Rear view

Top view

Top grid view

Rear view; Pins facing upwards; All dimensions are in mm; Header pitch is 2.54 mm. Drawing not to scale.

Motor – sensor configurations

Sensor \ Motor	PMSM	BLDC	DC BRUSH	STEP (2-ph)	STEP (3-ph)
Incr. Encoder	✓		✓	✓	
Incr. Encoder + Hall	✓	✓			
Analog Sin/Cos encoder	✓	✓	✓	✓	
SSI	✓	✓	✓	✓	
BiSS-C	✓	✓	✓	✓	
Linear Halls	✓				
Tacho				✓	
Open-loop (no sensor)				✓	✓

Features

- Motion controller and drive in a single compact unit based on MotionChip ™ technology
- Universal solution for control of rotary and linear brushless, brushed and 2 or 3-phase step motors
- Advanced motion control capabilities (PVT, S-curve, electronic cam)
- Motor supply: 11-50V; Logic SELV/ PELV supply: 9-36V; STO SELV/ PELV supply: 18-40V
- Output current: 8A cont. (BLDC mode); $20A_{PEAK}$, up to 100kHz PWM
- Feedback Devices (dual-loop support)
  1st feedback devices supported:
  - Incremental encoder interface (single ended or differential)
  - pulse & direction interface (single ended) for external (master) digital reference
  - Analogue sin/cos encoder interface (differential $1V_{pp}$)
  - Digital Hall sensor interface (single-ended and open collector)
  - Linear Hall sensors interface
  2nd feedback devices supported:
  - Incremental encoder interface (differential)
  - pulse & direction interface (differential) for external (master) digital reference
  - BISS / SSI encoder interface
- STO: 2 safe torque-off inputs, safety integrity level (SIL3/Cat3/PLe) acc. to EN61800-5-1;-2/ EN61508-3;-4/ EN ISO 13849-1.
- 6 digital inputs, 12-36V, PNP/NPN programmable: 2 for limit switches, 4 general-purpose
- 5 digital outputs, 5-36V, 0.5A, NPN open-collector: Ready, Error, 3 general-purpose
- 2 analogue inputs: 12-bit, 0-5V: Reference, Feedback or general purpose
- RS-232 serial & CAN-bus 2.0B interfaces
- 127 h/w addresses selectable by h/w pins configuration
- 16k x 16 SRAM memory for data acquisition
- 16k x16 E^2ROM to store setup data, TML motion programs, cam tables and other user data
- Operating ambient temperature: 0-40°C (over 40°C with derating)
- NTC/PTC analogue Motor Temperature sensor input

Mating Connectors

Ref	Producer	Part No.	Description
J1	Samtec	SSQ-112-01-G-S	1x12 contacts, socket 2.54mm-pitch accepting 0.635mm square pin
J2	FCI	87606-307LF	2x7 contacts, socket, 2.54mm-pitch accepting 0.635mm square pin
	TE Connectivity	534206-7	
J4	Samtec	SSQ-116-01-G-D	2x12 contacts, socket 2.54mm-pitch accepting 0.635mm square pin
J5	Samtec	SSQ-108-01-G-S	1x8 contacts, High-current socket 2.54mm-pitch accepting 0.635mm square pin

J1

Pin	Name	Type	Description
1	GND	-	Return ground for all signals. Internally connected to J4 pins 31 and 32, to metallic cover, and to the 3 fixing screws
2	TMLCAN / CANopen	I	Connect to GND to enable CANopen protocol Leave disconnected for TMLCAN protocol
3	Axis ID Bit6	I	8 bit H/W Axis ID register. Connect pin to GND to set bit to 1. Up to 127 H/W axis ID combinations.
4	Axis ID Bit5	I	
5	Axis ID Bit4	I	
6	Axis ID Bit3	I	
7	Axis ID Bit2	I	
8	Axis ID Bit1	I	
9	Axis ID Bit0	I	
10	reserved	-	Reserved for interface extensions†
11	reserved	-	Reserved for interface extensions†
12	reserved	-	Reserved for interface extensions†

J2

Pin	Name	Type	Description	
1	STO1+	I	Safe Torque Off input 1, positive input (opto-isolated, 18÷40V)	Apply between both STO1+, STO2+ and STO1-, STO2- 24V DC from SELV/ PELV power supply for motor PWM output operation
2	STO2+	I	Safe Torque Off input 2, positive input(opto-isolated, 18÷40V)	
3	STO1-	I	Safe Torque Off input 1, negative return (opto-isolated, 0V)	
4	STO2-	I	Safe Torque Off input 2, negative return (opto-isolated, 0V)	
5	LH1	I	Linear Hall 1 input	
6	LH2	I	Linear Hall 2 input	
7	IN4	I	12-36V general-purpose digital PNP/NPN input	
8	IN5	I	12-36V general-purpose digital PNP/NPN input	
9	OUT0	O	5-36V 0.5A, general-purpose digital output, NPN open-collector/TTL pull-up	
10	OUT3/ Ready	O	5-36V 0.5A, drive Ready output, active low, NPN open-collector/TTL pull-up. Also drives the green LED.	
11	OUT1	O	5-36V 0.5A, general-purpose digital output, NPN open-collector/TTL pull-up	
12	OUT2/ Error	O	5-36V 0.5A, drive Error output, active low, NPN open-collector/TTL pull-up. Also drives the red LED	
13	REF	I	Analogue input, 12-bit, 0-5V. Used to read an analog position, speed or torque reference, or used as general purpose analogue input	
14	FDBK / LH3	I	Analogue input, 12-bit, 0-5V. Used to read an analogue position or speed feedback (as tacho), or used as general purpose analogue input / or Linear Hall 3 input	

J3

Pin	Name	Type	Description
1..10	Reserved	-	Reserved for Technosoft communication interface extensions†

J4

Pin	Name	Type	Description
1	IN0	I	12-36V general-purpose digital PNP/NPN input
2	IN1	I	12-36V general-purpose digital PNP/NPN input
3	IN2/LSP	I	12-36V digital PNP/NPN input. Positive limit switch input
4	IN3/LSN	I	12-36V digital PNP/NPN input. Negative limit switch input
5	B2-/Dir-/CLK-/MA-	I/O	Incr. encoder2 B- diff. input, or Dir--, or Clock- for SSI, or Master- for BiSS; has 150Ω resistor between pins 5 and 7
6	B1-/Cos-	I	Incr. encoder1 B- diff. input, or analogue encoder Cos- diff. input
7	B2+/Dir+/CLK+/MA+	I/O	Incr. encoder2 B+ diff. input, or Dir+-, or Clock+ for SSI, or Master+ for BiSS; has 150Ω resistor between pins 5 and 7
8	B1+/Cos+	I	Incr. encoder1 B single-ended, or B+ diff. input, or analogue encoder Cos+ diff. input
9	A2+/Pulse+/Data+/SL+	I	Incr. encoder2 A+ diff. input, or Pulse+, or Data+ for SSI, or Slave+ for BiSS; has 150Ω resistor between pins 9 and 11
10	A1+/Sin+	I	Incr. encoder1 A single-ended, or A+ diff. input, or analogue encoder Sin+ diff. input
11	A2- /Pulse-/Data-/SL-	I	Incr. encoder2 A- diff. input, or Pulse-, or Data- for SSI, or Slave- for BiSS; has 150Ω resistor between pins 9 and 11
12	A1- /Sin-	I	Incr. encoder1 A- diff. input, or analogue encoder Sin- diff. input
13	Z2+	I	Incr. encoder2 Z+ diff. input ; has 150Ω resistor between pins 13 and 15
14	Z1+	I	Incr. encoder1 Z single-ended, or Z+ diff. input,
15	Z2-	I	Incr. encoder2 Z- diff. input; has 150Ω resistor between pins 13 and 15
16	Z1-	I	Incr. encoder1 Z- diff. input
17	Hall 1	I	Digital input Hall 1 sensor
18	CAN Hi	I/O	CAN-Bus positive line(dominant high)
19	Hall 2	I	Digital input Hall 2 sensor
20	CAN Lo	I/O	CAN-Bus negative line (dominant low)
21	Hall 3	I	Digital input Hall 3 sensor
22	232TX	O	RS-232 Data Transmission
23	+5V$_{OUT}$	O	5V output supply for I/O usage
24	232RX	I	RS-232 Data Reception
25	Temp Mot	I	NTC/PTC input. Used to read an analog temperature value
26	Reserved	-	Reserved. Do not connect.
27	+V$_{LOG}$	I	Positive terminal of the logic supply input: 9 to 36V$_{DC}$ from SELV/ PELV type power supply
28	OUT4	O	5-36V 0.5A, general-purpose digital output, NPN open-collector/TTL pull-up
29	+V$_{MOT}$	I	Positive terminal of the motor supply: 11 to 48V$_{DC}$.
30	+V$_{MOT}$	I	Positive terminal of the motor supply: 11 to 48V$_{DC}$
31	GND	-	Return ground for all signals. Internally connected to J4 pin 32, to J1 pin 1, to metallic cover, and to the 3 fixing screws
32	GND	-	

J5

Pin	Name	Type	Description
1,2	A/A+	O	Phase A for 3-ph motors, A+ for 2-ph steppers, Motor+ for DC brush motors
3,4	B/A-	O	Phase B for 3-ph motors, A- for 2-ph steppers, Motor- for DC brush motors
5,6	C/B+	O	Phase C for 3-ph motors, B+ for 2-ph steppers
7,8	Br/B-	O	Brake resistor / Phase B- for 2-ph steppers

Electrical characteristics

All parameters measured under the following conditions (unless otherwise specified):

- VLOG = 24 VDC; VMOT = 48VDC
- Supplies start-up / shutdown sequence: -any-
- Load current (sinusoidal amplitude / continuous BLDC, DC, stepper) = 8A

Operating Conditions		Min.	Typ.	Max.	Units
Ambient temperature		0		40[1]	ºC
Ambient humidity	Non-condensing	0		90	%Rh
Altitude / pressure[2]	Altitude (vs. sea level)	-0.1	0 ÷ 2.5	[2]	Km
	Ambient Pressure	0 [2]	0.75 ÷ 1	10.0	atm

Storage Conditions		Min.	Typ.	Max.	Units
Ambient temperature		-40		100	ºC
Ambient humidity	Non-condensing	0		100	%Rh
Ambient Pressure		0		10.0	atm
ESD capability (Human body model)	Not powered; applies to any accessible part			±0.5	kV
	Original packaging			±15	kV

Mechanical Mounting		Min.	Typ.	Max.	Units
Airflow		natural convection[3], closed box			
Spacing required for vertical mounting	Between adjacent drives	30			mm
	Between drives and nearby walls	30			mm
	Between drives and roof-top	20			mm
Spacing required for horizontal mounting	Between adjacent drives	4			mm
	Between drives and nearby walls	5			mm
	Space needed for drive removal	10			mm
	Between drives and roof-top	15			mm
Insertion force	Using recommended mating connectors		TBD	TBD	N
Extraction force		TBD	TBD		N

Environmental Characteristics		Min.	Typ.	Max.	Units
Size (Length x Width x Height)	Global size		60 x 43.6 x 22		mm
			~2.36 x 1.72 x 0.87		inch
Weight			43		g
Cleaning agents	Dry cleaning is recommended	Only Water- or Alcohol- based			
Protection degree	According to IEC60529, UL508	IP20			-

Logic Supply Input (+V$_{LOG}$)		Min.	Typ.	Max.	Units
Supply voltage	Nominal values	9		36	V$_{DC}$
	Absolute maximum values, drive operating but outside guaranteed parameters	8		40	V$_{DC}$
	Absolute maximum values, continuous	-0.6		42	V$_{DC}$
	Absolute maximum values, surge (duration ≤ 10ms)[†]	-1		+45	V
Supply current	+V$_{LOG}$ = 12V		130		mA
	+V$_{LOG}$ = 24V		90	280	
	+V$_{LOG}$ = 40V		85		

Motor Supply Input (+V$_{MOT}$)		Min.	Typ.	Max.	Units
Supply voltage	Nominal values	11		50	V$_{DC}$
	Absolute maximum values, drive operating but outside guaranteed parameters	9		52	V$_{DC}$
	Absolute maximum values, continuous	-0.6		54	V$_{DC}$
	Absolute maximum values, surge (duration ≤ 10ms)[†]	-1		57	V
Supply current	Idle		1	5	mA
	Operating	-20	±8	+20	A
	Absolute maximum value, short-circuit condition (duration ≤ 10ms)[†]			26	A

Motor Outputs (A/A+, B/A-, C/B+, BR/B-)			Min.	Typ.	Max.	Units
Nominal output current, continuous[4]	for DC brushed, steppers and BLDC motors with Hall-based trapezoidal control				8	
	for PMSM motors with FOC sinusoidal control (sinusoidal amplitude value)				8	A
	for PMSM motors with FOC sinusoidal control (sinusoidal effective value)				5.66	
Motor output current, peak	maximum 2.5s		-20		+20	A
Short-circuit protection threshold			±22	±26	±30	A
Short-circuit protection delay			5	10		µs
On-state voltage drop	Nominal output current; including typical mating connector contact resistance			±0.3	±0.5	V
Off-state leakage current				±0.5	±1	mA
Motor inductance (phase-to-phase)	Recommended value, for current ripple max. ±5% of full range; +V$_{MOT}$ = 36 V	F$_{PWM}$ 20 kHz	330			µH
		40 kHz	150			
		60 kHz	120			
		80 kHz	80			
		100 kHz	60			
	Minimum value, limited by short-circuit protection; +V$_{MOT}$ = 36 V	20 kHz	120			µH
		60 kHz	40			
		40 kHz	30			
		80 kHz	15			
		100 kHz	8			
Motor electrical time-constant (L/R)	Recommended value for ±5% current measurement error	20 kHz	250			µs
		40 kHz	125			
		60 kHz	100			
		80 kHz	63			
		100 kHz	50			
Current measurement	FS = Full Scale accuracy			±4	±8	%FS

Digital Inputs (IN0, IN1, IN2/LSP, IN3/LSN, IN4, IN5)[5]		Min.	Typ.	Max.	Units
Mode compliance			PNP		
Default state	Input floating (wiring disconnected)		Logic LOW		
Input voltage	Logic "LOW"	-10	0	2.2	
	Logic "HIGH"	6.3		36	
	Floating voltage (not connected)		0		V
	Absolute maximum, continuous	-10		+39	
	Absolute maximum, surge (duration ≤ 1s)[†]	-20		+40	
Input current	Logic "LOW"; pulled to GND		0		mA
	Logic "HIGH"		1.3	2	

		Min.	Typ.	Max.	Units
Mode compliance			NPN		
Default state	Input floating (wiring disconnected)		Logic HIGH		
Input voltage	Logic "LOW"	-10		2.2	
	Logic "HIGH"	6.3		36	
	Floating voltage (not connected)		3		V
	Absolute maximum, continuous	-10		+36	
	Absolute maximum, surge (duration ≤ 1s)[†]	-20		+40	
Input current	Logic "LOW"; Pulled to GND	-1.6	0.6	1	mA
	Logic "HIGH"; Pulled to +24V			0.3	
Input frequency		0		150	kHz
Minimum pulse		3.3			µs
ESD protection	Human body model	±2			kV

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[1]Operating temperature at higher temperatures is possible with reduced current and power ratings

[2] iPOS4808 can be operated in vacuum (no altitude restriction), but at altitudes over 2,500m, current and power rating are reduced due to thermal dissipation efficiency.

[3] In case of forced cooling (conduction or ventilation) the spacing requirements may drop substantially down to zero as long as the ambient temperature is kept below the maximum operating limit

[4] @20kHz F$_{PWM}$

[5] The digital inputs are software selectable as PNP or NPN

TECHNOSOFT

Title of document

iPOS4808 MY-CAN-STO

PRODUCT DATA SHEET

N° document

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Digital Outputs

Digital Outputs (OUT0, OUT1, OUT2/Error, OUT3/ Ready, OUT4)		Min.	Typ.	Max.	Units
Mode compliance	All outputs (OUT0, OUT1, OUT2/Error, OUT3/Ready)	NPN 24V			
Default state	Not supplied (+V_{LOG} floating or to GND)	High-Z (floating)			
	Immediately after power-up — OUT0, OUT1, OUT4	Logic "HIGH"			
	OUT2/Error, OUT3/ Ready	Logic "LOW"			
	Normal operation — OUT0, OUT1, OUT2/Error	Logic "HIGH"			
	OUT3/Ready	Logic "LOW"			
Output voltage	Logic "LOW"; output current = 0.5A			0.8	V
	Logic "HIGH"; output current = 0, no load — OUT2/Error, OUT3/ Ready	2.9	3	3.3	
	OUT0, OUT1, OUT4	4	4.5	5	
	Logic "HIGH", external load to +V_{LOG}		V_{LOG}		
	Absolute maximum, continuous	-0.5		V_{LOG}+0.5	
	Absolute maximum, surge (duration ≤ 1s)†	-1		V_{LOG}+1	
Output current	Logic "LOW", sink current			0.5	A
	Logic "LOW", sink current, pulse ≤ 5 sec.			1	A
	Logic "HIGH", source current; external load to GND; V_{OUT} >= 2.0V — OUT2/Error, OUT3/ Ready			2	mA
	OUT0, OUT1, OUT4			4	mA
	Logic "HIGH", leakage current; external load to +V_{LOG}; V_{OUT} = V_{LOG} max = 40V		0.1	0.2	mA
Minimum pulse width			2		µs
ESD protection	Human body model	±15			kV

Digital Hall Inputs (Hall1, Hall2, Hall3)

Digital Hall Inputs (Hall1, Hall2, Hall3)		Min.	Typ.	Max.	Units
Mode compliance		TTL / CMOS / Open-collector			
Default state	Input floating (wiring disconnected)	Logic HIGH			
Input voltage	Logic "LOW"		0	0.8	
	Logic "HIGH"	2	5		
	Floating voltage (not connected)		4.4		V
	Absolute maximum, surge (duration ≤ 1s)†	-10		+15	
Input current	Logic "LOW"; Pull to GND			1.2	
	Logic "HIGH"; Internal 4.7KΩ pull-up to +5	0	0	0	mA
Minimum pulse width			2		µs
ESD protection	Human body model	±5			kV

Encoder1 Inputs (A1/A1+, A1-, B1/B1+, B1-, Z1/Z1+, Z1-)

Encoder1 Inputs (A1/A1+, A1-, B1/B1+, B1-, Z1/Z1+, Z1-)		Min.	Typ.	Max.	Units
Single-ended mode compliance	Leave negative inputs disconnected	TTL / CMOS / Open-collector			
Input voltage, single-ended mode A/A+, B/B+	Logic "LOW"			1.6	
	Logic "HIGH"	1.8			V
	Floating voltage (not connected)		3.3		
Input voltage, single-ended mode Z/Z+	Logic "LOW"			1.2	
	Logic "HIGH"	1.4			V
	Floating voltage (not connected)		4.7		
Input current, single-ended mode A/A+, B/B+, Z/Z+	Logic "LOW"; Pull to GND			5.5	6
	Logic "HIGH"; Internal 2.2KΩ pull-up to +5	0	0	0	mA
Differential mode compliance	For full RS422 compliance, see [1]	TIA/EIA-422-A			
Input voltage, differential mode	Hysteresis	±0.06	±0.1	±0.2	
	Common-mode range (A+ to GND, etc.)	-7		+7	V
Input impedance, differential	A1+ to A1-, B1+ to B1-, Z1+ to Z1-		1		kΩ
Input frequency	Single-ended mode, Open-collector / NPN	0		5	MHz
	Differential mode, or Single-ended driven by push-pull (TTL / CMOS)	0		10	MHz
Minimum pulse width	Single-ended mode, Open-collector / NPN	1			µs
	Differential mode, or Single-ended driven by push-pull (TTL / CMOS)	50			ns
Input voltage, any pin to GND	Absolute maximum values, continuous	-7		+7	V
	Absolute maximum, surge (duration ≤ 1s)†	-11		+14	
ESD protection	Human body model	±1			kV

Encoder2 Inputs (A2+/Data+, A2-/Data-, B2+/Clk+, B2-/Clk-, Z2+, Z2-)[2]

Encoder2 Inputs (A2+/Data+, A2-/Data-, B2+/Clk+, B2-/Clk-, Z2+, Z2-)[2]		Min.	Typ.	Max.	Units
Differential mode compliance	For full RS422 compliance, see [1]	TIA/EIA-422-A			
Input voltage	Hysteresis	±0.06	±0.1	±0.2	
	Differential mode	-14		+14	V
	Common-mode range (A+ to GND, etc.)	-11		+14	
Input impedance, differential	A2+, B2+, Z2+ A2-, B2-, Z2-		150		Ω
Input frequency	Differential mode	0		10	MHz
Minimum pulse width	Differential mode	50			ns

Sin-Cos Encoder Inputs (Sin+, Sin-, Cos+, Cos-)

Sin-Cos Encoder Inputs (Sin+, Sin-, Cos+, Cos-)		Min.	Typ.	Max.	Units
Input voltage, differential	Sin+ to Sin-, Cos+ to Cos-		1	1.25	V_{PP}
Input voltage, any pin to GND	Operational range	-1	2.5	4	
	Absolute maximum values, continuous	-7		+7	V
	Absolute maximum, surge (duration ≤ 1s)†	-11		+14	
Input impedance	Differential, Sin+ to Sin-, Cos+ to Cos- [3]	4.2	4.7		kΩ
	Common-mode, to GND		2.2		kΩ
Resolution with interpolation	Software selectable, for one sine/cosine period	2		10	bits
Frequency	Sin-Cos interpolation	0		450	kHz
	Quadrature, no interpolation	0		10	MHz
ESD protection	Human body model	±1			kV

Analog 0…5V Inputs (REF, FDBK)

Analog 0…5V Inputs (REF, FDBK)		Min.	Typ.	Max.	Units
Input voltage	Operational range	0		5	
	Absolute maximum values, continuous	-12		+18	V
	Absolute maximum, surge (duration ≤ 1s)†			±36	
Input impedance	To GND		28		kΩ
Resolution			12		bits
Integral linearity				±2	bits
Offset error			±2	±10	bits
Gain error			±1%	±3%	% FS[4]
Bandwidth (-3Db)	Software selectable	0		1	kHz
ESD protection	Human body model	±5			kV

RS-232

RS-232		Min.	Typ.	Max.	Units
Compliance		TIA/EIA-232-C			
Bit rate	Software selectable	9600		115200	Baud
Short-circuit	232TX short to GND	Guaranteed			
ESD protection	Human body model	±2			kV

[1] For full RS-422 compliance, 120Ω termination resistors must be connected across the differential pairs, as close as possible to the drive input pins.

[2] Encoder2 differential input pins have internal 120Ω termination resistors connected across

[3] For many applications, a 120Ω termination resistor should be connected across SIN+ to SIN-, and across COS+ to COS-. Please consult the feedback device datasheet for confirmation.

[4] "FS" stands for "Full Scale"

Name	First edition	Document template: P099.TQT.564.0001		Last edition	Visa :
EP	August 18, 2016			August 18, 2016	GC
		Title of document		N° document	
TECHNOSOFT		**iPOS4808 MY-CAN-STO** **PRODUCT DATA SHEET**		**P027.314.E111.DSH.10C**	Page: 4 of 5

Safe torque OFF (STO1+,STO1-; STO2+, STO2+)		Min.	Typ.	Max.	Units
Safety function	According to EN61800-5-2	STO (Safe Torque OFF)			
EN 61800-5-1/ -2 and EN 61508-5-3/ -4 Classification	Safety Integrity Level	safety integrity level 3 (SIL3)			
	PFHd (Probability of Failures per Hour - dangerous)	8*10⁻¹⁰	hour⁻¹ (0.8 FIT)		
EN13849-1 Classification	Performance Level	Cat3/PLe			
	MTTFd (meantime to dangerous failure)	377			years
Mode compliance		PNP			
Default state	Input floating (wiring disconnected)	Logic LOW			
Input voltage	Logic "LOW" (PWM operation disabled)	-20		5.6	V
	Logic "HIGH" (PWM operation enabled)	18		36	
	Absolute maximum, continuous	-20		+40	
Input current	Logic "LOW"; pulled to GND		0		mA
	Logic "HIGH", pulled to +Vlog	5		13	
Repetitive test pulses (high-low-high)	Ignored high-low-high			5	ms
				20	Hz
Fault reaction time	From internal fault detection to register DER bit 14 =1 and OUT2/Error high-to-low			30	ms
PWM operation delay	From external STO low-high transition to PWM operation enabled			30	ms
ESD protection	Human body model	±2			kV

Linear Hall Inputs (LH1, LH2, LH3)		Min.	Typ.	Max.	Units
Input voltage	Operational range	0	0.5÷4.5	4.9	V
Input voltage	Absolute maximum values, continuous	-7		+7	V
	Absolute maximum, surge (duration ≤ 1s) †	-11		+14	
Input current	Input voltage 0…+5V	0		0.2	mA
Interpolation Resolution	Depending on software settings			11	bits
Frequency		0		1	kHz
ESD protection	Human body model	±1			kV

CAN-Bus		Min.	Typ.	Max.	Units
Compliance		ISO11898, CiA-301v4.2 & 402v3.0			
Bit rate	Software selectable	125		1000	Kbps
Bus length	1Mbps			25	m
	500Kbps			100	
	≤ 250Kbps			250	
Resistor	Between CAN-Hi, CAN-Lo	none on-board			
Node addressing	Strapping option (AxisID Bit0..6)	1 ÷ 127 ; 255 (all bits 0)			-
ESD protection	Human body model	±15			kV

Supply Output (+5V)		Min.	Typ.	Max.	Units
Output voltage	Current sourced = 250mA	4.8	5	5.2	V
Output current		600	650		mA
Short-circuit		NOT protected			
Over-voltage		NOT protected			
ESD protection	Human body model	±1			kV

† Stresses beyond values listed under "absolute maximum ratings" may cause permanent damage to the device. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.