INTEGRATED VISUAL DATA TECHNOLOGY INC.
Solutions that lift your business

RT-LCM-W

High Reach Truck Load Weighing Scale

Installation & Calibration Manual

RT-LCM -W V7

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General Installation Guide

This **RT-LCM-W Series** system installation & calibration guide describes how to install, calibrate, test and use your high reach vehicle onboard weighing scale. Following the instructions in this guide will enable you to get your system operating quickly and easily. In the event that you require additional assistance, please contact customer support via e-mail at support@skidweigh.com or visit www.skidweigh.com or contact us at number below

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Safety

Always disconnect the vehicle battery while installing SkidWeigh system or any other electronic product. Make sure that unit, pressure transducer and any other associated cables are securely mounted and do not impede any of the vehicle's controls. Use care when routing the components cables. Route the cables where they will be protected. Use commonly accepted install practices for after market industrial vehicle electronic devices. The installation of the SkidWeigh systems should only be performed by an acknowledged lift truck dealer technician or end user electro and hydraulic technical installer.
Here are two acceptable methods of making a wire connections:
* Soldering your connections (recommended)
* Crimp connectors (with the use of the proper crimping tool)
Regardless of the method you choose, ensure that the connection is mechanically sound and properly insulated. Use high quality electrical tape and shrink tubing where necessary.

Electro-Magnetic Compatibility

CE conformity to EC directive 89/336 (EMC) by application of harmonized standards: Interference stability EN 61000-6-2 and EN 61326-1 interference emit EN 61000-6-3, EN 61326-1 for the pressure transducer.

RT-LCM-W SkidWeigh Elite Series

Our policy is one of continuous improvement and the information in this document is subject to change without notice.

Overview of components

The standard **RT-LCM-W** SkidWeigh Elite Series onboard weighing scale consist of two main components:
* Digital indicator with wiring harness, mounting bracket with anti-vibration mounts
* Hydraulic pressure transducer with 3 wires cable
* Installation & calibration manual and operator usage instruction

Operational principal

The **RT-LCM-W Series SkidWeigh** system operational principal is based on the hydraulic pressure transducer installed in the vehicle lifting hydraulic circuit that will automatically activate the proprietary lifted load “measurement algorithm”. The increase in pressure is converted in an electronic signal at the sample rate of 16000 readings per measurement cycle during the lifting operation. The system will automatically calculate and display lifted load within few seconds. The RT-LCM-W load weight readout will be clearly visible to the operator.

Pressure transducer installation

The pressure transducer must be installed in the lifting hydraulic line ***between the lift control valve and lift cylinder(s).*** *In majority of cases* a T-piece is used to install the pressure transducer in lifting hydraulic line. In some cases you can install the pressure transducer in the flow divider, drilling and tapping for 1/4”-18 NPT male in spare plug (if only single or double mast configuration) or in the body of the flow divider. Also, you can drill and tap on any “larger elbow” that might be available in the hydraulic lifting circuit in the vehicle.

Pressure transducer installation precautions

Before mounting the pressure transducer in the hydraulic lift circuit make sure that system is pressure free.

There are two ways to do that:
1. Place the forks on the ground in their lowest position and make the hydraulic system pressure free by tilting the mast forward. The chain(s) should be slack.
2. Lift the forks and position them on the top of a supporting fixture. Start lowering the lifting cylinder into its lowest position. Be sure that chains are slack.

Make sure that that installed pressure transducer will not touch any moving parts or assembly of the vehicle while in normal operation.
Pressure transducer has **1/4”-18 NPT male thread**.
Use thread seal to ensure tight fit.

Swiss Made, Custom Pressure Transducer
The RT-LCM-W pressure transducer part number is IPT-1500 must be used with the system

Selecting the mounting location for digital indicator

There are many examples of mounting locations that will depend on the vehicle model. However, additional mounting items such as a flat brackets may be needed to help secure the unit to the overhead guard or to the operator dashboard.

Choose the correct location and make sure that indicator is visible to the operator.

Electrical Connections

The **RT-LCM-W** SkidWeigh systems operating voltage is from 12 to 55 VDC.

- **Orange Wire** (+) Ignition switch On position
- **Brown Wire** (-) Battery negative
- **Red Wire,** connect to RED wire of the pressure transducer cable
- **Black Wire,** connect to BLACK wire of the pressure transducer cable
- **White Wire,** connect to WHITE wire of the pressure transducer cable

Pressure transducer cable

- **White Wire,** signal output
- **Black Wire,** signal negative
- **Red Wire,** power supply to the pressure transducer

Pressure transducer 3 wires cable must be connected to main cable from the indicator.

Electrical power short circuit protection

All of the SkidWeigh systems are internally short circuit protected with resettable fuse. There is no need to install external inline fuse in orange wire connected to the ignition switch.
The **RT-LCM** system has a reversal power supply protection.

"Quick test to determine if electrical connections are done right"

Note: *SkidWeigh **RT-LCM-M** calibration function is not done yet at this stage. This procedure is only to test if electrical connections into the vehicle is done properly!*
After you have connected two wires to the vehicle power and pressure transducer cable you can "quickly" check the system operation.
- **Lower the forks to the ground**
- Turn on vehicle power switch
- Digital LED display will be activated, showing software version and serial number
- Number **8** will be shown on LED display above the **MODE** digit.
- Lift the empty or loaded forks to increase pressure in lifting cylinder. **Mode 8** number will go off and indicator will show "some" load on LED display.

If the above test is valid the system electrical connections are done right.
*The next procedure will be to calibrate the **RT-LCM-W** system.*

Calibration Procedure for Load Weight Measurement

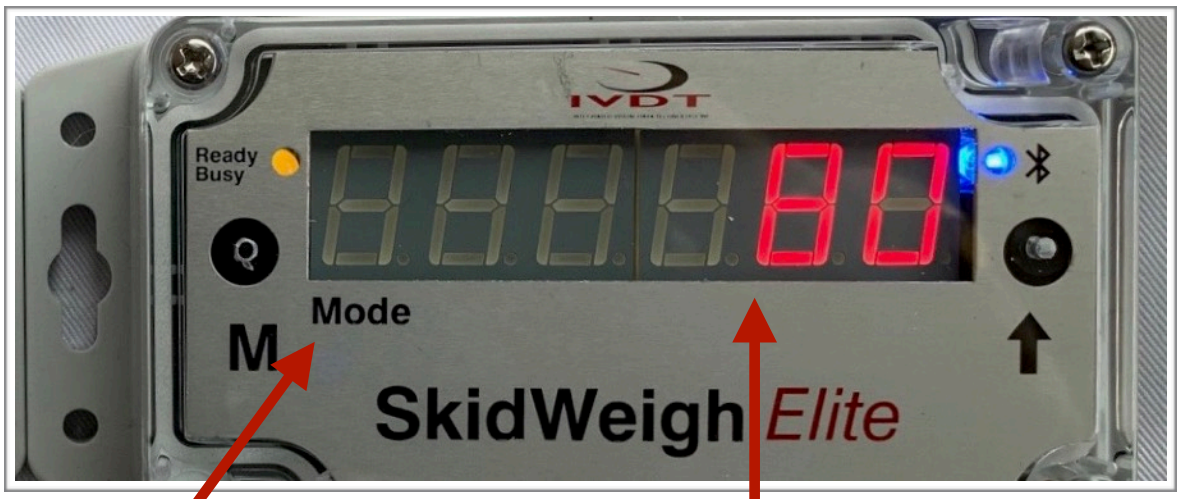
The **RT-LCM Series SkidWeigh** calibration is automatic and is done by lifting empty and loaded forks with known calibration load weight and pantograph fully extended **just above the ground.**
Note: *The known calibration load weight should be at 24" load centre.* Use customer floor scale or use a known skid load weight for the **RT-LCM-W** load weight calibration.

MAKE SURE THAT YOU HAVE A KNOWN LOAD WEIGHT AND KEEP IT NEARBY TO COMPLETE THE CALIBRATION.
For the best results use minimum calibration load weight of 40% to 70% of the vehicle maximum lifting capacity of the vehicle.

Digital Indicator *(RT-LCM system calibration utilizing two push buttons)*

- - Left button **"M"** is used to enter into calibration mode and to shift to the next digit on LED display.
- Right button **"Arrow Up"** is used to enter numerical increments from 0-9, wrap around.
- Both buttons are used during the system calibration.
- Buttons can be accessed through two small holes on the cover.
- Use paper clip to activate buttons (Momentary touch). *Do not push buttons too hard!*

- Left most significant digit on LED Display represents **Mode** of operation.
- Other five digits represent the load weight readout.



Mode Digit

Five Digits (Load Weight)

MODE	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1

Note:

- Every time the power is applied the software version will be shown momentarily for a brief moment.
- When forks are lowered to ground LED display will show **Mode 8**.
- If you make a mistake during the system calibration, turn power ON / OFF and start all over.

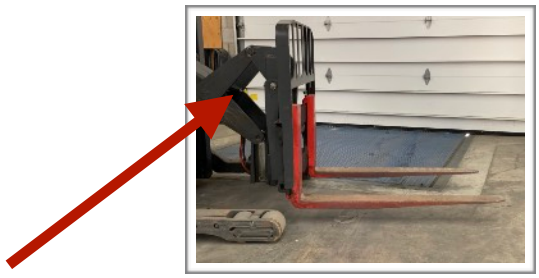
Calibration Procedure

Important: **If you want the system to show load weight in pounds, use the known load weight in pounds during the system calibration and enter that value accordingly. The same would apply if you want the system to show load weight in kilograms then use the known load weight in kilograms and enter that value into the system accordingly.**

Lower the empty forks to the ground with mast vertical and pantograph fully extended.

- There should be no hydraulic pressure in lift hydraulic circuit.
- Turn power switch to on position.
- LED display will show software version briefly on the right side and **Mode 8**

* For vehicles applications without pantograph calibrate empty and loaded forks lowered to ground, mast in vertical position



1. Calibration of empty forks with fully extended pantograph lifted just above the ground

To initiate calibration press the **"M"** button (use a paper clip) and hold it down for approx. 5 seconds.

After approximately five-seconds the **Mode 8** will change from **Mode 8** to **Mode 0.**
System is ready for automatic zeroing.
With LED display showing **Mode 0** lift the empty forks with pantograph fully extended **just above the ground.**

The **Mode 0** will go blank and after few seconds the LED display will show **MODE1** meaning that calibration of lifted empty forks is done.

Automatic zeroing is done

2. Calibration of loaded forks with fully extended pantograph lifted just above the ground

* Drive your vehicle into the skid load with known load weight at load centre of 24".
* The pantograph must be fully extended.
* Lower the loaded forks to the ground

Example: (In our calculation example we will use 1850 pounds as known calibration load weight)

With LED display showing **Mode 1** start entering the known calibration load weight value by using **Arrow Up** button (increments from 0 to 9) wrap around.
Start with Digit 1, least significant digit *(in our case input number "0")* and press momentarily button **"M"** to advance to next Digit 2.
Input number "**5**" and press momentarily button "**M**" to advance to next Digit 3.
Keep doing the same until known load weight of **1850** is entered into the system.

Make sure that Digit 5 is "**0**" *(Our calibrated load weight of 1850 has only four digits)*

Note: Loaded forks must be on the ground.

MODE	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
1					0
2				5	
3			8		
4		1			
5	0				

With the LED display showing **501850** press **"M"** button to advance to **Mode 6** and lift loaded forks **just above the ground** to complete system calibration.

MODE	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
6					

The LED display will go "blank" for few seconds.

After few seconds LED display will show the calibrated load of 1850.

MODE	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
		1	8	5	0

System load weight calibration is done

* Lower the calibrated load weight to ground
* The LED display will show **Mode 8**.
* System is ready to be used.
* **Note:** To use the load weighing function loaded forks must be lowered to ground and **Mode 8** must be shown on LED display. Lift loaded forks just above the ground to get the load weight.

Optional Overload Warning

The **RT-LCM-W** supplied with overload alert function will allow you to input into the system the overload warning value applicable for particular vehicle application. As soon the load weight calibration is done and **loaded forks are lowered to the ground** the LCD display will show number **7** in **Mode** window.

MODE	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
7					

Use **"M"** button and **Arrow Up** button to input applicable overload warning value.

Example: The overload value is **5500**
The **Mode 7** digit will remain while you are entering the overload value.
Start with Digit 1 and input "**0**" representing last digit of the overload value of 5500.
Make sure that **Digit 5** is inputed as "**0**" *(The overload value in our example of* **5500** *has only four digits)*

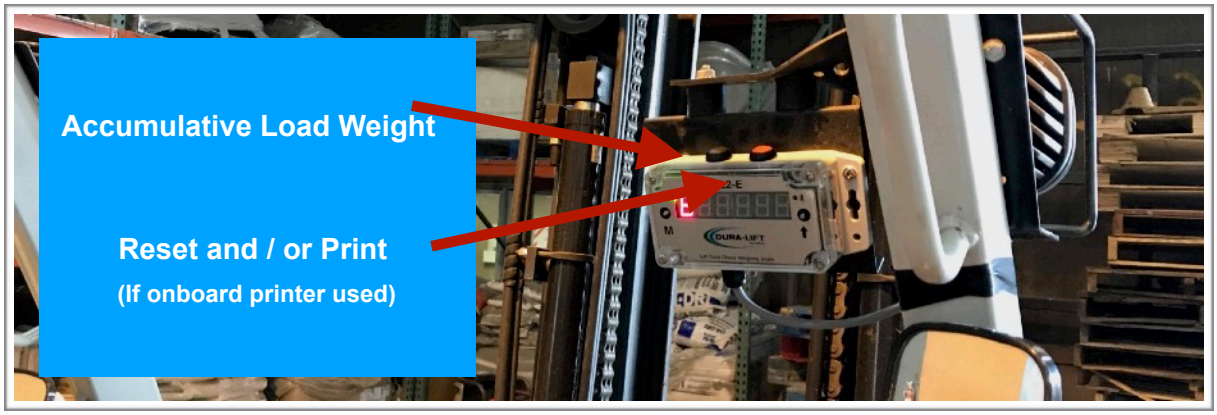
MODE	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
7					0
7				0	
7			5		
7		5			
7	0				

As soon the last overload digit (Digit 5) is entered into the system **MODE 7** will automatically change to **MODE 8** which is the normal operational mode *(System is ready to operate)*.

Note: When overload value is detected LED display will
- Show actual overload value
- LED display will "Flash"
- Audio overload alert will be activated and stay on until load is lowered to the ground

Optional Accumulative Load Weight Total

- Use **"Black"** button to accumulative load weight shown on LED Display
- Use **"Red"** button to reset accumulative load weight total shown on LED Display



Note: If onboard Bluetooth printer connected by pressing **"Red"** button the printer will provide individual or all individual and total accumulative load weight ticket

Optional Onboard Bluetooth Printer

Printer's pairing

Turn power on Bluetooth printer

1. On digital indicator press and hold **Arrow Up** button
2. Hold **Arrow Up** button with paper clip and turn on ignition switch to power the indicator
3. All six LED digits will show number 8 and countdown for pairing will be initiated
4. After several seconds the blue LED light on indicator will come on.
5. System is paired with mobile Bluetooth printer.

Note: If pairing is unsuccessful turn power to the indicator OFF and repeat the procedure.

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OPERATOR USAGE GUIDE

WEIGHING

Insert forks into pallet load

Make sure that loaded forks are on the ground

LED display must show **Mode 8 t**o initiate weighing function

Activate the lift control valve and lift loaded forks just above the ground

Mode 8 will go off and after few seconds the load weight will be shown on LED display

ACCUMULATIVE LOAD WEIGHT TOTAL

Press **“Black”** button to accumulate load shown on LED display

Press **“Red”** button to reset total accumulative or print individual and total accumulative ticket

OVERLOAD ALERT

No operator input required

When lifted load is above preset overload warning the LED display will show the overload value and will “flash”

Audio overload alert will be activated and stay on until load is lowered to the ground

TWO INDEPENDENT WEIGHING CHANNELS

First weighing channel is shown as a **Mode 8**

Second weighing channel is shown as a **Mode 82**

Note: Use external switch, two positions to select applicable weighing channel

The weighing procedures are the same for both independent weighing channels