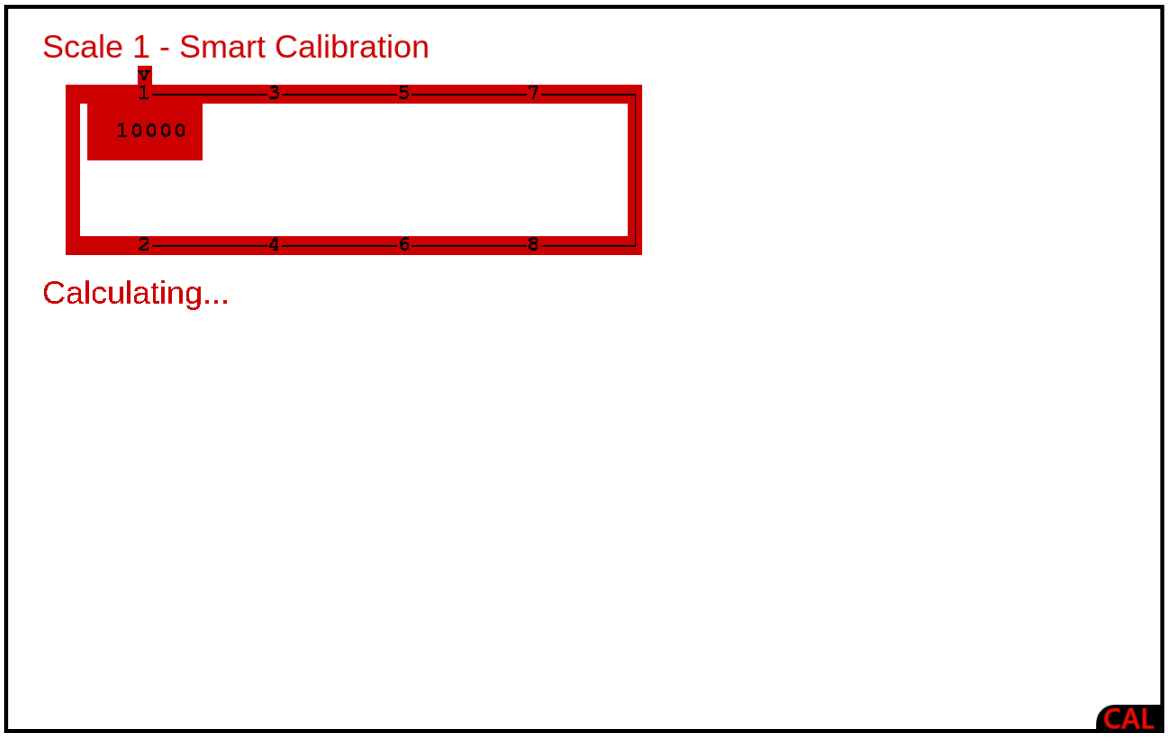
SETUP AND CONFIGURATION, CONT.

Smart Calibration, Cont.

Center the weight on load cell 1 and press **OK**.



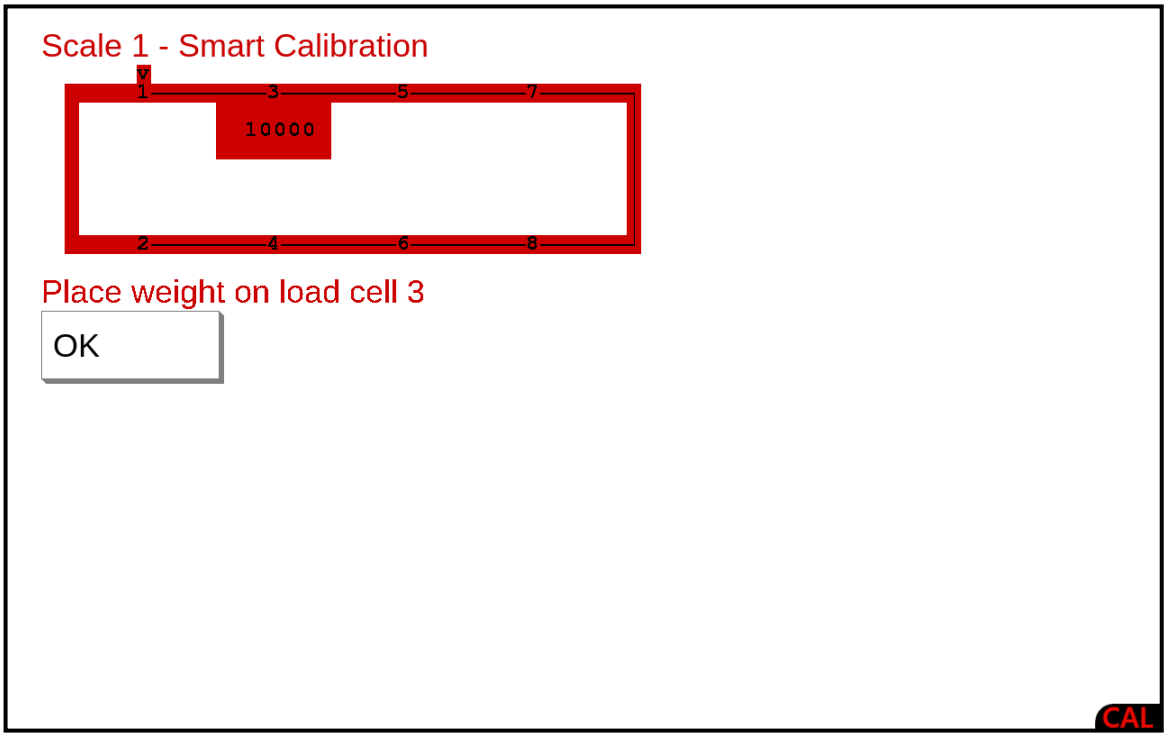
The display will change to indicate it is calculating the weight on load cell 1 and then prompt to place the weight over load cell 3.



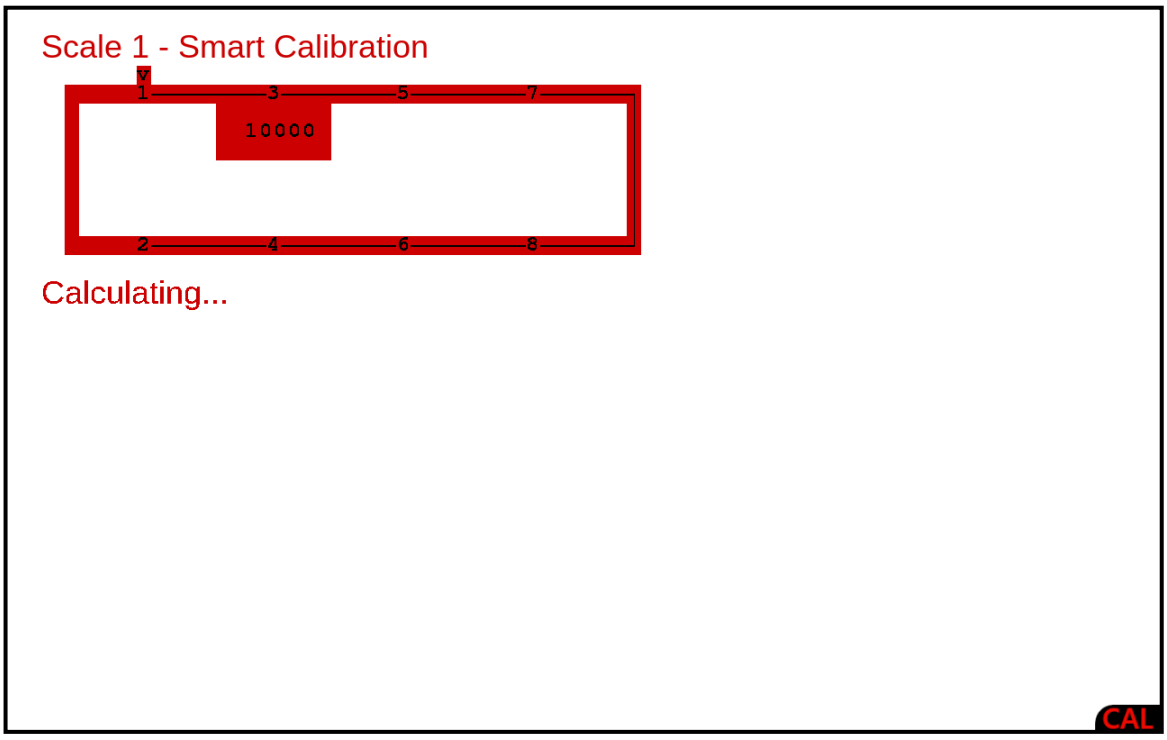
SETUP AND CONFIGURATION, CONT.

Smart Calibration, Cont.

Move the test weight and center it on load cell 3, and press **OK**.



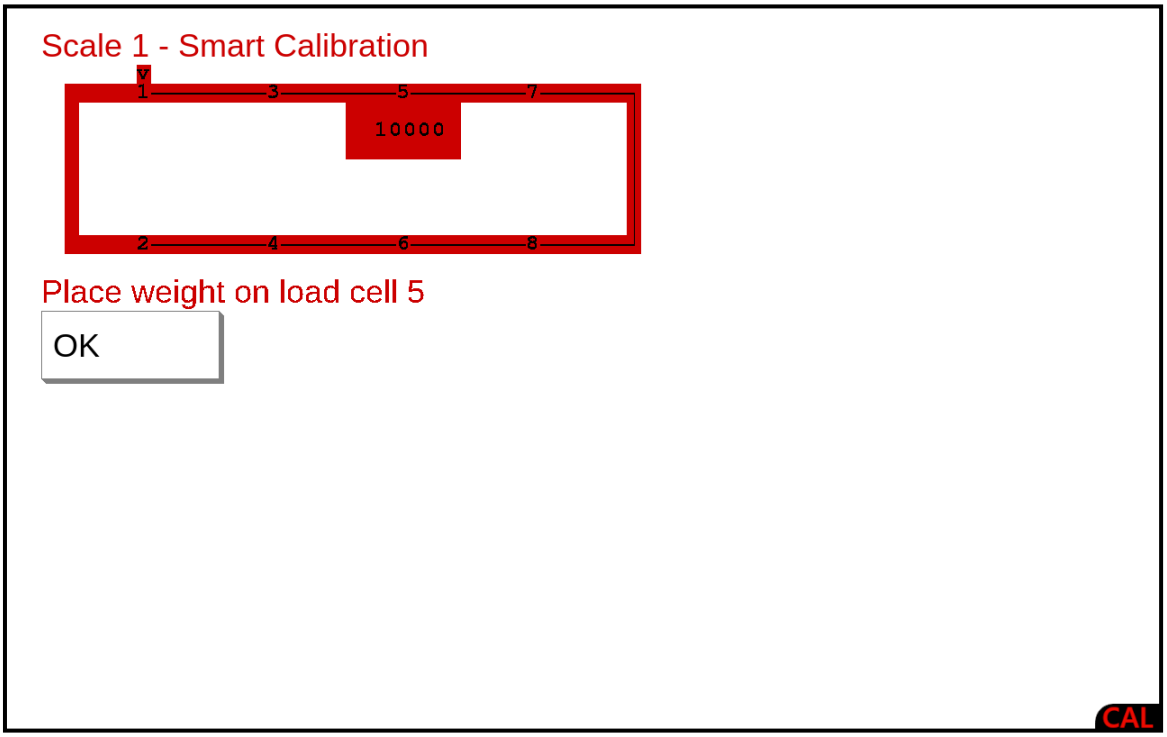
The display will change to indicate it is calculating the weight on load cell 3 and then prompt to place the weight over load cell 5.



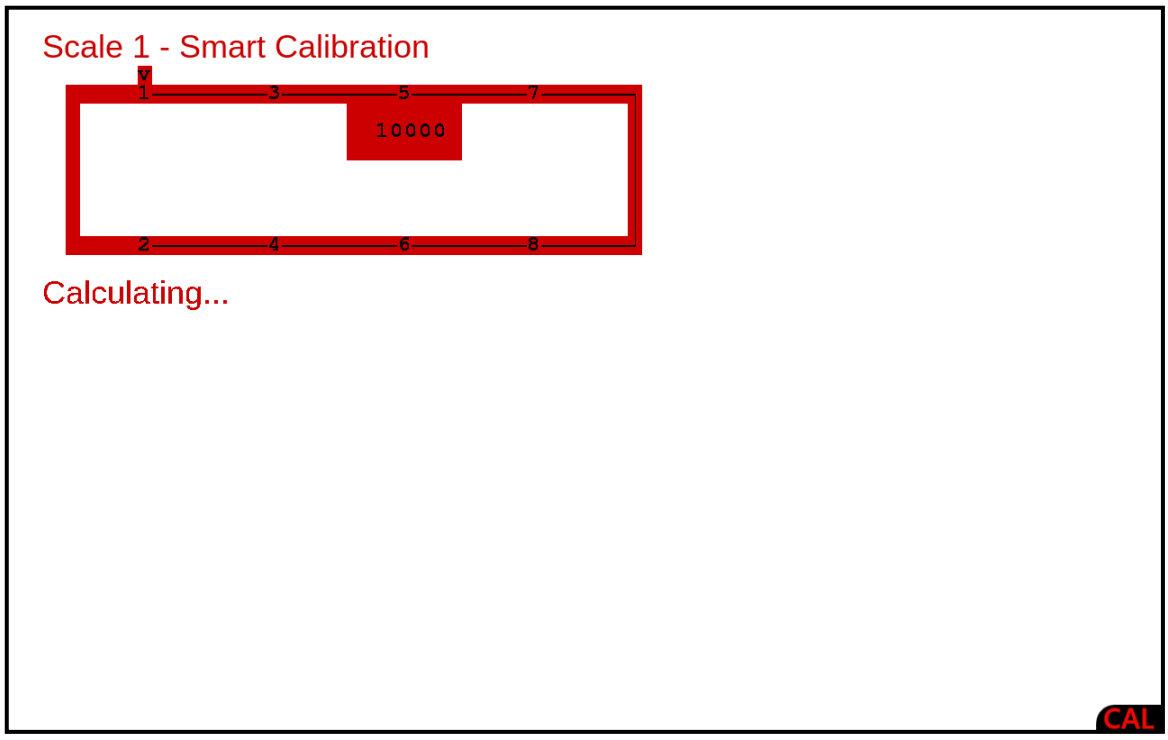
SETUP AND CONFIGURATION, CONT.

Smart Calibration, Cont.

Move the test weight and center it on load cell 5 and press **OK**.



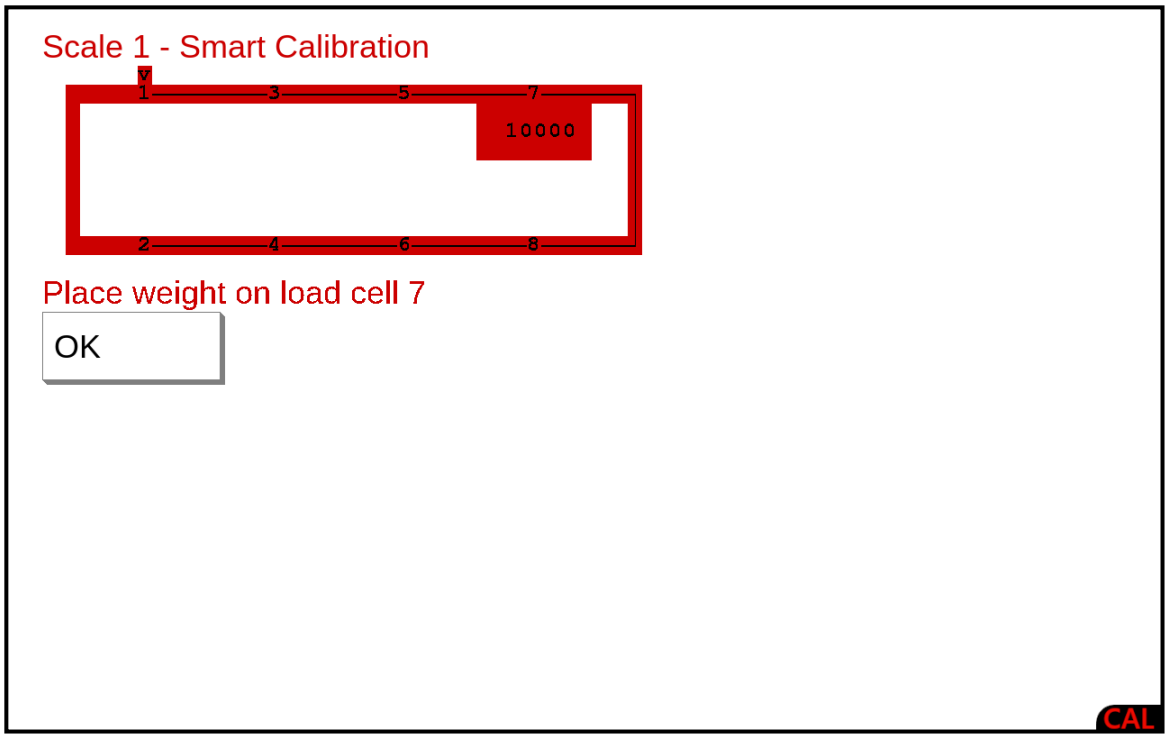
The display will change to indicate it is calculating the weight on load cell 5 and then prompt to place the weight over load cell 7.



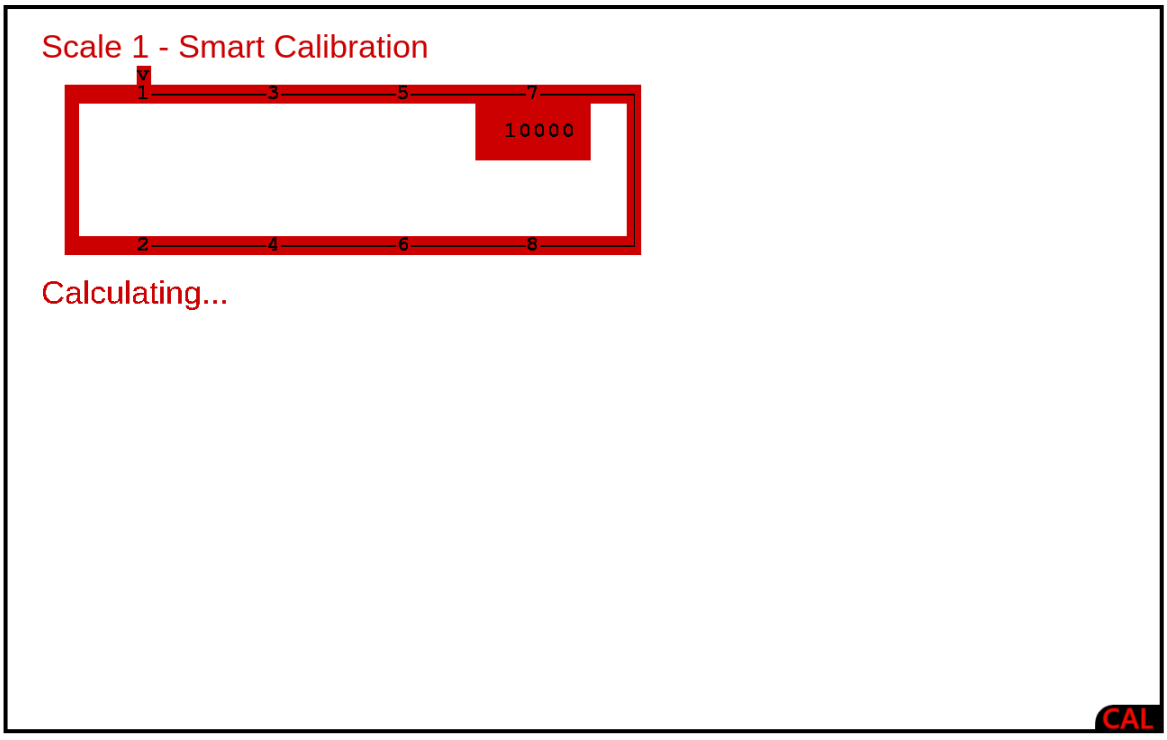
SETUP AND CONFIGURATION, CONT.

Smart Calibration, Cont.

Move the test weight and center it on load cell 7 and press **OK**.



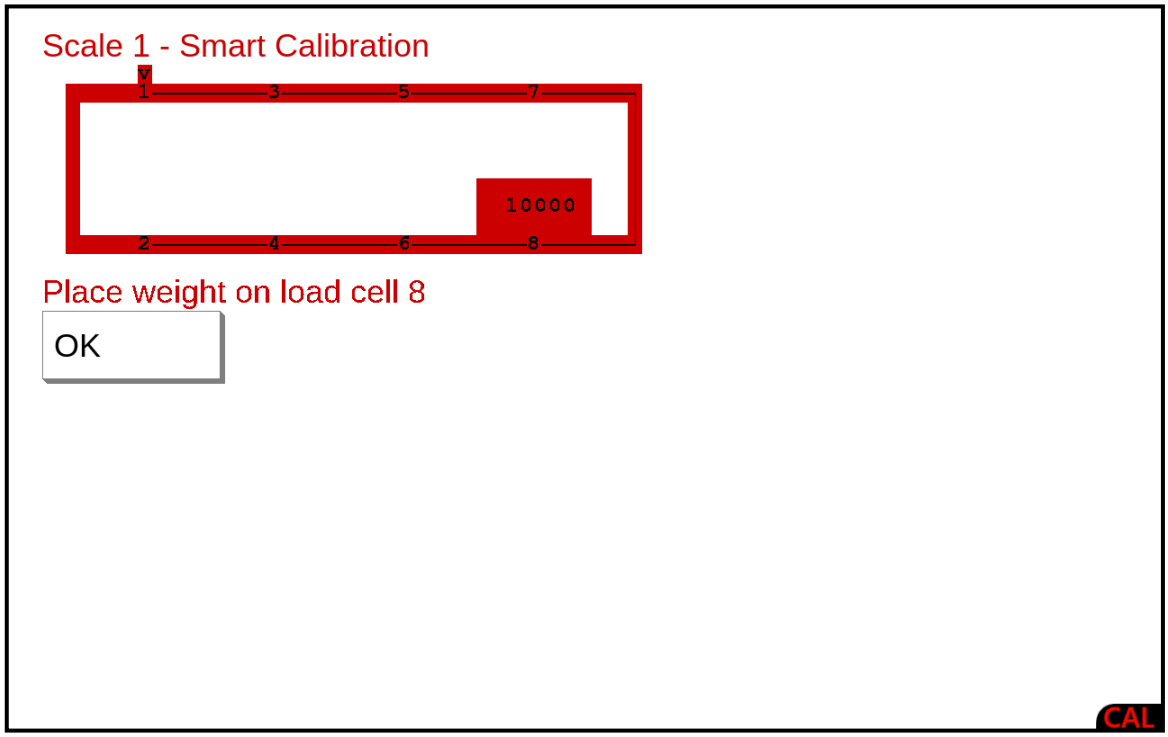
The display will change to indicate it is calculating the weight on load cell 7 and then prompt to place the weight over load cell 8.



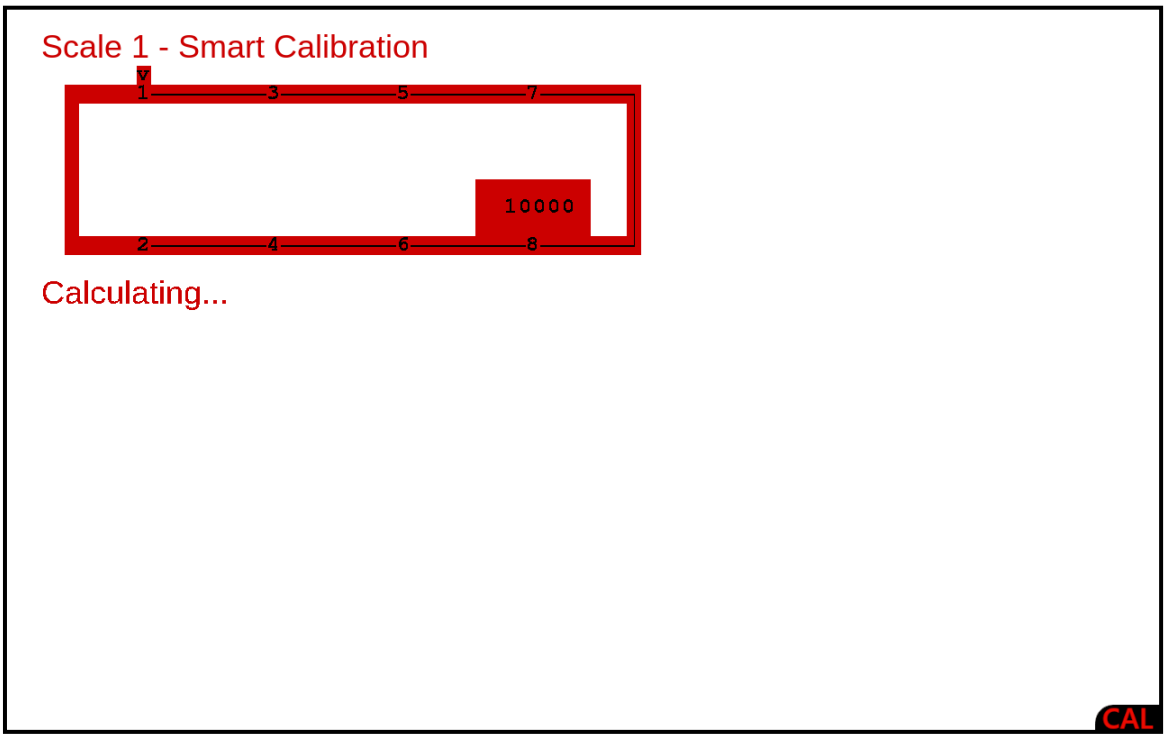
SETUP AND CONFIGURATION, CONT.

Smart Calibration, Cont.

Move the test weight and center it on load cell 8 and press **OK**.



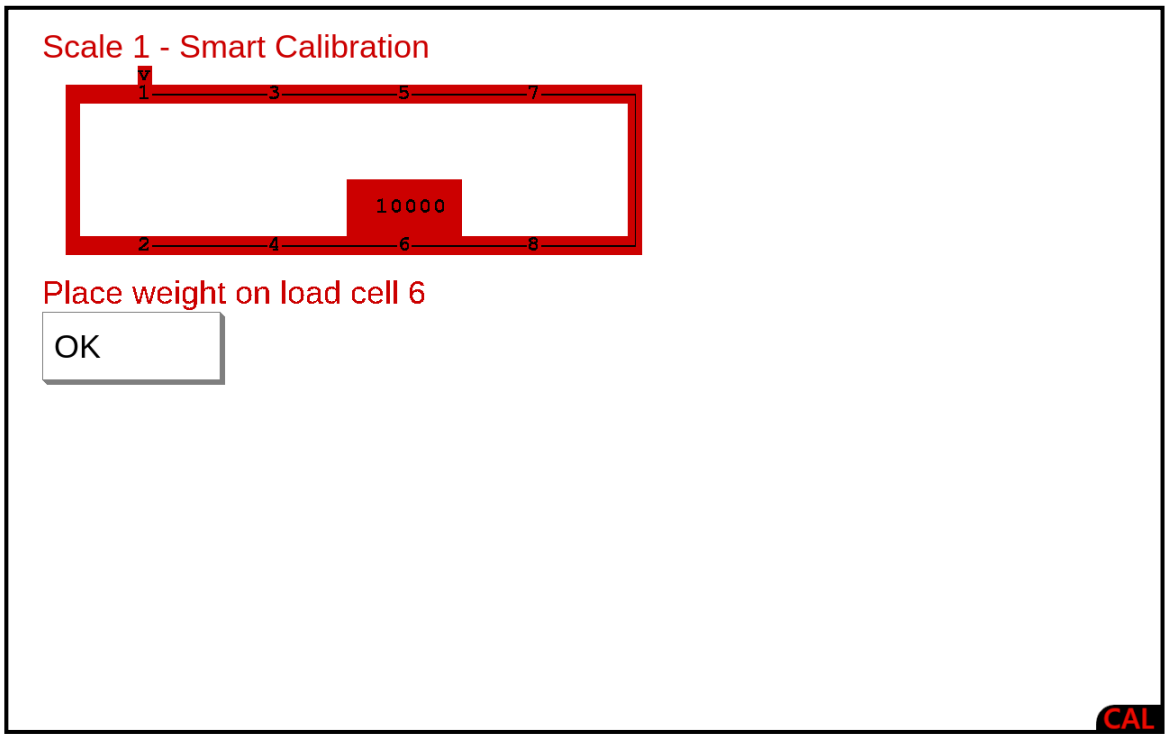
The display will change to indicate it is calculating the weight on load cell 8 and then prompt to place the weight over load cell 6.



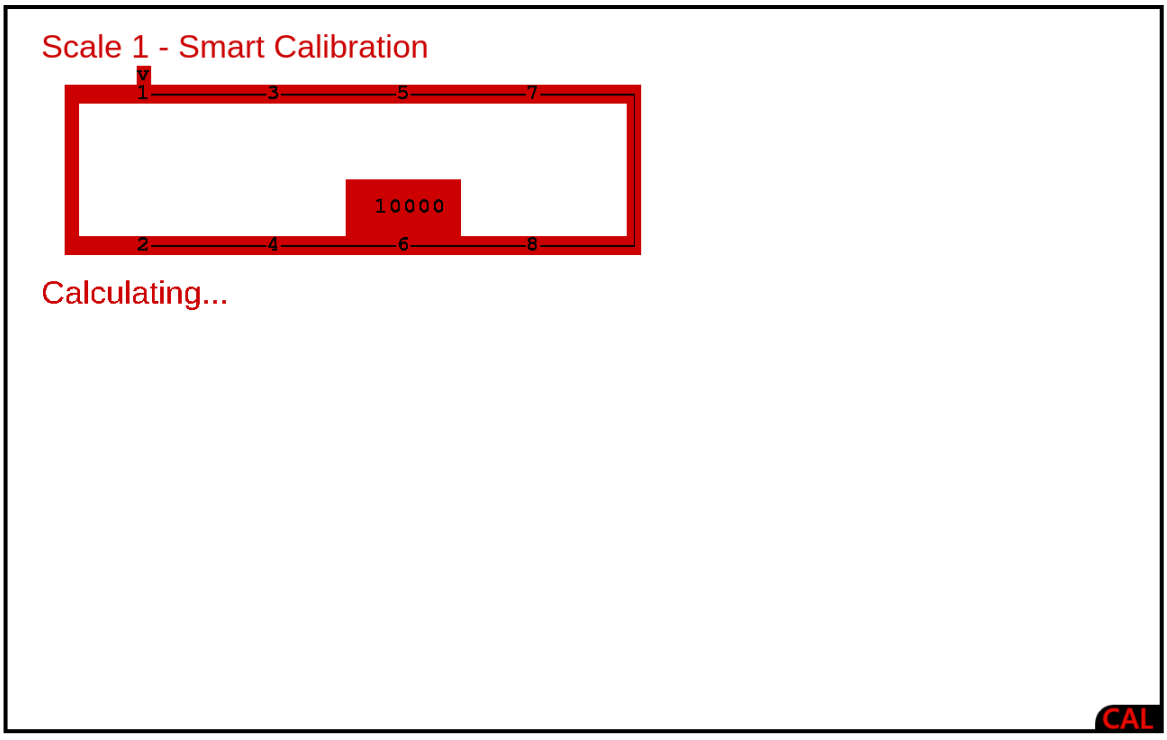
SETUP AND CONFIGURATION, CONT.

Smart Calibration, Cont.

Move the test weight and center it on load cell 6 and press **OK**.



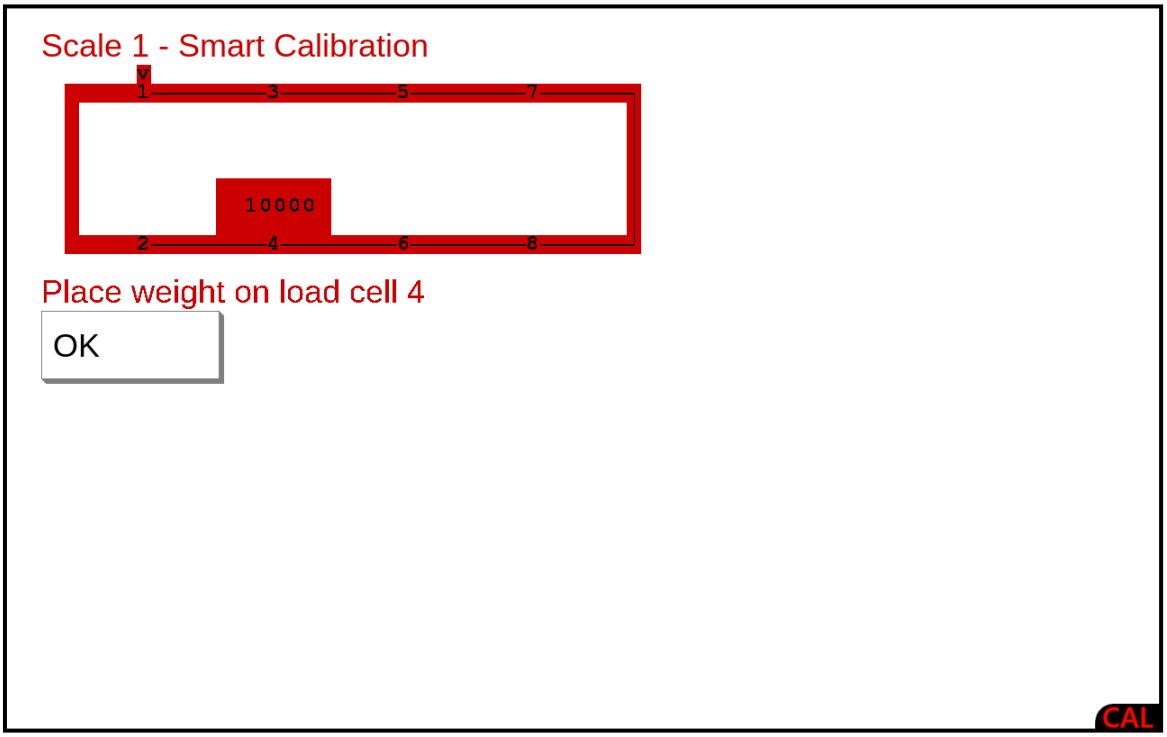
The display will change to indicate it is calculating the weight on load cell 6 and then prompt to place the weight over load cell 4.



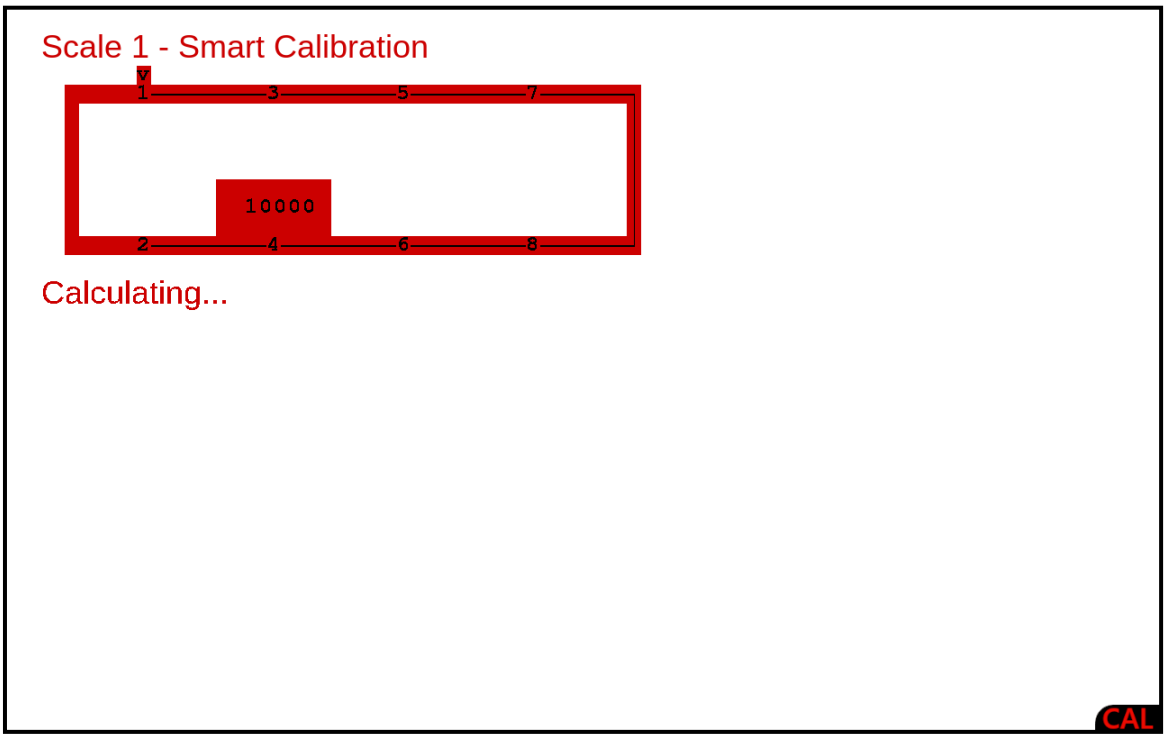
SETUP AND CONFIGURATION, CONT.

Smart Calibration, Cont.

Move the test weight and center it on load cell 4, and press **OK**.



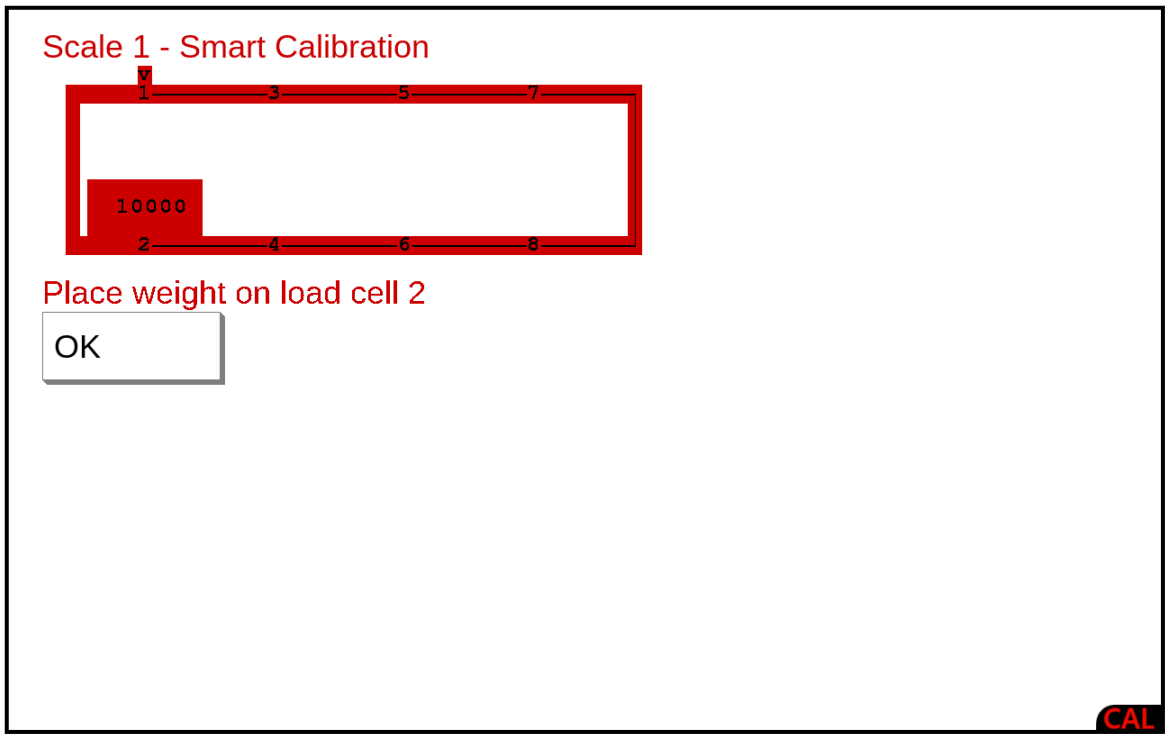
The display will change to indicate it is calculating the weight on load cell 4 and then prompt to place the weight over load cell 2.



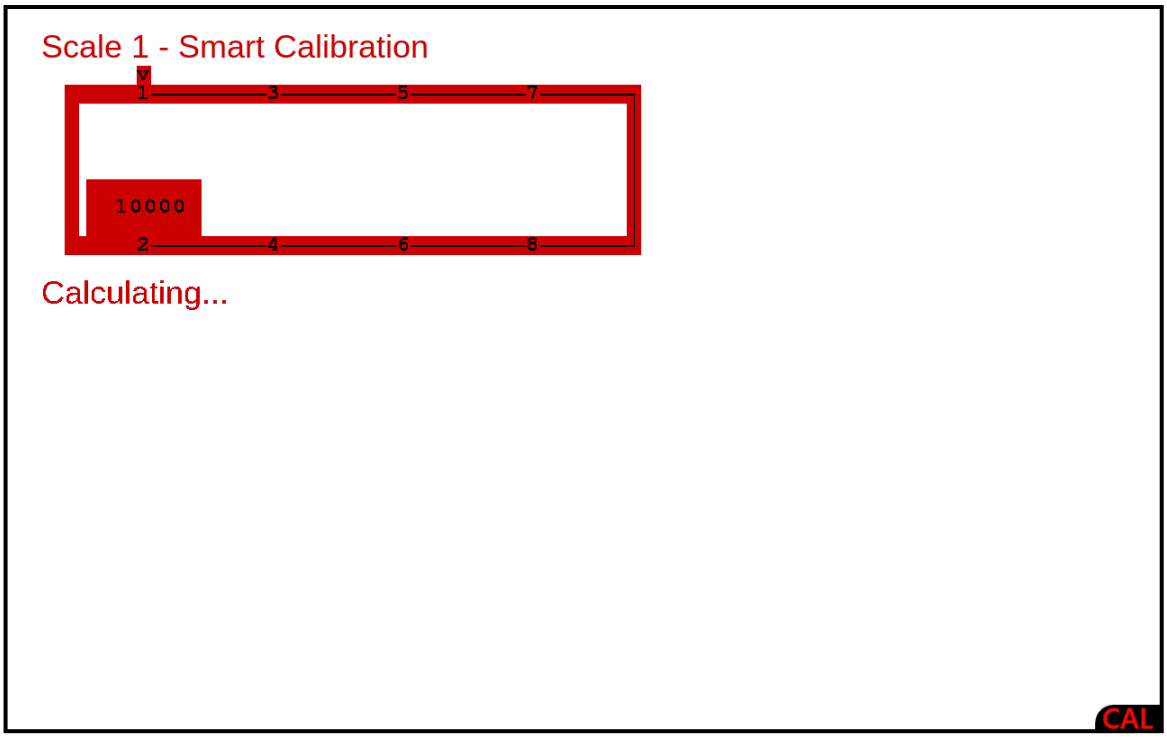
SETUP AND CONFIGURATION, CONT.

Smart Calibration, Cont.

Move the test weight and center it on load cell 2, and press **OK**.



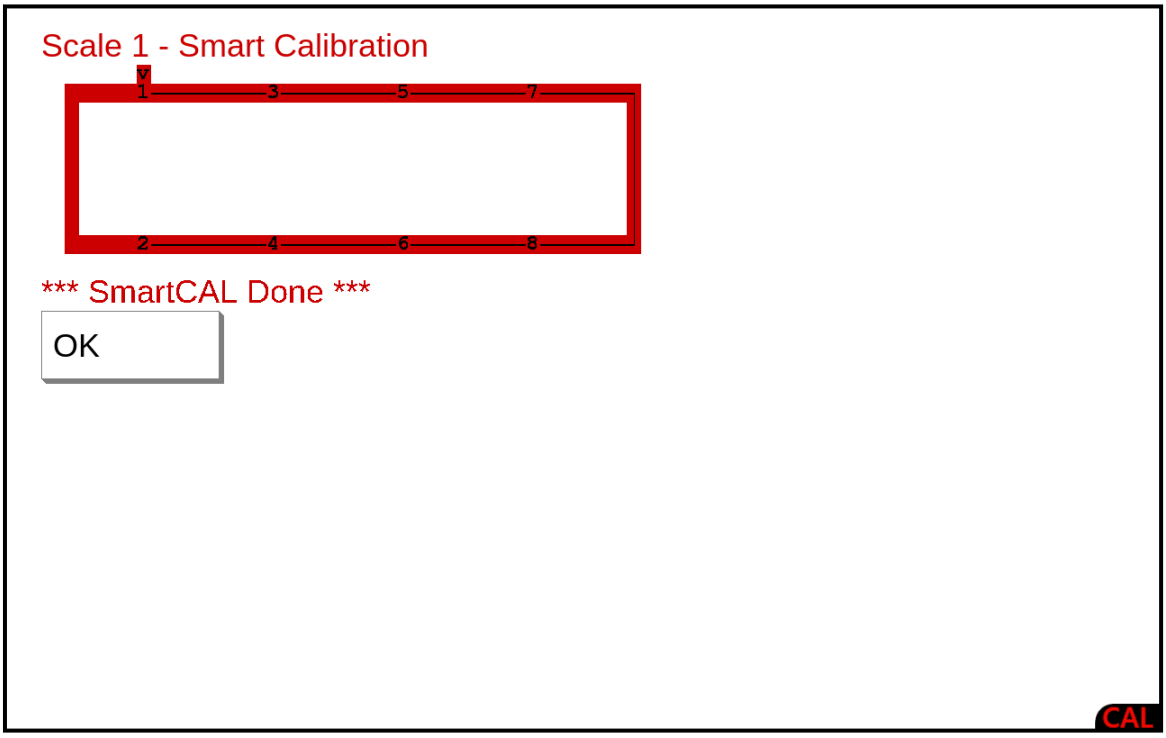
The display will change to indicate it is calculating the weight on load cell 2, and then the display will change to show that the Smart Calibration is done.



SETUP AND CONFIGURATION, CONT.

Smart Calibration, Cont.

When **Smart Calibration** is complete, the display will change to show *** SmartCAL Done ***.

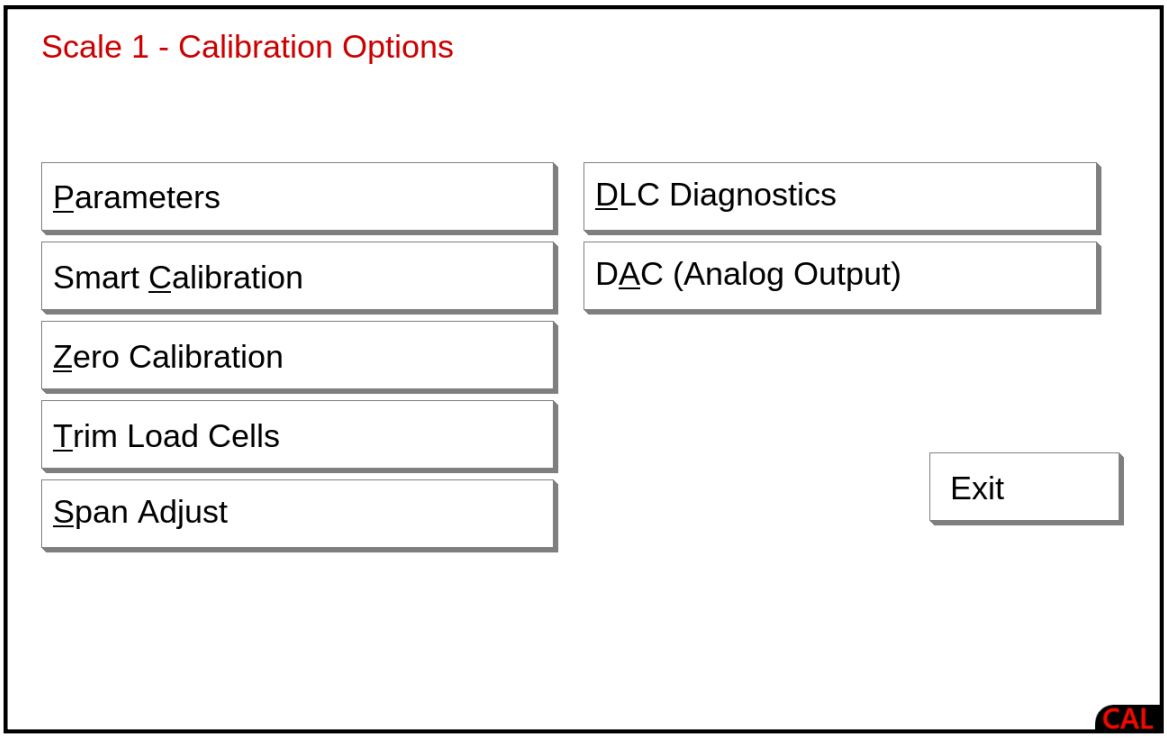


Press **OK** to return to the **Scale 1 – Calibration Options** screen.

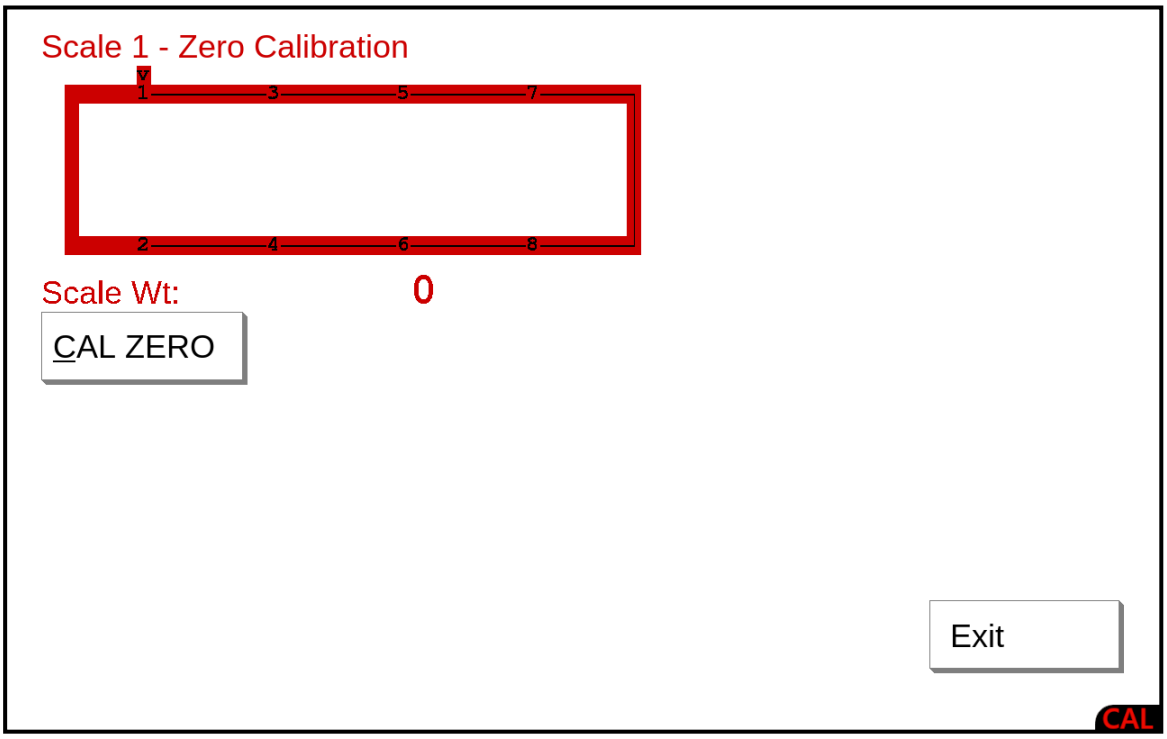
SETUP AND CONFIGURATION, CONT.

Zero Calibration

With the **Scale 1 – Calibration Options** screen displayed, press **Zero Calibration,** or if using a USB keyboard, press **Z**. The display will change to the **Scale 1 – Zero Calibration** screen.



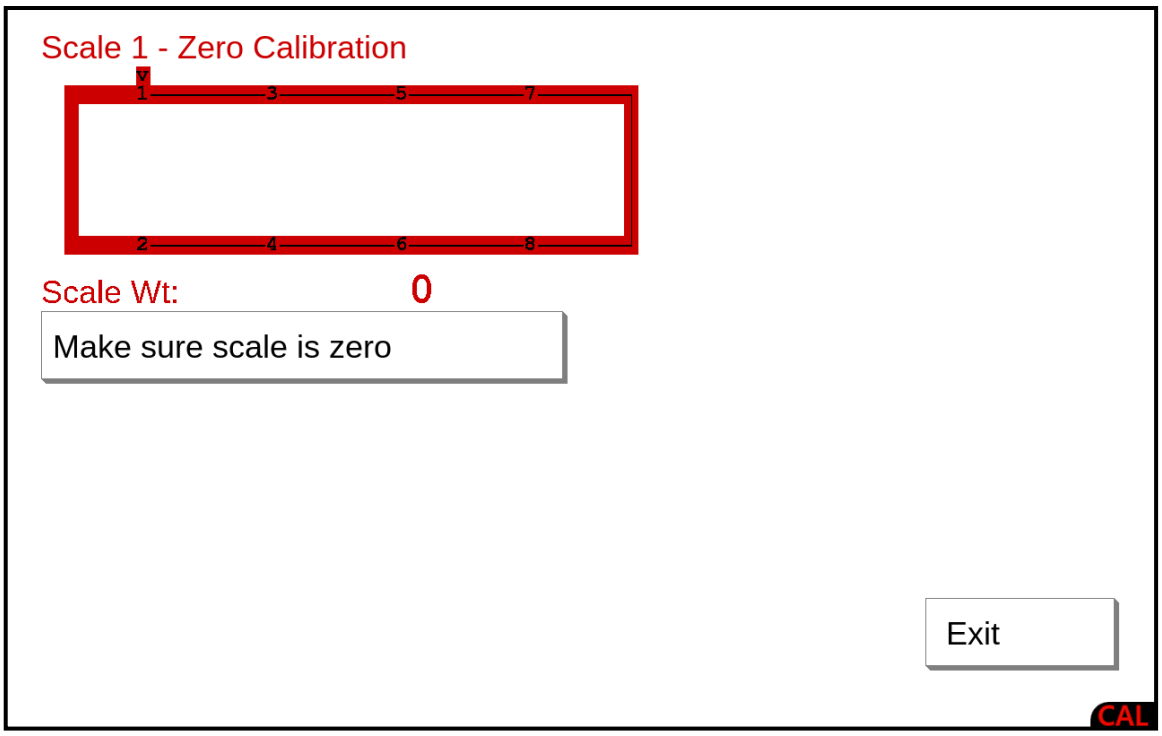
With the **Scale 1 – Zero Calibration** screen displayed, press **CAL ZERO,** or if using a USB keyboard, press **C**. The display will change to a prompt to make sure the scale is at zero.



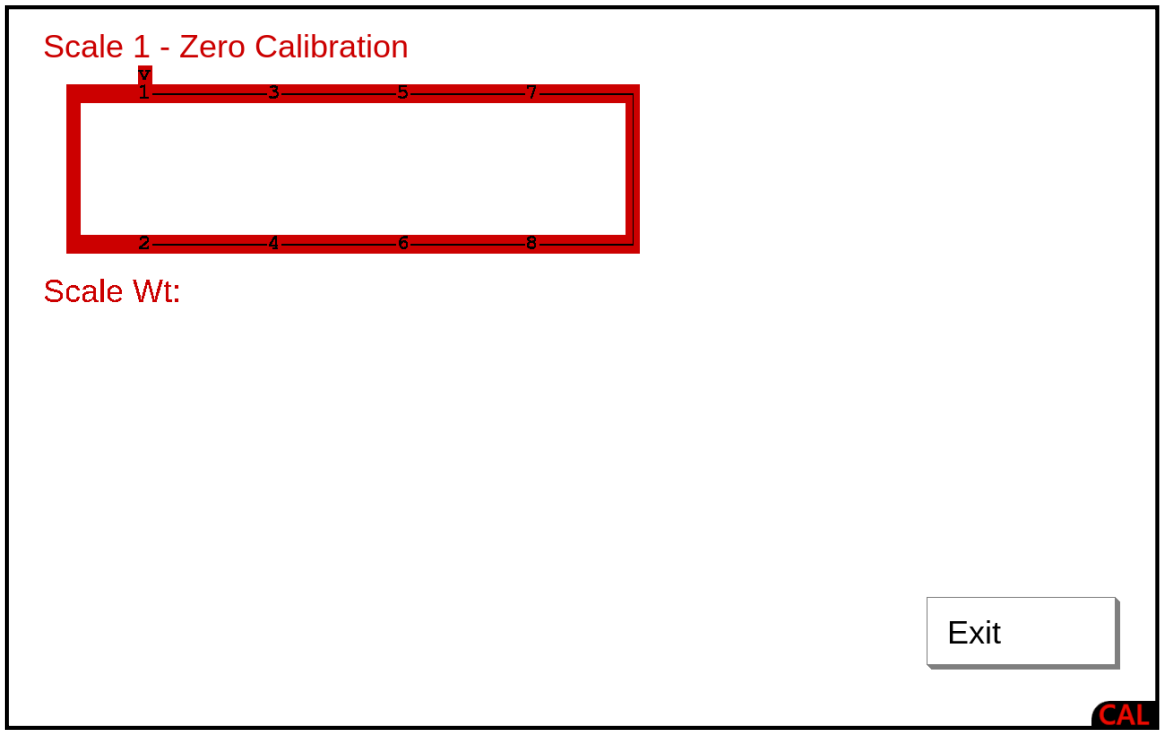
SETUP AND CONFIGURATION, CONT.

Zero Calibration, Cont.

Make sure the scale is empty and at zero, then press the **Make sure scale is zero** selection. Note that Zero Calibration does not affect the trimming of the cells or affect span; it simply sets the dead load weight of the scale.



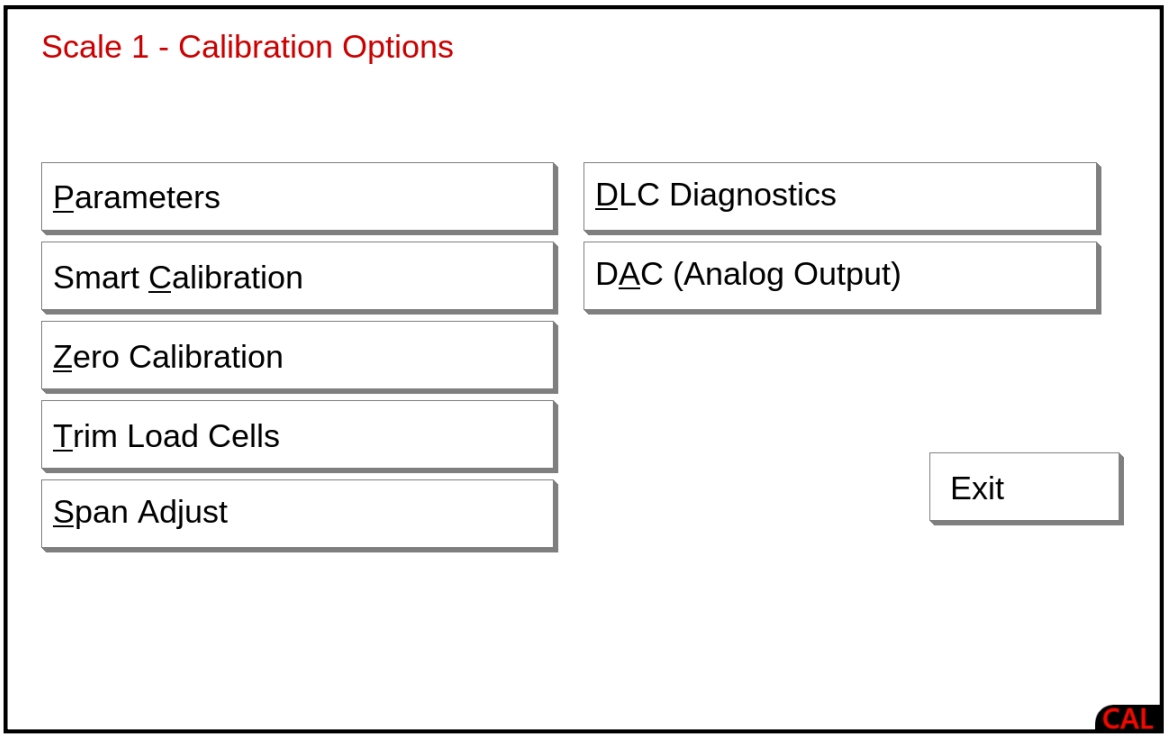
The 825D display will clear the **Make sure scale is zero** selection and Scale Wt: to show that it is calibrating zero, and then return to the **Scale 1 – Calibration Options** screen.



SETUP AND CONFIGURATION, CONT.

Trim Load Cells

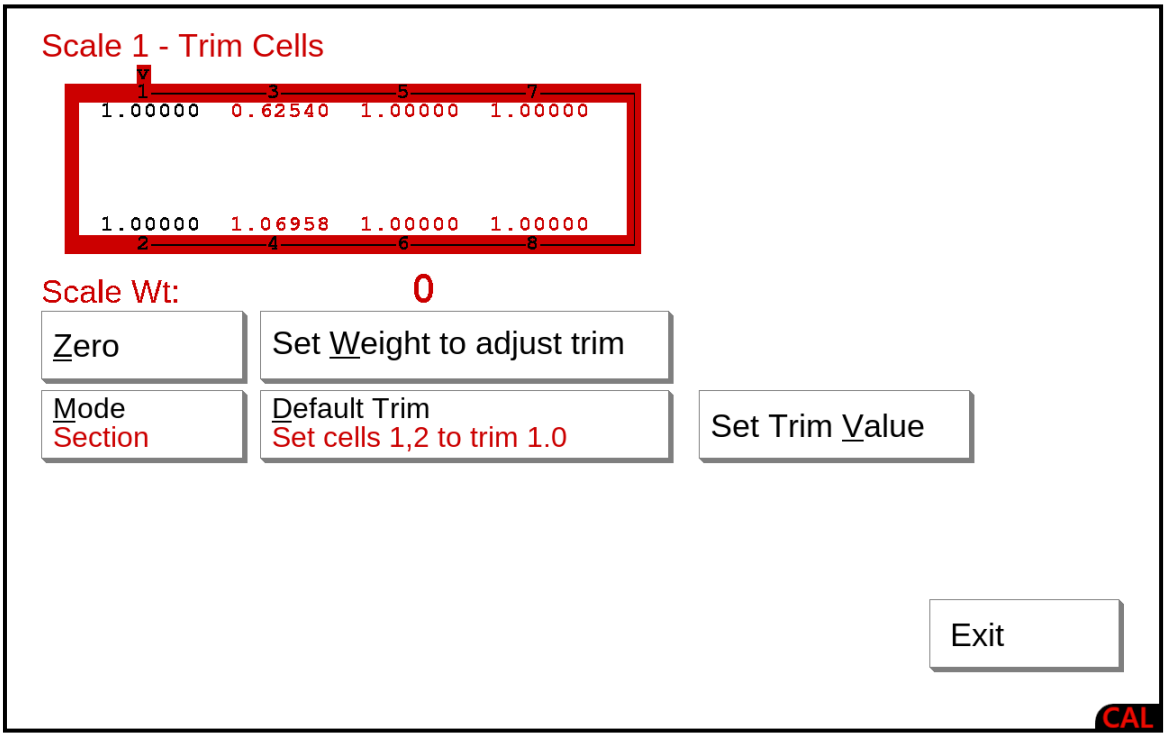
With the **Scale 1 – Calibration Options** screen displayed, press **Trim Load Cells** or, if using a USB keyboard, press **T**. The display will change to the **Scale 1 – Trim Cells** screen.



SETUP AND CONFIGURATION, CONT.

Trim Load Cells, Cont.

Section Trim Mode



Mode

Scale sections (pairs of cells) or individual cells, or may be trimmed. **NOTE:** This requires a test load weight.

Press the **Mode** selection or, if using a USB keyboard, press **M** to toggle between Section or Cell trim. *Note that the default selection is Section*.

Section to Trim

With the **Scale 1 – Trim Cells** screen displayed, press the section on the touchscreen to select (highlight) the section to trim.

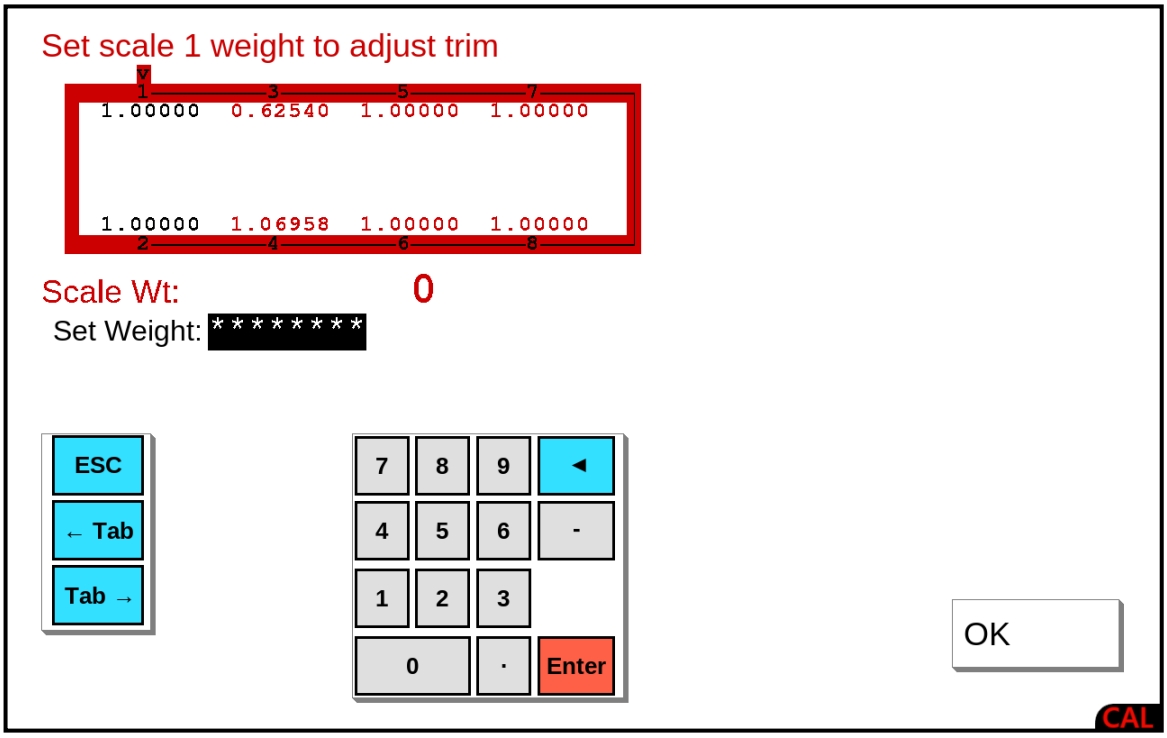
Zero

Press the Zero selection, or if using a USB keyboard, press **Z** to zero the Scale Wt:.

SETUP AND CONFIGURATION, CONT.

Trim Load Cells, Cont.

Section Trim Mode, Cont.



Set <u>W</u>eight to adjust trim

Press the **Set <u>W</u>eight to adjust trim** selection, or if using a USB keyboard, press **W** to set the weight to adjust trim.

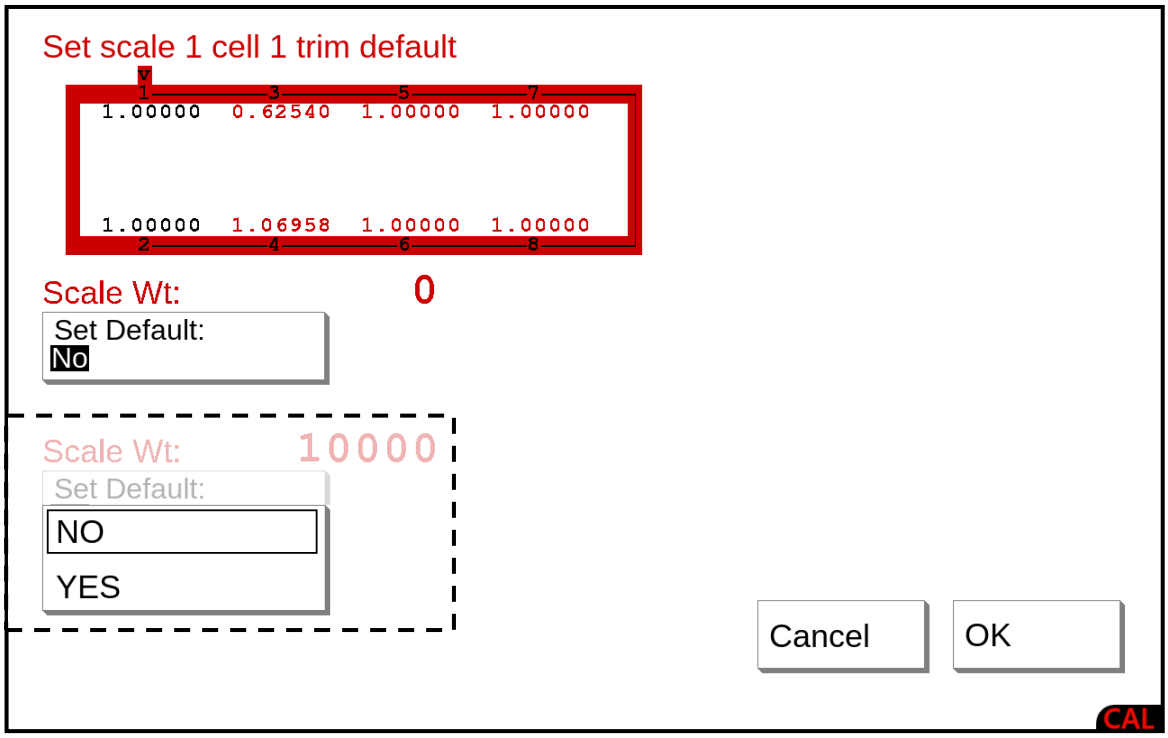
Use the onscreen numeric keys to enter the "weight to adjust trim" value and then press **OK**.

The display will change to show “Calculating” and then return to the **Scale 1 – Trim Cells** screen.

SETUP AND CONFIGURATION, CONT.

Trim Load Cells, Cont.

Section Trim Mode, Cont.



Default Trim

Press the **Default Trim** selection, or if using a USB keyboard, press **D** to set the selected section (pair of cells) as the default.

Set to **No**. This is the default setting.

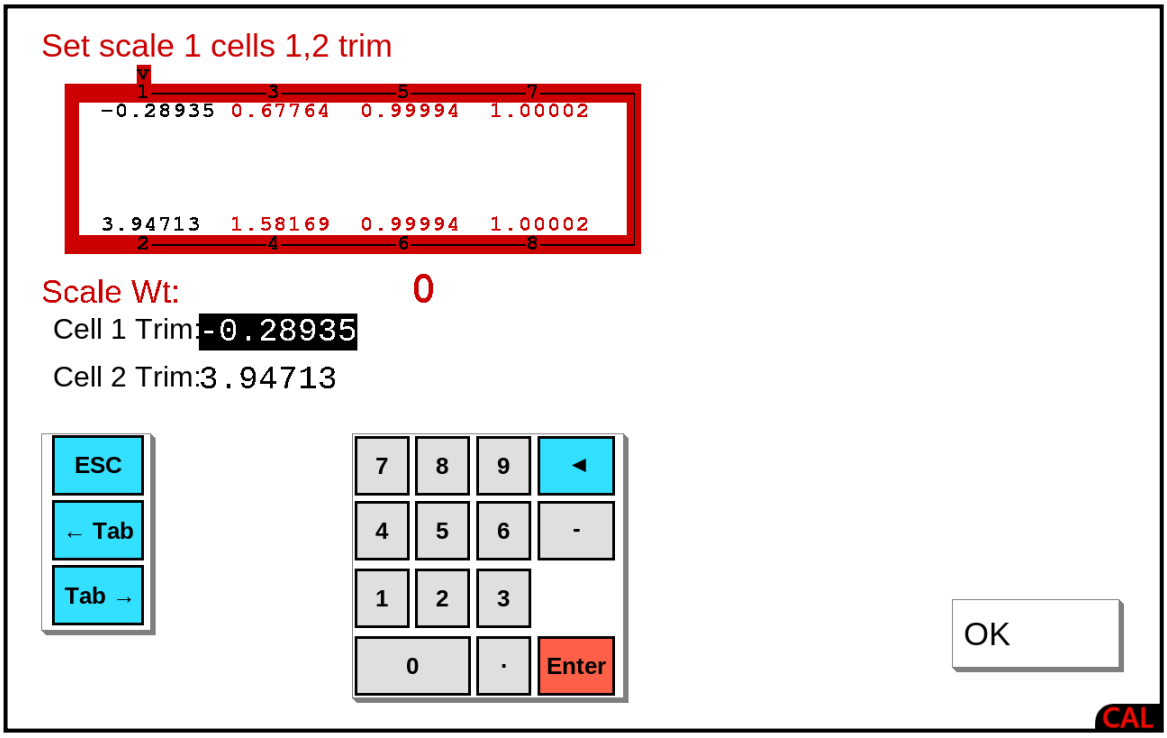
Set to **Yes** to set as the default section (pair of cells).

Press **OK** to save any changes and return to the **Scale 1 – Trim Cells** screen.

SETUP AND CONFIGURATION, CONT.

Trim Load Cells, Cont.

Section Trim Mode, Cont.



Set Trim Value

With the desired section selected, press the **Set Trim Value** selection, or if using a USB keyboard, press **V** to enter the trim value.

Use the onscreen numeric keys to enter the "trim value".

Press **OK** to save the “trim value” and return to the **Scale 1 – Trim Cells** screen.

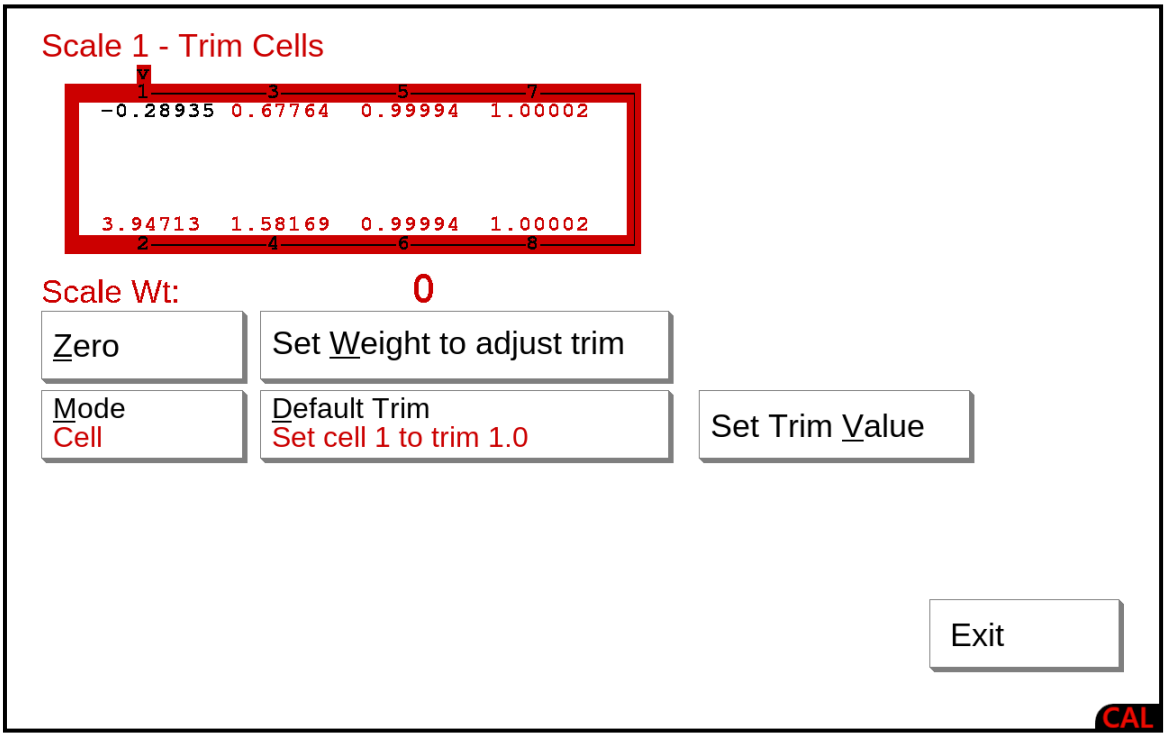
Trim Load Cells, Section Trim Complete

The Section Trim has been completed. With the **Scale 1 – Trim Cells** screen displayed, press **Exit** to return to the **Scale 1 – Calibration Options** screen.

SETUP AND CONFIGURATION, CONT.

Trim Load Cells, Cont.

Cell Trim Mode



Mode

Individual cells on the scale may be trimmed. **NOTE:** This requires a test load weight.

Press the **Mode** selection, or if using a USB keyboard, press **M** to toggle from Section to Cell trim. *Note that the default selection is Section.*

Cell to Trim

With the **Scale 1 – Trim Cells** screen displayed, press the cell on the touchscreen to select (highlight) the cell to trim.

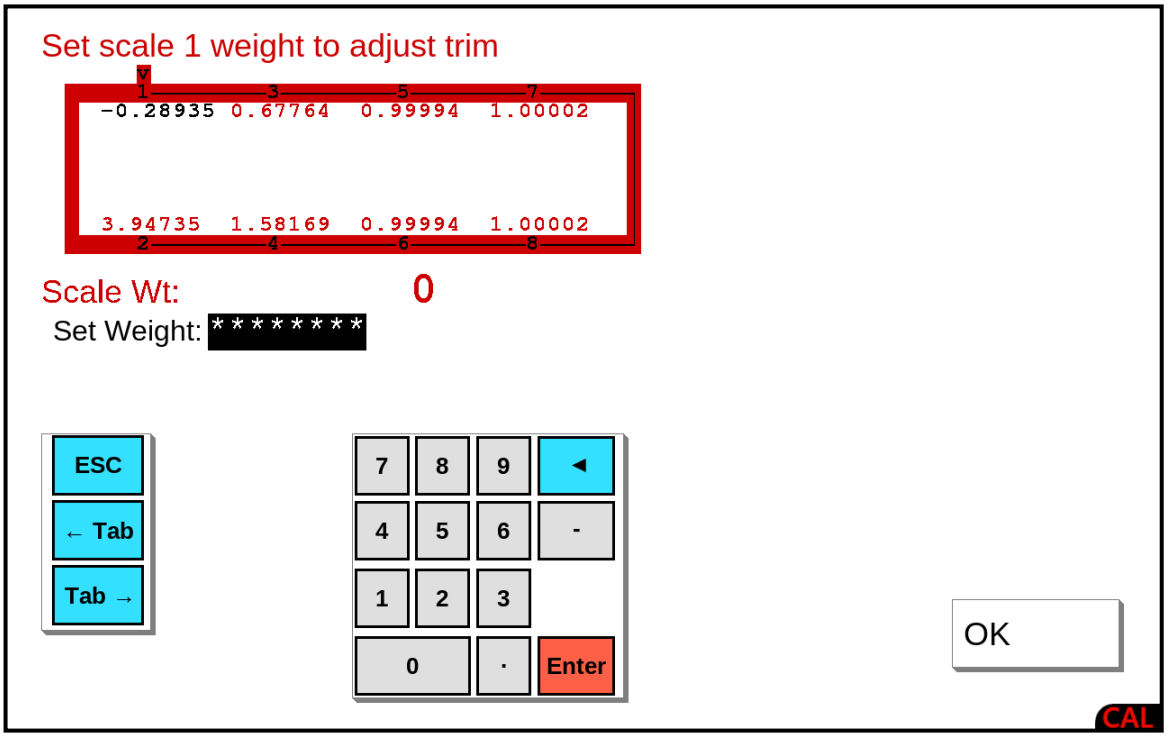
Zero

Press the Zero selection, or if using a USB keyboard, press **Z** to zero the Scale Wt:.

SETUP AND CONFIGURATION, CONT.

Trim Load Cells, Cont.

Cell Trim Mode, Cont.



Set <u>W</u>eight to adjust trim

Press the **Set <u>W</u>eight to adjust trim** selection, or if using a USB keyboard, press **W** to set the weight to adjust trim.

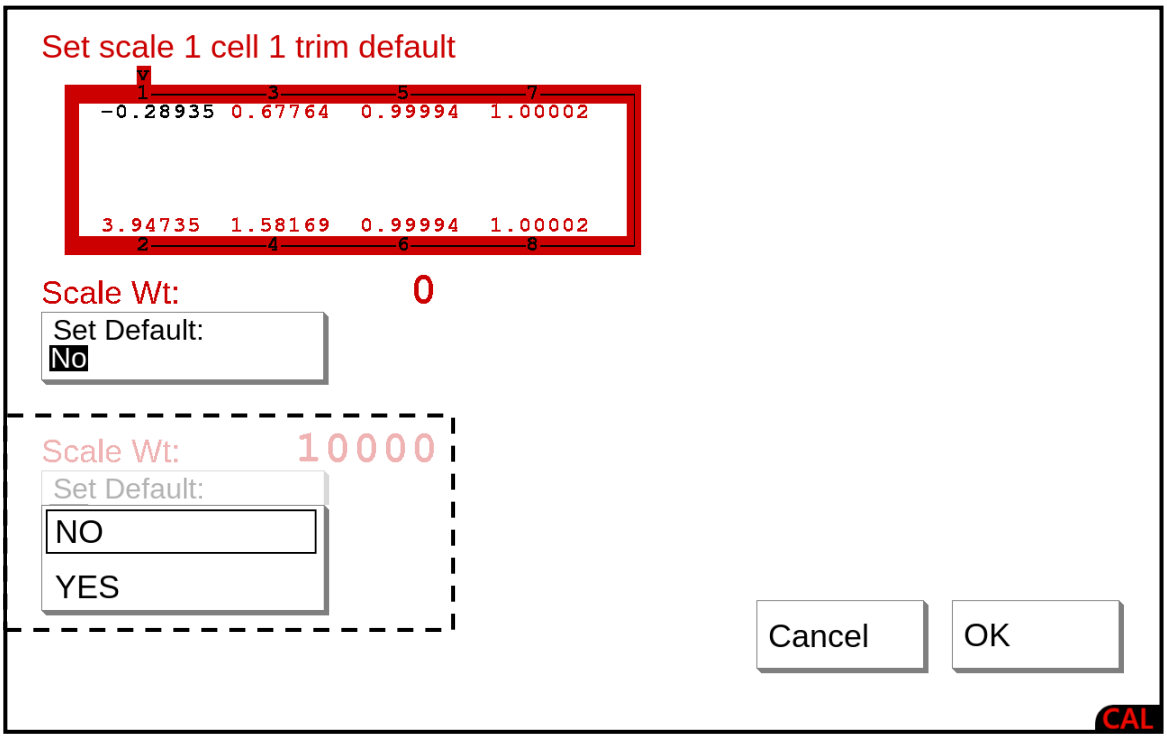
Use the onscreen numeric keys to enter the "weight to adjust trim" value and then press **OK**.

The display will change to show “Calculating” and then return to the **Scale 1 – Trim Cells** screen.

SETUP AND CONFIGURATION, CONT.

Trim Load Cells, Cont.

Cell Trim Mode, Cont.



Default Trim

Press the **Default Trim** selection, or if using a USB keyboard, press **D** to set the selected load cell as the default.

Set to **No**. This is the default setting.

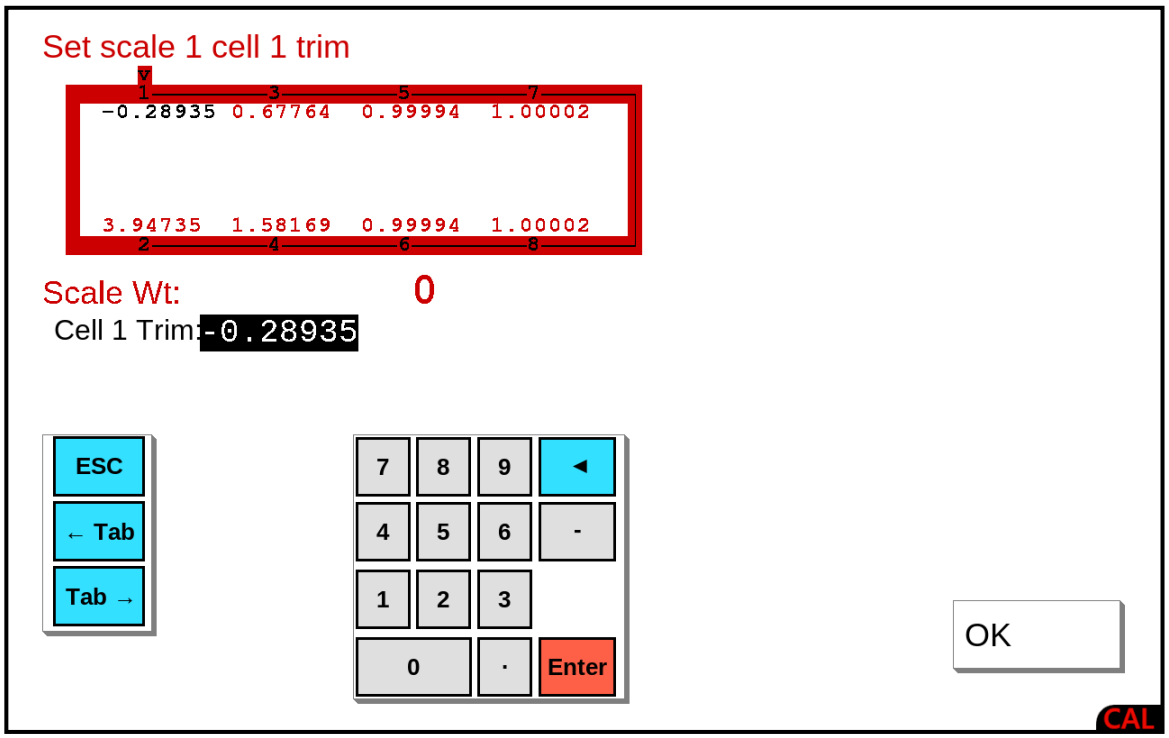
Set to **Yes** to set as the default load cell.

Press **OK** to save any changes and return to the **Scale 1 – Trim Cells** screen.

SETUP AND CONFIGURATION, CONT.

Trim Load Cells, Cont.

Cell Trim Mode, Cont.



Set Trim Value

With the desired section selected, press the **Set Trim Value** selection, or if using a USB keyboard, press **V** to enter the trim value.

Use the onscreen numeric keys to enter the "trim value".

Press **OK** to save the “trim value” and return to the **Scale 1 – Trim Cells** screen.

Trim Load Cells, Cell Trim Complete

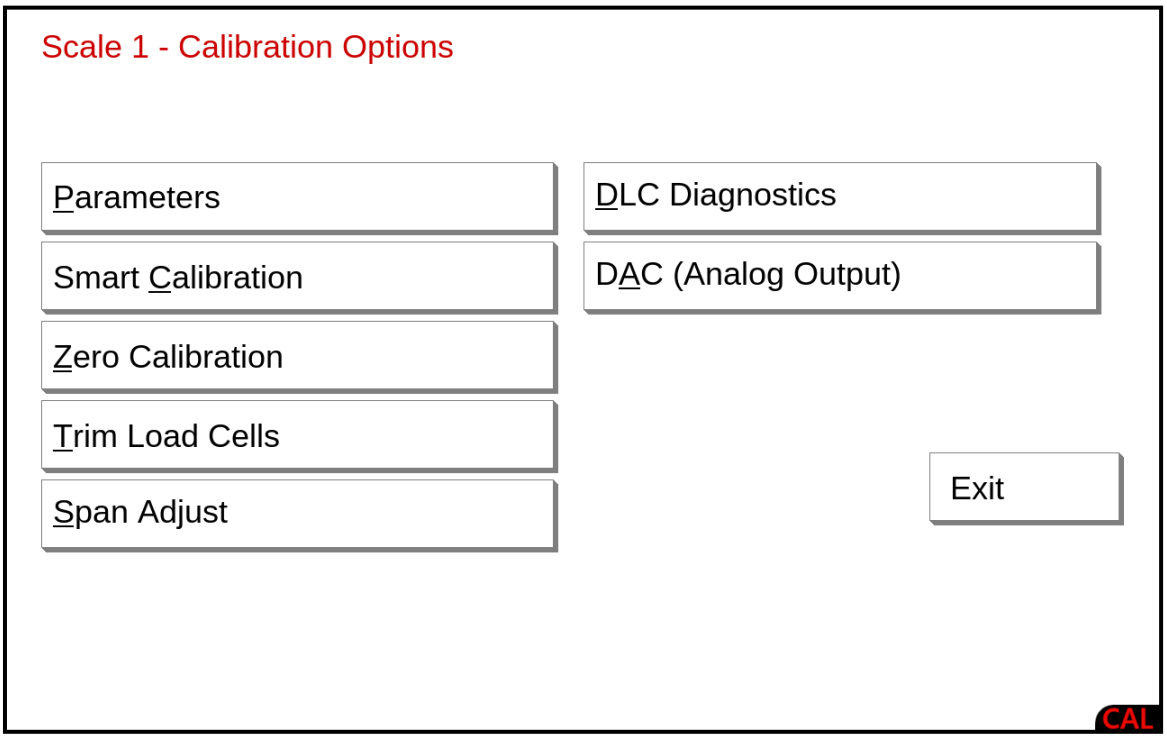
The Cell Trim Mode has been completed. With the **Scale 1 – Trim Cells** screen displayed, press **Exit** to return to the **Scale 1 – Calibration Options** screen.

SETUP AND CONFIGURATION, CONT.

Span Adjust

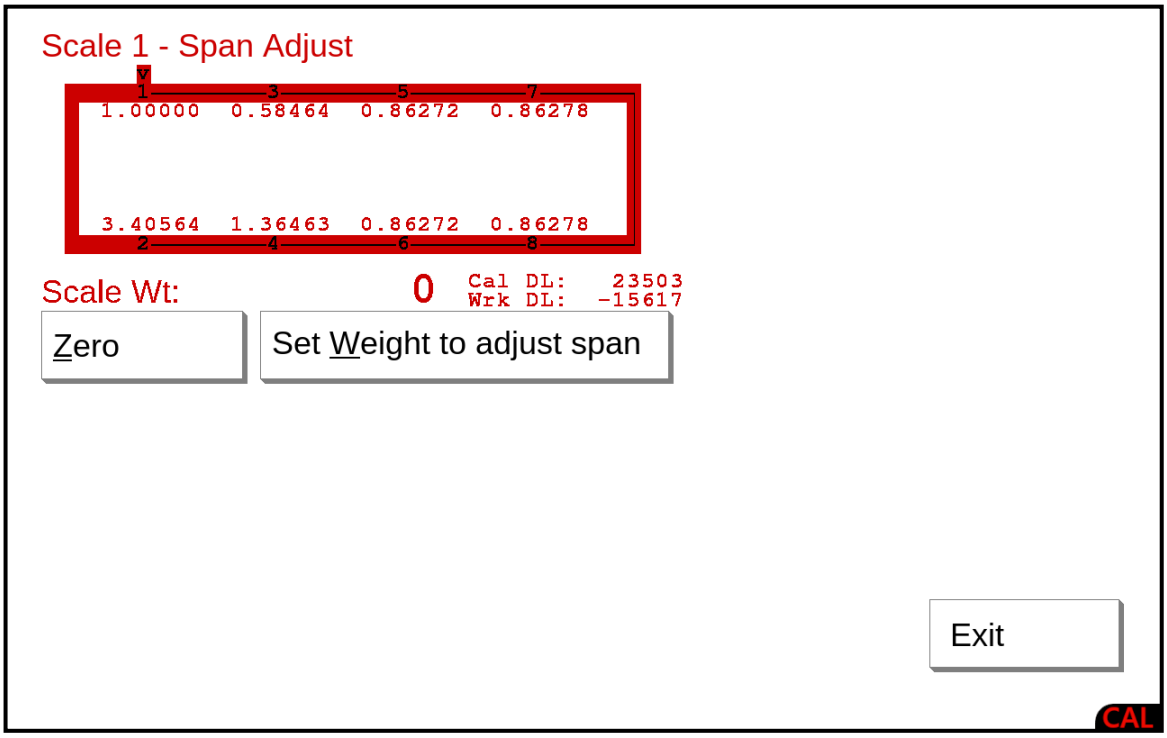
Span adjust allows you to tweak the span of the entire scale at once. Note that the 825D will display the current live scale weight.

With the **Scale 1 – Calibration Options** screen displayed, press **Span Adjust** or, if using a USB keyboard, press **S**. The display will change to the **Scale 1 – Span Adjust** screen.



SETUP AND CONFIGURATION, CONT.

Span Adjust, Cont.



Zero

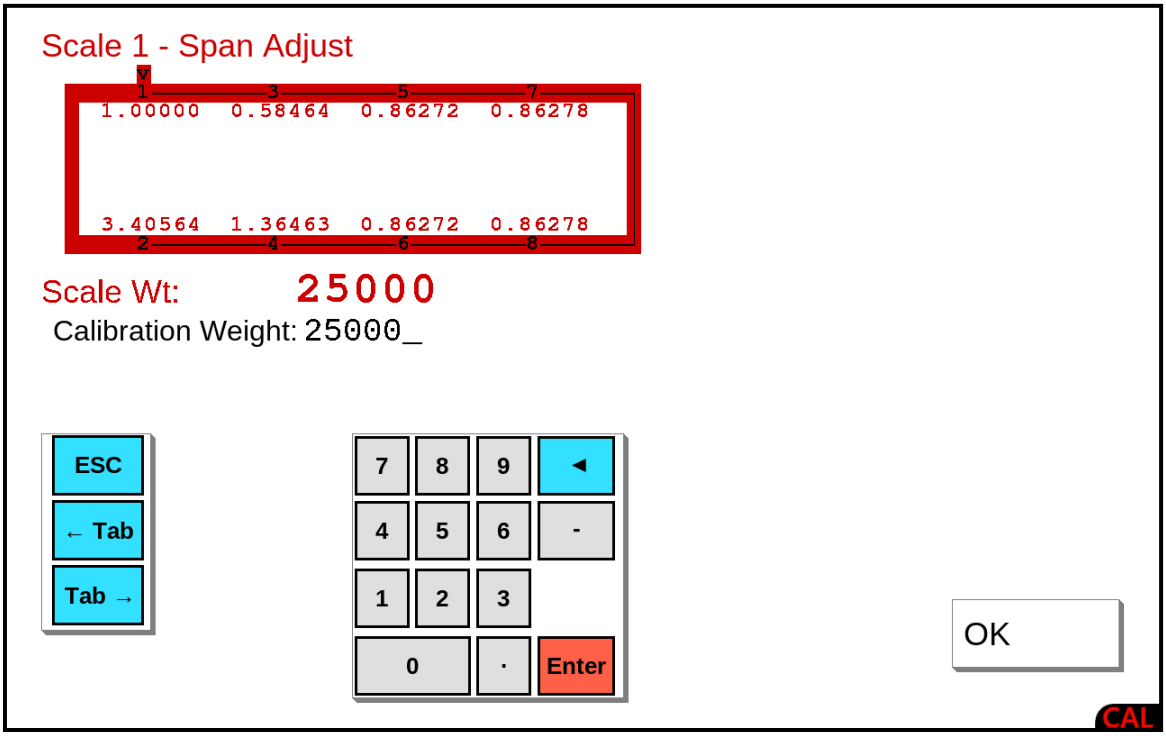
Press the Zero selection, or if using a USB keyboard, press **Z** to zero the Scale Wt:.

SETUP AND CONFIGURATION, CONT.

Span Adjust, Cont.

Set Weight to adjust span

With the **Scale 1 – Span Adjust** screen displayed, press the **Set Weight to adjust span** selection, or if using a USB keyboard, press **W** to set the weight to adjust span. The display will change to the prompt to enter the value of the Calibration Weight (test weight).



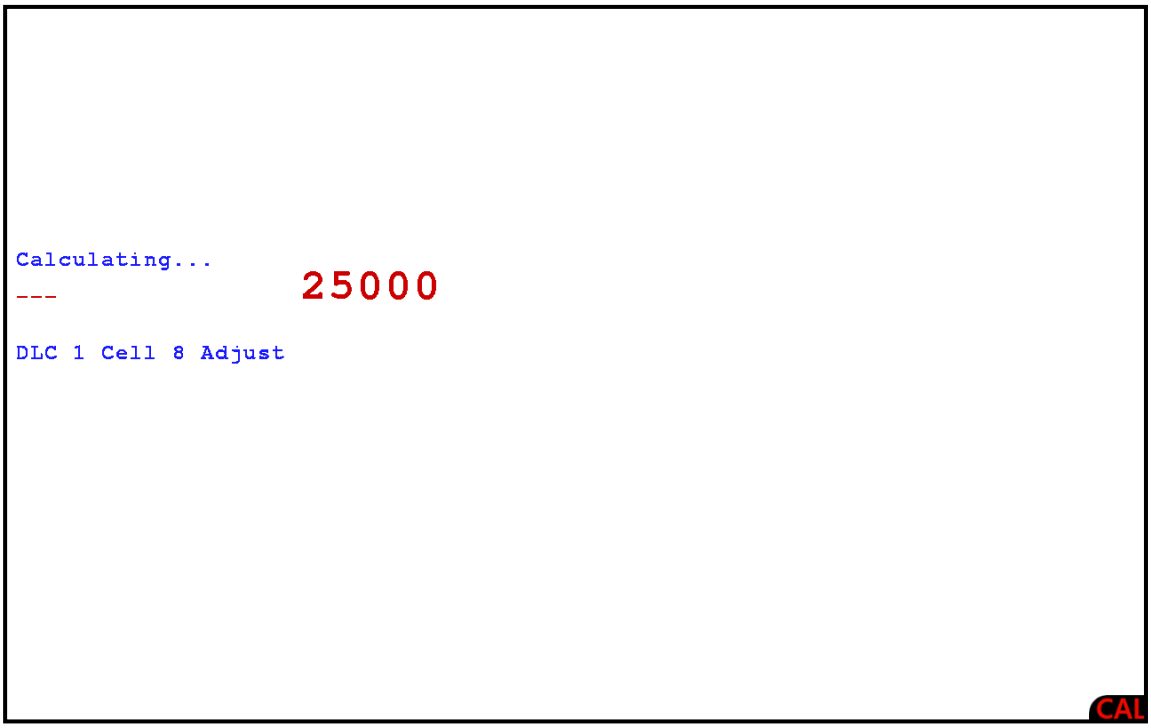
1. Place the Calibration Weight (test weight) at any location on the scale.
2. Using the onscreen numeric keys, enter the value of the Calibration Weight (test weight).
3. Press **OK** to begin the span adjustment.

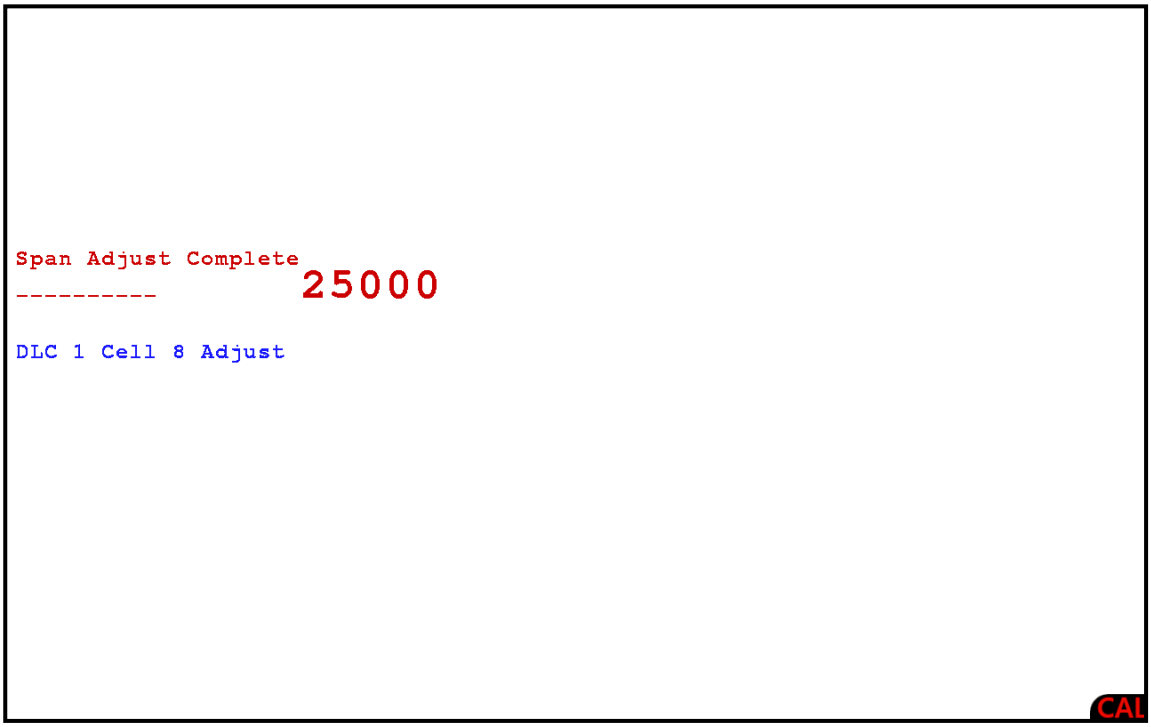
SETUP AND CONFIGURATION, CONT.

Span Adjust, Cont.

Set Weight to adjust span, Cont.

The display will change to show “Calculating” and that the span is being adjusted for each cell (*the trim will be adjusted for all cells of the scale*), briefly show that the Span Adjust is Complete, and then return to the **Scale 1 – Span Adjust** screen.

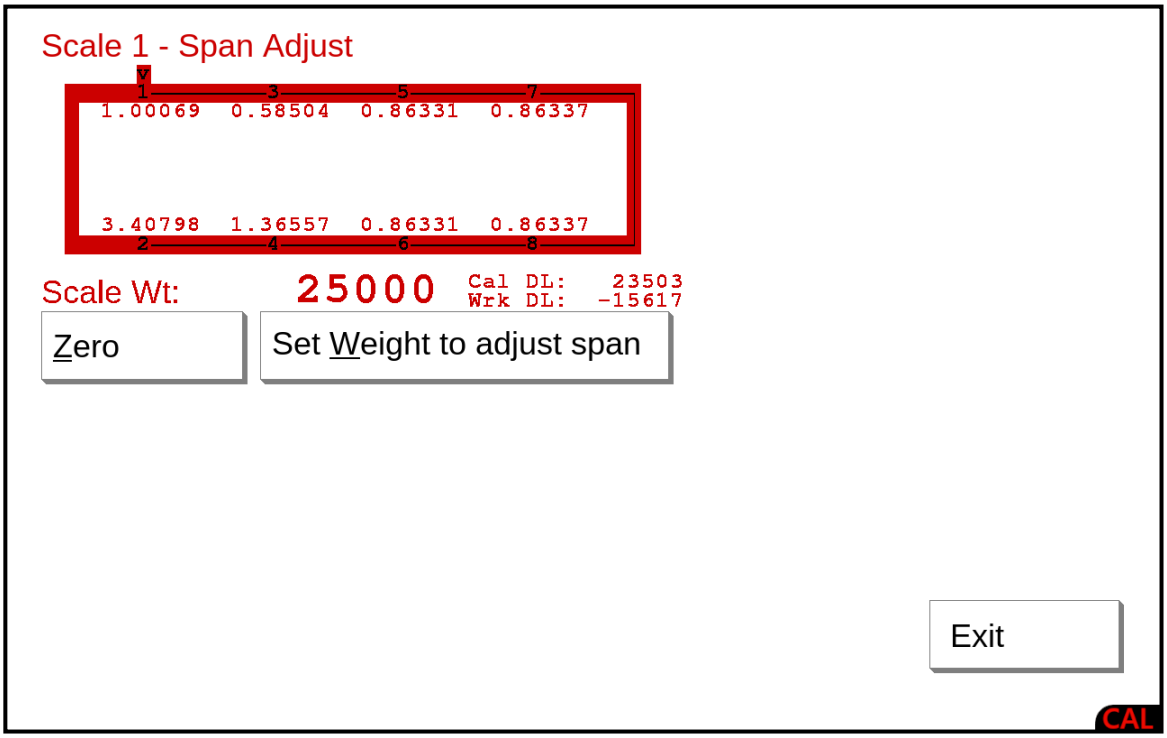




SETUP AND CONFIGURATION, CONT.

Span Adjust, Complete

The Span Adjust has been completed. With the **Scale 1 – Span Adjust** screen displayed, press **Exit** to return to the **Scale 1 – Calibration Options** screen.

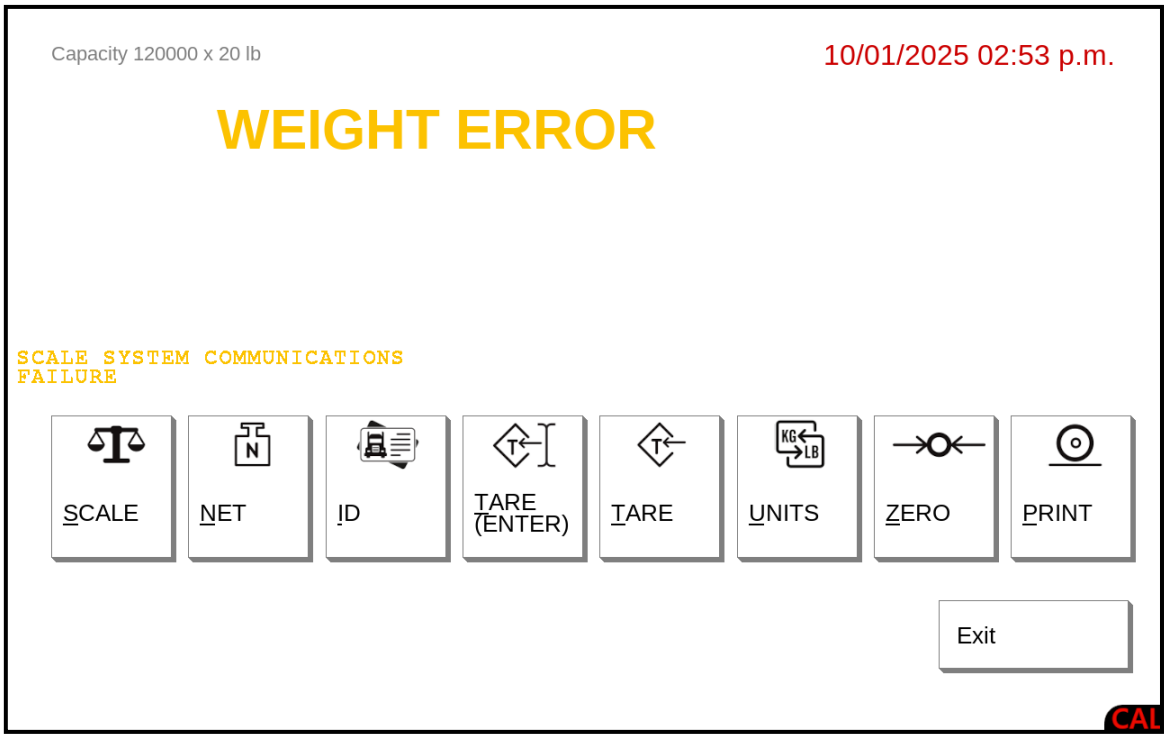


DIGITAL SCALE DIAGNOSTICS

On Screen Diagnostics

The On Screen Diagnostics messages are critical errors that alert the operator from the main screen to setup issues or hardware problems. These messages will be shown to the operator on the main weight screen in real-time when the error happens.

SCALE SYSTEM COMMUNICATION FAILURE

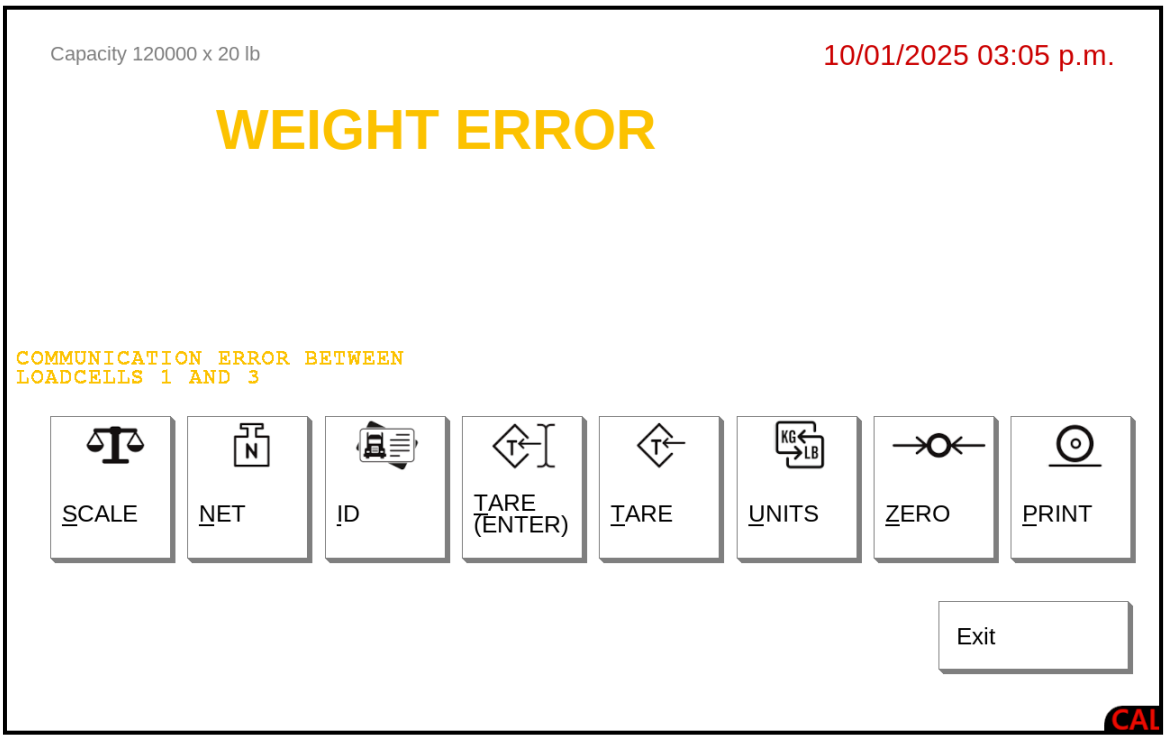


Probable Cause	Items to Check
The homerun cable is damaged or disconnected.	• Check that the cable is connected correctly. • Check the cable for damage. • Use caution on the amount of insulation stripped for the connector. The center wire could be shorted. It must be shorter than the center connector. • Check the connector for random strands of wire. • Verify that the connector is clear of debris.

DIGITAL SCALE DIAGNOSTICS, CONT.

On Screen Diagnostics, Cont.

COMMUNICATION ERROR BETWEEN LOADCELLS X AND Y

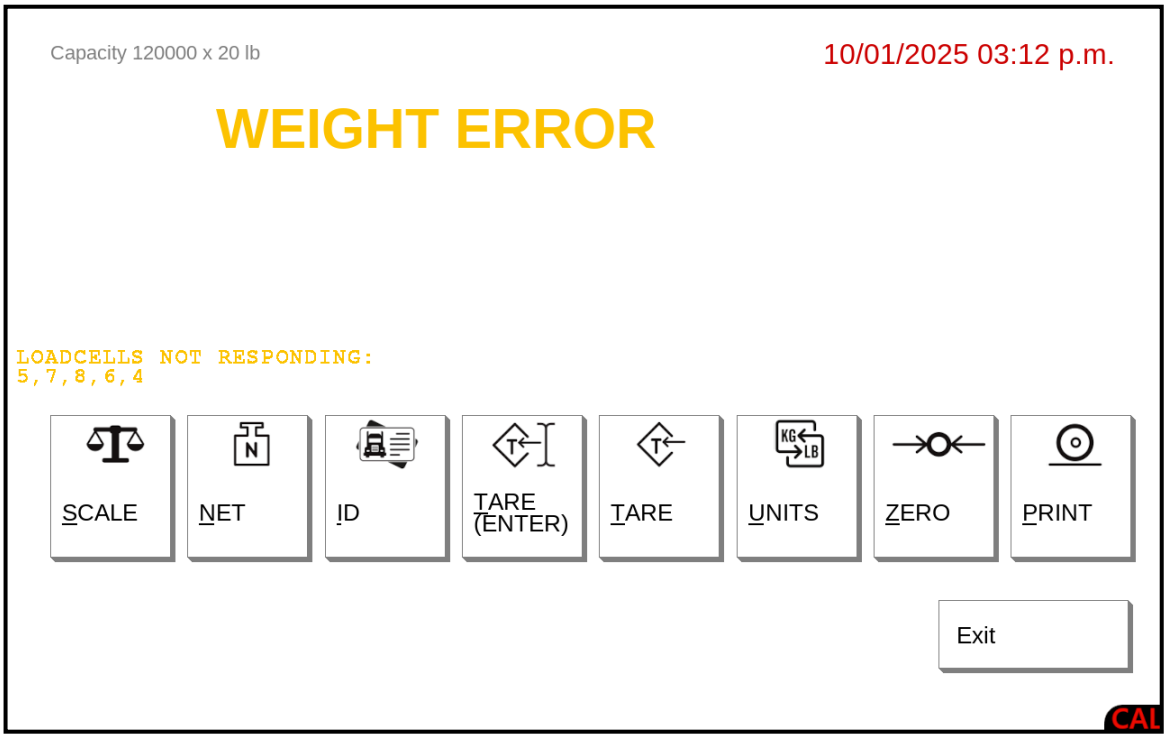


Probable Cause	Items to Check
There is a loss of communication between load cells.	• Check that the cable is connected correctly. • Check the cable for damage. • Verify that the connector is clear of debris. • Check the load cell COM ports on both load cells.

DIGITAL SCALE DIAGNOSTICS, CONT.

On Screen Diagnostics, Cont.

LOADCELLS NOT RESPONDING: #, #, #, #,

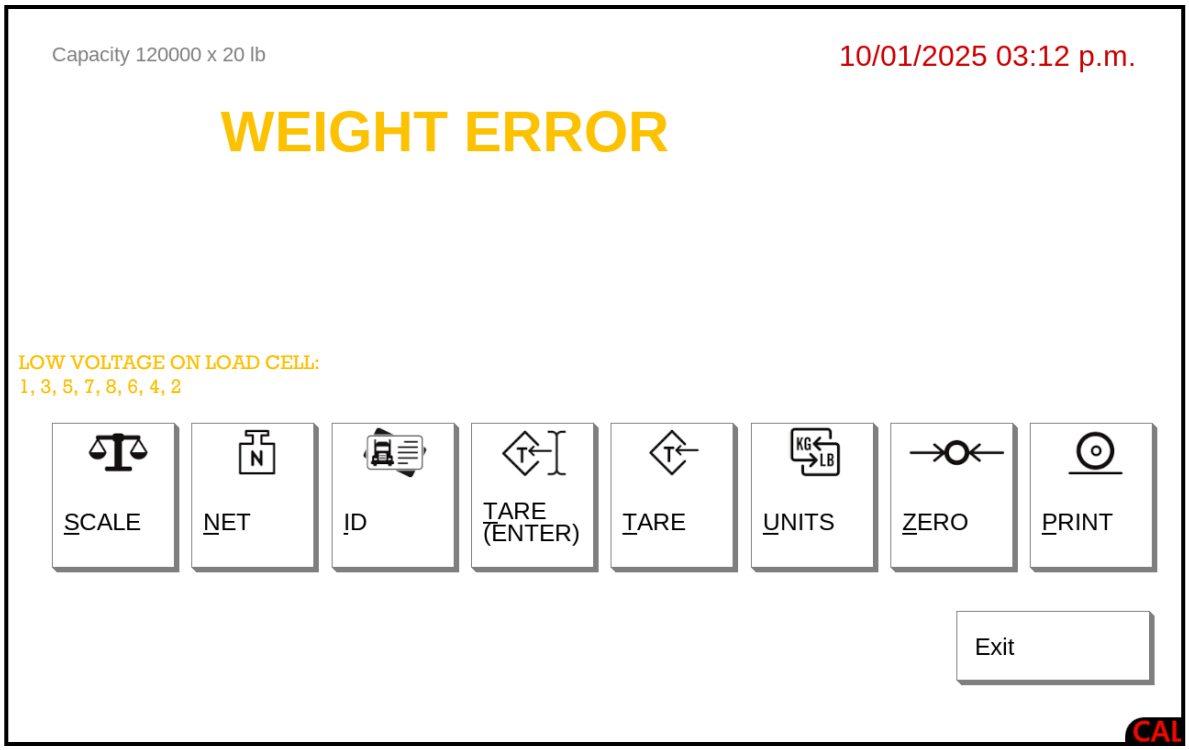


Probable Cause	Items to Check
The 825D cannot detect the exact communication problem with the unresponsive load cell.	• Check that the cable is connected correctly. • Check the cable for damage. • Verify that the connector is clear of debris. • Potentially dead load cell.

DIGITAL SCALE DIAGNOSTICS, CONT.

On Screen Diagnostics, Cont.

LOW VOLTAGE ON LOAD CELL #, #, #, #, #, #, #,



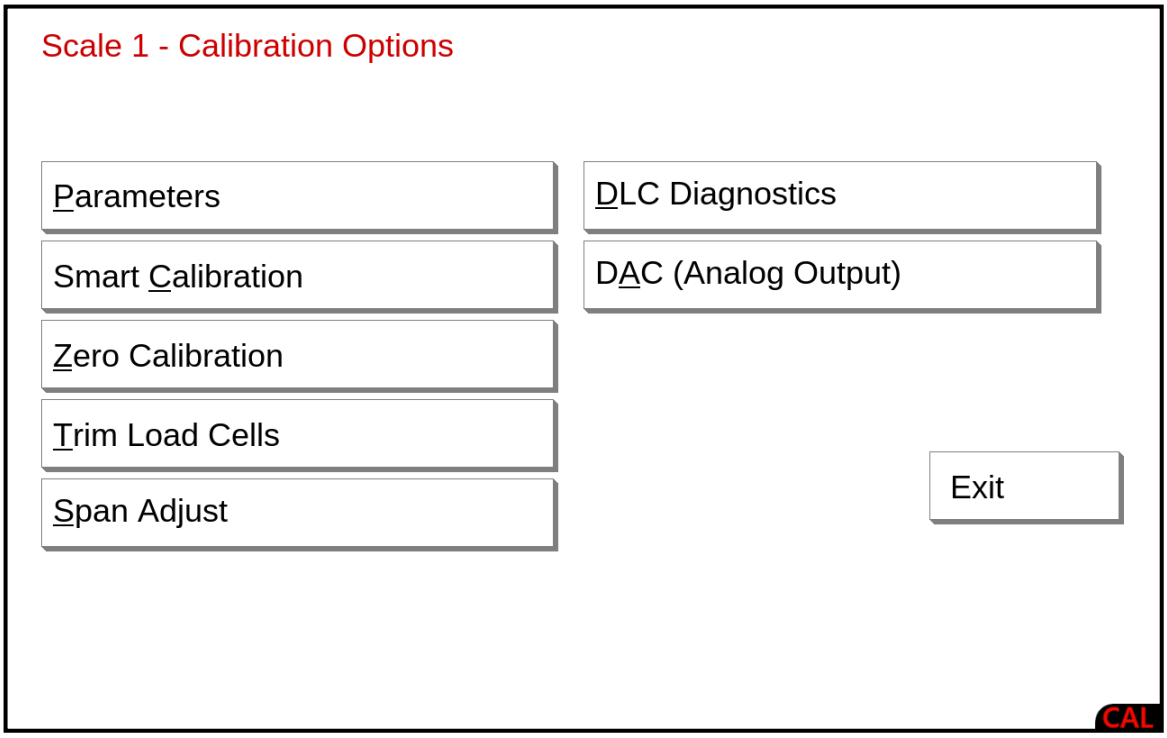
Probable Cause	Items to Check
Low power on a load cell. **NOTE:** Load cells at the end of the CAN daisy chain are most susceptible to low-voltage errors because of voltage drop along the cable.	• There are too many load cells on the chain. • Check that the cable is connected correctly. • Check the cable for damage. • Verify that the connector is clear of debris. • Check the 825D indicator power supply.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics

The DLC Diagnostics is a set of diagnostic tools that gives a technician more information about each load cell.

With the **Scale 1 - Calibration Options** screen displayed, select the **DLC Diagnostics** menu option, or if using a USB keyboard, press **D**. The display will change to the **DLC - Load Cell Weights** (Live Load Cell Weights) screen.

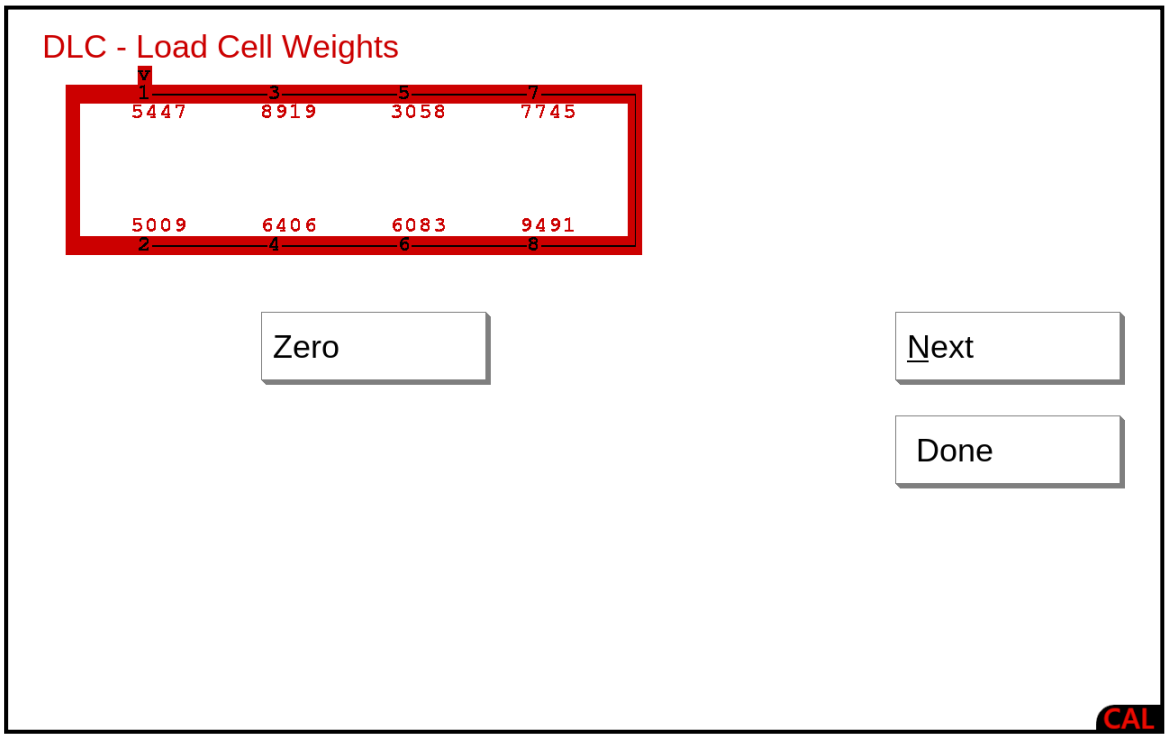


NOTE: To access DLC Diagnostics directly, select **Legal Metrology Information/Setup** from the Start-Up screen, and then select **DLC Diagnostics**. This method provides faster access to the 825D diagnostic tools by bypassing the login, password, and setup menu steps.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

Load Cell Weights (Live Weights)



Zero

The **Zero** selection is used to reset (zero) the readings on various diagnostics screens.

Next

The **Next** selection, or press **N** if using a USB keyboard, is used to advance to the next diagnostics screen. After advancing to the next diagnostics screen, the **Previous** selection will be shown.

Previous

The **Previous** selection, or if using a USB keyboard, pressing **P,** is used to return to the previous diagnostics screen.

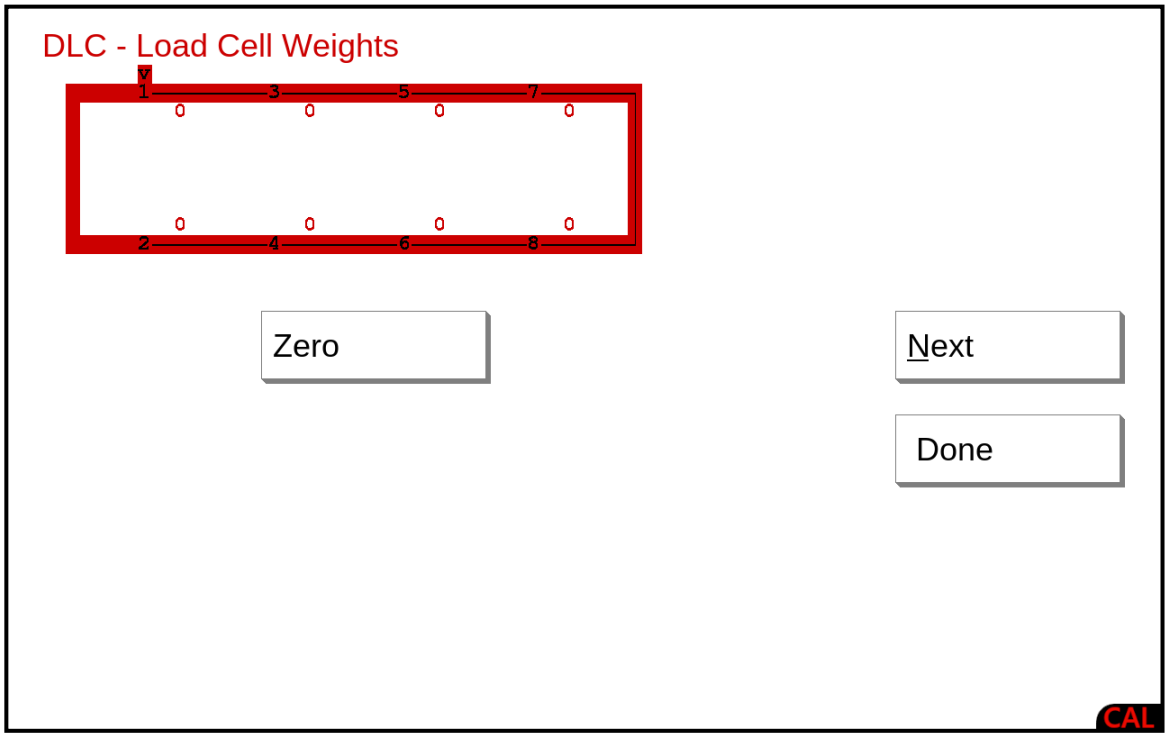
Done

The **Done** selection is used to return to the **Scale 1 - Calibration Options** screen.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

Zero (Live) Load Cell Weights



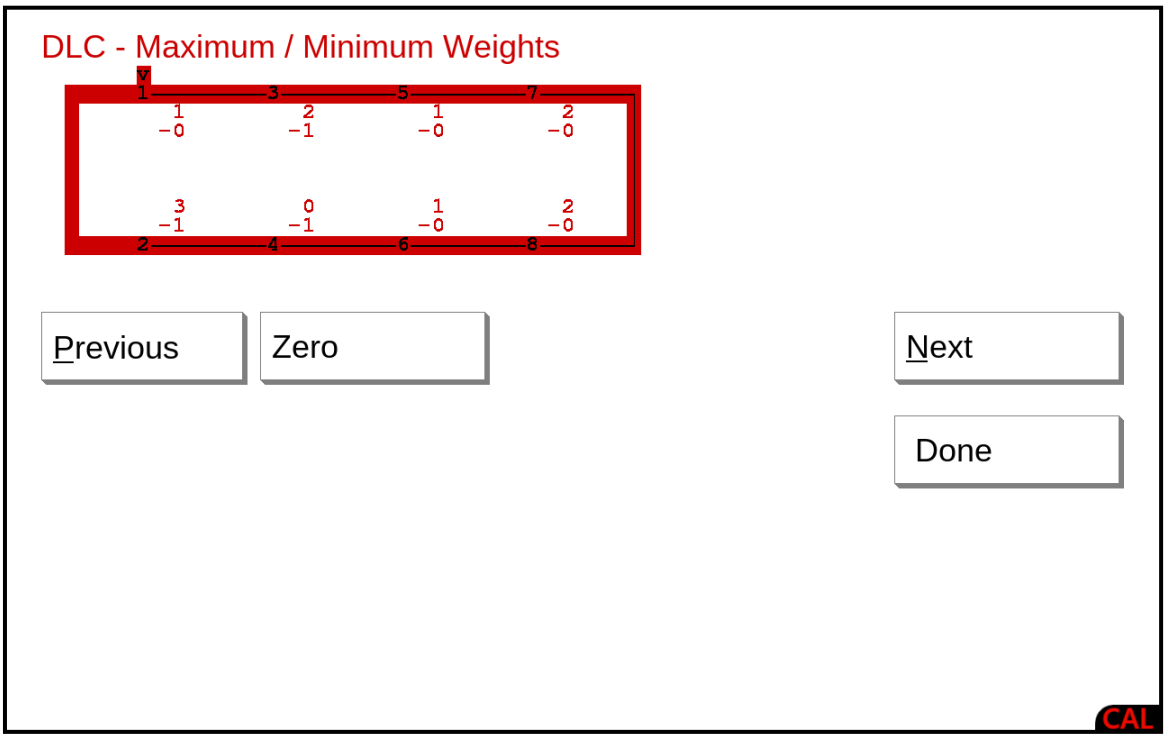
Press the **Zero** selection to reset the Live Load Cell Weights to zero. Note that this does not affect the scale zero.

Press the **Next** selection, or if using a USB keyboard, press **N** to advance to the **Maximum / Minimum Weights** diagnostic screen.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

Maximum / Minimum Weights



Press the **Zero** selection to reset the Maximum / Minimum Weights to zero.

Press the **Next** selection, or if using a USB keyboard, press **N** to advance to the **Deadload Shift** diagnostic screen.

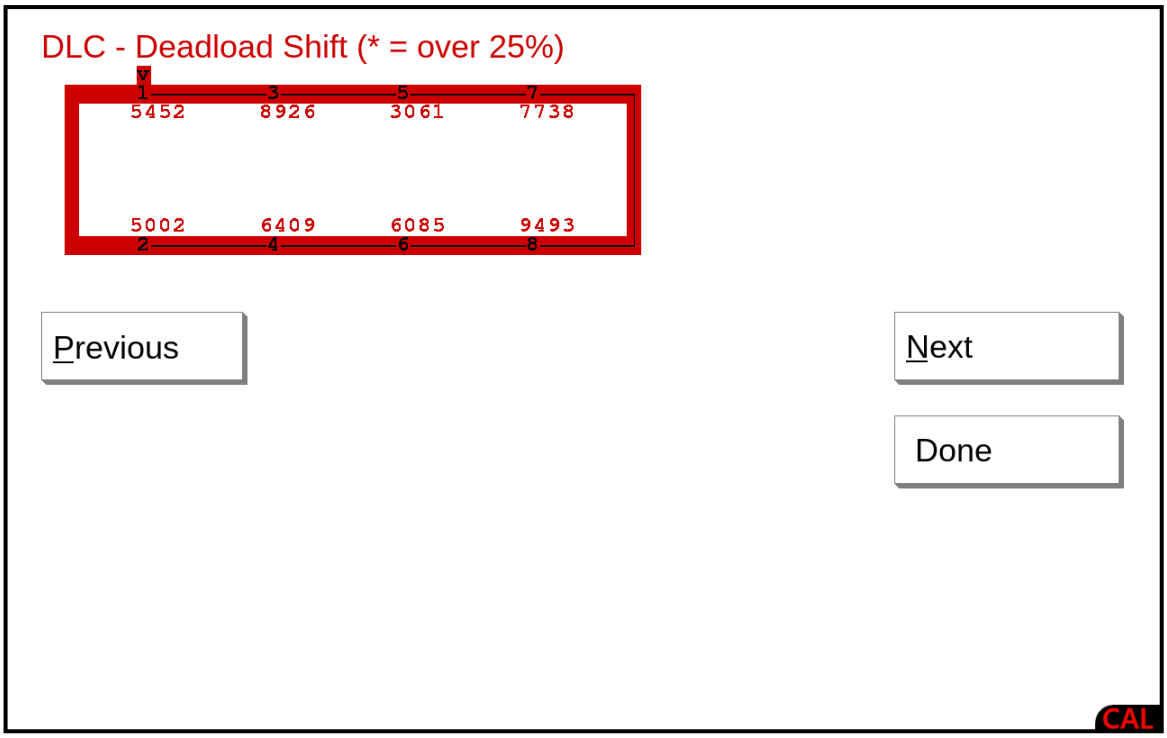
Press the **Previous** selection, or if using a USB keyboard, press **P** to return to the **Load Cell Weights (Live Weights)** diagnostics screen.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

Deadload Shift

This diagnostics screen shows the live shift from the original calibrated deadload. An asterisk (*) indicates that the deadload shift has been exceeded (over 25%). The scale must be ***empty*** for this to be valid.



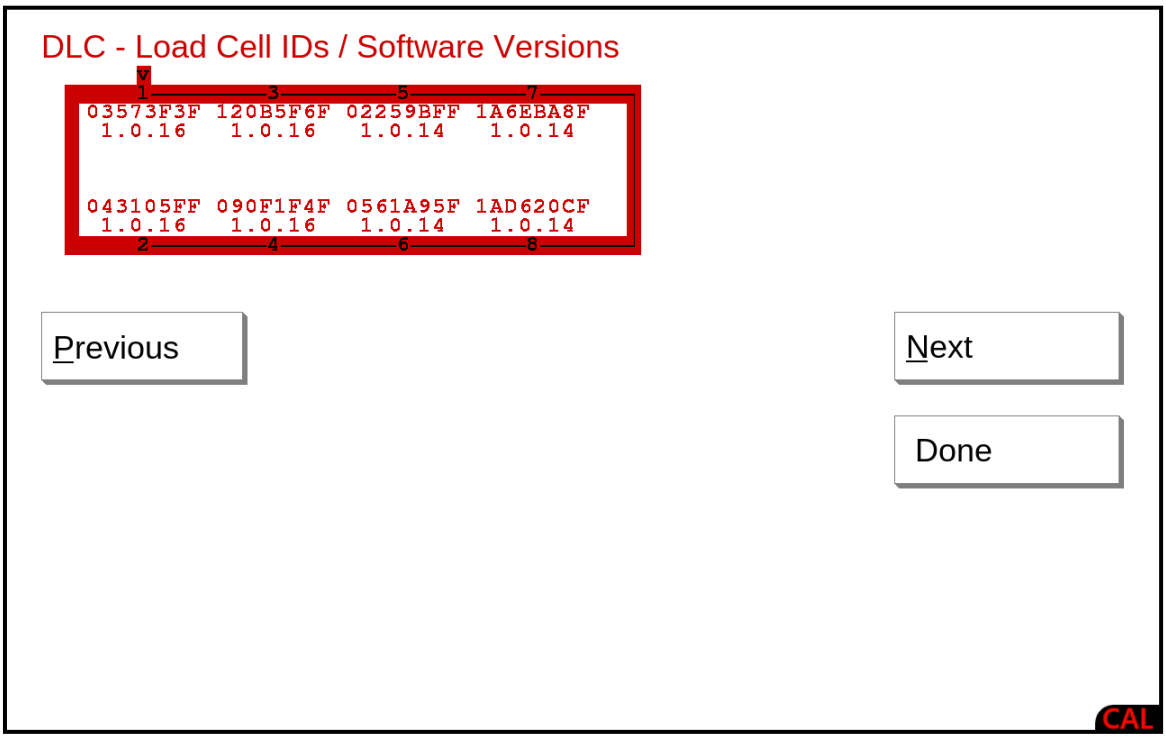
Press the **Next** selection, or if using a USB keyboard, press **N** to advance to the **Load Cell IDs / Software Versions** diagnostic screen.

Press the **Previous** selection, or if using a USB keyboard, press **P** to return to the **Maximum / Minimum Weights** diagnostic screen..

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

Load Cell IDs / Software Versions



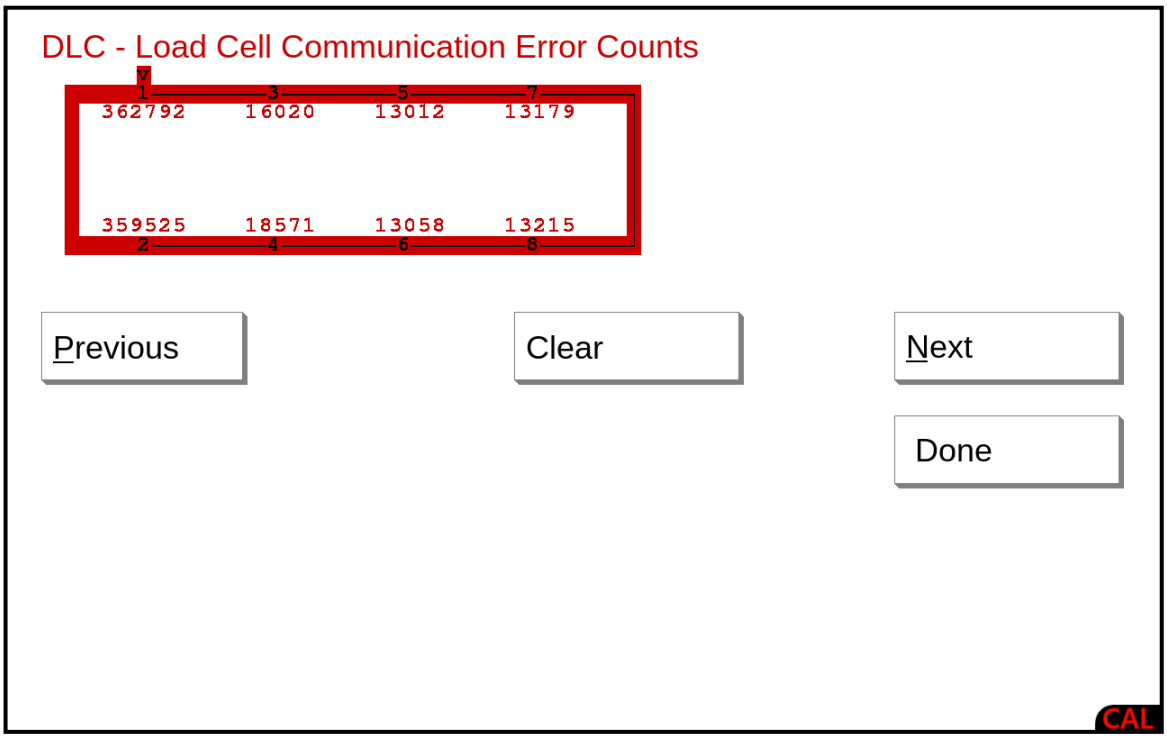
Press the **Next** selection, or if using a USB keyboard, press **N** to advance to the **Load Cell Communication Error Counts** diagnostic screen.

Press the **Previous** selection, or if using a USB keyboard, press **P** to return to the **Deadload Shift** diagnostic screen..

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

Load Cell Communication Error Counts



Press the **Clear** selection to clear the Load Cell Communication Error Counts.

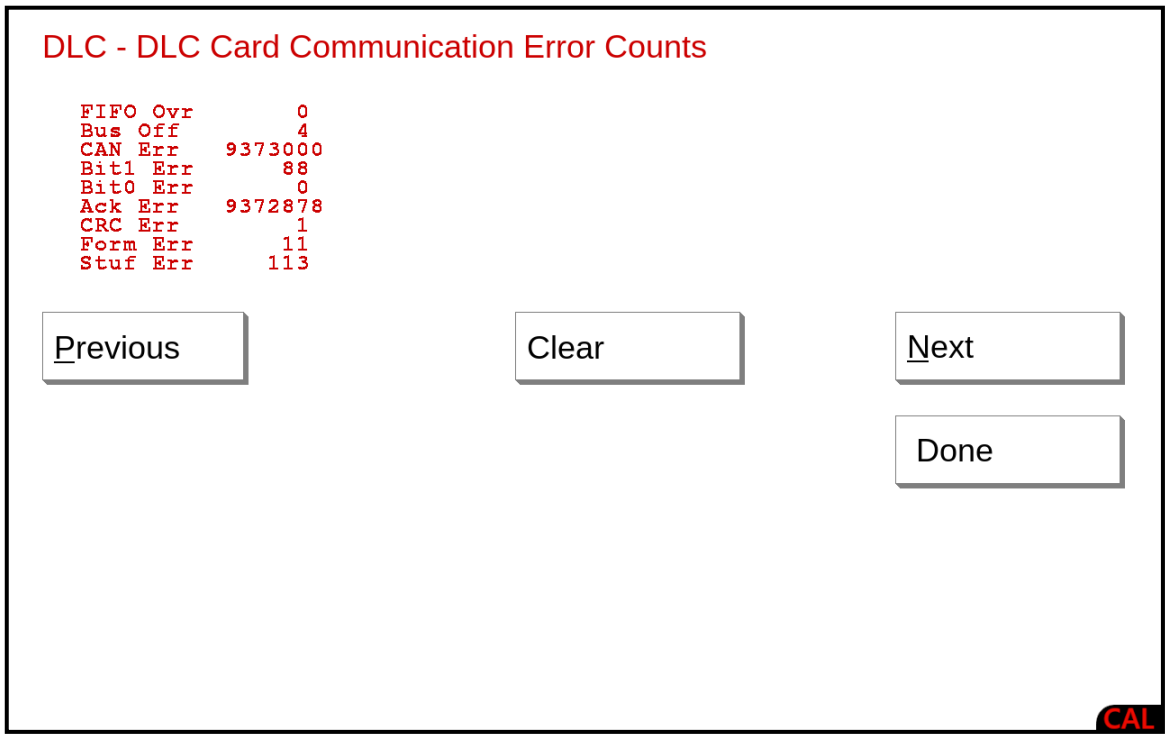
Press the **Next** selection, or if using a USB keyboard, press **N** to advance to the **DLC Card Communications Error Counts** diagnostic screen.

Press the **Previous** selection, or if using a USB keyboard, press **P** to return to the **Load Cell IDs / Software Versions** diagnostic screen.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

DLC Card Communication Error Counts



Press the **Clear** selection to clear the DLC Card Communication Error Counts.

Press the **Next** selection, or if using a USB keyboard, press **N** to advance to the **Weight Error Counts** diagnostic screen.

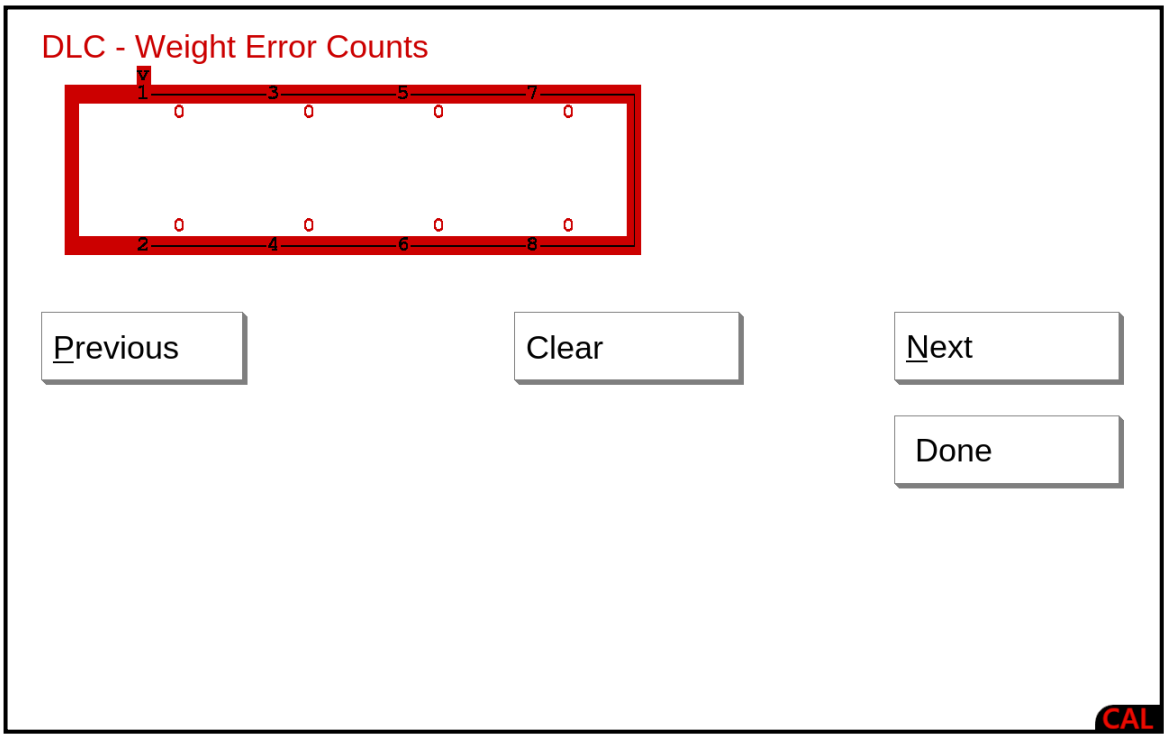
Press the **Previous** selection, or if using a USB keyboard, press **P** to return to the **Load Cell Communication Error Counts** diagnostic screen.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

Weight Error Counts

Weight Error Counts are analog errors that would normally indicate a bad cell.



Press the **Clear** selection to clear the Weight Error Counts.

Press the **Next** selection, or if using a USB keyboard, press **N** to advance to the **Load Cell Temperatures** diagnostic screen.

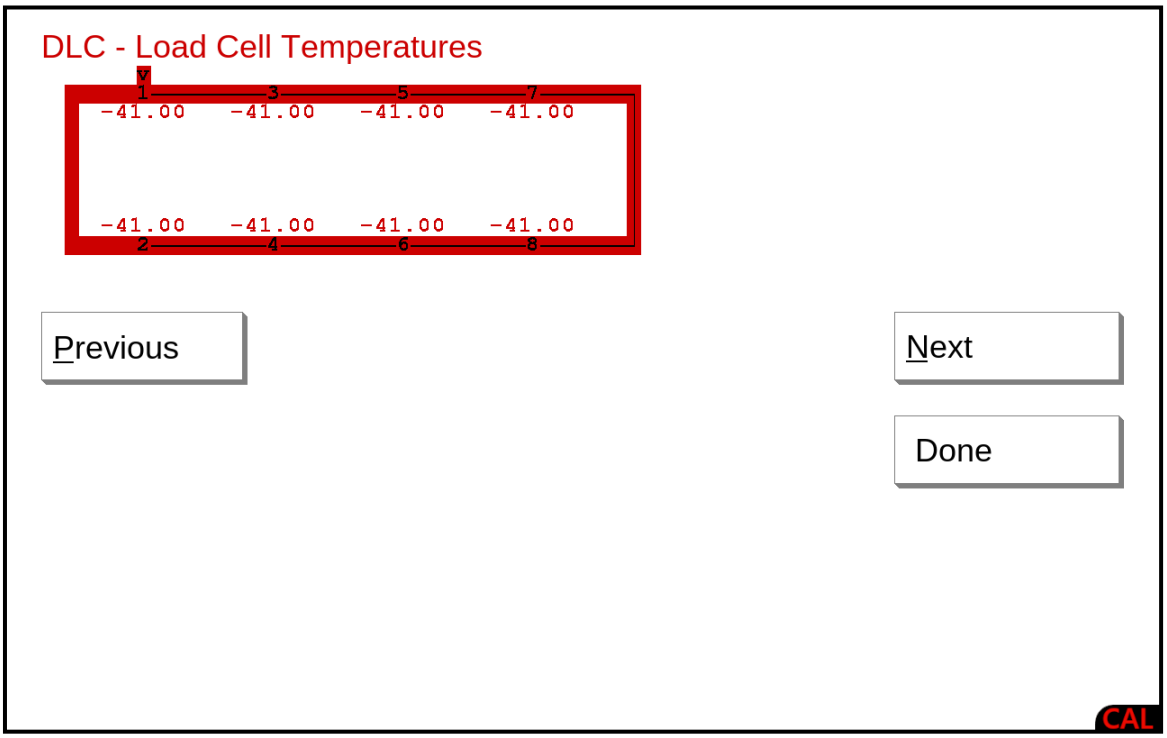
Press the **Previous** selection, or if using a USB keyboard, press **P** to return to the **DLC Card Communications Error Counts** diagnostic screen.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

Load Cell Temperatures

This is the temperature of the load cells in Celsius.



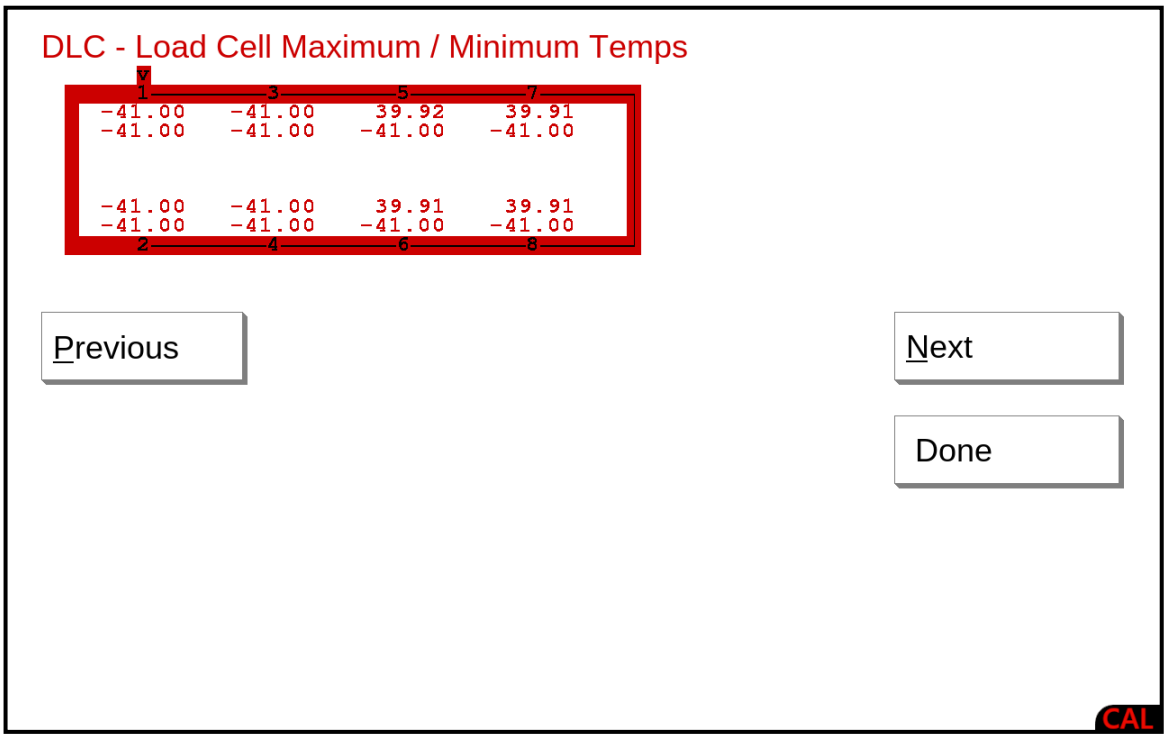
Press the **Next** selection, or if using a USB keyboard, press **N** to advance to the **Load Cell Maximum / Minimum Temps** diagnostic screen.

Press the **Previous** selection, or if using a USB keyboard, press **P** to return to the **Weight Error Counts** diagnostic screen.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

Load Cell Minimum / Maximum Temps



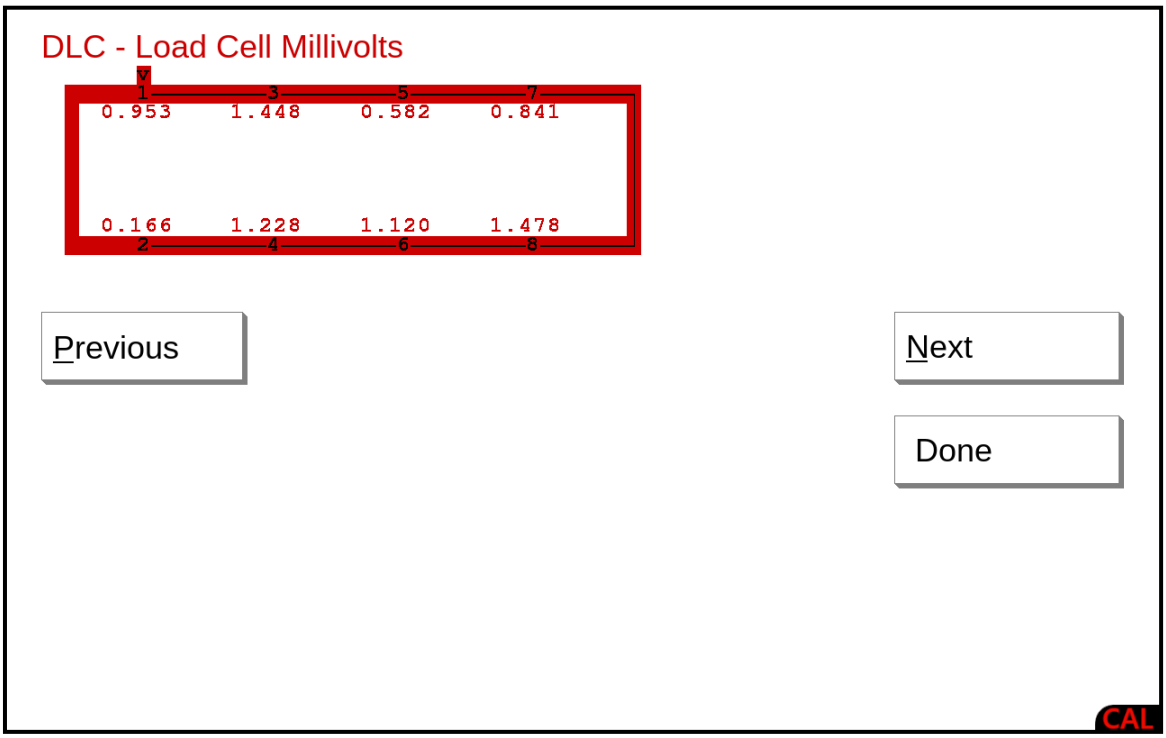
Press the **Next** selection, or if using a USB keyboard, press **N** to advance to the **Load Cell Millivolts** diagnostic screen.

Press the **Previous** selection, or if using a USB keyboard, press **P** to return to the **Load Cell Temperatures** diagnostic screen.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

Load Cell Millivolts



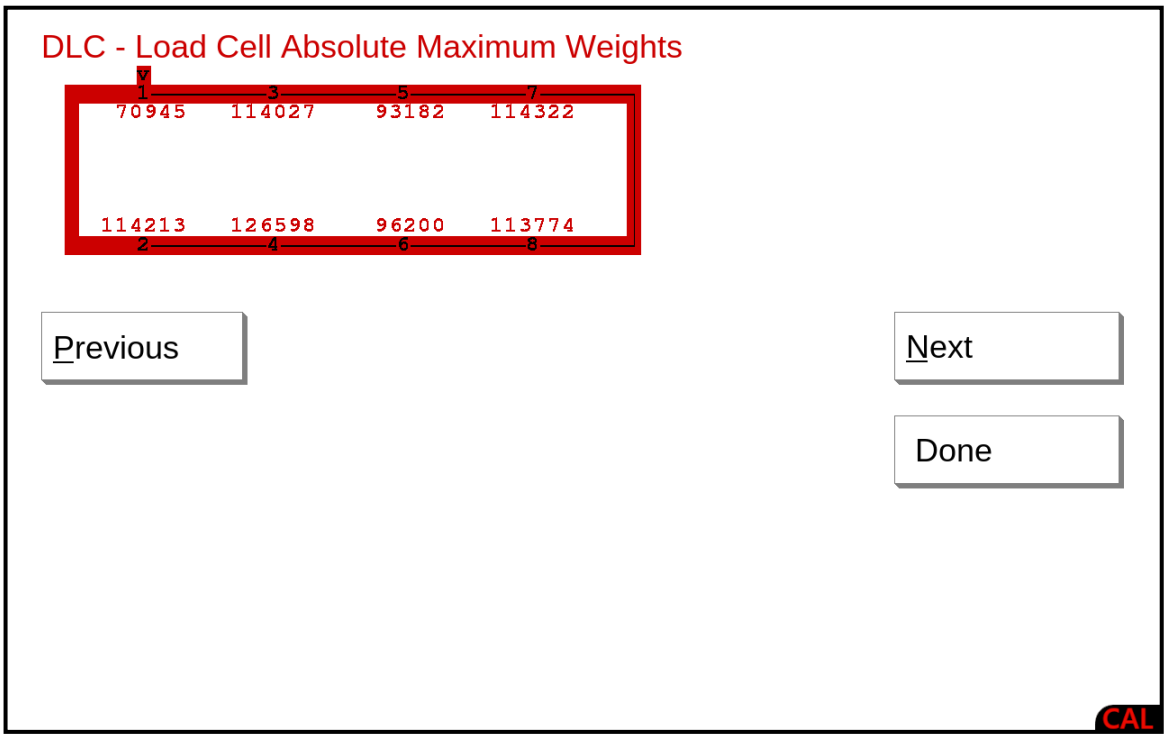
Press the **Next** selection, or if using a USB keyboard, press **N** to advance to the **Load Cell Absolute Maximum Weights** diagnostic screen.

Press the **Previous** selection, or if using a USB keyboard, press **P** to return to the **Load Cell Maximum / Minimum Temps** diagnostic screen.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

Load Cell Absolute Maximum Weights



Press the **Next** selection, or if using a USB keyboard, press **N** to advance to the **Supply Voltage - Raw Count / Voltage** diagnostic screen.

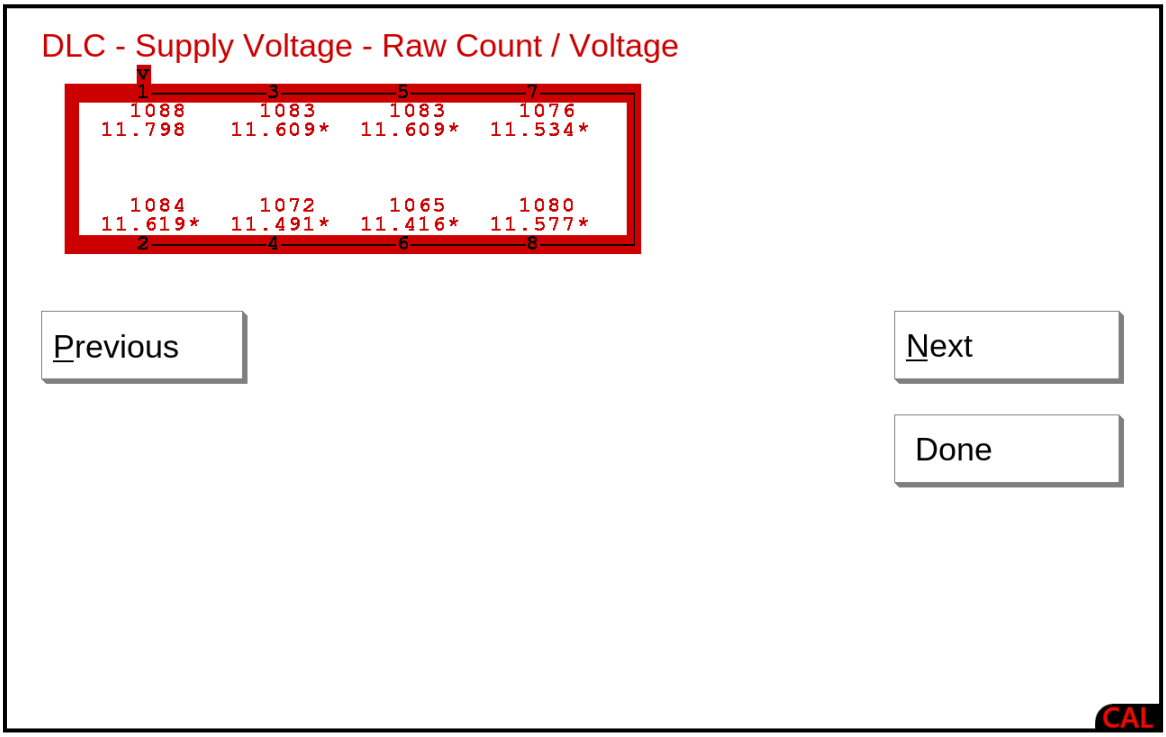
Press the **Previous** selection, or if using a USB keyboard, press **P** to return to the **Load Cell Millivolts** diagnostic screen.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

Supply Voltage – Raw Count / Voltage

NOTE: An asterisk (*) indicates voltage determination is approximated based on the raw count value.



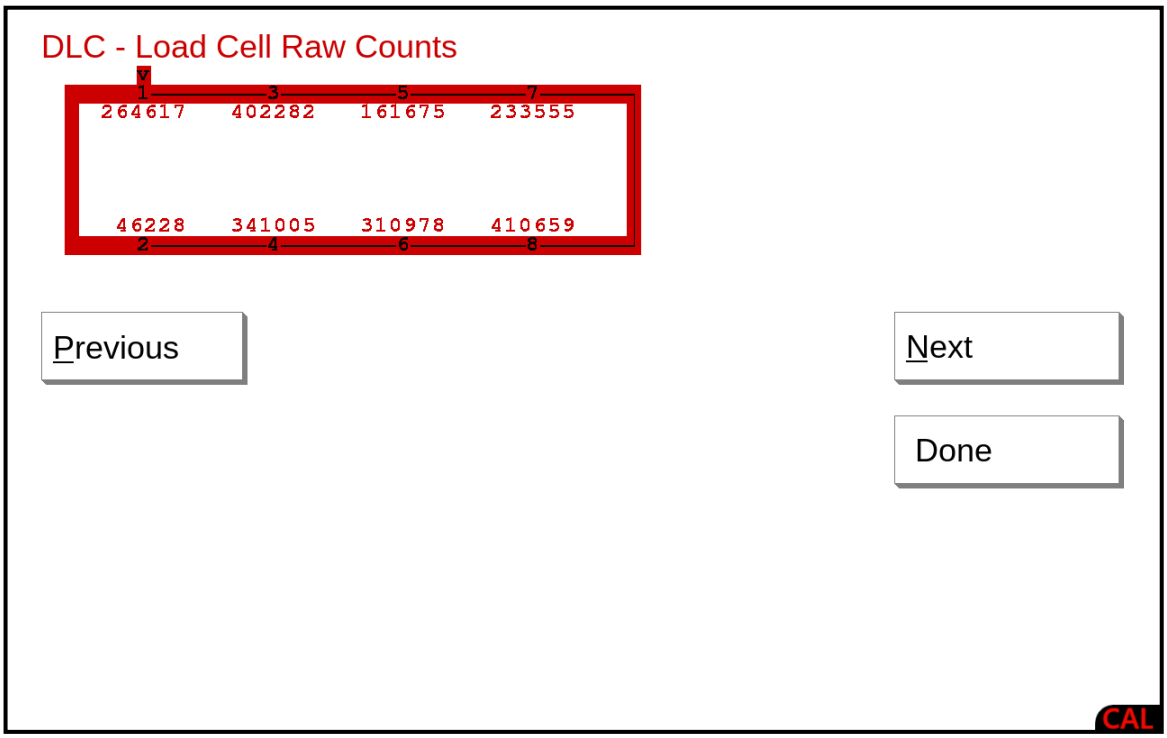
Press the **Next** selection, or if using a USB keyboard, press **N** to advance to the **Load Cell Raw Counts** diagnostic screen.

Press the **Previous** selection, or if using a USB keyboard, press **P** to return to the **Load Cell Absolute Maximum Weights** diagnostic screen.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

Load Cell Raw Counts



Press the **Next** selection, or if using a USB keyboard, press **N** to advance to the **DLC iSite Status of Last Connection** diagnostic screen.

Press the **Previous** selection, or if using a USB keyboard, press **P** to return to the **Supply Voltage - Raw Count / Voltage** diagnostic screen.

DIGITAL SCALE DIAGNOSTICS, CONT.

DLC Diagnostics, Cont.

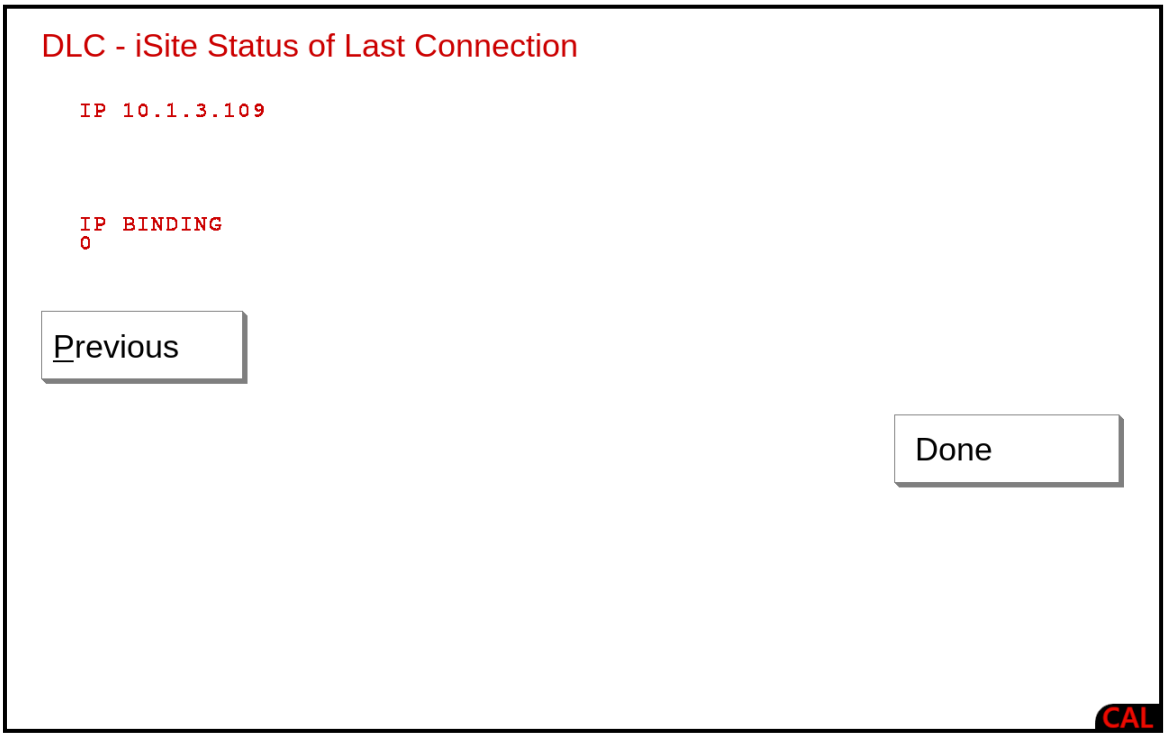
iSite Status of Last Connection

If the **IP BINDING** message is displayed for a long time, it may indicate that no network connection is present.

WAITING FOR SOCKET INIT

PORT CONNECT FAIL

COMM ESTABLISHED – successful connection



Press the **Previous** selection, or if using a USB keyboard, press **P** to return to the **Load Cell Raw Counts** diagnostic screen.

Press the **Done** selection to return to the **Scale 1 - Calibration Options** screen.

DIGITAL SCALE DIAGNOSTICS, CONT.

Hardware Diagnostics

The 825-DLC (Digital Load Cell Controller) option card has four LEDs for diagnostic purposes.

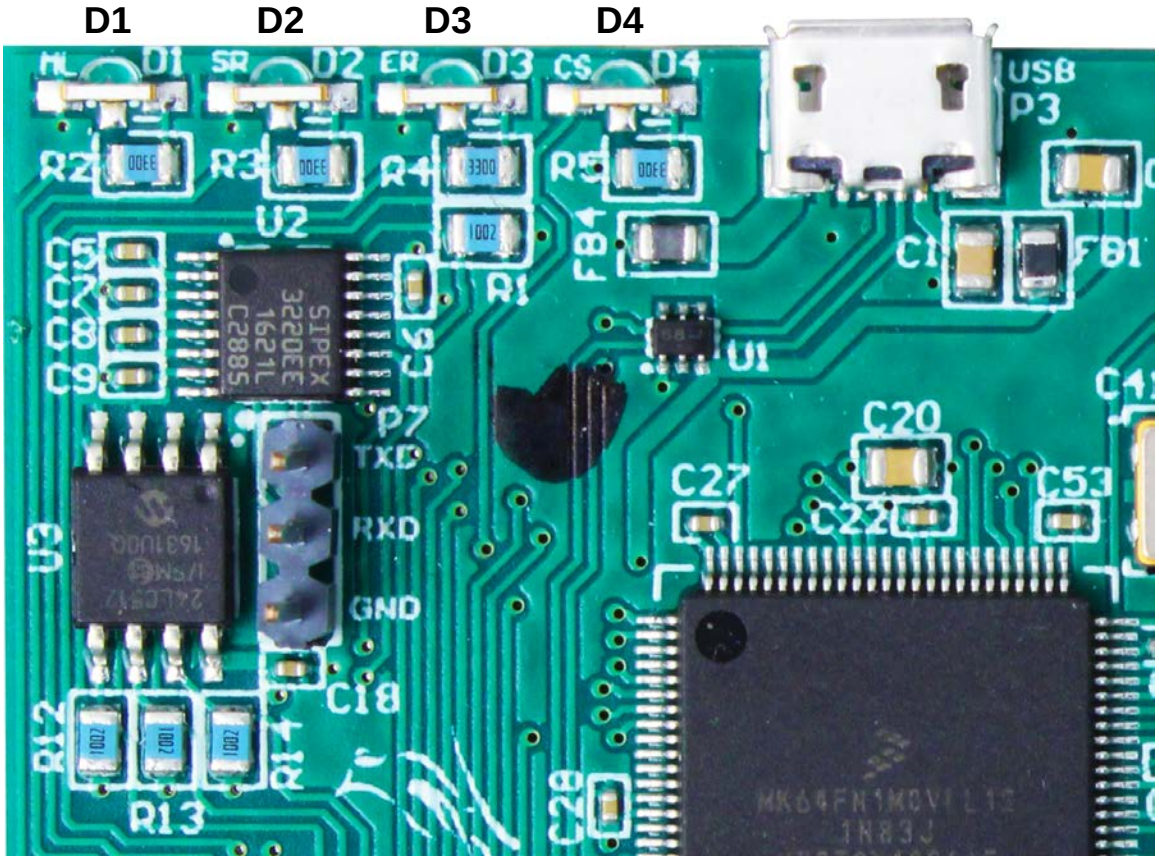


Figure No. 25

D1 – Blinking = Indicates the 825-DLC card is communicating with the 825D main PC board.

D2 – Blinking = Indicates the 825-DLC card is transmitting messages to the load cells.

D3 – Blinking = Indicates the 825-DLC card is receiving responses from all assigned load cells.

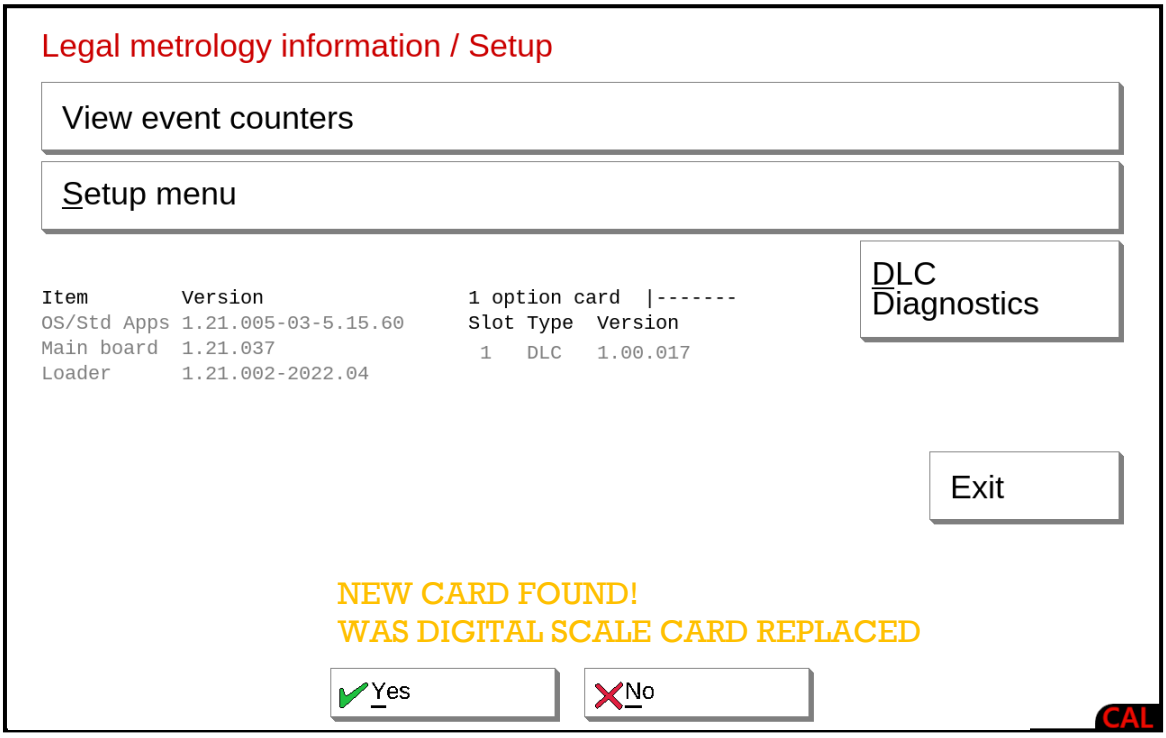
D4 – Blinking = Indicates 825-DLC card select from the 825D main PC board.

DETECTING BOARD REPLACEMENTS

The 825D will detect when a 825-DLC controller card or the 825D main PC board has been replaced using checksums and unique board identification numbers. Based on several parameters, it can detect whether the option card was replaced, or the mainboard was replaced and then reconfigure the NEW card to the existing scale.

825-DLC CONTROLLER CARD REPLACEMENT

If an 825-DLC controller card has been replaced, the 825D will display a message on the **Legal metrology information / Setup** screen indicating a new card has been found.



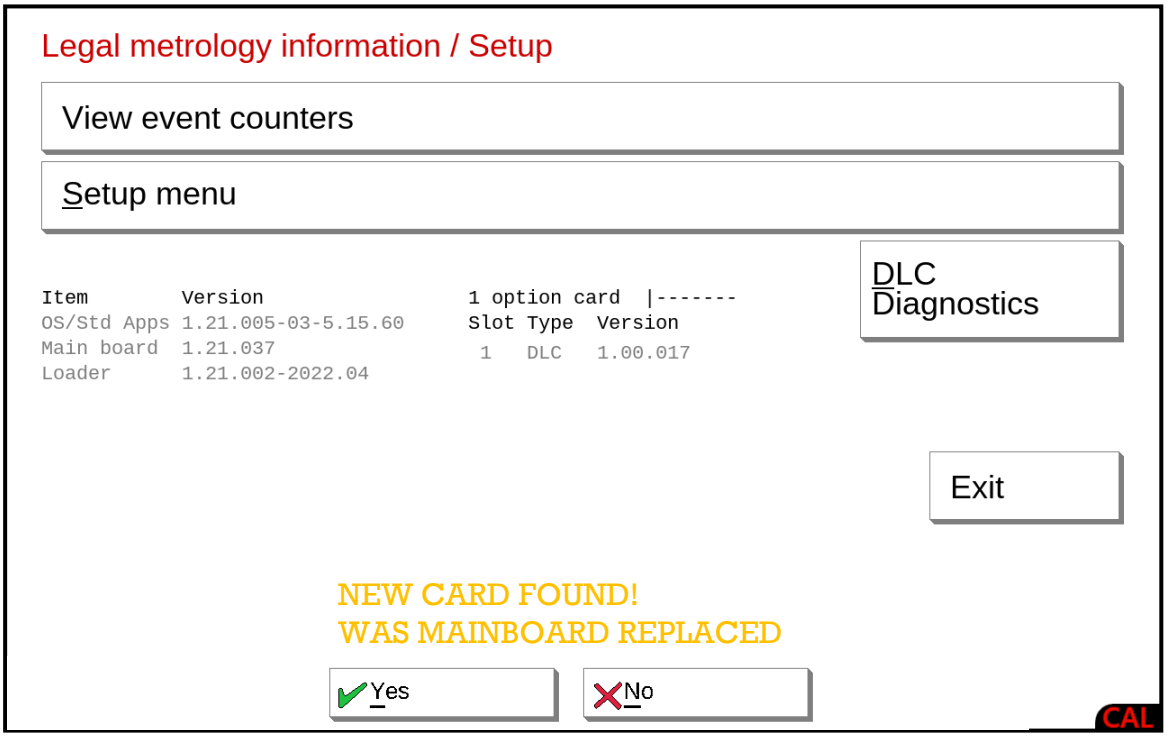
The 825D will check whether the 825-DLC controller card has been replaced, in order to reconfigure the new controller card to the existing scale.

If the operator selects **Yes**, then the 825D main PC board will upload the scale configuration to the new controller card, and the 825D will immediately be able to make weight again.

DETECTING BOARD REPLACEMENTS, CONT.

MAIN PC BOARD REPLACEMENT

If the main PC board has been replaced, the 825D will display a message on the **Legal metrology information / Setup** screen indicating a new card has been found.



The system will also check whether the main PC board of the 825D has been replaced, so that the scale configuration can be downloaded from the 825-DLC controller card to the new 825D main PC board.

If the operator selects **Yes**, the scale configuration will be downloaded from the 825-DLC controller card to the new main PC board. Scale configuration includes the number of load cells, all load cell IDs, and individual load cell trim.

The 825D indicator parameters will need to be entered manually (Interval, Decimal Point Position, Zero Tracking, Filtering, Print Settings, and Serial Settings).

NOTE: A dead load calibration will need to be performed (***does not require test weights***).

825-DLC CONTROLLER CARD REPLACEMENT

CAUTION! OBSERVE THE PRECAUTIONS FOR HANDLING STATIC SENSITIVE DEVICES

1. Remove the 825D power cord from the wall outlet or turn off the breaker for the indicator.
2. Open the indicator enclosure to access the 825-DLC controller card. The procedure varies by indicator model. Refer to the instructions below for your specific model.

825D-D Desktop Indicator:

Locate and remove the two (2) thumbscrews securing the hinged front display panel to the base enclosure. Next, referring to Figures No. 26 and 27 below, pull forward on the panel and then lower the front display panel until it is completely opened.

Figure No. 26

Figure No. 27

825D-S Stainless Steel Indicator:

Referring to Figures No. 28 and 29 below, unsnap the four draw latches (two on top and two on bottom) securing the front display panel to the rear enclosure, and then lower the hinged front display panel.

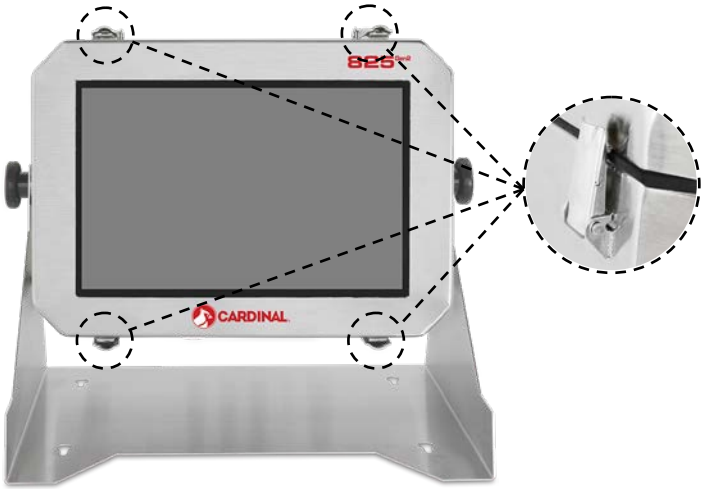


Figure No. 28

Figure No. 29

825-DLC CONTROLLER CARD REPLACEMENT, CONT.

825D-NS No Screen Indicator:

Referring to Figures No. 30 and 31 below, remove the four (4) thumbscrews securing the top plate to the base enclosure, and then remove the top plate, exposing the main PC board in the base enclosure.

Figure No. 30

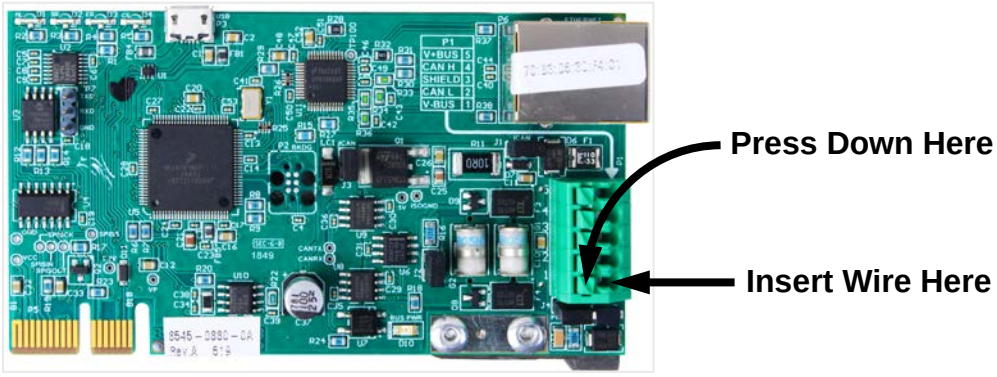
Figure No. 31

3. Remove the screw securing the 825-DLC controller card to the main PC board, and then lift the card straight up to remove it from the enclosure.
4. Disconnect the Homerun cable wires from the P1 terminal block on the old 825-DLC controller card.
5. On the new 825-DLC controller card, connect each wire from the Homerun cable to the P1 terminal block. Use the table below (or the circuit board silkscreen) for terminal connections.

Board Label	Homerun Cable Wire Color	Wire Color if using a Load Cell Cable
V-BUS	BLACK	BLUE
CAN L	BLUE or LIGHT BLUE	GRAY
SHIELD	GRAY	BROWN
CAN H	WHITE	BLACK
V+BUS	RED	WHITE

6. Referring to Figure No. 32 below, use a small flat-blade screwdriver to press down on the release for the terminal, insert the wire into the opening, and then remove the screwdriver. The release will return to its original position, locking the wire in place.

Figure No. 32



825-DLC CONTROLLER CARD REPLACEMENT, CONT.

7. Completing the replacement of the 825-DLC controller card is dependent on the indicator model you have:

All models (825D-D, 825D-S, and 825D-NS):

Ensure any excess cable has been removed from the indicator enclosure.

Next, install the 825-DLC controller card into the enclosure by carefully aligning the card edge connector with the slot on the main PC board and applying even downward pressure to the edge of the card.

Finally, secure the card to the main PC board with the screw removed earlier.

825D-D Desktop Indicator:

Close the hinged front display panel by lifting it until it is against the base enclosure, and then secure the front display panel to the base enclosure with the 2 thumbscrews removed earlier.

825D-S Stainless Steel Indicator:

Close the hinged front display panel by lifting it until it is against the rear enclosure. Next, place the catch of the draw latches over the latch hooks on the front panel (two on top and two on bottom) and then snap the latches in place, ensuring the front display panel is tightly closed against the rear enclosure.

825D-NS No Screen Indicator:

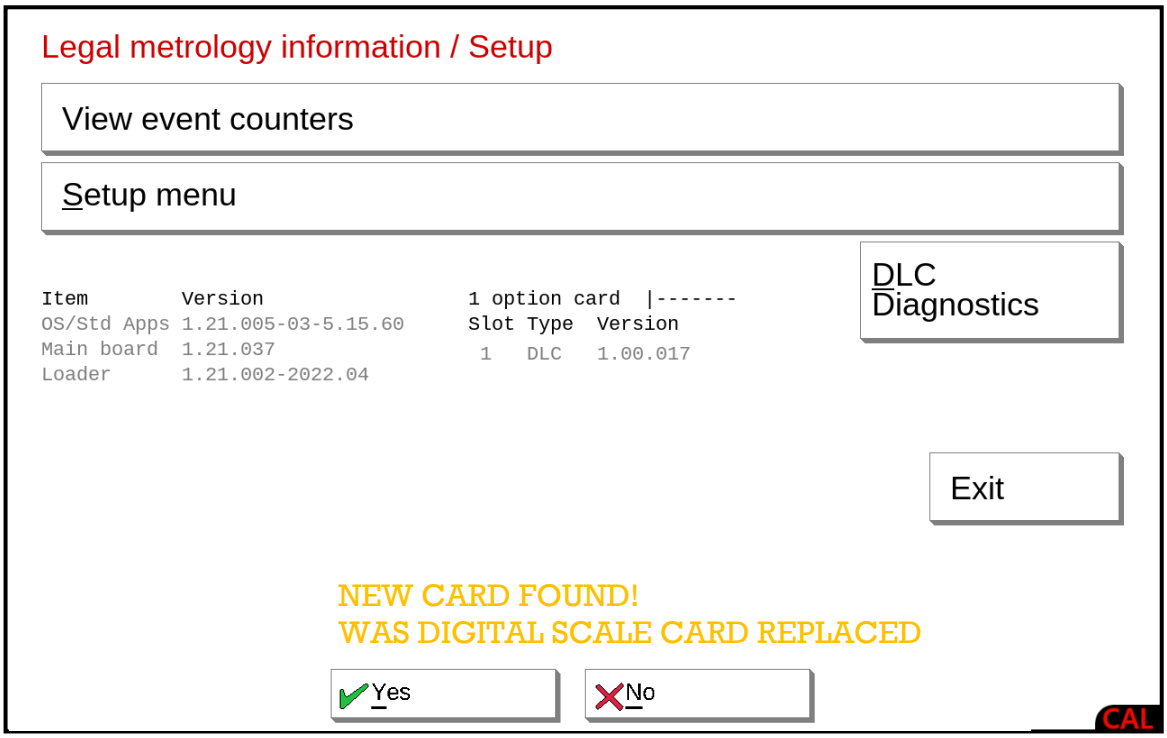
Place the top plate on the base enclosure and secure the top plate to the base enclosure with the four (4) thumbscrews removed earlier.

8. Re-insert the 825D power cord into the wall outlet or turn on the breaker for the indicator.

9. Press the Push Button Power Switch on the rear enclosure of the 825 to turn it on.

825-DLC CONTROLLER CARD REPLACEMENT, CONT.

10. After replacing the 825-DLC controller card, the 825D will display a message on the **Legal metrology information / Setup** screen indicating a new card has been found.



11. The 825D will check whether the 825-DLC controller card has been replaced, in order to reconfigure the new option card to the existing scale.

12. If the operator selects **Yes**, the 825D main PC board will upload the scale configuration to the new 825-DLC controller card, and the 825D will immediately be able to make weight again.

STATEMENT OF LIMITED WARRANTY

WARRANTY TERMS

Cardinal Scale Manufacturing Company warrants the equipment we manufacture against defects in material and workmanship. The length and terms and conditions of these warranties vary with the type of product and are summarized below:

PRODUCT TYPE	TERM	MATERIAL AND WORKMAN-SHIP	LIGHTNING DAMAGE See note 9	WATER DAMAGE See note 7	CORROSION See note 4	ON-SITE LABOR	LIMITATIONS AND REQUIREMENTS
WEIGHT INDICATORS	90 DAY REPLACEMENT --- 1 YEAR PARTS	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D
LOAD CELLS (Excluding Hydraulic)	1 YEAR	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D
HYDRAULIC LOAD CELLS (When purchased with Guardian Vehicle Scale)	LIFETIME	YES	YES	YES	YES	90 DAYS	1, 5, 6, 8 A, B, C, D
HYDRAULIC LOAD CELLS (When purchased separately)	10 YEARS	YES	YES	YES	YES	NO	1, 5, 6, 8, 9 A, B, C, D
VEHICLE SCALE (Deck and Below Excl. PSC Series)	5 YEARS	YES	YES	YES	YES	90 DAYS	1, 2, 3, 5, 6 A, B, C, D, E
LSC SCALE (Deck and Below)	3 YEARS	YES	YES	YES	YES	90 DAYS	1, 2, 3, 5, 6, 11 A, B, C, D
GUARDIAN FLOOR SCALES	10 YEARS	YES	YES	YES	YES	NO	1, 2, 3, 5, 6, 9, 10 A, B, C, D
ALL OTHER CARDINAL PRODUCTS	1 YEAR	YES	YES	YES	YES	NO	1, 2, 5, 6 A, B, C, D, E
REPLACEMENT PARTS	90 DAYS	YES	YES	YES	YES	NO	1, 2, 4, 5, 6 A, B, C, D
SWIM AND 760 SERIES VEHICLE SCALES	1 YEAR	YES	YES	YES	YES	90 DAYS	1, 2, 5, 6 A, B, C, D
SOFTWARE	90 DAYS	YES	N/A	N/A	N/A	NO	1, 6 B, C, D
CONVEYOR BELT SCALES (including Belt-Way)	1 YEAR	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D, E, F

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04/24
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315-WARRANTY-CAR-M

APPLICABLE LIMITATIONS AND REQUIREMENTS

1. This warranty applies only to the original purchaser. The warranty does not apply to equipment that has been tampered with, defaced, damaged, or had repairs or modifications not authorized by Cardinal or has had the serial number altered, defaced or removed.
2. This warranty is not applicable to equipment that has not been grounded in accordance with Cardinal's recommendations.
3. This equipment must be installed and continuously maintained by an authorized Cardinal / Belt-Way dealer.
4. Applies only to components constructed from stainless steel.
5. This warranty does not apply to equipment damaged in transit. Claims for such damage must be made with the responsible freight carrier in accordance with freight carrier regulations.
6. Warranty term begins with date of shipment from Cardinal.
7. Only if device is rated NEMA 4 or better or IP equivalent.
8. Lifetime warranty applies to damages resulting from water, lightning, and voltage transients and applies only to the hydraulic load cell structure itself (does not include pressure transducers, rubber seals, o-rings, and associated wiring).
9. 10-Year prorated warranty on hydraulic load cells.
10. 1-Year warranty for scale structure.
11. PSC models' warranty coverage applies only to agricultural installations on farms up to 3,000 acres (LSC models not limited in this manner).
12. Load cell kits MUST be installed in accordance with Cardinal Scale instructions. Failure to follow these instructions will void the warranty.

EXCLUSIONS

A.) This warranty does not include replacement of consumable or expendable parts. The warranty does not apply to any item that has been damaged due to unusual wear, abuse, improper line voltage, overloading, theft, fire, water, prolonged storage or exposure while in purchaser's possession or acts of God unless otherwise stated herein.

B.) This warranty does not apply to peripheral equipment not manufactured by Cardinal. This equipment will normally be covered by the equipment manufacturer's warranty.

C.) This warranty sets forth the extent of our liability for breach of any warranty or deficiency in connection with the sale or use of our product. Cardinal will not be liable for consequential damages of any nature, including but not limited to loss of profit, delays or expenses, whether based on tort or contract. Cardinal reserves the right to incorporate improvements in material and design without notice and is not obligated to incorporate said improvements in equipment previously manufactured.

D.) This warranty is in lieu of all other warranties expressed or implied including any warranty that extends beyond the description of the product including any warranty of merchantability or fitness for a particular purpose. This warranty covers only those Cardinal products installed in the forty-eight contiguous United States and Canada.

E.) This warranty does not cover paint coatings due to the variety of environmental conditions.

F.) Do not cut load cell cables on load cells returned for credit or warranty replacement. Cutting the cable will void the warranty.

G.) Software is warranted only for performance of the functions listed in the software manual and/or the Cardinal proposal.

H.) The software warranty does not cover hardware. Warranties on hardware are provided from the hardware vendor only.

I.) The software warranty does not cover interfacing issues to non-Cardinal supplied hardware.

J.) The software warranty does not include automatic software upgrades unless purchased separately.

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