



## How can I enter the transducers calibration certificate points in the software?

The calibration points of the analog measurement transducers can be managed with an editor named **CalEd** (Calibration Editor). It appears as in Picture 1 and it can be opened as follows:

Labsoft software: click on *Measures calibration* in the *Settings* menu.

Parseq software: in the Diagnostic panel, click on *AI configuration*.

Table of CalEd editor

Name	Unit	Description	Type	Address
DWIP	bar	DHW pressure	WAI0-20	2

Electrical	Real
3,999	0
5,601	2,5
8,004	6,25
11,999	12,5
15,987	18,75
19,992	25

Channel parameters: Start scale 0, End scale 25, Damping 1, Fixed Offset 0

ConversionTest: Manual Electrical Value 0, Real Value -6,258; Instrument Electrical 0, Real Value -6,253

Equation of fit:  $y = -6,253E+0 + 1,563E+0x + 48,506E-6x^2$

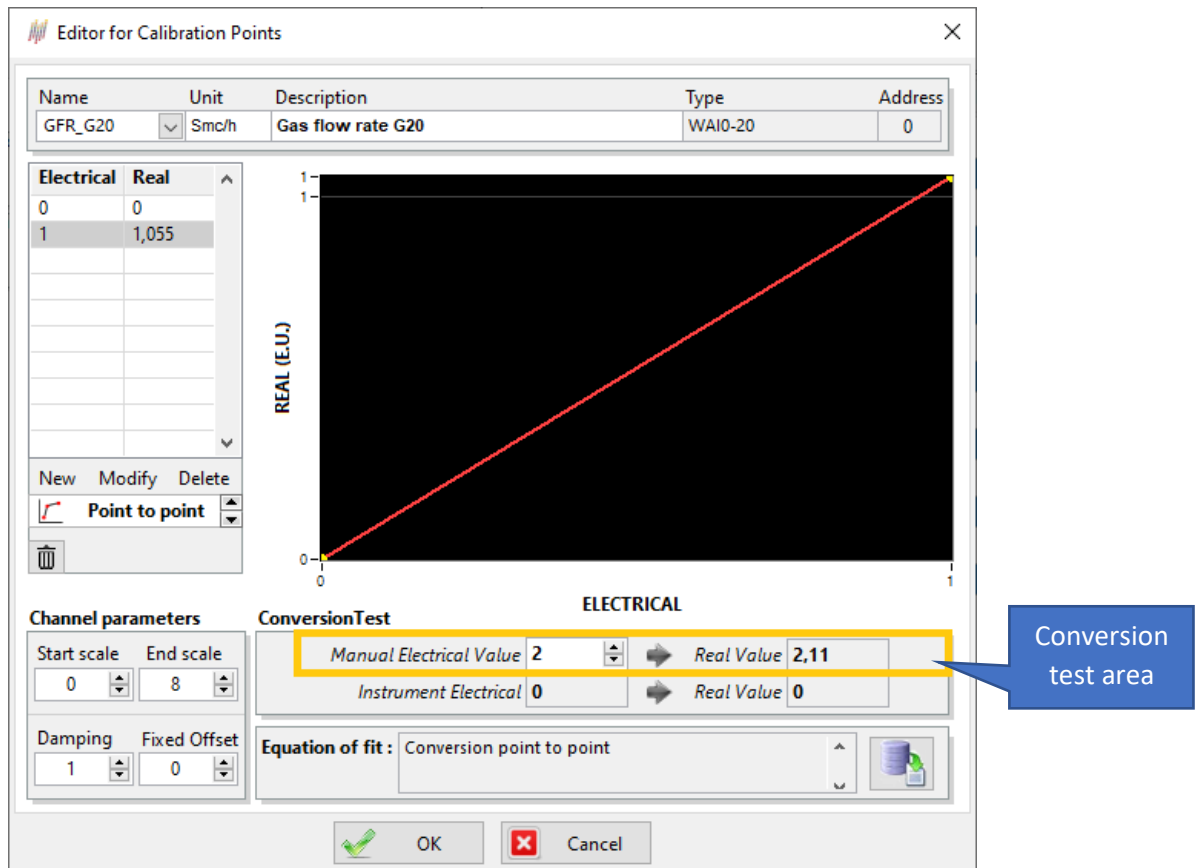
Precision 3

Picture 1

From the drop-down menu labelled “Name”, select the input channel, whose calibration points you want to edit.

The “Electrical”/”Real” table on the left hand side includes the calibration points used to build up the characteristic curve of the selected instrument. This table is originally filled by Microplan’s engineers. Points can be added without any limit, and the existing points can be edited or cancelled using respectively “New”, “Modify” and “Delete” buttons. User can choose the degree of polynomial function thought the *Polynomial Order* value.

On the graph the resulting characteristic is shown and on the lower side of the screen the function formula is shown in *Equitation of fit* box.



Picture 2

The *Conversion test* area on the lower right-hand side allows to immediately check the interpolation function: inserting an electric value it is possible to see it converted by the function (see Picture 2).

A damping for each channel can also be included filling the *Damping* cell on the lower left-hand side.

The damping is the number of samples, linked to the cycle time, that the software uses to create a mobile average; for example with a cycle time of 100ms, if Damping=10, the measure will have a mobile average of 1 seconds.

The fields “Start scale” and “End scale” have to be filled with the zero and full scale of the selected instrument.

In the following table we will provide basic instructions on how to enter calibration points – into Caled – based on the type of measuring instrument. We will use the following definitions:

- **DUC** = Device Under Calibration, the instrument of the test bench that has been calibrated, whose points need to be entered into the calibration editor, usually Caled.
- **REF** = reference instrument used for the calibration

(\*) The points from calibration certificates can be entered into the table of Caled editor only if they are expressed as electrical figures (mA or V) otherwise a conversion operation is needed to produce an equivalent table of values useful for the scope.



Type of measuring instrument	What to digit into the Table Of Caled editor		Interpretation of the Table of Caled editor	
	Brand new instrument (also spare part)	After 1 year (or whenever user decides)	Meaning of “Electric”	Meaning of “Real”
<b>Programmable transducers</b> (usually those with onboard display, ex. Siemens MAG water flowmeters and Siemens DSIII pressure transducers)	Theoretical points		The 2 theoretical points of the measuring range, usually 4 mA and 20 mA	The 2 theoretical points of zero and full scale of the instrument, ex. 0 and 160 mbar
		Points from calibration certificate	Electrical value, analog input signal, expressed in mA, of the DUC (*)	The corresponding measurement of the REF, in physical units, for instance l/m, mbar
<b>Pressure transducers (fixed scale, not programmable)</b>	Points from calibration certificate or theoretical points if calibration certificate is not available		Electrical value, analog input signal, expressed in mA, of the DUC (*)	The corresponding measurement of the REF, in physical units, for instance bar, mbar
<b>Temperature sensors</b>	Points from calibration certificate or theoretical points if calibration certificate is not available		Temperature measured by the DUC	Corresponding temperature of the REF from the calibration certificate
<b>Thermal mass gas flowmeters with 4-20 mA output signal</b> (ex. Bronkhorst, Burkert)	Points from calibration certificate. If different calibration curves, associated to different gases are provided, the calibration points must be entered for each kind of gas available in the test bench under consideration. The calibration points have to be entered in the associated channels (usually called GFR_G20, GFR_G31, ...), while the generic gas flow channel (usually called GFR) must be left without calibration, which means with the couple of points 0(Electric) 0(Real) and 1(Electric) 1(Real)		Electrical value, analog input signal, expressed in mA, of the DUC (*)	The corresponding measurement of the REF, in physical units, for instance m3/h
<b>Thermal mass gas flowmeters with Canbus output signal,</b>	Theoretical points only. Points from manufacturer calibration certificate are already registered		Contact <a href="#">Microplan Support</a>	Contact <a href="#">Microplan Support</a>



Type of measuring instrument	What to digit into the Table Of Caled editor		Interpretation of the Table of Caled editor	
	Brand new instrument (also spare part)	After 1 year (or whenever user decides)	Meaning of “Electric”	Meaning of “Real”
Burkert mod.8746	into the firmware of the instrument.			
		Points from calibration certificate	Gas flow rate measured by the DUC	The corresponding measurement of the REF, in physical units, ex. m3/h
<b>Other transducers with 4-20 mA output signal</b>	Points from calibration certificate or theoretical points if calibration certificate is not available		Electrical value, analog input signal, expressed in mA, of the DUC	The corresponding measurement of the REF, in physical units, for instance W
<b>Gas volumetric counter</b>	Gas volumetric counter’s calibration points are treated differently, read below “Special case...”			

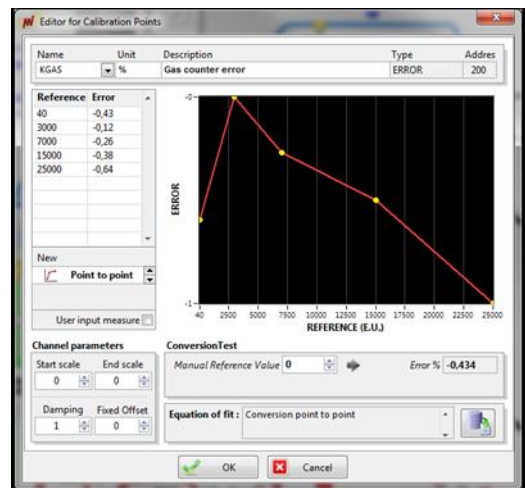
The **FORMULA** channels do not need to be calibrated so the couple of points to enter are 0(Electric) and 0(Real) and 1(Electric) 1(Real).

### Special case: Gas volumetric counter (Error channel type)

From the drop-down menu labelled “Name”, select the KGAS channel.

Enter the calibration points, typically taken from the calibration certificate, in the “Reference” - “Error” table:

- Values of the gas flow rate REF in the “Reference” column;
  - Associated percentage error in the “Error” column;
- For this channel the interpolation option “Point-to-point” must be selected.



Picture 3