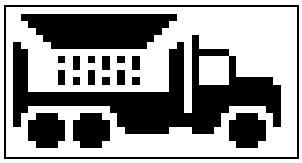
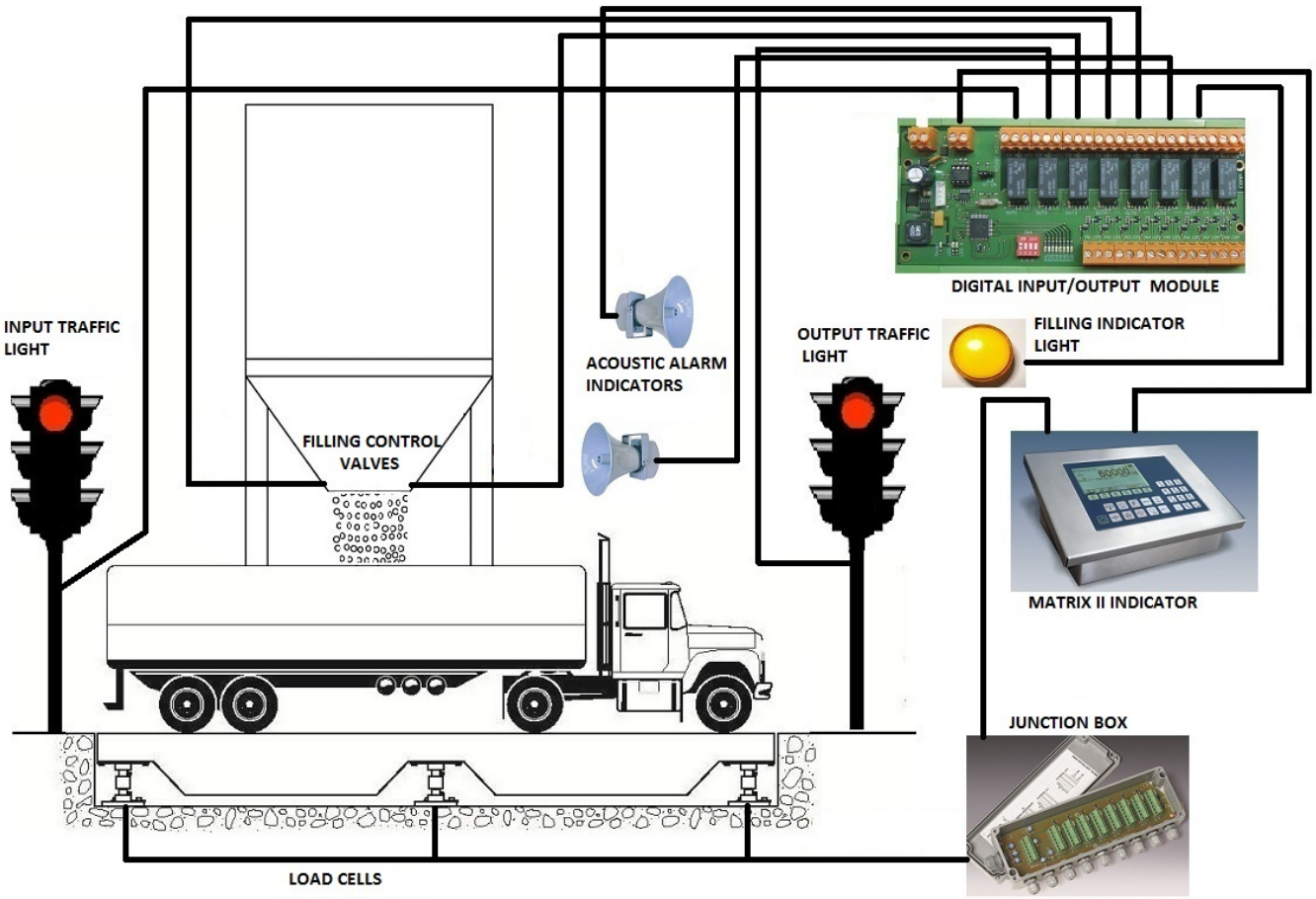
1st AND 2nd WEIGHT MANAGEMENT WITH ACCESS CONTROL AND AUTOMATIC FILLING IN A TRUCK SCALE APPLICATION



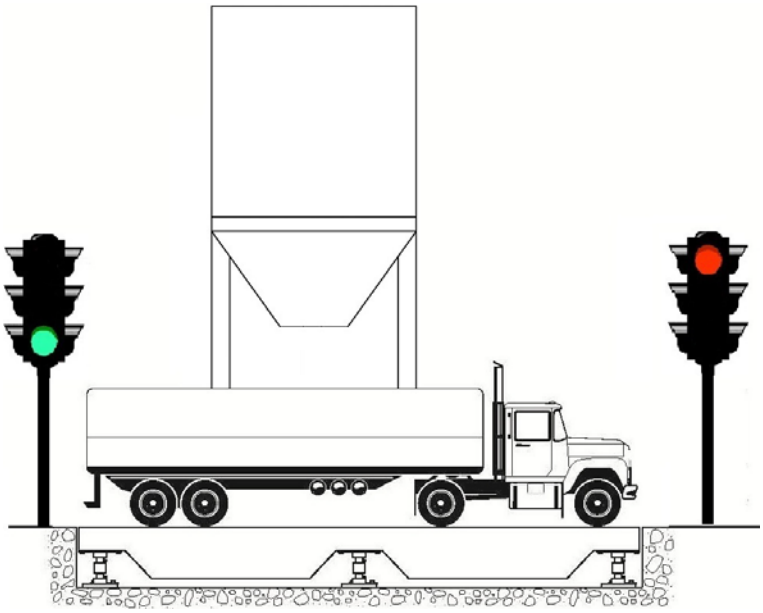
The intent of this AppManual is guide the user when making the input and output barriers /traffic lights control, the 1st weight management, the automatic filling and the 2nd weight management in a truck scale with a MATRIX II indicator.
This application can be of help in industrial environments where it is necessary to transport material to another place having total control of the filling of the truck.

Next, we will show a general scheme of the application:



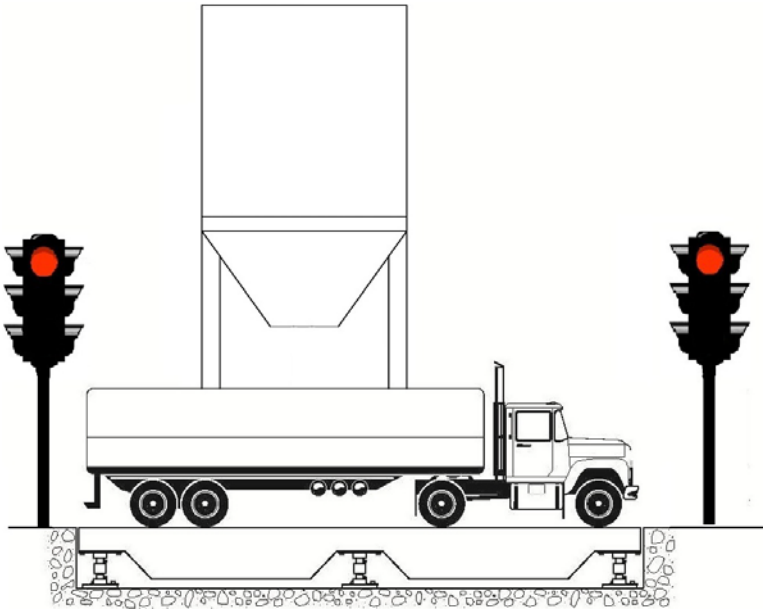
The operative of the application is shown in the following 4 images:

1) The truck comes into the scale:



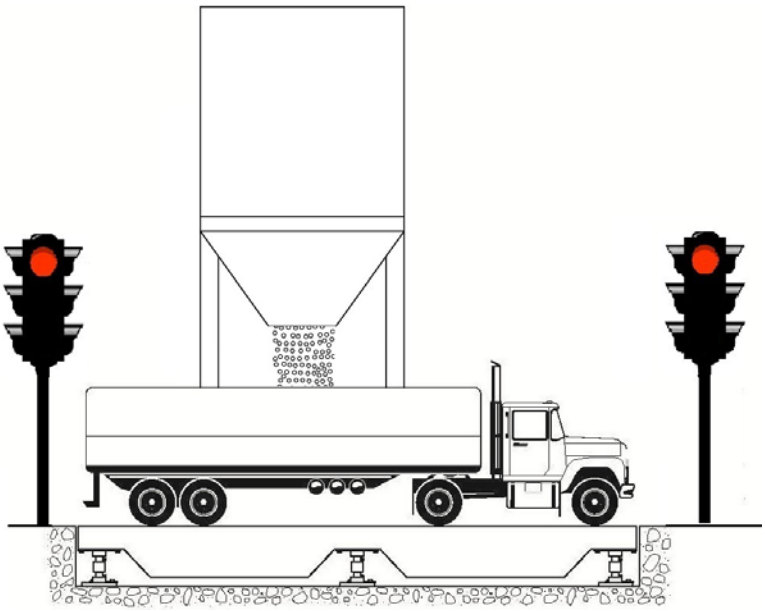
- The truck arrives to the scale, the scale is empty, the input barrier is open and the output barrier closed.
- The truck comes into the scale and the input barrier closes.

2) Once the truck is in the scale, the input traffic light closes and now we are able to perform the first weight:



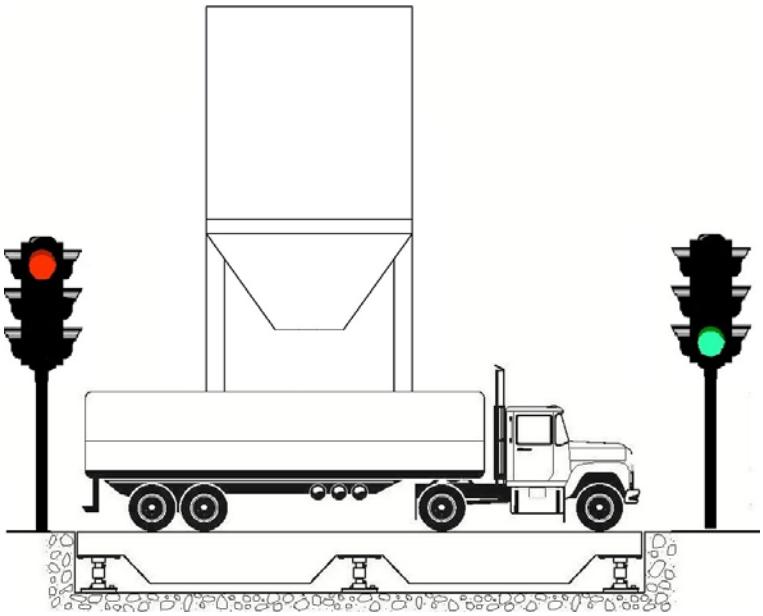
- By pressing the F4 (filling) function starts the application; the device will ask us for some information, as the truck license, the company, etc. Once we have completed or skipped some fields, but after have finished the information step, the device will start the application as normally in a common truck scale application, 1st and 2nd weight. The 1st weight in the filling function, weights normally an empty truck, it performs a TARE.

3) Once the 1st weight it is been done, we are going to perform the truck's filling:



- After the 1st weight has been finished without leave the filling menu, the device will start the automatic filling, as we have programmed, controlling the necessary digital outputs to activate the above hopper valves.

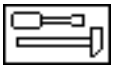
4) After the filling has been done, the operative finishes opening the output traffic light:

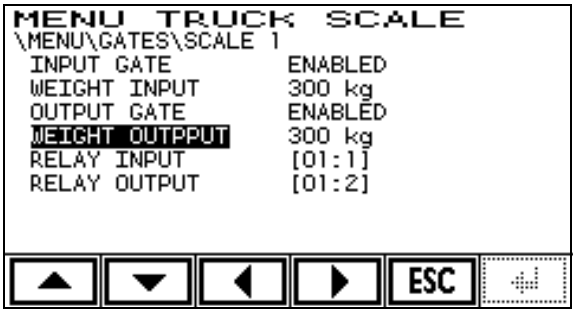


- The filling it is done, the truck now is ready to get out the scale, so the output access will open, leaving get out the truck.
- When the truck has gone out of the scale, the maneuver starts again. The input access will open and the output access will close.

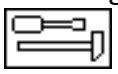
Programming of the Operative

The operative has been shown and understood; now we are going to perform the necessary configuration for the application:
First of all, we should configure the basic configuration parameters, as select the truck scale application, configure the scale, and perform the zero and the span calibration.
To continue we have to connect the I/O digital accessory to COM3, as shown in the manual.
Once is connected, let's get into the menu by pressing the SETUP button, the device will ask us for the PIN code, type it and afterwards we have to go to EXTERNAL MODULES, get into the menu and find INSTALLATION, then AUTO-SEARCH and finally SEARCH NEW MODULES. The indicator will look for all the new modules connected.
Once the device has finished the search we have to go back one screen before by pressing the ← arrow and go to TEST. Here we will see if the external modules have been installed correctly, if the modules have not been installed correctly we should go back to the previous menu and perform another AUTO-SEARCH.

Now, we will configure the input and output barriers. From the main menu press the  button and go to GATES, select the gate we want to use, in our case is GATE SCALE 1, and configure the unit as shown on the following figure:



Define the input and output weight for the control barriers, in our case 300kg, this weight will be the setpoint to change its state. Below we will assign the address for the input and output relay, as shown on the previous figure.

Afterwards we will configure the filling for the selected scale, in our case SCALE 1. From the main menu press the  button and go to FILLING, the device will ask us for the PIN code, type it and select the SCALE 1 and configure the needed parameters. We want to perform the filling of 1 product at two speeds in GROSS mode, with a target weight of 39.500kg. Also we want an automatic start filling and 2nd weight, for this reason we will configure these parameters as AUTO.

The first part of the menu will be configured as shown on the next figure:

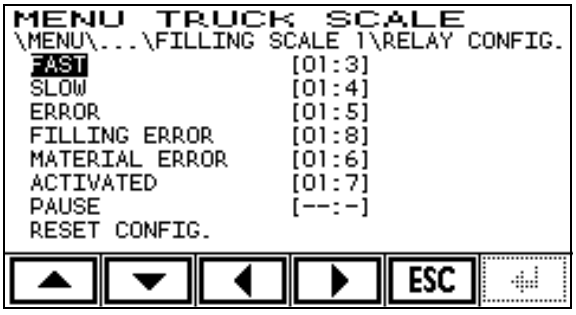
Concerning to the inflight material will be set initially as follows:

We should talk about the inflight material, it is alive, I mean, at every filling it will be correcting the value, so it will be more accurate with every filling. Once we have done some fillings to determine the inflight material value, we should set the MAX. CORRECTION value a 30% higher to the inflight material value, this means that if appears any problem in the filling (e.g. not homogenous material and some rocks fall, etc.) to avoid overflow.

We will configure the SLOW SECTION to 5.000kg, an ERROR MARGIN of ± 100kg and a MATERIAL ERROR defined by 20s and 5div.

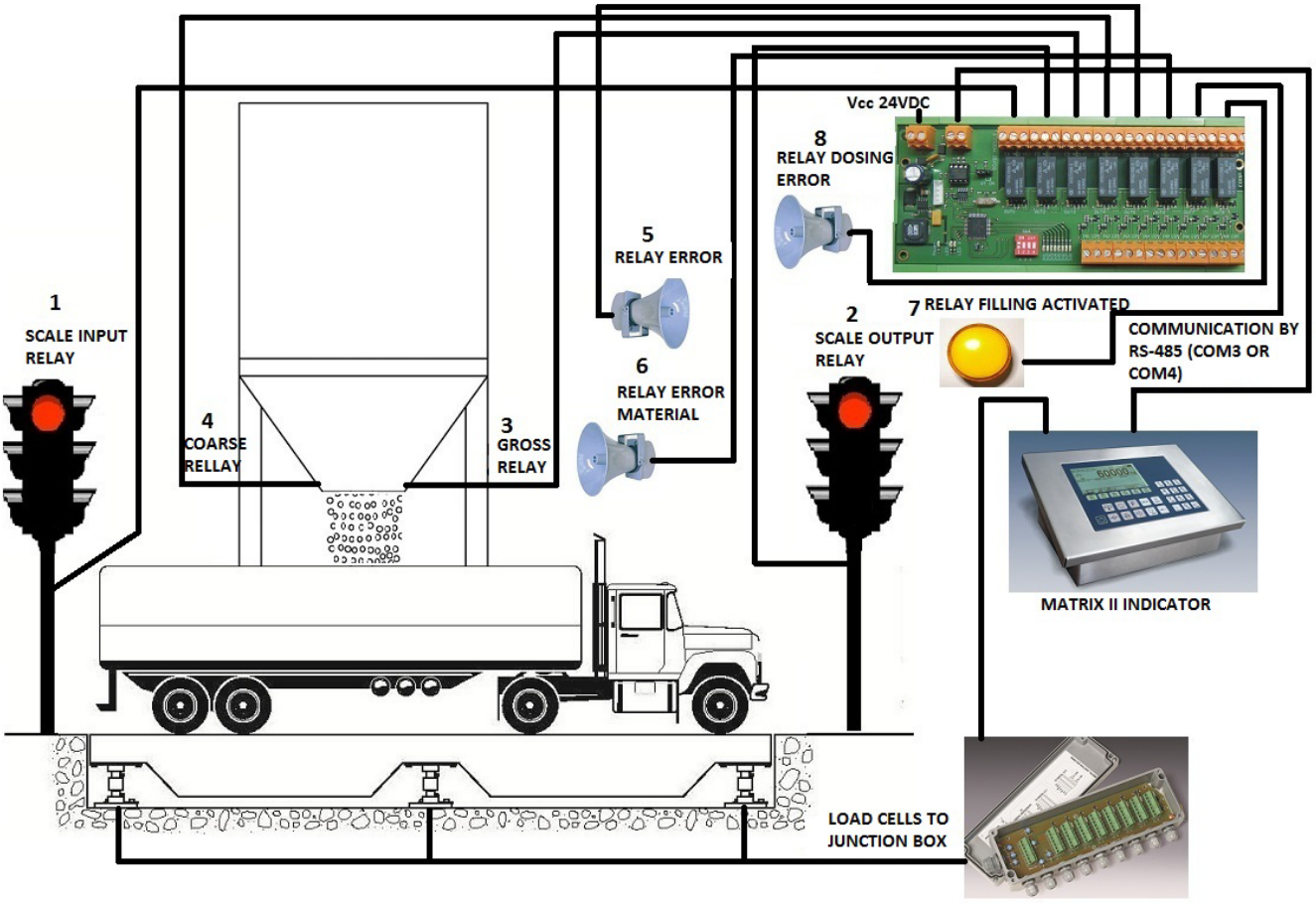
The second part of the filling menu will be set as follows:

Configure the relays as shown on the following figure:



Finally let's define the FAST and SLOW relays, a relay for general ERRORs and another relay for MATERIAL ERROR, this relay will indicate us when a filling error will occurs, I mean, when during a defined time, does not change the weight. Finally we will define an ACTIVATED relay, this relay will indicate us when the process is active and an FILLING ERROR relay, this relay will indicates us if the filling is inside a defines band, in our case is ±100kg

Once are configured all the parameters, only will be necessary to perform the right wiring to ensure the correct working application.



NOTE: TO PROGRAM THE DEVICE IN FILLING MODE, DOES NOT EXCLUDE THE SCALE TO WORK AS A NORMAL TRUCK-SCALE DEVICE, I MEAN, WE CAN PERFORM THE OPERATIVE FOR 1ST AND 2ND WEIGHT, OR A SIMPLE WEIGHT (F1) WITHOUT PERFORMING A FILLING.
ALSO EXISTS THE POSSIBILITY OF PROGRAMMING DIGITAL INPUTS TO ASIGN DIFFERENT TYPES OF SIGNALS, E.G: STOP EMERGENCY, PAUSE, ETC.