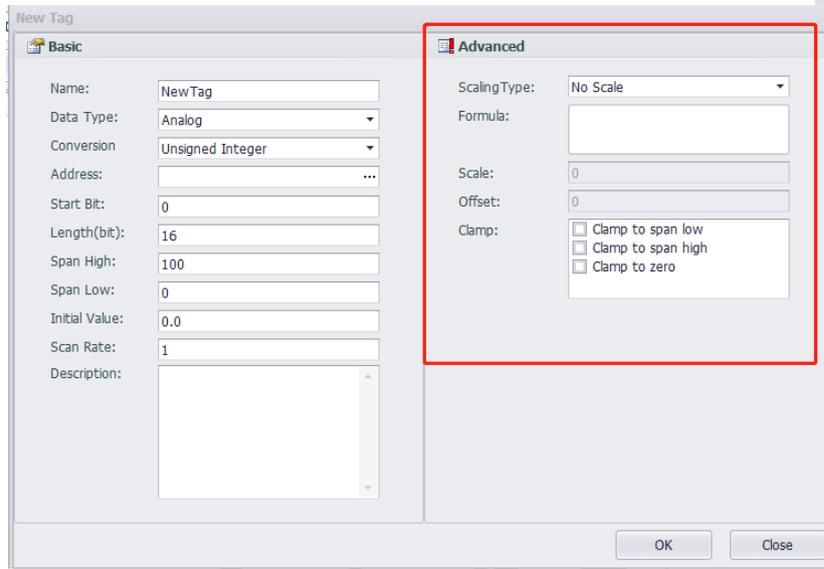


## Advantech AE Technical Share Document

<b>Date</b>	2018/5/17	<b>SR#</b>	1-3458642798
<b>Category</b>	■FAQ □SOP	<b>Related OS</b>	N/A
<b>Abstract</b>	The Description of the Scaling Type and Clamp in TagLinkStudio		
<b>Keyword</b>	Scaling Type, Clamp		
<b>Related Product</b>	Taglink		

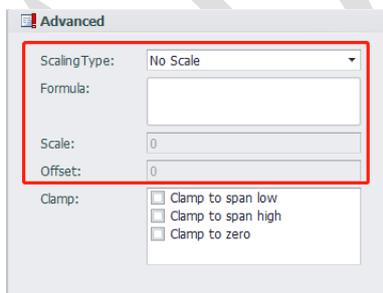
■ **Problem Description:**

The description of the scaling type and clamp setting in the new IO tags.



■ **Answer:**

1、 **Scaling Type**



Scaling type specifies how to convert data read from the field device to a number meaningful to users and operators. Specifies how to re-scale input from device into actual Engineering Units. Scaling works with SPAN LOW and SPAN HIGH. Many automation devices supply data a raw form. For example, many 12-bit IO devices supply all values as an integer between 0 and 4096.

Typical scaling types include:

### No Scale

For a value not requiring scaling or one that will be scaled prior to reaching the computer. Will display raw value read from device.

### Scale 0-100 Input to Span

This will convert values between 0 and 100 to specified Low and High Span (SPAN LOW and SPAN HIGH). Fits input of 0 - 100 into SPANLO - SPANHI. This assumes the input is a value between 0 and 100.

$$\text{OUTPUT} = (\text{SPANHI} - \text{SPANLO}) \frac{\text{INPUT}}{100} + \text{SPANLO}$$

$$\text{SCALE} = \text{SPANHI}$$

$$\text{OFFSET} = \text{SPANLO}$$

### Linear scale MX+B

This will convert input using the classic equation for a line.

$$\text{OUTPUT} = \text{SCALE} * \text{INPUT} + \text{OFFSET}$$

SCALE: The slope of the line.

OFFSET: The intercept of the line with the x-axis.

### Scale Defined Input H/L to Span

This will convert values between INPUT LOW and INPUT HIGH to specified Low and High Span (SPAN LOW and SPAN HIGH). This assumes the input is a value between INPUT LOW and INPUT HIGH.

$$\text{OUTPUT} = (\text{SPANHI} - \text{SPANLO}) \frac{\text{INPUT} - \text{OFFSET}}{\text{SCALE} - \text{OFFSET}} + \text{SPANLO}$$

### Scale 12-Bit Input to Span

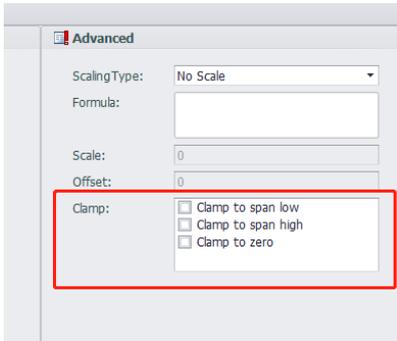
Commonly used to read IO Multiplexors or IO cards that use the industry standard of 12 bit accuracy. This conversion reads only the first 12 bits of the word then re-ranges the value to fit the Low and high span (SPAN LOW and SPAN HIGH). It converts an input that ranges between 0 and 4096 to the specified SPAN LOW and SPAN HIGH for the block. Scale 0-100 Square Root Input Commonly used to convert Flow from differential Flow meters (i.e. convert 0 -100 inches H2O to GPM). This will convert the square root of values between 0 and 100 to specified Low and High Span (SPAN LOW and SPAN HIGH). Fits square root of input of 0 - 100 into SPANLO - SPANHI. This assumes the input is a value between 0 and 100 (hence 0 -100 %).

$$\text{OUTPUT} = (\text{SPANHI} - \text{SPANLO}) \sqrt{\frac{\text{INPUT}}{100}} + \text{SPANLO}$$

### Square Root of (Input/(F2-F1)) to Span

$$\text{OUTPUT} = (\text{SPANHI} - \text{SPANLO}) \sqrt{\frac{\text{INPUT} - \text{SCALE}}{\text{OFFSET} - \text{SCALE}}} + \text{SPANLO}$$

## 2、Clamp



**Clamp to span low:** when the input value is less than the minimum range, the minimum range is displayed.

**Clamp to span high:** when the input value is greater than the maximum range, the maximum range is displayed.

**Clamp to zero:** when the input value is less than 0, display 0.