INTEGRATED VISUAL DATA TECHNOLOGY INC.
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Installation & Calibration Manual

ED2E-Elite SkidWeigh & DL2-E DURA-LIFT Systems

Lift Truck Onboard Weighing Scale

ED2E-Elite V2200H

Integrated Visual Data Technology Inc., 3439 Whilabout Terrace, Oakville, Ontario, Canada L6L 0A7

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General Installation Guide

This ED2E-Elite SkidWeigh / DL2-E system installation & calibration guide describes how to install, calibrate, test and use your on-lift truck board load weighing system. 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 , visit www.skidweigh.com or contact us at the address or contact 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.

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.

ED2E *Elite* SkidWeigh 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 ED2E-Elite SkidWeigh weighing system consist of two main components:
* Digital indicator with mounting flange and wiring cable
* Hydraulic pressure transducer with 3 wires cable
* Installation & calibration manual and operator usage instruction

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Operational principal

The ED2E-Elite SkidWeigh system 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 per session which is converted into a load weight reading.

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 flange and fasten digital indicator on the vehicle dashboard or side railing preferably on the right hand side. 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 does not hit a head

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Compact size

All of the SkidWeigh ED2E Series systems are compact size, housing dimension of only 115 x 65 x 40 mm (4,53” x 2,65” x 1,58”) with mounting flange.

Electrical Connections

All SkidWeigh Elite Series systems operate from 12 to 55 VDC.

Digital indicator with seven 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

Pressure transducer cable

(Pressure transducer cable must be connected to the digital indicator seven wires single cable)

- **White Wire, signal wire 0 to 2,5 V**
- **Black Wire, negative**
- **Red Wire, positive, 11 VDC**

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Electrical power short circuit protection

- All of the SkidWeigh Series 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.
- Automotive 60 V load dump protection
- Reversal power supply protection

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

Note: 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. - Lower the forks to the ground

- Turn On ignition switch
- Digital LED display will be activated, showing software version and serial number
- Number 8 will be shown on LED display above the Mode sign.
- Lift loaded forks. Mode 8 will go off and some load weight will be shown on LED display.

If the above test is valid than the system electrical connections are done right. The next procedure will be to calibrate the SkidWeigh weighing function.

Lift truck equipped with hydraulic accumulator

If the standard ED2E 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 +/-1.0% of vehicle maximum lifting capacity.

Weighing function calibration procedure

The ED2 Elite SkidWeigh 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.

Note:

For the best results use at least minimum calibration load test weight of 40 to 80% 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 during the system calibration and enter that value accordingly. The same would apply if you want the system to show load weight in kilograms than use the known load weight in kilograms and enter that value into the system accordingly.

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Calibration starting point

Lower the empty forks to the ground. There should be no hydraulic pressure in lift hydraulic circuit.
- Turn ignition switch to on position and start the engine
- LED display will show software version on the right side and number **8** will be shown in **Mode** window. *(Green led light, "Ready" will be on)*

Calibration of empty forks being lifted just above the ground

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

After 5 seconds the Mode display digit will change from number 8 to 0.
(System is ready for automatic zeroing of the scale function)

When LED display is showing **"0"** in Mode digit, lift the empty forks (or attachment such as clamp, etc) **just above the ground.**

Note: *Activate the lift control valve as you would do during the normal lifting operation. Do not attempt to lift the empty forks slowly.*

The LED display will go "blank" for few seconds while the system is calculating the value for empty forks being lifted.

After few seconds, LED display will show **"1"** in Mode digit and **"0"** value in furthest right digit display.

Automatic zeroing is done!

Note: Next step will be to calibrate the system by lifting known load weight.

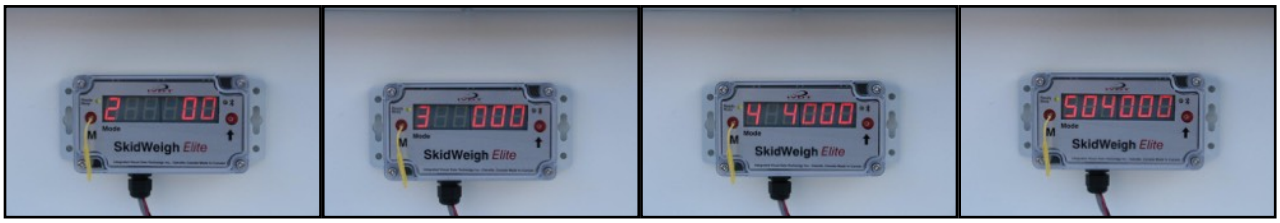
Calibration of loaded forks being lifted just above the ground

Pick up a known load weight and lower the loaded forks to the ground.
- (Green led light, “Ready” will be on)
- In our example we will use a known calibration load weight of 4000 pounds

Our Example

Known load weight to calibrate the system is 4000 pounds.

- Start entering a known load weight value by using arrow up button (increments from 0 to 9), wrap around.



Mode	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
1					0
2				0	
3			0		
4		4			
5	0				

- Start with least significant digit. (In our case this is “0”)

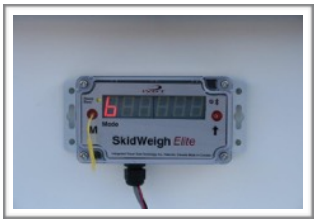
- Use **“M”** button to increment to the next digit on LED display.

- To enter the second digit, press the **“M”** button and Mode digit will increment to the second.

- Keep pressing **“M”** button and enter a third, forth and fifth values.

- As the input for known load value has only four digits *(4000 in our example)*, the fifth digits must be “0”.

- Before going to **Mode 6** please make sure that the “Known load weight” is ready to be lifted.
  The loaded forks must be on the ground (No hydraulic pressure in the lifting hydraulic circuit)



- Press the **“M”** button to advance to **Mode 6** and lift the “Known load weight” just above the ground.

LED display will go blank and within few seconds LED display will show the value of calibrated ***“Known load weight of 4000”***

When you lower the load to the ground system will go automatically into operational mode.

- Mode digit will display number **8**.

Weighing calibration function is completed and system is ready to be used

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ED2E-Elite / DL2-E SkidWeigh Options

Overload Warning ____

ED2E-Elite-V SkidWeigh system with visual overload warning

ED2E-Elite-VA SkidWeigh system with visual / audio overload warning

As soon the ED2E Elite system is calibrated LED display will show number **7** in Mode digit.
When LED display shows **"Mode 7"** you must enter the overload warning value for that particular vehicle application.
The **"Mode 7"** digit will remain while you are entering the overload warning value.

In our example we will enter the overload value of **4500.**
Make sure that "0" is inputed for digit number 5.
As soon the last digit is inputed into the system **Mode 7** *will change to* ***Mode 8*** *which is the normal operational mode.*

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

Example: If the lifted load is above preset overload value of 4500, in our case showing 5489 pounds the LCD display will
- Show actual overload value
- LED display will "flash"
- Audio warning will be activated and stay on until load is lowered to the ground

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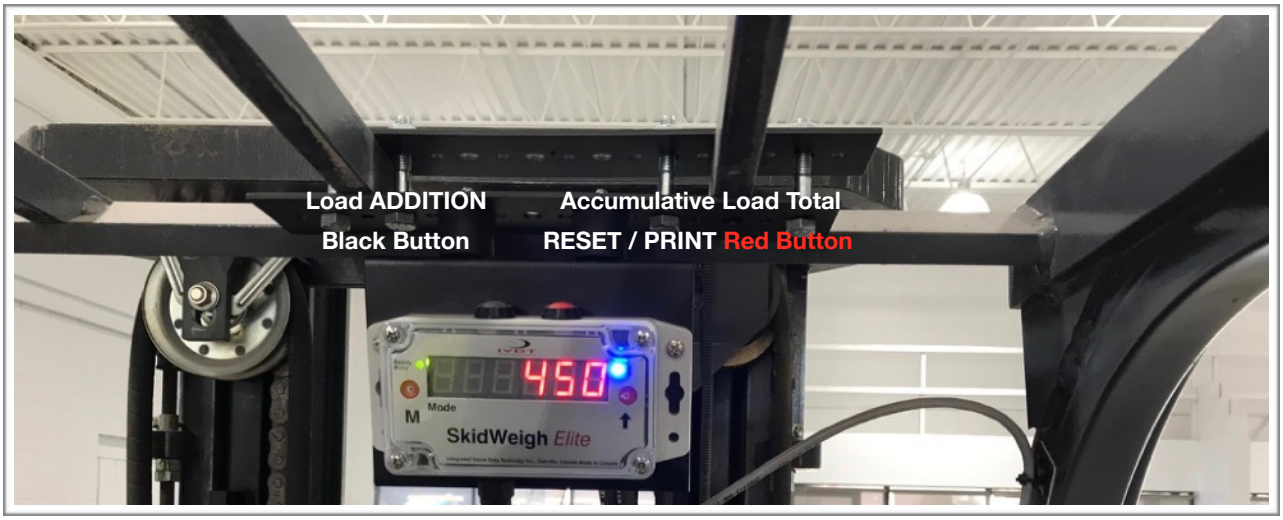
Accumulative Load Weight total ____

ED2E-Elite-AT SkidWeigh system with accumulative load weight



Power On LED Bluetooth LED

SkidWeigh system with accumulative load weight total with Onboard Printer (Bluetooth)

Bluetooth Onboard Printer Pairing Procedure

- Turn printer on.
- On digital indicator press and hold **Arrow Up** button.
- Turn ignition switch on to apply power to the system. Indicator will show number 8 on all six digit. *(Do not need to hold **Arrow Up** button)*
- Wait for few seconds and **"Bluetooth Blue LED Light"** will come on.
- The mobile Bluetooth printer is paired with the system.

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Two Independent Weighing Channels ____

ED2E-Elite-2X

SkidWeigh system with two independent weighing channels

- LCD display showing Mode 8 is representing first independent weighing channel
- LCD display showing Mode 82 is representing second independent weighing channel

Mode **8** is the first weighing channel
By pressing two weighing channels switch indication on LED display will change to Mode **82**

Note:

The calibration procedure is the same for the second weighing channel, indicated on LED display as Mode **82**.

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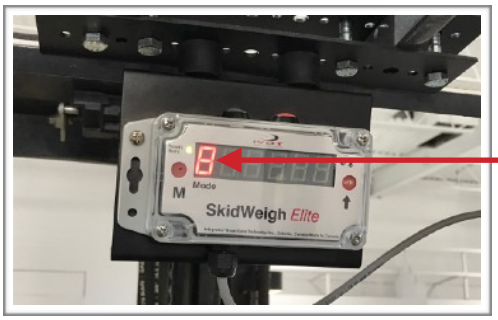
OPERATOR USAGE GUIDE

WEIGHING LOADS

1. Drive forks into palleted load

2. Make sure that the forks are completely on the ground with no pressure in hydraulic system



LED display must show **Mode 8** to initiate weighing cycle

3. Lift the loaded forks approximately 2" above the ground.

Use the hydraulic lift lever and accelerator pedal only (same as during normal usage)

- Do not move vehicle, manipulate the tilt, side shift or forth lever function during weighing process.
- During the measurement cycle LED light (Busy) will turn yellow
- After few seconds LED display will indicated load weight

ACCUMULATIVE LOAD WEIGHT TOTAL (Optional)

- Use **"Black"** Button to accumulate load weigh
- Use **"Red"** Button to reset accumulative load weight total and print ticket if onboard Bluetooth printer is connected to the system.

OVERLOAD WARNING (Optional)

- **If the load lifted is above pre-set overload value the LED display will show overload and LED will flash. Audio warning will be activated and stay on until load is lowered to the ground.**