CS200

User Manual

Manual #: 700182-J

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Declaration of Conformity

CE

We, Intercomp Company
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Declare under sole responsibility that the CS200 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.

2001/95/EC - on general product safety
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
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
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

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.

Mark Browne / Quality Manager
June 3, 2014

Introduction

This manual contains specifications and operation instructions for the Intercomp model CS200 Crane Scale.

Specifications

Controls

General	Zero, Backlight, On/Off
Display	4 digit LCD

Electrical

Batteries	1 (9-volt) size disposable alkaline or rechargeable Nickel-Cadmium cell
Resolution	24 bit A/D delivers over 16,000,000 internal counts
Auto-Zero	Automatically zeros off errors of zero-load
Battery Life	50 hours with an alkaline battery 15 hours with backlight on
Low Battery Indicator	Flashes '**LbAt**' when battery is running low; Automatically turns off when battery power is low enough to affect reliability

Performance

Accuracy	±0.1% of applied load or ± 1 display graduation, whichever is greater

Environmental

Humidity	10 to 95% Non-Condensing.
Temperature	Operating: -10 C to +50 C. / +15 F to +122 F Storage: -40 C to +75 C. / -40 F to +170 F

Physical

Dimensions	Height: 3.3 in (6.2 in with hooks) / 8.4cm (15.7cm with hooks) Width: 4.4in / 11.2cm Depth: 2.5in / 6.4cm Weight: 1.1 lbs / 0.5 kg to 1.5 lbs / 0.7 kg depending on capacity

Operations

Operating Practices

Warning: The crane scale will 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 crane scale movement is minimized when positioning it over the load.

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

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

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

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.

Controls

On/Off

Press the On/Off key to turn the CS200 on. The unit will conduct a self-test. When the self-test has been successfully completed, the system will begin weighing. Press the On/Off key to turn the unit off.

NOTE: The scale will briefly display the firmware version when shutting down.

ZERO

The ZERO key is used to zero the scale. When the ZERO key is pressed with weight on the pad, that weight becomes the zero condition for the scale. When the weight is removed, a negative weight will be displayed until the system is zeroed again.

NOTE: If the negative number is too large to fit on the display, the scale will display "dI 5" until you press ZERO.

The scale contains a feature called Auto Zero Tracking (AZT), which corrects for slight zero changes during normal operation. If small weights are added slowly, the CS200 will zero them off.

Backlight

Press the Backlight key to toggle the backlight on and off.

Units Switching (lb and kg)

The CS200 will toggle between unit of measure (lb or kg).To switch units simultaneously press and hold the ZERO and backlight keys. Press and hold the keys until the unit displays one of the following"

1) "KGS", if the display has been switched kgs.
2) "LbS", if the display has been changed to lbs.

Options Menu

The Options Menu allows provides access to the following functions: Peak Mode, Print, Average Rate, Auto-Off, Serial Output and Baud rate. To access the Options menu, simultaneously press the ZERO and backlight keys. The screen will display "PEAH". Press the ZERO or backlight keys to scroll through the menu options. To select a specific function, simultaneously press the ZERO and backlight keys. Enter the required Step number.

Access Step Number
Press the backlight key to increment the value of the blinking digit. To move the place of the blinking digit, press the ZERO key. When the desired number is displayed, simultaneously press the ZERO and backlight keys and release.

Step	Function	Note	Default
PEAH	Peak Mode	Toggles peak and normal mode	nor
Prnt	Print	Prints one line	
A.rt	Filter Size	1, is off. 4 is one second. The max setting is 120.	4
A.oFF	Auto Off	000 = off, 1 to 240 minutes	0 10
Prt.t	Print Mode	Prnt = demand print, COnt = Continuous.	Prnt
bAUd	Printer Baud Rate	1200, 2400, 4800, 9600, 19.2k, 38.4k, 57.6k or 115k	9600

Peak Hold Mode

When in Peak Hold Mode, the unit will display only the largest force applied to the scale until the ZERO key is pressed. To enable the Peak Hold feature, access the Options menu. The screen will display "PEAH", simultaneously press the ZERO and backlight keys and release. The unit will return to Measurement mode and will display the peak force. To return back to Normal Measurement mode, repeat the above procedure. When initially powered up, the unit will always be in Normal Operating mode.

Print

The Print feature is only applicable if the CS200 has the optional Serial Output feature. To enable the Print feature, access the Options menu. Press the ZERO key until the screen displays "Prnt". The CS200 will print when the ZERO and backlight keys are pressed and released.

Average Rate

The Average Rate is the number of past readings that are averaged together to calculate a weight. The default average rate is 4. To adjust the Average Rate setting, access the Options menu. Press the ZERO key until the screen displays "A.rt". Press the backlight key and release. Enter the desired average rate. The default rate setting of 4 is the equivalent to one second. To save the setting, simultaneously press the ZERO and backlight keys. The display will return to the Mode menu. To disable the Average Rate feature, enter 0.

Auto-Off

The Auto-Off feature is determines the period of time a scale will remain powered up without any activity (a key being pressed or a change in weight). To adjust the Auto-Of setting, access the Options menu. Press the ZERO key until the screen displays "AOFF". Simultaneously press the ZERO and backlight keys and release. Enter the Auto-Off time (in minutes). To deactivate the Auto-Off function, enter 0. The maximum time that can be set is 180 minutes.

Print Mode Select (Serial output)

The Print Mode Select function is only applicable if the CS200 has the optional Serial Output feature. To set the Print Mode to Continuous Serial Output access the Options menu. Press the ZERO key until the screen displays "Prt.t". Press the backlight key, and release. The display will flash "Prt.t". Press the backlight key and release. The screen will display "Cont". The Print Mode Select is now set in Continuous mode. Simultaneously press the ZERO and backlight keys to return to Mode menu.

Baud Rate

The Baud Rate function is only applicable if the CS200 has the optional Serial Output feature. When set to Serial Output (this includes the print function), the baud rate must match the peripheral device that is being used. To set the Baud Rate, access the Options menu. Press the ZERO key until the screen displays "bAUd". Press the backlight key and release. The screen will display the default setting of 9600. To select a different setting, cycle through the preset rates by pressing the backlight key. The following baud rates are available: 1200, 2400, 4800, 9600,19.2k, 38.4k, 57.6k and 115k. When the required setting is displayed, simultaneously press the ZERO and backlight keys and release. The setting is saved and the unit will return to normal weighing mode.

Maintenance

Periodic Inspection

The crane scale and all associated adaptive devices require periodic inspection and maintenance. The frequency and recording of the inspection requirements are set forth in following service category classifications and are dependent on the type of service that the equipment is used.

Service Categories

Normal Service

Crane scale is operated at less than 85% of it's 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 it's 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 it's 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 Requirements

Frequent Service Inspection (records not required)

A frequent visual inspection is completed at intervals indicated by the service category above by the operator or designated person of the following.

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 (if applicable)

Periodic Service Inspection (records required)

A periodic visual inspection is completed at intervals indicated by the service category above by the operator or designated person and documented to provide the basis for continuing evaluation. The periodic inspection will cover areas in the frequent service inspection above and the following.

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 and load support clevises or pins.
5. Inspect for any visible bends or twists of all used rigging devices.
6. Inspect all latches and locks for proper operation (if applicable)

Removal From Service Criteria

GGG**ATTENTION**GGG

Replacement parts for any device or parts of any device used in any element of the rigging used to lift a load shall be at least equal to the original manufacturer specifications.

Hooks

Hooks shall be removed from service if damage such as the following is found and shall only be returned to service if a qualified person approves their continued use and initiates corrective action.

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 ¼ of an inch.
5. If self-locking hooks have the inability to lock.
6. A hook latch that is inoperable (if applicable)

Shackles

Shackles shall be removed from service if damage is visible and shall only be returned to service when approved by a qualified person. Refer to the following list for examples:

1. The manufacturers name, trademark or the rated load identification is missing or illegible.
2. The device shows signs of heat damage including weld spatter or 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 other condition including visible damage that causes doubt to the continued use of the shackle.

Calibration

Calibration should be performed annually under normal operating conditions. If the unit is dropped, damaged, or service has been performed on the scale, a new calibration should be performed. Recommended calibration points are at 10% intervals from 10% through 100% of the scales capacity.

Calibration Verification

Turn of the CS200. The unit will perform a self-test and lamp test. Upon successful completion of the self-test, the unit will enter the weigh mode and is ready to begin weighing. Intercomp recommends letting the electronics warm up for a minimum of three minutes to allow the electronics to stabilize for maximum accuracy before beginning the calibration check.

1. Verify there is no weight is on the hook.
2. Press the ZERO switch. The weight shown will be zero.
3. Apply weights at each step of the weighing range. Verify the correct weight is displayed at each step (+/- 0.1% of applied load or ±1 display graduation, whichever is greater).
4. If possible, apply a weight of 105% of capacity and verify the scale displays OVER on the indicator screen.
5. Remove the weights and verify the display returns to zero. If no errors are encountered, the scale is operational. If a failure(s) is encountered, refer to the Calibration instructions.

Entering Numbers

During the calibration check, the screen will issue a prompt to enter a number. The scale will display a number (originally all zeros) with a blinking digit. Press the ZERO key to increase the value of the blinking digit. Press the BACKLIGHT key to move to the next digit. When finished entering the required number, press the ZERO and BACKLIGHT keys together to save the entry.

Calibration Introduction

Overview

The CS200 has a three point calibration feature which reduces the effects of non-linearity in the load cells. The procedure requires that three weights be placed on the cell during calibration. The first weight must be greater than zero, the second greater than the first, and the final weight between the second weight and the cell capacity.

Enabling Calibration

The calibration of the scale is protected from accidental adjustment to calibration settings by a shunt placed on pins 1 to 2 of CAL, located on the back of the circuit board. To allow access to calibration settings, the shunt must be removed. When calibration has been completed, return the shunt to the original location to prevent accidental entry and adjustment to the settings.

Calibration Menu

Access to the Calibration Menu is achieved by pressing the ZERO and BACKLIGHT keys. The screen will display "StEP". If the message is not displayed, the calibration shunt must be removed. Refer to "Enabling Calibration". When a Function description is displayed, advance to the next function by pressing the ZERO key.

Entering Numbers

The scale will display a number with a blinking digit. The flashing digit may be incremented by pressing the BACKLIGHT button. To move one digit to the left, press the ZERO key. When the number has been entered, press the ZERO and BACKLIGHT keys to save the setting and advance the menu. The scale can then be turned off.

Step	Function	Note	Default
StEP	Skip	000= no skip 001= skip to weight calibration	000
Unit	Select Unit of Measure	lbs, kgs	Lbs
AZt	AZT (Auto Zero Tracking)	OFF, 0.6 d, 1 d, 3 d, 0.5 d	0.5 d
GrAd	Graduation Size	0.01, 0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, or 100	0.1
CAP	Capacity	Enter scale capacity	250
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	
	10 Points Available to Enter		

Calibration Procedure

1. Turn the power OFF.
2. Remove the calibration blocking shunt to allow entry into calibration mode.
3. Turn the power ON.
4. Allow scale to warm up for a minimum of 3 minutes to allow electronics to stabilize.
5. Press ZERO and BACKLIGHT simultaneously and then release to access the Calibration menu.

   NOTE: At any point during calibration, data will be retained by the scale at the last step completed if the power is cycled off.

6. Begin calibration by pressing the ZERO and BACKLIGHT buttons. The scale swill display the message "StEP". Press the ZERO and BACKLIGHT buttons. The scale will show "000" with the far right number in flashing mode.

   a. To go through all of the calibration parameters, press ZERO and BACKLIGHT buttons when the scale displays "000".

   b. To skip to the setting up the calibration parameters and proceed to step 11, Weight Calibration, enter "001".

   c. When the desired number is displayed, press the ZERO and BACKLIGHT buttons to save the entry and advance to the next step.

7. The scale displays the message "Un it". Press the BACKLIGHT button to toggle the unit of measure between lbs or kg. Press the ZERO and BACKLIGHT buttons to save the entry advance the menu.

8. The scale displays the message "AZt" (AZT). When the AZT feature is enabled, small loads will be automatically zeroed off after a few seconds. Press ZERO and BACKLIGHT together and then release. The screen will display the current setting. Press the BACKLIGHT button to cycle through the auto zero tracking options (OFF, 0.6 d, 1 d, 3 d, 0.5 d). The Default Setting is 0.5d. If the displayed weight is less than the number of divisions shown for a specific period of time, the weight will be zeroed off. When the desired auto zero tracking setting is displayed, press the press the ZERO and BACKLIGHT buttons to save the entry and advance the menu.

   EXAMPLE: If the grad size is 10 lb and the AZT setting is 0.5 d, the scale will automatically zero when at +/- 5 lbs.

Calibration Procedure (continued)

9. The scale displays the message "GrAd". Press the ZERO and BACKLIGHT keys together and then release. The scale displays the current graduation selection. Press the ZERO key to cycle through the graduation size choices. When the desired setting is displayed, press ZERO and BACKLIGHT together and then release to enter the number and advance the menu.

   NOTE: The stated accuracy specifications are based on the graduation settings referenced in the following table. If a graduation setting is selected that is not referenced in the table, the accuracy specification shall remain intact tied to the documented graduation setting choices.

Capacity	Graduation Setting
25 lb / 12.5 kg	.01 lb / .01 kg
50 lb / 25 kg	.02 lb / .01 kg
100 lb / 50 kg	.05 lb / .02 kg
250 lb / 125 kg	.1 lb / 0.05 kg
500 lb / 250 kg	0.2 lb / 0.1 kg

10. The scale displays the message "CAP". Press the ZERO and BACKLIGHT keys together and then release. Enter the scale capacity in pounds. Changes made to this step will be saved.

Weight Calibration

Conducting a weight calibration requires that one to ten load weights be applied to the scale. A multiple point calibration enables 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 may be performed.

To calibrate with one point, turn off the scale when the screen displays "HH-02". To calibrate with two points, turn off the scale when the screen displays "HH-03". The CS200 can apply and load up to 10 calibration points.

Continue with Step 11 to perform a multipoint weight calibration.

11. The scale displays the message "LL00". With no weight on the pad, press the ZERO and BACKLIGHT keys together and then release. The pad has been zeroed.

12. The scale displays the message "LL01". Apply the first weight/force. Press the ZERO and BACKLIGHT keys together and then release. Enter the value of the weight applied. Press the ZERO and BACKLIGHT keys together and then release to save the weight.

13. The scale displays the message "LL02". Apply the second weight. Press the ZERO and BACKLIGHT keys together and release. Enter the value of the weight applied. Press the ZERO and BACKLIGHT together and release to save the second weight.

Weight Calibration (continued)

14. The scale displays the message "LL03". Apply the third weight. Press the ZERO and BACKLIGHT keys together and release. Enter the value of the third weight. Press the ZERO and BACKLIGHT keys together and release to save the third weight.
15. If no additional calibration points are required, reposition the Calibration shunt as described in the Enabling Calibration section to prevent accidental access to the calibration settings. If additional calibration points are required, continue with the procedure as set forth in step 14. The maximum number of cal points is 10.
16. When the last calibration point has been entered, turn the scale off and then back on.
17. Verify the calibration.
18. Calibration complete.

Troubleshooting

Error Messages

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 this memory during the calibration process. Each time the power is turned on this code is regenerated and compared to the stored value. If a change is detected, the error message is displayed. Recalibration may clear the error display. If the problem persists the control panel will need to be replaced.	
"Ad 1"	**A/D Converter Failure**
The A/D circuit board has indicated a fault and needs to be repaired or replaced.	
"LCb 1"	**Power-up Self-Test Has Detected a Load Cell Error**
The load cell may have failed or there is a bad connection. If the load cell resistance checks are good then the A/D circuit board has indicated a fault and needs to be repaired or replaced.	
"LC 1"	**Run-time Checking Has Detected a Load Cell Error**
The load cell circuit may have failed or there is a bad connection. If the load cell resistance checks are good then the A/D circuit board is at fault and needs to be repaired or replaced.	
"L.bAt"	**Low Battery Voltage**
The message displayed intermittently indicates the control panel has measured the battery voltage and found it to be too low. The most likely cause is the batteries. If a new set of batteries fails to correct the situation, the control panel may need to be replaced. Also check the battery holder and wiring.	
"CAP"	**Overload or Calibration Information Lost or Bad Load Cell**
The control panel has detected a weight reading that is larger than expected. May be caused by the application of excess weight to the scale. If message is displayed when there is no weight on the scale, the most likely cause could be a defective load cell or defective control panel. To isolate the problem, measure the signal across pins two and three on the load cell connector located on the control panel. The reading should be between zero and one millivolt. If found to be higher or lower, check the load cell system. If the signal is within the range then the calibration data may be lost. Attempt to recalibrate the scale. If problem persists, replace the control panel.	
"2Er0"	**Zero Range Error**
Scale attempted to zero off a load outside the range specified in the zero range setting. Remove load and press ZERO.	
"HELd"	**Key is Held Down**
If the message is displayed with no key pressed, examine the key pad and key pad connector ribbon.	
"d iSP"	**Number Cannot be Displayed**
The most common cause of 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 display.	

Changing the Battery

1. Turn the power off.
2. Slide the battery hatch down.
3. Unsnap the used battery and remove the battery from the case.
4. Snap in the new battery.
5. Replace the cover.

How to Contact Intercomp

Please provide the following information when requesting service for the CS200:

1. Item Description and Part Number (if available)
2. Serial Number(s) of Item (if available)
3. When was item purchased (mm/yyyy)?
4. Where was item purchased (company/location)?

For Intercomp Service call or fax: