Product Selector Signal Conditioning & Monitoring ICs ● Silicon for Motion®

	iC-MSA	iC-MSB SAFETY	iC-MSC NEW	iC-TW3	iC-PE Series	iC-RC1000 Signal Safety Monitoring	iC-WT
Interpolation	None (in = out)	None (in = out)	None (in = out)	None (in = out)	None (in = out)	None	None
Principle	Analog signal path +DACs	Analog signal path +DACs	Analog signal path +DACs	Analog signal path +DACs	Analog signal path	Analog +comparators	Hysteresis comparator
Accuracy*	**12 bit**	**13 bit**	**13 bit**	**10 bit**			
(per input cycle)	0.08°	0.04°	0.04°	0.35°			
Latency	< 1 µs	< 1 µs	< 1 µs	< 1 µs			< 1 µs
Inputs	3x Diff. / single-ended 16 ... 160 mVpp diff. 64 ... 640 mVpp diff. Current >2.5 µA	3x Diff. / single-ended 10 ... 250 mVpp diff. 40 ... 1000 mVpp diff. Current >2.5 µA	3x Diff. / single-ended 10 ... 750 mVpp diff. 40 ... 3000 mVpp diff. Current >2.5 µA	3x Diff. voltage, 10 ... 700 mVpp diff.	3x Diff. voltage, rail-to-rail	4x Single-ended, approx. rail-to-rail	5x Photocurrent, 0 to 600 nA (common cathode)
Max. Input Frequency	**20 kHz**	**500 kHz**	**500 kHz**	**1 MHz**	**200 kHz**	Lissajous (1 Vpp-diff.) monitoring to **100 kHz** Common mode (DC) monitoring to **500 kHz**	**500 kHz**
Gain Range	0.8 ... 116 0.2 ... 29	2 ... 100 0.5 ... 25	0.6 ... 100 0.17 ... 25	0.7 ... 700	1, 10, 20, 30, 50**		
Signal Conditioning							
Offset	●	●	●	● Automatic	-	-	-
Amplitude	● Auto-gain	●	●	● Automatic	-	-	-
Phase	●	●	●	-	-	-	-
Linearization	-	-	-	● LUT	-	-	-
Stabilization	-	● LED/MR bridge control	● LED/MR bridge control	-	● XMR bridge supply	-	● LED control
Digital Outputs	1x Error	1x Error	1x Error	1x Error	1x Shift Output	1x OK, 1x ERR; CMOS/TTL, 4 mA push-pull	3x TTL for A, B, Z; Up to 500 kHz
Sin/Cos Outputs	● 1 Vpp-diff. @ 100 Ω	● 1 Vpp-diff. @ 100 Ω	● 1 Vpp-diff. @ 100 Ω	● 1 Vpp-diff. @ 100 Ω ● 2 Vpp-diff. @ 1 kΩ	● 1x Diff. (1 mA), rail-to-rail		
Index Output	Analog / comparated	Analog / comparated	Analog / comparated	Analog / comparated			AND gated
Commutation (U,V,W)							-
Min. AB Edge Distance							-
Configuration	Ext. EEPROM, µC	Ext. EEPROM, µC	Ext. EEPROM, µC	Ext. EEPROM, µC	-	-	External resistors
Interfaces	I²C Slave & multi-master	I²C Slave & multi-master	I²C Slave & multi-master	I²C master, 1-Wire	Shift and clock inputs	-	-
Supply	4.3 V to 5.5 V	4.3 V to 5.5 V	4.3 V to 5.5 V	3.0 V to 5.5 V	3.0 V to 5.5 V	4.5 V to 5.5 V	4.5 V to 5.5 V
Pin Protection	● Reverse polarity	● Reverse polarity	● Reverse polarity	-	-	-	-
Temperature Sensor	● Thermal shutdwn.	● Thermal shutdwn.	● Thermal shutdwn.	● Int./ext.	-	-	-
Operating Temp. (Ta)	-25 ... +100°C,	-25 ... +100°C,	-40 ... +125°C	-40 ... +125°C	-40 ...+125°C	-40 ... +110°C	-25 ... +85°C
(Ta-extended)	-40 ... +115°C	-40 ... +115°C					on request
Package	TSSOP20-TP	TSSOP20-TP TSSOP20, QFN32-5x5	TSSOP20-TP	QFN32 5x5	QFN16-3x3	MSOP10 3x3	SO16N
Special Features		Certified for safety applications according to IEC 61508, DIN EN 13849; iC-MSB2: with output multiplexer (non-safe applications only)	Advanced LED/MR control	Temperature compensation by look-up table	Safety shift-register for cascading, bus-capable outputs	Certified for safety applications according to DIN EN61800-5-2 (drive controls), IEC 61508, DIN EN 13849	

*) Typical values following calibration. **) Depends on IC version.