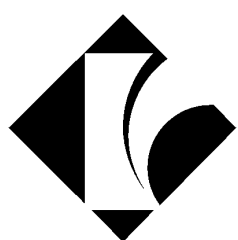


SMART WEIGHING SOLUTIONS



rinstrum



(L003-507)

Reference Manual

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Disclaimer

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performance or reliability.

The information in this manual is believed to be accurate in all respects at the time of publication, but is subject to change without notice. Rinstrum Pty Ltd assumes no responsibility for any errors or omissions and disclaims responsibility for any consequences resulting from the use of the information provided herein.

SPECIAL NOTE

Trade Use of the Instrument

This manual may occasionally make reference to Trade Use settings of the instrument.
Some individual settings may not be legal for trade use.
Please check regulations with the appropriate Weights and Measures Authority.

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Overview and Safety

1.1. Overview

This precision digital indicator uses advanced firmware and the LUA module to perform axle weighing. The category logging program records truck weights to a database for later recovery using a USB drive. There is a soft power on/off function that retains memory of its state. Once an instrument is turned on it will automatically start up again if the external power is interrupted. Day-to-day settings (Clock, Trucks, and Pre-set Tares etc.) are retained when power is removed.

The instrument provides zero, truck and re-print on the fixed function keys and supports special functions (farm/field setup, 1 key access to configuration menu.), via function key and remote inputs (*clickers*). The up/down arrow and [ok] keys are used in most menus to make selections.

There are various features written into the LUA module that are very useful for this specific application. The discard timer allows for weighing first then setting up the truck id. The farm configuration data can be setup to individual trucks for unique data-basing options.

Many of the features and functions described in this manual may not be available in all versions of the axleWEIGHr. Due to variations in Firmware and various applications not all features described in this manual may work as described.

1.2. Operating Environment

- Temperature: 14 °F to 122 °F (–10 to +50°C ambient)
- Humidity: <90% non-condensing
- Storage: –20 to +50°C ambient (-4 °F to 122 °F)
- IP66 panel mounted

1.3. Electrical Safety

- For your protection all mains electrical hardware must be rated for environmental conditions of use.
- Pluggable equipment must be installed near an easily accessible power socket outlet.
- To avoid the possibility of electric shock or damage to the instrument, always unplug or isolate the console from the power supply before maintenance is carried out.

1.4. Cleaning

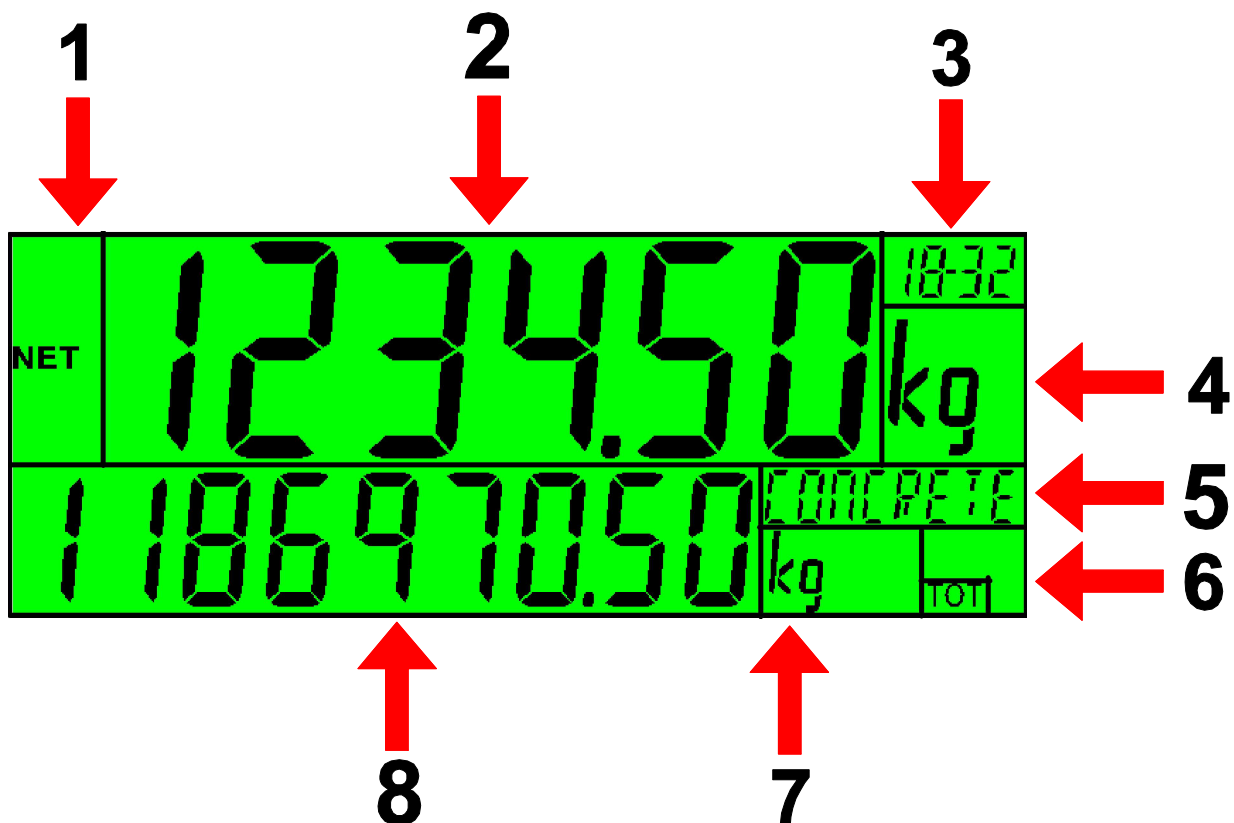
- To maintain the instrument, never use harsh abrasive cleaners or solvents. Wipe the instrument with a soft cloth **slightly** dampened with warm soapy water.

User Interface and Display



Code	Description
1	Display
2	Numeric Keypad
3	Function Keys (Fixed)
4	Power Key

1.5. Display








Code	Description
1	Primary Annunciators
2	Primary Display
3	Auxiliary Display (WO or WO-PT)
4	Primary Units
5	Category prompt: example Farm
6	Miscellaneous Annunciators
7	Secondary Units (<i>function not available</i>)
8	Secondary Display (<i>totalised weight of last truck</i>)

1.6. Primary Annunciators

Symbol	Name	Description
HOLD	HOLD	Visible when the displayed reading is held.
NET	NET	Visible when the displayed reading represents Net weight.
→0←	ZERO	Visible when the gross reading is within $\pm \frac{1}{4}$ of a division of true zero.
~	MOTION	Visible when the displayed reading is not stable.
┌	ZERO BAND	Visible when the displayed weight is within the zero 'dead' band setting.

1.7. Keypad



Code	Description	
1	Number Buttons	0-9 (short press)
2	Black Characters	Hold 2 seconds (#1 key allows time & date configuration)
3	Orange Characters	[F1]-[F3]*
	Cancel	Undo last command; step backwards (including in setup menus).
	Up	Move cursor backwards; previous option (use for trucks & farm/field selections)
	Down	Move cursor forwards; next option (use for trucks & farm/field selections)
	OK	Accept this choice
	Decimal Point	Place decimal point

- See FUNCTION KEYS (pg. 13)

1.8. Strings

To enter custom names via the keypad press the number keys repeatedly and the characters will scroll through. For example pressing the #2 key twice will produce a “B”. If you wait 2 seconds and press the #2 key again you can enter an “A”.

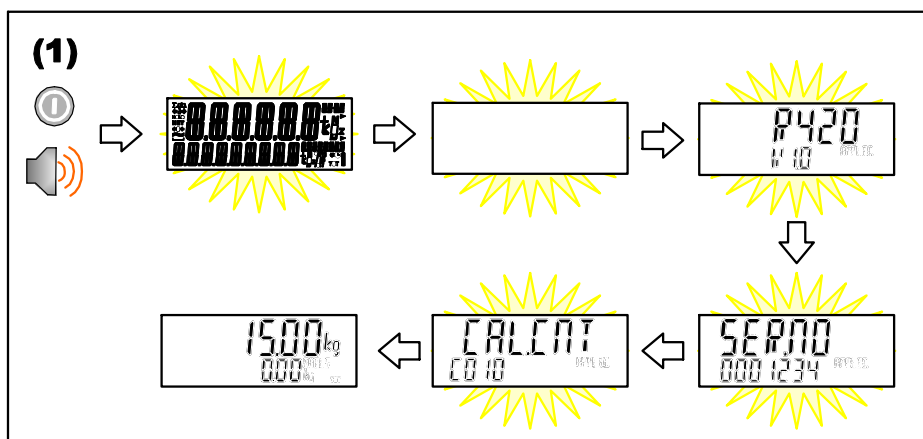
Normal String Editing

Normal string editing is most useful where strings are small and contain no lowercase or unprintable characters. The available characters are printed in orange on the keypad.

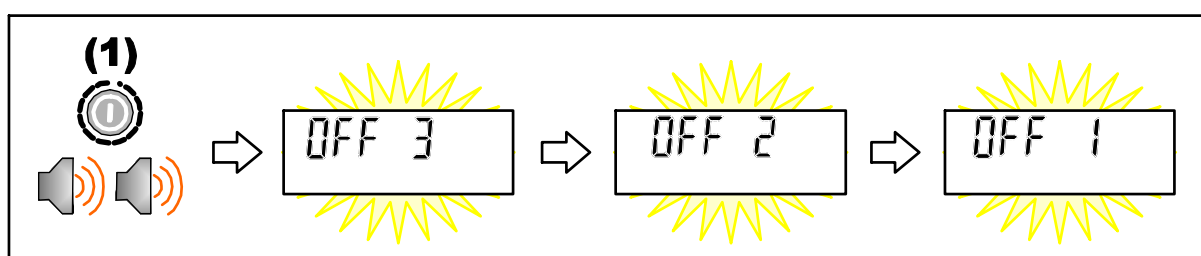
Special keys are:

- <OK>: Accept changes and finish.
- <Long press of cancel>: Cancel and exit without changes
- <Cancel>: Delete character
- <Up>, <Down>: Move cursor
- <Long press of down>: Delete string after cursor
- <+/->: Switch editing modes

1.9. Turn Instrument ON - Short press <Power>



1.10. Turn Instrument OFF - Long press <Power>



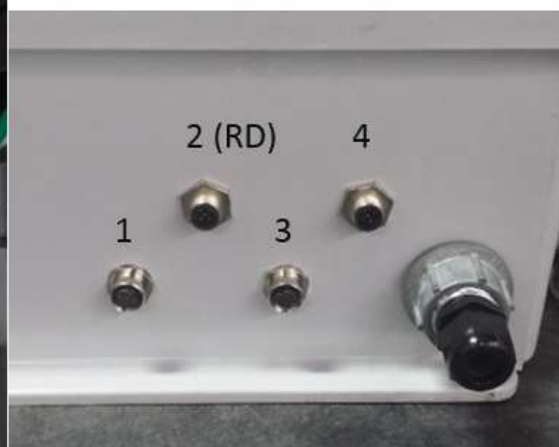
1.11. Wiring & Connections

Make connections using the supplied AC Power cord terminating the Grey Green and White wires as shown below. *110 VAC - 240 VAC accepted*

AC POWER	MAIN CONNECTIONS
Grey Terminal – Black (HOT)	Connector 1 – Scale Cable (5 pin)
White Terminal – White (Neutral)	Connector 2 – Remote Display
Green Terminal – Green (Ground)	Connector 3 – Clicker RF Box
<i>Optional:</i>	Connector 4—Sensor Cable I/O



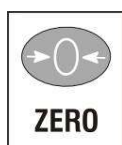
(Figure 1)



(Figure 2)

**Figure 2: Connector #4 is used in some applications for optional accessory (sensors, external lights, etc.)*

1.12. Zero Key



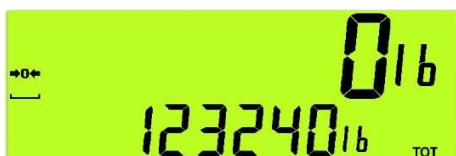
When an empty scale has drifted away from a true zero reading, this key is used to perform a zero adjustment on the scale display. The zero adjustment is stored when power is removed and is re-used when next powered up.

Setting Dynamic Scale Factor

1.5 Dynamic Scale

With the scale at zero the dynamic scale factor can now be set. The reference weight of a fully loaded truck should be obtained at a nearby certified truck scale. Simply drive across the axleWEIGHr to capture a truck's total weight. (See also page 20-21)

CAPTURED TOTAL ON BOTTOM:



Divide the average of 4 to 5 weighments using this formula:

$$K/R=D$$

K = Known weight of truck (reference)

R = Average reading of 5 weighments from axleWEIGHr axle scale

D = Dynamic Scale Adjustment

1. Press and hold [F2] for 2 seconds to enter the configuration menu.
2. The lower display will show: "DISCARD".
3. Use the [UP] [DOWN] arrow keys to scroll to "DYN.SCL". Press [OK] to show INBOUND*. Press [OK] to change current value: 1.000000.
4. Enter your Dynamic factor up to 6 decimal places. X.XXXXXX and press [OK].
5. Use the [UP] [DOWN] arrow keys until "QUIT" then press [OK] to exit.

If your configuration does not have directional sensors please use INBOUND setting only.

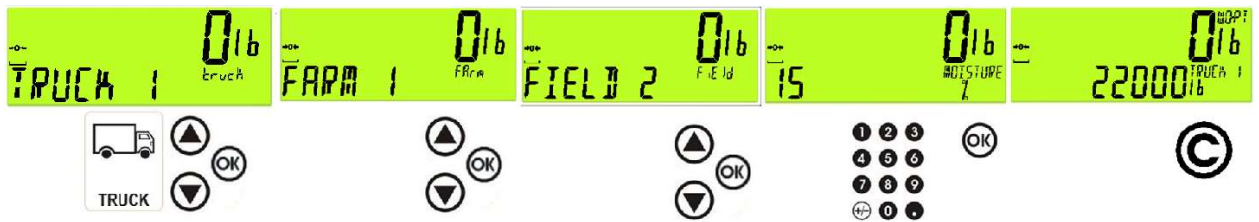


1.13 Creating a Permanent Truck ID (Create & Setup)



(Press & Hold the Up key, set name using number pad, select 1 or 2 pass, enter tare weight if one pass.) Farm & Field selection will then prompt (see section 2.10.2.)

Editing Truck Data (existing)



Select the truck you want to configure. Proceed through the rest of the prompts. Press cancel key to return to weigh mode with no truck selected.



Now press & Hold the TRUCK key to change truck name and method from one pass / two pass. Complete farm & field setup as shown above.

Selecting Truck IDs

Select a Truck ID - Short Press of F1 (TRUCK KEY)

A short press of the [F1] key will allow the user to select the desired truck from the truck list. The <UP> and <DOWN> keys will then step through the list of trucks in the truck database. Alternately use the key fob



Setting up Farm. Field

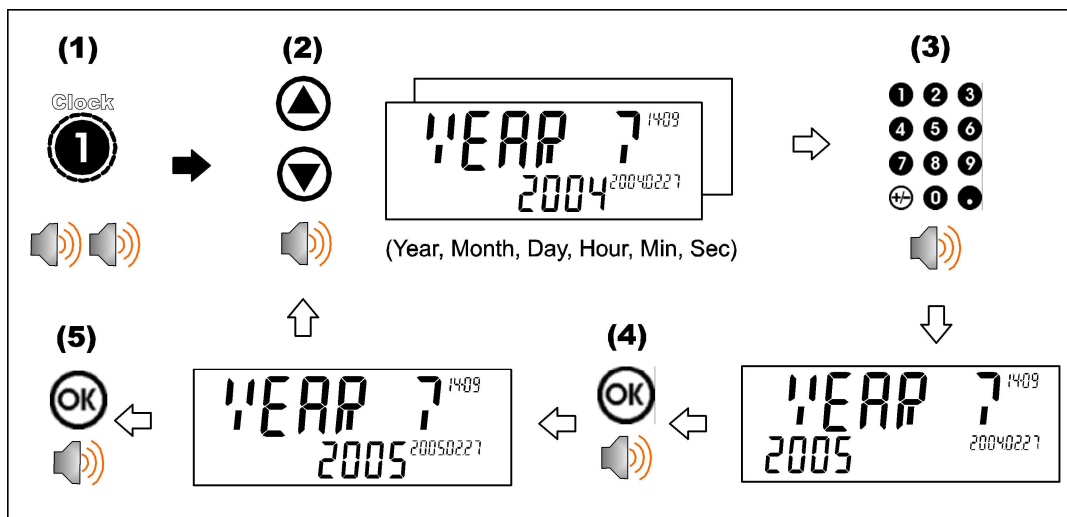
[F1] These options are associated with the Truck key and allow different fields to be assigned to different trucks. Note: If farm/fields are not selected from front panel then these fields will be blank in the csv database



The cancel key is used to return to the home screen. (*Truck not queued*)

1.14 Clock

A long press of the 1 key (Clock) allows the system time and date to be viewed and changed



1.15 Stability Considerations

Some functions (e.g. Tare and Zero) require a stable weight. These functions will wait for up to 10 seconds for stable weight. If a stable weight is not available 'MOTION ERROR' is displayed and the function is cancelled.

1.16 Traffic Lights

While at Zero & stable weight the traffic lights should both be off. There are various conditions that will activate the lights. If there are errors the RED light will activate. See table below.

TRAFFIC LIGHT STATUS

Code	Description	
RED	SOLID ON	ERROR – CHECK SCALE DISPLAY FOR CODE
RED	5 SEC THEN OFF	NORMAL OPERATION (TICKET PRINTS)
GREEN	SOLID ON	CLICKER PRESS DETECTED/ TRUCK IN PROCESS OF WEIGHING/ MOTION DETECTED OVER 1000 lbs
BOTH OFF	GREEN & RED ARE BOTH OFF	SCALE IS IN IDLE MODE/ NO POWER TO SCALE

1.17 Clicker operation

The remote clicker has a small red LED that lights when pressed. When pressing the key fob you should be somewhere in the range of 75-150 feet from the antennae system. If the "GREEN" traffic light does not illuminate then check to see if the small red light on the key fob lights.



To add a key fob go to the Config menu (Long press of F2) and go to KEY.BIND menu. Press [OK] to enter learn mode. Once key fob has been press "DONE" will display.



Weigh-in (2 PASS), Weigh-out pre-set tare (1 PASS), Weigh-out (2 PASS)

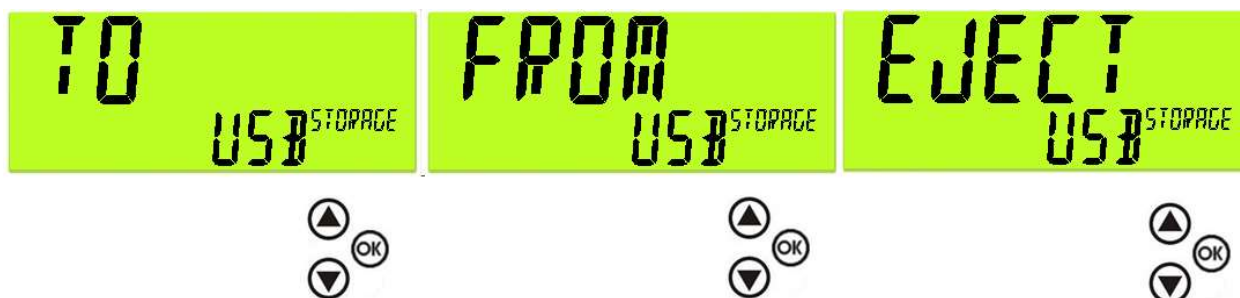


These are the 3 screen you should see on the Rinstrum 423 display when the clicker has been activated.

- If when pressing the clicker you receive the error "NOT FOUND" your clicker has been detected by the system but the truck has not been created yet. Either hold the "UP" arrow key to create the new truck name or make the name on the USB drive under truck.csv and upload it to the console.

1.18 USB Operation

When using the USB drive provided by Rinstrum you will want to search for the folder named "Data Store". (See section 1.23) The 2 files you will be using need to be moved to the ROOT directory of the USB drive. (This means the upper most level of the USB directory)

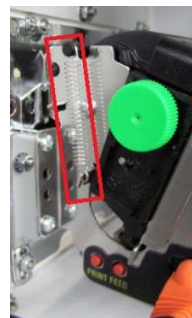


There are 3 options to select once the USB drive has been detected by the console.

- TO USB
This means you will send the log.csv file to the USB drive. (This creates a copy only – the original log file will remain on the console)
- FROM USB
This means you will duplicate the files from the USB drive. If you have modified the truck.csv file or the harvest.csv file then they will overwrite your truck configuration and your farm & field configuration.
- EJECT USB
This will prepare the console for the USB drive to be removed.

1.19 Printer Operation

The Kiosk style printer uses thermal paper that will need to be loaded upon first use. This paper is a special thermal style paper that can be ordered directly through Rinstrum Inc. Load the paper into the printer with the inside facing upwards as shown below. If the power is on to the printer the paper sensor will feed automatically once paper is detected.



Ensure tension spring is configured for maximum tension as shown above to ensure optimal printing operation. There is a "PRINT" test button shown in figure above used to perform a single test page.

Truck Weighing

1.20 Weighing

Once a Truck has begun to scale you can either press the clicker button/[F1] key to select the truck or do nothing and the weight will totalize and display on the lower display for a period of time. If you do nothing then the data will not be stored in the database and a ticket will not print out.



Weighing out with pre-set tare

Once a truck with a pre-set tare is selected the indicator will move to weigh out with pre-set tare mode. The tare weight will display on the lower display. The Cancel key <C> or <OK> key allows you to cancel out of the weigh out mode and return to normal mode without adding any weight to totals.



1.21 Weighing out with first weight

Once a Truck with a stored first weight is selected the indicator will move to weigh out with first weight mode.

The Cancel key <C> or <OK> key allows you to cancel out of the weigh out mode and return to normal mode without clearing the first weight or adding any weight to totals.



1.22 Weighing first then configuring

If you are making use of the “**DISCARD**” timeout setting you are going to want to set this setting for 120 (120 seconds). See [F2] Configuration menu at end of manual.

With the discard timeout you can either use the clicker to id the truck or manually setup your truck from the front panel of the R423 after you weigh. If you are making use of the farm & field configuration and you have not setup your farm & fields yet then you will want to use the [F1] key after weighing. This will allow your first time configuration of the truck. Once you have done this step you can use the clicker for the rest of the day and it will recall your farm field selection.

Note: The farm & field data will need to be configured for each truck using the [F1] key. The unique farm/field data being stored for each truck will be recalled when using the clicker.

Function Keys

1.23 Introduction



The instrument has 3 special function keys on the front panel. It uses **[F1]** as the **Truck key** and **[F2]** as a **re-Print key**. [F3] long allow for resetting of farm field database settings.

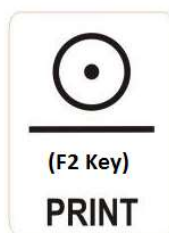
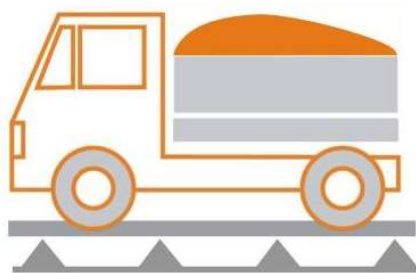


TRUCK [F1]

A short press of the truck button will allow you to select from your list of permanent trucks. Use the <arrow> keys to select truck.

Short press: select of truck

Long press: configure truck (last selected)



```

04/16/15 16:33:48 000000165
FARM: FARM 1:FIELD 1 MAP:
CROP: Corn VARIETY: P104
TRUCK: TRUCK 1
AXLE 1: 22320 lb
AXLE 2: 22320 lb

GROSS: 44640 lb

INBOUND TICKET

<<Copy>>
    
```

[F2] Key

Short press: Reprint last truck

Long press: Configuration menu

(This menu controls critical axleWEIGHr settings. The default menu settings should not be altered unless advised by Rinstrum/Service Company)

Other Configuration:

To re-bind all wireless key fobs or to change the farm field selection methods see end of manual.

Harvest & Truck CSV File Configuration

1.24 USB Files

Select and open the harvest.csv file. An example of the harvest file is shown below. Do not change the data in the header (data inside the yellow box). To setup your farm & field data change the names to suit your farm names. If you only have 1 farm then the farm names in the #1 farm column will all be the same. The field names however MUST all be different.

farm	field	Descriptic Map	acres	TotalAcre:	Crop	Variety
FARM 1	FIELD 1				Corn	P104
FARM 1	FIELD 2				Corn	P104
FARM 2	FIELD 1				Corn	P104
FARM 2	FIELD 2				Corn	P104
FARM 3	FIELD 1				Corn	P104

EXAMPLE PRINT OUT

```

04/17/15 09:03:31 000000168
FARM: FARM 1:FIELD 2 MAP:
CROP: Corn VARIETY: P104
TRUCK: TRUCK 1

AXLE 1: 22320 lb
AXLE 2: 22320 lb

TARE: 22000 lb
GROSS: 44640 lb
NET: 22640 lb

OUTBOUND TICKET W/PRE-SET TARE
    
```

Farm & Field Column

This information should be setup and edited as new farms/ fields are added or removed. These should all be typed in capital letters. The R423 display is optimal with upper case lettering.

Description, Map, Acres Column

This information will not print on the ticket but will be stored in the database and pulled out when using thumb drive.

Crop & Variety Column

This information will print out on the ticket and will need to be updated yearly based on crop data.

Once you have completed updating your files on the USB drive you will need to take it out to the console and plug it into the LUA module to complete the uploading process. (Note – this only needs to be done once a year)

1.25 Truck.csv File editing

The truck file allows for editing/ adding trucks. You can create custom names instead of the default “Truck 1”, “Truck 2” etc. The header should not be altered (The label “id”, “truck”, “pass”, “tare”) but the data below it is configurable.

EXAMPLE PRINT OUT

id	truck	pass	tare
1	PETE 87	1	36400
2	MACK 02	1	24040
3	VOLVO 94	1	35000
4	VOLVO 96	1	35700
5	FREIGHT 0	2	0
6	TERRY	2	0
7	VOLVO 99	2	0
8	LOW BOY	1	565

```
04/17/15 09:03:31 000000168
FARM: FARM 1:FIELD 2 MAP:
CROP: Corn VARIETY: P104
TRUCK: TRUCK 1

AXLE 1: 22320 lb
AXLE 2: 22320 lb

TARE: 22000 lb
GROSS: 44640 lb
NET: 22640 lb

OUTBOUND TICKET W/PRE-SET TARE
```

Id & Truck Column

Id and truck needs to be unique and will display to the R423 screen & print on the ticket. The id number should be sequential and in order. (Example: 1,2,3,4 etc.)

The labels in the truck column will print out to the ticket.

Pass & Tare Column

If pass equals 1 pass then you must enter in the tare weight. If pass equals 2 then tare will equal zero lbs. Pass must be equal to “1” or a “2”.

The tare value will print to the ticket. The tare value is typically the empty weight of the truck/ wagon.

Data Log Output

The log.csv file contains all of the weight data for each truck including the farm and field configuration.

date	time	printid	truck.id	Truck	gross	Net	farm	farm.field	farm.varie	moisture
4/13/2015	9:50:34	120	1	TRUCK 1	44640	0	FARM 1	FIELD 1	P104	1
4/13/2015	9:51:08	121	2	TRUCK 2	44640	43990	FARM 3	FIELD 1	P104	99
4/13/2015	9:52:27	123	1	TRUCK 1	44640	0	FARM 2	FIELD 2	P104	15
4/13/2015	9:52:48	124	2	TRUCK 2	44640	43990	FARM 3	FIELD 1	P104	99
4/13/2015	9:54:34	127	1	TRUCK 1	44640	0	FARM 2	FIELD 2	P104	15
4/13/2015	9:54:49	128	2	TRUCK 2	44640	43990	FARM 3	FIELD 1	P104	99
4/13/2015	10:17:09	130	1	TRUCK 1	44640	22640	FARM 1	FIELD 1	P104	15
4/13/2015	10:17:37	131	2	TRUCK 2	44640	43990	FARM 2	FIELD 2	P104	22
4/13/2015	10:22:19	137	1	TRUCK 1	44640	22640	FARM 1	FIELD 1	P104	15
4/13/2015	10:22:49	139	2	TRUCK 2	44640	43990	?	?	?	0
4/13/2015	10:23:21	141	4	TRUCK 4	66960	22320	?	?	?	0
4/13/2015	10:24:03	142	1	TRUCK 1	44640	22640	FARM 1	FIELD 1	P104	15
4/13/2015	10:28:01	143	9	AARON	44640	44005	FARM 3	FIELD 1	P104	66
4/13/2015	10:33:07	144	2	TRUCK 2	44640	43990	?	?	?	0
4/13/2015	10:33:25	145	9	AARON	44640	44005	FARM 3	FIELD 1	P104	66
4/13/2015	10:33:53	146	1	TRUCK 1	44640	22640	?	?	?	0
4/13/2015	10:34:51	147	1	TRUCK 1	44640	22640	FARM 1	FIELD 1	P104	1
4/13/2015	10:35:51	149	3	TRUCK 3	44640	0	FARM 1	FIELD 2	P104	66

A farm & field that does not have data details is due to the farm & field not configured. The truck was weighed before the farm database was configured for that day.

Error Messages

1.26 Overview

A number of error messages may be displayed to warn of operation outside of the acceptable limits. These messages may appear on either the primary or the secondary display. Short messages (XXXXXX) will appear as a single message. Longer messages (XXXXXX) (YYYYYY) will appear on the display in two parts, first the (XXXXXX) part, then the (YYYYYY) part.

1.27 Weighing Errors

These messages show status messages or errors that may occur during normal weighing operation.

Error	Description	Resolution
(U.LOAD)	The weight is below the minimum allowable weight reading.	Increase the weight or decrease the minimum allowable weight reading.
(O.LOAD)	The weight is above the maximum allowable weight reading. Warning - overloading may damage mechanical scale elements.	Check the condition of load cell connections. Check for damaged load cell.
(ERROR) (RANGE)	The weight reading is beyond the limit set for Zero operation. The operation of the <ZERO> key is limited in the setup during installation. The indicator cannot be Zeroed at this weight.	Increase the Zero Range (Z.RANGE) or use the <TARE> key instead.
(ERROR) (MOTION)	Scale motion has prevented a <ZERO> or <TARE> operation from occurring on command.	Try the operation again once the scale is stable.
(ERROR) (ADC)	An error with the ADC has prevented a <ZERO> or <TARE> operation from occurring	Ensure load cell cabling is correct.
(E2000)	Cable error – 4/6 mode not selected	Check for broken wires & check 4 way
(NOT FOUND)	No truck data has been found in database.	Create truck using up arrow or USB drive.

Table 1: Errors: weighing

F2 Configuration Menu (long press)

Timeout: Time in between axles before controller times out and complete axle captures. (default 20 sec)

Discard: Timer allowing for truck id press after weighing has taken place. (default 10 sec)

Dyn.Scl: dynamic scaling factor for “in-motion” calibration adjust.

Zero: zero calibration capture. (do not use)

Span: span calibration capture. (do not use)

MvV: raw millivolt reading from scale base.
(*example* .2234 +/- .0001)

(Note: to exit the config menu either press the clear key or scroll to quit and press the "OK" key)

SENSOR NOTES:

EMITTERS (BLUE MARKED CABLES)

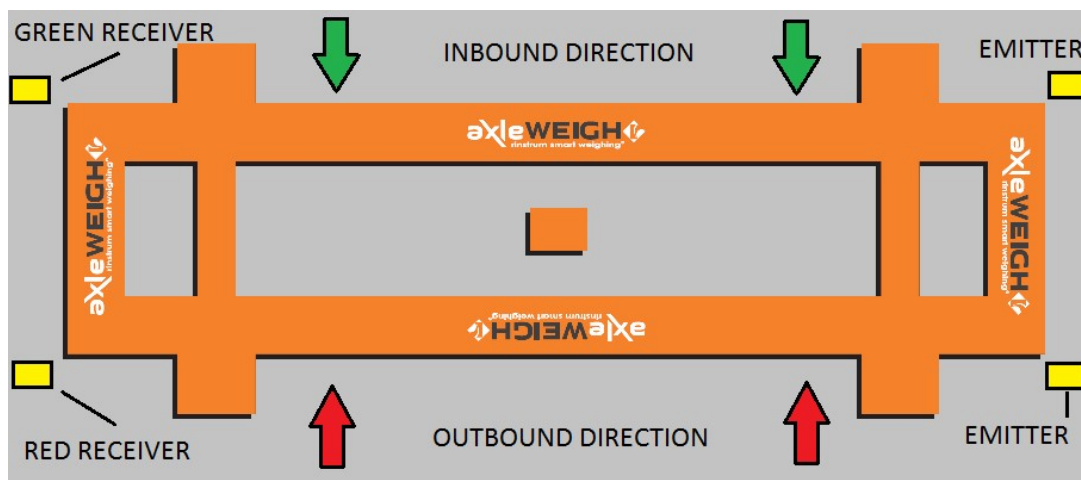
RECEIVERS (GREEN/RED MARKED CABLES)

GREEN MARKED RECIEVER = INBOUND DIRECTION

RED MARKED RECEIVER = OUTBOUND DIRECTION

INBOUND DYN.SCL SETTING MUST BE SET FIRST

DIAGRAM FOR MOUNTING SENSORS:



See below:



Definitions:

Console: This can include the R423 instrument and up to the entire axleWEIGHr box including kiosk printer

R423: This is the stainless indicator mounted on the front of the axleWEIGHr

LUA: The lua module is located on the back of the stainless indicator nearest the green 2 pin power connector

Arrow Keys: The up and down arrows are located on the number pad keypad

Clicker: Small black key fob used for remote id of trucks

Power Supply: 120 VAC Power supply located inside the enclosure near the M12 connectors (see figure 1)

SPECIAL SETTINGS MENU:

Press and Hold Power & F1 together at the same time. This will enter a special settings menu and should only be done by qualified personnel.

The SEL.TYPE option allows the farm/field selection to be switched from global (all trucks assigned) to multiple (each truck is assigned) to a single farm and field.

A photograph of a green LCD display showing the text "SEL.TYPE SETTING" in a black, pixelated font. The word "SETTING" is smaller and positioned to the right of "SEL.TYPE".

Press OK Key to enter Menu

A photograph of a green LCD display showing the text "MULTIPLE SEL.TYPE" in a black, pixelated font. The word "SEL.TYPE" is smaller and positioned to the right of "MULTIPLE".

Use up/down arrow keys to switch from GLOBAL to MULTIPLE

Press OK to make Selections and then arrow keys to QUIT

MASSBIND:

This Menu allows the pairing of all key fobs in the truckDB file –

A photograph of a green LCD display showing the text "MASSBIND SETTING" in a black, pixelated font. The word "SETTING" is smaller and positioned to the right of "MASSBIND".

Enter the Special settings menu and use arrow keys to navigate to MASSBIND

Press OK to begin key pairing – all keys fobs will need to be pressed in order #1, #2 etc. until all key fobs have been paired.

DONE will be displayed after each successful key bind and then the next ID will be displayed along with the message Press Clicker #

Notes:

SMART WEIGHING SOLUTIONS

