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REFLUX & iMT CALIBRATION PROCEDURE

Using the MAT (Magnetic Angle Transmitter) Calibration Program

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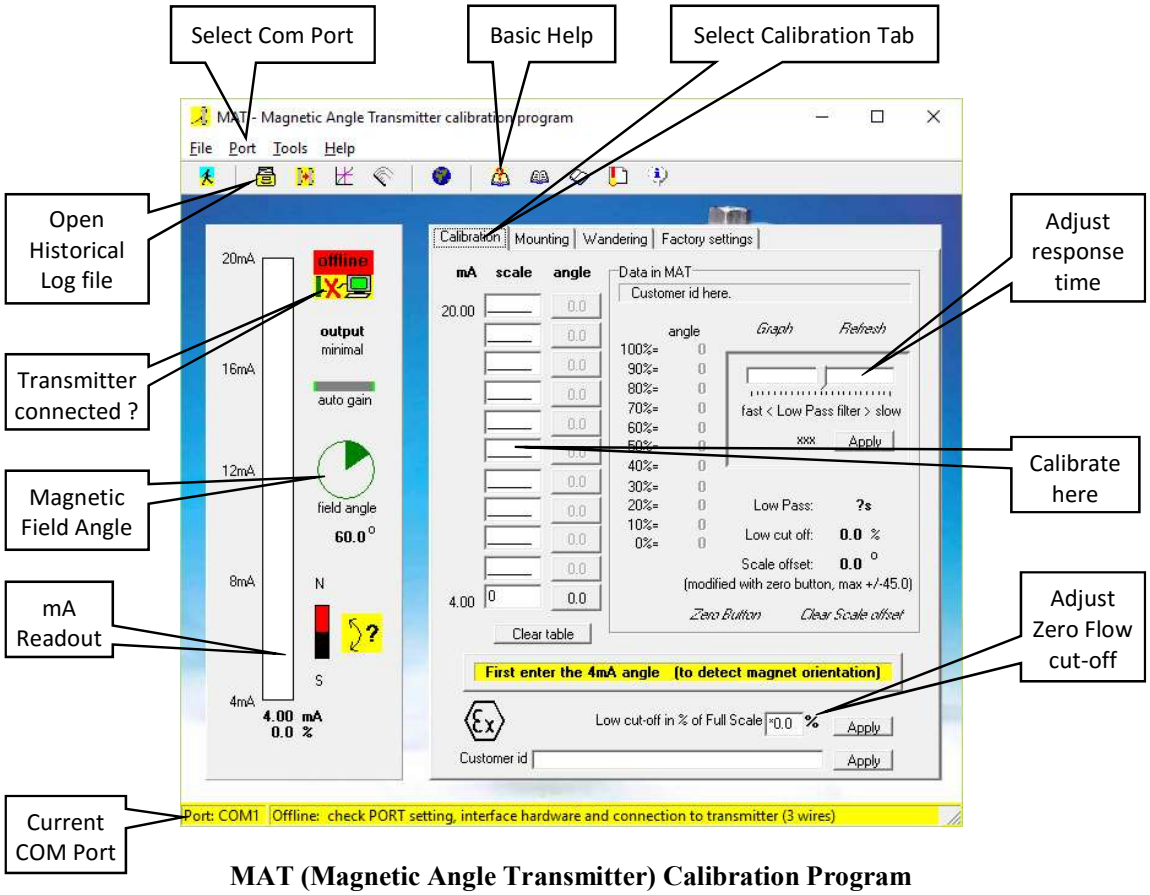
The following procedure outlines the steps that would be carried out for a 'clean' calibration of the Transmitter, but can also be used for re-calibration purposes.

When re-calibrating steps 5-7 will generally not be applicable.

Scale ranges for these meters will typically have a turndown <= 10:1.



MAT (Magnetic Angle Transmitter) Calibration Program

The software can be downloaded from our website, via the web page:
http://www.influxmeasurements.com/product/Transmitter-Dongle-Software/

To install the software, just extract all the contents of the zip file to any folder on your PC or Laptop.

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1) Start the MAT software, using 'Mat.exe'.

2) Wire the meter to the PC Interface, ensuring the wire colours match the terminal colours (Red, Green & Blue).

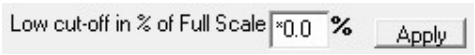
3) Connect the PC Interface to a RS232 9 Pin 'D' Type Com Port on your PC or Laptop.

4) The red 'offline' icon will change to a yellow 'online' icon when connected successfully. As required change the Port designation 1 to 4 via the 'Port' Menu bar.

5) For traceability purposes enter the Influx Order / Serial No., Customer Name, Range & Fluid details and then click 'Apply'.

6) Set the 'Low Pass Filter' to adjust the update smoothness / response time / speed of the analogue output signal and then click 'Apply'. This is factory set fully to the right = slow.

7) Set the 'Low cut-off in % of Full Scale', for when the mA signal will drop off to 4 mA (Zero flow) and then click 'Apply'. This applies a magnetic field tolerance, so that connected intelligent devices, can discern sensibly between operational & zero flows. This is typically factory set at 8%, but may vary where meter builds dictate.

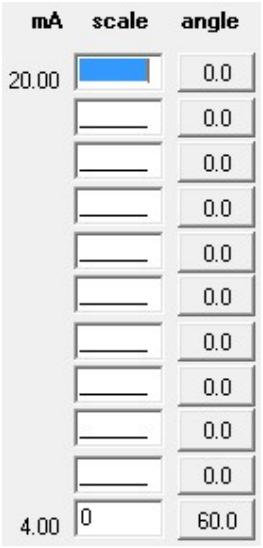


8) When starting with a 'clean' calibration the 4 mA / 0 Scale, angle MUST first be set, by pressing the associated '0.0' button. A yellow button (locked) message will be displayed just below, telling you of this. Before pressing the '0.0' button, ensure the meter's float is at Rest with zero flow passing through the meter. The other 11 buttons directly above will be locked.

Leave the scale field next to the '4.00' as '0'.

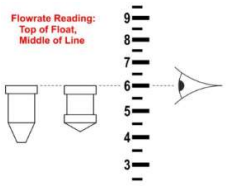
Once the 4 mA angle has been set the other 11 '0.0' buttons will be unlocked and the yellow button (locked) & message will change to this.

9) Now the remainder of the scale needs to be calibrated. For 'clean' calibrations the 11 'scale' fields will be blank ('__') and the 'angle' buttons will state '0.0'.



Enter into the 'scale' fields the indicated values of the scale graduations / positions to be calibrated. Only the 4 mA and 20 mA points have to be calibrated, but the 'Flow v mA' won't then be very accurate, so it is recommended that at least 5 or 6 other points are calibrated.

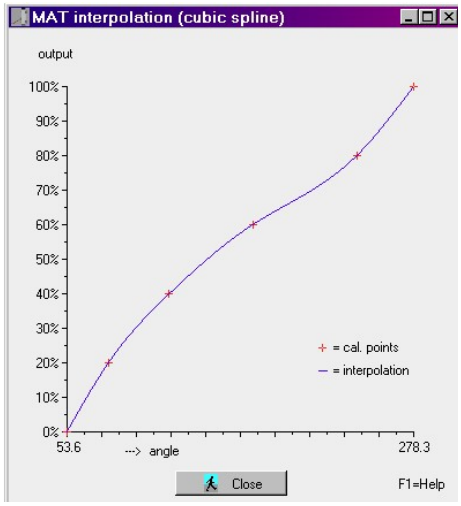
To calibrate each point, adjust the flow such that the Float (Reflux) (see image for aligning) or Pointer (iMT) aligns with the scale graduation / position and then click the associated '0.0' button. The '0.0' will be replaced with the current 'Field Angle'. Repeat for all other calibration points.



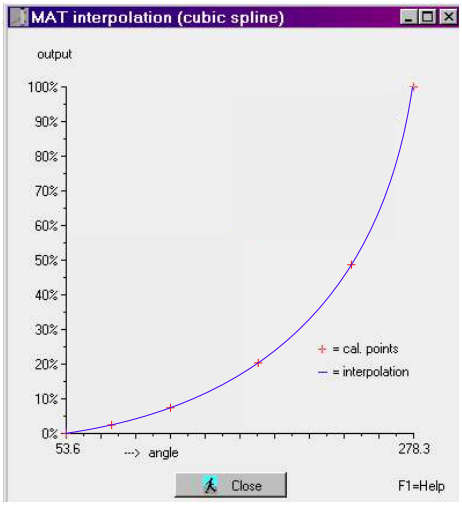
Once a minimum of 2 points have been calibrated the previously locked large button will unlock.

10) Once all the required scale graduations / positions have been calibrated click the above button to run the 'Interpolation' routine. This will show a graph of the resultant smoothing, with curves of typically a reverse 'S' or 'Concave' shape as below.

Any blank ('__') 'scale' fields with or without field 'angles' will be ignored.



Typically: Reflux



iMT

Assess the graphs curve for smoothness. If the curve is not smooth, then as required (see steps 8-9) re-calibrate, add, change or remove calibration points, until it is smooth.

11) At the same time as the 'interpolation' routine, the calibration session is recorded to a log file (MAT*.log, where * = PC / Laptop calendar Year). As more calibrations are carried out, they will be appended to the relevant year's log file. These log files can be opened and a specific calibration can be selected and imported (copy selection in cal. sheet). This is useful when the same basic calibration is being repeatedly carried out.

Note: The data imported will not automatically be stored into the attached transmitter. This needs to be done manually with this button, but only after the specific meter's characteristics have been calibrated.

12) Once the calibration has been completed, the Flow should approx. correlate to the mA as follows:

Flow (% of Scale Maximum Flowrate)	**mA**
100 %	20
75 %	16
50 %	12
25 %	8
10 %	5.6
8 % (typ. Low cut-off)	5.3
0 %	4