

PICOSCALE V2 Breakout Box Interface



WARNING

For convenient access of the signals, SmarAct offers the **PICOSCALE Breakout Box** for which all signals are specified and supported. It is the sole responsibility of the user to access the signals directly. Permanent damage may occur if not used properly. SmarAct does not grant warranty when the **PICOSCALE** suffers permanent damage when using this interface without the *Breakout Box*.

INTRODUCTION

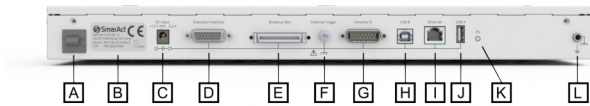


Figure 1. View of the **PICOSCALE** Controller. In this document, the interface labeled with [E] is described.

The **PICOSCALE** is shown in Figure 1. The connector for the cable to the interfaces is at the back panel. All signals and ratings are described in the tables on the following pages.

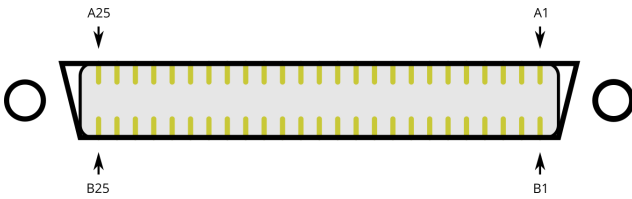


Figure 2. Pin indication of the **MiniRibbon50** connector. The pins are described in Table 1.

Table 1. Pin description of the connector of Figure 2.

Pin	Signal	Pin	Signal
A1	Quad1C_P	B1	Quad1C_N
A2	Quad1B_P	B2	Quad1B_N
A3	Quad1A_P	B3	Quad1A_N
A4	Quad2C_P	B4	Quad2C_N
A5	Quad2B_P	B5	Quad2B_N
A6	Quad2A_P	B6	Quad2A_N
A7	Quad3C_P	B7	Quad3C_N
A8	Quad3B_P	B8	Quad3B_N
A9	Quad3A_P	B9	Quad3A_N
A10	GND	B10	Digital 4
A11	DAC1_P	B11	DAC1_N
A12	ADC2	B12	GND
A13	ADC1_P	B13	ADC1_N
A14	GND	B14	Digital 5
A15	DAC2	B15	GND
A16	ADC3	B16	GND
A17	DAC3	B17	GND
A18	VCC 12V	B18	GND
A19	GND	B19	Digital 2
A20	GND	B20	Digital 3
A21	GND	B21	Digital 6
A22	GND	B22	BOB 1-Wire (Digital 0)
A23	GND	B23	Digital 1
A24	VCC 12V	B24	GND
A25	VCC 12V	B25	GND

Table 2. Main performance data - ADC1

Parameter	Value	Unit	Comment
$f_{BW_{-3dB}}$	2.5	MHz	Analog input bandwidth
Conversion rate	40	MSa/s	
Resulting data rate	10	MSa/s	Input signal is 4x oversampled
Resolution	16	Bit	
Analog input range	± 2.5	V	Differential, VCM=0
Equiv. input range	0..65535		data type: uint
Input resistor	550	Ω	P and N, to ground

Table 3. Main performance data - ADC2,3

Parameter	Value	Unit	Comment
$f_{BW_{-3dB}}$	100	kHz	Analog input bandwidth
Data rate	10	MSa/s	
Resolution	16	Bit	
Analog input range	± 2.5	V	Single ended
Equiv. input range	0..65535		data type: uint
Input resistor	3.8	k Ω	

Table 4. Main performance data - DAC1

Parameter	Value	Unit	Comment
$f_{BW_{-3dB}}$	2.5	MHz	Analog output bandwidth
Sampling rate	20	MSa/s	
Resolution	16	Bit	
Analog output range	± 2.5	V	Differential, VCM=0
Equiv. output range	± 1		data type: double
$R_{OUT\ 100}$		Ω	Output resistance
I_{OUT}	10	mA	Maximum output current

Table 5. Main performance data - DAC2,3

Parameter	Value	Unit	Comment
$f_{BW_{-3dB}}$	100	kHz	Analog output bandwidth
Sampling rate	400	kSa/s	
Resolution	16	Bit	
Analog output range	± 2.5	V	
Equiv. output range	± 1		data type: double
$R_{OUT\ 50}$		Ω	Output resistance
I_{OUT}	10	mA	Maximum output current

Table 6. Main performance data - Digital IO - Used as OUTPUT

Parameter	Value	Unit	Comment
Max. Frequency	10	MHz	
Analog level	3.3	V	
$R_{OUT\ 50}$		Ω	Output resistance in series
I_{OUT}	2	mA	Maximum output current
Rise/Fall time	≤ 10	ns	

Table 7. Main performance data - Digital IO - Used as INPUT

Parameter	Value	Unit	Comment
Max. Frequency	10	MHz	
Input level nom.	3.3	V	
Input level min.	-0.2	V	
Input level max.	3.5	V	
R_{In}	1	M Ω	Input impedance
Driver VIH Min	2	V	
Driver VIL Max	0.8	V	

Table 8. Main performance data - DDI/Quadrature

Parameter	Value	Unit	Comment
Level			TIA/EIA-485 Compliant
Max Frequency	50 Mbps		
Differential Output min.	2.0	V	

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