INTEGRATED VISUAL DATA TECHNOLOGY INC.
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SC4 SkidWeigh *Classic*

Installation & Calibration Manual

Lifted Load Shown in % of Maximum Vehicle Lifting Capacity with Visual Overload Alert

SC4V1

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General Installation Guide

This SC4 Series SkidWeigh Classic system installation & calibration guide describes how to install, calibrate, test and use your load monitoring 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 or 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.

SC4 SkidWeigh Classic 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 SC4 Series SkidWeigh *Classic* load capacity monitor consist of two main components:
* Digital indicator with wiring harness, mounting bracket and anti-vibration mount
* Hydraulic pressure transducer with 3 wires cable
* Installation & Calibration manual and operator usage instruction

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Operational principal

The SC4 SkidWeigh Classic system operational principal is based on the hydraulic pressure transducer mounted in the vehicle lifting hydraulic circuit. The patented algorithm will initiate the measurement cycle every time a load is lifted. The increase in pressure is converted in an electronic signal at the sample rate of 16000 readings per measurement cycle, updated every second which is converted into a capacity load readout shown in percentage of the vehicle maximum load lifting capacity.

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 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 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 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.

* Pressure Transducer with cable
* Mounting Bracket Kit with two anti-vibration mounts

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Electrical Connections

The SC4 SkidWeigh Classic systems operate 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

* **Optional connection to external overload alert** (Dry relay contacts S.P.S.T. N.O. max. 1A load)

Pressure transducer cable

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

- White Wire, signal output 0 to 2,5 V
- Black Wire, signal negative
- Red Wire, power supply to pressure transducer + 11 VDC

Electrical power short circuit protection

- All of the SkidWeigh *Classic* 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.

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

Note: SkidWeigh Classic SC4 calibration function is not done yet at this stage. This procedure is only to test if electrical connections of the system electrical wires into the vehicle is done properly! After you have connected electrical power and pressure transducer cable you can "quickly" check the system.

- Lower the forks to 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 digit.
- Lift the empty or loaded forks to increase pressure in lifting cylinder. The **Mode 8** digit will go off and indicator will show load in percentages on LED display. (*Not calibrated value)*
  If the above test is valid than the system electrical connections are done right.

The next procedure will be to calibrate the SC4 system

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- Lift truck equipped with hydraulic accumulator (IC vehicles)

If the SC4 system is installed on the lift trucks equipped with hydraulic accumulators, please contact us to provide you with different digital indicator.

Calibration procedure

The SC4 Series SkidWeigh *Classic* calibration is fully automatic and is done by lifting empty forks (or with any other attachment such as paper clamp) and loaded forks with known load weight 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 vehicle as per vehicle name plate. Use customer floor scale or find a known skid load weight within the operational facility.

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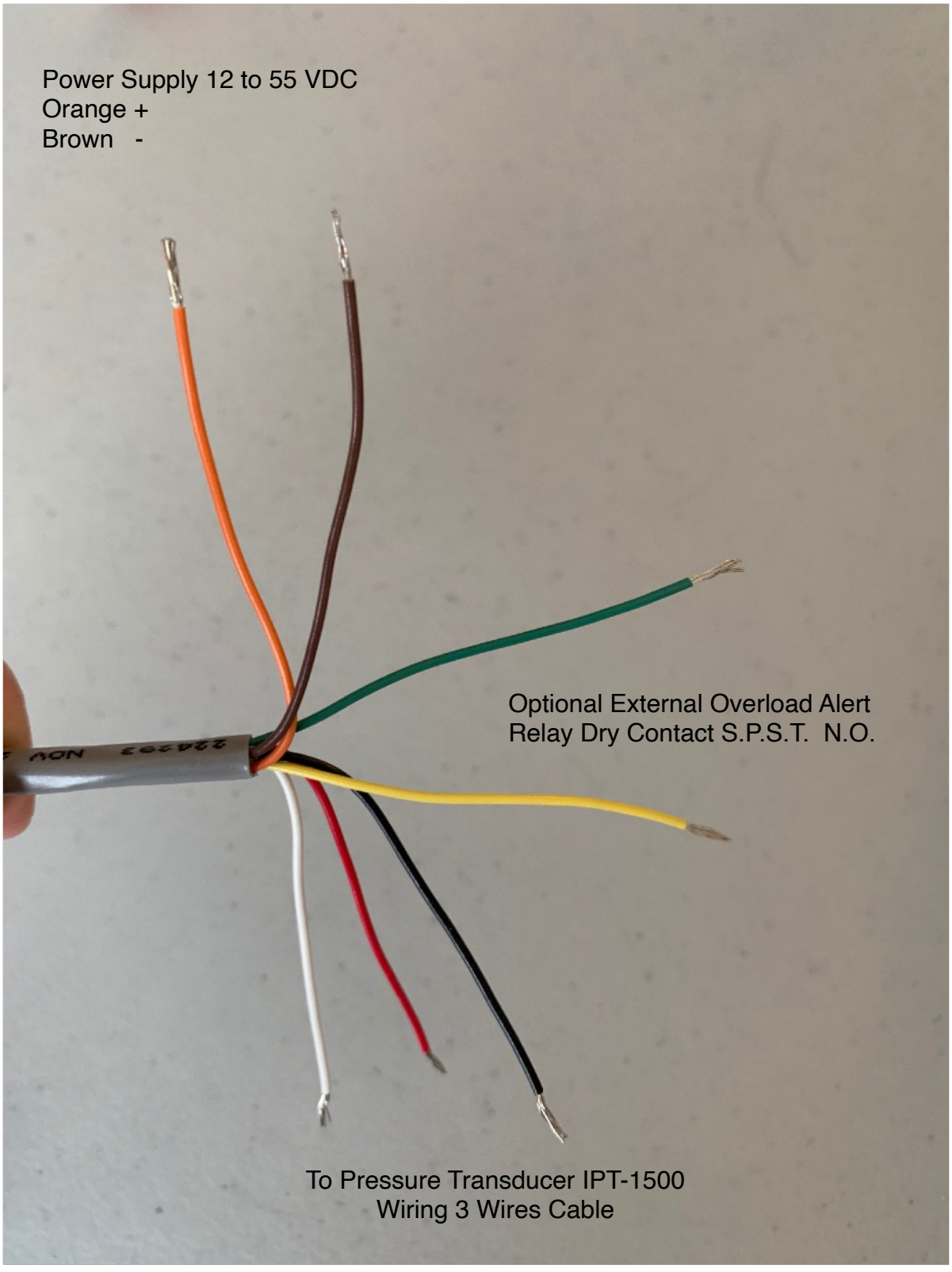

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SC4 SkidWeigh *Classic* System Calibration

Lower the empty forks to the ground. There should be no hydraulic pressure in lift hydraulic circuit.
- Turn ignition switch to on position (electric lift trucks) and start the engine on combustion powered lift trucks
- LED display will show software version briefly on the right side and number **8** will be shown in the **Mode** digit.

1. Calibration of empty forks 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 8** 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 longer forks, clamp, etc) just above the ground.

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

Wait few seconds, LED display will go blank for *few seconds and will show in **Mode** digit number **1** and default value of "**0**" in furthest right digit display.

** In vehicles equipped with hydraulic accumulator(s) the LED display will go blank for about 8-10 seconds. You must order different digital indicator for such application. Model is SC4-HA.*

Automatic zeroing for scale function is done

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2. Calibration of loaded forks

At this point drive your vehicle into the skid with known calibration load weight and **lower it to the ground**

Note:

(In our example the known load weight to calibrate the system is 4000 kg or pounds)

Calculation Example To Input Known % Value

* Known Load Weight To Calibrate the System Is 4000 Kg or pounds

* Vehicle Maximum Lifting Capacity Is 8000 Kg
(As per manufacturer specifications shown on the vehicle name plate)

Use a following calculation to arrive to the percentage value that you will have to input into the system.

$$\text{Load Capacity in \%} = \frac{\text{Known Load Weight X 100}}{\text{Lift Truck Maximum Lifting Capacity}} =$$

Our example input known % value

$$\text{Load Capacity in \%} = \frac{\text{4000 X 100}}{\text{8000}} = \text{50}$$

Calculated % Value input

Use calculated value of 50 as a percentage to be entered into the system

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Use **M** button for left shift direction from Digit 1 to Digit 5 and to **Mode** digit
Use **Arrow Up** button to input digits from 0 to 9 in one direction (increase)

Use **"M"** and **Arrow Up** buttons to enter value of **50**. Make sure that Digits **3**,**4** and **5** are "**0**".

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

Note:

With LED display showing **500050** (as per our example) and loaded forks on the ground with known load weight press the **"M"** button to advance to **MODE 6** and lift the known load weight approximately 2" to 4" inches above the ground to initiate loaded weight calibration.

In our example when lifted known load weight of 4000 above the ground the LED display will show 50 % and will be updated every second

Automatic load weight calibration in % is done

Lower the loaded forks to the ground
to input the overload warning alert for the application

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When system calibration is done and loaded forks lowered to the ground the MODE 7 will be automatically shown on LED Display

Overload Input Procedure

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

Use the **"M"** and **"Arrow up"** button to enter the desired overload warning value. In our example we will enter the overload value as **90%**. The Mode **7** digit will remain throughout the numerical input. Make sure that digits **3,4** and **5** are "**0**". On last shift (Utilizing **"M"** button, left shift direction) the **Mode 7** digit will turn off. The overload value will be stored in the system.

MODE	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
7					0
7				9	
7			0		
7		0			
7	0				

Operator Usage Guide

The SC4 SkidWeigh Classic system does not require operator input.
Digital indicator will show the lifted load weight just above the ground in % of the vehicle maximum lifting capacity.

* The readout is automatically updated every second.
* If the lifted load is more than preset overload value for the application the overload value will be shown on LED display and (Visual, Audio or both warning) will be activated.
* The overload alert will be activated after two seconds
* To stop the overload alert operator must lower the overload to the ground