# **SETUP AND CALIBRATION MANUAL**

# Trimble LOADRITE Payload Management for Earthworks

Software 116242 Version 2.0.0 Revision D March 2020 ENGLISH





# Trimble LOADRITE Payload Management for Earthworks Setup and Calibration Manual

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# 1.0 Introduction

Welcome to the LOADRITE Payload Management for Earthworks Setup and Calibration Manual. This manual presents an overview of the set-up and calibration procedures. It may be read through, or used as a reference manual.

## Formatting

The following formatting in this manual identifies specific types of information:

Convention	Type of Information
Bold	<ul> <li>Indicates a button on the Trimble Earthworks display, or</li> <li>Indicates an area displayed on-screen, including buttons, headings, field names and options.</li> </ul>
Italics	<ul> <li>Indicates the name of a screen or window, or</li> <li>Indicates an operation mode that the software can be set to.</li> </ul>
Monospace	The exact error message displayed on-screen.

### **Action Terms**

The following terms are used throughout this manual to describe actions:

Term	Description
Тар	Press and release a button, menu option or other item on the touchscreen.

# 2.0 Setup



#### Access Code: 6992

The following menus are available within Setup:

- Weighing
- Machine
- Operation
- Printer
- Data
- Calibration
- Diagnostics
- Communication

The following sections describe functionality on each of these menus.

# 3.0 Weighing

The **Weighing** menu is used to configure weighing-related functionality for the LOADRITE *Payload Management for Earthworks* system.

# 3.1 Unit of Measure

The **Unit of Measurement** function changes the weight unit used when weighing. The unit will be displayed on-screen as per the **Displayed as** column, in the below table.

## Available options

Option	Description	Displayed as	Default
kg	Kilogram	kg	
tonne	Tonne (metric)	t	$\checkmark$
lb	Pound	lb	
ton	Ton (imperial)	t	

# 3.2 Number Format

The **Number Format** function adjusts how weight values are displayed on the LOADRITE Trimble Earthworks display.

Option	Description	Default
0	123	
0.0	123.0	
0.00	123.00	
0.000	123.000	✓

# 3.3 Increment Size

The **Increment Size** value is the minimum difference that will be displayed between two different weights; i.e. it is the step size that the measured weight value is rounded off to.

### Formula

The LOADRITE software uses the following formula to determine which **Increment Size** options are available:

INCREMENT SIZE = FULL SCALE / GRADS

- The maximum value for GRADS = 2000
- The minimum value for GRADS = 100

### Available options

The available options depend on the Unit of Measure, Number Format and Full Scale values.

**TIP** – It is normally better to select a value for **Increment Size** that is larger than the minimum value allowed. This will help to mask any small instability when repeatedly weighing the same payload.

# 4.0 Machine

The Machine menu allows you to configure settings related to the physical specifications of the excavator.

# 4.1 Rod Size

The rod size is the diameter of the rod (or spear) of the hydraulic lifting cylinders. It is very important that this value is entered correctly. It is recommended that manufacturer data be used, or alternatively make measurements with calipers.

**TIP –** For a list of settings for standard excavators, refer to the latest *LOADRITE Rod* and Bore Chart document.

### Available options

- Valid values are from 0 to 9999mm.
- The default setting is 85mm.

# 4.2 Bore Size

The bore size is the diameter of the bore of the cylinder of the hydraulic lifting rams. It is very important that this value is entered correctly. It is recommended that manufacturer data be used.

**TIP** – For a list of settings for standard excavators, refer to the latest *LOADRITE Rod* and Bore Chart document.

## Available options

- Valid values are from 0 to 9999mm.
- The default setting is 120mm.

# 4.3 Full Scale

The **Full Scale** value is the maximum payload that the excavator is normally capable of lifting. The value will vary from machine-to-machine and will also depend on the type of attachment fitted.

- Valid values are from 0 to 999999.
- The default value depends on the Unit of Measure and Number Format values.

# 4.4 Cylinders

The Cylinders value is the number of lift cylinders that the excavator has.

## Available options

Option	Description	Default
1	One lift cylinder	
2	Two lift cylinders	✓
3	Three lift cylinders	
4	Four lift cylinders	

# 4.5 Weighing Tolerance

The *Weighing Tolerance* functionality allows you to set the amount of variation that is allowed for during each weigh.

### Available options

- Valid values are from 0 to 50%.
- The default value is **15**%.

# 4.6 Filter

The software has several filters to compensate for the bounce of the load as it is being lifted. The bounce may be caused by the acceleration of the load as the lift valves are opened, or by the motion of the excavator as the boom is lifted.

The greater the filter, the higher the filtering, and the more time is needed to calculate a weight. For example, changing from a **Minimum** filter to **Maximum** filter will cause a longer time for a weight to be produced.

**TIP** – The filter can only remove some of the bounce signals, so it is therefore important to realize that weighing must still be done carefully to achieve good results.

**IMPORTANT –** Over-filtering loses optimum dynamic performance.

Option	Description	Default
Minimum	This filter should be optimum for most applications.	
Medium	This increases the level of filtering. Select this option if inconsistent weights and Lift Not Smooth messages appear after Standard has been used.	

Option	Description	Default
Maximum	This further increases the level of filtering. Select this option if inconsistent weights and <b>Lift Not</b> <b>Smooth</b> messages continue to appear after <b>Medium</b> has been used.	~

# 5.0 Operation

The Operation menu allows you to configure settings related to the operation of the LOADRITE Payload Management for Earthworks.

# 5.1 Auto-Add

Auto-Add allows the LOADRITE software to automatically add the lifted weight to the total without the need

to press **1**. The *Enable Auto-Add* function indicates whether the *Auto-Add* functionality is enabled or disabled.

## Available options

Option	Description	Default
M	The <i>Auto-Add</i> functionality is enabled; lifted weights will be automatically added to the total.	
	The Auto-Add functionality is disabled.	✓

# 5.2 Operator Toggle

#### This function is ignored if Auto-Add is set to Off.

The Operator Toggle function allows the operator to turn the Auto-Add functionality On or Off. If enabled,

🐨 will display on the *Total* screen to allow the operator to toggle Auto-Add functionality.

Option	Description	Default
	will display on the <i>Total</i> screen to allow the operator to toggle Auto-Add functionality.	$\checkmark$
	Auto-Add cannot be toggled by the operator.	

# 5.3 Auto-Add Time

#### This function is ignored if Auto-Add is set to Off.

The Auto-Add Time function determines how long the Auto-Add functionality must wait before activating.

If the same valid weight will not be auto-added again.

#### Available options

- Valid values are **0 8** seconds.
- The default value is 2 seconds.

# 5.4 Auto-Add Min Weight

#### This function is ignored if Auto-Add is set to Off.

The *Auto-Add Min Weight* function ensures that *Auto-Add* functionality can only add weights over a specific minimum weight.

- Valid values are 0 999999.
- The default value is 1500.

# 6.0 Printer

The Printer menu allows you to configure settings related to the attached printer.

# 6.1 Copies

The *Copies* function determines the number of copies of each ticket will be printed, for example, if the value is **3**, then each time a total is cleared, three copies of the ticket will be printed. The **Copies** value also applies when the operator reprints a ticket.

## Available options

- Valid values are **1 50**.
- The default value is 1.

# 6.2 Print Buckets

The *Print Buckets* function determines whether or not the weight of every bucketload will be printed on each ticket. The Total will always be printed, irrespective of the selected option.

### Available options

Option	Description	Default
$\square$	Bucketloads (Adds), and the Total will be printed on each ticket.	~
	The Total will be printed on each ticket. Bucketloads will not be printed.	

# 6.3 Header

The ticket header can hold up to five lines of text, to be printed at the top of every ticket.

- Each header line can contain up to 17 characters of text (depending on individual character width).
- Any header lines containing no text will be skipped.
- A line feed will follow the last populated header line.

Option	Description	Default
Header 1	Text to be printed on line 1 of the ticket header.	LOADRITE
Header 2	Text to be printed on line 2 of the ticket header.	
Header 3	Text to be printed on line 3 of the ticket header.	

Option	Description	Default
Header 4	Text to be printed on line 4 of the ticket header.	
Header 5	Text to be printed on line 5 of the ticket header.	

# 6.4 Footer

The ticket footer can hold up to five lines of text, to be printed at the bottom of every ticket.

- Each footer line can contain up to 17 characters of text (depending on individual character width).
- Any footer lines containing no text will be skipped.
- A line feed will follow the last populated footer line.

Option	Description	Default
Footer 1	Text to be printed on line 1 of the ticket footer.	
Footer 2	Text to be printed on line 2 of the ticket footer.	
Footer 3	Text to be printed on line 3 of the ticket footer.	
Footer 4	Text to be printed on line 4 of the ticket footer.	
Footer 5	Text to be printed on line 5 of the ticket footer.	

# 7.0 Data

The Data menu allows you to configure data list items and ticket numbering.

# 7.1 Ticket Prefix

The *Ticket Prefix* function determines the value that will be prefixed to the **Ticket Number** value when the ticket number is printed on the next ticket.

### Ticket number format

Ticket numbers are printed on tickets in the following format:

TN [Ticket Prefix] [Ticket Number]

where [Ticket Prefix] is the value determined by the *Ticket Prefix* function, and [Ticket Number] is the numeric value determined by the *Ticket Number* function.

#### Available options

• The default value is LR-.

# 7.2 Ticket Number

The *Ticket Number* function determines the *numeric portion* of the ticket number that is to be printed on the next ticket.

The **Ticket Number** value automatically-increments by 1 each time the total is cleared. After the **Ticket Number** value reaches **999999**, it will return to **0** and continue to increment. The **Ticket Number** value can be overwritten at any time with a new value that will be included in the next ticket number to be printed.

### Ticket number format

Ticket numbers are printed on tickets in the following format:

TN [Ticket Prefix] [Ticket Number]

where [Ticket Prefix] is the value determined by the *Ticket Prefix* function, and [Ticket Number] is the numeric value determined by the *Ticket Number* function.

- Valid values are 0 999999.
- The default value is 1.

# 7.3 Data List n

The LOADRITE *Payload Management for Earthworks* can have up to 9 data lists configured. The details for each data list item are listed on the *Data* menu below the **Ticket Prefix** and **Ticket Number** section.

The following features of each data list item can be configured:

- Name
- Add
- Enabled

# 7.3.1 Name

The data list Name function sets the name of the selected data list.

#### **Default settings**

Data List	Default	Default after initial synchronization with InsightHQ
DataList1	Product (cannot be changed)	Product
DataList2	Customer	Customer
DataList3	Truck	Truck
DataList4	Data List 4	Job No
DataList5	Data List 5	Data List 5
DataList6	Data List 6	Data List 6
DataList7	Data List 7	Data List 7
DataList8	Data List 8	Data List 8
DataList9	Data List 9	Data List 9

# 7.3.2 Add

The data list Add function determines if an operator can add new items to the selected data list.

# Default settings

Data List	Default
DataList1	Off
DataList2	Off
DataList3	Off
DataList4	Off
DataList5	Off
DataList6	Off
DataList7	Off
DataList8	Off
DataList9	Off

Option	Description
	The operator can add new items to the selected data list via the DataLists screen.
	The operator <i>cannot</i> add new items to the selected data list.

# 7.3.3 Enabled

The data list *Enabled* function determines whether the data list will be available to the operator from the *Main Menu* screen, and printed on tickets. Disabled data lists will still be synchronized with InsightHQ if **Data Sync** is set to **On** (see "*Data Sync*" on page 28).

**TIP** – All disabled data lists can be enabled by toggling the **Data Sync** function **Off** and then **On** again. For more information, see "*Data Sync*" on page 28.

## **Default settings**

Data List	Default	Default after initial synchronization with InsightHQ
DataList1	On (cannot be changed)	On
DataList2	Off	On
DataList3	Off	On
DataList4	Off	On
DataList5	Off	Off
DataList6	Off	Off
DataList7	Off	Off
DataList8	Off	Off
DataList9	Off	Off

Option	Description
<b>⊡</b>	The data list is included on the DataLists screen so that the operator can select a value to be applied to a load.
	The data list is not available to be selected by the operator.

# 8.0 Calibration

The **Calibration** menu consists of walk-through procedures for calibrating the LOADRITE Payload Management for Earthworks system.

# 8.1 Pre-Calibration System Checks

This section provides guidance on checking components prior to calibration to ensure correct operation. Read the following important points before you begin calibration:

### Trimble Earthworks Sensors

Ensure that all *Trimble Earthworks* sensors are installed, measure-up is completed, and that the *Trimble Earthworks* system has been configured and is working correctly.

### **Excavator Position**

Calibration is best performed with the excavator parked on a stable, level bench, so that the bucket can be lowered as far below track level as possible to get a larger range of boom movement. It is important that the excavator tracks remain in the same position for each stage of the calibration process.

### **Excavator Stability**

If the calibration is performed on a level bench, it is important that the excavator is on a stable platform, i.e. not a soft or springy material. When the stick is in its furthermost position (away from the cab), the tracks should remain firmly on the bench. This will require assistance, as often it cannot be felt if the excavator is leaning.

### **Excavator Throttle**

Calibration is best performed with the throttle set to allow smooth lifts. Feather the boom lift control valve to achieve the required speed. Ideally, the lift speed is such that it takes 30 to 60 seconds to complete the calibration lift.

# 8.2 Trigger

ine de		⊖ ↔ 5.09
	000	B
Boom Length (A-B)	4	600 mm
Stick Length (B-G)	2	500 mm
Boom to Bucket (A-G)	6	000 mm
CANCEL	RESET	APPLY
4 0		

Three trigger measurements are required to calibrate the machine. Record the following lengths, then enter them on the *Trigger* page:

- Boom Length (A-B)
- Stick Length (B-G)
- Boom to Bucket (A-G)

Ideally the Boom pivot to Stick pivot (**A**) and Stick pivot to Bucket pivot (**B**) measurements can be taken when installing the stick sensor to make the process easier. To take the final measurement of the Boom pivot to Bucket pivot (C), move the boom and stick such that the boom pivot and bucket pivot points are horizontally aligned. Measure the Boom pivot to Bucket pivot (**C**) distance, and without moving the boom or stick, enter the three distances into the *Trigger* page.

**IMPORTANT –** Ensure that you also set the geometry measurements on the *Geometry* page.

- Valid values are from 1mm to 999999mm.
- The default values are 4600mm for Boom Length (A-B), 2500mm for Stick Length (B-G), and 6000mm for Boom to Bucket (A-G).

# 8.3 Geometry

	A3	● ↔ \$10
Boom to Rod (A-A3)	19	980 mm
Boom to Cylinder (A-A1)	6	333 mm
Cylinder Length (A1-A3)	16	80 mm
CANCEL	RESET	APPLY
⊲ <		

Three geometry measurements are required to calibrate the machine. Record the following lengths, then enter them on the *Geometry* page:

- Boom to Rod (A-A3)
- Boom to Cylinder (A-A1)
- Cylinder Length (A-G)

Lower the boom (to make it easier to measure) and measure the three required lengths from pin-center to pin-center. Do not move the boom between measuring the geometry and entering the information into the *Geometry* page.

**IMPORTANT –** Ensure that you also set the trigger measurements on the *Trigger* page.

- Valid values are from 1mm to 999999mm.
- The default values are 1980mm for Boom to Rod (A-A3), 633mm for Boom to Cylinder (A-A1), and 1680mm for Cylinder Length (A-G).

# 8.4 Delete Attachment

The LOADRITE *Payload Management for Earthworks* system can store calibration information for up to four (4) attachments (work tools). The attachment that is automatically selected is the "work tool" that is selected in the *Trimble Earthworks* app.

If you have selected a work tool in *Trimble Earthworks* that is not one of the four attachments configured in LOADRITE *Payload Management for Earthworks*, you will first need to delete one of those four attachments by completing the following procedure.

## 1. Tap **Delete Attachment**.

The Delete Attachment window will display.

2. Tap the attachment to be deleted. The attachment is deleted from the LOADRITE *Payload Management for Earthworks* system.

# 8.5 Attachment

The *Attachment* section displays the name of the attachment (work tool) that is selected in the *Trimble Earthworks* app, and walk-through procedures for calibrating the selected attachment.

• To change the attachment, refer to changing the "work tool" in the Trimble Earthworks User Manual.

# 8.5.1 Zero



The LOADRITE *Payload Management for Earthworks* system needs to know the pressure required to lift the weight of the empty bucket and arms. This "zero pressure" is then subtracted from the pressure required to lift a particular load to calculate the true weight of the load. The *Zero Calibration* involves performing one or more lifts to determine the required zero-offset.

### Prerequisite

- Ensure the excavator is warmed up, on level ground and the is bucket empty before performing a Zero Calibration.
- Ensure the *Trigger* and *Geometry* measurements have been entered correctly before performing a *Zero Calibration*.
- Ensure the operating area is clear of people and hazards before performing a Zero Calibration.

### Procedure

**IMPORTANT –** Perform this calibration with an empty bucket, using smooth, slow lifts. A lift should take 30 to 60 seconds. During a lift, do not move the stick or bucket.

Follow the prompts, including:

- 1. Moving the boom, stick and bucket into position.
- 2. Raising the boom to provide sensor data.
- 3. Reviewing the calibration accuracy.

# 8.5.2 Span



Span Calibration allows the LOADRITE Payload Management for Earthworks system to determine the relationship between lift pressure and the weight in the bucket. It is achieved by placing a known (or guessed) test weight in the bucket and then lifting it.

#### Prerequisite

- A test weight is required for a *Span Calibration*. The weight of the test weight must be known and must be as close as possible to an expected normal lift weight, and at least 20% of the **Full Scale** value.
- A Zero Calibration must be performed before performing a Span Calibration.
- Ensure the Trigger and Geometry measurements have been entered correctly before performing a Span Calibration.
- Ensure the operating area is clear of people and hazards before performing a Span Calibration.

#### Procedure

IMPORTANT - Perform this calibration using smooth, slow lifts.

Follow the prompts, including:

- 1. Load the test weight into the bucket so that it sits as close as possible to where a normal load would sit.
- 2. Select a **3-lift** calibration or a **5-lift** calibration. If no suitable test weight is available, select the **3-lift** calibration.
- 3. Use the keypad to enter the weight of the test weight.
- 4. Lift the bucket until the Lift Complete message displays, then lower the test weight.
- 5. Lift the bucket again until the Lift Complete message displays, then lower the test weight.
- Repeat until you have completed 3 lifts or 5 lifts.
   The displayed weight should be close or equal to the weight of the test weight.

### Span Calibration Without a Known Test Weight

It is sometimes difficult to obtain a suitable test weight. The shape of some weights often does not allow them to sit correctly in the bucket. This can cause problems, as the center of gravity will be different to that of a normal bucket of material.

If no suitable test weight is available, perform the procedure using the 3-lift calibration method.

# 8.5.3 Span Adjust

CANCEL       Image: Cancel content of the second seco							
CANCEL ENTER WEIGH TREPORTED by the WEIGH bridge CANCEL CANCEL CAPPLY - + . 1 2 3 * / , 4 5 6 2 ( ) = 7 8 9			Ent	ter Loadrit	e calculate	d weight	
CANCEL Enter weight reported by the weigh bridge CANCEL CANCEL CAPPLY - + . 1 2 3 * / , 4 5 6 2 ( ) = 7 8 9							
CANCEL       APPLY         -       +       .       1       2       3       3         *       /       .       4       5       6       0         (       )       =       7       8       9						0	
CANCEL       Image: Cancel and the set of the se							
CANCEL APPLY - + . 1 2 3 * / , 4 5 6 ( ) = 7 8 9			Ent	ter weight	reported b	v the weig	h bridge
CANCEL APPLY - + . 1 2 3  * / , 4 5 6  ( ) = 7 8 9				ter melane	reported b		
CANCEL APPLY - + . 1 2 3 ≪ * / , 4 5 6 ● ( ) = 7 8 9						0	
<pre>CANCEL</pre>							
CANCEL APPLY - + . 1 2 3 * / , 4 5 6 ( ) = 7 8 9							
CANCEL         APPLY           -         +         .         1         2         .3							
CANCEL APPLY - + . 1 2 3 * / , 4 5 6 ( ) = 7 8 9							
CANCEL APPLY - + . 1 2 3 * / , 4 5 6 ( ) = 7 8 9							
CANCEL         AFPLY           -         +         .         1         2         .3         .           *         /         .         .4         .5         .6         .           (         )         =         .7         .8         .9         .							
CANCEL         APPLY           -         +         .         1         2         3         ≤3           *         /         ,         4         5         6         ●           (         )         =         7         8         9							
CANCEL       APPLY         -       +       .       1       2       3       <         *       /       .       4       5       6           (       )       =       7       8       9							
CANCEL         APPLY           -         +         .         1         2         .3							
CANCEL         APPLY           -         +         .         1         .2         .3         .           *         /         .         .4         .5         .6         .         .           (         )         =         .7         .8         .9         .							
CANCEL     APPLY       - + . 1     2     3     ☑       * / , 4     5     6     ≥       ( ) = 7     8     9							
CANCEL         APPLY           -         +         .         1         2         3         <           *         /         ,         4         5         6             (         )         =         7         8         9							
CANCEL         APPLY           -         +         .         1         2         3         <							
CANCEL     APPLY       - + . 1     2     3     <							
- + . 1 2 3 * / , 4 5 6 2 () = 7 8 9	C/	ANCEL					APPLY
- + . 1 2 3 * / , 4 5 6 () = 7 8 9			_				
* / , 4 5 6 <b>&gt;</b> ( ) = 7 8 9	-	+		1	2	3	
* / , 4 5 6 <b>0</b> () = 7 8 9		,			-		
( ) = 7 8 9	*	/	,	4	5	6	•
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	(	)	=	/	8	9	
* 0 #				*	0	#	

Span Adjust allows small changes to be made to the LOADRITE Payload Management for Earthworks system calibration if the bucket is modified, or if no accurate test weight was available when the LOADRITE Payload Management for Earthworks system was calibrated at installation time.

The adjustment is carried out by entering the total weight recorded at a weighbridge (scale house) and the corresponding total provided by the *Loadrite* payload app.

**CAUTION** – The LOADRITE Payload Management for Earthworks system alters its calibration every time this function is used. It is important that this function is only used once with a given set of data. If the same weights are entered again, the LOADRITE Payload Management for Earthworks system will over-correct and its accuracy will be seriously impaired.

### Prerequisite

Two weight values are required for this calibration:

- A test weight weighed using LOADRITE Payload Management for Earthworks system
- The same test weight weighed using a weighbridge.

#### Procedure

Follow the prompts, including:

1. In the Enter Loadrite calculated weight field, enter the total weight provided by the LOADRITE Payload Management for Earthworks system.

- 2. In the **Enter weight reported by the weigh bridge** field, enter the total weight provided by the weighbridge.
- 3. Tap Apply.

The Span Adjust factor percentage will display.

#### Checking the adjustment

The *Span Adjust* calibration can be checked by obtaining and comparing new LOADRITE and weighbridge values. If necessary, the *Span Adjust* calibration can be performed again using the new data.

**NOTE –** All trucks and trailers should have tare weights confirmed for all loads to be checked. This ensures that a true weight can be established. Avoid split-weighing the truck and trailer.

# 8.5.4 Uncalibrate

The Uncalibrate function resets the calibration setting for the attachment to the factory default values. When re-calibrating an attachment, it is not necessary to uncalibrate the attachment first.

#### Procedure

When prompted to confirm the uncalibration, press OK.

# 8.5.5 Backup

The *Backup* function allows the existing calibration values for the attachment to be copied into a backup memory.

### Procedure

When prompted to back up the existing calibration values, press OK.

# 8.5.6 Restore

The Restore function allows the previously backed up calibration settings to be restored for the attachment.

#### Procedure

When prompted to restore previous calibration values, press OK.

# 9.0 Diagnostics

The **Diagnostics** menu consists of a range of diagnostic functions to assist in finding faults, including live information.

# 9.1 Pressure Transducers

The *Pressure Transducers* diagnostic function displays the current **Lift** and **Return** values from the pressure transducers.

# 9.2 Orientation Sensors

The Orientation Sensors diagnostic function displays the current values from the **Boom**, **Stick** and **Bucket** orientation sensors.

# 9.3 Bus Diagnostics

The *Bus Diagnostics* function displays information used to diagnose problems with the connected CAN devices.

# 10.0 Communication

The **Communication** menu consists of a range of options for setting up and configuring a connection with InsightHQ.

# 10.1 InsightHQ

The *InsightHQ* function controls whether or not payload data is transferred from the Trimble Earthworks display to InsightHQ.

## Available options

Option	Description	Default
	The <i>InsightHQ</i> function is enabled. Payload data will be transferred to InsightHQ.	✓
	The InsightHQ function is disabled.	

# 10.2 Scale ID

The *Scale ID* is a site-specific number used to track the Trimble Earthworks display in weight data. The Trimble Earthworks display serial number cannot be used as the *Scale ID* in case the Trimble Earthworks display unit needs to be replaced.

## Available options

- Valid values are 0 65535.
- The default value is 0.

# 10.3 Data Sync

The *Data Sync* function indicates whether data lists that have **Enabled** set to **On** (see "*Enabled*" on page 18) are synchronized with InsightHQ.

Keep in mind the following when using Data Sync:

- InsightHQ holds the "master list" of all data lists.
- During the initial synchronization, the Trimble Earthworks display's data list names (see "Name" on page 16), and Enabled settings (see "Enabled" on page 18) will be replaced.
- Updates to data lists are synchronized with InsightHQ every 5 (five) minutes.
- Data list values added by the operator on the Trimble Earthworks display are only synchronized with InsightHQ if they have been assigned to a load. Otherwise they may be deleted during the next synchronization.
- All data list titles will be synchronized along with data values, except for the **Product** data list title.

**TIP** – All disabled data lists can be enabled by toggling the **Data List Sync** function **Off** and then **On** again.

#### Available options

Option	Description	Default
$\square$	Data list synchronization with InsightHQ is enabled.	
	Data list synchronization is disabled.	✓

# 10.4 Install And Assign

The Install And Assign function can only be used if InsightHQ is enabled.

The *Install And Assign* function is used to register the TD520 with InsightHQ and install a communication certificate to allow LOADRITE *Payload Management for Earthworks* system to transmit payload information.

### Prerequisite

Before the TD520 can be registered, you must be logged into InsightHQ using an internet browser. If you are not logged into InsightHQ, you may need to repeat the registration process.

### Procedure

#### 1. Tap Install And Assign.

LOADRITE*Payload Management for Earthworks* will contact InsightHQ via the Internet. When a certificate has been retrieved, a QR Code and URL address will be display. The QR code is valid for 30 minutes.

**TIP** – If a QR code is not displayed, you may not have Internet access. Ensure that the TD520 is connected to the Internet via the Earthworks platform.



 Within 30 minutes, use a device (a phone, tablet, etc) with Internet access to scan the QR code (or copy the URL address and paste it in a browser address bar).
 InsightHQ will open in a new browser window, displaying a confirmation message. The TD520 registration is now complete.

**NOTE** – If instead of seeing the above screen, you are prompted to log in to LOADRITEInsightHQ, complete the log in process, then return to step 1 to generate a new QR code.

3. Complete "Configure InsightHQ" on page 30.

# 10.4.1 Configure InsightHQ

The LOADRITE Trimble Earthworks display will automatically connect to the Internet once everything is installed and the Indicator is turned on and configured. The last step is to configure InsightHQ to receive information from the TD520 via the LOADRITE *Payload Management for Earthworks*.

**TIP** – The InsightHQ configuration process can be completed remotely or at any time after installation, however we recommend that it is completed on-site as soon as possible, in case problems occurred during installation.

#### Assign the TD520 to a site

Refer to the LOADRITE InsightHQ Configuration Manual [111932-93] while completing the following:

- 1. If prompted, login to LOADRITE InsightHQ using a computer or device with an Internet connection. The *Config* page will display.
- 2. In the searchbar, type the serial number from the label onback of the TD520. The TD520 will be listed in the search results.

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PICIFLE PASSWORD			
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(LPM) Trimble Inc			

3. Click the TD520 icon. The *New Devices* page will display.

<b>Trimble</b>	New Devices	
<b>t</b> Status	Config Config	

#### 4. Click Reassign.

The Assign page will display.

- 5. Click the customer that you are assigning the TD520 to.
  - A list of the customer's sites will display.

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Cu:	stomer, Site		
Site	Aussie test site Bedrock Quarries		
Site	Haul Rock Bedrock Quarries		
Site	Kid Rock US Bedrock Quarries		
Site	Test Site Bedrock Quarries		
Site	PM Test Bedrock Quarries		

6. Click the site that you are assigning the TD520 to. The TD520 is now assigned to the site.

#### Confirm the connection

After configuring InsightHQ, complete the following to confirm that the TD520 is communicating with InsightHQ:

- 1. Login to LOADRITEInsightHQ. The *Config* page will display.
- 2. In the searchbar, type the serial number from the label on of the TD520. The TD520 will be listed in the search results.
- 3. Click the TD520 icon. The *Device* page for the TD520 will display.
- 4. Click Status.

The Device Status page will display, showing what the TD520 is connected to.

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5. Confirm that there isn't a red cross (**X**) next to the next to the **TD520** icon, as that indicates a possible loss of connection. However a red cross (**X**) next to the **LAT** icon is normal at this step, and indicates that payload data has not yet been received by InsightHQ.

# 10.5 Configuration Upload

The *Configuration Upload* function synchronizes the Trimble Earthworks display with InsightHQ via a configuration file.

# 11.0 Appendix A: Access Codes

CAUTION – For security purposes, access codes should only be shared on a need-to-know basis. If settings are changed without authorization, weighing accuracy may be compromised.

Title	Code
Setup	6992
Span Adjust	2217
System Reset	50103

# 12.0 Appendix B: Legal information

#### Disclaimer

Trimble Inc operates a policy of on-going development. Please note that while every effort has been made to ensure that the data given in this document is accurate, due to continued product development, the information, figures, illustrations, tables, specifications, and schematics contained herein are subject to change without notice. Trimble Inc does not warrant that this document is error-free. The screenshots and other presentations shown in this manual may differ from the actual screens and presentations generated by the actual product. All such differences are minor and the actual product will deliver the described functionality as presented in this document in all material respects. If you find any errors in the document, please report them to us in writing.

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Trimble Inc is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

### Compliance

Domain	Policy	Description	Top-Level Requirement
Australia / New Zealand	Radiocommunications (EMC Standards) Notice 2004 No. 2	Emissions/Immunity (earthmoving ESA)	ISO 13766-1
Canada	ICES-003	Emissions (industrial)	ANSI C63.4
Europe	Electromagnetic Compatibility Directive 2014/30/EU	Emissions/Immunity (earthmoving ESA)	ISO 13766-1
	Restriction of Hazardous Substances Directive 2011/65/EU (RoHS 2)	Hazardous Substances	
United States of America	FCC Part 15 Subpart B - Radio Frequency Devices	Unintentional Emission (industrial)	15.107(b) and 15.109(b)

# CE

This LOADRITE product is fully EMC (Electro-Magnetic Compatibility) compliant and is CE marked accordingly. A Declaration of Conformity, in accordance with the EMC Directive 2014/30/EU (and as amended) is available from Trimble Inc on request: info@loadritescales.com

Trimble Inc cannot be held responsible for modifications made by the User and the consequences thereof, which may alter the conformity of the product with CE marking.

Hereby, Trimble Inc declares that the LM520 devices are in compliance with the essential requirements and other relevant provisions of CE.

This device complies with part 15 of the FCC Rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This Class A digital apparatus complies with Canadian ICES-003 (A) / NMB-003 (A).

WARNING – This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. This Notice is being provided in accordance with California's Proposition 65.

## Disposing of LOADRITE electronic equipment

This electronic product is subject to the EU Directive 2002/96/EC for Waste Electrical and Electronic Equipment (WEEE) which requires the separate collection, treatment, recycling and environmentally-sound final disposal of waste of electrical and electronic equipment. As such, this product must not be disposed of at a municipal waste collection point. Please refer to local regulations for directions on how to dispose of this product in an environmentally-friendly manner.



### Third-Party Software Licenses

The following third-party software libraries are included as part of the Payload Management for Earthworks software:

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#### Kotlin Standard Library:

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#### mbedtls:

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