

LD720 LED LOAD/UNLOAD INDICATOR



User Manual

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EU DECLARATION OF CONFORMITY



PRODUCT DESCRIPTION: LD720 LED Load/Unload Indicator

We, Intercomp Company
3839 County Road 116
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Declare under the sole responsibility of Intercomp Company that the LD720 LED Load/Unload Indicator to which this declaration relates is in conformity with the relevant Union harmonization legislation, and meets the essential health and safety requirements, and is in conformity with the relevant EC Directives listed below using the relevant section of the following standards and other normative documents.

DIRECTIVE	DIRECTIVE TITLE / PURPOSE
Directive 2012/19U	On waste electrical and electronic equipment (WEEE) (Directive 20/96/EC Recast)
Directive 2013/56/EU (amending 2006/66/EC)	Sets out that the limit of 0.0005% of mercury in batteries will also apply to button cell batteries from 1 st October 2015. The exemption of button cell batteries in hearing aids will be reviewed by 1 st October 2014. AKA batteries and accumulators directive
Directive 2014/30/EU Electromagnetic Compatibility (EMCD) Directive	Of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility (recast) Text with EEA relevance. The Directive covers apparatus sold as single functional units to end users, which are likely to 1) generate electromagnetic disturbance, or 2) have performance affected by electromagnetic disturbance. NOTE: If the unit has a radio (XBEE Radio Chip) installed, Directive 2014/53/EU will take precedence
Directive 2014/53/EU	Of the European Parliament and of the Council of 16 April 2014 on the harmonization of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC Text with EEA relevance AKA Radio Equipment Directive (RED)
EN 300 328 V2.1.1 (2016-11)	Wideband transmission systems; Data transmission equipment operating in the 2.4 GHz ISM band
EN 301 489-1 V1.9.2 (2011-09)	Common Technical requirements
EN 45501:2015	Metrological aspects of non-automatic weighing instruments
EN 55011:2016+A1:2017	Industrial, scientific and medical equipment. Radio-frequency disturbance characteristics. Limits and methods of measurement

EU DECLARATION OF CONFORMITY

DIRECTIVE	DIRECTIVE TITLE / PURPOSE
EN 60950-1:2006+A2:2013	Information technology equipment. Safety. General requirements
EN 61000-6-1:2019	Generic standards, Residential, commercial and light industry environment
EN 61000-6-2:2019	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-3:2007+A1:2011	Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments
EN 62311:2008	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)

The safety issues of this measurement equipment have been evaluated under the self-certification provisions of the relevant directives. This product complies with all safety-relevant provisions referring to protection against electrical hazards and other hazards, such as mechanical hazards, fire hazards, noise and vibration.

The related technical construction files are held for inspection in the U.K. at Intercomp Europe Limited.

Signed for and on the behalf of Intercomp Company:



Mark Browne / Quality Manager
Medina, Minnesota USA
February 07, 2020

NOTIFICATIONS

SAFETY SUMMARY

The following general safety precautions must be observed during all phases of operation, service, and repair of this scale. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the scale. Intercomp assumes no liability for the customer's failure to comply with these requirements.



WARNING: Due to the danger of introducing hazards, do not substitute parts or perform any unauthorized modifications to the scale.

NOTICE

All rights reserved. The information contained in this publication is derived in part from proprietary and patent data of the Intercomp Corporation. This information has been prepared for the express purpose of assisting operating and maintenance personnel in the efficient use of the instrument described herein. Publication of this information does not convey any rights to use or reproduce it or to use it for any purpose other than in connection with the installation, operation, and maintenance of the equipment described herein. Intercomp Corporation assumes no responsibility for damages resulting from the use of the information contained herein.

WARRANTY

INTERCOMP CORPORATION (hereafter called "the company") warrants the products which this document accompanies to be free of defects in materials and workmanship, and to operate according to design specifications for a period of one (1) year after receipt by the original purchaser. After authorized return to the company at the purchaser's expense, the company shall evaluate any returned equipment under warranty claim, and shall make such repairs or replacements as may be judged necessary, in as expeditious a manner as possible.

IN THE EVENT that the company determines the claim to be made as a result of improper use, abuse, modification, shipping damage, or other factors beyond the reasonable control of the company, the company will advise the purchaser of the estimated repair costs. The company makes no warranty other than that contained in this statement. No agent other than an executive officer of Intercomp Corporation is empowered to modify in any manner this statement of warranty.

SPECIFICATIONS

CONTROLS

DISPLAY KEYS				
ON/OFF	ZERO	HOLD	TARE	MENU/SETUP
BIN	GROSS/NET	CLEAR	STORE/ENTER	LOAD
UNLOAD	START/STOP	NUMERIC KEYPAD		
DISPLAY SCREEN				
5 Digits, 1.5 inch (38 mm) LED				
6 Digits, 1.2 inch (38 mm) LED				

ELECTRICAL

FUNCTION	SPECIFICATION
Voltage	4 - 15 VDC or 120/240 VAC with power supply

ENVIRONMENTAL

FUNCTION	SPECIFICATION
Humidity	10 to 95% non-condensing
Temperature	Storage: -40° F to +170° F / -40° C to +75° C
	Operating -40° F to +140° F / -40° C to +60° C

RADIO

FUNCTION	SPECIFICATION
Radio Frequency	ISM 2.4 GHz, 802.15.4 DSSS*
License Requirements	None. Pre-approved US/FCC, CAN/IC, EUR/CE
Range	200 ft / 60m indoor, 300 ft / 90m line of sight

- * Radio Notes: Frequency: ISM 2.4 GHz (2.400 GHz - 2.483 GHz), with 12 channels (CH 1-12) within that range with each center frequency = 2405 MHz + (CH * 5) MHz Power output 63 mW (18dBm), 10mW (10dBm) for international variant. Antenna is internal surface mount with -1.5dbi gain, omni-directional.



WARNING: FCC Radio Frequency (RF) exposure requirements for mobile transmitting devices dictate that a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended. The antenna used for this transmitter must not be co-located in conjunction with any other antenna or transmitter.

OVERVIEW

INDICATOR DISPLAY



KEY FUNCTIONS

KEY FUNCTION	DESCRIPTION
ON/OFF	<p>Press the ON/OFF key (RED Power Symbol) to turn indicator on or off.</p> <p>Alternate Function to Set Radio Settings: Perform the alternate function only if required to match the radio setting with a remote. When turning on the indicator, press and hold the power key for 6+ seconds until RFCH screen appears. Enter the RFCH (1 - 12) and the RFPAN (0 - 65534). Both settings must match the radio settings of the remote for successful communication.</p>
NUMERIC KEYPAD	<p>The keypad is used to enter numeric inputs into the system when accessing the MODE Menu.</p>
CLEAR	<p>Press the CLEAR key to clear entry when setting Menu parameters or to exit the Load/Unload mode. When in Load/Unload mode, the CLEAR key will reset the relays and return to normal display.</p>

OVERVIEW

Key Functions (continued)

KEY FUNCTION	DESCRIPTION
STORE/ENTER	The STORE/ENTER key is used to store a numeric entry
ZERO	Press and hold the ZERO key to zero the scale when there is no load.
HOLD	<p>Press the HOLD key to lock the current weight. When operating in the HOLD mode, the screen will alternate between displaying HOLD and the locked weight. Ensure no weight is added or removed while in HOLD mode. If attempting to add or remove weight in the HOLD mode, the weight difference will not be recorded. Press the HOLD key again to return to normal weighing mode.</p> <p>NOTE: The HOLD feature is disabled by default. To enable the HOLD feature, access the MODE Menu and change "Hold.E" from NO to YES.</p>
TARE	Press the TARE key to set the displayed weight as the TARE weight. Press the TARE and CLEAR keys together to clear a saved TARE weight and return to GROSS weight.
MENU/SETUP	Press the MENU/SETUP key to access the MODE Menu parameters required to configure the system.
BIN	<p>The BIN key is used to set a preset BIN weight for up to ten (10) individual bins or seed boxes. When operating in the BIN mode, only the selected BIN and TOTAL GROSS weight values will change. The other BIN weight values do not change. For first time use, select the Number of Bins setting in the MODE Menu to enter the number of bins.</p> <p>Press the BIN key to toggle through BIN numbers 1-x. The screen will display the BIN number selected or the GROSS (or NET) weight: bin01, bin02... Gross. The indicator screen will also display the current BIN number when powered up. Press and hold the BIN key to enter a bin weight for the selected BIN number. Enter the desired weight for the BIN number and press the STORE/ENTER key. NOTE: The ZERO key will not function while in BIN weight viewing mode.</p>
GROSS/NET	Press the GROSS/NET key to toggle between Gross and Net weight. The Gross or Net weight selection will be illuminated by the applicable indicator lights in the lower right hand corner of the screen.
LOAD	The LOAD key controls the load operation.

OVERVIEW

Key Functions (continued)

KEY FUNCTION	DESCRIPTION
UNLOAD	The UNLOAD key controls the unload operation.
START/STOP	The START/STOP key is used to start and stop load and unload operations.
M+	Reserved for future use.
RM	Reserved for future use.
PRINT/EXPORT	Reserved for future use.

MENU

MODE MENU

Press the MENU/SETUP key to advance through the MODE Menu steps. Some settings require a number to be entered, while other settings will have preset selections to choose from. Use the keypad to enter numbers. Use the arrow keys to toggle through and edit preset selections. When the desired setting has been entered or selected, press the MENU/SETUP key to save and advance. The setting will be saved and the indicator can be turned off if no other settings need editing.

STEP	FUNCTION	SETTING	DEFAULT
<i>ModE</i>	Mode Menu Code	0 = Continue through MODE Menu Steps 477 = Proceed to Calibration Menu	000
<i>t d iSP</i>	Time After Unload/Dispense	Adjustable 0-60 seconds 0 = screen stays in unload mode	5
<i>b inS</i>	Number of Bins	0 -10	00
<i>LEd.br</i>	LED Brightness	1 - 6 (6 is brightest)	6
<i>Un itS</i>	Units	lb or kg	lb
<i>A. rt</i>	Average Rate	1 to 120	006
<i>A oFF</i>	Auto Off	000 = off, 1 to 240	000
<i>HoLd.E</i>	Hold Enable	YES or NO	no
<i>Prt t</i>	Print/RS232 Type	Off, STD, BAR, GTN	GTn
<i>PbAUD</i>	RS232 Baud Rate	1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200	9600
<i>SC id</i>	Scale ID	1-190	001
<i>d iSP.o</i>	Unload/Dispense Output Mode	1 = Auger or Clutch on/off control 2 = open/close gate or +/-Speed control	0
<i>UP.t iTE</i>	Uptime	Length that the open/+speed relay is set at the start of unload (Unload Output mode 2 only) 0-60 seconds	2
<i>r.oPEN</i>	Rear Gate Open Detection	YES or NO	no
<i>tArE.S</i>	TARE Sync	0 = normal weight message 1 = weight + tare/bin message 2 = weight + tare + load/unload	2
<i>A. out</i>	Analog Output Capacity (Optional Setting)	0=Analog Output disabled	0

MENU

SETTING MODE MENU PARAMETERS

1. Press the MENU/SETUP key. The screen will display the message "iOdE".
2. Press the MENU/SETUP key. The screen will display "000". Press the MENU/SETUP key to continue through the MODE Menu steps.
3. The indicator screen will display "t d iSP". Press the MENU/SETUP key. The screen will display "00" or the current setting. Use the numeric keypad to enter the time in seconds for the display to stay in the UNLOAD mode before returning to normal display after a PRACT weight is reached during an unload operation, or when the unload operation is cancelled. Enter 00 to keep the display in the unload mode indefinitely when the unload operation has been completed. NOTE: The CLEAR key can be pressed to return the display to normal mode. The default setting is 5 seconds and the setting range is 0 - 60 seconds. Press the MENU/SETUP key to save and advance.
4. The screen will display "b in5". Press the MENU/SETUP key. The screen will display "00" or the current setting. Use the numeric keypad to enter the number of bins or seed boxes. Press the MENU/SETUP key to save and advance.
5. The screen will display "LEd.br". Press the MENU/SETUP key. Select a number from 1 - 6 to set the LED brightness. When the desired number is shown on the screen, press the MENU/SETUP key to save and advance.
6. The screen will display "Un iE5". Press the MENU/SETUP key. The current unit of measure will be flashing in the lower left corner of the display screen. Press any arrow key to toggle between lb and kg. When the desired unit of measure setting is flashing press the MENU/SETUP key to save and advance.
7. The screen will display "R. rE". Press the MENU/SETUP key. Use the numeric keypad to enter the number for the system Average Rate. The setting represents the number of readings that will be averaged to obtain an average rate. Higher values will result in a more stable reading, but may take longer to calculate the final value. The scale updates at 4Hz, so an Average Rate of 8 equates to 2 seconds of averaging. When the desired number is displayed press the MENU/SETUP key to save and advance. To disable the averaging function, enter 1.

MENU

Setting MODE Menu Parameters (continued)

8. The screen will display "R oFF". Press the MENU/SETUP key. Use the numeric keypad to enter the desired setting for the system automatic turnoff. The number displayed references the time in minutes the scale can remain idle before it automatically shuts down. Press any key to reset the countdown. If the scale is used with a host indicator (wired or wireless), an active link with the indicator will prevent the scale from turning off. Setting the number to "000" will disable the link and prevent the scale from automatically shutting down. Use the numeric keypad to enter the desired setting. Press the MENU/SETUP key to save and advance.
9. The screen will display "HoLd.E". Press the MENU/SETUP key. Press any arrow key to toggle between "YES" and "no". When the desired setting is displayed, press the MENU/SETUP key to save and advance.
10. The screen will display "PrT t". Press the MENU/SETUP key. Press any arrow key to toggle through the available Print/RS232 Type settings. The default setting is "Grn".

MODE	FUNCTION
oFF	RS232 Output Disabled
Std	Standard Output
bAr	Output including bar graph data
Grn	GROSS, TARE, NET Output

When the Print/RS232 Type setting has been selected, press the MENU/SETUP key to save the entry and advance.

11. The screen will display "PbAUd". Press the MENU/SETUP key. Press any arrow key to toggle through the available RS232 Baud Rate settings.

AVAILABLE BAUD RATE SETTINGS			
1200	2400	4800	9600
19200	38400	57600	115200

Baud Rate is the speed data is transmitted through a continuous serial output connected to a scoreboard or secondary display. When the desired baud rate setting is displayed, press the MENU/SETUP key to save and advance.

MENU

Setting MODE Menu Parameters (continued)

12. The indicator screen will display "5C ID". Press the MENU/SETUP key. Enter a number from 1 - 190 to set the scale ID. When the desired setting is displayed, press the MENU/SETUP key to save and advance.
13. The screen will display "d SP.a". Press the MENU/SETUP key. The indicator screen displays "00" or the current setting. Use the numeric keypad to enter the desired setting for the Unload/Dispense Output mode. Refer to the following table. Press the MENU/SETUP key to save and advance.

SETTING	FUNCTION
00	Disables automatic control. Unload operation can be performed but there is no automatic relay control or use of the PRACT weight.
01	Mode 1 uses the auger or clutch ON/OFF control
02	Mode 2 uses +/- speed or open/close gate control.

14. The screen will display "UP.t iT". Press the MENU/SETUP key. The screen displays "00" or the current setting. Use the numeric keypad to enter the desired UPTIME in seconds. When Unload Output Mode 2 is selected (refer to step 13), the unload action is started by pressing the START/STOP key on the keypad. The +speed/open relay is then set for UPTIME seconds and cleared after that. The default value is 2 seconds and the selection range is from 0 to 60 seconds. Press the MENU/SETUP key to save and advance.
15. The screen will display "r.aPEn". Press the MENU/SETUP key. The screen displays "YES" or "no". Use the numeric keypad to toggle the setting by pressing one of the arrow keys. When the desired setting is selected, press the MENU/SETUP key to save and advance. When enabled YES, the message "DPEn" will blink on the screen when Input 2 (connect to rear gate open sensor) is pulled low.

MENU

Setting MODE Menu Parameters (continued)

16. The screen will display "LAr-E.5". Press the MENU/SETUP key. The screen will display the current setting. Use the numeric keypad to enter the desired setting as referenced in the following table;

SETTING	FUNCTION
0	Normal Weight Only
1	Weight + Tare
2	Weight + Tare + Load/Unload (The LD720 must be set to number 2 when used with the HH520 RFX Wireless Remote)

When the setting has been entered, press the MENU/SETUP key to save and advance.

17. Analog Output Capacity (Optional Feature "A. out")

When the optional Analog Output Capacity function is installed, the screen will display "A. out". Press the MENU/SETUP key. The current setting will be displayed. Enter 0 to disable the analog output. Enter a number between 1 - 999,999 (or 1 - 99,999 if using a 5-digit indicator) to enable the analog output capacity with the max 20mA output scaled to the number entered. For example, if an analog output capacity of 20,000 lb is entered, a gross weight of 10,000 lb will set the analog output to 12mA (mid-point of the 4 - 20mA range). The analog output is scaled to the gross weight even if a TARE or BIN weight is currently displayed. The value is entered in the current unit of measure (lb or kg) setting.

18. The system will return to normal operation.

LOAD/UNLOAD OPERATION

PREACT WEIGHT

The PREACT weight setting compensates for seed that is still in-flight as the auger/conveyor is stopped or a door/gate is being closed at the end of an Auto Dispense operation. Factors influencing the PREACT setting adjustment include chute size or length, gate time opening and closing, or seed type and weight. If a seed tender is dispensing too much seed, increase the PREACT WEIGHT setting value by the overflow weight amount. If the seed tender is dispensing too little seed, decrease the PREACT WEIGHT setting value by the under fill weight amount. For Example: If the final dispense weight is overshooting by 10 lbs, increase the PREACT WEIGHT setting by 10 lbs.

LOAD/UNLOAD LED

The Load/Unload LED Indicator is located in upper middle section of the indicator screen. The LED is used to signal the status of the Dispense operation.

INDICATOR	FUNCTION
OFF	Normal Mode. Dispense not ready. Optional external key(s) operate in Pass-Through mode and will not trigger a dispense action.
RED	Load/Unload/Dispense Ready Mode. The indicator is ready to start a Load/Unload/Dispense action. Optional external key(s) can initiate a dispense operation.
BLINKING RED	Load/Unload/Dispense in progress.

LOAD

1. Press the LOAD key to commence a load operation.
2. The screen will momentarily display "LOAD" followed by 5 digits. Enter the weight to be loaded and press the STORE/ENTER key (previously entered value will be displayed as default). The LOAD/UNLOAD LED will be illuminated and the display screen returns to normal gross/net weight. The indicator is now in Load Ready mode prepared to begin the next load operation.

MENU

Load/Unload Operation (continued)

3. When ready to commence the load operation, press the START/STOP key. The LOAD/UNLOAD LED will begin to blink and the screen will display the live weight along with the weight of product remaining to be loaded.
4. Proceed to load the product. The displayed weight will decrease as the weight on the scale increases. If a scoreboard display with bar graph is used, the bar graph will increase from 0% to 100% over the duration of the loading operation.
5. When the loading is completed, the displayed weight will be near zero. The indicator may display a small positive or negative number representing the weight under or over the desired target weight. Press the START/STOP key to stop and return to Load Ready mode (normal gross/net/bin display). Alternatively, pressing the CLEAR or GROSS/NET key will return the display to Load Ready mode.
6. To repeat a load operation with the same weight, press the START/STOP key.

UNLOAD/DISPENSE, OUTPUT MODE 0 (No Automatic Control)

1. Press the UNLOAD key to commence an unload/dispense operation.
2. The indicator screen will momentarily display "UNLOAD" followed by 5 digits. Enter the weight to be unloaded and press the STORE/ENTER key (previously entered value will be displayed as default). The LOAD/UNLOAD LED will be illuminated and the display returns to normal gross/net weight. The indicator is the Unload Ready mode ready to commence the next unload operation.
3. To commence the unloading operation, press the START/STOP key. The LOAD/UNLOAD LED will begin to blink and the screen will display the live weight with the weight of product remaining to be unloaded.
4. Proceed to unload the product. The displayed weight will decrease as the weight on the scale decreases. If a scoreboard display with bar graph is used, the bar graph will decrease from 100% to 0% during the unloading of product.
5. When unloading is completed, the displayed weight will be near zero. The indicator may display a small positive or negative number that represents the weight of product under or over the desired target unload/dispense weight. Press the START/STOP key to stop and return to Load Ready mode (normal gross/net/bin display). Alternatively, pressing the CLEAR or GROSS/NET key will return the indicator screen to Unload Ready mode.
6. To repeat an unload operation with the same weight; press the START/STOP key.

MENU

LOAD / UNLOAD Operation (continued)

UNLOAD/DISPENSE, OUTPUT MODE 1 (Auger or Clutch ON/OFF Control)

1. Press the UNLOAD key to commence an unload/dispense operation.
2. The indicator screen will momentarily display "UNLOAD" followed by 5 digits. Enter the weight to unload and press the STORE/ENTER key (previously entered value will be displayed as default).
3. The screen will briefly display the message "Preact". The number 00040 (or previously saved value) will be displayed followed by 5 digits. Enter the Preact amount and press the STORE/ENTER key (previously entered value will be displayed as default) The LOAD/UNLOAD LED will be illuminated solid red. The indicator is now in Unload Ready mode standing by to begin the next unload operation.
4. Press the START/STOP key to start the dispense operation. The LED will begin to blink and the screen will display the dispensed weight. The indicator will trigger a relay to start the auger/conveyor and the value of the dispensed weight on the screen will decrease as product is dispensed.
5. When the Preact weight has been reached, the relay will be disabled and the auger/conveyor will stop. The LED will stop blinking and turn solid RED. Product will continue to dispense, stopping at the completion of the dispense operation. The screen will return to the normal (GROSS or BIN weight) display after an adjustable Time After Dispense delay.
6. To commence a new unload/dispense action using the same settings, press the START/STOP key. If a new dispense or Preact weight is required, press the UNLOAD key to enter the new weight.



ATTENTION: To stop the unload/dispense operation prior to reaching the Preact weight, press the START/STOP key. The indicator will return to Dispense Ready Mode and a new dispense can be started. Press the CLEAR key at any time to return to normal mode (dispense not ready).

MENU

LOAD/UNLOAD Operation (continued)

UNLOAD/DISPENSE, OUTPUT MODE 2 (+/-Speed or Open/Close Gate Control)

1. Press the UNLOAD key to commence an unload/dispense operation.
2. The screen will momentarily display the message "UNLOAD", followed by 5 digits. Enter the weight to unload and press the STORE/ENTER key (previously entered value will be displayed as default).
3. The screen will briefly display the message "Preact". The number 00040 (or previously saved value) will be displayed followed by 5 digits. Enter the Preact amount and press the STORE/ENTER key (previously entered value will be displayed as default). The LOAD/UNLOAD LED will be illuminated solid red. The indicator is now in the Unload Ready mode, ready to begin the next unload operation.
4. Press the START/STOP key on the keypad to start the dispense action. The LED will begin to blink and the screen will switch to display the dispensed weight. The indicator will enable the +SPEED/OPEN relay for adjustable UPTIME seconds. The value of the dispensed weight displayed on the screen will begin to decrease as product is dispensed.
5. When the Preact weight has been reached, the -SPEED/CLOSE relay will be set and the LED will turn RED. Product will continue to dispense stopping at the completion of the unload/dispense operation. The screen will return to the normal (GROSS or BIN) weight after an adjustable Time After Dispense delay.
6. To commence a new unload/dispense action using the same settings, press the START/STOP key. If a new dispense or Preact weight is required, press the UNLOAD key to enter the new weight.



ATTENTION: To stop the unload/dispense operation prior to reaching the Preact weight, press the START/STOP key. The indicator will return to Dispense Ready Mode and a new dispense can be started. Press the CLEAR key at any time to return to normal mode (dispense not ready).

MENU

LOAD/UNLOAD Operation (continued)

PASS-THROUGH MODE (Default Mode - Dispense Not Ready)

When the indicator is in Normal mode (dispense not ready, LED off), it will pass-through the external key functions and will not trigger a dispense operation. If required, press the CLEAR key to reset the LOAD/UNLOAD LED and return the indicator to Normal mode.

STR REMOTE HANDHELD

When using an optional STR Remote to control the internal relay for the dispense operations, verify the indicator is in Normal mode (Dispense Not Ready, LED Off). If required, press the CLEAR key to reset the LOAD/UNLOAD LED and return the indicator to Normal mode.

CALIBRATION

CALIBRATION MENU

To initiate a calibration, press the MENU/SETUP key. The indicator screen will display "i0dE". Enter 477 to access the Calibration Menu. Press the MENU/SETUP key to advance through the Calibration Menu settings. Some settings require a number to be entered, while other settings will have preset selections to choose from. Use the keypad to enter numbers. Use the arrow keys to toggle through, edit or select preset selections. When the desired setting has been entered or selected, press the MENU/SETUP key to save the entry and advance. The setting will be saved and the indicator can be turned off if no other settings require editing.

STEP	FUNCTION	SETTING	DEFAULT
i0dE	Mode Menu Code	Enter 477 to access the Calibration Menu	477
StEP	Calibration Menu Step Code	000 = Advance to Radio Enable	000
rAd io	Radio Enable	Yes or No	no
rF CH	Radio Channel	01 to 12	04
rF.PAN	Radio Network ID	0 to 65534	8000
rF.ECP	Radio Encryption Enable	Yes or No	no
	Radio Encryption Key	0 to 65534	00000
rF.dEF	Restore Radio Defaults	0 or 3	0
U. ENA	Unit Switch Enable	Yes or No	YES
AZt	AZT (Auto Zero Tracking)	0.5 d, 0.6 d, 1 d, 3 d, oFF	1 d
GrAd	Graduation Size	0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100	d 2
	SAuE	Displays for 1 sec and returns to normal display	

CALIBRATION

SETTING CALIBRATION PARAMETERS

1. Press the MENU/SETUP key. If the screen displays "MODE", enter 477 to access the Calibration menu.
2. The indicator screen will display the message "STEP".
3. Press the MENU/SETUP key. Use the numeric keypad to enter the number assigned for a specific CAL Mode (refer to the Calibration Step Codes section) or press the MENU/SETUP key to continue through the Calibration menu.
4. The screen will display "Rad io". Press the MENU/SETUP key. Press any arrow key to toggle between "YES" (radio enabled) and "no" (radio disabled). When the desired setting is displayed, press the MENU/SETUP key to save and advance.
5. The screen will display the message "rF CH". Press the MENU/SETUP key. Use the numeric keypad to enter the desired RADIO CHANNEL setting (01 - 12). Press the MENU/SETUP key to save and advance.
6. The screen will display "rF.PRN". Press the MENU/SETUP key. Use the numeric keypad to enter the RADIO NETWORK ID setting (0 - 65534). Press the MENU/SETUP key to save and advance.
7. The message "rF.ECP" will be displayed. The RADIO ENCRYPTION ENABLE status will be set to either yes or no. Press the MENU/SETUP key. Press the arrow keys to toggle between "YES" and "no". When the desired setting is displayed, press the MENU/SETUP key. If YES is selected, enter the encryption key number (0 - 65534). Press the MENU/SETUP key to save and advance.
8. The screen will display "rF.dEF". Press the MENU/SETUP key. Use the numeric keypad to enter the RESTORE RADIO DEFAULTS setting. The default setting is 0. Select setting number 3 to restore the default radio settings (set at the factory). Enter the setting (0 or 3). Press the MENU/SETUP key to save and advance.
9. The screen will display the message "U. EnR". Press the MENU/SETUP key. Press any arrow key to toggle between "YES" and "no". When the UNIT SWITCH ENABLE setting "no" is selected, the units will be locked and the MODE menu entry "UN tS" will be prevented from toggling the unit of measure settings between lb and kg. When the desired setting is displayed, press the MENU/SETUP key save and advance.

CALIBRATION

Setting Calibration Parameters (continued)

10. The screen will display "AZT". Press the MENU/SETUP key. Press any arrow key to toggle through the available AUTO ZERO TRACKING (AZT) settings referenced in the following table. If the displayed weight is less than the number of grads shown for a specific amount of time, the weight will be automatically zeroed off. When the desired AUTO ZERO TRACKING setting is displayed, press the MENU/SETUP key to save the entry and advance.

AZT SETTINGS
0.5 d, 0.6 d, 1 d, 3 d, OFF

11. The screen will display the message "GrAd". Press any arrow key to toggle through the available GRADUATION SIZE settings referenced in the following table. When the desired setting is displayed, press the MENU/SETUP key to save the entry and advance.

GRADUATION SIZE SETTINGS					
0.02	0.05	0.1	0.2	0.5	1
2	5	10	20	50	100

12. The message "SALE" will be displayed and the indicator will return to normal operation.

CALIBRATION

CALIBRATION OPTIONS

The LD720 LED Indicator has four scale calibration options available for conducting a comprehensive calibration of the weigh system.

CODE CALIBRATION WITH mV/V

Calibrate the system by entering the load point (lb or kg) per load cell, signal (mV/V), and number of load cells. The mV/V calibration can also be adjusted by following the procedure set forth in the mV/V Calibration section.

FIELD CALIBRATION WEIGHT ENTRY ADJUSTMENT

The Field Calibration Weight Entry Adjustment should only be attempted if the scale is working but the weights are off. Adjust the displayed weight by entering the Displayed Weight and a Certified Weight. The LD720 will automatically calculate an internal factor which is applied to all displayed weights for future weighings.

FIELD CALIBRATION FACTOR ADJUSTMENT

Field Calibration Factor Adjustment is used to view or edit the Field Cal Factor directly.

WEIGHT CALIBRATION

Weight Calibration should only be attempted if the calibration has been lost. Apply known weight(s) and enter the value of those weights into the indicator. The scale must be unloaded at the start of the procedure, with a known weight ready to be loaded.



WARNING: When a Weight Calibration is performed, the Field Calibration Adjustment is automatically reset to the default setting of 1.0000.

CALIBRATION

CALIBRATION PROCEDURES

MV/V CALIBRATION



WARNING: The mV/V calibration parameters will be overwritten when advancing through the mV/V calibration menu. Do not advance through the mV/V Calibration steps unless the following conditions are present.

1. A certified Load Cell Simulator is available.
2. There is a requirement to change the mV/V calibration.

The mV/V calibration of the indicator is accomplished at the factory prior to shipment. A certified load cell simulator is required to perform the mV/V adjustment. NOTE: When performing the mV/V calibration on a system with multiple cell channel inputs, adjust the simulator on CH1 input only, leaving the other inputs stable. An alternative method is to set the number of cell inputs to 1 prior to the calibration, returning to the required number of cells when the calibration is completed.

STEP	FUNCTION	SETTING	DEFAULT
<i>ModE</i>	MODE Menu Code	Enter 477 to proceed to the Calibration Menu	477
<i>STEP</i>	Calibration Menu Step Code	Enter 20 for mV/V Calibration	020
<i>55-00</i>	Simulator Set to 0.0 mV/V		
<i>55-01</i>	Simulator Set to x.x mV/V	Enter simulator setting	2.0000
	<i>SALE</i>	Displays for 1 second and returns to normal display	

1. Press the MENU/SETUP key to access the MODE Menu. When the message "*ModE*" is displayed on the screen, enter 477 to proceed to the Calibration menu.
2. Press the MENU/SETUP key. When "*STEP*" is displayed, enter 20 for mV/V Calibration.
3. Step "*55-00*" is displayed. Set the simulator to 0 mV/V. Press the MENU/SETUP key.
4. Step "*55-01*" is displayed. Set the simulator to the desired value. Enter the value and press the MENU/SETUP key.
5. The screen will display the message "*SALE*" and return to normal operation.

CALIBRATION

Calibration Procedures (continued)

CODE CALIBRATION

STEP	FUNCTION	SETTING	DEFAULT
<i>ModE</i>	MODE Menu Code	Enter 477 to proceed to the Calibration Menu	477
<i>StEP</i>	Calibration Menu Step Code	Enter 21 for Code Calibration	021
<i>[[- 01</i>	Load Point (in lb or kg)	1 to 999999	40000
<i>[[- 02</i>	Signal (mV/V)	0.1000 to 99.9999	0.4500
<i>[[- 03</i>	Number of Load Cells	1 - 99	1
	<i>SAuE</i>	Displays for 1 second and returns to normal display	

1. Press the MENU/SETUP key to access the MODE Menu. When "*ModE*" is displayed on the screen, enter 477 to proceed to the Calibration menu.
2. Press the MENU/SETUP key. When "*StEP*" is displayed, enter 21 for Code Calibration.
3. Step "*[[- 00*" is displayed. Enter the capacity that each load cell is rated for at for a specific mV/V output. The load or cell capacity may be listed on the load cell label or data sheet. Press the MENU/SETUP key to save and advance.
4. Step "*[[- 02*" is displayed. Enter the mV/V output corresponding to the load entered in step 3. The value may be listed on the load cell label or data sheet. Press the MENU/SETUP key to save and advance.
5. Step "*[[- 03*" is displayed. Enter the number of cells in the system. Press the MENU/SETUP key to save and advance.
6. The screen will display the message "*SAuE*" and then return to normal operation.

CALIBRATION

Calibration Procedures (continued)

FIELD CALIBRATION WEIGHT ENTRY ADJUSTMENT

Adjust the displayed weight by entering the Displayed Weight and a Certified Weight. The indicator will automatically calculate an internal factor that will be applied to all subsequent displayed weights. NOTE: Performing a field calibration adjustment should only be attempted if a certified or trusted weight is available to compare the displayed gross weight against. The indicator should display the gross weight prior to starting the adjustment.

STEP	FUNCTION	SETTING	DEFAULT
<i>MODE</i>	MODE Menu Code	Enter 477 to proceed to the Calibration Menu	477
<i>STEP</i>	Calibration Menu Step Code	Enter 31 for Field Calibration Weight Entry Adjustment	031
<i>dISP.Ld</i>	Displayed Load (weight)	1 - 999999	
<i>CERT.Ld</i>	Certified Load (weight)	1 - 999999	

1. Press the MENU/SETUP key to access the MODE Menu. When "*MODE*" is displayed, enter 477 to proceed to the Calibration menu.
2. Press the MENU/SETUP key. When "*STEP*" is displayed, enter 31 for Field Calibration Weight Entry Adjustment.
3. Step "*dISP.Ld*" is displayed. Press the MENU/SETUP key and enter the current displayed gross weight. If there is a load on the scale, the weight will automatically be populated into the display but can later be edited. Press the MENU/SETUP key to save and advance.
4. Step "*CERT.Ld*" is displayed. Press the MENU/SETUP key and enter the certified or trusted gross weight. Press the MENU/SETUP key to save the entry and advance. An internal Field Cal Factor will be calculated automatically and applied to all subsequent displayed weights.

CALIBRATION

Calibration Procedures (continued)

FIELD CALIBRATION FACTOR ADJUSTMENT

View or edit the Field Cal Factor directly.

STEP	FUNCTION	SETTING	DEFAULT
<i>MODE</i>	MODE Menu Code	Enter 477 to proceed to the Calibration Menu	477
<i>STEP</i>	Calibration Menu Step Code	Enter 30 for Field Calibration Adjustment	030
<i>FLd.Ad</i>	Field Cal Adj Value	0.1000 to 9.9999	1.0000

1. Press the MENU/SETUP key to access the MODE Menu. When "*MODE*" is displayed, enter 477 to proceed to the Calibration menu.
2. Press the MENU/SETUP key. When the message "*STEP*" is displayed, enter 30 for Field Calibration Adjustment.
3. Step "*FLd.Ad*" is displayed. Press the MENU/SETUP key to view the current Field Cal Adjustment value.
4. Calculate and enter the new Field Cal Adjustment value. Press the MENU/SETUP key to save the entry and advance. The new factor will be applied to all subsequent displayed weights.

EXAMPLE: To increase the weight by 1%, increase the factor by 1%. If the factor is set at the default setting of 1.0000, change the setting to 1.0100 to increase weights by 1%.

The default Field Cal Factor is 1.0000. The Field Cal Factor is also reset to 1.0000 when performing a new Code or Weight calibration.

CALIBRATION

Calibration Procedures (continued)

WEIGHT CALIBRATION



WARNING: The Weight Calibration parameters will be overwritten when advancing through the Weight Calibration menu. Do not advance through the Weight Calibration steps unless the following conditions are present.

1. The required number of Known Weight(s) is available.
2. There is a requirement to change the Weight Calibration.

The scale must be unloaded at the start of the calibration. A known weight(s) must be readily available to be loaded on the scale.

STEP	FUNCTION	SETTING	DEFAULT
<i>ModE</i>	MODE Menu Code	Enter 477 to proceed to the Calibration Menu	477
<i>STEP</i>	Calibration Menu Step Code	Enter 1 to advance to Weight Calibration	001
<i>CAP</i>	Capacity	Enter scale capacity	199999
<i>LL-00</i>	No Weight Applied		
<i>HH-01</i>	First Weight	Enter first weight	
<i>LL-01</i>	First Weight	Load first weight	
	Up to 3 Cal Points Available to Enter	Turn indicator off to stop adding cal points.	

1. Press the MENU/SETUP key to access the MODE Menu. When "*ModE*" is displayed, enter 477 to proceed to the Calibration menu.
2. Press the MENU/SETUP key. When "*STEP*" is displayed, enter 1 for Weight Calibration.
3. Step "*CAP*" is displayed. Press the MENU/SETUP key and enter the scale capacity. The scale capacity is saved and the unit can be turned off before commencing with the Weight calibration.
4. Step "*LL-00*" is displayed. Verify there is no weight is on the scale. Press the MENU/SETUP key.

CALIBRATION

Calibration Procedures (continued)

5. Step "HH- 0 1" is displayed. Press the MENU/SETUP key.
6. Enter the first calibration weight to be applied and press the MENU/SETUP key.
7. Step "LL- 0 1" is displayed. When the first load is applied and stabilized on the scale, press the MENU/SETUP key.
8. Step "HH- 02" is displayed. Turn off the scale to lock in a 1-point calibration. Repeat steps 5 - 7 to enter up to 3 calibration points.

CELL SPAN ENTRY

The Cell Span Entry procedure will adjust the relative output of the cells when compared to one another. The Cell Span Entry procedure applies only to systems with multiple digital channels or systems that use different types of load cells in the same system.

The default setting for each load cell is 1.0000 signifying the load weight is distributed equally across each cell. For most system configurations, the load cells will maintain the default setting. However, special configurations may require different settings be established for each of the system load cells.

STEP	FUNCTION	SETTING	DEFAULT
<i>ModE</i>	MODE Menu Code	Enter 477 to proceed to Calibration Menu	477
<i>STEP</i>	Calibration Menu Step Code	Enter 221 to advance to Cell Span Entry	221
<i>CH1.SP</i>	Cell #1 Span	0.0001 to 9.9999	1.0000
<i>CH2.SP</i>	Cell #2 Span	0.0001 to 9.9999	1.0000
	Up to 6 Cells Available		
	<i>SAwE</i>	Displays for 1 second and returns to normal display	

CALIBRATION

CALIBRATION STEP CODES

CAL MODE	ENTER CAL MODE # AFTER "STEP" in CAL MENU Diagnostic Use Only – Contact Intercomp Service Before Proceeding
000	Advance through normal Calibration menu
001	Weight Calibration (apply weight(s) to calibrate)
003	Set number of load cell inputs, followed by corner calibration
005	Access MODE Menu. (same menu accessed when the CAL strap is in the Run position)
020	mV/V calibration (calibrate mV/V input using a certified LC simulator)
021	Code Calibration (set system calibration by entering cell load and mV/V info)
030	Field Calibration Adjustment
031	Field Calibration Weight Entry Adjustment
072	Output Rate. Select 4H or 8H. Set to 8H for faster RS232 output rate and display update rate. When set to 8Hz, the display will update 8 times per second, the RS232 continuous output will transmit a message 8 times per second, and the averaging will be based on 8 reads per second (set to 16 for 2 second averaging)
111	Individual cell read diagnostic. Enter specific load cell number 1 - 8
121	Raw Counts display diagnostic. 0 mV/V = 131072 (6 digit display) or 31072 (5 digit display). 8375 per mV/V
122	Raw mV/V display. Output based on mV/V calibration
131	Constant power to all load cells diagnostic
201-208	Corner adjust cell 1 - 8. (Example: 202 will enter mode to adjust cell span #2)
221	Cell Span Entry (manually enter cell spans for cells 1 - 8)
311	Default and save all radio settings to the radio
711	Default and save all settings (leave calibration and cornering untouched)
811	Default and save corner compensation to nominal values
911	Default and save all board memory (settings, calibration and corners)

SERIAL OUTPUT

If the LD720 Indicator includes the Serial Output option, the RS232 output will transmit the current GROSS, NET or BIN weight being displayed at a rate of four times per second on the RS232 output. If a load/unload job is in progress, the weight loaded/unloaded will be transmitted instead. If the PRINT/RS232 type mode is set to BAR (as referenced in the MODE Menu), an additional command intended to control a bar graph display will be transmitted. If the PRINT/RS232 type mode is set to GTN, a 4-line output will always send the GROSS, TARE and NET weights plus a blank line. Refer to the following examples.

PRINT/RS232 Type = STD

```
" 3000 1b<cr><lf>" (lb or kg)
" 2865 1b<cr><lf>"
```

PRINT/RS232 Type = BAR

```
" 3000G<cr>@^100<cr>" (G for Gross or N for Net) (100% bar graph filled)
" 2856G<cr>@^22<cr>" (22% bar graph filled)
```

PRINT/RS232 Type = GTN

```
"G: 3000 1b<cr><lf>"
"T: 1200 1b<cr><lf>"
"N: 1800 1b<cr><lf>"
"<cr><lf>"
```

TROUBLESHOOTING

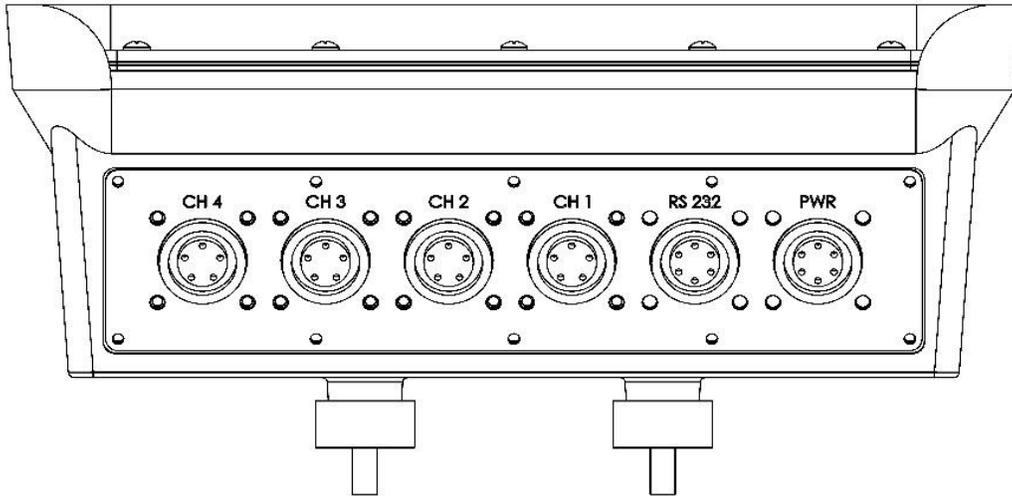
ERROR MESSAGES

Error messages are displayed in priority order.

MESSAGE	DEFINITION
EEPE	EEPROM FAILURE Calibration Information Lost or Corrupted
Calibration information is held in a special permanent memory area. A checksum code is generated and written to the memory during the calibration process. Each time the power is turned on the code is regenerated and compared to the stored value. If a change is detected, the error message is displayed. Recalibration may clear the error. If the problem persists the control panel will require replacement.	
Ad 1	A/D Converter Failure
The A/D circuit board has detected a fault and needs to be repaired or replaced.	
LCb 1	Power Up Self-Test Has Detected Load Cell Error
The load cell may have failed or there is a bad connection. The message "LCb 1" indicates that cell #1 has failed.	
LC 1	Run-Time Checking Has Detected Load Cell Error
The load cell may have failed or there is a bad connection. The message "LC 1" indicates that cell #1 has failed.	
Lo.bAt	Low Battery (Supply) Voltage
The message indicates that the indicator has measured the supply voltage and found it to be too low. Check the power supply voltage and wiring.	
CAP	Overload or Calibration Information Lost or Bad Load Cell
The control panel has detected a weight reading larger than expected. The error may be caused by the application of too much weight to the platform. If the message is displayed when there is no weight on the platform, the most likely cause is a defective load cell or defective control panel.	
d ,5P	Number Cannot Be Displayed
A common cause of the error is pressing the ZERO key with a full load on the scale. When the load is removed, the full number with a minus sign will not fit on the display. Press the ZERO key to clear the error.	

TROUBLESHOOTING

INDICATOR PIN CONNECTIONS



1CH 4 Input

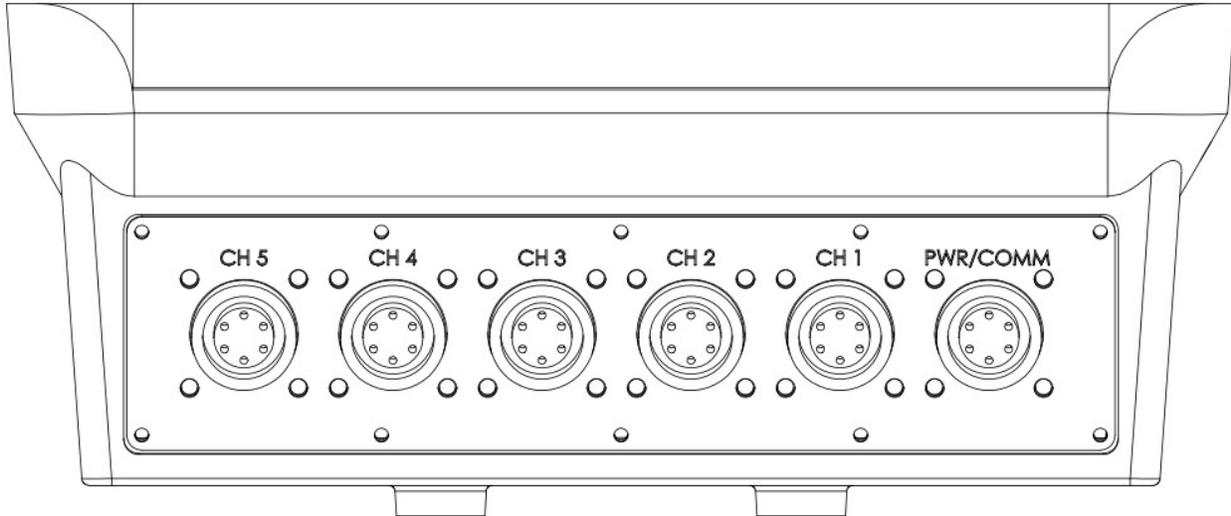
CH 4		CH 3		CH 2		CH 1		RS232		PWR	
A	-SIG	A	-SIG	A	-SIG	A	-SIG	A	12V Switched	A	+12V INPUT
B	+EXC	B	+EXC	B	+EXC	B	+EXC	B	GND	B	GND
C	+SIG	C	+SIG	C	+SIG	C	+SIG	C	RS232 TX	C	RELAY 1
D	-EXC	D	-EXC	D	-EXC	D	-EXC	D	RS232 GND	D	INPUT 1
E	-SHIELD	E	-SHIELD	E	-SHIELD	E	-SHIELD	E	N/A	E	RELAY 2
								F	N/A	F	INPUT 2

1CH 4 Input - No Relay

CH 4		CH 3		CH 2		CH 1		RS232		PWR	
A	-SIG	A	-SIG	A	-SIG	A	-SIG	A	12V Switched	A	+12V INPUT
B	+EXC	B	+EXC	B	+EXC	B	+EXC	B	GND	B	GND
C	+SIG	C	+SIG	C	+SIG	C	+SIG	C	RS232 TX	C	RS485-A
D	-EXC	D	-EXC	D	-EXC	D	-EXC	D	RS232 GND	D	RS485-B
E	-SHIELD	E	-SHIELD	E	-SHIELD	E	-SHIELD	E	N/A	E	N/A
								F	N/A	F	N/A

TROUBLESHOOTING

Indicator Pin Connections (continued)

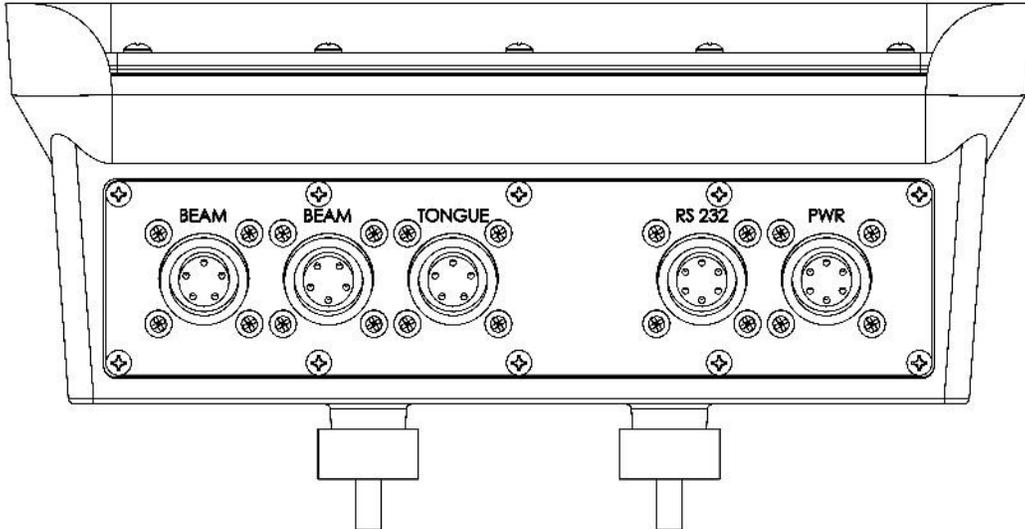


1CH 5 Input

CH 5		CH 4		CH 3		CH 2		CH 1		PWR/COMM	
A	-SIG	A	+12V INPUT								
B	+EXC	B	GND								
C	+SIG	C	RELAY 1								
D	-EXC	D	INPUT 1								
E	-SHIELD	E	RS232 TX								
										F	RS232 GND

TROUBLESHOOTING

Indicator Pin Connections (continued)



1CH 2 Input - No Relay

BEAM		BEAM		TONGUE		RS232		PWR	
A	-SIG	A	-SIG	A	N/A	A	12V Switched	A	+12V INPUT
B	+EXC	B	+EXC	B	N/A	B	GND	B	GND
C	+SIG	C	+SIG	C	N/A	C	RS232 TX	C	RELAY 1*
D	-EXC	D	-EXC	D	N/A	D	RS232 GND	D	INPUT 1*
E	-SHIELD	E	-SHIELD	E	N/A	E	N/A	E	RELAY 2*
							N/A	F	INPUT #2

* RELAY 1/2 and INPUT 1/2 connections are only applicable to indicators with the optional internal relay control installed.

HOW TO OBTAIN SERVICE

For Service and Support, contact your Equipment OEM or Local Dealer.

Inform the Service Department that the product is an AG Scale System.

Be prepared to provide the following information:

1. Serial Number(s) of System and/or Components
2. When was the system purchased?
3. Where was the system purchased?

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