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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	404.935 \pm 0.02% (k=2)	404.615 \pm 0.02% (k=2)	404.708 \pm 0.02% (k=2)
Low Range	3.97474 \pm 1.50% (k=2)	4.00470 \pm 1.50% (k=2)	3.97681 \pm 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	52.0 $^{\circ}$ \pm 1 $^{\circ}$
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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	200034.27	-0.74	-0.00
Channel X	+ Input	20007.95	2.01	0.01
Channel X	- Input	-20003.23	2.74	-0.01
Channel Y	+ Input	200035.13	0.36	0.00
Channel Y	+ Input	20003.67	-2.11	-0.01
Channel Y	- Input	-20005.39	0.68	-0.00
Channel Z	+ Input	200035.01	0.32	0.00
Channel Z	+ Input	20004.42	-1.23	-0.01
Channel Z	- Input	-20007.27	-1.03	0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2001.43	0.05	0.00
Channel X	+ Input	201.39	0.07	0.03
Channel X	- Input	-198.49	0.08	-0.04
Channel Y	+ Input	2001.41	0.18	0.01
Channel Y	+ Input	200.23	-0.98	-0.49
Channel Y	- Input	-199.52	-0.79	0.40
Channel Z	+ Input	2001.27	0.12	0.01
Channel Z	+ Input	200.78	-0.30	-0.15
Channel Z	- Input	-199.55	-0.69	0.35

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	-1.20	-2.91
	- 200	4.42	2.51
Channel Y	200	3.70	3.51
	- 200	-5.26	-5.81
Channel Z	200	3.33	3.50
	- 200	-4.60	-4.61

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	-	-1.74	-2.39
Channel Y	200	5.44	-	0.91
Channel Z	200	10.00	1.98	-

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	15842	16255
Channel Y	15773	16552
Channel Z	16072	15798

5. Input Offset Measurement

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

Input 10M Ω

	Average (μ V)	min. Offset (μ V)	max. Offset (μ V)	Std. Deviation (μ V)
Channel X	0.94	-0.43	2.13	0.42
Channel Y	-0.30	-1.73	0.48	0.37
Channel Z	-0.34	-1.51	0.78	0.41

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