

Permissible Deviations for MGCplus Amplifiers

The permissible deviation for the MGCplus system amplifiers is made up of the gain deviation and the zero deviation. It is specified in:

% o.m. (percent of reading) + % f.s. (percent of range).

The gain deviation (corresponds to accuracy class, if not specified in datasheet) is computed as a percentage of the respective reading (measured value).

The zero deviation (corresponds to accuracy class, if not specified in datasheet) is computed as a percentage of the range (full scale value).

For some amplifiers, an absolute calibration deviation is specified in the physical unit instead of the zero deviation (e.g. with amplifiers for thermocouple connection). Here the permissible deviation amounts to the sum of the gain deviation (% o.m.) and the calibration deviation (absolute value).

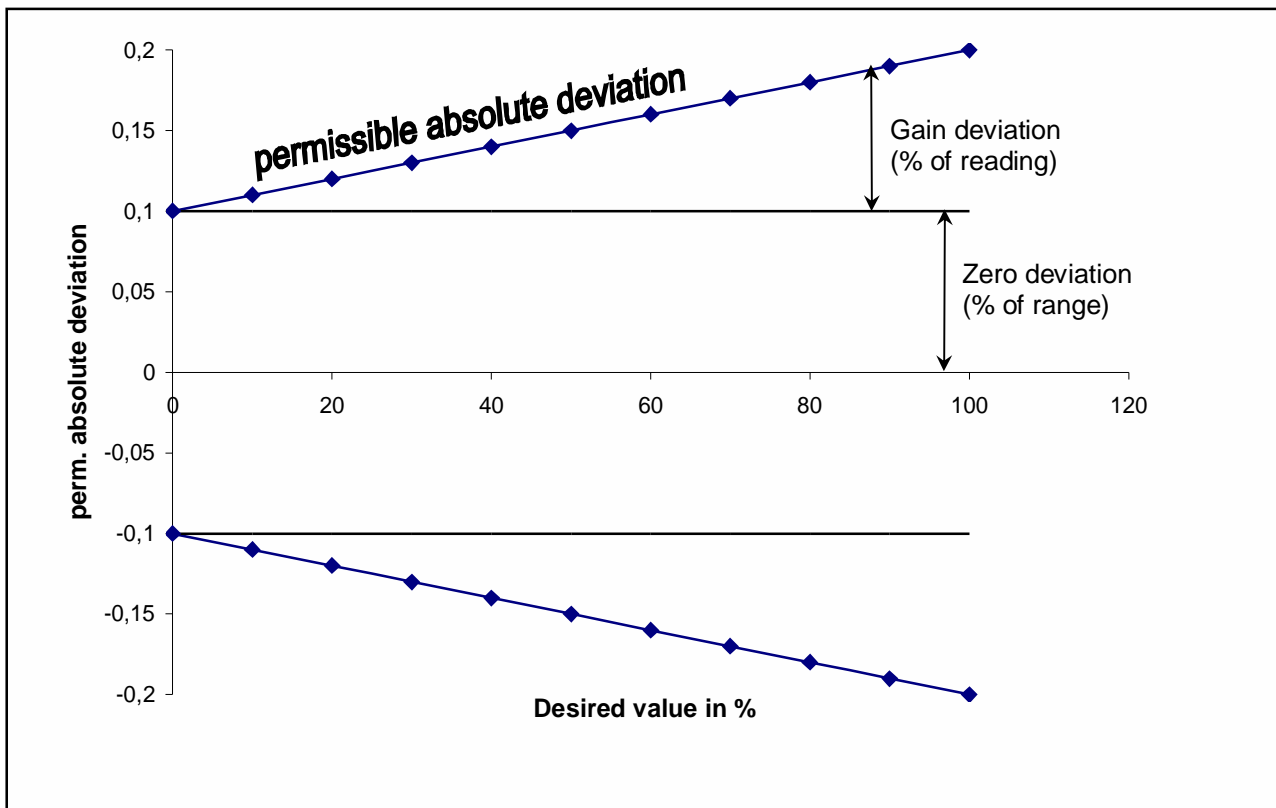


Diagramm 1: permissible deviation: sum of zero deviation and gain deviation

Linearity deviation

In addition, the linearity deviation is taken into consideration. Therefore, the measured values are within the range of the permissible deviation and, at the same time, observe the linearity. The values are not distributed arbitrarily within the limits, but are around a straight line (the maximum deviation from this straight line is the linearity deviation).

The linearity deviation is determined by the zero-adjusted straight line through zero and end point (measured zero and end point). The deviation of each measured value from this straight line is computed as a percentage of the range (full scale value).

This applies separately for both, the positive range and the negative range.

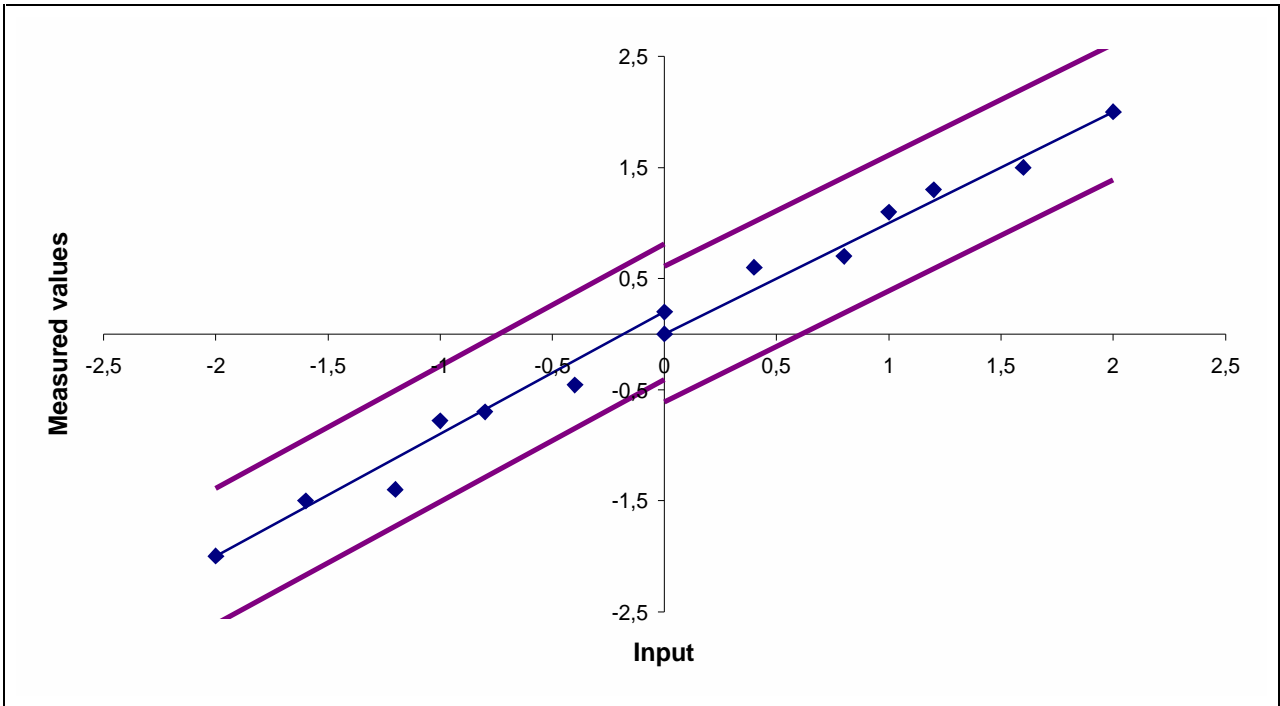


Diagramm 2: example for linearity deviation

Effect of the ambient temperature

The effect of the ambient temperature on gain deviation and zero deviation is added if measurements are taken at temperatures deviating from 22°C. The datasheet always specifies the effect per 10K.

Example:

At 22°C the gain deviation is 0.1%

the effect of a 10K change of the ambient temperature on sensitivity is 0.1%

At an ambient temperature of 52°C (change in comparison to 22°C: $3 \times 10^\circ\text{C}$) 3 times 0.1% is added to the gain deviation of 0.1%: at 52°C it amounts to 0.4% of the respective measured value.

All properties that are not explicitly specified in the datasheet correspond to the accuracy.