Installation & Calibration Manual

ED3/ED4-RFID SkidWeigh Plus
Lift Truck On-board Check Weighing Scale

Optional: *Impact Monitor, OSHA Pre-Shift Checklist, Overload Warning, Vehicle Utilization, Authorized Operator Vehicle Access Control*

ED3/ED4-RFID V1.25

General Installation Guide

This **ED3-RFID and ED4-RFID SkidWeigh Plus V1.25** Series installation & calibration guide describes how to install, calibrate, test and use your on-board check weighing unit. Following the instructions in the **ADMINISTRATION MENU** guide will enable you to get the system set up and weighing calibration function operating quickly. In the event that you require additional assistance, please contact customer support via e-mail at support@skidweigh.com , visit www.skidweigh.com or contact us at the address or contact number below:

Integrated Visual Data Technology Inc.
3439 Whilabout Terrace, Oakville, ON, Canada, L6L 0A7   Phone: 905-469-0985

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. This product is connected directly to the vehicle's ignition switch, 12 to 55 VDC. There is no on-off switch on the unit.

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.

ED3/ED4-RFID SkidWeigh Plus Series

Our policy is one of continuous improvement and the information in this document is subject to change without notice. The software version is displayed on the LCD display once the power is turned on to the system.

Overview of components

The standard ED3/ED4-RFID SkidWeigh Plus check weighing system consist of two main components:

* Digital indicator with integrated RFID operator access reader with wiring harness, mounting bracket
* Hydraulic pressure transducer with 3 wires cable
* Installation & calibration manual and operator usage instruction
* One Master RFID card is included

Operational principal

The ED3/ED4-RFID SkidWeigh Plus series operational principal is based on the hydraulic pressure transducer mounted in the vehicle lifting hydraulic circuit that will automatically activate the "weighing cycle / specific algorithm " every time a skid load is lifted just above the ground. The increase in pressure is converted in an electronic signal at the sample rate of 16000 readings which is converted into a load weight reading. The valid RFID operator card is required to operate vehicle.

Pressure transducer installation

The pressure transducer must be installed in the lifting hydraulic line **between the lift control valve and lift cylinder(s).** Mount a T-piece in 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 found in vehicles with larger hoses to accommodate larger vehicle lifting capacities.

Pressure transducer installation precautions

Before installation of the pressure transducer the hydraulic lift circuit must be 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 chain(s) 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.

Selecting the mounting location for digital indicator

Use the mounting bracket with the anti vibration mount and fasten digital indicator on the vehicle dashboard, side railing on the right hand side or preferably on the overhead guard. 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 upper right corner of the guard or side railing.

  Choose the correct location and make sure that:

- Indicator is visible and within reach of the operator

- Location so that operator has a clear unobstructed view of the working environment

Compact size

All of the SkidWeigh systems are compact, housing dimension of only 120 x 80 x 55 mm is ideal for the installations to material handling vehicles of all kinds.
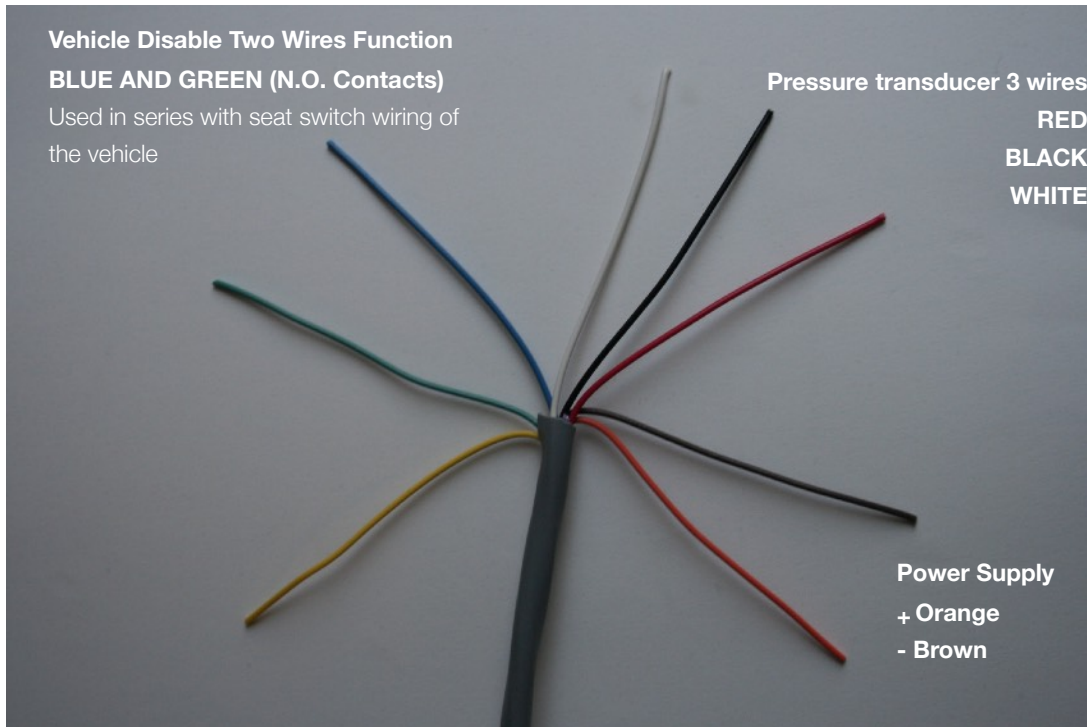
Electrical connections

All SkidWeigh RFID equipped systems operate from 12 to 55 VDC.

Digital indicator with eight wires single cable

- **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**

Vehicle Disable Two Wires Function
BLUE AND GREEN (N.O. Contacts)
Used in series with seat switch wiring of the vehicle

Pressure transducer 3 wires
RED
BLACK
WHITE

Power Supply
+ Orange
- Brown

Internal relay connections to be used to enable vehicle usage

(Dry contacts, SPDT maximum current 1A)

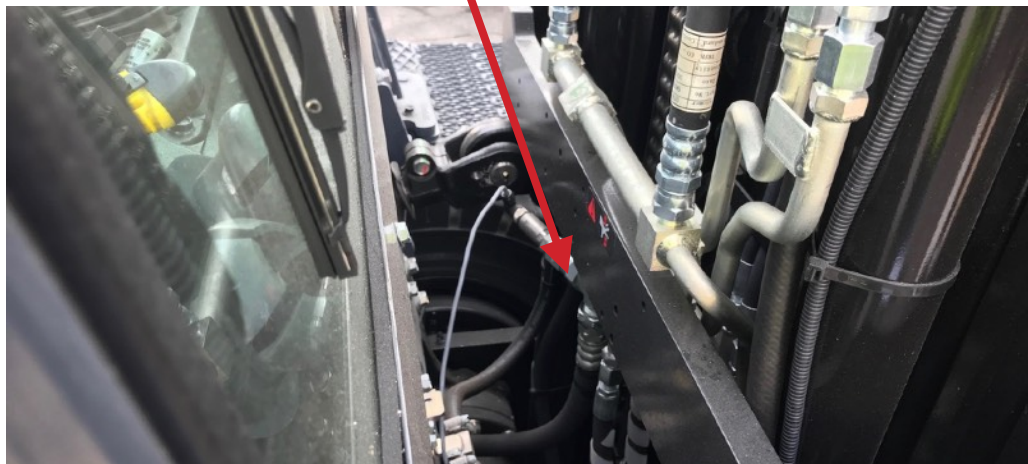**- Green Wire Common**

- Yellow Wire NC

- Blue Wire NO

Note: Use two wires, BLUE and GREEN normally open SPST contacts and connect in series with vehicle seat switch wire to control vehicle usage

Pressure transducer cable

- **White Wire, signal 0 to 2,5 V**

- **Black Wire, signal negative**

- **Red Wire, power supply + 11 V DC**

Male port 1/4"-18

All SkidWeigh systems are **internally short circuit protected with resettable fuse.** There is no need to install external inline fuse in orange wire that is connected to the ignition switch.

IMPORTANT

For all SkidWeigh Plus Systems equipped with RFID card reader you MUST HAVE AT LEAST ONE VALID OPERATOR CARD in order to access the administration menu to set up and calibrate the

weighing function of the system!

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

Note 1: *SkidWeigh weighing calibration function is not done yet at this stage. This procedure is only to test if electrical connections of the system installation into the vehicle is done properly!*

After you have connected electrical power and pressure transducer cable you can "quickly" check the system operation.

- Turn On ignition switch
- Digital LCD display will be activated, showing software version and serial number
- With LCD display indicating **"IVDT Scan Card"** scan valid RFID card and system will advance showing date / time. When the LCD display is showing time /data lower the loaded forks to the ground .

LCD Display
Aug 28, 2010
12:20:23

(N/A) If the loaded forks are lifted above the ground LCD digital display will show **"PLEASE WAIT"** and within few seconds display will show "some" load weight . *(Example: 455, not calibrated load weight at this stage)*

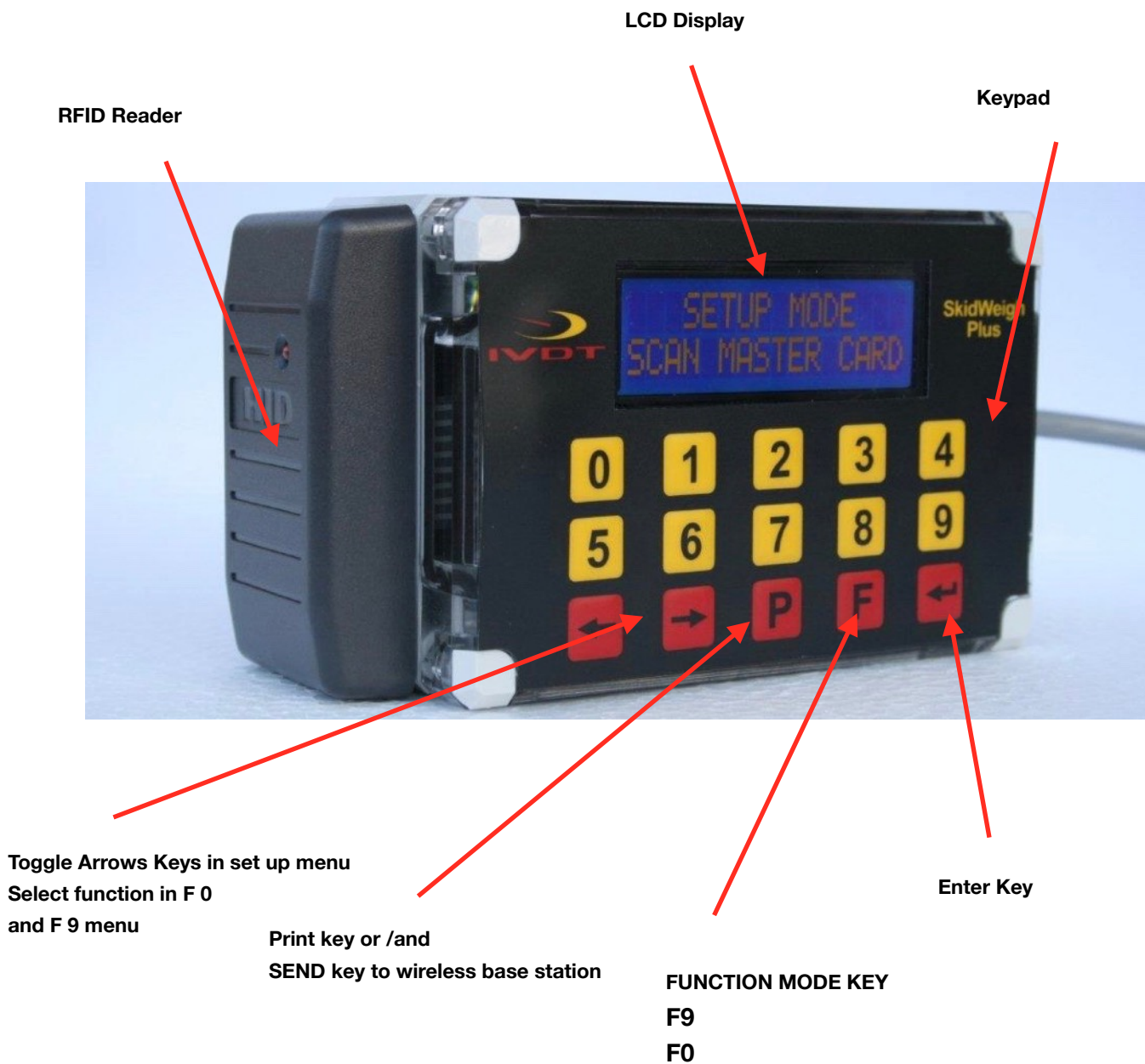| LCD Display |
|:---:|
| PLEASE WEIGHT |
| WEIGHT = 455 |
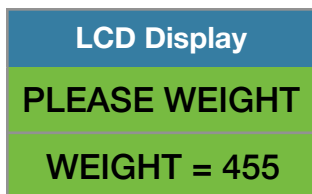
If the above test is valid than the system electrical connections are done right.

The next procedure will be to log in into **ADMINISTRATION MENU** to calibrate the weighing function.

Lift truck equipped with hydraulic accumulators

If the standard SkidWeigh system is installed on the lift trucks equipped with hydraulic accumulators, please contact us to provide you with different digital indicator having specific software algorithm to obtain load weight accuracy within +/- 1% of vehicle maximum lifting capacity.
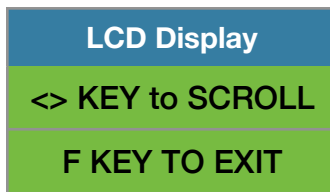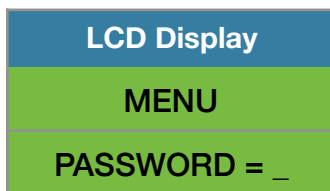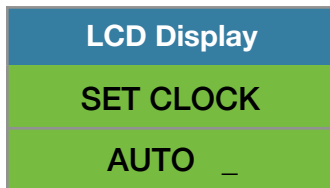
SkidWeigh Plus series ED3-RFID

LCD Display

Keypad

RFID Reader

**Toggle Arrows Keys in set up menu
Select function in F 0
and F 9 menu**

**Print key or /and
SEND key to wireless base station**

**FUNCTION MODE KEY
F9
F0**

Enter Key

Administration Menu Instructions

(Weight scale function calibration, time/date, vehicle ID#)

To enter into the **Administration Menu**, press **F key and than 9 key** and input password **521.**

Use left and right arrow keys to scroll and follow the LCD instructions.

LCD Display
MENU
PASSWORD = _

LCD Display
<> KEY to SCROLL
F KEY TO EXIT

Date / Time Set Up

LCD Display
SET CLOCK
ENTER TO SELECT

LCD Display
SET CLOCK
AUTO _

Use left ◀ and right ▶ arrow key *(bottom left side of the keypad)* to change from AUTO to MANUAL date/time set up.

Note: AUTO set up refers to system utilizing a wireless RF platform with automatic date /time update from IVDT Base Station communication and programming hub.

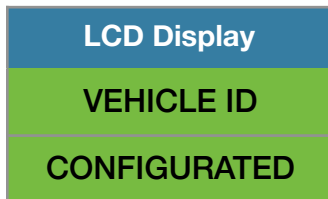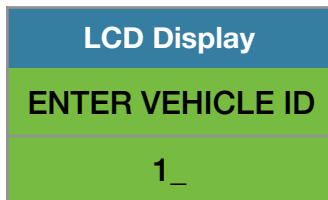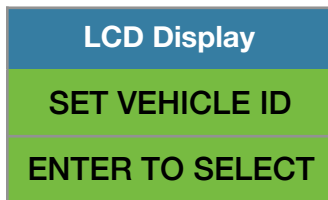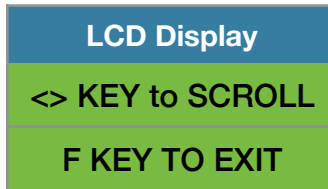**For the applications without Base Station, select MANUAL _ set clock and follow the LCD instructions.**

LCD Display
SET CLOCK
MANUAL _

LCD Display
Aug 28, 2010
12:20:23
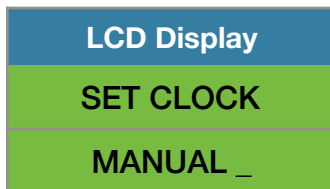
Press **"Enter key"** ↵ to confirm the setting. The cursor will automatically move to the next item to be changed

(Month, Day, Year, Hours, Minutes, Seconds). On the last correction, seconds item press **"Enter key"** ↵ to confirm

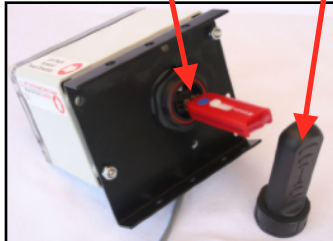new date / time set up.

Set vehicle ID

Maximum input number for vehicle ID is 4 digits.

Note: For system used with RFID card reader maximum input number for vehicle ID is 5 digits.

LCD Display
<> KEY to SCROLL
F KEY TO EXIT

LCD Display
SET VEHICLE ID
ENTER TO SELECT

LCD Display
ENTER VEHICLE ID
1_

LCD Display
VEHICLE ID
CONFIGURATED

USB port **USB Port Protective Cover**

Save data to USB

The SkidWeigh Plus system will allow you to download all recorded data onto a USB drive. **Follow instructions shown on the LCD display**
This function is located in **Supervisor Menu** to protect the integrity of the information.

LCD Display
<> KEY to SCROLL
F KEY TO EXIT

LCD Display
SAVE TO USB
ENTER TO SELECT

LCD Display
SAVING TO USB
- - - - - -

LCD Display
ERASE SDRAM ? N

When the system has finished uploading the data to the USB memory stick the LCD display will prompt you to erase the SDRAM , all files contained on the SKidWeigh Plus ED3-IM . Once you have made your selection **Y** or **N** the system will automatically bring you back to the main screen in the supervisor menu.

LCD Display
<> KEY to SCROLL
F KEY TO EXIT

Weighing scale function calibration

The **ED3/ED4-RFID SkidWeigh Plus** calibration is automatic and is done by lifting empty and loaded forks (or any other attachment such as paper clamp) **just above the ground**. MAKE SURE THAT YOU HAVE A KNOWN LOAD WEIGHT AND KEEP IT NEARBY TO COMPLETE THE CALIBRATION.

For the best results use at least minimum calibration load test weight of 30 to 50% of maximum lifting capacity of the lift truck. Use customer floor scale or find a known skid load weight within the operational facility.

Important:

If you want the system to show load weight in pounds, use the known load weight in pounds and enter that value accordingly. The same would apply if you want the system to show load weight in kilograms. Use the known load weight in kilograms and enter that value into the system accordingly.

Calibration starting point

Scan valid HID operator card and press F key and than number 9 to get into administration menu. Input password 521 , press "Enter key" ↵ and scroll to Calibration 1.

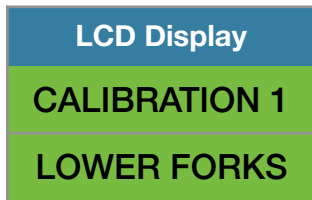| LCD Display |
|---|
| <> KEY TO Optional |
| Function SCROLL |
| F KEY TO EXIT |
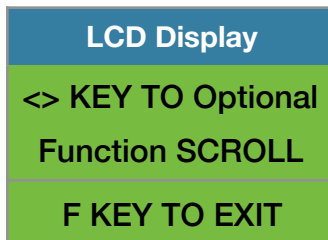
Lower the empty forks to the ground. There should be no hydraulic pressure in lift hydraulic circuit.

Follow instructions shown on the LCD display

LCD Display
CALIBRATION 1
ENTER TO SELECT

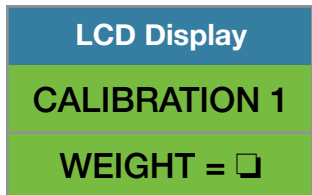| LCD Display |
|---|
| CALIBRATION 1 |
| LIFT EMPTY FORKS |
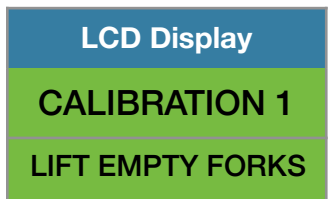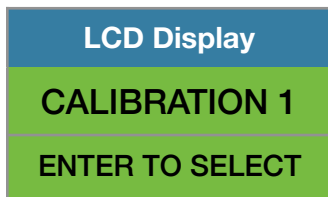
You must activate lift control valve and lift the empty forks just above the ground the same way that you would normally do when lifting loads. Do not slow down this lifting operational cycle, do not tilt the load, do not lift to different heights or move vehicle. **Lift empty forks just above the ground .**

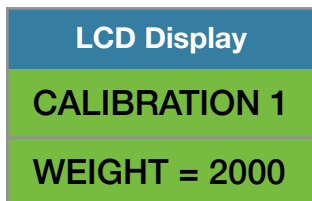After few seconds the LCD display will show

LCD Display
CALIBRATION 1
LOWER FORKS

At this point you must lower the empty forks to the ground. The LCD display prompt you to input known calibration load weight.

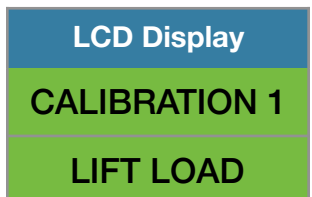| LCD Display |
| :---: |
| CALIBRATION 1 |
| WEIGHT = ❑ |

Pick up a known load weigh and **lower the loaded forks to the ground**.
(Our example of the known load weight is 2000 kg)

LCD Display
CALIBRATION 1
WEIGHT = 2000

Input into the system the known load weight of 2000 into the LCD display and press **"Enter key"** ↵.

The LCD display will show

LCD Display
CALIBRATION 1
LIFT LOAD

Lift loaded forks just above the ground. After few seconds the calibrated load weight value of 2000 will be stored in the system memory. The LCD display will prompt you to lower **"LOWER FORKS"**.

LCD Display
CALIBRATION 1
LOWER FORKS

LCD Display
CALIBRATION 1
CONFIGURATED
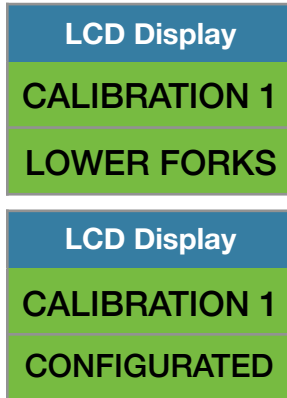
As soon the loaded forks are lowered to the ground LCD will show data / time. **System is ready to be used!**

LCD Display
AUG 28, 2010
12:25:23

System with optional overload warning function *(Additional step)*

As soon as the loaded forks are lowered to the ground the LCD will prompt you to input the overload value for your vehicle operational application.

LCD Display
CALIBRATION 1
OVERLOAD = _
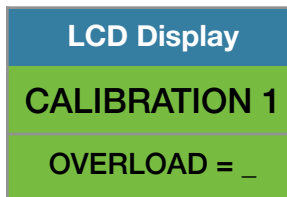
Input the overload value and press **"Enter key"** ↵ **.**

Calibration of the ED3-RFID system weighing function is finished.

Supervisor Menu Instructions

(Set Impacts, saving data to USB, other applicable functions)

Low impacts

High impacts

Audible buzzer warning for low and high impacts

Audible buzzer warning time from 1 to 60 seconds

Continuous audible buzzer warning

To enter into the Supervisor Menu, press **F key and than number 9 key.** Input password **521**.

Follow instructions shown on the LCD display

LCD Display
MENU
PASSWORD = _

LCD Display
SET IMPACTS
ENTER TO SELECT

LCD Display
ENTER LOW IMPACT
4.0 G _

LCD Display
ENTER HI IMPACT
8.0 G _

LCD Display
ENTER HI IMPACT
8.0 G _

LCD Display
ENTER HI IMPACT
CONTINUOUS ? Y

LCD Display
ENTER HI IMPACT
CONTINUOUS ? Y

LCD Display
IMPACT
CONFIGURATED

Lift Truck Operator Menu Instructions

(Bluetooth, TARE set up, Parts count functions)

The SkidWeigh Plus system allows lift truck operator to pair Bluetooth additional devices such as onboard printers or barcode scanners or set TARE, Parts count.

To enter into the lift truck operator menu, press **F key and than number 0**.

Follow instructions shown on the LCD display

LCD Display
BLUETOOTH
ENTER TO SELECT

LCD Display
BLUETOOTH MODE
AUTO _

Note: Use left ◀ and right ▶ arrow key *(bottom left side of the keypad)* to choose MANUAL, INQUIRY or AUTO.

Note: For the majority of the Bluetooth pairing applications use AUTO mode.

Make sure that you follow pairing instructions for each Bluetooth device.

LCD Display
BLUETOOTH MODE
AUTO _

LCD Display
BLUETOOTH MODE
INQUIRY

LCD Display
BLUETOOTH MODE
MANUAL

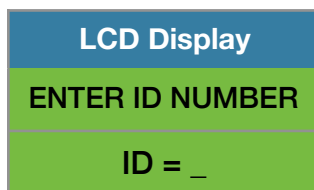| LCD Display |
| :---: |
| SEARCHING |
| _ _ _ _ _ _ |
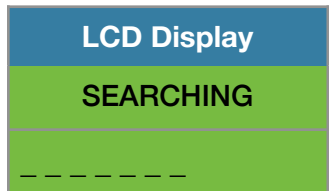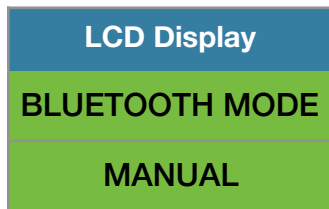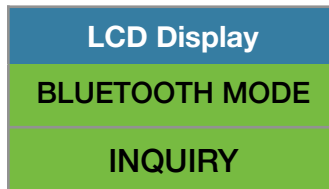
Bluetooth pairing options are

- **AUTO**

- **MANUAL**

- **INQUIRY**   (Preferable method)

Operator Reference / Usage Guide

- Turn ignition switch
- Scan RFID card.

Note: Input an operator ID# and press **"Enter key"** ↵ **if applicable**.

LCD Display
ENTER ID NUMBER
ID = _

LCD Display
Aug 11, 2011
11:19:38

- Insert the forks into the pallet or under the product to be weighed.
- Lower the forks to the ground.

*LCD display must show date and time in order to initiate weighing function.*

LCD Display
Aug 11, 2011
11:19:38

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

Do not manipulate the tilt, side shift or move the vehicle.

LCD Display
Aug 11, 2011
PLEASE WAIT

LCD will display "**PLEASE WAIT"** and after few seconds a load weight will be shown

Example: Lifted load weight of 300
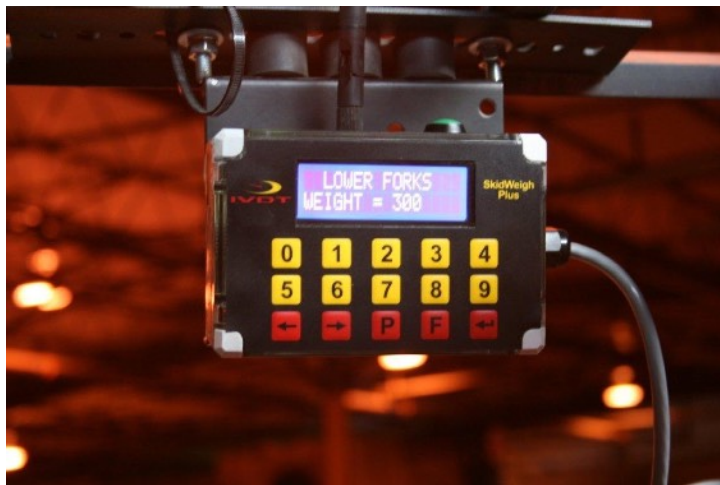
This load weight will be shown on LCD display until next time the forks are lowered to ground.

Note: *When vehicle in motion the LCD might show some random load weight. This is due to the hydraulic spikes and this does not represents any actual load weight value. To initiate the **"weighing cycle" you must lower the loaded forks to the ground and lift loaded forks just above the ground.***

Accumulative Load Weight Total

To add loads weight press **"Enter key"** ↵ after each load weight is shown on LCD display.

LCD Display
Aug 11, 2011
WEIGHT = 1200

When **"Enter key"** ↵ is pressed LCD display will show a load weight of the first load and total load weight.

LCD Display
WEIGHT#1 = 1200

LCD Display
TOTAL = 1200

After each new load weight shown on LCD display and pressing **"Enter key"** ↵ system will be updated showing the latest current load weight total, number of loads and total load weight of all loads.

To reset current individual load weight or totalizing session press **"P" key** and session will be RESET.

Note: If the onboard printer is connected to the system by pressing "P" key after individual or total load weight you will get a printout ticket. If the system is utilizing RF communication data will be send to base station.

TARE Function Input

To set up TARE value into the system press **F key and than 0 key.**

LCD Display
Aug 11, 2011
WEIGHT = 1200

LCD Display
<> KEY to SCROLL
F KEY TO EXIT

Scroll to get to the TARE value set up.

LCD Display
TARE
ENTER TO SELECT

LCD Display
TARE ADJUSTMENT
TR = 00 Select

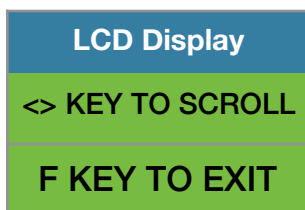| LCD Display |
|:-----------:|
| **TARE** |
| **CONFIGURATED** |
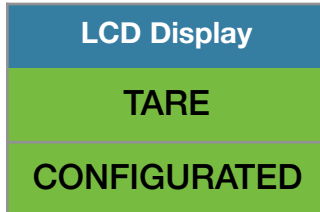
To reset or change TARE value press **F key and than 0** key and set to 0 to reset current TARE value. To change to the new TARE value, input another TARE value and press **"Enter key"** ↵ .

LCD Display
Aug 11, 2011
TARE = 1250
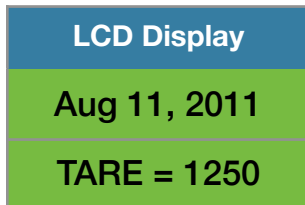
All of the following load weight measurements will be displayed with TARE sign shown on LCD display.

Important:

To reset TARE you must press **"F" key** and input number **0** and press **"Enter key"** ↵.

LCD Display
<> KEY TO SCROLL
F KEY TO EXIT

LCD Display
TARE
ENTER TO SELECT

If the current value is 500 as of example, than input 0 value and **"Enter key"** ↵.

LCD Display
TARE ADJUSTMENT

LCD Display
TR = 500 Select

TARE will be reset to zero. All load weights shown on LCD display will be showing actual load weight.

All SkidWeigh products equipped with HID RFID card reader MUST be activated with valid operator access card in order to initiate system set up, calibration and enable vehicle normal usage by authorized operator. Every system shipped out to the customer includes a **RFID MASTER CARD to be used by the end user to program any number of valid lift truck operator's HID cards.**

Integrated Visual Data Technology Inc. DOES NOT supply valid operator card to access the system or supply any programming of the HID cards.

It is a customer responsibility to have at **least one VALID HID RFID operator card available** that can be automatically programmed into the any SkidWeigh product utilizing the enclosed **RFID MASTER CARD**.

Technology

The RFID operator access HID card reader is integrated into digital indicator housing with SkidWeigh system proprietary software that allows self programming, deleting and management of authorized vehicles operators on the any of the Skidweigh products equipped with RFID card readers. There is no need for any additional programming devices!

System application to operate on any material handling vehicle having electrical power supply from 12 to 55 VDC.
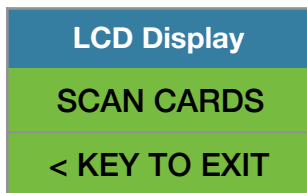
Starting point to program valid operator(s) cards

Turn ignition switch to on position
The LCD display will indicate to "SCAN CARD" (as shown below on the picture)
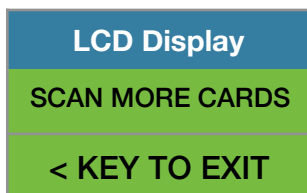
Scan RFID MASTER CARD

LCD display will show

LCD Display
SCAN CARDS
< KEY TO EXIT

Scan first valid HID operator card.

The LCD display will show for the moment the value of the inputed card.
The LCD display will indicate that "CARD ADDED OK "and short beep once

LCD Display
SCAN MORE CARDS
< KEY TO EXIT

Scan second valid HID operator card.

Follow instructions shown on LCD display.
Keep adding the valid cards to vehicle. When all cards inputed into the system press **< KEY TO EXIT**
Lift Truck SkidWeigh RFID Authorized Operator Access *System has a capability to add up to 250 valid operator cards.*
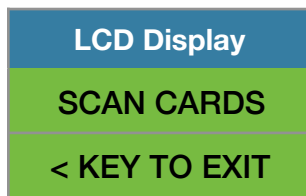**Note: *Proceed with programming valid operator cards for each vehicle in your fleet.***

Starting point to delete operator(s) cards already on the system

Turn ignition switch to on position
The LCD display will indicate to "SCAN CARD" (as shown on the picture)
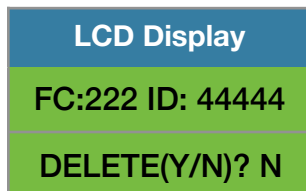
Scan RFID MASTER CARD

LCD display will show

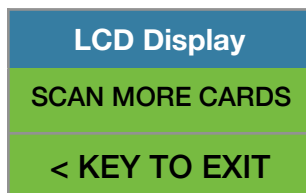| LCD Display |
| :---: |
| SCAN CARDS |
| < KEY TO EXIT |

Scan first valid operator CARD that you want to delete from the system

LCD display will show the card ID# . Use left ◀ and right ▶ arrow key to change to **Y**.

LCD Display
FC:222 ID: 44444
DELETE(Y/N)? N

The current card ID# 44444 will be deleted from the system. LCD display will automatically show

LCD Display
SCAN MORE CARDS
< KEY TO EXIT

Scan next valid operator CARD that you want to delete from the system

Follow instructions shown on LCD display.

Keep adding cards to be deleted. When all cards inputed into the system press **< KEY TO EXIT**   **Note:** In the case that you need replacement of RFID MASTER CARD, please call us at 905-469-0985

How to disable RFID reader

Vehicle access enable function in case of lost HID master card, valid card(s) or reader malefaction
- With digital indicator showing " IVDT SCAN CARD" press and hold **F** key for 5 seconds
- LCD display will show PASSWORD =_
- Input **521** and RFID reader will be disabled. Vehicle will be operational without RFID operator card
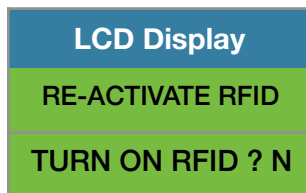
input.

How to enable RFID reader

With digital indicator showing date / time press **F key and than number 9**.

- LCD display will show PASSWORD =_

- Input **521**

 < KEY TO SCROLL and follow instructions

LCD Display
RE-ACTIVATE RFID
ENTER TO SELECT

LCD Display
RE-ACTIVATE RFID
TURN ON RFID ? N

ProxPoint Plus RFID Card Reader / SkidWeigh Technology

Read Range   Typical 3”
Operating Voltage 12 to 55 VDC
Operating Temperature (-35 C to 65C)
Operating Humidity 5-95% non-condensing
Transmit Frequency 125 kHz
Card Compatibility All 125 kHz HID Proximity cards, long and short formats, as well as Corporate 1000 cards formats
LED Type Bicolored (green and red)
Transient Surge and Reverse Voltage Protection
Extra Security, Recognizes card formats up to 85 bits with over 137 billion unique codes
Application for all kinds of lift trucks regardless of the vehicle make, type ,model or operating voltage
Self programming, no additional devices required to add or delete cards from the system
Memory capacity to up to 250 operators ID#
FCC Compliance, part 15 of the FCC rules