



CS1500TM LED Wireless Crane Scale User Manual

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Declaration of Conformity



We, Intercomp Company
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Declare under sole responsibility that the CS1500-LCD Wireless crane scale to which this declaration relates 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.

2009/125/EC - ecodesign requirements for energy-related products (2005/32/EC recast)
(EC) No 278/2009 - no-load condition electric power consumption and average active efficiency of external power supplies
Directive 2014/30/EU 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 AKA Electromagnetic Compatibility (EMC) Directive
EN 55011:2016 - Industrial, scientific and medical equipment. Radio-frequency disturbance characteristics. Limits and methods of measurement
EN 61000-6-1:2007 - Generic standards, Residential, commercial and light industry environment
EN 61000-6-2:2005 - Immunity for industrial environments
EN 61000-6-3:2007 - Emission standard for residential, commercial and light-industrial environments
2006/42/EC - on machinery, and amending Directive 95/16/EC (recast)
EN 45501:2015 - Metrological aspects of non-automatic weighing instruments
EN 62311:2008 - Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)
2012/19/EU - on waste electrical and electronic equipment (WEEE) (Directive 20/96/EC Recast)
2013/56/EU amending Directive 2006/66/EC on batteries and accumulators
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 301 489-1 V2.2.0 (2017-03) – Electro-Magnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
EN 300 328 V2.1.1 (2016-11) - Wideband transmission systems; Data transmission equipment operating in the 2.4GHz ISM band
EN 60950-1:2006+A2:2013 - Information technology equipment. Safety. General requirements

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

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

The CE mark, Red M and WEEE marks must be affixed as required in the directives.

A handwritten signature in black ink that reads "Mark Browne". The signature is written in a cursive style with a small "#" symbol at the end.

Mark Browne / Quality Manager
June 9, 2014

Introduction

This manual contains specifications, operating instructions and calibration procedures for the Intercomp Wireless CS1500 Crane Scale.

Specifications

Controls

General	Zero, lb/kg, Mode, Set, Print, Tare, On, Off
Display	5 digit, 1.5 inch LED. User adjustable brightness. LED segments: lb, kg, GROSS, NET, PEAK, TOTAL

Electrical

Batteries	8 X D-size alkaline
Battery Life	500 hours typical at default LED brightness, indoor use 100 hours typical at highest LED brightness setting 600 hours in sleep mode (any brightness setting) 9000 hours in standby mode (any brightness setting)
Filtering	Adjustable averaging up to 30 seconds.
Standby Mode	Scale goes into standby when shut off using the IR or RFX remote or after an adjustable time without use or motion. When in standby mode, scale can be turned on with the IR or wireless remote.
Auto-Zero	Satisfies all HB-44 requirements.

Performance

Speed	4 display updates per second
Accuracy	$\pm 0.1\%$ of reading or ± 1 display graduation, whichever is greater.
Calibration Interval	Twelve month interval recommended

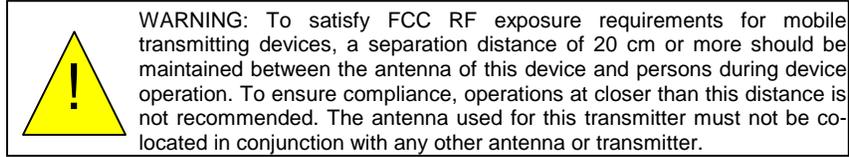
Environmental

Humidity	10 to 95% Non-Condensing.
Temperature	Operating: -28 C to +65 C. / -20 F to +150 F. Storage: - 40 C to +75 C. / - 40 F to +170 F.
Ingress Protection	IP65
EMI/RFI	Meets Mil Spec 461

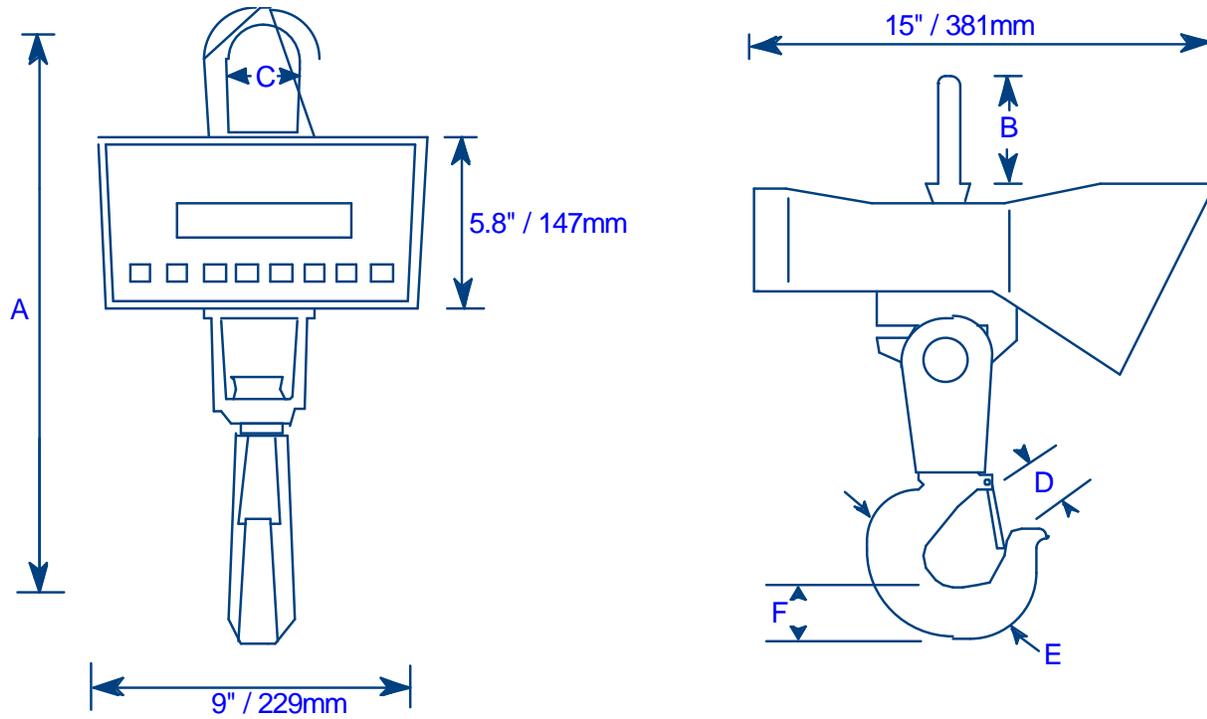
Radio

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

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



Physical



*

Capacity	Graduation	A	B	C	D	E	F	Approx. Weight
250 lb 125 kg	0.1lb .05 kg	10.5 in 267 mm	2.38 in 61 mm	2.00 in 51 mm	0.97 in 25 mm	1.38 in 35 mm	0.84 in 22 mm	20 lb 9 kg
500 lb 250 kg	0.2 lb 0.1 kg	10.5 in 267 mm	2.38 in 61 mm	2.00 in 51 mm	0.97 in 25 mm	1.38 in 35 mm	0.84 in 22 mm	20 lb 9 kg
1,000 lb 500 kg	0.5 lb 0.2 kg	10.5 in 267 mm	2.38 in 61 mm	2.0 in 51 mm	0.97 in 25 mm	1.38 in 35 mm	0.84 in 22 mm	20 lb 9 kg
2,000 lb 1,000 kg	1 lb 0.5 kg	11.5 in 292 mm	2.38 in 61 mm	2.0 in 51 mm	0.97 in 25 mm	1.38 in 35 mm	0.84 in 22 mm	20 lb 9 kg
5,000 lb 2,500 kg	2 lb 1 kg	19 in 482 mm	2.88 in 73 mm	2.25 in 57 mm	1.69 in 43 mm	2.5 in 64 mm	1.82 in 46 mm	36 lb 16 kg
10,000 lb 5,000 kg	5 lb 2 kg	19 in 482 mm	2.88 in 73 mm	2.25 in 57 mm	1.69 in 43 mm	2.5 in 64 mm	1.82 in 46 mm	36 lb 16 kg
20,000 lb 10,000 kg	10 lb 5 kg	23 in 584 mm	3.5 in 90 mm	3.12 in 80 mm	2.41 in 62 mm	3.25 in 83 mm	2.60 in 66 mm	45 lb 20 kg

Weights and Measures



The CS1500 meets or exceeds Class III standards for 3000 division accuracy from 500 lb to 70,000 lbs. The certification was completed by the National Type Evaluation Program (NTEP) in accordance with the National Institute of Standards and Technology (NIST) Handbook 44. A NTEP Certificate of Conformance Number 97-135A4 was issued under the National Conference of Weights and Measures.

Parts and Optional Equipment

RFX Wireless Handheld Weighing Indicator (101225)

The RFX Wireless Indicator provides the added capability to manage weighing operations using the CS1500 scale. The Indicator provides wireless communication with displays, computers and other weighing system devices. The Indicator can store and download weight records and other data through either USB or RS232 connections.

RS232 Serial Data Output / Direct Power (184507)

The Serial Data Output/Direct Power harness assembly provides communication with a computer or remote display through a RS232 connection. The harness also provides a direct power connection.

Direct Power on Crane Unit, 120V/220V (184506)

The Direct Power/RS232 harness (184507) option provides 100-250VAC power. The option includes a coiled power cord and 120V/220V wall mount AC/DC adapter. The coiled power cord is 2ft long retracted and approximately 6ft in length when extended. Four International power interchangeable plug clips accommodate US, Europe, UK and China power ratings.

Operations

Operating Practices

Warning: The crane scale must be operated by qualified designated persons, trainees under the direct supervision of designated persons, maintenance and test personnel when in performance of their assigned duties or lifting device inspectors.

Warning: Do not exceed the rated load limit of the crane scale.

Warning: The crane scale shall be applied to the load in accordance with the instruction manual.

Warning: Prior to lifting the operator shall make sure that all ropes or chains are not kinked and if multiple lines are used they are not twisted around each other.

Warning: Ensure that the load is correctly distributed for crane scale use.

Warning: Ensure the temperature of the load does not exceed the maximum temperature limits of the crane scale.

Warning: Ensure that crane scale movement (swing) is minimized when positioning over a load.

Warning: Avoid any sudden acceleration or deceleration when moving the load.

Warning: Do not allow crane scale or the lifter to come into contact with any obstruction when moving the load.

Warning: Do not operate crane scale if it is damaged, malfunctioning or missing parts.

Warning: Do not lift people with the crane scale.

Warning: Do not lift suspended loads over people.

Warning: Do not use the crane scale to pull side loads or to slide loads unless specifically authorized by a qualified person.

Warning: Do not leave suspended loads unattended.

Warning: Do not remove or obscure warning labels.

Warning: Do not operate the crane scale without having read and understood the operating manual.

Warning: Stay clear of suspended loads.

Warning: Do not lift loads higher than necessary.

Warning: Do not make alterations or modifications to the crane scale.

Warning: Ensure all portions of the human body are kept clear of all device involved with the rigging during the lift.

Display



Controls

ON / OFF



Press and hold the power button to apply power to the weighing system electronics. Hold button until the display responds (approximately 1 second). When power is applied, the weighing system performs a self-test of the pad and the internal electronics. When the self-test has been completed, the system begins weighing. If a problem is detected during self-test, an error message will be displayed. Press the button to turn the scale off.

NOTE: When the scale is turned off using the ON/OFF button, it cannot be turned on with the IR remote or RFX wireless indicator. If the scale is powered up using a remote, turn off the scale with the IR remote or wireless indicator.

ACCUM TOTAL

The scale will not accumulate when the weight is negative, zero, or if the weight is in motion (when Motion Detect is enabled). A display message "Acc.Errr" will be displayed if any of those conditions are present. After a successful accumulation the scale must return to zero before you accumulate the next weight. If you attempt to accumulate the next weight before allowing the scale to return to zero, a display message "Acc.Errr" will be displayed. Press and hold ACCUM TOTAL to view the total. Press ZERO and ACCUM TOTAL together to clear the total.

MODE

The Mode button cycles through the scale set-up menu (Mode Menu) when in normal run mode. When in calibration mode, use the button to toggle through the calibration menu. Refer the Mode Men" and Calibration Menu sections for further details.

ZERO

The ZERO button is used to display a zero weight when the scale shows a non-zero value with no weight on the hook. If ZERO is pressed with weight on the hook, the weight becomes the zero condition for the scale. This can be useful to cancel the weight of any weighing fixtures, such as containers, chains or cables. When the weight is removed, a negative weight shows until the system is zeroed again. If Motion Detect is enabled, the ZERO command will be rejected when a change in weight is detected. The weight must be allowed to stabilize before the zero command is accepted.

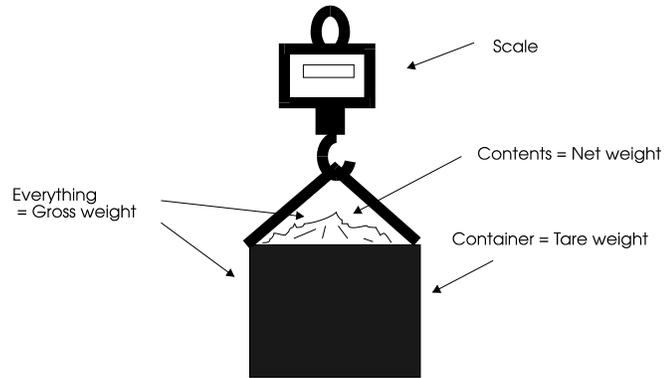
NOTE: The scale has a feature called Auto Zero Tracking (AZT) that corrects slight zero changes during normal operation. If small weights are added slowly, the scale will zero them off.

Lb/Kg

The Lb/Kg button toggles the weighing system between pound (English) and kilogram (SI metric) units of measure. The unit of measure indicator lights are located below the indicator screen.

TARE

Pressing the TARE button will set the TARE equal to the current gross weight of the total load suspended on the scale and then switch the display to net weight. The NET indicator light is located below the indicator screen. The net weight is equal to the gross weight minus the TARE weight. If TARE is pressed when a TARE is already set, the display will briefly show the current TARE weight before returning to net weight display. The TARE weight can only be set if the current gross weight is positive.

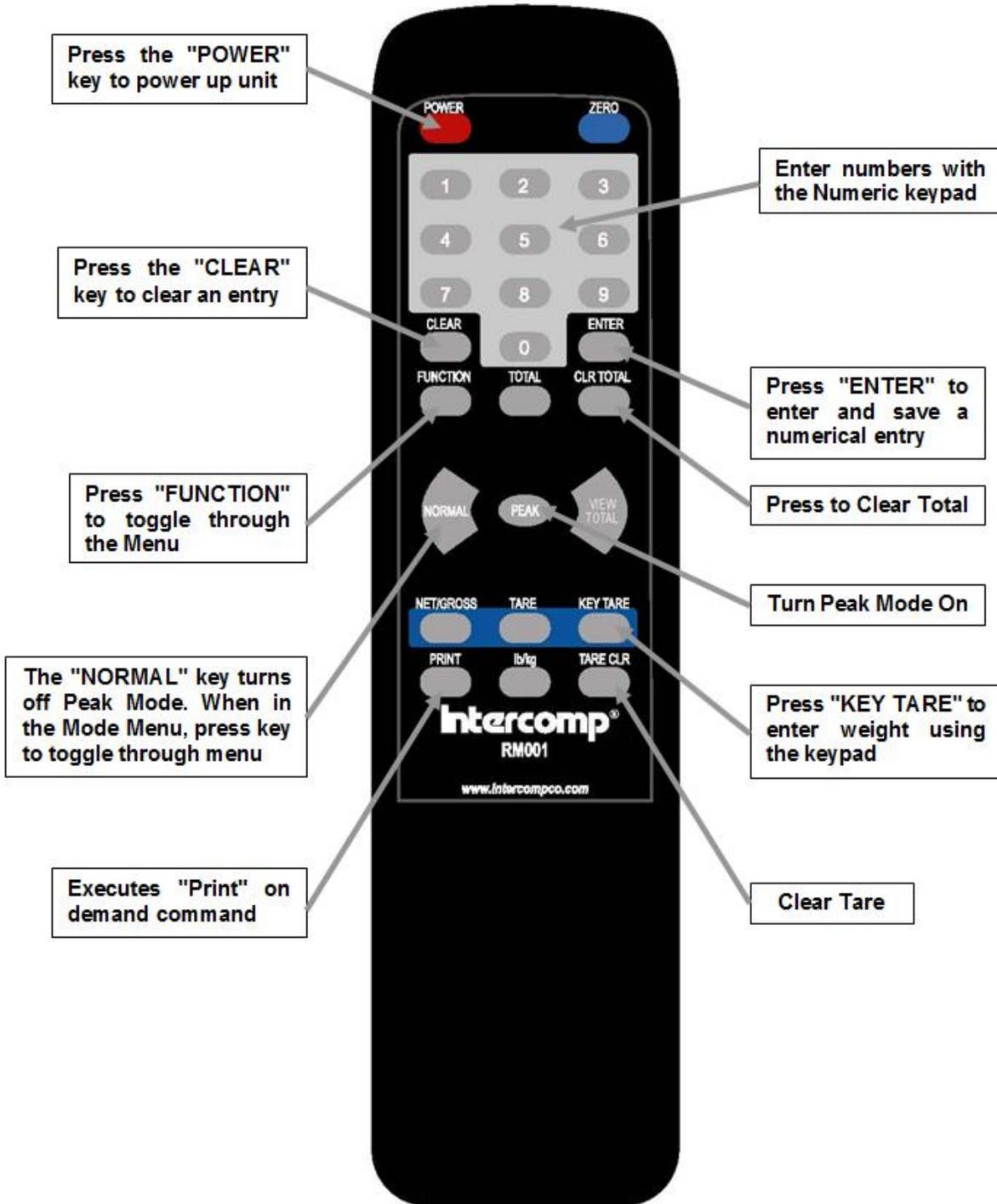


Clearing the TARE

Press both the TARE and ZERO buttons to reset the TARE to zero and return the scale to GROSS weighing status.

IR Remote Control

The primary key functions of the CS1500 IR Remote Control are referenced in the following diagram.



KEY TARE (IR Remote Only)

Press the KEY TARE button on the IR remote to enter the TARE weight. Enter the weight then press ENTER to save the new tare. The entered tare weight must match the grad setting for the scale. For example, if the display graduations are set to 2 lb on the scale, a TARE entry of 19 lb is not allowed. In this example, enter either 18 or 20 lb. If an invalid TARE weight is entered, the scale will blink "Er.Err" 3 times and return to normal weighing without applying the new TARE.

PEAK (IR Remote Only)

Press the PEAK key to enter PEAK mode. Press the NORMAL key to turn PEAK mode off. When PEAK mode is enabled, the scale will show the highest weight that has been applied to the scale since it was powered up or zeroed. Toggling the PEAK mode key will not clear the PEAK weight: Press the ZERO key to reset the PEAK weight. PEAK mode works with gross or net weights. PEAK mode will allow tickets to be printed. However, continuous print output will only function is gross only.

Mode Menu

Press the mode button to access the Mode menu. The display will show "Print". If "SEEP" is displayed instead, press the calibration button to return to normal RUN mode. Press the calibration button a second time to access the Mode Menu. (Enter "5" for the "SEEP" entry to bring up Mode Menu.)

It may be necessary to enter number (up to 5 digits). This is required when the current number is displayed with a flashing number (right hand digit). The flashing number may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. When the number has been entered, press the Mode button. Settings are saved each time Mode is pressed to advance the menu. The scale can then be turned off.

Step	Function	Note	Default
Print	Print	Yes or no	no
LEd.br	LED Brightness	1-6 (6 is the brightest)	2
SEEP1	Set Point 1	0 to 19999	19999
SEEP2	Set Point 2	0 to 19999	19999
A.r.t	Average Rate	1 to 120	004
A.tHr5	Average Threshold	1 to 10000	00000
SLEEP	Sleep Mode	1 to 120	000
AutoFF	Auto Off	000 = off, 1 to 240 minutes	060
Print t	Print Mode	0 = On-Demand, 1 = Continuous	0
PbAUD	Printer Baud Rate	1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200	9600
SC id	Scale ID	1-190	001
Proto	Protocol	StAnd, Lo Pr, C.LOOP or nonE	Lo Pr
rAd io	Radio Enable	Yes or no	YES
rF CH	Radio Channel	01 to 12	01
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

Setting the Mode Menu Parameters

1. Press the mode button to access the Mode menu. The display shows "Print" and will allow the user to activate the print function by selecting "YES" or bypass printing by selecting "no". Press either the ZERO or the lb/kg button to toggle the display. When the desired setting is displayed press the Mode button to continue through the Mode menu.

2. The display will show "LEd.br". Press the Mode button. The flashing display shows the current LED brightness setting. The setting may be adjusted from a range of 1 to 6, with 6 being the brightest setting. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. When the desired setting is displayed press the Mode button to continue through the Mode menu.
3. The display will show "SEtP 1". Press the Mode button. The display shows the current Set Point 1 setting. When the weight displayed is equal to or greater than the set point, the optional set point output will be set high. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. When the display shows the desired number, press the Mode button to continue through the Mode menu.
4. The display will show "SEtP2". Press the Mode button. The display shows the current Set Point 2 setting. When the weight displayed is equal to or greater than the set point, the optional set point output will be set high. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. When the display shows the desired number, press the Mode button to continue through the Mode menu.
5. The screen will display "A. r t". Press the Mode button. The current Average Rate setting will be displayed. The value reflects the number of readings to be averaged. Higher values will result in a more stable reading, but will take longer to calculate the final value. Note that the scale updates at 4Hz, so an Average Rate of "8" equates to 2 seconds of averaging. Enter a "1" to disable averaging. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. When the display shows the desired number, press the Mode button to continue through the Mode menu.
6. The screen will display "A.tHr5". Press the Mode button. The number shown is the current Average Threshold setting. The Average Threshold setting enables dynamic averaging which can improve the settling time of a large Average Rate. If the scale senses a large weight change, it will temporarily suspend averaging, jump to the new weight and resume averaging. Enter a value from 1-10000 to set the threshold (in display divisions). Setting the threshold automatically triggers the dynamic averaging function. Enter "0" to disable dynamic averaging. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. When the display shows the desired number, press the Mode button to continue through the Mode menu.

7. The screen will display "SLEEP". Press the Mode button. The number shown is the current Sleep Mode setting, displayed in minutes the scale will remain idle before it goes into sleep mode. NOTE: Sleep mode may extend battery life. The countdown timer for the sleep mode resets whenever there motion is detected on the scale, there is communication with a wireless remote display or a key is pressed. When the scale is in sleep mode, a "-" will cycle across the screen. The scale will return to active mode when there is motion on the scale, communication with a wireless remote display or a key pressed. Setting sleep mode number to "000" will disable the function. When disabled, the scale will not revert automatically into sleep mode. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. When the display shows the desired number, press the Mode button to continue through the Mode menu.
8. The screen will display "A. OFF". Press the Mode button. The number shown is the current Auto Off setting, displayed in minutes the scale will remain idle before it automatically powers down into standby mode. NOTE: Standby mode may extend battery life. The countdown timer will reset whenever motion is detected on the scale, there is communication with a wireless remote display, or a key pressed. When the scale powers down into standby mode, the scale can be powered back on using the wireless indicator. Setting the sleep mode to "000" will disable the function. When disabled the scale will not revert automatically to standby mode. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. When the display shows the desired number, press the Mode button to continue through the Mode menu.
9. The screen will display "Prnt L". Press the Mode button. The number shown the current Print Mode setting and enables the scale print modes (0 for on-demand, 1 for continuous). Refer to the "Serial Output" section for additional print information. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. When the display shows the desired number, press the Mode button to continue through the Mode menu.
10. The screen will display "PbAUD". Press the Mode button. The flashing number is the current setting of the printer baud rate. The available baud rates are: 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200. Press the ZERO button or the lb/kg button to toggle the display through the baud rate settings. When the desired setting is displayed, press the Mode button to continue through the Mode menu.
11. The message "SC ID" will be displayed. Press the Mode button. A number will be displayed followed by three dashes. This is the scale number. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. When the desired number is displayed, press the Mode button.

12. The screen will display "Pr**o**tocol". Press the Mode button. The flashing message is the current Protocol setting. There are 4 protocol settings for the scale; Standard ("St**A**nd"), Low Power ("Lo **P**r"), Current Loop ("C**L**oop") and Disable ("no**n**E"). Select the "Lo Pr" setting for wireless operation with the RFX wireless indicator. Selecting "no**n**E" will disable wireless operation. NOTE: Disabling wireless operation will extend battery life. Press the ZERO button or the lb/kg button to toggle the display through the different settings. When the desired setting is selected, press the Mode button to continue through the Mode menu.
13. The screen will display "r**A**d **o**". Press the Mode button. The flashing message is the current Radio Enable setting for the radio enable function. Select the "Y**E**S" setting for wireless operation with the RFX wireless indicator. Select "no" to disable wireless operation. Note: Disabling wireless operation will extend increase battery life. If the "no" setting is selected, the scale will skip the remaining radio modes and return to normal weighing. Press either the ZERO or the lb/kg button to toggle the display. When the desired setting is selected press the Mode button to continue through the Mode menu.
14. The screen will display "r**F** **C**H". Press the Mode button. The flashing digit is the current Radio Channel setting. All scales and indicators in a system must be set to the same radio channel setting to communicate with each other. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. When the desired number is selected, press the Mode button.
15. The screen will display "r**F**.**P**A**n**". Press the Mode button. The current Radio Network ID setting is displayed with the right number in flashing mode. All scales and indicators in a system must be set to the same "Personal Area Network ID" setting to communicate with each other. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. When the desired number is selected, press the Mode button.
16. The screen will display "r**F**.**E**C**P**". Press the Mode button. The current setting will be flashing. This setting is the encryption enable status and will be in either the on or off mode. Use the Lb/Kg button or the ZERO button to toggle between the "Y**E**S" or "no" settings. When the desired setting is flashing, press the Mode button. If "Y**E**S" was selected proceed to the next step. If "no" was selected, skip the next step. If "Y**E**S" was selected, the screen will display "00000" with the right digit in flashing mode. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. Enter a number from 0 to 65534. The number selected will be the encryption key. For security purposes, the encryption key is not accessible for viewing and will always be displayed as "00000". All scales and indicators in a system must be set to the same encryption key setting to be able to communicate with each other. When the desired number is selected, press the Mode button. To keep the existing encryption key, enter "00000", then press the Mode button to lock the existing key as is.

17. The screen will display "*rF.dEF*". Press the Mode button. The screen will display a flashing "0", the "*rF.dEF*" default setting. To restore the radio default settings, enter the number "3". The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. No other number entry will have an effect on radio set-up. When the desired number is flashing, press the Mode button. The scale will return to normal weighing.

Accum / Total Use

To enable the accumulating total function, press the "ACCUM TOTAL" button when a load is placed on the scale. The screen will briefly show "*Ac. 1*". This message indicates the first accumulation has been calculated. Each subsequent accumulation will briefly display "*Ac. X*". The "X" element of the equation denotes the number of accumulations that have been calculated during the weighing operation.

Accumulation Errors

The scale will not accumulate when the weight is negative, zero or if the weight is in motion. A display message "*Ac.Err*" will be displayed if any of those conditions are present. After a successful accumulation the scale must return to zero before the next weight can be accumulated. If an attempt is made to accumulate the next weight before allowing the scale to return to zero, a display message "*Ac.Err*" will be displayed.

Motion Detection System

The scale has a motion detection system that can be enabled or disabled using the "Calibration" menu. Refer to the "*-dEt-*, Motion Detect" step of the "Calibration Menu" section. When the motion detect function is enabled, any load motion detected will disable the zero, TARE, print and accum functions. When accumulating, the message "*Ac_Err*" with the "MOTION" icon will be displayed. When attempting to zero, print, or TARE the scale, the display will show "---" and the "MOTION" icon.

Serial Output (Optional)

The Serial Output is accessed through the Mode menu under the "Print" option. The following steps will enable Print On-Demand when "0" is entered.

1. Press the mode button. The display will show "Print".
2. Press the mode button once more. Toggle the display to "YES" by pressing the lb/kg button.
3. Press the mode button once more and the print command will be transmitted. After the print command is sent, the scale will return to normal operations. If accumulating, all accumulations will be retained.

Or press PRINT on the IR remote.

Print-In-Continuous Mode will be enabled when "1" is entered. The scale transmits one weight line per second.

Print Output Examples

On-Demand Print Mode

GROSS: 2865 lb (No TARE, No Total)

GROSS: 2865 lb (TARE, No Total)
TARE: 1000 lb
NET: 1865 lb

GROSS: 2865 lb (TARE and Accumulated Total)
TARE: 1000 lb
NET: 1865 lb
ACC.TOT: 6935 lb

ACCUM #01: 2500 lb (No TARE, Accumulated Total)
ACCUM #02: 2800 lb
ACCUM #03: 2770 lb
ACCUM #04: 2865 lb
ACC.TOT: 10935 lb

GROSS: 2865 lb (No TARE, No Total, PEAK Enabled)
PEAK: 2870 lb

Continuous Print Mode (one line sent once per second, GROSS weight)

2865 lb
2865 lb
2865 lb

Scoreboard

The output of the Wireless CS1500 can be connected to a scoreboard to display continuous, real-time information.

The signal is transmitted through the Serial I/O connector located on the rear of the unit. The connector has the following pinout:

Signal	Pin
TXD	F
GND	B

The transmitted signal has the following characteristics:

- Fixed 8 Data bits, no parity, 1 stop bit.
- Baud rate is configurable with the "printer baud rate" setting in the "Mode Menu".
- The output swings from -9 VDC to 9 VDC.

The scoreboard output is an externally available signal designed to drive a numeric overhead display board or a computer RS-232 input.

Continuous print mode transmitted data: xxxxxxx<cr><lf>

Transmitted data is displayed in either NET or GROSS weight, whichever is currently shown on the Wireless CS1500 display. Data is transmitted at a rate of once per second. However, data transmission may be delayed when motion is detected.

The xxxxxxx field will vary in size depending on the length of the number and may contain a decimal point and/or a minus sign.

Connection Example

Connection to a 9-pin PC Communication Port

CS1500	PC 9-Pin
F (TXD)	2 (RXD)
B (GND)	5 (GND)

Maintenance

Calibration Menu

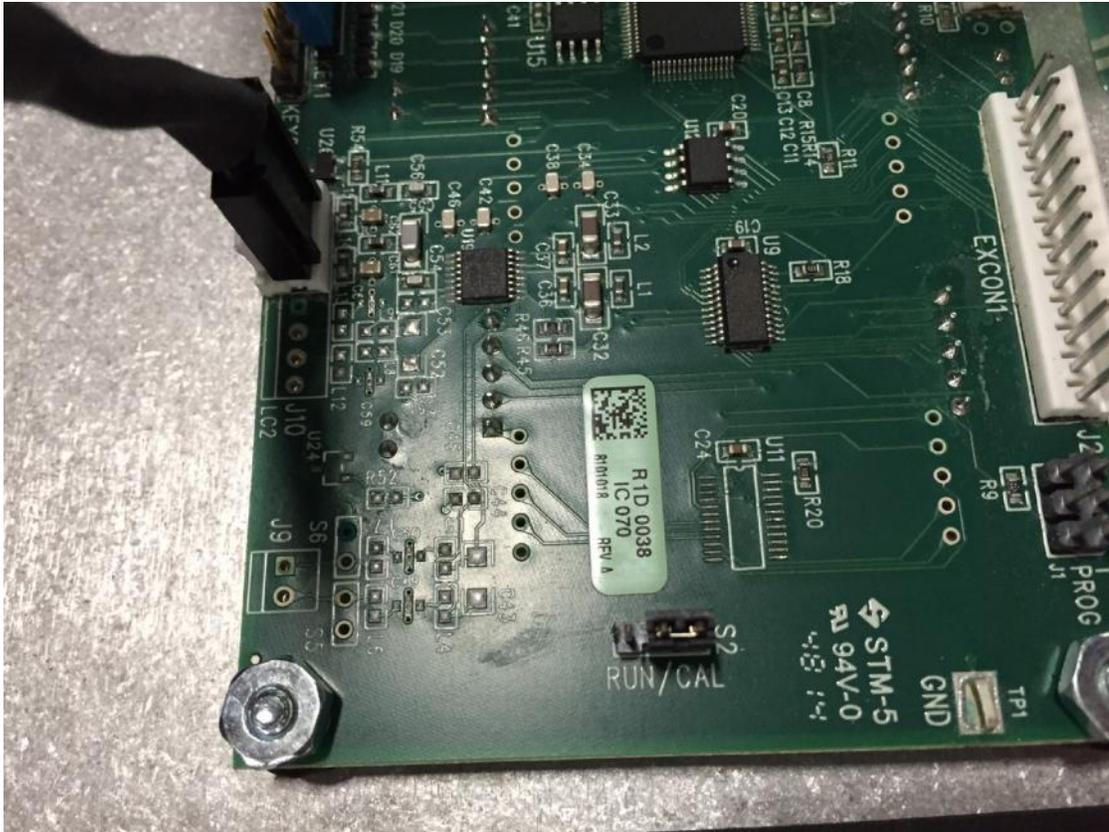
To initiate calibration, press the Mode button. The screen will display the message "STEP". If the message does not appear on the screen, press the Mode button to toggle through the calibration menu.

Step	Function	Note	Default
STEP	Skip	000= no skip 002= skip to weight calibration 005= skip to Mode menu	000
U. EnA	Unit Switch Enable	Yes or no	YES
-dEt-	Motion Detect	Yes or no	no
AdC.r.t	ADC Rate	0 or 1	0
AZt	AZT (auto zero tracking)	1 d, 3 d, .5 d, oFF or.6 d	1 d
ZErD.r	Zero Range	0= off, 1= 1%, 2= 2%, 3= 5%, 4 = 1%	0
GrAd	Graduation Size	0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50,100, 200, 500 or 1000	d 1
	SALE	Displays for 1 sec and advances	
CAP	Capacity	Enter scale capacity	60000
LL-00	No Weight Applied		
HH-01	First Weight	Enter first weight	
LL-01	First Weight	Load first weight	
HH-02	Second Weight	Enter second weight	
LL-02	Second Weight	Load second weight	
HH-03	Third Weight	Enter third weight	
LL-03	Third Weight	Load third weight	
HH-04	Fourth Weight	Enter fourth weight	
LL-04	Fourth Weight	Load fourth weight	
	10 Points Available to Enter	3 or more recommended	

The calibration of the scale is protected from accidental adjustment by a switch. The switch is protected by an access plug. The access plug is located on the back of the scale and is covered by a calibration sticker (seal). The switch is set in the "calibration blocked" mode at the factory.

Enabling the Calibration Switch

Remove all of the screws securing the front cover on. Slowly pull the cover out and rotate it forward to access the calibration jumper. Move the jumper from the "RUN" position to the "CAL" position. The scale is now ready to accept calibration.



Number Entry

Flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. When the desired number has been entered, press the Mode button. The settings will be saved when the Mode button is pressed to advance the menu. The scale can then be turned off.

Setting Calibration Parameters

1. Calibration data will be retained by the scale at the last step completed should power be cycled off. To initiate calibration, press the Mode button. The scale will display "STEP". Press the Mode button again. The scale will display "000". The right digit will be in flashing mode. To move through the calibration parameters, press the Mode button to display "000". The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. When the correct number is displayed, press the Mode button. To skip to the weight calibration parameters and proceed to step 8, enter "002".

2. The screen will display "U. EnA". Press the Mode button. The screen will show "YES", indicating the lb/kg unit switch is enabled. To leave the unit switch function enabled press the Mode button. To disable the lb/kg unit function, press the Lb/Kg or ZERO button to toggle the display to "no". Press the Mode button.
3. The screen will display "-dEt-". Press the mode button. The screen will show the current Motion Detect setting. When the motion detect function is enabled, any motion detected of the load will disable the scale zero, TARE, print and accum functions. Pressing the Lb/Kg or the ZERO buttons will toggle through the motion detect settings. When the desired setting is displayed, press the Mode button.
4. The screen will display "AdC.r". Press the Mode button. The screen will show the current ADC setting in flashing mode. This function enables the internal A/D conversion time to either full conversion or reduced conversion. Enter "0" to enable full conversion. Full conversion time provides the most stable results. Enter "1" to enable reduced conversion time. Reduced conversion time may extend battery life. Intercomp recommends the conversion setting to be set to "0". It should be noted that when the conversion setting is changed, the scale must be recalibrated. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. When the desired ADC rate is selected press the Mode button.
5. The screen displays "AZT". Press the Mode button. The screen shows the current Auto Zero Tracking (AZT) setting. Press either the Lb/Kg or the ZERO button to toggle through the auto zero tracking options (1 d, 3 d, 0.5 d, OFF or 0.5 d). If after a period of time the displayed weight is less than the number of grads shown, the weight will be zeroed off. When the correct auto zero tracking setting is selected, press the Mode button.
6. The screen will display "ZER0.r". Press the Mode button. The screen shows the current Zero Range setting in flashing mode. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. Zero range is the percentage the zero can move from the original zero point acquired at calibration. The ZERO button will not operate if outside the zero range. When outside the zero range, the screen will display "ZER0.r". The error icon will also be displayed if the zero range is set to 1, 2 or 3. If settings 4 through 6 are selected, the zero button will not function when attempting to zero the scale outside the range. When the desired zero range number is selected (0=off, 1=1%, 2=2%, 3=5%, 4=1%, 5=2%, 6=5%), press the Mode button.
7. The screen displays "GrAd". Press the Mode button. The display shows the current Graduation Size setting in flashing mode. Press either the Lb/Kg or the ZERO buttons to cycle through the graduation options. When the desired graduation setting is displayed (grad options 0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100, 200, 500 or 500) press the Mode button.

After completing Step 7, the screen will display "SCALE" for approximately 1 second and then advance to "CAP".

Weight Calibration

Upon completing Steps 1 through 7, the scale is ready to be calibrated. To ensure an accurate calibration, one to ten load weights will be required to load the scale. Using multiple point calibration allows the unit to weigh more accurately by removing undesirable characteristics of load cells. A typical weight calibration is a three point calibration. Three different and optimal loads are applied and entered (not including the zero point). If three different weights are not available, a one or two point calibration process may be substituted. To calibrate using one point, turn off the scale when the screen displays the setting "HH-02". To calibrate using two points, turn off the scale when the screen displays setting "HH-03". The CS1500 can load and apply up to 10 calibration points.

8. The screen will display "SCALE" for 1 second and then advance to show "CAP". Press the Mode button. The screen will display the current capacity setting with the right digit in flashing mode. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. Enter the capacity of the scale and press the Mode button when the scale capacity is displayed.
9. The screen will display setting "LL-00", no weight applied. Remove weight from scale and press the Mode button.
10. The screen will display setting "HH-01", enter first weight. Press the Mode button. The screen will show "00000" with the right digit in flashing mode. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. Enter the value of the first load and press the Mode button when the value is displayed.
11. The screen will display setting "LL-01", load first weight. Apply first load to the scale. When the first load is applied press Mode button.
12. The screen will display "HH-02", enter second weight. Press the Mode button. The screen will show "00000" with the right digit in flashing mode. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. Enter the value of the second load and press the Mode button when the value is displayed.
13. The screen will display the setting "LL-02", load second weight. Apply second load to the scale. When the second load is applied press Mode button.
14. The screen will display the setting "HH-03", enter third weight. Press the Mode button. The screen will show "00000" with the right digit in flashing mode. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. Enter value of the third load and press the Mode button when the value is displayed.
15. The screen will display setting "LL-03", load third weight. Apply third load to the scale. When the third load is applied press Mode button.

16. The screen will display setting "HH-04", enter fourth weight. Press the Mode button. The screen will show "00000" with the right digit in flashing mode. The flashing digit may be incremented by pressing the Lb/Kg button or decremented by pressing the ZERO button. To move one digit to the left, press the TARE button. Enter value of the fourth load and press the Mode button when the value is displayed.
17. The screen will display setting "LL-04", load fourth weight. Apply fourth load to the scale. When the fourth load is applied press Mode button.

Repeat step 10 and 11 for each additional setting "HH-05" – "HH 10" and "LL-05"- "HH 10" combination. If the scale is turned off during calibration, the data acquired to that point will be retained. When the Mode button is pressed after entering the final setting "LL-10", the display will return to normal weighing.

Finished

When calibration of the scale is completed, move the jumper from the "CAL" position to the "RUN" position. Replace the front cover and secure with the screws previously removed.

Calibration (Verification)

To verify the scale has maintained all calibration points, load the scale in 10% increments. Verify the CS1500 display screen reflects an accuracy to 1% of the load or one display division as referenced in the following table. When all 10 points have been verified, the scale calibration is complete.

NOTE: The stated accuracy specifications are based on the graduation setting in the table below. If the graduation setting is set other than the value in the table below the accuracy specification remains with the graduation size listed below.

Scale Capacity	Graduation Setting
500 lb / 250 kg	0.2 lb / 0.1 kg (8)
2000 lb / 1000 kg	1 lb / 0.5 kg (6)
5000 lb / 2500 kg	1 lb / 0.5 kg (6)
10000 lb / 5000 kg	2 lb / 1 kg (5)
20000 lb / 10000 kg	5 lb / 2 kg (4)
30000 lb / 10000 kg	10 lb / 5 kg (3)
50000 lb / 25000 kg	10 lb / 5 kg (3)
70000 lb / 35000 kg	20 lb / 10 kg (2)
100,000 lb / 45000 kg	20 lb / 10 kg (2)

NOTE: Accuracy specifications are based on the graduation settings referenced in the preceding table. If a graduation setting different than the value set forth in the table is used, the accuracy specification remains unchanged from the graduation size listed in the table.

Inspection Requirements

The CS1500 LED Crane Scale and all associated adaptive devices require periodic inspection and maintenance. The frequency and recording of the inspection requirements are found in the service categories referenced below and are dependent on the type of service and environment the equipment is used.

Service Categories

Normal Service – Crane scale is operated at less than 85% of its capacity except for isolated instances. Complete the frequent service inspection monthly and record the periodic service inspection annually.

Heavy Service – Crane scale is operated at 85% - 100% of its capacity as part of normal usage. Complete the frequent service inspection weekly to monthly and record the periodic service inspection semi-annually.

Severe Service – Crane scale is operated at 85% - 100% of its capacity and used in environmental conditions that are unfavorable, harmful or detrimental to the use of the crane scale. Complete the frequent service inspection daily to weekly and record the periodic service inspection quarterly.

Inspection Types

Frequent Service Inspection (records not required)

A frequent visual inspection should be undertaken at intervals dictated by the relevant service category and conducted by the operator or designated person.

1. Inspect for structural deformation, cracks or excessive wear of any part of the crane scale or associated adaptive devices.
2. Inspect for loose or missing guards, fasteners, covers, stops, or nameplates.
3. Inspect all functional operating mechanisms and automatic hold and release mechanisms for improper adjustments interfering with operation of the crane scale or associated adaptive devices.
4. Inspect for distortion such as bending, twisting or increased throat opening.

Periodic Service Inspection (records required)

A periodic visual inspection should be undertaken at intervals dictated by the findings of frequent service inspections and other operational and environmental factors. Inspections should be conducted by the operator or designated person with the results documented to provide the basis for continuing assessment and evaluation. The periodic inspection should cover all frequent service inspection requirements in addition to the following items:

1. Inspect for loose bolts or fasteners.
2. Inspect for cracked or worn gears, pulleys, sheaves, sprockets, bearings, chains and belts.
3. Inspect for excessive wear of linkages and other mechanical parts.
4. Inspect for excessive wear at hoist hooking points, load support clevises and pins.
5. Inspect for visible bends or twists of rigging devices used in scale operation.
6. Inspect all latches and locks for proper operation.

Removal From Service Criteria

Hooks

Hooks shall be removed from service when damage is detected. Hooks can only be returned to service if a qualified person approves the continued use of the item and only after a root cause investigation and corrective action has been initiated.

1. Hooks show cracks, nicks, or gouges.
2. Hook has wear exceeding 10% of the original sectional dimension.
3. Hook has any visible bend or twist from the plane of the unbent hook.
4. Hook has an increase in throat opening of 5% not to exceed $\frac{1}{4}$ of an inch.
5. Self-locking hooks are unable to lock.
6. A hook latch that is inoperable.

Shackles

Shackles shall be removed from service when damage has been detected. Shackles can only be returned to service when approved by a qualified person.

1. The manufacturer's name, trademark or rated load identification information is missing or illegible.
2. The device shows signs of heat damage including weld spatter and arc strikes.
3. The device shows excessive pitting or corrosion.
4. The device is bent, twisted, distorted, stretched, elongated, cracked or has broken load-bearing components.
5. The device has excessive nicks or gouges.
6. The device has a 10% reduction of the original or catalog dimension at any point around the body or pin.
7. The device has incomplete pin engagement.
8. The device has excessive thread damage.
9. The device shows evidence of unauthorized welding.
10. Any condition including visible damage that causes doubt to the continued use of the shackle.

WARNING: Replacement of any device, part or component used in the rigging and lifting of loads to be weighed must be of a quality equal to or better than the original manufacturer's specification.

Power/Batteries

Battery Replacement

Remove the two caps in the back of the unit. Tip the old cells out. Replace the cells with standard alkaline "D" batteries. Pay special attention to polarity, inserting positive end. Replace the battery caps.

Legal-for-Trade Sealing

Qualified Calibration Facilities:

1. Replace the 2 lower left screws located on the front of the CS1500 with the drilled screws provided with the scale.
2. Thread a lead & wire seal through both drilled screws.
3. Crimp the lead seal tightly.

Troubleshooting

Problem Table

Symptom	Will Not Power Up. Blank Display
If power reaches the control panel, the display driver turns on random segments. A blank display could mean power is not reaching the scale circuitry. Possible Causes:	
<ul style="list-style-type: none"> • Defective wiring harness: Inspect for damaged wiring. • Defective battery pack: Measure battery voltage, charge or repair as needed. • Defective ON switch: Bridge switch to see if unit turns on. • Defective circuitry: Replace control panel. 	
The power supply may be delivering power, but a defective circuit board or cable may prevent power from reaching the intended circuit. Unplug the load cell cable. If the scale turns on at this point, a load cell lead is shorted. Turn the power off and try each cell lead in turn to determine the source of the problem. When found, inspect the cable.	
Symptom	Power Up to Random Display
Power is reaching the display driver circuit, but the control panel is not working correctly. Test for low battery voltage. Inspect for visible damage. If this fails replace the control panel.	
Symptom	Scale Shuts Off
If the scale turns off IMMEDIATELY after the On/Off button is released it may indicate low battery levels. Replace the batteries. If battery replacement does not work, it may be necessary to replace the control panel.	
Symptom	Locks Up
The scale may be programmed incorrectly. This can be corrected by restoring the correct control parameters. If the Average Rate setting is very high, an active load may not update the display quickly which in turn may be interpreted as a lock up.	
Symptom	No Backlight
Cover the light sensor window. If the light does not turn on, replace the control panel. Please note that the light is not visible in bright sunlight.	
Symptom	Slow Operation
May be caused by a programmed change in the filter setting. There is a tradeoff between speed and stability of the display reading. This can be tuned by changing the "Average Rate" setting.	
Symptom	Low Battery Indicator Will Not Turn Off
Battery output is very low. Check battery voltage level indicator and replace if required. If the battery voltage is correct the control panel may need to be replaced.	
Symptom	Erratic or Drifting weights
May be traced to contamination on circuit boards or a bad load cell. A rapid change in temperature may also trigger the symptom. The scale requires at a minimum of one-hour of acclimation time for each 10 degree Fahrenheit change in temperature. Another potential cause could be powerful radio interference.	
Symptom	No Response to One or More Buttons
The switch may be defective. The control panel may be defective. (Note: The zero button does not function while the scale is in motion). The scale may be programmed to ignore the zero button when there is an excess amount of weight (over what should be on the scale) on the platform.	
Symptom	Bad Weights
Check weighing technique and scale settings. Verify reference scale is correct? Is the scale spanned correctly? Inspect interconnecting wiring and cables for pinching or damage.	

CAUTION: Changing a circuit board or load cell may affect calibration. Calibration should be checked after any maintenance or repairs have been performed.

Error Messages

Refer to the Error Message table for message types and descriptions.

Message	Description
" --- "	Motion Detected While Attempting to ZERO/TARE/PRINT/ACCUM
The message and the "MOTION" segment will briefly show when motion is detected when attempting to set zero, set TARE or print ticket. The motion detection function can be disabled in the calibration menu under "Motion Detect". However, checking for motion is required for NTEP applications.	
"Rc.Err"	Motion Detected While Attempting to Accumulate Total
The message will be displayed if a restriction is detected when attempting to accumulate to total: 1. Weight must return to zero in between weight accumulations. 2. Weight must be greater than zero to accumulate. 3. Weight must be stable (not in motion) to accumulate. When motion detection is the cause for preventing an accumulation to take place, the "MOTION" segment will also be displayed when the error code message is present. The motion detection function can be disabled in the calibration menu under "Motion Detect". However, checking for motion is required for NTEP applications.	
"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 power is turned on, the code is regenerated and compared to the stored value. If a change is detected, error message will be displayed. Recalibration may clear the error display. If the problem persists the control panel may need to be replaced.	
"Ad I"	A/D Converter Failure
The A/D circuit board has detected a fault and will require repair or replacement.	
"LCb I"	Power-Up Self-Test Has Detected Load Cell Error
The load cell may have failed or there is a bad connection.	
"LC I"	Run-Time Checking Has Detected Load Cell Error
The load cell may have failed or there is a bad connection.	
"Lo.bAt"	Low Battery Voltage
The message indicates that the control panel has measured the battery voltage and found it to be too low. The most likely cause is that the batteries need to be changed. If a new set of batteries fail to correct the situation, then the control panel may need to be replaced. A check of the battery holder and associated wiring should also be performed.	
"CAP"	Overload or Calibration Information Lost or Bad Load Cell
The control panel has detected a weight reading that is over the capacity of the scale or is out of the expected mV/V range. This may be caused by the application of excessive weight on the platform. If the message is displayed when there is no weight on the platform, the most likely cause would be a defective load cell or defective control panel. To isolate the problem, measure the signal across pins 2 and 3 of the load cell connector located on the control panel. The reading should be between zero and one millivolt. If the reading is found to be higher or lower, then the load cell system should be checked. If the signal is within the designated range then the calibration data may be lost. Attempt to recalibrate the scale. If this does not clear the problem, then replace the control panel.	
"d ,SP"	Display Over Range
Weight display is too large to fit on the display. Remove existing load and press zero.	
"ZEr0.r"	Zero Range Error
Scale attempted to zero off a load outside the range specified in the zero range setting. Remove existing load and press zero.	
"Tr.Err"	TARE Grad Mismatch
The message will blink if a TARE entry was attempted with graduations that do not match the grad settings. For example, if the display graduations are set to "2 lb", a TARE entry of "19 lb" would not be accepted. In this situation a graduation of either 18 or 20 lbs. should be entered.	

Calibration Menu Skip "5LEEP"

Cal Mode #	Enter Cal Mode # After "5LEEP" in Cal Menu
000	Advance through normal calibration menu.
001	Jump to weight calibration
005	Enter Mode menu. (the same menu that is entered if the cal strap is in the Run position)
121	Raw Counts display diagnostic
131	Constant power to all load cells diagnostic
311	Default and save all radio settings to the radio
711	Default and save all settings (Leave calibration untouched)
911	Default and save all board memory (settings and calibration)

How to Contact Intercomp

Please provide the following information when requesting service for the Intercomp CS1500 LED Wireless Crane Scale:

1. Item Description (Nomenclature, PN)
2. Serial Number(s) of Item
3. When was item purchased (mm/yyyy)?
4. Where was item purchased (company/location)?

For Intercomp Service call or fax:

(763)-476-2531
1-800-328-3336
FAX (763)-476-2613

Or complete the Service Support request form at:

<http://www.intercompcompany.com/service-contact.html>

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