

# V2

LOAD WEIGHING DEVICE

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## VERSION 3.0



SMARTRISE

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## Document History

Date	Version	Summary of Changes
March 1, 2020	1.0	Initial Submittal
April 30, 2020	2.0	Updated to new cover page and format
May 13, 2020	3.0	Added notes to the Wi-Fi connection and calibration procedure

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# Load Weighing Device

The load weighing device (LWD) monitors the weight of the car.

The device consists of two boards:

- Base board
- Extension board (top board)

## Base Board

The Base board does the following:

- The 24-bit A/D reads the loadcell.
- The Base board reads the data from the sensor and processes the information by an analog to digital converter.
- The Base board creates a Wi-Fi access point (as a UI) which can be used with any Wi-Fi capable device to calibrate the LWD.
  - Enter the following information to access the Wi-Fi.

**NOTE:** The Wi-Fi connection is only available for one hour then the connection drops. If more time is needed, the user must power cycle the unit and reconnect to the Wi-Fi.

Wi-Fi SSID: Smartrise LWD (no password is required)

IP Address: 192.168.4.1

UI Username: smartrise

UI Password: 1234

- Converts the weight to an analog signal (0-10V) and sends it to the Extension board for analog/discrete interface with V2/V3 controllers.

## Extension Board

The Extension board provides three discrete signals:

- 01 – Light Load
- 02 – Full Load
- 03 – Overload

The OAN is an analog output of 0-10V (connected to the drive).

The LWD has LED indicators for each signal.



Figure 1: LWD Signal Indicators

## Sensor

The sensor consists of four wires:

- Red
- Black
- White
- Green

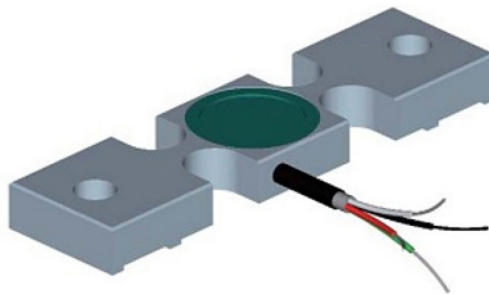


Figure 2: Sensor

For additional information on the sensor, see

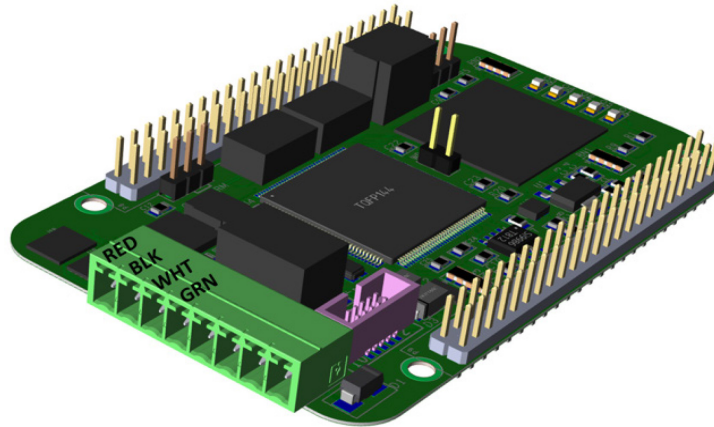
[http://www.elevatormotors.com/load\\_weighting\\_controls/cross\\_head\\_sensor/index.html](http://www.elevatormotors.com/load_weighting_controls/cross_head_sensor/index.html).

## Connect Sensor to the Base Board

Perform the following to connect the sensor to the Base board:

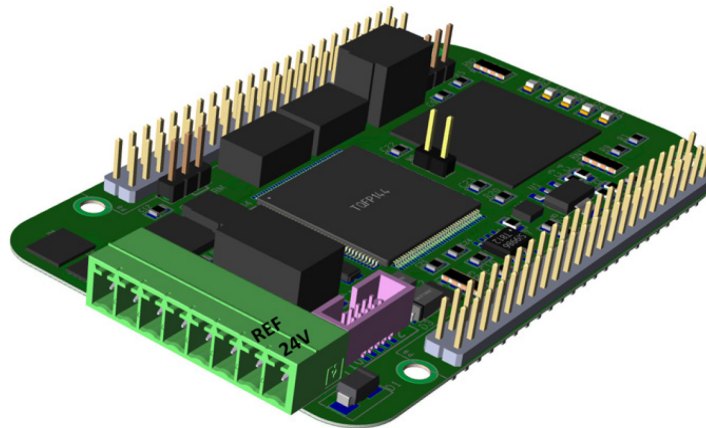
1. Connect the sensor to the Base board connector pins 5-8 as shown in the figure below.

**NOTE:** Verify the color of the wires match the connection points on the Base board.



*Figure 3: Base Board Sensor Connection*

2. Connect power to the Base board connector pins 1-2 as shown in the figure below.



*Figure 4: Base Board Power Connection*

## Connect Extension Board (Top Board)

Perform the following to connect the Extension board to the SRU.

1. Connect COM, O1, O2, and O3 on the Base board to the SRU as shown in the figure below.

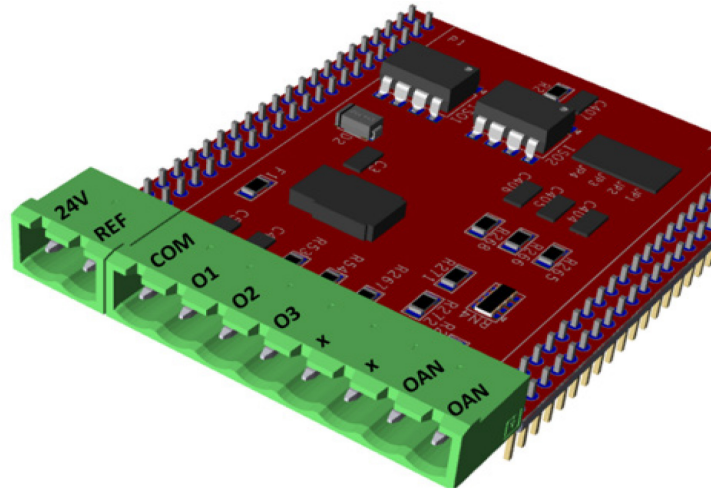


Figure 5: Extension Board Connection to SRU

2. Connect OAN to the analog input of the drive. See Figure 5.

## Jumpers and LEDs

The table below lists the Header and Function.

Table 1: Header and Function

Header Name	Function
HMB8266	Programming the ESP8266 processor
WD	Watch-dog jumper
CAN_TERM	CAN termination jumper

The table below lists LED Indicators.

Table 2: LED Indicators

LED	Indicator	Normal Status
O1 (Green)	Power LED	On
O2 (Green)	M4 heartbeat	Blinks 1Hz
O3 (Red)	M4 fault	Off (On indicates a fault)
O4 (Orange)	M4 N/A	Off
O5 (Green)	Serial Comm.	N/A

## LWD Calibration

The following procedure describes how to calibrate the LWD.

**NOTE:** Weights must be available prior to performing calibration procedure.

1. Put the car at the lowest floor, and make sure the car is empty. In the section **Zero**, click on **“ENTER”**.
2. While the car is still at the lowest floor, insert a known weight inside the car, (ideally the full load weight), and enter the weight in (lb) in the field **Span**, and hit **“ENTER”**.
3. Empty the car and repeat #1.

**NOTE:** **“Zero”** again! (IMPORTANT)

4. Enter the car capacity in the required field and hit enter.
5. Enter the Light load, Full load, Overload thresholds in the required fields and hit enter.

**Smartrise LWD Calibration Setup**

**1- Zero (Offset adjustment)**  
Put the car at the bottom floor with no load in it, and hit "ENTER"

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**2- Span (Sensitivity adjustment)**  
Car at the bottom floor, put a known weight in the car and enter the value in the box below and hit "ENTER"

(lb)

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**3- Max. car capacity**  
Enter the maximum car capacity in the box below and hit "ENTER"

(lb)

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**4- Light Load Threshold (lb)**  
Enter the light-load threshold

(lb)

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**5- Full Load Threshold (lb)**  
Enter the full-load threshold

(lb)

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**6- Over Load Threshold (lb)**  
Enter the over-load threshold

(lb)

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Figure 6: Smartrise LWD Calibration Setup

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