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### **Manual Updates and Corrections**

Efforts have been made to make this document accurate and useful for Digi-Star service centers. Reader input is important and changes to improve this document are important to keep up with product changes and to correct errors.

Please contact your Digi-Star service representative if you wish to suggest changes or make corrections to this document.

### **Reference Documents**

D3739 – EZ3 Technical Manual – contains other scale related information including setting descriptions

D3586 - Direct Access Numbers and software functions

D3605 – Software release information – software version & type used by model

D3648 - Escape computer commands - RS232 serial commands and print formats

D3657 – Log Form Setup – factory settings for indicators

F3471 – Setup and Calibration numbers

F3471 Appendix A & B – Setup & Calibration guides

D3924, D3925, D3931, D3933, D3934, D3935 – Scale Link Operation and Installation manuals

Other documents available at <a href="http://www.Digi-Star.com">www.Digi-Star.com</a>

# **Definition of a Scale Link**

Scale Links are scales within an enclosed housing that do not have any built in displays to view weight and other information. They are typically "linked" to a remote display such as the Scale Link Control (SLC2400V), touch-screen display (SLT7600), or virtual terminal (VT) to view the scale interface and gain access to the scale's functionality. Scale Links come in three Series – the SL100, SL200, and SL300.

# **Scale Link Remote Display Options**

In order to view Scale Link data, the Scale Link must be connected to a Remote Display to change settings and to view weight or other information. Below is a list of the primary display options for the Scale Link along with their basic features.



### Scale Link Control: SLC2400V

- Basic user interface with keys to control the Scale Link
- For use on planters, grain carts, seed tenders and mixers
- Uses the 8 Pin M12 SLC connector
- A RD2500V w/ M12 cable may also be used for display only
- A RD2500V may be added to J903 equipped models for an additional remote display

### Touch-Screen/Scale Link Touch: SLT 7600, Unverferth 620

- Touch-screen interface to control the Scale Link
- Uses serial/RS-232 commands to communicate with the Scale Link
- Applications can be installed on the SLT in conjunction with the scale interface
- For use on grain carts with AutoLog feature (SLT7600) or grain carts with Door Control (Unverferth 620)

|       | 2 5ٍ.8 كَأَنَّ      |  |
|-------|---------------------|--|
|       | Notion Print III    |  |
|       | 258                 |  |
| MENU  | NET Load Gross      |  |
| SETUP | ीं <u>Digi-Star</u> |  |

### Virtual Terminal: VT

- Common tractor display terminal used by multiple pieces of equipment
- Serves as an ISOBUS display with keys
- User interface is programmed by the ISOBUS Gateway Module Daughter Board
- Interface uploads to VT upon power up of the Scale Link

# Scale Link Nomenclature



# **Specifications and Options**

|   | SL100 Series      | SL200 Series      | SL300 Series      |
|---|-------------------|-------------------|-------------------|
| Specification/ Feature                              | Small Housing     | Large Housing     | Large Housing     |
| Voltage range, typically supplied by tractor ISOBUS | 10.5 - 16.0 VDC   | 10.5 - 16.0 VDC   | 10.5 - 16.0 VDC   |
| Maximum Load Cells, 'A' Scale (SLx10 series)        | 8                 | 8                 | 10                |
| Maximum Load Cells, 'A-B-C' Scale                   | 12 (4 each scale) | 12 (4 each scale) | 12 (4 each scale) |
| ABC system limited to 12 LC total                   |                   |                   |                   |
| BC option board limited to 8 LC total               |                   |                   |                   |
| Maximum Current Load                                | 400mA             | 400mA             | 450mA             |
| Maximum Current Load, with Radio option             | NA                | NA                | 600mA             |
| Basic Scale Functions                               | Х                 | х                 | Х                 |
| Preset Scale Functions                              | Х                 | х                 | Х                 |
| Remote Zero Input                                   | Х                 | х                 | Х                 |
| Configurable RS232 for printer or computer          | Х                 | Х                 | Х                 |
| ISOBUS/CAN port option                              | Х                 | х                 | Х                 |
| Remote port option (for SLC2400V)                   | Х                 | Х                 | Х                 |
| Real Time Clock option                              | Х                 | х                 | Х                 |
| T/R wireless transmitter/receiver (in SLC2400V)     | Х                 | Х                 | Х                 |
| NVRAM option  |                   |                   | Х                 |
| Wireless Radio option                               |                   |                   | Х                 |
| Machine Control                                     |                   |                   | Х                 |
| Rotation Counter option                             |                   |                   | Х                 |
| Programmable Batching                               |                   |                   | Х                 |
| Feed Management Batching                            |                   |                   | Х                 |

| Operating Temperature             | -29C to 60C (-20F to 140F)                           |
|-----------------------------------|--|
| Humidity                          | 0 to 95% relative humidity, non-condensing           |
| Enclosure Rating                  | IP65 per IEC529                                      |
| SLC2400V Max Current Load         | 150mA  |
| Serial Functions & Software Setup | Reference EZ3 Tech Manual D3739 or D3586 for details |

# **Typical Circuit Board Configurations**



### Figure 1: SL100-200 ISO Series Board Stack



Figure 2: SL100-200 Series Board Stack with Load Cell Terminal Block



Figure 3: SL100-200 Series Board Stack with ABC Scale Daughter Board



Figure 4: SL100-200 Series Board Stack with ISOBUS Gateway Module and Load Cell Terminal Block

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Figure 5: SL300 Series Board Stack



Figure 6: SL300 Series Board Stack with ISOBUS Gateway Module and Load Cell Terminal Block

# **Typical Scale Link Features**

# **SL100 Series**

- ABC Scale Daughter Board (Multiple scales operating in one Scale Link)
- ISOBUS Gateway Module (For ISO/CAN Communication)

# **SL200 Series**

- ABC Scale Daughter Board (Multiple scales operating in one Scale Link)
- ISOBUS Gateway Module (For ISO/CAN Communication)
- Larger Enclosure and Connector Panel for >4 Load Cell Connections

# **SL300** Series

- ABC Scale Daughter Board (Multiple scales operating in one Scale Link)
- ISOBUS Gateway Module (For ISO/CAN Communication)
- NVRAM for Memory & Batching Functions
- Door Control/Machine Control (Utilizing I/O Board or CL144)
- Rotation Counter (for Auto Log functions)
- Batching Functions







Control Link (CL144)

Figure 7: Typical SL300 Series Features

# **Typical Bottom Panel Configuration**

# **SL100 Series**

Each Scale Link Part Number/configuration will have a different bottom panel setup. For a SL100 Series Scale Link, the Load Cell connections (Commonly known as M12's or EZ-Mates) are typically placed on the outside holes of the housing. Another hole is typically reserved for the SLC M12 8 Pin connector which is commonly referred to as "SLC". One hole is typically reserved for ISOBUS communication, serial data communication, or power. Also note that if any M12 connectors are used, all but one connector should be capped; at least one connection will be in use by the end user.





Figure 10: SL130 ISO/DT6/3M12/SLC



Figure 11: SL110 ISO/DT6/4TB/SER

# SL200 - SL300 Series

The SL200 Series Bottom Panel setup is similar to the 300 series except for the fact that it will not include Door Control (I/O Relay Board) or Rotation Counter connections. All M12 (Load Cell), DT4, DT6, SLC and SER connections will remain the same for both Series Scale Links.



# **Typical Load Cell Configuration**

Load cell termination to the Scale Link Main Board consists of using either a terminal block inside the Scale Link to connect to the Load Cell wires directly, or, by using a M12 Load Cell PCB to mount the M12 load cell connectors (Commonly referred to as EZ-Mate Connectors). For the SL100 Series, the smaller 2 Connector M12 Load Cell PCB is used as in Figure 14. For larger housings, the 6 connector PCB will be used as in Figure 17. If M12 Load Cell Connectors are being used for terminating to the Load Cells AND the customer would like the unit to be an ABC Scale, then M12 Harness must be used. This M12 harness will take the place of the Load Cell PCB and will wire directly into the terminal block on the ABC Scale Daughter Board.



Figure 15: SL100 Series Terminal Block Load Cell Setup



Figure 16: Typical SL100 Series M12 Load Cell Setup



Figure 17: Typical SL200-300 Series M12 Load Cell Setup

# **ABC Scale Configuration**

All Scale Link Series can be configured to utilize up to three scales operating simultaneously at once. From the factory, Scale Links Main Boards are configured to be used as only one scale; but have the capability to be configured to work as up to three scales. To configure a unit in this manner, an ABC Scale Daughter Board must be used in conjunction with the Main Board. Jumper settings and setup must also be changed.

Units using 2 scales utilize only the daughter board for easier connection. These daughter board connections then become the "A" and "B" scales when the main board load cell connections are not used (not shown).



Figure 18: SL100-200 Series Board Stack with ABC Scale Daughter Board



Figure 19: SL100-200 Series Board Stack with ABC Daughter Board

# Typical ABC Scale Setup (SL130 ISO Version Shown)



Figure 20: Typical ABC Scale Setup

# **Connector Types and Function**

| NAME                | FUNCTION   | IMAGE            |
|---------------------|--|------------------|
| M12-5 PIN           | <ul> <li>Load Cell connector<br/>for all Digi-Star Load<br/>Cells</li> </ul> | Un-Capped Capped |
| M12-6 PIN           | <ul> <li>Serial Data<br/>Communication</li> </ul>                            |                  |
| M12-8 Pin           | <ul> <li>Scale Link Control<sup>™</sup><br/>(SLC2400, SLC2500)</li> </ul>    |                  |
| Deutsch DT6         | • ISOBUS/CAN   |                  |
| <u>Metri Pack 3</u> | <ul> <li>AutoLog<sup>™</sup> Rotation<br/>Sensor</li> </ul>                  |                  |

| NAME            | FUNCTION  | IMAGE   |
|-----------------|---|---------|
| Weather Pack 3  | Scale Link Power  |         |
|                 |   |         |
| Cinch 30 Pin    | <ul> <li>Machine Control</li> <li>May be used for<br/>AutoLog<sup>™</sup><br/>Connection</li> </ul> | CONTROL |
| Weather Pack 6  | • Special Applications  |         |
| Metri Pack 4, 8 | <ul> <li>Power and<br/>Communication<br/>for SLT 7600 Scale<br/>Link Touch<sup>™</sup></li> </ul>   |         |

# Wiring Connections

# **General Wiring**

### **POWER TERMINALS**

| WIRE COLOR | FUNCTION (SEE FIG 1) |
|------------|----------------------|
| BLACK      | GROUND               |
| RED        | POWER (12V)          |

#### SERIAL (PRINTER, TOUCH SCREEN, OTHER SERIAL ENABLED DEVICES)

| FUNCTION      | MAIN PCB DESIGNATOR |
|---------------|---------------------|
| GND           | GND                 |
| Data In (Rx)  | IN                  |
| Data Out (Tx) | PRN                 |
| +12V          | 12V                 |

### SCALE LINK CONTROL<sup>™</sup> REMOTE HARNESS (Inside SL Box)

| PIN | WIRE COLOR | MAIN PCB DESIGNATOR |
|-----|------------|---------------------|
| 1   | WHITE      | 12)/                |
| 2   | BROWN      | 120                 |
| 3   | GREEN      | RMZ                 |
| 4   | YELLOW     | OUT                 |
| 5   | GRAY       | CLK                 |
| 6   | PINK       | IN                  |
| 7   | BLUE       | CND                 |
| 8   | RED        | GND                 |

## SCALE LINK CONTROL<sup>™</sup> REMOTE SLC2400V WIRING

| CABLE COLOR | FUNCTION | MAIN PCB DESIGNATOR |
|-------------|----------|---------------------|
| WHITE       | 12V      |                     |
| BROWN       | 12V      | IBI-I KED           |
| GREEN       | RMZ      | TB1-2 WHI           |
| YELLOW      | OUT      | TB1-3 GRN           |
| GRAY        | CLK      | TB1-4 YEL           |
| PINK        | IN       | TB1-5 BLU           |
| BLUE        | GND      | TB1-6 BLK           |

### ISOBUS/CAN (ISO MODELS ONLY)

| PIN | WIRE COLOR | MAIN PCB DESIGNATOR |
|-----|------------|---------------------|
| 1   | RED        | 12V                 |
| 3   | BLACK      | GND                 |
| 2   | WHITE      | CAN-H               |
| 4   | GREEN      | CAN-L               |

### **Rotation Sensor**

| WIRE COLOR | MAIN PCB DESIGNATOR |
|------------|---------------------|
| WHITE      | RCIN                |
| RED        | 12V                 |
| BLACK      | GND                 |

### Wiring Load Cells Directly to Scale Link<sup>™</sup>





| WIRE   | TERMINAL BLOCK | FUNCTION    |
|--------|----------------|-------------|
| WHITE  | WHT            | +SIGNAL     |
| GREEN  | GRN            | -SIGNAL     |
| RED    | RED            | +EXCITATION |
| BLACK  | BLK            | -EXCITATION |
| SHIELD | SHD            | SHIELD      |

# SL100/ SL200 Series



### TB2: ISOBUS, CAN, SERIAL, TOUCH SCREEN

- 1. GND
- 2. CAN-L
- 3. CAN-H
- 4. IN
- 5. PRN
- 6. SCB

### TB1: SCALE LINK CONTROL<sup>™</sup>, REMOTE

- 1. GND
- 2. OUT
- 3. CLK
- 4. IN
- 5. RMZ
- 6. 12V

## **SL300** Series



- 1. GND
- 2. CAN-L
- 3. CAN-H
- 4. IN
- 5. PRN
- 6. SCB
- 7. GND
- 8. OUT
- 9. CLK
- 10. IN
- 11. RMZ
- 12. 12V
- 13. RC IN

# **Scale Link ISO Operation**



Figure 21: Scale Link ISO Operation

# **Scale Link Part Numbers**

Scale Link part numbers are based on circuit board configuration, bottom panel/ load cell configuration, cable configuration, jumper settings and scale setup. Please note that these part numbers are available as of May 1<sup>st</sup>, 2013 and are subject to change. Contact Digi-Star Sales for the most current part numbers and available options.

| Part Number   | Description                 | Notes            |
|---------------|-----------------------------|------------------|
| SL100 Series  |                             |                  |
| 407213        | SL110-ISO DT6/4TB           |                  |
| 407309        | SL110-ISO DT6/4M12/REM      |                  |
| 407482        | SL110-ISO/4TB DSE           |                  |
| 407483        | SL110-ISO/4M12 DSE          |                  |
| 407485        | SL110-ISO DT6/4TB/REM       |                  |
| 407502        | SL110-4TB DSE               |                  |
| 407503        | SL110-4M12 DSE              |                  |
| 407582        | SL130-ISO DT6/3M12/REM      |                  |
| 407601        | SL110-ISO DT6/4TB/SER       |                  |
|               |                             |                  |
| SL200 Series  |                             |                  |
| 406993        | SL220-ISO WP/8TB/REM KINZE  |                  |
| 407560        | SL220-ISO DT6/TB/REM        |                  |
| 407581        | SL230-ISO DT6/TB/REM        |                  |
| 407858        | SL210-ISO DT6/6TB/REM       |                  |
| 407859        | SL210-ISO DT6/6M12/REM      |                  |
| 407874        | SL230-ISO DT6/3M12/REM/SER  |                  |
| 407991        | SL220-WP/8TB KINZE          |                  |
| 408044        | SL210-ISO DT6/4M12/REM      |                  |
| 408146        | SL220 TB/SER/REM            |                  |
|               |                             |                  |
| SL300 Series  |                             |                  |
| 407421        | SL310-DC/5M12/SER           |                  |
| 407422        | SL310-STB/SER/RC            |                  |
| 407424        | SL310-5M12/SER/RC           |                  |
| 408497        | SL310-10TB/CAN/PWR          |                  |
|               |                             |                  |
| Kits & Cables |                             |                  |
| 405892        | CABLE 20' 8 COND M12 REMOTE | SLC remote cable |
| 405976        | CABLE-WEATHER-PACK          | 6 pin WP cable   |
| 406891        | CABLE-35"PLUG/M DEUTSCH     | 4 pin DT cable   |
| 407070        | KIT-4PT PLANTER/SLC2400V    | full system      |

| 407295                       | CABLE-W/P POWER 25'            | DC cable adapter  |
|------------------------------|--------------------------------|-------------------|
| 407387                       | HARNESS-DOOR CONTROL 620       | DC harness        |
| 407388                       | CABLE-SL TO T/S HITCH 20'      |                   |
| 407390                       | HARNESS-SLT POWER SWITCH       | used w/ SLT7600   |
| 407410                       | KIT-SLT7600-GT-TB SCALE SYS    | uses 407422       |
| 407411                       | KIT-SLT7600-GT-M12 SCALE SYS   | uses 407424       |
| 407588                       | KIT-SL210-ISO DT6/4M12/REM     | uses 408044       |
| 407637                       | HARNESS-JD ISOBUS              | DT6 to JD cable   |
| 407669                       | KIT-UNV620 AUTOLOG SCALE LINK  | uses 407421       |
| 407747                       | KIT-SL110 ISO DT6/4M12/REM/P   | uses 407309       |
| 407748                       | KIT-SL110 ISO DT6/4TB/REM/P    | uses 407485       |
| 407749                       | KIT-SL220 ISO DT6/TB/REM/P     | uses 407560       |
| 407750                       | KIT-SL230 ISO DT6/TB/REM/P     | uses 407581       |
| 407751                       | KIT-SL130 ISO DT6/3M12/REM/P   | uses 407582       |
| 407780                       | KIT-ISOBUS IMPLEMENT HARNESS   | harness materials |
| 407799                       | KIT-SL220 ISO DT4/8M12/SER/P   | uses 407601       |
| 407990                       | CABLE-ISO EXT 30' M/P 10       | ISO MP ext cable  |
| 408100                       | CABLE-30' EXT ISO AMPSEAL      | ISO AMP ext cable |
| 408423                       | KIT-SL220 ISO WP/8TB/REM/P     | uses 406993       |
|                              |                                |                   |
| <b>Displays and Controls</b> |                                |                   |
| 406227                       | REMOTE-SLC2400V NO J901 W/M12  |                   |
| 406972                       | REMOTE-SLC2400V W/U-BOLT RAM   |                   |
| 407406                       | SLT7600-GT TOUCH SCREEN        |                   |
| 408175                       | REMOTE-SLC2400V W/J903 NO J901 |                   |

## Figure 22: Scale Link Part Numbers

# **Jumper Settings**

All Scale Link part numbers will have specific Main Board Jumper Definitions – that is, each feature or option you would like to "turn on" must be jumpered correctly in order for that feature to be applied. If a feature is to be applied, follow the diagram below in Figure 23. Typically, jumpers are already configured from the factory in order to fit a specific application or piece of machinery. Refer to the applicable schematic and production print revisions for the most accurate jumper settings.

| SL300      |                                       | SL100      | 0/200 |
|------------|---------------------------------------|------------|-------|
| 406987-sch |                                       | 406368-sch |       |
| Rev B      | Jumper Definition                     | Rev C      | Rev D |
| JP1        | NVRAM >= 512K (JP3 and JP8 removed)   | n/u        | n/u   |
| JP2        | TXD0/PRN signal for ISO               | n/u        | JP2   |
| JP3        | SRAM (Install when NVRAM is not used) | n/u        | n/u   |
| JP4        | TXD0_EXP signal for ISO               | JP2        | JP4   |
| JP5        | Real Time Clock (RTC)                 | JP1        | JP1   |
| JP6        | Constant ON                           | n/u        | n/u   |
| JP7        | TXD1 (SCI1) for ISO                   | JP3        | JP7   |
| JP8        | NVRAM < 512K (JP1 and JP3 removed)    | n/u        | n/u   |
| JP9        | RXD0 for ISO                          | JP5        | JP9   |
| JP10       | RXD1 for ISO                          | JP6        | JP10  |
| JP11       | RXD0 for RS232 (DATA-IN)              | JP4        | JP11  |

### Figure 23: Factory Jumper Settings for Each Scale Link Series Main Board

# **Calibrating the Scale Link**

Your Digi-Star scale indicator can be mated to many different types of load cells with varying capacity. There can be as few as 1 and as many as 12 load cells on a system, based on model number and type. The scale indicator has a "setup" number that determines how the scale displays the weight, and a "calibration" number that matches the load cells to the indicator and determines the weight value displayed on the indicator.

### Long Form Vs Short Form Calibration Method

Long form calibration requires you to have some known accurate weights to load onto the scale. If done properly, this is the best way to calibrate your scale accurately.

Short form calibration requires you to know the load ratings on the load cell, the number of load cells and other factors. A calibration number can be calculated and entered directly into the scale.

CAUTION: The short form calibration method works with Digi-Star load cells only. The short form calibration method for a non-Digi-Star load cell may get close to the correct calibration number, but this method is not reliable and the scale calibration must be checked using known weights.

### Calibrating the Scale for Maximum Accuracy (Long Form)

Write down the current Setup and Calibration numbers of your EZ indicator. These numbers are displayed during the Self Test. Press [On/Off] to "pause" the Self-Test while setup and calibration numbers are displayed. Press [On/Off] again, to "resume"

Setup Number \_\_\_\_\_\_ Calibration Number \_\_\_\_\_

To accurately calibrate the scale, you will need a large amount of weight that has a known value. For best results you should have at least as much weight as the largest load you plan to weigh.

### Determining the New Setup and Calibration

- 1. Zero-Balance the scale so the display reads zero.
- 2. Put the **Known Weight** on the scale platform and write down the **Weight Display**.

### Perform the following equation to find the Accurate Calibration Number.

### Actual Known Weight X Existing Calibration Number

Displayed Weight

### Example:

| Actual Known Weight | 2000lbs |
|---------------------|---------|
| Weight Display      | 2080lbs |
| Existing Cal Number | 32500   |

### <u>2000 X 32500</u> = 31250

2080

31250 is the "Accurate Calibration Number". The setup number does not change.

#### Enter a New Setup and Calibration Number (Short Form)

The Short Form Setup & Calibration procedure allows you to change the "SETUP" and "CAL" numbers of the indicator.

1. Press and hold [Zero], and then press [On/Off] for 3 seconds to enter the short form calibration.

2. The display will flash "SETUP" and then display the 6-digit setup number with the right digit flashing. To modify the setup number:

- 3. Press [Gross/Net] several times to increment the digit to it proper value.
- 4. Press [Tare] to advance the blinking digit to the left.
- 5. Repeat steps 1 and 2 for each digit as required.
- 6. Press [On/Off] to enter the new setup number and display the calibration number.
- 7. Repeat steps 1 and 2 to modify the calibration number.
- 8. Press [On/Off] to enter the new calibration number and the display will go back to normal.
- 9. Verify the accuracy of the scale.

### Self Test

#### Initiating the Self Test

After turning the scale on, wait for normal operation to begin then press the ON key. The Self Test tests all settings, displays information, and performs an internal system check to ensure that the indicator is working and set properly.

#### **Test Sequence** (Order may vary based on model & software version)

| The word TEST flashes:                              |  |
|---|--|
| "SETUP" is displayed.                               |  |
| Display Setup Value:                                | Short Form Setup Value.  |
| Display Calibration Number:                         | Short Form Calibration Value.  |
| Display Temperature Calibration Co                  | punt:  |
| Display LCD Segments:<br>identify any faulty areas. | The system then cycles through all display segments to help the operator   |
| Display Program ID:                                 | Displays the current version (revision number) of the software.  |
| System Test:<br>performing internal system testing  | The indicator displays the message "RUNNING SELF TEST - PLEASE WAIT" while<br>. Self Test cannot be paused or terminated during this test. |

### Self Test System Errors:

If system errors are discovered during internal diagnostics, the operator will see an error message. For example, "ERROR 1 - PRESS NET/GROSS TO CONTINUE" followed by "\*\*\* INDICATOR NEEDS SERVICE \*\*\* PRESS NET/GROSS TO CONTINUE". See "Software Error Codes" near the end of this manual for error code descriptions.

Sending a command using the Computer Interface causes the system to terminate the error messages and attempt normal system operation.

#### Pausing the Test:

Press [ON] during the self test to pause the sequence.

Press [ON] again to restart the test.

#### Terminating the Test:

The self-test terminates and continues normal operation if no errors are detected or if other keys are pressed.

## **Weighing Errors**

### OVRCAP (Capacity Limit)

The display shows the message "OVRCAP" if the weight on the scale system exceeds the capacity limit. The capacity value is entered in SETUP to warn of overloading the scale system.

### +RANGE (Over Range)

The display shows the message "+RANGE" if the weight on the scale system exceeds the maximum weight measurable by the scale system. The over range value is always the system's maximum A/D counts multiplied by the scaling factor. The actual weight at which over range occurs depends on the calibration, zero, and display count size.

#### -RANGE (Under Range)

The display shows the message "-RANGE" if the weight on the scale system is less than the minimum weight measurable by the scale system. The under range value is always the system's minimum A/D counts multiplied by the scaling factor. The actual weight at which under range occurs will depend on the calibration, zero, and display count size.

# Software Error Codes

Error codes occur when there is a hardware failure, failed user operation, or mismatch between hardware and software. If an error code is observed and unable to be corrected, contact your dealer or Digi-Star Customer Service.

| Error 1:            | .EPROM/ FLASH Failure                                |
|---------------------|--|
| Error 2:            | .68HC12 System CRC EEPROM Failure                    |
| Error 3:            | .68HC12 Ram Failure                                  |
| Error 4:            | .External Ram Failure                                |
| Error 5, 6 or 7:    | .68HC12 Scale CRC EEPROM Failure                     |
| Error 8, 9 or 10:   | Analog Converter Failure                             |
| Error 11:           | .Real Time Clock Missing                             |
| Error 12:           | .Real Time Clock Battery Failure                     |
| Error 13:           | .Keypad over Run Failure                             |
| Error 14:           | .Com Port #1 Input Buffer Overflow Error             |
| Error 15:           | .Com Port #1 Printer Output Buffer Overflow Error    |
| Error 16:           | .Com Port #1 Scoreboard Output Buffer Overflow Error |
| Error 17:           | .Com Port #2 Input Buffer Overflow Error             |
| Error 18:           | .Com Port #2 Output Buffer Overflow Error            |
| Error 19:           | .SPI Failure   |
| Error 20:           | .SPI Failure   |
| Error 21, 22 or 23: | .A/D 0.4mv/v Calibration Failure                     |
| Error 24:           | .A/D-SPI Timing Failure                              |
| Error 25:           | .68HC12 EZ3200 Recipe CRC EEPROM Failure             |
| Error 26:           | Wireless Radio Failure                               |
|                     |  |

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