Portable Load-Cell Indicator Manual
AS020 / AS021

INTRODUCTION

This device can be operated in two modes:

MODE 1 - STANDARD OPERATION
MODE 2 - CALIBRATION PROCEDURE

The CALIBRATION PROCEDURE needs to be performed first before the device can be used in STANDARD OPERATION. We usually perform this step for you before shipping the device according to your requirements, but you are also able to make changes if necessary.

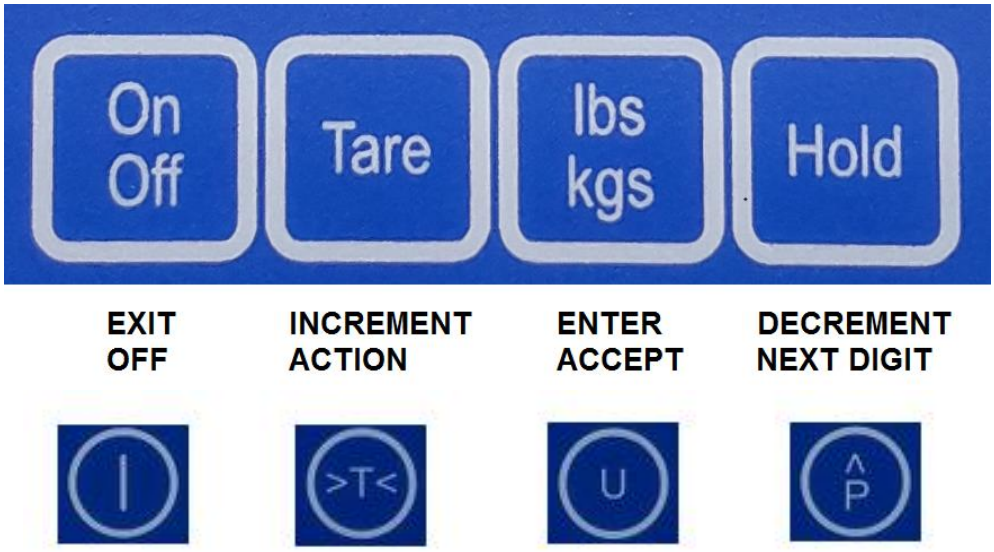
MODE 1: STANDARD OPERATION

Key	Function
ON/OFF 	Press to switch on. Internal tests are now performed. If all tests have passed 'Yes' will display briefly, otherwise 'Yes' will remain on the screen. Press again and release to switch off (toggle action) The unit will switch off automatically after about 20 minutes
TARE (ZERO) 	Press to return the display to zero.
UNITS 	Press to select the required units 'Back Arrow' indicates kg or tonne No arrow indicates lbs, kN or 10Lb
HOLD (PEAK) 	Press to select peak reading The largest load positive or negative will be displayed The right-hand digit will alternate with 'P' Press again to de-select (toggle action)

Warning Status	Display Indication
Battery low	“Lobt” alternates with display
Over-load	‘HELP’ displays when the preset full- scale is exceeded by 2%
Display limit	‘1 9 9 9 9’ with the 9000 digit flashing is displayed if the count is over 20000

MODE 2: CALIBRATION PROCEDURE

During the calibration procedure the keys have alternative functions as shown below:



Key	Calibration Function
ON /OFF	Exit calibration procedure / Turn off device
TARE (ZERO)	Increment or Action
UNITS	Accept (Enter)
HOLD (PEAK)	Decrement or Select next right digit

1. Entry and Password (Default: 7168)

Press the UNITS and HOLD keys together to enter the calibration sequence.
‘Yes’ will briefly display followed by the left-hand digit flashing. The system now requests the password. Enter the numbers digit by digit using the ZERO key to increment and the HOLD key to select the next digit. When the code is correct press the UNITS key. If an incorrect code is entered the unit will switch itself off.

2. Units (Default: kg)

After the correct password has been given, the units to be used can now be selected.
Use the ZERO key to step through the selection. Press UNITS to confirm the selection.
Only one pair of Units (lb/kg or kN/tonne or 10Lb/tonne) can be used at any one time. The ‘back arrow’ symbol on the display indicates kg or tonne.
No arrow on the display indicates lb, kN or 10Lb.

3. Decimal Point (Default: 0.0)
Press ZERO to step the decimal point to the right. The range of decimal point is limited according to the pair of Units selected as shown below:

Units	Range lb	Range kg
lb / kg	***0.0000*** *– 1.9999* ***0.000*** *– 19.999* ***0.00*** *– 199.99* ***0.0*** *– 1999.9* ***0*** *– 19999*	**0.0000** – 1.9999 **0.000** – 19.999 **0.00** – 199.99 **0.0** – 1999.9 **0** – 19999
Units	Range kN	Range tonne
kN / tonne	***0.000*** *– 19.999* ***0.00*** *– 199.99* ***0.0*** *– 1999.9* ***0*** *– 19999*	**0.0000** – 1.9999 **0.000** – 19.999 **0.00** – 199.99 **0.0** – 1999.9
Units	Range 10Lb	Range tonne
10Lb / tonne	***0.00*** *– 199.99* ***0.0*** *– 1999.9* ***0*** *– 19999*	**0.0000** – 1.9999 **0.000** – 19.999 **0.00** – 199.99

4. Calibration Load (Default: 1000,0)
Enter the load (in the units selected) you intend to apply to calibrate the span.
The entry method is the same as for the password. The 10,000 segment will display as blank or 1, the others flash to highlight the entry point.
Use ZERO to step the selected digit and HOLD to select the next digit to the right, UNITS to confirm the selection.

5. Display resolution (Default: 1)
Select 1,2 or 5 counts. The system will round down the display accordingly. For example, if 5 is selected the last digit will show 0 for 0 to 4 and 5 for 5 to 9

6. Full-scale Load (Default: 1000,0)
Enter the Full-scale load. The entry method is the same as for the calibration load. The 10,000 segment will display as blank or 1, the others flash to highlight the entry point.
Use ZERO to step the selected digit, and HOLD to select the next digit to the right, UNITS to confirm the selection. Full-scale load must of course be greater than or equal to Calibration load. The setting of Full-scale determines the maximum load to be displayed.

7. Acceleration due to Gravity (Default: 9,807)
The system comes with gravity preset to 9.807 m/sec/sec for kN to tonne.
To convert kN to Imperial Tons set to 9.964.

To convert kN to US short Tons set g to 8.896.

8. Zero (Default: value depends on internal signal conversion)
The system is now ready for mechanical calibration. Before calibrating, the cell should be zero balanced to better than 0.2 mV/V. The display shows the “raw” output from the sensor electronics. Ensure the system is at true mechanical zero then press ZERO.
‘Zero’ will then display briefly and the display will zero. Repeat if necessary, then press UNITS to accept.

9. Span (Default: value depends on internal signal conversion)
Apply the specified load, as previously entered in Step 4. The display will show the unscaled electronic counts. When the reading is stable press the ZERO key.
‘Span’ will then display briefly followed by the calibrated result in engineering units. Repeat if required, then press UNITS to accept.
If the span is less than 0.2 mV/V the system rejects and displays “nogo”.
If the predicted full-scale is greater than 2.5 mV/V, “HELP” will flash.

10. Span Trim (Default: 1000,0)
Trim the calibration reading as required (ZERO to increment, HOLD to decrement)
Press UNITS to accept.

11. Linearity Correction (Default: 1000,0)
This facility corrects a cell or link which tends to read low at small loads.
Apply a known load of about 30% full scale. Press and hold ZERO to increase the display or HOLD to decrease to the display. Press UNITS to enter. Linearity correction has no effect at full scale.

12. Sensitivity Readout in mV per Volt
The transducer sensitivity is now calculated and shown in mV/V.

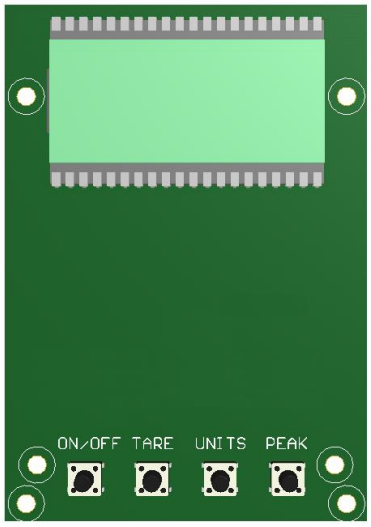
13. Exit/Repeat Calibration Procedure
Press UNITS to repeat the calibration sequence or ON/OFF to exit the calibration procedure.

14. After Calibration
The calibrated state may be viewed by entering the calibration sequence as above and stepping through using the UNITS key, but no other keys. Calibration may be quitted at any point by pressing ON/OFF, but if the Units or Gravity have been changed a full calibration sequence must be completed.

15. Load-Cell Recognition
To quickly test if an external load cell is connected to the unit, turn the device OFF and then immediately press the ON/OFF button again. If an external load cell is connected, the display will re-appear immediately. If there is no external load cell connection, the unit will not turn on. It will only switch back on after a delay of approximately 3-5 seconds between turning the unit OFF and then ON again.

TECHNICAL INFORMATION

Connection PCB side

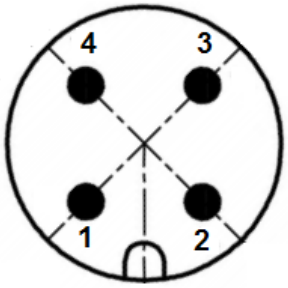


E+: Sensor excitation +
S-: Sensor output –
S+: Sensor output +
E-: Sensor excitation –
B+: Power Supply + (9V)
B-: Power Supply – (0V)

Connectors on the PCB (standard, alternative)
Manufacturer: Connyfly, part DS1002-01-1*4S13
Manufacturer: Molex, part 0533980471 (default)

Mates with Male plug (standard, alternative)
Manufacturer: Connyfly, part DS1002-01-1*4S13
Manufacturer: Molex, part 0510210400

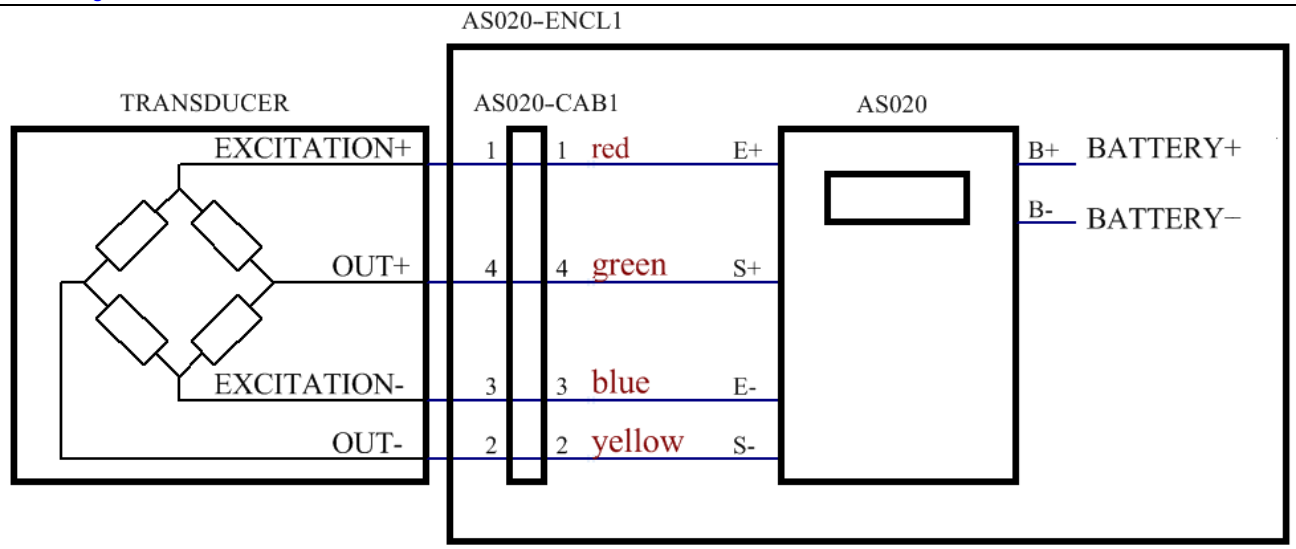
Sensor Connector (Front view: “pin” - side as shown below)



1: Red (sensor excitation +)
2: Yellow (sensor output -)
3: Blue (sensor excitation -)
4: Green (sensor output +)

Connector Male socket
Manufacturer: Binder
MPN: 09-3431-77-04

Mates with Female plug
Manufacturer: Binder
MPN: 99-0430-14-04



AS020-CAB1

Example of connecting AS020 with external connector for calibration using our AS600-series calibrator tool.