

# Conversion of the ADC values

		Saved as	Offset	Gain	Factor b	Physical factor k	Measurand	Unit	
Scope	CH 1	Int16	1.36E-02	8.76E-05	5.299641744	2.00	A/V	Current	[A]
	CH 2	Int16	1.50E-02	8.68E-05	5.299641744	2.00	A/V	Current	[A]
	CH 3	Int16	1.09E-02	8.65E-05	5.299641744	2.00	A/V	Current	[A]
		Saved as	Offset	Gain	Factor b	Physical factor k	Measurand	Unit	
DAQ1	CH 1	Int32	0	5.36E-09	1	250	Pa/V	Sound pressure	[Pa]
	CH 2	Int32	0	5.36E-09	1	9.81	m/s <sup>2</sup> /V	Acceleration plain bearing	[m/s <sup>2</sup> ]
	CH 3	Int32	0	5.36E-09	1	98.1	m/s <sup>2</sup> /V	Acceleration piston rod	[m/s <sup>2</sup> ]
	CH 4	Int32	0	5.36E-09	1	98.1	m/s <sup>2</sup> /V	Acceleration ball bearing	[m/s <sup>2</sup> ]
		Saved as	Offset	Gain	Factor b	Physical factor k	Measurand	Unit	
DAQ2	CH 1	Int16	0.00488591	3.29E-04	1	1.25	kN/V	Axial force	[kN]
	CH 2	Int16	0.00488591	3.29E-04	1	1.5	Nm/V	Torque	[Nm]
	CH 3	Int16	0.00488591	3.29E-04	1	100000	Pa/V	Pressure pneumatics	[Pa]
	CH 4	Int16	0.00488591	3.29E-04	1	62.5	N/V	Lateral force	[N]
	CH 5	Int16	0.00488591	3.29E-04	1	30	mm/s /V	Velocity	[mm/s]
	CH 6	Int16	0.00488591	3.29E-04	1	0.5	A/V	Active current	[A]

## Conversion:

$$\text{Physical value [Unit]} = ((\text{ADC} \cdot \text{Gain}) + \text{Offset}) \cdot b \cdot k$$

Gain and Offset: Given by the PXI system to convert the binary values into voltage (explanation on the following slide)

Factor b: Caused by a following operational amplifier circuit determined empirically by measuring input and output voltage

Physical factor: Given by the datasheets of the sensors