

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland



S Schweizerischer Kalibrierdienst
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Accreditation No.: SCS 0108

Glossary

DAE data acquisition electronics
Connector angle information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- **DC Voltage Measurement:** Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- **Connector angle:** The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
 - **DC Voltage Measurement Linearity:** Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
 - **Common mode sensitivity:** Influence of a positive or negative common mode voltage on the differential measurement.
 - **Channel separation:** Influence of a voltage on the neighbor channels not subject to an input voltage.
 - **AD Converter Values with inputs shorted:** Values on the internal AD converter corresponding to zero input voltage
 - **Input Offset Measurement:** Output voltage and statistical results over a large number of zero voltage measurements.
 - **Input Offset Current:** Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - **Input resistance:** Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - **Low Battery Alarm Voltage:** Typical value for information. Below this voltage, a battery alarm signal is generated.
 - **Power consumption:** Typical value for information. Supply currents in various operating modes.

**DC Voltage Measurement**

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1 μ V , full range = -100...+300 mV

Low Range: 1LSB = 61nV , full range = -1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	403.804 $\pm$ 0.02% (k=2)	404.568 $\pm$ 0.02% (k=2)	403.927 $\pm$ 0.02% (k=2)
Low Range	3.97954 $\pm$ 1.50% (k=2)	3.99058 $\pm$ 1.50% (k=2)	3.96919 $\pm$ 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	332.5 ° $\pm$ 1 °
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Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	199993.97	-1.61	-0.00
Channel X + Input	20003.68	1.67	0.01
Channel X - Input	-19999.35	1.95	-0.01
Channel Y + Input	199994.72	-0.94	-0.00
Channel Y + Input	20001.93	-0.03	-0.00
Channel Y - Input	-19999.69	1.70	-0.01
Channel Z + Input	199995.14	-0.83	-0.00
Channel Z + Input	20001.23	-0.62	-0.00
Channel Z - Input	-20001.59	-0.08	0.00

Low Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	2000.92	-0.47	-0.02
Channel X + Input	202.45	0.76	0.37
Channel X - Input	-197.45	0.81	-0.41
Channel Y + Input	2000.30	-0.94	-0.05
Channel Y + Input	201.24	-0.37	-0.18
Channel Y - Input	-198.12	0.14	-0.07
Channel Z + Input	2000.71	-0.42	-0.02
Channel Z + Input	200.46	-1.06	-0.53
Channel Z - Input	-198.55	-0.18	0.09

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	12.11	9.92
	- 200	-9.05	-11.12
Channel Y	200	11.30	11.37
	- 200	-12.29	-12.77
Channel Z	200	1.70	1.84
	- 200	-3.81	-3.72

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	1.67	-4.44
Channel Y	200	8.45	-	3.12
Channel Z	200	10.32	5.39	-

4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	15754	15950
Channel Y	16502	16801
Channel Z	16087	13971

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	0.94	-0.24	2.94	0.49
Channel Y	0.26	-1.03	1.33	0.51
Channel Z	-1.40	-2.82	0.02	0.54

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	-0.01	-8	-9