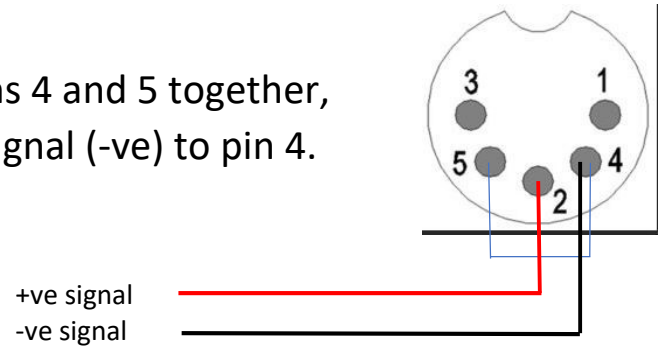
Transmille EA014 Torque Adapter Setup

Equipment required: 5 pin DIN plug lead to connect to EA014 adapter box.

D.C. source (i.e. 3000/4000 series calibrator)

DIN plug lead Connections: connect pins 4 and 5 together, positive signal (+ve) to pin 2, negative signal (-ve) to pin 4.



To enable the EA014 adapter box to be setup, we need to apply a signal (which simulates the torque transducer output) such that when the full scale output voltage of the transducer is applied (x10) to the EA014 the EA014 amplifies the signal to 6V i.e. if the transducer produces say 2.5mV/V at full scale we need to input a signal of 25mV (2.5mV x10) into the EA014 and then adjust the output of the EA014 to 6V.

1. Ensure that the A/D convertor is setup on the calibrator (+10V, 0V & -10V)
2. Connect the DIN plug to the EA014 and the EA014 to the calibrator 'adapter interface' via the serial lead, ensure the EA014 is switched to 'Continuous Reading Mode'
3. Connect the DIN plug +Ve and -Ve to a calibrated voltage source (another calibrator).
4. Open the calibrator adjustment software and click the 'Adapters' button in the setup menu. The 'Adapter Mode Setup' screen will appear as shown (Figure 1)
5. Select Range 3 (custom) the default for this range will show the output of the EA014 in voltage (V)
6. Apply 0V from the reference calibrator and then click the 'Zero' button on the screen (see figure 1)
7. On the front page of the calibration certificate it states the 'VOLTAGE OUTPUT' i.e. 2.74297 mV/V at maximum capacity, as the transducer has a supply of 10V we need to multiply the signal by a factor of 10 which then equates to 27.4297mV.
8. Apply the above mentioned voltage from the reference calibrator and check the reading on the front panel of the UUT (Unit Under Test) calibrator, this should be approximately 6V, this voltage needs to be set to 6.0000V ± 0.0001V, to achieve this remove the lid of the EA014 and adjust VR1 on the PCB. Switch off the supply from the reference calibrator.
9. On the software screen type **100 lbf.ft** in the Title box (see figure 1) and then click 'Set New Title'
10. Now type **lbf.ft** in the Unit box (see figure 1) and then click 'Set New Unit'
11. Finally type **2** in the Decimal Places box (see figure 1) and then click 'Set Decimal Places'
12. Apply 0V from the reference calibrator and then click the 'Zero' button on the screen (see figure 1) the display should read 0.00 lbf.ft
13. Apply 27.4297mV from the reference calibrator, the UUT calibrator will display approximately 60 lbf.ft (as the EA014 is outputting 6V with this input signal). To enable the display to read 100.00 lbf.ft we need to apply a multiplication factor of **16.6666,** this value is entered in box (see figure 1) next to 'Set

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Fullscale Value (at nominal 10V input)' enter the value a press 'Set Fullscale Value (at nominal 10V input)' The UUT display should now display 100.00 lbf.ft., if this is the case press 'Store'

14. If the display is not quite correct you can correct this by taking the calibration factor (see figure 1) and calculate the error and enter a new calibration factor, i.e.

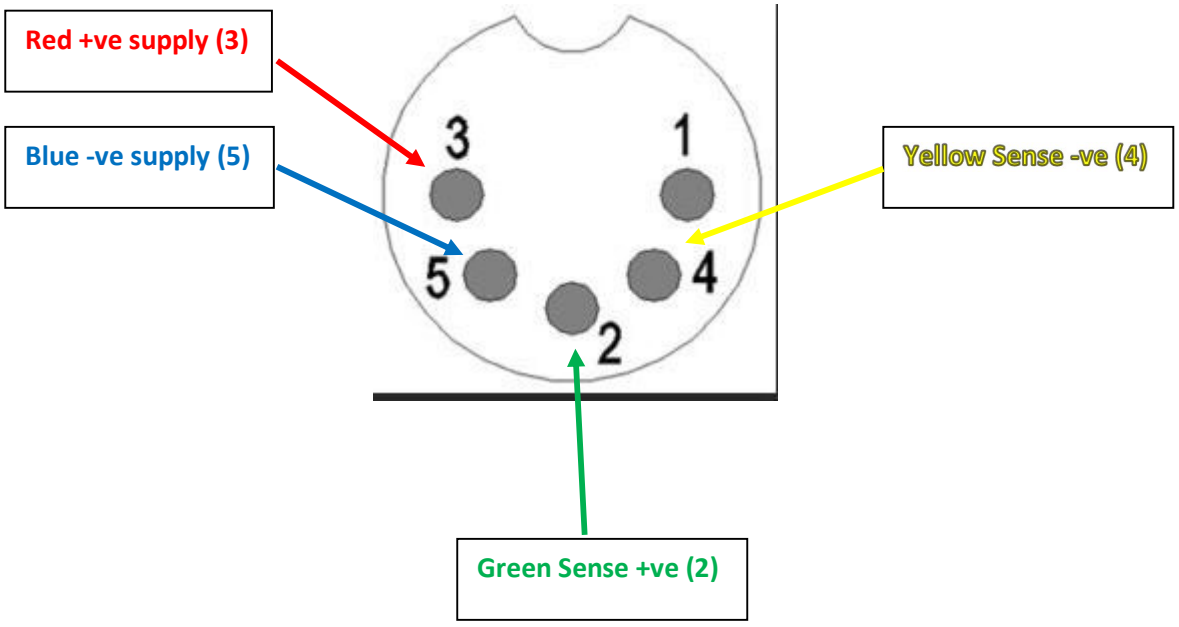
    If the reading is 100.01 lbf.ft and the calibration factor (once the multiplication factor 16.6666 has been applied is 5370282 as follows:

    (5370282 / 100.01) x 100 = 5369745

    Enter 5369745 into the 'Calibration Factor' box and then press 'Set Factor' the UUT display should now display 100.00 lbf.ft, press 'Store', the EA014 is now calibrated.

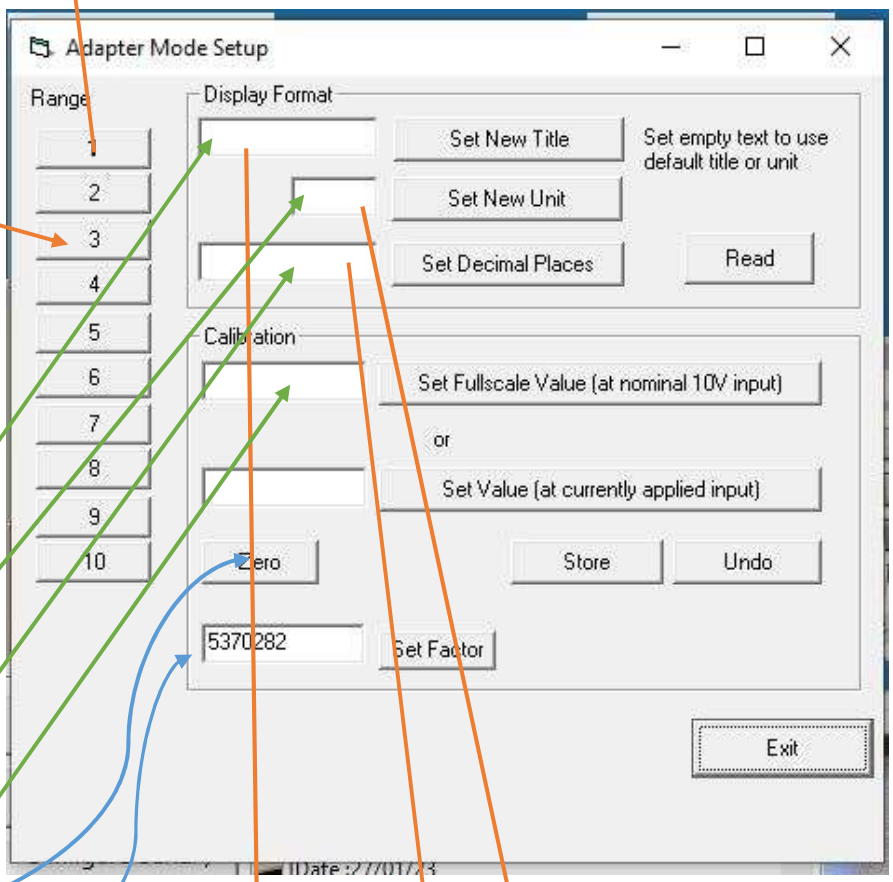
15. To check the linearity of the system we need to apply a voltage at 20%, 40%, 60%, 80% of the full scale value i.e. Full scale = 27.4297mV (100 lbf.ft), 80% = 21.9438mV (80 lbf.ft), 60% = 16.4578mV (60 lbf.ft), 40% = 10.9719mV (40 lbf.ft), 20% = 5.4859mV (20 lbf.ft), the transducer in this case is 0.5% so the displayed readings should be within 0.5% of the nominal.
16. Remove the reference calibrator from the EA014 and attach the torque transducer, press the 'zero' on the calibrator (soft key) and check that display zero's, apply some torque to the transducer and check that the display increases (if you have a torque wrench to try that would be ideal), switch the EA014 to 'peak hold mode' apply some torque and check the reading is held when the torque is removed, press the 'reset' button and check that reading goes back to zero.

Wiring for lead from transducer to EA014.



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Ranges: i.e. 10 Bar = range 1
10 Nm = range 2
Custom = range 3
etc. (left to right) all ranges can be given any title, just select the range required, the above image is the default screen when the calibrator is shipped.

Title: type in transducer capacity: **100 lbf.ft** – press 'Set New Title'
Unit: type in transducer units: **lbf.ft** – press 'Set New Unit'
Decimal Places: type in the number of decimal places: **2** – press 'Set Decimal Places'

Multiplication factor **16.6666** entered here

'Zero' button

Calibration Factor entered here (if required)

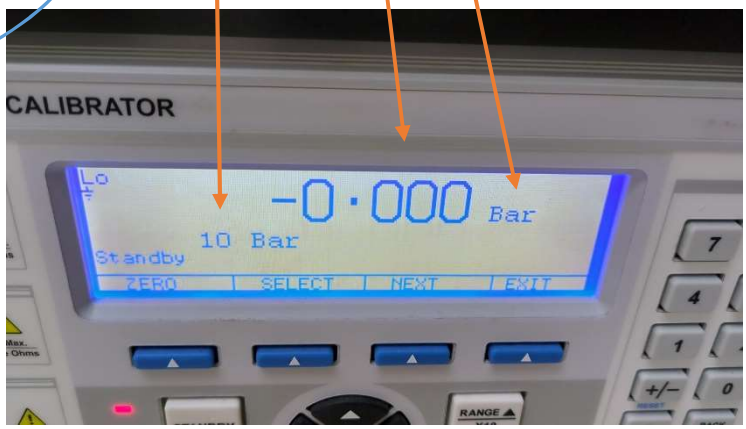


Figure 1: Adapter Mode Setup