

PM Onboard

# 1155 Display



## User & Technical Manual

**IMPORTANT INSTALLATION INFORMATION AND LIABILITY WAIVER**

*Vishay PM Onboard Ltd.* design and manufacture on-board vehicle weighing equipment. These installation guidelines are provided solely for the use of trained fitters and represent the correct, safe and recommended method of installation. They must be followed fully to ensure proper, safe installation. Failure to do so may result in serious consequences including, but not limited to, failure of the system to function properly and damage to the weighing equipment that could jeopardise the stability and safety of the vehicle.

***Vishay PM Onboard Ltd.* accepts no responsibility or liability for consequences arising from any improper installation of the weighing equipment including but not limited to, any misapplication or misinterpretation of the installation information contained herein.**

Strict observance of these guidelines should help to ensure accurate weight measurement and enable safe operation of the vehicle. Failure of our on-board vehicle weighing equipment due to poor installation workmanship or incorrectly installed elements remains solely the responsibility of the installer.

*Vishay PM Onboard Ltd.* do not accept responsibility for the structural integrity of the vehicle concerned, for any part thereof, and for its proper, safe operation.

The company also reserves the right to make any amendments and alterations to this document deemed necessary. You should ensure you have the current version of this information by contacting *Vishay PM Onboard Ltd.* prior to performing installation, such as on our website at [vishaypg.com/onboard-weighing](http://vishaypg.com/onboard-weighing).

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**Document Information**

*The reference number for this document is: **1155/userandtechnical/v3.2/20110714***

*This reference filename is divided into 4 areas, these are:*

**pm1155**

*This designation is for documents covering the series 1155 display equipment supplied by Vishay PM Onboard Ltd.*

**userandtechnical**

*This designation refers to the type of equipment supplied, in this case a User and Technical manual*

**v3.2**

*This denotes that this documentation is version 3.*

**20110714**

*This is the date on which the document was compiled. In this case the date was 14th July 2011.*

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## 1155 Introduction

The 1155 is a display used to show information from weighing systems fitted to vehicles.

The display has available a number of main screens as standard, these are:

- Time / Date
- Net Weight
- Gross Weight

Also available, depending on which functions are enabled are additional main screens, these are:

- Axle Weights
- Twin / 5 + Air
- Drawbar
- Load / Deliver
- Stability

A number of other screens are used to setup the display and weighing system and also to show diagnostic information.

Extra axle weighing options are available for Refuse type vehicles.

Password (number) protection is a feature of this equipment.

Alarms are also used to show if the vehicle is out of load limits and also to show if the body is raised on a tipper vehicle.

This display and system information is applicable to software version 01.08.xx.xx onwards and junction boxes to version 02-03 onwards.



## Accessing the Available Display Screens

The various screens and on-screen options are accessed by using the display buttons A - E and observing the changes on the LCD display screen F.

**Button - A**

This is on the left of the display and is used to power ON or power OFF the display.

**NOTE:**

The display is often set to come ON when the ignition is turned on.



**Button - B**

This button is used to access menus and select menu items.



**Button - C**

This button is used to scroll up an on-screen list and increment selected values in Edit.



**Button - D**

This button is used to scroll down an on-screen list and decrement selected values in Edit.



**Button - E**

This button is used to accept changes to screens or parameters and exit the screen.



**LCD display - F**

For display of Gross, Net menus etc.



### Startup Screens

When the display is first powered up it will show a screen with the PM Onboard logo, display type and the software version, as shown here:



This is followed by a P.O.S.T. (Power On Self Test) screen while the display checks various parameters. If using analogue load cells this is shown. If a 511 transceiver is used this is also shown.



When this process is complete the first of the main information screens appear.

This can be one of a number of different 'Main' screens available, depending on the options setup in the display.

These are always available when the display is on. Use the  button to scroll through the available main screens. The standard options available are:

#### Net Weight



#### Gross Weight



#### Time / Date

See page 43 for details



### Additional Available Startup Screens

Other 'Main' screens can appear here if the appropriate options are turned on from within Setup etc, these are:

- Axles** See page 27 for details
- Load / Deliver** See page 35 for details
- Twin / 5 + Air** See page 31 for details. This option cannot be selected at the same time as Drawbar.
- Drawbar** See page 31 for details. This option cannot be selected at the same time as Twin / 5+ Air.
- Stability** See page 39 for details

## Setting CAN or Analogue Load Cells

The weighing systems used with this display can have either CAN bus or ANALOGUE load cells fitted. Identify the type used and follow the instructions below to make the display fully compatible.

Some peripherals used, 511 remote, packer switch etc, may be analogue. If this is the case then set the display to 'CAN AUTO' in stead of 'CAN' in step 6.

1. In the Time / Date main screen press the Menu  button
2. Press  button to select the Setup option.
3. Press the  button to go into the Setup menu
4. Press the  to go to the Vehicle Config option
5. Press the  button to select
6. This option should be pre-set to CAN load cells, if not scroll through the available options using the  button to select
7. Press the Exit  button 3 times to return to the main screens



## Changing a Parameter Value

Where an on-screen parameter has a changeable value against it and the value has to be changed then a standard method can be used to alter the value regardless of which screen is used.

A typical example of this would be the NET ALARM screen shown here:



### To Change a Parameter Value

The selected parameter is shown by the long grey bar on the parameter and value.

The value shown here is 1050kg.

1. To change this press button  (Edit). This will clear the long bar and highlight the first changeable value, as shown in the screen below:



2. Use buttons  &  to alter the original value to the required value.
3. To move to the next value in line press button  and repeat as for line 2.
4. Once the required value is fully changed press button , this will show the new value.
5. Press button  again to leave the screen.



## How to Identify Your PM Onboard 1155 System Type

This page shows you how to identify the type of PM Onboard 1155 system fitted to your vehicle and to calibrate that system.

### How to Identify:

1. Look under the vehicle at the load cells:  
If the cable from the load cells are about 18" - 20" long to a connector then the load cells are CAN types.  
If the cables are much longer, running directly from the load cell to the junction box and there are no plugs fitted, then the load cells are the Analogue types.

2. Look at the type of junction box fitted:  
In most instances this is located near the centre of the chassis on the inside, all the load cell cables run to this item.

If the junction box is yellow then this is a CAN junction box.

If the junction box is grey with a red label then this is an Analogue junction box.

#### NOTE:

In certain cases the vehicle may have been painted after the weighing system was fitted, in these cases scrape a small amount of paint from the junction box to determine the base colour.

3. Identify the type of vehicle:  
Setup and calibration will vary slightly depending on the type of vehicle that the weighing system is fitted to, the main types of vehicle are:

Standard - this is a normal heavy goods vehicle using 2 or more axles. This type can be a normal body type, a roll on - roll off type or a refuse vehicle, etc., 1 junction box and up to 8 load cells.

Tipper - this is similar to the above but the body can be raised to remove the load.

5th Wheel and Air - this type uses a separate prime mover cab to pull separate trailers using a 5th wheel coupling and air suspension on the trailer. Only available with 4 or 8 load cell systems.

Drawbar - this type has a ring and pin type coupling on the prime mover (cab or vehicle) to pull a separate trailer. Only available with 4 or 8 load cell systems.

#### Refuse Vehicles

These have additional axle weighing options. See page 31.

### Additional information you may need:

When calibrating the PM Onboard 1155 system there are additional pieces of information you may need:

1. If you are using Axle Weighing to weigh the load on individual axles you will need to know the number of axles fitted to the vehicle, i.e. one front + one rear, one front + two rear, two front + two rear, etc
2. The Tare and Gross weight of the vehicle - these can be obtained during the calibration process using a weighbridge etc.

### Definitions

#### Tare Weight

The weight of an empty vehicle but including the weight of a full fuel tank and the weight of the driver.

#### Net Weight

The weight of the maximum load that the vehicle is legally allowed to carry. This is the Gross weight less the Tare weight.

#### Gross Weight

The maximum legally allowed overall weight of the vehicle, i.e. the Tare weight plus the Net weight.

## Order of Calibration - Examples

### Example 1

**This example uses CAN load cells and Weigh Mode set to 'Standard'.**

Use with the 'Order of calibration for a basic 1155 system' on the next page.

Tare weight - 2000kg

See step 9.

The main screens will now show:

Net - 0kg  
Gross - 2000kg

Net (load weight) added - 20,000kg - then span.

See step 12.

The main screens will now show:

Net - 2000kg  
Gross - 22 0000kg

### Example 2

**This example uses CAN load cells and Weigh Mode set to 'Twin/5 +Air' (or 'Drawbar')**

Use with the 'Order of calibration for a basic 1155 system' on the next page.

Front Tare weight - 1200kg, rear Tare weight - 800kg

As step 9 but set Front and Rear Tares instead of an overall total Tare weight.

The main screens will now show:

Net - 0kg  
Gross - 2000kg  
Twin/5+Air - 1200kg F / 800kg R

Net (load weight) added - 20,000kg - then span.

As step 12. but set front Tare to 8000kg and rear Tare to 12000kg.

The main screens will now show:

Net - 20000kg  
Gross - 22 0000kg  
Twin/5+Air - 9200 F / 12800 R

## Order of Calibration for a Standard PM Onboard 1155 System

With all the weighing equipment fitted and the required information known from the initial checks the vehicle and weighing system can be calibrated. A sequence for carrying this out is below. Use this in conjunction with the examples on the previous page.

### Power - On Screen Items 1 - 3.

1. Power the system up - the weighing system will be powered up when the ignition is turned on in most cases, an exception to this could be a tipper vehicle.
2. Watch the opening P.O.S.T. (Power On Self Test) screens carefully, these will show that the load cells and junction box have been detected correctly.
3. On an initial calibration a message will be shown saying that new load cells have been detected.
4. If the vehicle is a tipper then raise the body until clear of the guides, ensure the body does not catch anywhere.
5. Go to the Main Menu screen - set the time and date and then return to the Main screen.
6. Go to Vehicle Configuration.
7. Select the load cell type fitted, CAN or Analogue.

### Calibrate Zero Items 8 - 10

**The steps from here must be carried out on a weighbridge. See also page 19 for full details.**

8. With the EMPTY vehicle on a weighbridge enter the Tare weight (2000kg in example) and then zero the vehicle.
9. Select Calibrate.
10. With the vehicle as level as possible zero the inclinometer.

### Span the Vehicle Items 11 - 16. See also page 23 for full details.

11. Exit to the Main screens, this should in most cases be the NET screen, if not go to the NET screen.
12. LOAD THE VEHICLE - as near to the maximum allowed load weight as can be managed (20,000kg in the example).
13. Go to the Menu screens again.
14. Go to Setup.
15. Go to Calibrate.
16. With the vehicle on a weighbridge span the display - Minimum weight (Tare) to Maximum weight (Gross) - see page 23 for more information.
17. Customise any other settings to your own requirements, i.e axle weighing, twin / 5 + air, drawbar, password etc.
18. Set the alarms - set the NET alarm to about 100kg less than the weight of the load carried (NET), i.e. if the load carried is 20000kg (20 Tonnes in example) then set the alarm to 19900kg - (19 Tonnes, 900 kg).



## Entering the Vehicle Tare Weight

The Tare weight of a vehicle is the weight of the empty vehicle, but including the weight of a full tank of fuel and the weight of the driver.

This page is used when the 'Axles' setup option is not used, i.e. the Tare weight applies to the whole vehicle NOT the Tare weight of each axle.

To set the Tare weight of each axle see the 'Axle Weighing' page.

With vehicle as above drive the vehicle onto a weighbridge and obtain the Tare weight.

In the display go to: Menu - Setup - Vehicle Config - Tare Weight by pressing the  button until the Time / Date screen can be seen, then pressing the  button to get the Menu screen.

Press the  button to get Setup, followed by the  button to open the Setup screen.

Press the  button to go to Vehicle Config, followed by the  button to open the screen.

Press the  button to scroll to the Tare Weight option.

Set the Tare weight to the value shown on the weighbridge ticket using the method shown on the 'Changing a Parameter Value' screen. . **See also page 11 for full details.**

Press  4 times to return to the main screen.

**NOTE:**

You can also obtain the Tare weight of a vehicle using weigh pads under each wheel, if available.



## Zeroing the Tare

### Body

With vehicle empty go to: Menu - Setup - Calibrate by pressing the  button until the Time / Date screen can be seen, then pressing the  button to get the Menu screen.

Press the  button to get Setup, followed by the  button to open the Setup screen.

Press the  button to go to Calibrate, followed by the  button to open the screen. Zero will be highlighted.



Press the  button, the screen shows "Are you sure ? Yes / No". Press Yes, (  button).



The screen shows "Zero OK" then returns to the previous screen.



Press  3 times to go to the main screen.



## Zeroing an Inclinometer (CAN bus Only)

1. In the Time / Date main screen use the  to open the Menu screen
2. Use  to select Setup
3. Use  to open Setup screen
4. Use  to go to Calibrate option
5. Use  to open option screen
6. Use  to go to Zero Inclinometer
7. Use  to select, confirmation screen opens
8. Use  to select Yes, screen closes
9. Press  3 times to go back to main screen



## Spanning the Vehicle

The idea of spanning a vehicle is to take the Tare (empty vehicle) weight from the maximum (gross) weight for the vehicle and to input the weight left (Net or load weight) into the display so that the display can typically use the Tare weight as EMPTY and the Gross weight as FULL when working out the amount of load weight actually in the vehicle at a given point in time.

### Example:

Tare weight = 25000kg

Gross weight = 45000kg

Gross weight less Tare weight = Net weight:  $45000\text{kg} - 25000\text{kg} = 20000\text{kg}$

Therefore Net (load) weight = 20000kg

When the vehicle is spanned the display would use the 20000kg Tare weight as the net span weight.

Load vehicle to as near full load as possible (20000kg).

1. In the Time / Date main screen use the  to open the Menu screen
2. Use  to select Setup
3. Use  to open Setup screen
4. Use  to go to Calibrate option
5. Use  to open option screen
6. Go to Span with the  button and then press the  button. Screen shows "Net Span Weight" and "Calibrate". Net Span Weight should be selected by pressing .



To alter weight press  button, first figure will be highlighted. Alter figure using  &  buttons to alter values and  button to move along figure until correct value is reached (in this instance 20000kg).



Press  to go to the previous screen.

Press the  button to go to the "Calibrate" option followed by the  button to select. The screen will say "Are you sure ? Yes / No", with a YES next to the  button and a NO next to the  button.



Press Yes (  button), screen shows "Calibrated OK".



Press  4 times to go to the main screen.

## Setting the NET and GROSS Alarms

1. In the main Time / Date screen use the  to select the menu screen
2. Use the  to go to the Setup option
3. Use the  to select the option
4. The Setup screen will open with the Alarms option selected
5. Use the  to select the option
6. Use the  to select the NET or GROSS options as required
7. See 'Changing a Parameter Value' for how to alter the values. See also page 11 for full details.
8. When values altered to your requirements press the  3 times to return to the main screen.

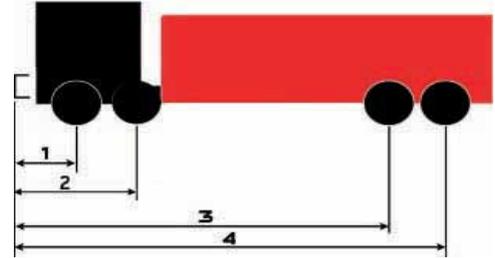
### Alarm Filter

This option (Setup - Alarms) is a built in slight delay to prevent any alarm sounding immediately if an alarm parameter is only exceeded for a short period, e.g. if the vehicle goes over a small obstruction. The period can be set between 1 second (default) and 10 seconds.

### Axle locations and load cell distances record

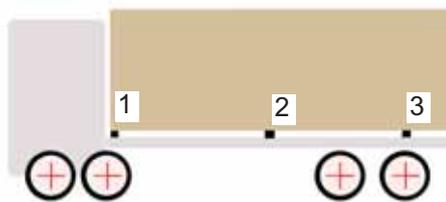
Use this page to record the axle and load cell distance settings used for a vehicle.  
Copy this page as required for additional or new vehicles.

#### Axle Locations



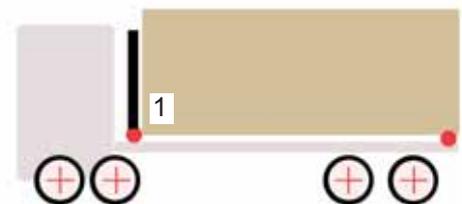
#### Axle Distances

Axle Distances - in Centimetres				
Vehicle Identification:				
Axle No.	1	2	3	4
Distance from front bumper				



BulkWeigh Type Vehicle

Tipper Type Vehicle



#### Load Cell Distances

Load Cell Distances - in Centimetres				
Vehicle Identification:				
Axle No.	1	2	3	4
Distance from front bumper				

## Axle Weighing - BulkWeigh and Tipper Vehicles

When the Axle options are turned on :

1. In the main Time / Date screen use the  button to select the menu screen
2. Use the  button to go to the Setup option
3. Use the  button to select the option
4. The Setup screen will open
5. Use the  button to select the Vehicle Config option and press 
6. Use the  button to select the Weigh Mode option
7. Use the  button to scroll through the available options and select Axle

6. Various axle related items appear in the screen list, these are:

Number of axles  
Cell positions  
Axle positions  
Axle tares  
Axle spans

The number of axles on the vehicle is added using the  to select the 'Number of Axles' option and then the  button to scroll through the options.  
The number of axles can be set to 2, 3 or 4.

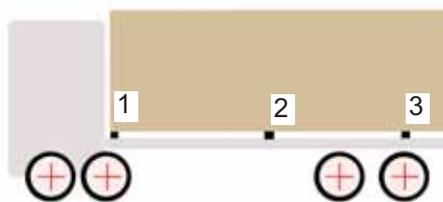
You now need to set the distances of the load cells and axles from a datum - in this case the front face of the front bumper. (see diagrams following).

### Cell Positions

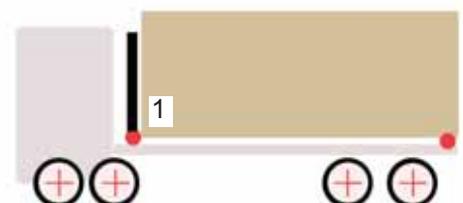
Scroll down to Cell Positions with the  button and select with the  button.  
This screen shows each axle location with an associated distance in Centimetres from the datum.  
Each distance can be altered as for the standard parameter screens.  
Measure each distance on the vehicle and record the details - a table is provided later in the manual.  
Photocopy the table page if more than one vehicle is to be recorded.

When all measurements are correct press the  button to leave the screen.

Press the  button to go to the next axle option - Axle Positions



**BulkWeigh Type Vehicle Cell Positions**



**Tipper Type Vehicle Cell Positions**

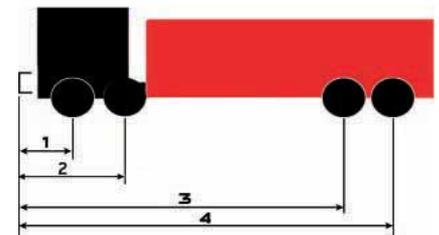
## Axle Positions

This screen shows each axle location with an associated distance in Centimetres from the datum. Each distance can be altered as for the standard parameter screens. Measure each distance on the vehicle and record the details - a table is provided later in the manual. Photocopy the table page if more than one vehicle is to be recorded.

1. Use the  button to select the option
2. The Axle Positions screen will open, with a separate line for each axle selected previously.
3. Alter the figure for each axle position - see standard parameter screens.

When all measurements are correct press  to leave the screen.

Press the  arrow button to go to the next axle option - Axle Tares.



Vehicle Axle Positions

## Axle Tares

Use the  button to open the Axle Tares screen. This screen shows the Tare weight for each axle location and is similar to the Axle Positions screen.

1. Use the  button to select the option.
2. The Axle Tares screen will open, with a separate line for each axle selected previously.
3. Alter the figure for each axle Tare weight - see standard parameter screens for method.

When all measurements are correct press  to leave the screen.

Press the  arrow button to go to the next axle option - Axle Spans

## Axle Spans

Use the  button to open the Axle Spans screen. This screen shows the Span weight for each axle location.

1. Use the  button to select the option.
2. The Axle Spans screen will open, with a separate line for each axle selected previously.
3. Alter the figure for each axle span weight - see standard parameter screens for method.

When all measurements are correct press  to return to the Setup screen.

### Axle Alarm Weights

1. Use the  button to go to the Alarms option.
2. Use the  button to select the option.
3. Use the  button to scroll down the list of options, added to the list will be an option for each axle that has been added, (Axle 1, Axle 2 etc.).

A weight is shown against each axle location, this is the weight on that axle at which the alarm will sound. Highlight each axle in turn and edit the weight as for the standard parameters screen.

When all measurements are correct press  three times to go to the main screens.

### Main Screen

In the main screens there will be a new screen available, press the  button to go to the new Axles screen.



This has the current weight, in Tonnes, shown for each axle.

To activate or de-activate the alarm facility press the  button, an icon  will appear on screen when the alarm is activated.

With the alarm ON, when the weight on an axle exceeds the preset weight the alarm will sound.

To print out the weights on each axle press the  button.



## Axle Weighing - Refuse Vehicles

When Refuse type vehicles are used extra weighing facilities are available with the 1155 display. With these vehicles the Barrier and Axle Weight Stability options are used to balance the load weight along the vehicle and prevent either overloading or underloading of an axle group and to sound the alarm if a particular load setting on an axle group is exceeded.

### NOTE:

The PM Onboard system does not activate the vehicle hydraulics. The system only provides a request signal to the body system that it would like to be moved.

To use these facilities a number of options need to be set to suit:

**Weigh Mode** - Setup - Vehicle Config - Weigh Mode - set to Axles.

### Barrier Control:

**NOTE:** zero the inclinometer **FIRST** (important) - Setup - Calibrate - Zero Inclinometer.

Barrier Control is only used when axle weighing mode is enabled (vehicle config – weigh mode).



Turn Barrier Control OFF (Outputs – Barrier Control – press EDIT).

Maximum Incline - This option will not operate over the default figure of 3 degrees inclination (this figure can be changed).

### Front Axle Underload

Turn this to OFF - Setup - Outputs - Barrier Control.

### Set Number of Axles:

Setup - Vehicle Config - Number of axles. The number of axles on the vehicle is added using the  to

select the 'Number of Axles' option and then the  button to scroll through the options.

The number of axles can be set to 2, 3 or 4.

Set all axle spans

See page 23 for spanning the vehicle and page 28 for axle spans.

### Axle Overload Settings

Setup - Outputs - Barrier Control

Axle 1 overload figure - not currently used.

Axle 2 overload figure (2 or 3 axled vehicles) - set to the required overload weight.

Axle 3 overload figure (3 or 4 axled vehicles) - set to the required overload weight.

Axle 4 overload figure (4 axled vehicles) - set to the required overload weight.

**Axle Stability Filter Weight**

Setup - Outputs - Barrier Control - default weight is 100kg. This figure can be altered.

**Axle Stability Filter Time**

Setup - Outputs - Barrier Control - the default setting is 5 seconds - 2 to 10 seconds available.

**Cell Positions**

Setup - Vehicle Config - Cell Positions. Enter the distance from the front bumper face to each load cell centre in Centimetres.

**Axle Positions**

Setup - Vehicle Config - Axle Positions. Enter the distance from the front bumper front face to the centre of each axle in Centimetres.

**Axle Tares**

Setup - Vehicle Config - Axle Tares.

Measure each axle weight on a weighbridge or weigh pads. The vehicle MUST be empty.

**Axle Spans**

Setup - Vehicle Config - Axle Spans. Enter the span figure for each axle using a weighbridge or weigh pads. The vehicle MUST be loaded.

**Aux Output1**

Setup - Outputs - Aux Output 1. Set this to Alarm.

**Aux Output 2**

Setup - Outputs - Aux Output 2. Set this to Barrier.

**Front Axle Underload Note:**

If front axle weight is less than 20% of gross vehicle weight on front axle then this is used to move the barrier and put more weight on the front axle(s).

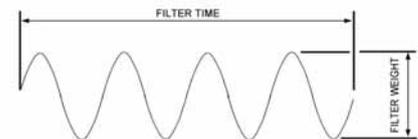
Axle 1 overload – ignore.

Axles 2,3 and 4 – rear axle group set to a few hundred kg LESS than maximum. When the weight on the axle group reaches this figure the barrier will move to equalise the load.

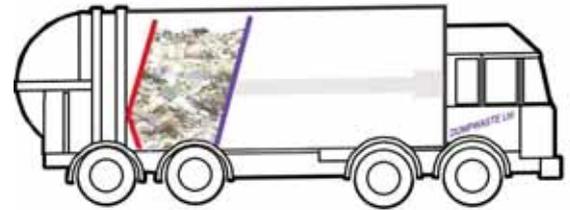
**Axle Stability Filter Note:**

This feature constantly monitors the rear axle weight parameters before allowing the weight distribution to be changed. The rear axle weight must stay within the 100kg (default) band for 5 seconds (default time) before axle weight outputs are used.

The maximum period is 10 seconds but the weight can be set up to 99999kg.



Weight to rear of vehicle -  
excess weight on rear axle



Weight to front of vehicle -  
low weight on rear axle



Weight balanced in vehicle  
no excess weight on front  
or rear axles



### Weight Distribution Diagrams

**Expansion Connector Details**

The expansion connector on the rear of the display is used to send signals to the compactor and barrier. The pins are as below:

**Pin 5 - Gross Vehicle Weight**

0 Volts - Max GVW not reached. Compacter to operate as normal.

+24 Volts - Max GVW reached. Compacter stop request.

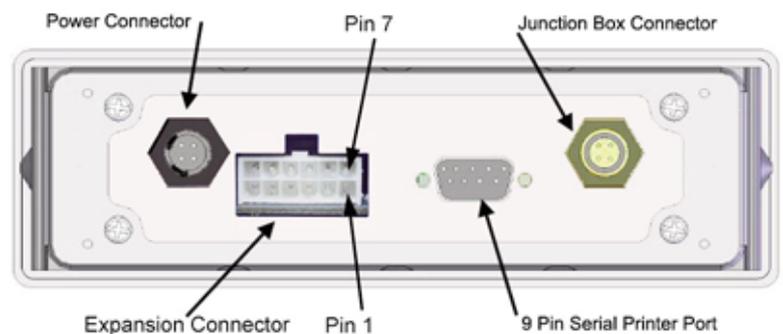
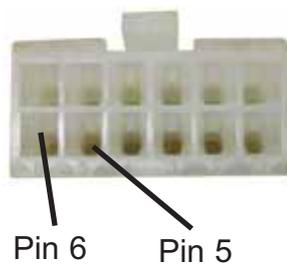
**Pin 6 - Move Forward**

0 Volts - No barrier movement required.

+24 Volts - Request to move barrier to front of vehicle.

The connector is a Molex 5557 series receptacle, Molex part number 39 - 01 - 2120. Farnell part number 151 - 871.

The female pin is Molex part number 39 - 00 - 0039. Farnell part number 973 - 2195.



## Twin / 5 + Air and Drawbar Screens

Use the Menu function in the Time / Date screen to access settings.

To access any Settings screens you must have password access, unless the display has not been setup previously.

### Setting Up the Display with Twin / 5 + Air

#### NOTES:

1. These instructions show how to setup and use the Twin / 5 + Air options but the method is the same for the 'Drawbar' option, just select 'Drawbar' instead of 'Twin/5 + Air'.
2. These options are **ONLY** available with either 4 or 8 load cells fitted and is **NOT** available when 6 load cells are fitted.

#### Setting Up Display:

1. In the Time / Date screen press the  button.
2. Use the  Button to scroll down to the Setup option.
3. Press the  Button, the Setup screen will open.
4. Use the  Button to scroll down to the Vehicle Config. option.
5. Press the  Button, the Vehicle Config. screen will open.
6. Use the  Button to scroll down to the Weigh Mode option.
7. Use the  Button to toggle between the available options and select Twin / 5 + Air.
8. Press the  button 3 times to go back to the main screens.
9. Press the  button to toggle through the main screens until the Twin / 5 + Air screen can be seen.

#### Twin / 5 + Air Screen

This shows the overall gross weight (weight of the load and the vehicle combined) of the vehicle and the percentage of that weight on the front and rear axles.

The weights can be shown either as a weight in Kilogrammes, as in this screen,



or as percentages, as in this screen.



**Options Available in the Twin / 5 + Air Screen:**

**Alarm**

An alarm symbol is shown in the top left hand corner. This can be turned on or off using the button.

**% or Kg**

The display can be toggled between percentages or Kilogrammes using the button. If Kilogrammes are chosen then % will be shown next to the button. If percentages are chosen then Kg will be shown next to the button.

**Print**

The button can be pressed to print out the weights onto a ticket. The word 'Printing' will appear briefly at the base of the screen.

**Exiting**

The button closes the screen and moves you to the next main screen available.

**Calibrating Twin / 5+Air**

**This example uses CAN load cells and Weigh Mode set to 'Twin/5 +Air' (or 'Drawbar')**

Use with the 'Order of calibration for a basic PM Onboard 1155 system' on the next page.

**This repeated from page 16**

Front Tare weight - 1200kg, rear Tare weight - 800kg

As step 9 but set Front and Rear Tares instead of an overall total Tare weight.

The main screens will now show:

Net - 0kg  
Gross - 2000kg  
Twin/5+Air - 1200kg F / 800kg R

Net (load weight) added - 20,000kg - then span.  
rear

As step 12. but set front Tare to 8000kg and Tare to 12000kg.

The main screens will now show:

Net - 20000kg  
Gross - 22 0000kg  
Twin/5+Air - 9200 F / 12800 R

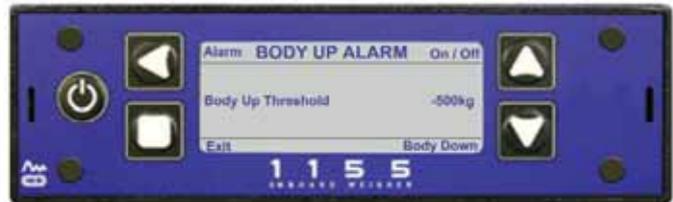
## Body Up Alarm Details

### Purpose:

This alarm sounds when a tipper body is raised.

To access the Body Up Alarm screen from the main Time / Date screen:

1. Press the  button to go to the main menu.
2. Press the  button to go to the Setup option.
3. Press the  button to open the option screen, Alarms is highlighted.
4. Press the  button again to open the Alarm option, the Alarms screen will open.
5. Press the  button to go to the Body Up option.
6. Press the  button to open the Body Up Alarm screen.



The alarm can be set to On or Off using the  button. An alarm symbol  and a vehicle with its body up symbol  will be shown on screen if On is selected - see screen below:



### NOTE:

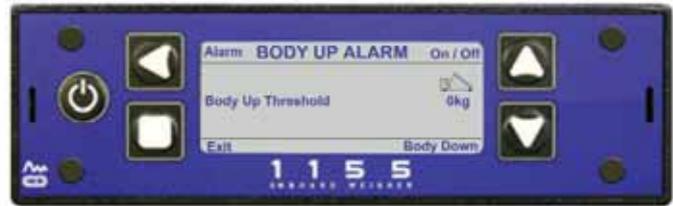
Pressing the  button will also turn on the Stability option in the Alarms screen.

The Body Up alarm will beep at intervals. Pressing the  button will turn off the beep.

With the vehicle body down, pressing the  button will show the message "Body Down" at the bottom right of the screen.



The Body Up alarm point will be set to zero:



**Example:**

If the body up alarm is ON and the weight is set to -500kg then if the body is raised the system will detect the decrease in weight and when this reaches approximately the start weight the alarm will sound.

Press the  button 4 times to return to the main screens.

**Body Down Option - Main Screen**

Set the alarm with the vehicle empty and the body down.

Press the  button, the alarm and vehicle symbols will appear and the alarm will be on.

**Setting and Altering the Body Up Alarm Weight.**

**NOTE:**

**In most cases the default setting can be left as supplied.**

1. Press the  button to go to the main menu.
2. Press the  button to go to the Setup option.
3. Press the  button to highlight the Settings option
4. Press the  button to open the option screen
5. Press the  button to go to the Zero Limit option
6. Press the  button again to open the option, the figure can now be altered as for a Standard Parameter screen.
7. Press the  button 3 times to return to the main screens.

## Load / Deliver Screen

This feature is designed to allow a user to fully load up a vehicle and then drop off parts of the total load with different customers. The weight of the part load can be printed out.

To Setup and Use Load / Deliver:

1. In the Time / Date main screen press the  button to open the main menu.
2. Press the  button to highlight the Setup option.
3. Press the  button to open the option.
4. Use the  button to scroll to and highlight the Settings option.
5. Press the  button to open the option.
6. Use the  button to scroll down to the Load / Deliver option.
7. Use the  button to toggle the option between ON and OFF as required.
8. Press the  button 3 times to return to the main screens.
9. Use the  button to scroll to the Load / Deliver screen shown here:



### Adding Part Loads to a Vehicle - Example

These details assume that the Tare, Net Weight and Gross Weight are set. The example assumes a net weight of 20 000kg, and a gross weight of 50 000kg. There are three part loads: 7000kg, 8000kg and 5000kg, giving a total of 20 000kg. The Net Weight and Gross Weight should appear on their respective main screens.

1. Press the  button.
2. Load the vehicle with the first part load (7000kg). The weight will be shown on the screen.  
Press  to print the first weight on the load ticket.
3. Press and hold the  button until the weight resets to zero.
4. Load the second part (8000kg) and zero. Press  to print the second weight on the load ticket.
5. Load the third part (5000) and zero. Press  to print the third weight on the load ticket.
6. Access the Load / Deliver main screen using the  button.
7. Press the  button, the alarm symbol  will disappear.
8. Press the  button again, a load figure will appear and the ALARM at the top of the screen will change to EDIT.
9. Print out the ticket with the  button.

### Load / Deliver continued

The figure shown on the previous screen (5000kg) is the amount at which the alarm will sound.

For this example set the figure to the first part load weight of 7000kg.

1. Press the  button until the word 'Edit' appears at the top left of the screen and the load figure of 5000kg is highlighted.
2. Press the  button again and the figure will have the first digit highlighted.
3. Use the  button to move along the figure and the  and  buttons to alter the figure to suit the first part of the load required (7000kg)
4. Press  twice to return to the first screen.

The weights for the second and third part loads are set in the same manner.

The accumulated load is shown on the screen.

### Delivering a Load to Three Different Sites - Example

1. These details assume that the Tare, Net Weight and Gross Weight are set.
2. The example assumes a net weight of 20 000kg, and a gross weight of 50 000kg.
3. There are three part loads: 7000kg, 8000kg and 5000kg, giving a total of 20 000kg
4. The Net Weight and Gross Weight should appear on their respective main screens.
5. Load the total delivery weight onto the vehicle (20000kg)
6. On arrival at the first delivery site set the alarm to the first weight (7000kg) - see previous example.
7. Press the  (ON-SITE) button, this will print out the load ticket header and time etc.
8. Deliver the first part of the load. The alarm will sound when the set weight is reached.
9. Press and hold the  button until the weight on screen is zeroed.
10. Press the  button, the weight of the first part of the load will be added to the ticket. Pass over the weight ticket.
11. Press the  (OFF-SITE) button.

**Load / Deliver continued**

**To deliver the rest of the load move to the next delivery point.**

Reset the alarm to the weight required for the second delivery (8000kg).  
Repeat parts 7 to 11.

Reset the alarm to the weight required for the third delivery (5000kg).  
Repeat parts 7 to 11.

**Example Load / Deliver Tickets:**

1. If Tare is Zero - no gross.

<b>PM Onboard Ltd PM 1155</b>	
<b>Tel: 01274 - 822999</b>	
<b>Time</b>	<b>14:36</b>
<b>Date</b>	<b>09/01/08</b>
<b>Net</b>	<b>1940kg</b>
<b>Gross</b>	<b>6940kg</b>

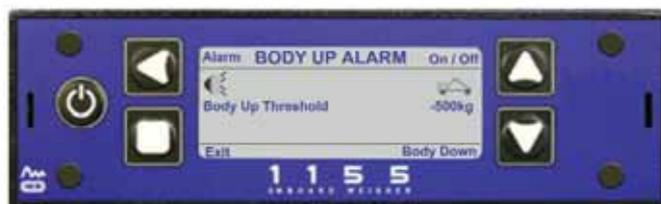
2. Net and Gross weights used.

<b>PM Onboard Ltd PM 1155</b>	
<b>Tel: 01274 - 822999</b>	
<b>Arrive Site</b>	
<b>Time</b>	<b>14:36</b>
<b>Date</b>	<b>09/01/08</b>
<b>Net</b>	<b>1940kg</b>
<b>Gross</b>	<b>6940kg</b>
<b>Load</b>	<b>1440kg</b>
<b>Load</b>	<b>2060kg</b>
<b>Deliver</b>	<b>1600kg</b>
<b>Site Total</b>	<b>1900kg</b>
<b>Depart Site</b>	
<b>Time</b>	<b>15:07</b>
<b>Date</b>	<b>09/01/08</b>
<b>Net</b>	<b>1900kg</b>
<b>Gross</b>	<b>6980kg</b>



## Vehicle Stability

An indication of vehicle stability can be shown on a main screen if this option is setup.  
To setup the stability option:



1. In the Time / Date screen press the button to open the main menu.
2. Use the button to select the Setup option.
3. Press the button to open the already selected Alarms option.
4. Use the button to select the Body Up option.
5. Press the button to open the Body Up option
6. Use the button to select the ON / OFF option in the top right corner of the screen.
6. A loudspeaker icon and a vehicle with a raised body icon will appear on the screen.
7. Press the button to return to the Alarms screen, the Stability option will now be available and should already be selected.
8. Use the button to toggle the stability option ON or OFF as required - see screen below.



The stability screen, shown here:



has a picture of a vehicle in the centre, this picture tilts to show the direction of any vehicle lean.

Also on screen is an indication of the amount of lean in degrees and as a percentage of the total allowed lean, with an arrow to show the direction.

When the vehicle leans more than a set amount the alarm will come on to warn the user.

The amount of lean before the alarm comes on is pre-set and cannot be altered.

At the right hand side of the screen is an indication of the net weight in the vehicle.



## PIN Numbers Access

### PIN Numbers

A PIN number is required to access the Setup screens etc.

There are separate PIN numbers allowed for the User and the Manager.

The Manager can access all available options.

The user can only access Alarms, on the main menu and only if User Alarms are turned on in the Pin Access screen.

### Default PIN Number

The default PIN number is 0000 (four zeros) and can be left unaltered by the PM Onboard engineer or changed to something different. This number is changed as below:

### Entering New PIN Numbers

To enter a new Manager PIN number:

1. From the Time / Date screen use the  button to open the main menu.
2. Use the  button to open the PIN Access option.
3. Select " Set Manager PIN" with the  button. A new screen will open:



4. Enter the required PIN number using the  button to move along the number and the  or  arrow button to alter the individual figures.
5. When the new number is on screen press the  arrow button. A confirmation screen will open:



5. Select YES using the  button. The password is now set.

### PIN Control

To enter a new User PIN number highlight the "Set User PIN" option and follow the same process as for the Manager PIN.

Highlight the PIN Control option on the screen with the   buttons and press the  button to toggle the option to USER / MANAGER. This allows the use of PIN controls with the display.

### User Alarms

To allow the user to access the user alarm options of the display highlight the "User Alarms" option on the

screen with the   buttons and use the  button to toggle to YES.

Turning this option to YES means the user can alter the alarm settings on the display main screens. Turning this option OFF means that the user cannot alter the alarm settings.



## Optional Settings

### Display Settings

To go to these options:

1. In the Time / Date screen press the  button to open the main menu options, the Display option will already be selected.
2. Press the  button to open the display option.
3. Use the  and  buttons to move between the various options.

This screen deals with the general setup parameters affecting the display. The options are:

1. **Contrast.**  
To alter the contrast of the screen use the  button to increase / decrease the controlling value between 1 and 8.
2. **Power on screen.**  
This shows which information screen will be displayed initially.  
The options are: NET Weight or GROSS Weight.
3. **Key bleep.**  
This can be set to Off or On by using the  button.

When all these options are set press the  button twice to go back to the main screens.

### Setting the Time and Date

1. In the Time / Date main menu screen press the  to open the main menu
2. Press the down arrow to go to the Setup option
3. Press the  to open the option
4. Use the  button to go to the Set Time / Date option
5. Press the  to open the option
6. Highlight the figures requiring changing and change to the new date / time - see 'Changing a Parameter Value'
7. Turn daylight saving On as required - only used in the UK.
8. When all set press the  button to save changes, a new screen will open saying 'Set Clock - Yes / No'
9. Press the  button to OK changes (or the  button to discard).
10. Press the  button twice to return to the main screens
11. Press the  button to go to the main Time / Date screen to check the settings

## Setting a Printer

The PM Onboard 1155 weighing system can use a variety of printers, thermal or impact.

In most cases a 'Sprint' thermal printer will be used

The default printer settings are:

9600 Baud Rate

Handshake Off

Print header On

These settings will be OK to use without alteration.

If an impact type printer is used in a situation requiring large data transfer rates then the handshaking can be turned on, to do this:

1. In the Time / Date main menu screen use the  to select the menu
2. Use the  button to select the Setup option
3. Use the  button to select the Outputs option
4. Use the  to open the Outputs screen, the screen opens with the Serial Output option selected
5. Use the  to open the option
6. Use the  button to select the Handshake option
7. Use the  to select On

## Print Header

The print header appears at the top of a printer load weight ticket and by default is: PM Onboard and the PM Onboard service telephone number.

### To Change the Print Header

1. In the Serial Output screen (item 5 in the list above) use the  button to scroll down the list to the 'Change Print Header' option
2. Use the  button to open the option
3. Select and change the existing text - see 'Changing a Parameter Value' for how to do this, there is a maximum of 64 characters including spaces available.
4. When the text has been changed to your requirements then press the  button 5 times to exit out to the main screens

## Front Panel Zero

This option gives you the ability to zero the Net weight main screen. This has three options: On, Off, Single.

OFF: This option is not available.

ON: The word Zero appears in the bottom corner of the main 'Net Weight' screen.

Press the  button and hold down for 3 to 5 seconds, 'Zero OK' will appear briefly on the screen and the Net weight will be zeroed.

This operation can be carried out as many times as possible.

SINGLE: The operation is the same as 'ON' but can only be carried out once.

### To Activate Front Panel Zero:

In the Time / Date main screen press the  button to open the main menu.

Use the  button to go to the 'Setup' option and the  button to open this.

Use the  button to go to the 'Settings' option and the  button to open this.

Use the  button to go to the 'Front Panel Zero' option.

Use the  button to select either OFF, ON or Single.

Press the  button 3 times to return to the main screens.

## User Password Access

If you have user password access you will have access to an extra item on the Menu screen. These are the user alarms.

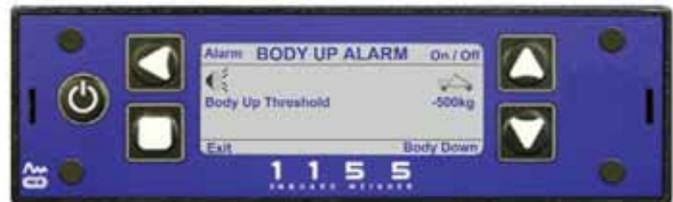
Select the Alarms option with the  button and press the  button, the Alarms screen will open.



Here you can set the operating mode to Auto or Manual, set the Gross and Net weights at which the alarm will sound and set the Body Up alarm threshold.

Use the  button to select an option. Use the  and  buttons to move between options and to increase or decrease the weights.

Pressing Body Up will open the Body Up Alarm screen:



This shows the (negative) weight at which the body up alarm will sound.

Use the  button to turn the alarm on or off - when turned on symbols will appear on the screen.

## Alarms - Manual or Auto

In the Setup - Alarms screen the alarms can be toggled between Manual and Auto:

**Manual** The alarm sounds when the weight is over the set weight. The alarm goes off when the weight is less than the set point and will not go back on if the weight is increased again. The alarm symbol disappears.

**Auto** The alarm sounds when the weight is over the set weight. The alarm goes off when the weight is less than the set point and goes back on if the weight is increased again. The alarm symbol will be back on the screen.

## Packer Alarms - Manual or Auto

If the packer is full the alarm operates, if the packer is empty the alarm will be off.

**Manual** when the packer is emptied the alarm will have to be reset by the driver.

**Auto** When the packer is emptied the alarm will automatically reset itself.

## Turning the Display Off

Press the  button once to turn off the display.

### Setting or Re-setting the Count By Option

Access the Main Menu from the Time / Date screen - Menu button.

Press the down arrow button  to go to the Setup option.

Press the left arrow Select button  to open the option.

Press the down arrow button  to go to the Settings option.

Press the left arrow Select  button to open the option.

The Settings screen opens with the Count By option pre-selected.

Use the left arrow Edit button  to alter the figures, You can choose from: 1kg, 10kg, 20kg, 50kg, 100 kg or 200 kg.

The default is 20kg.

Press the square Exit button  to choose the required option and close the screen.

Press the square Exit button  twice more to return to the main menu.

Press the  button once to turn off the display.

Re-start the display to use the changed option.

### Setting the Filter Option

Access the Main Menu from the Time / Date screen - Menu button.

Press the down arrow button  to go to the Setup option.

Press the left arrow Select button  to open the option.

Press the down arrow button  to go to the Settings option.

Press the left arrow Select  button to open the option.

After accessing the settings screen press the down arrow button  to highlight the filter option

Use the left arrow Edit button  to alter the filter setting. You can choose from: low, medium or high.

The default is medium.

Press the square Exit button  to choose the required option and close the screen.

Press the square Exit button  twice more to return to the main menu.

Press the  button once to turn off the display.

Re-start the display to use the changed option.

## Fault Finding and Diagnostics

### 1. No Power to Display

The PM Onboard 1155 display is protected by a 3 Amp in - line blade fuse, check this if power is not available.

### 2. Display Locked Out

If the display is locked, i.e. pressing any of the keys has no effect then:

1. Turn off the display power with the  button.
2. Gain access to the rear of the display.
3. Unplug the power cable (grey) from the rear of the display for approximately 15 seconds.
4. Plug the power cable back into the display and reassemble anything removed.
5. Press the  button to restart the display, the buttons should now be working correctly.

### 3. Backlight Flashing

If the backlight flashes and the display is blank after updating firmware then there has been an error. Reinstall the firmware to cure this.

### 4. System Not Weighing

This could be a load cell or junction box not working, or a broken / cut cable. Any defective item will be shown on the startup screen.

To see this remove power from the system for about 10 seconds and then restart.

### 5. Error Messages

These will be shown on the startup screen or weight screen and would concern defective load cells or junction box.

### 6. P.I. Values

P.I. values should ideally be the same but would probably be more or less the same for each cell, an acceptable range would be 80% - 100% approximately. A value on one load cell that is different signifies a faulty load cell or that the system needs recalibrating.



## Diagnostics Information - CAN Mode

When the option is selected this screen opens in the first of ten screens. These screens are only for information and cannot be altered.

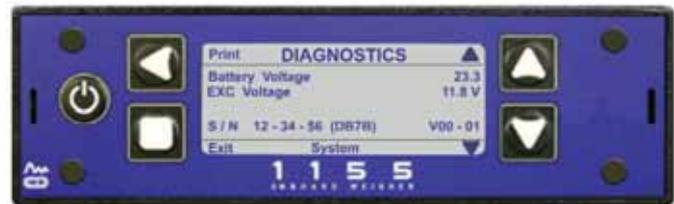
Use the  or  buttons to access the other diagnostic screens available.

Use the PRINT facility (  button) from any screen to print out a list of parameters shown in diagnostics.

1. System
2. J/box Configuration
3. J/box Software version
4. Adjusted Net
5. Raw Net
6. Millivolts
7. P.I. Value
8. P.I. Percent
9. Serial Number (of each load cell)
10. Software Version (of each load cell)
11. Inclinometer

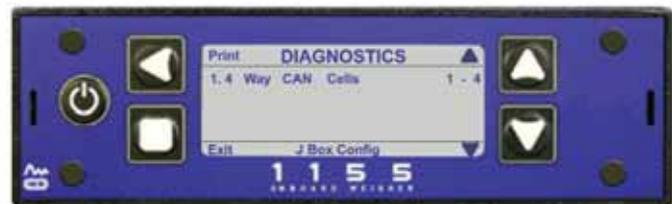
### 1 System Screen

This screen shows the battery voltage, the excitation voltage and the installed software serial number and version.



### 2 J / Box Configuration

This screen shows the configuration of the junction box. Shown is a 4 way junction box with CAN cells 1 to 4.



### 3 J / Box Software Version

This screen shows the installed software version of the junction box. Shown is version 01 - 03.



4. **Adjusted Net Screen**

This shows the payload weight seen by each load cell, using a diagram to show where each load cell is positioned on the vehicle. If a dotted line (- - - -) is shown against a load cell this could indicate a faulty cell or faulty or broken cable. This could also be a faulty Suzi connector, if used.



5. **Raw Net Screen**

This shows the total weight seen by each load cell, not taking into account zero. If a dotted line (- - - -), as above, is shown against a load cell this could indicate a faulty cell or faulty or broken cable. This could also be a faulty Suzi connector, if used.



6. **Signal (Millivolts) Screen**

This is the millivolt representation of the A / D and shows the millivolt output from the strain gauge bridge, for each load cell. If a zero figure is shown against a load cell this could indicate a faulty cell or faulty or broken cable. This could also be a faulty Suzi connector, if used.

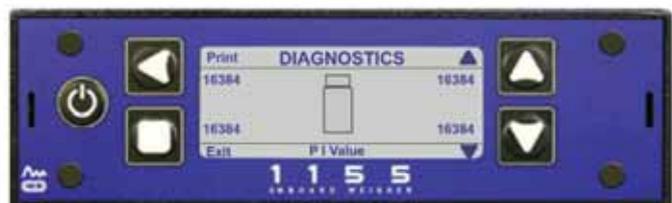
This screen is intended to be mainly used by a PM engineer, or when passing on information to a PM engineer.



7. **P.I. Value Screen**

This shows the P.I. (after calibration) value for each load cell. Ideally this should be 16384 for each cell. If one of the readings is very different from the others this would indicate a faulty cell. This could also be a faulty Suzi connector, if used.

This screen is intended to be mainly used by a PM Onboard engineer, or when passing on information to a PM Onboard engineer.



8. **P.I. Percentage Screen**

This shows the P.I. percentage for each load cell. Acceptable values are from approximately 80% to 120%. If one of the readings is very different from the others this would indicate a faulty cell. If the system is set up as a 5th wheel and air then the front and rear may differ but must match left and right.



9. **Serial Number Screen**

This shows the current serial number of each load cell. Every load cell is given a unique serial number when the initial factory calibration is carried out. These numbers will be updated automatically if a load cell is changed. If no serial number is shown against a load cell this is an indication that the cell is faulty or a cable is faulty or broken. This could also be a faulty Suzi connector, if used.



10. **Software Version Screen**

This shows the current software version of each load cell. Every load cell is given the current software version number when the initial factory calibration is carried out. The version number will be updated automatically if a load cell is changed for one with a different version. If no version number is shown against a load cell this could indicate a faulty cell or faulty or broken cable. This could also be a faulty Suzi connector, if used.



11. **Inclinometer**

This screen shows the degree of Pitch (front to back movement of the vehicle) and Roll (side to side movement of the vehicle). The inclinometer is set on level ground or a weighbridge, if a reading is seen that is obviously wrong (e.g. 15 degrees when the vehicle is on level ground) then re-zero the inclinometer.





## Using the Display with Analogue Load Cells

Using analogue cells with the PM Onboard 1155 display alters several of the screens and the way that they operate.

### Changing To Analogue Cells

1. In the Time / Date screen use the  button to open the main menu.
2. Use the  button to select the Setup option.
3. Use the  button to go to the Vehicle Config option.
4. Open the Vehicle Config option with the  button.
5. Press the  button to select the Load Cells option.
6. Press the  button to select the Analogue option.

The screen options available will change to those shown here:



The first option - Load Cells - will be highlighted.

7. Use the  button to cycle through the options until 'Analogue' appears. This will let you use the display with analogue load cells instead of CAN load cells.

The rest of the screen options will disappear and a new "Tare Weight (Analogue)" option will appear.

8. Use the  button to scroll to the Tare Weight option.

The Tare Weight of the vehicle using analogue cells is set here, using the standard parameter screen to alter the values.

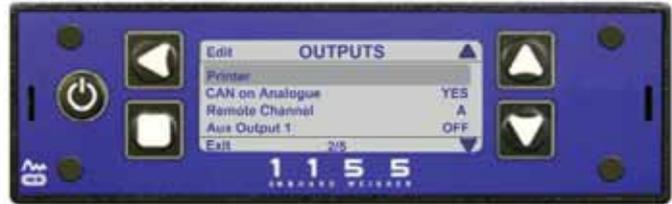
After setting the Tare Weight press the  button twice to return to the Settings screen.

**Other screens changed when using the Analogue option.**

The options that appear on some other screens are changed when Analogue Load Cells is selected are listed here:

**1. Outputs**

The outputs screen will appear as here:



There is a new option on this screen, 'CAN on Analogue', this lets you use CAN devices with analogue load cells, e.g. 511 remote, packer plate or 6 point alarm.

This option can be toggled ON or OFF using the  button.

**2. Alarms**

In the Alarms screen the 'Body Up' option is no longer available.

**3. Calibrate**

In the Calibrate screen the 'Zero Inclinator' option is no longer available.

**4. Vehicle Config**

In this screen the only options are: Load Cells (Analogue) and Tare Weight (Analogue).

**5. Diagnostics**

Only the first 'System' screen will be available.

## Options Available in the Display

### 1. Display

When opened this option gives access to three sub-options:

- 1.1 Contrast
- 1.2 Power-On screen
- 1.3 Key Bleep

### 2. Setup

When opened this option gives access to eight sub-options:

- 2.1. Alarms
- 2.2. Calibrate
- 2.3. Vehicle Configuration
- 2.4. Settings
- 2.5. Outputs
- 2.6. Set Time / Date
- 2.7. Pin Access
- 2.8. Reset

#### 2.1. Alarms

The options listed under this heading are:

- 2.1.1 Mode - Manual or Auto are available
- 2.1.2 Net - this has a value next to it showing the Net weight at which the alarm will sound.
- 2.1.3 Gross - this has a value next to it showing the Gross weight at which the alarm will sound.
- 2.1.4 Body Up - Set to On or Off. Symbol shown on screen if On is selected. **CAN only**
- 2.1.5 Alarm Filter - 1 to 10 seconds.

#### 2.2. Calibrate

This option has three sub-options:

- 2.2.1 Zero - this is used to zero the display
- 2.2.2 Span - this is used to span the display
- 2.2.3 Zero Inclinometer - this is used to zero the junction box inclinometer. **CAN only.**

#### 2.3. Vehicle Configuration

This option has four sub-options:

- 2.3.1 Load Cells - this sets the display to the type of load cells fitted to the vehicle.  
You can select from Auto, CAN and Analogue. If analogue is selected the screen will alter to show the tare weight for the analogue cells, this value can be altered. Other screens in the display are also altered if Analogue is selected.
- 2.3.2 Weigh Mode - Select from four options: Standard, Axle, Twin/5 + Air and Drawbar. **CAN only.**
  - 2.3.2.1. Standard - used for the majority of applications where just the overall weight of the load is required.
  - 2.3.2.2. Axle - used where the weight on each axle of the vehicle is required, options are 2, 3 or 4 axles. Screen options will alter to add number of axles, cell positions, axle positions, axle tares and spans.
  - 2.3.2.3. Twin/5+Air - Used for 5th wheel and air system applications. Separates the weight into front and rear values. Functionally the same as the Drawbar option.
  - 2.3.2.4. Drawbar - Used for vehicles with a drawbar coupled trailer. Functionally the same as Twin/5+Air.
- 2.3.3 Tare Weight - This has a value that can be altered. The vehicle tare weight is found on the identification plate. This is the weight for the whole vehicle and is divided up for some options.
- 2.3.4 Cell P.I. Values - selecting this opens a screen showing the PI value for each load cell on the system. The default is 16384. These can be altered. **CAN only.**

## 2.4. Settings

This option has six sub-options:

2.4.1 Count By - this sets the amounts by which the weights are updated. This can be set to 1kg, 10kg, 20kg, 50kg, 100kg, 200kg.

2.4.2 Filter - this can be set to low medium or high. This counts more values in a given period when set on high and less when set on low.

2.4.3 Zero Limit - the vehicle driver can zero off up to this limit. This setting has a value that can be changed as with the standard parameter screens.

2.4.4 Front Panel Zero - this can be set to On, Off or Single.

If set to On this option lets the user reset the Net Weight to zero when required, if set to Single the user can reset the Net Weight to zero once and if set to Off the user cannot reset the Net Weight. Zero appears on the lower left corner of the main Net Weight screen.

2.4.5 Load / Deliver - can be set to On or Off. Load / deliver is used when parts of a full vehicle load are off loaded at different sites. A ticket with the weight left can be printed. If this is set to ON, this screen appears with the Net and Gross screens when the display is turned on.

2.4.6 Language - currently set to English. Others will be available in due course.

## 2.5. Outputs

This option has four main options:

### 2.5.1. Serial Output

This can be either **Printer** or **Scoreboard**:

Select the **Printer** option and the screen changes to show the four sub options associated with the printer functions:

Baud Rate - you can select from 1200, 2400, 9600, 19200, and 57600.

Handshake - this can be On or Off

Print Header - this can be On or Off

Change Print Header - selecting this opens another screen with four lines of sixteen characters that can be changed to show what prints on a weight ticket

Select the **Scoreboard** option and the screen changes to show the five sub options associated with the scoreboard functions:

Baud Rate - you can select from 1200, 2400, 9600, 19200, and 57600.

Handshake - this can be On or Off

Frequency - you can select from 5s, 10s, 0.5s, 1s or 2s.

Acknowledgement Required - Yes or No

Transmit Retries - 1 - 5

Additional documentation is available from PM Onboard about this output.

### 2.5.2. Barrier Control

**This is CAN only.** If analogue cells are used this changes to CAN on analogue.

Barrier control is only intended for Refuse vehicles and is used to balance the load between the axle groups.

Select this option and the screen changes to show the options available:

Barrier - this can be On or Off.

Maximum Incline - this is 3 Degrees maximum, but the figure can be changed.

Front Axles Underload - this is used to move the load weight forward, if the load on the front axles is less than 20% of the GVW, and balance the vehicle. This can be Off or On.

Axle (1 - 4) Overload - this can be altered from the default 9500kg.

Filter Weight - this can be altered from the default 100kg.

Filter Time - this can be altered from the default 5 seconds.

2.5.3. Remote Channel - this function determines the channel to use with the PM Onboard 511 remote handset. Channels A - O are available.

2.5.4. Auxillary Output 1 - you can select Off, Alarm or Alarm Inv(ert). Used to send a signal to augural equipment.

2.5.5. Auxillary Output 2 - you can select Off, Barrier or Inv(ert) barrier. Used to send a signal to auxillary equipment, i.e. packer plates etc.

## 2.6. Set Time and Date

This option has two lines of text, the top one is the time and date figures, all these are changeable. The bottom line shows Daylight Savings, this can be On or Off.

**Note:** Daylight Savings ONLY apply to the U.K.

## 2.7. Pin Access

This option has four sub-options:

2.7.1 Set Manager PIN - the on screen default is four zeros, these can be set to any four digit number. This gives access to all areas of the display.

2.7.2 Set User PIN - this is the same as setting the manager pin. This gives access to the standard User areas and the alarms menu

2.7.3 PIN Control - this is the access to the system and can be Of, Manager or User / Manager.

## 2.8. Reset

This has two options.

2.8.1 Re - Learn - This is used when the display is used with different external equipment, e.g. a body inclinometer has been removed. The external equipment is scanned and the display internal parameters amended.

2.8.2. Reset Defaults - This applies the original default settings to the display, any previously added options or screens will have to be re-applied if needed.

2.9 Diagnostic	CAN Load Cells	Analogue Load Cells
2.9.1.	System	System
2.9.2.	Inclinometer	
2.9.3.	Software Version	
2.9.4.	Software Number	
2.9.5.	P.I Percent	
2.9.6.	P.I. Value	
2.9.7.	Signal	
2.9.8.	Raw Net	
2.9.9.	Adjusted Net	
2.9.10.	External Inputs	
2.9.11.	Junction Box Software Version	
2.9.12.	Junction Boc Configuration	



## Display Default Settings

There are accessible on the Setup menu - Reset option, there are two options available on that screen:

1. Re - Learn
2. Reset Defaults

### Reset Defaults

These settings can be accessed from:  
Menu - Setup - Reset Defaults and are the standard settings loaded on a display when new.



### Main Screens

Net Weight  
Gross Weight  
Time / Date

### Display

Contrast: 3  
Power On screen: Net weight  
Key bleep: OFF

### Setup - Alarms

Mode: manual  
Net weight: 50 000kg  
Gross weight: 50 000kg  
Body up threshold: -500kg, alarm OFF

### Setup - Calibrate

Span - 2500kg

### Setup - Vehicle Config

Load cells: CAN  
Weigh mode: standard  
Tare weight: 5000kg  
Cell P.I. values: 16384

### Setup - Settings

Count by: 20kg  
Filter: medium  
Zero Limit: 500kg  
Front panel zero: ON  
Load deliver: OFF  
Language: English

### Re - Learn

This option is used when the display is operated with different external equipment to that originally used, e.g. if an external inclinometer has been used in the past and the display is now used on a system without one. The option forces the display to check all external equipment and update its settings.

### Setup - Outputs

Serial Output

### Printer

Baud rate: 9600  
Handshaking: OFF  
Print header: ON

### Scoreboard

Baud rate: 9600  
Handshaking: OFF  
Frequency: 5s  
Acknowledge: NO

### Barrier Control

Barrier: OFF  
Max Incline: 3°  
Front Axle Underload: OFF  
Axle Overloads: 9500kg  
Filter Weight: 100kg  
Filter Time: 5s

### Remote channel: A

Auxillary output 1: OFF  
Auxillary output 2: OFF

### Setup - Set Time / Date

Daylight saving: ON

### Setup - Pin Access

Pin control: OFF  
User alarms: NO

### Setup - Password

0000 (four zeros)



## 511 and 1155

When using a 511 remote with the 1155 display this is plugged into the expansion connector at the rear of the display.

The 1155 has different communication channels (A - O) available to link with the 511.

Remove the 1155 from the mounting and plug in the sender unit to the expansion port on the back of the display.

Locate the sender unit on the dashboard or near the roof so that the aerial has a good range.  
Replace the 1155 display.

The 511 remote has the same A - O channels available. You will need to select one of these that does not interfere with other equipment.

Set the 1155 to the same channel:

From the Setup menu go to Outputs.

Scroll down to Remote Channel with the DOWN arrow button.

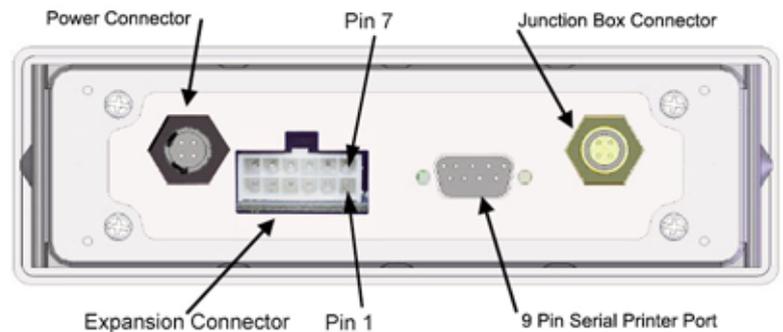
The default channel is 'A'

Press the EDIT button to select any other channel.

Press the EXIT button three times to go back to the main screens.

Read the 511 FreeWeigh information for setting up and using the remote:

PM Onboard 511 FreeWeigh - 511/info/130106

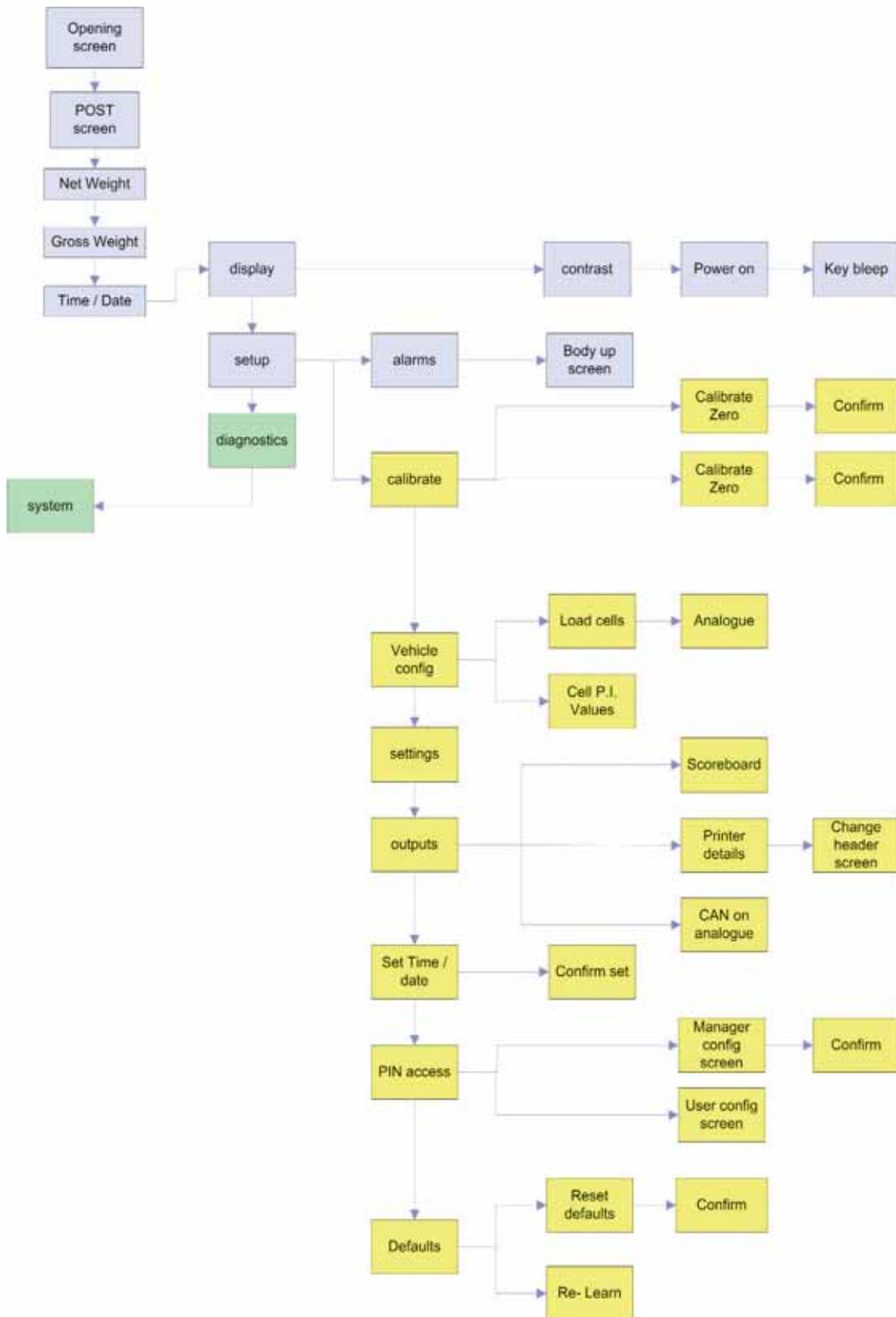




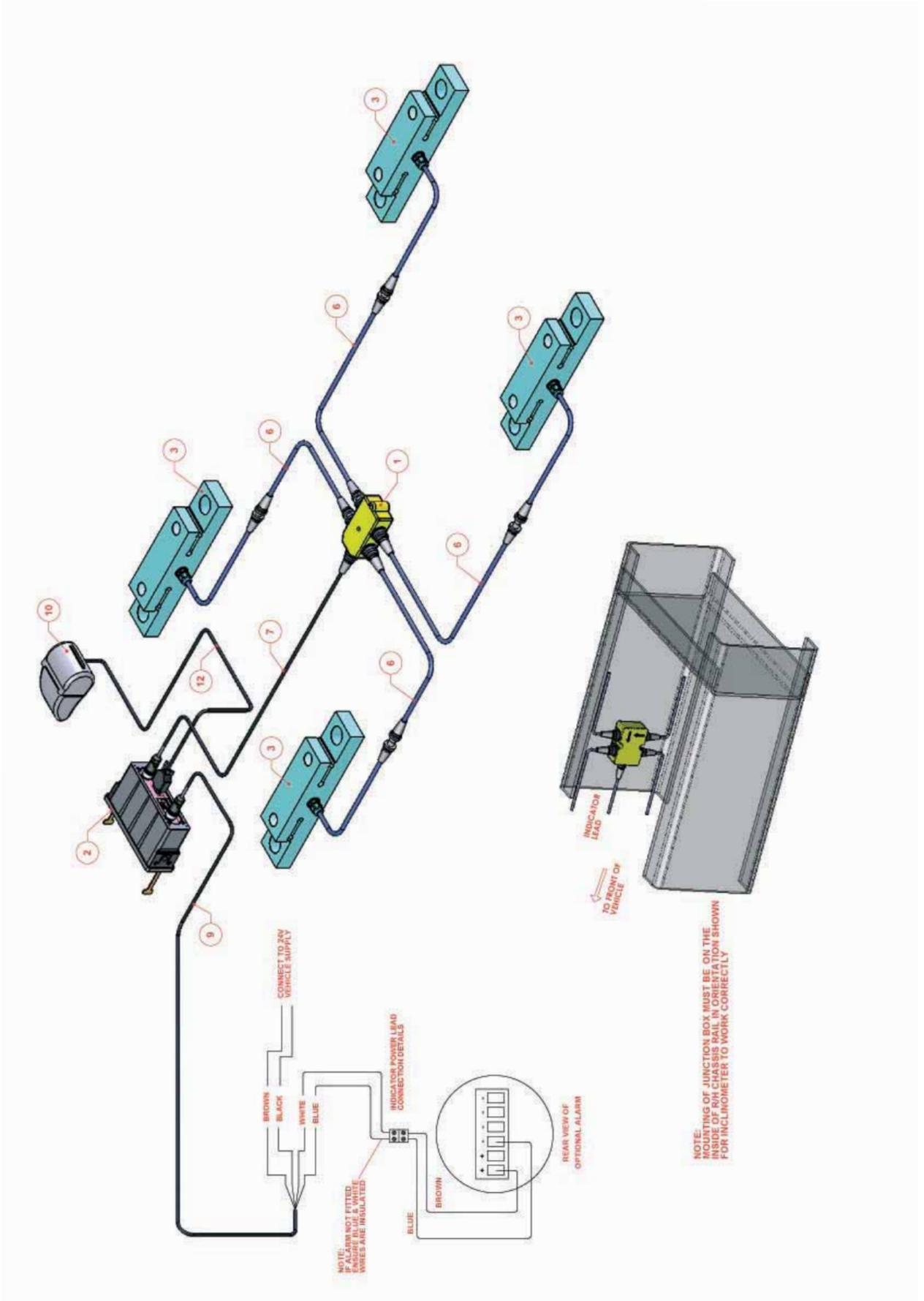
# Screen Layouts & Drawings



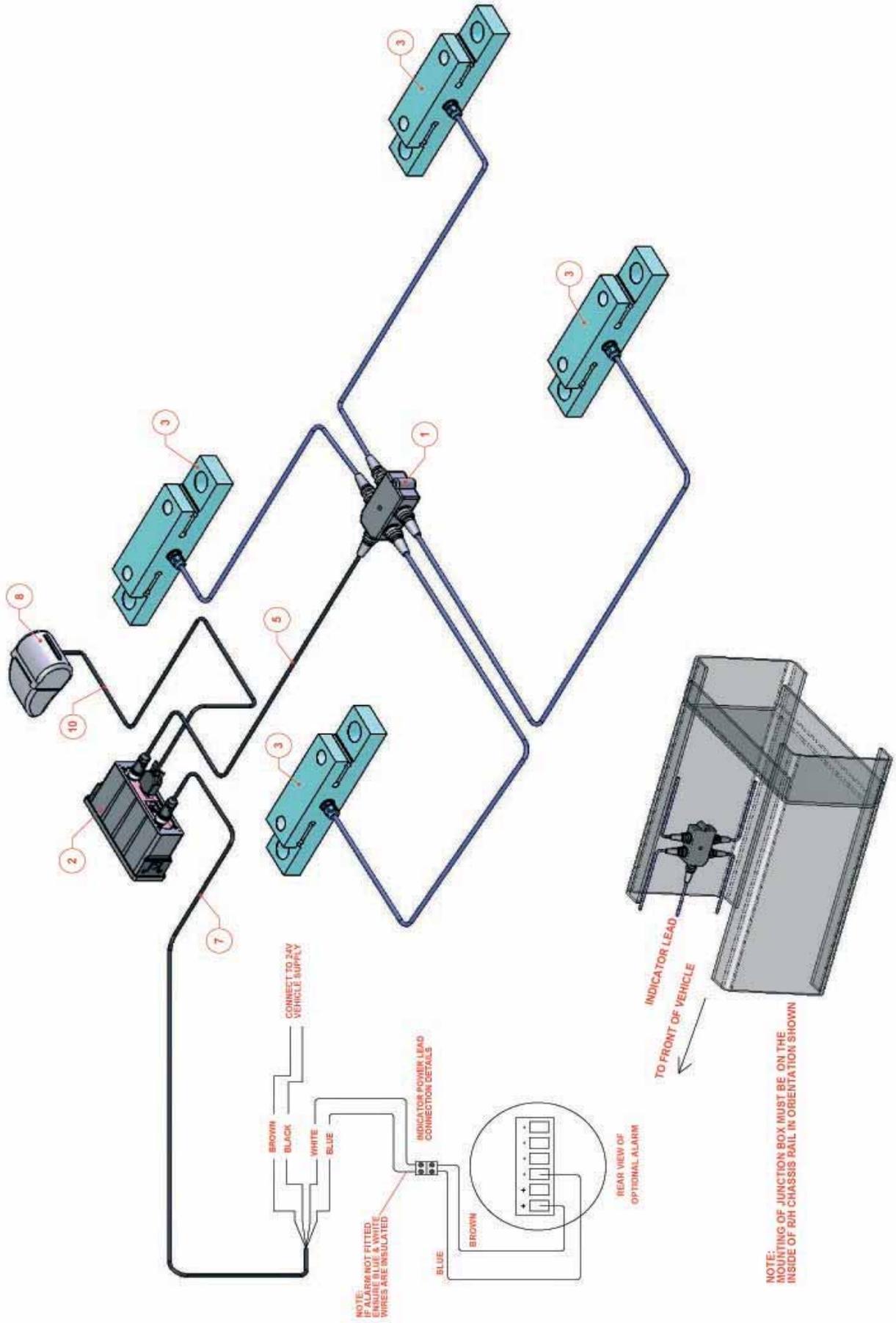
PM 1155  
Software Version  
01.08.xx.xx  
August 2009  
CAN Cells Only



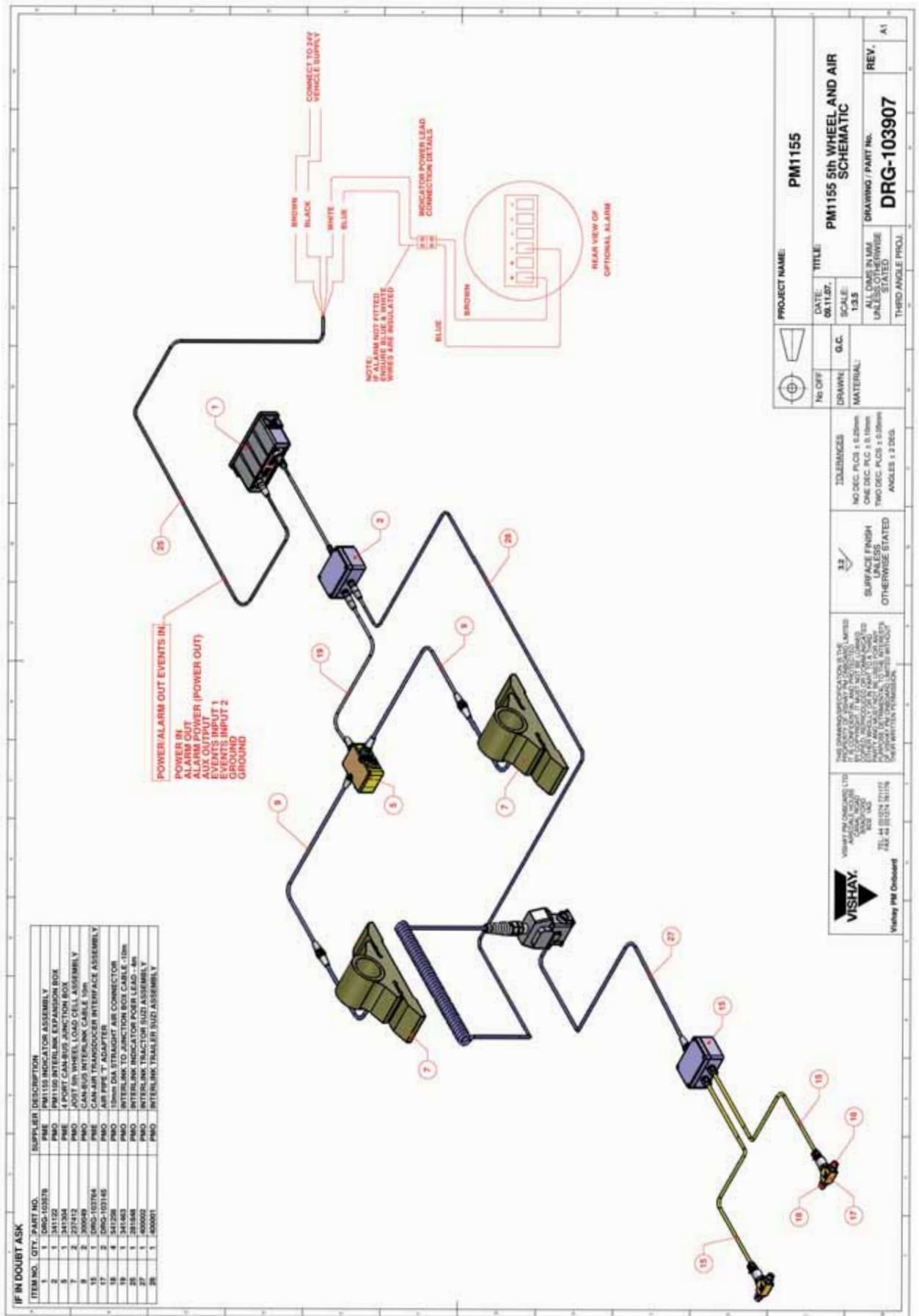
PM 1155  
 Software Version  
 01.08.xx.xx  
 August 2009  
 ANALOGUE Cells Only



CAN System Typical Layout



Analogue System Typical Layout



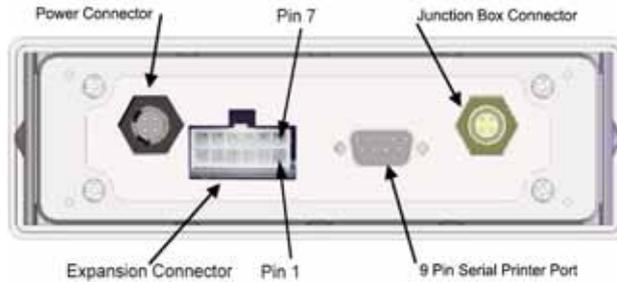
5th Wheel and Air System Typical Layout



## Connecting the PM Onboard 1155 Display

### Rear Connections

Various connectors are used on the back of the PM Onboard1155 display. These are shown below:

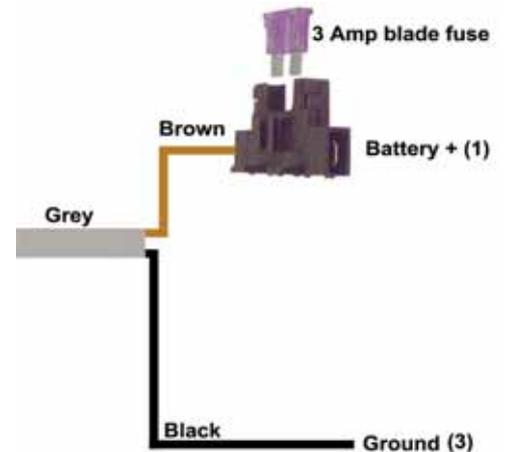


### Connecting The Display To A Power Supply

The power is supplied to the display through a 3 Amp blade type fuse from the battery live (24Volt) feed.

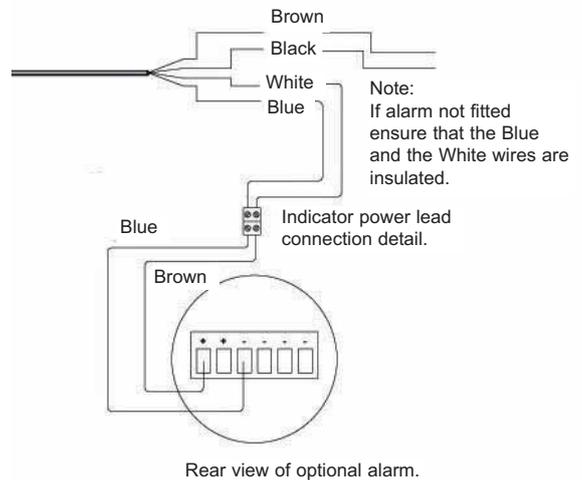
**NOTE:**

The ground wire (Black) is to be connected as per the vehicle manufacturers current recommendations.



### Connecting Optional Sounder Alarm

An optional external sounder alarm can be connected to the display. This uses the Blue and White wires in the power supply cable. The Blue wire is connected to the Blue wire on the sounder alarm. The White wire is connected to the Brown wire on the sounder alarm.



## Fitting and Removing the PM Onboard 1155 Display

### Fitting the Display

There are three methods of mounting the display:

1. DIN slot mounted.
2. Bracket mounted.
3. Trailer box mounted.

#### 1. DIN Slot Mounted.

With this method the display is mounted in a standard single DIN (Radio) slot in the dashboard. All the connections are brought to the rear of the slot and connected to the display. The display is then pushed firmly into the slot, a click will be felt as the built - in security bracket engages.

#### To Remove

See page 76.

#### IMPORTANT NOTE:

DIN / ISO 7736 is the european radio mounting standard and is 180mm x 50mm.

Some eastern asian vehicles (Hyno, etc) have non-standard radio slots that do not conform to DIN / ISO 7736 and are approximately 177mm x 47mm.

These will need modifying to fit the display, approximately 1.5 mm is required to be removed from each side.

**This MUST only be done with the permission of the customer.**

If done carefully the modified edges are hidden when the display is installed.

Alternatively the dash mounting bracket method can be used if required.



**DIN / ISO Radio Slot**

**2. Bracket Mounted.**

This method uses a 'U' shaped mounting bracket to hold the display to the dashboard / mounting. Smaller brackets are secured to either side of the display. These two brackets are secured to the mounting bracket with a knob at either side, this allows the display to be rotated to get the best viewing angle.

The base of the 'U' shaped bracket is secured to the dashboard or other supporting surface.

**To Remove**

Disconnect the connections, undo the two knobs holding the bracket to the display and lift the display and small brackets clear.

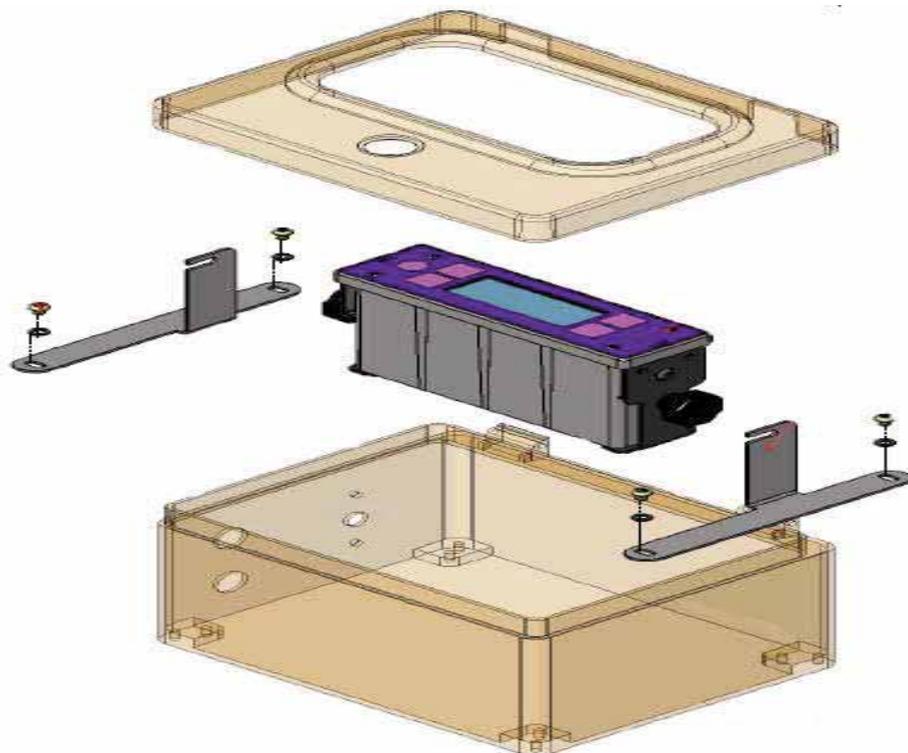


### 3. Trailer Box Mounted.

This method uses a 'U' shaped bracket (not the same bracket as method 2) to hold the display in a standard PM Onboard trailer box. Smaller brackets are secured to either side of the display. These two brackets are secured to the base bracket with a knob at either side, this allows the display to be rotated to get the best viewing angle. The 'U' shaped bracket is secured to the base of the trailer box.

#### To Remove

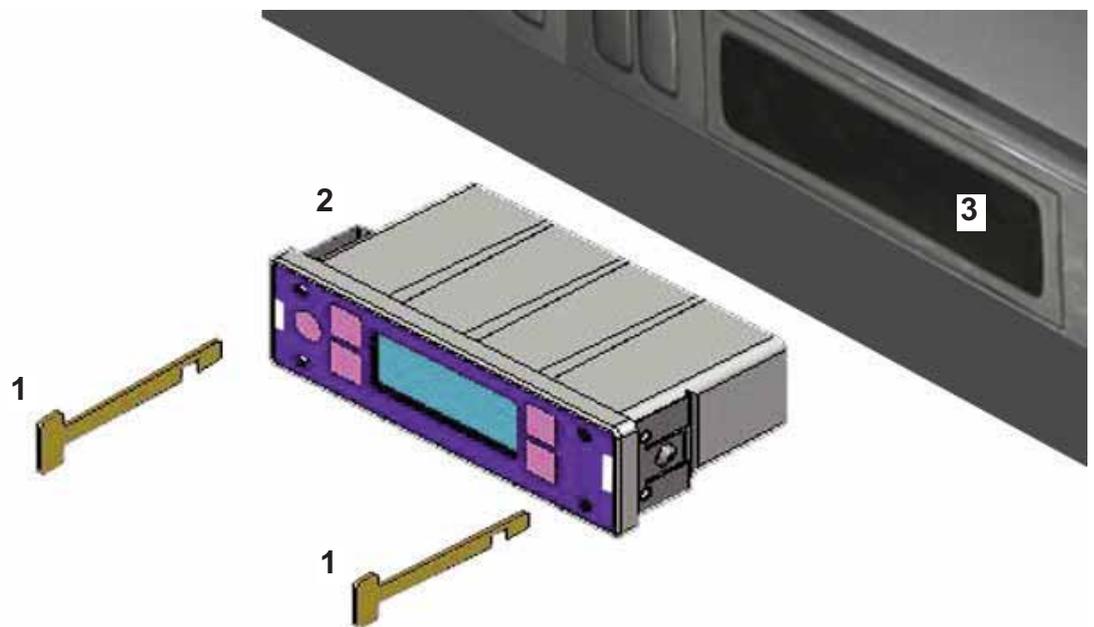
Open the box, disconnect the connections, undo the two knobs holding the 'U' bracket to the display and lift the display and small brackets clear.



**To remove the PM Onboard 1155 from a dashboard 'Radio' slot :**

1. Insert the two removal keys (slots downwards) into the two slots on the PM Onboard 1155.
2. Press the removal tools downwards to lock into the slots.
3. Pull the PM Onboard 1155 and retaining bracket free from the dash mounting.

Removal is the reverse of the above.



1. Removal Tool
2. PM Onboard 1155 Display
3. Dashboard and 'Radio' Slot



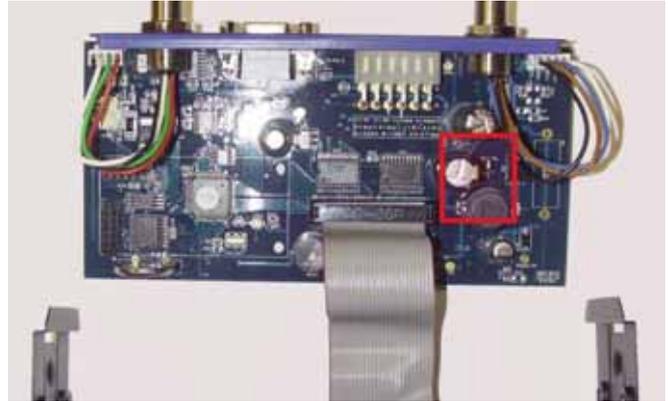
Removal Tool Item 1

## Power ON Jumper Resetting

### Power On Jumper

When the display is required to go ON with the vehicle ignition a jumper has to be connected across two internal pins.

This is 'Jumper 1' and is located to the right hand end of the pcb - see photo 1, red box.



A close up view - see photo 2 - shows the jumper located only on one of the pins, for storage.



To reset the display to go ON with the ignition, disconnect and remove the display from the vehicle, open the case, remove the jumper and place over BOTH pins - see photograph 3.



Replace all items and replace and connect the display. Switch on the ignition, the display should now also come on.

### NOTE:

This method is often used for trailer mounted displays etc.



## Junction Box Combinations

The PM Onboard 1155 display can be used with various numbers of load cells fitted to the vehicles:

- 4 Cell system
- 6 Cell system
- 8 Cell system

These various numbers of load cells can be used with different junction boxes or combinations of junction boxes, depending on the end user requirements.

### **4 Cell System:**

- 1 off - 4 way junction box
- 1 Off - 6 way junction box and built in inclinometer
- 2 off - 4 way junction boxes operating as two inputs (modes 1 and 2)
- 2 off air cell junction boxes and (optional) inclinometer operating as two inputs (modes 1 and 2)

### **6 Cell System**

- 1 off 6 way junction box
- 1 off 4 way junction box (mode 0) + 1 off air cell junction box (mode 3)
- 3 off air cell junction boxes and (optional) inclinometer (modes 1,2,3)
- 3 off 4 way junction boxes operating as two inputs (modes 1,2,3)

### **8 Cell System**

- 1 off eight way junction box
- 2 off 4 way junction boxes (modes 1 and 5)
- 4 off 4 way junction boxes operating as two inputs (modes 1,2,3,4)
- 4 off air cell junction boxes and (optional) inclinometers (modes 1,2,3,4)
- 1 off 4 way front junction box (mode 0) and 2 off rear air junction boxes (modes 3 and 4)
- 2 off front air junction boxes (modes 1 and 2) and 1 off rear 4 way junction box (mode 5)

When using only a single standard junction box this can be any software version.

When combining junction boxes they must have the latest version of the software.

When using more than one junction box and an inclinometer then the inclinometer must be connected to the rear junction box.

**Legend**

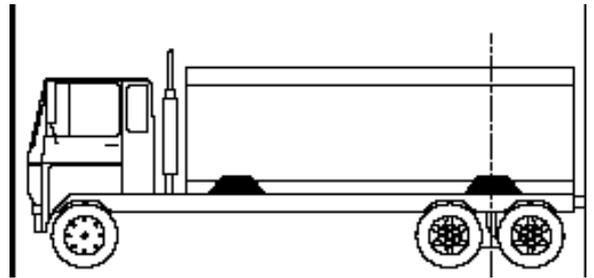
-  Load cell
-  Air pressure transducer

Mode	Meaning
Mode 0	Standard default cells - 1,2,3,4
Mode 1	Set to install cells 1 and 2 only
Mode 2	Set to install cells 3 and 4 only
Mode 3	Set to install cells 5 and 6 only
Mode 4	Set to install cells 7 and 8 only
Mode 5	Set to install cells 5,6,7 and 8

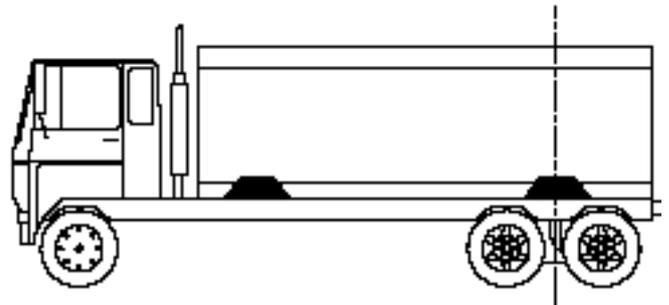
Drg Ref		Junction Box				Inclinometer	
		4 way	6 way	8 way	Air	J/box	Body
<b>4 load cell systems</b>							
4a	4 load cell system	mode 0				yes	no
4b	4 load cell system +inclinometer		mode 0			yes	Yes
4c	5th wheel +air	mode 1			mode 2	yes	optional
4d	air + air				mode 1 & 2	no	optional
<b>6 load cell systems</b>							
6a	6 load cell system		mode 0			yes	no
6b	air + air + air				modes 1, 2 & 3	no	optional
6c	2 cells + 2 cells + 2 cells	modes 1.2 & 3				yes	no
<b>8 load cell systems</b>							
8a	8 load cell system			mode 0		yes	no
8b	4 load cells + 4 load cells	modes 0, 5				yes	no
8c	air + air + air + air				modes 1,2,3,4	no	optional
8d	2 cells + air + air + air	mode 1			modes 2,3,4	no	optional
8e	4 cells + air + air	mode 0			modes 3,4	no	optional
8f	air + air + 4 cells	mode 5			modes 1,2	yes	optional

**4 Cell Systems:**

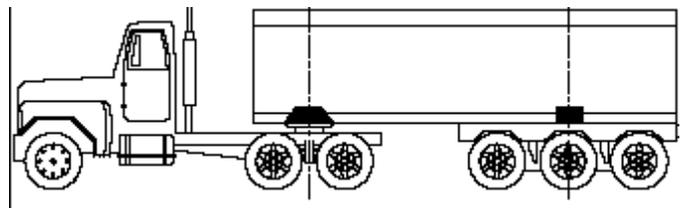
**4a** - Standard 4 load cell system. Includes 1 off 4 way junction box.



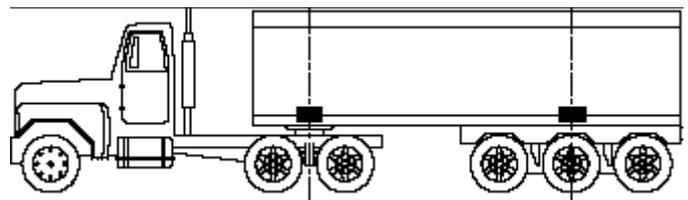
**4b** - 4 load cell system. 1 off - 6 way junction box and inclinometer.



**4c** - 5th wheel and air. 1 off 4 way junction box and 1 off air pressure transducer.



**4d** - Air + air. 2 off air pressure transducers.

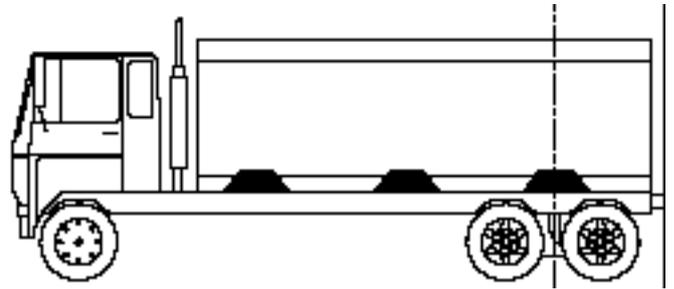


**Legend**

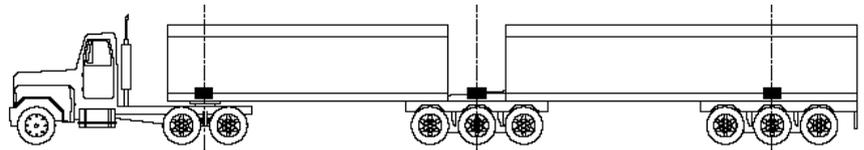
-  Load cell
-  Air pressure transducer

**6 Cell Systems**

**6a** - Standard 6 load cell system. 1 off 6 way junction box.



**6b** - Air + air + air. 3 off air pressure transducers.



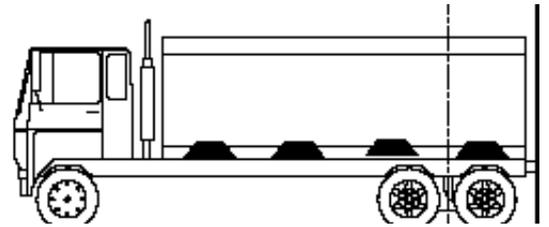
**6c** - 6 load cell system. 3 off 4 way junction boxes.

**Legend**

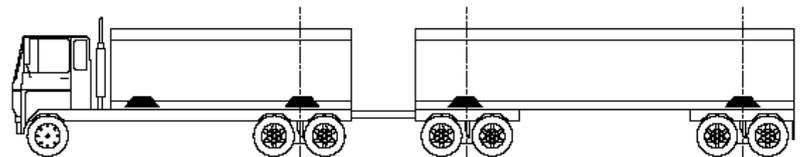
-  Load cell
-  Air pressure transducer

**8 Cell Systems**

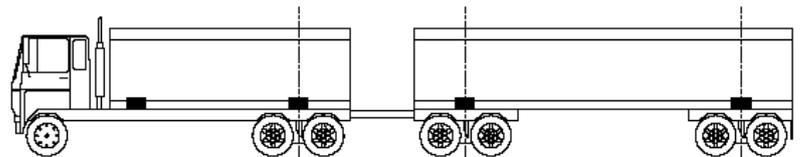
**8a** - Standard 8 load cell system. 1 off 8 way junction box.



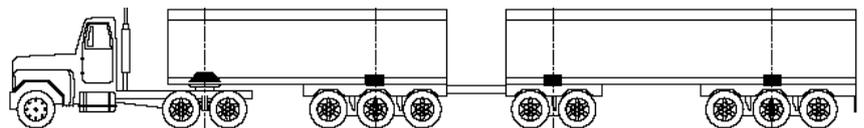
**8b** - 8 load cell system. 2 Off 4 way junction boxes.



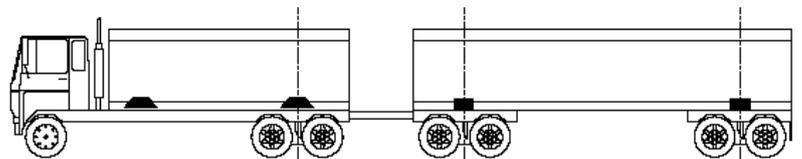
**8c** - Air + air + air. 4 off air pressure transducers. See also Road Train option.



**8d** - Load cells + air + air + air. 1 off 4 way junction box + 3 off air pressure transducers.



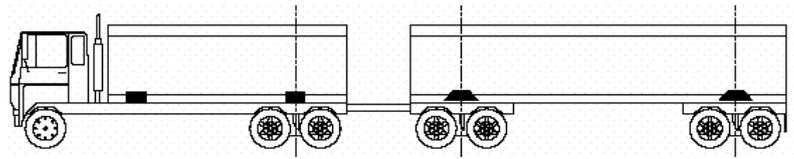
**8e** - 4 load cells + air + air. 1 off 4 way junction box + 2 off air pressure transducers.



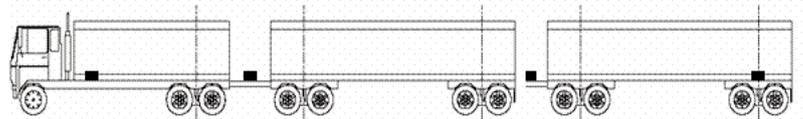
**Legend**

-  Load cell
-  Air pressure transducer

8 f - Air + air + 4 load cells. 2 off air pressure transducers + 1 off 4 way junction box.



Road Train Option - Air + air + air + air. 4 off air pressure transducers.



**Legend**

-  Load cell
-  Air pressure transducer

## Related Information Available

This manual assumes that the display and all other associated equipment has been fitted to the vehicle and calibrated. Here are details of separately available related PM Onboard documents.

- 1. PM Onboard Load Cell Installation Guidelines.**  
This covers the modifications to the vehicle and the fitting of the load cells, junction box and wiring.
- 2. PM Onboard 1155 User & Technical Manual (this document)**  
This covers the installation on a vehicle of the PM Onboard 1155 display and associated equipment such as load cells and printers etc, the initial setting up and calibration of this equipment.
- 3. PM Onboard 1155 User Manual**  
This covers all functions and settings available to a typical user.
- 4. PM Onboard 1155 Quickstart Guide**  
This covers the day to day functions available for use by the vehicle driver.  
This document is included with the operating manual and is also available separately on request.
- 5. PM Onboard 1155 Quicksetup Guide**  
This covers the basic controls and how to Tare, Span etc.  
This document is included with the operating manual and is also available separately on request.
- 6. PM Onboard 1155 Twin / 5 + Air Guide**  
This covers the Twin / 5 + Air process, both setting up and using.
- 7. PM Onboard Printerguide**  
These printer guides available for the range of printers used with PM Onboard equipment.  
These cover basic operating functions and maintenance requirements.  
Please quote the printer model if you require one.
- 8. PM Onboard 511 FreeWeigh**  
This covers adding a 511 remote to a 1155 system and integrating both.



