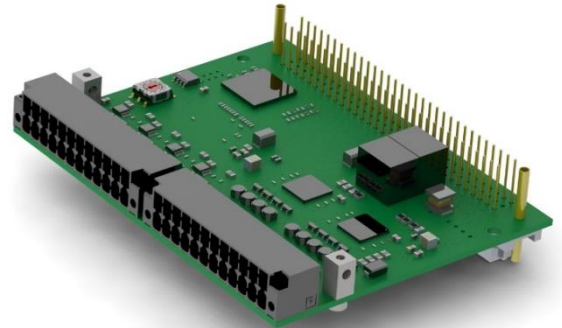


16. COP-ADA (Analogue IO)

COP-ADA

611042130

The COP-ADA module is equipped with eight fast analogues 16-bit inputs and outputs. The inputs are differential, and the outputs apply to the GND line of the COP node power supply. For the inputs, a hardware filter can be configured, which will average up to 64 sample values. In addition, there is a 10V power supply, including feedback, for connection to an external measuring bridge. The outputs can be configured as voltage or current outputs.



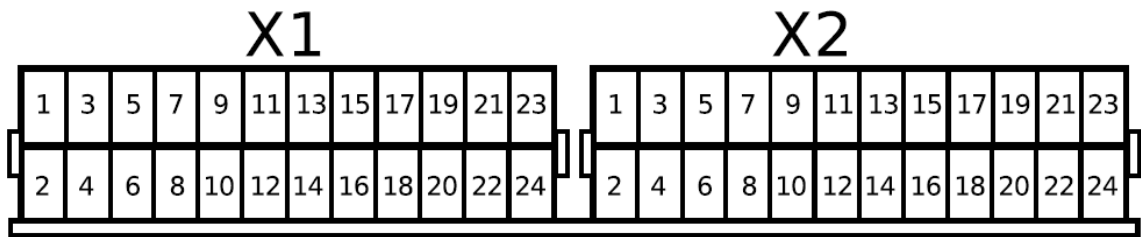
16.1. Technical Specifications

Analogue Inputs		
Number of inputs	8	
Technology	Differential	
ADC sampling rate	200	kHz
COP bus sampling rate	1 ... 16	kHz
Voltage ranges	$\pm 0.1, \pm 1, \pm 10$	V
Resolution	16	Bit
Deviation $\pm 10\text{ V} / \pm 1\text{ V} / \pm 0.1\text{V}$	$< 0.01 / 0.01 / 0.02$	% FSR ³⁾
Input impedance	10	M Ω
Hardware filter ¹⁾	Mean value filter: 4, 32, 64 values	
Full scale drift	20	ppm/K
Common mode	± 12 relative to GND	V
Analogue Outputs		
Number of outputs	8	
Technology	Single-ended	
Sampling rate for all channels	16	kHz
Voltage range ²⁾	$0 \dots 5, \pm 10$	V
Deviation Voltage Output	< 0.02	% FSR ³⁾
Maximum output current in the voltage mode	16	mA
Current range ²⁾	$0 \dots 20$	mA
Resolution	16	Bit
Deviation Current Output	< 0.025	% FSR ³⁾
Full scale drift	50	ppm/K

Measuring Bridge		
Bridge voltage	10	V
Minimum load resistance	250	Ω
Drift	50	ppm/K
Module		
Warm-up time	15	min
Maximum power consumption at 24V node power supply	260	mA

- 1) The hardware filter applies for all eight inputs.
- 2) Switching between different ranges during 120 μ s returns incorrect values on all channels.
- 3) FSR: Full-Scale Range. E.g. ± 10 V Range: FSR = 20V

16.2. Pin Assignment



X1					
No.	Dir	Id.	Id.	Dir	No.
2	In	+A 01	+A 00	In	1
4	In	-A 01	-A 00	In	3
6		Shield	Shield		5
8	In	+A 03	+A 02	In	7
10	In	-A 03	-A 02	In	9
12		Shield	Shield		11
14	In	+A 05	+A 04	In	13
16	In	-A 05	-A 04	In	15
18		Shield	Shield		17
20	In	+A 07	+A 06	In	19
22	In	-A 07	-A 06	In	21
24		Shield	Shield		23

X2					
No.	Dir	Id.	Id.	Dir	No.
2	Out	A 01	A 00	Out	1
4		GND	GND		3
6	Out	A 03	A 02	Out	5
8		GND	GND		7
10	Out	A 05	A 04	Out	9
12		GND	GND		11
14	Out	A 07	A 06	Out	13
16		GND	GND		15
18		GND	GND		17
20	Out	-Vcc MB	+Vcc MB	Out	19
22	In	-FB MB	+FB MB	In	21
24		Shield	Shield		23

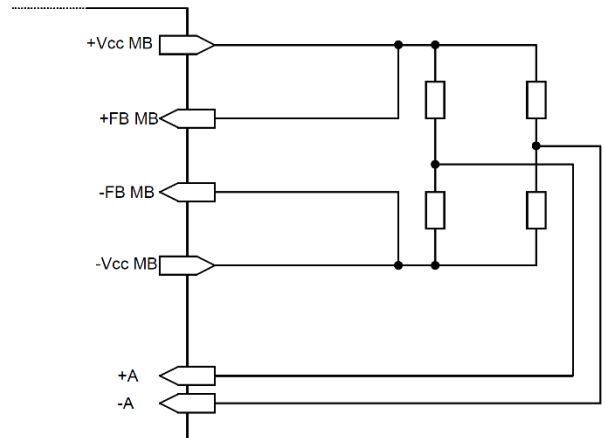

Remarks on the versions:

- In HW-Rev0 the pins 23 and 24 are connected to GND.
- From HW-RevA the pins are connected to the shield.

16.3. **Connection Examples**

Measuring bridge

The module has an extra interface for connection to a measuring bridge. The voltage of the measuring bridge is regulated by the module independently via feedback. The bridge voltage is measured using any of the COP-ADA card's analogue inputs.



16.4. **Available Options**

Item Number	Label	Option	Description
611042130	COP-ADA		8 x ADC 16kHz, 16Bit, multi-range, 8 x DAC current and voltage outputs