

Scaling 0-10V Analogue Inputs into voltage and temperature readings VisiLogic

In this Application note, we will be going over how to linearise the values coming in from a 0-10V analogue input and using those values to control a temperature reading and display the voltage on an HMI Screen for VisiLogic.

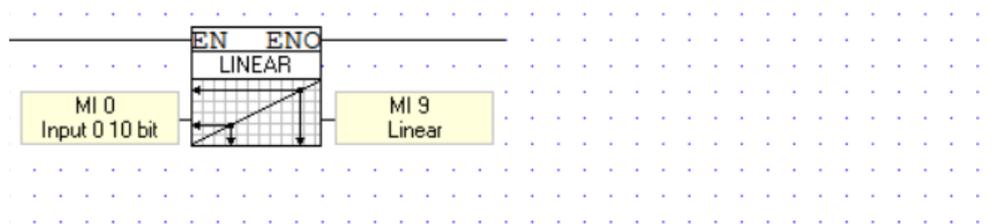
For this example, we will be using a V1040 with a V200-18-E46B. We have also attached a Project to this Application note **‘scaling 0-10V to Temp.vlp’**

First, we start by setting up the hardware configuration in the analogue inputs tabs to filter at 0-10V and make sure the dip switches on our V200-18-E46B are correct.

With these settings now corrected if you were to plug into the V200-18-E46B now it would show a value between 0- 1024 for the inputs. This is because these are the values for 10-bit resolution. Please consult your Technical manuals to find out your resolution on your chosen Unitronics PLC/IO.

Now with these settings in place, we can move forward with the linearisation of the values into what we need them for.

Start by placing a linearisation FB on your ladder shown below:



When this Function block has been placed a new pop-up will appear asking for the values of X1,Y1,X2,Y2, Input of X value and Input of Y value.

Linearization ✕

Note that you cannot use the Linearization function if the value of an input or an intermediate calculation is close to the value FFFFFFFF. Click on the Help button for more information.

Params	Func	Operand	Address			Format	Description
IN	X1	D#	0			DEC	Linear conversion: X1 Value
	Y1	D#	0			DEC	Linear conversion: Y1 Value
	X2	D#	1024			DEC	Linear conversion: X2 Value
	Y2	D#	1000			DEC	Linear conversion: Y2 Value
	X	MI	0			DEC	Input 0 10 bit resolution
OUT	Y	MI	9			DEC	Linear conversion:Voltage 1 0-10V

As shown above:

X1= Lowest value of the values coming into the linearisation

Y1=Lowest value of the output values after linearisation has taken place

X2= highest value of the values coming into the linearisation

Y2= Lowest value of the output values after linearisation has taken place

X=Input Integer

Y=Output Integer

In my example shown above, what we are doing here is linearising the voltage value. Because we want a more accurate reading instead of 10 in Y2 I have opted for 1000. What this does is give me the voltage to 2 decimal points all we need to do when we add this to the HMI is put it to 2 decimal places.

Now that the voltage is set up and linearised you can do the same process to do the same for the temperature.

Linearization

Note that you cannot use the Linearization function if the value of an input or an intermediate calculation is close to the value FFFFFFFF. Click on the Help button for more information.

Params	Func	Operand	Address	Format	Description
IN	X1	D#	0	DEC	Linear conversion: X1 Value
	Y1	D#	-32767	DEC	Linear conversion: Y1 Value
	X2	D#	1024	DEC	Linear conversion: X2 Value
	Y2	D#	32767	DEC	Linear conversion: Y2 Value
OUT	X	MI	0	DEC	Input 0 10 bit resolution
	Y	MI	11	DEC	Degrees input 1

Buttons: OK, Cancel, Help

The Values I have put in Y1 and Y2 are just the Limits of the MI but you can set these to temperature settings of your choosing.

Alongside this, we have set a few compare Function Blocks so that we can set maximum and minimum temperatures.

If there is any issue with understanding this application notes or you have any other questions please contact us at sales@i4automation.co.uk