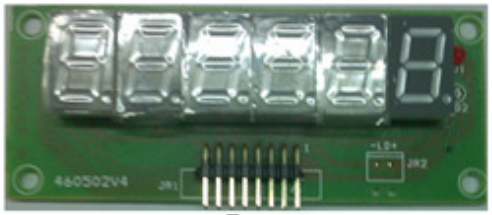
i-sys
Intelligent systems

I-SYS R5.0V1 WEIGHING SCALE PCB CONNECTION DETAILS

Only for R5.0V1 model

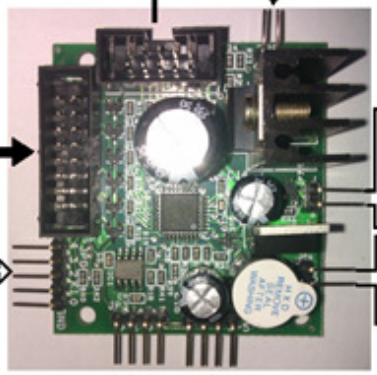
6-Digits 7Segment Display



16-Pin FRC connector

Serial Port Connection to PC

Power supply (AC)
12V / 1Amp Transformer



6V / 4.5 Ah Battery
BAT +
BAT-
Battery(Check for polarity & connect)
Switch
DPST SWITCH

Keys(description)
K4 - TARE
K3 - SHIFT
K2 - INCREMENT
K1 - ENTER
0 - GROUND

KEYS
K4
K3
K2
K1
GND

Load Cell Connection (need to be soldered)
0 ---- Ground (black wire)
N ---- Signal - (white wire)
P ---- Signal + (green wire)
+ ---- Supply + (red wire)

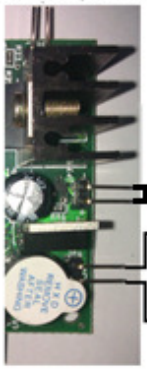
Pins for Future use

DPST : Double pole single throw switch

Note: The above battery & switch connection is provided for using the built in reverse battery protection available on the PCB.

Important Note:
The baterry will charge only when machine or PCB is ON.

Note:
This Circuit connection does not have Reverse battery Protection.
If connected this way the PCB carries no guarantee.



6V / 4.5 Ah Battery
BAT +
BAT-
short the bat + & - pins on the PCB & connect it to battery negative pin
Switch
SPST Switch

Important note:
Battery will charge even when PCB is OFF

R5.0V1 PCB Configuration & Calibration Manual

To configure the machine, connect the power supply. Now press TARE key(K4) and with the TARE key(K4) pressed power on the Machine (switch connected to the weighing scale PCB).

It shows

P	0	0	0	0	0.

Now use the INCREMENT key(K2) & SHIFT key(K3) to enter the Password given to you & then press the ENTER key(K1). If your Password is wrong it will display "Sorry".

If you have entered the right Password it shows

P	A	R	A		

Now press ENTER key(K1) to go to parameters (PARA) settings

Or press Increment (INC) key(K2) to change to (CAL)

calibration settings.

To configure PARA press enter key when it displays "PARA".

L	0	0	0	0	0.

To set maximum Capacity use INC key(K2) and SHIFT key(K3).

Ex: for 30kgs

L	0	0	0	3	0.

Enter the maximum Load & then Press ENTER key(K1).

Next parameter is Formula which is used to set formula for Kg-litre conversion.

To set formula press INC key(K2) and shift it by pressing shift key(K3)

F	0	0	0	0	0.

Ex: for oil the weight is 970grams for 1litre, the value for 1Kg oil in litres is (1000/970= 1.03092) the formulae to enter is 1031.

F	0	1	0	3	1.

Press ENTER key(K1)

The next option is PSEL (Parameter / Function selection)

P	S	E	L		0.

In this there are three modes.
PSEL 0— for Piece count ; PSEL 1— for Set-point 1 and Set-point 2; PSEL 2— for Litre
Some PCB's may have more than 3 functions. Contact manufacturer for more information.

The next setting is the Scale's Least Count settings, LC1 & LC2.

LC1 is for least count 1 and & is applicable form zero load to 50% of machine capacity. LC2 is for least count 2 & applies for load greater than 50% to maximum capacity of the scale.

L	C	x			0.

LCx 0—increment of resolution in steps of 1 count accuracy
LCx 1—increment in steps of 2 counts.
LCx 2—increment in steps of 5 counts.
LCx 3—increment in steps of 10 counts.

AT0 - is for auto-zero. You can enter values 0 to 9. Small drift in weight seen in the least significant digit is zeroed for values less than or equal to AT0 value we have entered. For most purpose set it to a value in the range of 3 to 5.
Press INC key(K2) to change the value

A	t	0			5.

D0 - is Dummy-zero. Enter the value 1 to invoke dummy-zero. It works in range 2(set in calibration routine for 100kg to 999 kg range) and it shifts the display digit to the left side to place a dummy zero.
To select dummy-zero press INC key(K2) & set D0 – 1 and then press ENTER key(K1).

D	0				0.

Unit: 0-4. It is used to specify the units like milligram or kilo-newton of the scale for serial print / communication.
Unit: 0-(mg); 1-(g); 2-(kg); 3-(ton "t"); 4-(kilo-newton "kn"). This is used only for serial output (UART) application.

U	n	I	t		0.

Press ENTER key(k1).

F	I	L			0.

Now you can select the filter options. Use default "0" for fast response. Higher values of filter can be used for platform scales & weigh bridge application where there is a lot of movement or oscillations on the platform.

Next we can choose different banner or start-up display options.

S	d	I	S		0.

The various display options are scrolling name display, 123… display or a combination of both. Select values 0,1,2 & see the difference for yourself.

Next is power save option.

P	S				0.

We recommend you to use default value “0” to save power (single zero display in power save mode).
Entering value “1” will display all digits even when weight is zero (No power saved).
Now we have completed configuring all the setting in the “PARA” menu.
Once all the settings in PARA menu is completed it will again return back to the main menu “PARA”.
When PARA appears as below you are ready to calibrate the machine.

P	A	R	A		

To enter into calibration mode press INC key(K2).

C	A	L			

It will appear as shown.

Now press Enter key(K1).
Next “rAnGEx” will appear. This selection decides the decimal point position.
RANGE 0-4(range selection)

R	A	N	G	E	0.
R	A	N	G	E	1.
R	A	N	G	E	2.
R	A	N	G	E	3.
R	A	N	G	E	4.

Displayed output

-	0.	0	0	0	0
-	0	0.	0	0	0
-	0	0	0.	0	0
-	0	0	0	0.	0
-	0	0	0	0	0

Use the INC key(K2) to change the range value.
Select and press ENTER key(K1).
Next it shows **No-Load count** value.

	X	X	X	X	X

Now press the Enter key(K1) to accept the **No-load count value**.
Next it will display “**LOAD**” briefly as below.

L	O	A	D		

And then it will again display the No-load count value.
Now you need to place a **known-load** (Standard calibration Weight) on the pan.
It will now show the **known-load count value**.

	Y	Y	Y	Y	Y

Press the Enter key(K1) to accept the known-load count value.
The display will now display the span value (known-load count value – no-load count value) for a brief period & then it will display as below…

	0	0.	0	0	0

The decimal point position will depend on your range value selected earlier.
Using the INC key(K2) & SHIFT key(K3) enter the known-weight (Calibrating weight)you had kept on the pan just now to calibrate. Example…

	0	2.	0	0	0

Enter the value for the known weight and press ENTER key(K1).
Next remove the known-weight from the pan.

It will now show “CAL” again. Now your calibration procedure is completed.

Now please switch OFF the power to the PCB & then switch it ON.
Your machine is calibrated & ready to use.

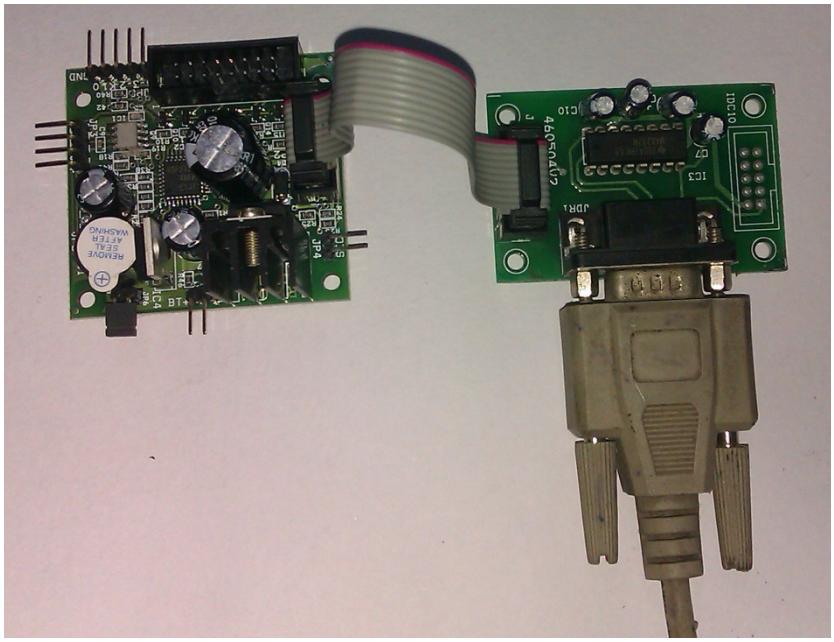
If you had selected PSEL - 2 then the scale will display litre value upon power up. To see the kg value press INC key(K2). It will briefly display “ kg ” & then start displaying in kg mode. To go back to litre measurement mode press INC key(K2) again. For a brief period it will display “*LItrE*” & than it will start displaying litre value. Make sure you have selected litre option ie. PSEL - 2 in “PArA”. I-SYS can also customize the displaying function as per your requirements.

In the normal weighing, to go to piece count press TARE key(K4) and SHIFT key(K3) simultaneously. It will display piece & display actual weight. Then keep weight (Known number of pieces) press enter key(K1). Next you need to enter the number of pieces you had placed & then press ENTER key(K1). Next press INC key(K2) to go into piece mode. You should select piece count mode in PSEL, i.e. PSEL = 0.

If PSEL = 1 has been selected, then the set-point function gets activated. In the mains mode, pressing TARE key(K4) & SHIFT key(K3) simultaneously will allow you to enter the set-point values. Make sure set-2 value is greater than set-1 value. Now you can hear an intermittent audible beep when the weight exceeds set-point1 value & a continuous beep when the weight exceeds set-point2 value.
The set-point values as well as the piece count measurement values work on temporary memory of the controller for the normal weighing scale boards. So if you reset the machine you need to re-enter the piece, set-point values again.
Special piece counting & set-point (with relay output control) PCBs are available. Please contact manufacturer for more information.

For more information regarding calibration & settings please call the manufacturer.

Serial Communication: A 10 pin FRC box header with TTL UART Pins are available for serial communication. RS232 adaptor PCBs as shown below are available for easy interface for connecting to a PC.



The communication settings are as follows…
Baud Rate: 2400bps fixed baud rate.
Data Format: 8N1
Hardware flow: None
For customized string format, please contact manufacturer. Optically isolated RS232 /485 interface PCBs are also available with us.
The data string will be a continuous dump data. The data rate is 10 data strings per second.
The serial string data is as shown below…

#+000.000 kg$202

The data after the "#" is the weight data. The data after "$" is the battery ADC data, used in debugging battery voltage condition.

LED Display : 6 digit Common anode seven segment display. A 16pin FRC box connector is provided on the PCB for this purpose. Apart from segment (weight) display it will also drive a LED that indicates the presence of mains supply.

Buzzer annunciation: The buzzer is used for multiple annunciations. A few are mentioned below...

a. Beeps with scrolling banner display.

b. Beeps while TARE key is pressed.
c. Intermittent & continuous beeps for set-point1 & set-point2 function.

External I/O pins: 3 controller pins are available for input / output control application.
Please contact manufacturer for customization of program for i/o pin control applications.

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