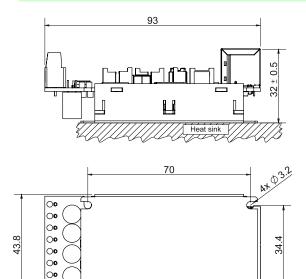
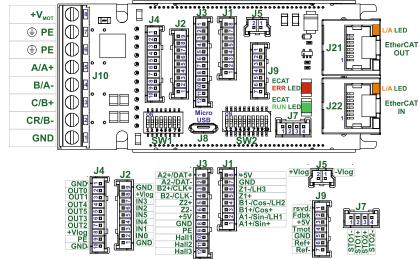


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All dimensions are in mm; Drawing not to scale.

Motor – sensor configurations						
Motor Sensor	PMSM	BLDC	DC BRUSH	STEP (2-ph)	STEP (3- ph)	
Incr. Encoder	3		7	3		
Incr. Encoder + Dig. Hall	T	T				
Linear Halls	7					
Digital Hall control only	T					
Analog Sin/Cos encoder	T	7	7	3		
SSI / BiSS-C/ EnDAT/ TAMAGAWA/ Panasonic	•	•	•	7		
Tacho			7			
Open-loop (no sensor)				3	T	

Features

- Motion controller and drive in a single compact unit based on MotionChip TM 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: 10A RMS cont. (BLDC mode); 28A_{PEAK} RMS, up to 100kHz PWM
- Operating ambient temperature: 0-40°C (over 40°C with derating)
- NTC/PTC analogue Motor Temperature sensor input
- Communication interfaces:
 - USB
 - Dual RJ45 100Mbps EtherCAT® ports
- Commissioning (set-up) possible through USB, FoE (file-over-EtherCAT®), EoE (Ethernet-over-EtherCAT®)
- 128 h/w addresses selectable by h/w sliding switches
- 16k x 16 SRAM memory for data acquisition
- 24k x16 E2ROM to store setup data, TML motion programs, cam tables and other user data

Mating Connectors					
Producer Part No. Connector Description					
Molex	35507-0800	J1	2.00mm Pitch Sherlock Housing, 8 Circuits		
Molex	35507-0900	J2	2.00mm Pitch Sherlock Housing, 9 Circuits		
Molex	35507-1200	J3	2.00mm Pitch Sherlock Housing, 12 Circuits		
Molex	35507-1000	J4	2.00mm Pitch Sherlock Housing, 10 Circuits		
Molex	35507-0200	J5	2.00mm Pitch Sherlock Housing, 2 Circuits		
Molex	35507-0400	J7	2.00mm Pitch Sherlock Housing, 4 Circuits		
Molex	35507-0700	J9	2.00mm Pitch Sherlock Housing, 7 Circuits		
-	-	J21, J22	Standard 8P8C modular jack (RJ-45) male		
	79758-1021	14 10 10 14	Pre-Crimped Lead Sherlock Female-to- Sherlock Female, Tin (Sn) Plating, 300.00mm Length, 26 AWG, Black		
Molex	502128100	J1,J2,J3,J4< J5,J7,J9	2.00mm Pitch, Micro-Latch Female Crimp Terminal, Tin (Sn) Plating, 24-30 AWG, Bag		
	638190500		Hand Crimp Tool for 2.00mm Pitch Terminal, 24-30 AWG		

- Feedback Devices (dual-loop support)
 - 1st feedback devices supported:
 - Incremental encoder interface (single ended or differential)
 - Analogue sin/cos encoder interface (differential 1V_{pp})
 - Digital Hall sensor interface (single-ended and open collector)
 - Linear Hall sensors interface
 - pulse & direction interface (single ended or differential) for external (master) digital reference
 - 2nd feedback devices supported:
 - Incremental encoder interface (differential)
 - pulse & direction interface (differential) for external (master) digital reference
 - BISS / SSI / EnDAT / TAMAGAWA / Panasonic encoder interface
- Integrated termination resistors for differential Feedback#1 pairs, selectable through sliding switches.
- 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
- 6 digital outputs, 5-36V, 0.5A, PNP/NPN programmable: Ready, Error, 4 general-purpose
- 2 analogue inputs: 12-bit,:±10V Reference, 0-5V Feedback or general purpose

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Connectors descri	ption
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J1 Fe	eedback #	1
Pin	Name	Description
1	A1+/Sin+	Incr. encoder1 A single-ended, or A+ diff. input, or analogue encoder Sin+ diff. input
2	A1-/Sin- /LH1	Incr. encoder1 A- diff. input, or analogue encoder Sin- diff. input if SW2 pin2= ON and pin3=OFF
	/LH I	Linear Hall 1 input if SW2 pin2= OFF and pin3=ON
3	B1+/Cos+	Incr. encoder1 B single-ended, or B+ diff. input, or analogue encoder Cos+ diff. input
4	B1-/Cos-	Incr. encoder1 B- diff. input, or analogue encoder Cos- diff. input if SW2 pin5= ON and pin6=OFF
	/LN2	Linear Hall 2 input if SW2 pin5= OFF and pin6=ON
5	Z1+	Incr. encoder1 Z single-ended, or Z+ diff. input
6	Z1-/LH3	Incr. encoder1 Z- diff. input if SW2 pin8= ON and pin9=OFF
- 6	Z1-/LH3	Linear Hall 3 input if SW2 pin8= OFF and pin9=ON
7	GND	Return ground. Internally connected to all GND signals except STO GND.
8	+5V _{OUT}	5V output supply

J2			

02 D	gitai ilipt	
Pin	Name	Description
1	GND	Return ground. Internally connected to all GND signals except STO GND.
2	IN0	12-36V general-purpose digital PNP/NPN input
3	IN1	12-36V general-purpose digital PNP/NPN input
4	IN4	12-36V general-purpose digital PNP/NPN input
5	IN5	12-36V general-purpose digital PNP/NPN input
6	IN2/LSP	12-36V digital PNP/NPN input. Positive limit switch input
7	IN3/LSN	12-36V digital PNP/NPN input. Negative limit switch input
8	+V _{LOG}	Positive terminal of the logic supply input: 9 to $36V_{DC}$. Internally connected to other + V_{LOG} pins
9	GND	Return ground. Internally connected to all GND signals except STO GND.

J3 Fe	J3 Feedback #2 and Digital Hall				
Pin	Name	Description			
1	A2+/Pulse+/ Data+/SL+	Incr. encoder2 A+ diff. input, or Pulse+, or Data+ for SSI, or Slave+ for BiSS; has internal 120Ω resistor between pins 11 and 12			
2	A2- /Pulse-/ Data-/SL-	Incr. encoder2 A- diff. input, or Pulse-, or Data- for SSI, or Slave- for BiSS; has internal 120Ω resistor between pins 11 and 12			
3	B2+/Dir+/ CLK+/MA+	Incr. encoder2 B+ diff. input, or Dir+, or Clock+ for SSI, or Master+ for BiSS; has internal 120Ω resistor between pins 9 and 10			
4	B2-/Dir- /CLK-/MA-	Incr. encoder2 B- diff. input, or Dir-, or Clock- for SSI, or Master- for BiSS; has internal 120 Ω resistor between pins 9 and 10			
5	Z2+	Incr. encoder2 Z+ diff. input ; has internal 120Ω resistor between pins 7 and 8			
6	Z2-	Incr. encoder2 Z- diff. input ; has internal 120 $\!\Omega$ resistor between pins 7 and 8			
7	+5V оит	5V output supply			
8	GND	Return ground. Internally connected to all GND signals except STO GND.			
9	PE	Protection Earth			
10	Hall 1	Digital input Hall 1 sensor			
11	Hall 2	Digital input Hall 2 sensor			
12	Hall 3	Digital input Hall 3 sensor			

J4 Di	gital Out	puts
Pin	Name	Description
1	GND	Return ground. Internally connected to all GND signals except STO GND.
2	OUT0	5-36V general-purpose digital output, 0.2A PNP/ 0.3A NPN, software selectable
3	OUT1	5-36V general-purpose digital output, 0.2A PNP/ 0.3A NPN, software selectable
4	OUT4	5-36V general-purpose digital output, 0.2A PNP/ 0.3A NPN, software selectable
5	OUT5	5-36V general-purpose digital output, 0.2A PNP/ 0.3A NPN, software selectable
6	OUT3/ Ready	5-36V Ready signal digital output, 0.2A PNP/ 0.3A NPN, software selectable
7	OUT2/ Error	5-36V Error signal digital output, 0.2A PNP/ 0.3A NPN, software selectable
8	+V _{LOG}	Positive terminal of the logic supply input: 9 to 36V _{DC} . Internally connected to other +V _{LOG} pins
9	PE	Protection Earth
10	GND	Return ground. Internally connected to all GND signals except STO GND.

J5 Lo	J5 Logic supply input				
Pin	Name	Description			
1	-V _{LOG}	Negative terminal of the logic supply input: 9 to $36V_{DC}$ from SELV/ PELV type power supply.			
2	+V _{LOG}	Positive terminal of the logic supply input: 9 to $36V_{DC}$ from SELV/ PELV type power supply.			

J7 ST	J7 STO (Safe Torque Off)					
Pin	Name	Description				
1	STO2-	Safe Torque Off input 2, negative return (opto-isolated, 0V)	Apply between both			
2	STO2+	Safe Torque Off input 2, positive input (opto-isolated, 18:40V)	STO1+, STO2+ and STO1-, STO2- 24V			
3	STO1+	Safe Torque Off input 1, positive input (opto-isolated, 18÷40V)	DC from SELV/ PELV power supply for motor PWM			
4	ST01-	Safe Torque Off input 1, negative return	output operation			

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Jy	Ana	поо	ue	ш	uus

Pin	Name	Description		
1	rsvd	Reserved. Do not connect		
2	FDBK	Analogue input, 12-bit, 0-5V. Reads an analogue feedback (tacho), or general purpose		
3	+ 5V оит	5V output supply		
4	Temp Mot	NTC/PTC 3.3V input. Used to read an analog to value	emperature	
5	GND	Return ground. Internally connected to all GND except STO GND.	signals	
6	REF+	+/-10V Analogue Input+, 11-bit	Found as	
7	REF-	+/-10V Analogue Input-, 11-bit	variable REF	

110	Dower	innut	and	Motor	outputs

Pin	Name	Description
1	GND	Negative return (ground) of the power supply
2	CR/B-	Chopping Resistor output/ Phase B- for step motors
3	C/B+	Phase C for 3-ph motors, B+ for 2-ph steppers
4	B/A-	Phase B for 3-ph motors, A- for 2-ph steppers, Motor- for DC brush motors
5	A/A+	Phase A for 3-ph motors, A+ for 2-ph steppers, Motor+ for DC brush motors
6	PE	Earth connection
7	PE	Earth connection
8	+Vmot	Positive terminal of the motor supply: 12 to 48V _{DC} .

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SW1 – Axis ID settings						
Position	Description					
18	Sets hardware Axis ID that is found in the ECAT register configured station alias Pin 1 is Bit 0 Pin 7 is Bit 6 of the Axis value. Possible values: from 1 to 255 when all pins OFF; When Axis ID is 255, the EtherCAT register called "configured station alias" will be 0.					

SW2 – Fee	SW2 – Feedback #1 Signal routing and termination resistors				
Position	Description				
1	Internally connect 150Ω termination resistor between J1 pin 1 and 2.				
2	Internally connect A1-/Sin- signal to J1 pin2; Remark: If this pin is ON, SW2 pin 3 must be OFF.				
3	Internally connect Linear Hall 1 (LH1) signal to J1 pin2; Remark: If this pin is ON, SW2 pin 2 must be OFF.				
4	Internally connect 150Ω termination resistor between J1 pin 3 and 4.				
5	Internally connect B1-/Cos- signal to J1 pin4; Remark : If this pin is ON, SW2 pin 6 must be OFF.				
6	Internally connect Linear Hall 2 (LH2) signal to J1 pin4; Remark : If this pin is ON, SW2 pin 5 must be OFF.				
7	Internally connect 150Ω termination resistor between J1 pin 5 and 6.				
8	Internally connect Z1- signal to J1 pin6; Remark: If this pin is ON, SW2 pin 9 must be OFF.				
9	Internally connect Linear Hall 3 (LH3) signal to J1 pin6; Remark: If this pin is ON, SW2 pin 8 must be OFF.				
10	Reserved				

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 / cont. BLDC, DC, stepper) = 10A RMS

 Prairing Conditions Min. Typ. Max. Units Operating Conditions

Operating Condit	ions		IVIIII.	ιyp.	wax.	Units
Ambient temperatu	ıre		0		40 ¹	ºC
Ambient humidity		Non-condensing	0		90	%Rh
Altitude / pressure ²		Altitude (vs. sea level)	-0.1	$0 \div 2.5$	2	Km
		Ambient Pressure	0 ²	$0.75 \div 1$	10.0	atm
Storage Conditions		Min.	Тур.	Max.	Units	
Ambient temperatu	ıre		-40		100	ºC
Ambient humidity		Non-condensing	0		100	%Rh
Ambient Pressure			0		10.0	atm
ESD capability	- 1\	Not powered; applies to any accessible part			±0.5	kV
(Human body mod	eı)	Original packaging			±15	kV
Mechanical Moun	ting		Min.	Тур.	Max.	Units
Airflow			natural convection ³ , closed box			
Cooring required	Bet	ween adjacent drives	30			mm
Spacing required for vertical mounting	Bet wal	ween drives and nearby	30			mm
mounting	Bet	ween drives and roof-top	20			mm
	Bet	ween adjacent drives	4			mm
Spacing required	Bet wal	According to the property of	mm			
mounting		ace needed for drive noval	10		90 5 2 1 10.0 Max. U 100 10.0 ±0.5 ±15 Max. U	mm
for horizontal	Bet	ween drives and roof-top	15			mm

Environmental Ch	naracteristics		Min.	Тур.	Max.	Units
Size (Length x Width x Height)	Global size		93 x 43.8 x 32			mm
wiath x neight)	Global Size		~3.66 x 1.72 x 1.26			inch
Weight			83			g
Cleaning agents	Dry cleaning is recommended		Only \	Nater- or	Alcohol- I	oased
Protection degree	According to IEC6	0529,		IP20		_
	UL508					11
Logic Supply Inpo	Nominal values		Min.	Тур.	Max. 36	Units V _{DC}
	Absolute maximum		-			
	drive operating but guaranteed param		8		40	V _{DC}
Supply voltage	Absolute maximur continuous		-0.6		42	V_{DC}
	Absolute maximur	+	-1		+45	V
	surge (duration ≤ 1	10ms) '	'	TDD	110	
Supply current	$+V_{LOG} = 12V$ $+V_{LOG} = 24V$			TBD TBD		mA
Cappiy carroin	+V _{LOG} = 40V			TBD		
Motor Supply Inp	ut (+V _{MOT})		Min.	Тур.	Max.	Units
	Nominal values		11		50	V _{DC}
	Absolute maximur drive operating burguaranteed param	t outside	9		52	V_{DC}
Supply voltage	Absolute maximur continuous		-0.6		54	V_{DC}
	Absolute maximum values, surge (duration ≤ 10ms)		-1		57	٧
	Idle			1	5	mA
	Operating		-40	±15	+40	Α
Supply current	pply current Absolute maximum value, short-circuit condition				43	Α
Motor Outputs (A	(duration ≤ 10ms) /A+, B/A-, C/B+, CF		Min.	Тур.	Max.	Units
Wotor Outputs (A	for DC brushed, st	-	IVIIII.	īyp.	IVIAA.	Offics
Nominal output	and BLDC motors with Hall- based trapezoidal control for PMSM motors with FOC sinusoidal control (sinusoidal amplitude value)				14.1	A
current, continuous ⁴					14.1	
	for PMSM motors sinusoidal control effective value)				10	•
Motor output current, peak	maximum TBD s		-40		+40	Α
Short-circuit protection			±43		±43	Α
threshold						
Short-circuit protection delay				TBD		μS
On-state voltage drop	Nominal output cu including typical m connector contact	ating		TBD		٧
Voltage efficiency	SSTITICOLOT COTTACT	. Solotario		100		%
Off-state leakage				±0.5	±1	mA
current	_	F _{PWM}				
	Recommended value, for current	20 kHz				
	ripple max. ±5%	40 kHz				μН
	of full range;	60 kHz 80 kHz				
Motor inductance	$+V_{MOT} = 36 \text{ V}$	100 kHz				
(phase-to-phase)	Minimum value,	20 kHz				
	limited by short-	60 kHz				
	circuit protection;	40 kHz 80 kHz				μН
	$+V_{MOT} = 36 \text{ V}$	100 kHz				
	Recommended	20 kHz				
Motor electrical	value for ±5%	40 kHz				μs
time-constant (L/R)	current measurement	60 kHz 80 kHz				
,	error	100 kHz				
Current measurement	FS = Full Scale ac	curacy		TBD		%FS

¹Operating temperature at higher temperatures is possible with reduced current and power ratings Populating terriperature at ingrient emperatures is possible with reduced certaint and power rate of 2 iPOS4810 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 $\rm F_{PWM}$

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Supply Output (+	Supply Output (+5V)			Max.	Units
Output voltage	Current sourced = 250mA	4.8	5	5.2	V
Output current			TBD		mA
Short-circuit			Y	es	
Over-voltage			NOT p	rotected	
ESD protection	Human body model	±1			kV
Digital Inputs (INO, IN1, IN2/LSP, IN3/LSN, IN4, IN5) ¹		Min.	Тур.	Max.	Units
Mode compliance			Р	NP	
Default state	Input floating (wiring disconnected)	Logic LOW			
	Logic "LOW"	-10	0	2.2	
	Logic "HIGH"	6.3	24	36	
	Hysteresis	1.2	2.4	2.8	
Input voltage	Floating voltage (not connected)		0		V
	Absolute maximum, continuous	-10		+39	
	Absolute maximum, surge (duration ≤ 1s) [†]	-20		+40	
Input ourrent	Logic "LOW"; pulled to GND		0		mA
Input current	Logic "HIGH"		8	10	IIIA

Mode compliance			N	PN		
Default state	Input floating (wiring disconnected)		Logic	HIGH		
	Logic "LOW"		0	2.2		
	Logic "HIGH"	6.3	24	36		
	Hysteresis	1.2	2.4	2.8		
Input voltage	Floating voltage (not connected)		15		V	
	Absolute maximum, continuous	-10		+39		
	Absolute maximum, surge (duration ≤ 1s) ^t	-20		+40		
	Logic "LOW"; Pulled to GND		8	10		
Input current	Logic "HIGH"; Pulled to +24V	0	0	0	mA	
Input frequency		0		10	kHz	
Minimum pulse		6			μs	
ESD protection	Human body model	±5			kV	
Encoder1 Inputs (A1/A1+, A1-, B1/B1+, B1-, Z1/Z1+, Z1-)		Min.	Тур.	Max.	Units	
Single-ended mode compliance	Leave negative inputs disconnected	TTL / CMOS / Open-collector				
Input voltage,	Logic "LOW"			1.6		
single-ended	Logic "HIGH"	1.8			V	
mode A/A+, B/B+	Floating voltage (not connected)		3.3		v	
Input voltage,	Logic "LOW"			1.2		
single-ended	Logic "HIGH"	1.4			V	
mode Z/Z+	Floating voltage (not connected)		4.7		·	
Input current,	Logic "LOW"; Pull to GND		5.5	6		
single-ended mode A/A+, B/B+, Z/Z+	Logic "HIGH"; Internal 2.2KΩ pull-up to +5	0	0	0	mA	
Differential mode compliance	For full RS422 compliance, see ²	TIA/EIA-422-A				
land de la land	Hysteresis	±0.06	±0.1	±0.2		
Input voltage, differential mode	Common-mode range (A+ to GND, etc.)	-7		+7	٧	
Input impedance,	A1+ to A1-, B1+ to B1-		1		kΩ	
differential	Z1+ to Z1-		1			
	Single-ended mode, Open- collector / NPN	0		5	MHz	
Input frequency	Differential mode, or Single- ended driven by push-pull (TTL / CMOS)	0		10	MHz	

Minimoun	Single-ended mode, Open- collector / NPN	1		μs
Minimum pulse width	Differential mode, or Single- ended driven by push-pull (TTL / CMOS)	50		ns
Input voltage.	Absolute maximum values, continuous	-7	+7	.,
any pin to GND	Absolute maximum, surge (duration ≤ 1s) [†]	-11	+14	V
ESD protection	Human body model	±1		kV

Digital Outp (OUT0, OUT OUT4, OUT5	UT1, OUT2/Error, OUT3/Ready, Min. Typ. Max. U					
Mode compliance		PNP 24V				
Default	Not supplied (+VLOG floating or to GND)		High-Z (f	loating)		
state	Normal operation		Logic "H	ligh"		
	Logic "HIGH"; output current = 0.2A		V _{LOG} -0.2	V _{LOG} -0.8		
Output	Logic "LOW"; output current = 0, no load	0	pen-collect	or		
voltage	Logic "HIGH", external load to GND		0		V	
	Absolute maximum, continuous	-0.3		V _{LOG} +0.3		
	Absolute maximum, surge (duration ≤ 1s) ^t	-0.5		V _{LOG} +0.5		
0.11	Logic "HIGH", source current, continuous			0.2	Α	
Output current	Logic "HIGH", source current, pulse ≤ 5 s			0.4	Α	
	Logic "LOW", means High-Z				mA	
Minimum pulse width	_	2			μs	
ESD protection	Human body model	±15			kV	

Mode compliance			NPN	24V	
Default	Not supplied (+VLOG floating or to GND)	High-Z (floating)			
state	Normal operation		High	ı-Z	
	Logic "LOW"; output current = 0.3A		0.2	8.0	
	Logic "HIGH"; output current = 0, no load	O	pen-collec	tor	
Output voltage	Logic "HIGH", external load to +V _{LOG}		V_{LOG}		V
	Absolute maximum, continuous	-0.3		V _{LOG} +0.3	
	Absolute maximum, surge (duration ≤ 1s) ^t	-0.5		V _{LOG} +0.5	
0.11	Logic "LOW", sink current, continuous			0.3	Α
Output current	Logic "LOW", sink current, pulse ≤ 5 s			0.5	Α
	Logic "HIGH", means High-Z				mA
Minimum pulse width		2			μs
ESD protection	Human body model	±15			kV

 $^{^2}$ For full RS-422 compliance, termination resistors must be connected across the differential pairs; See SW2 settings..

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 $^{^{\}rm 1}$ The digital inputs and outputs are software selectable as PNP or NPN



Mode	s (Hall1, Hall2, Hall3)	Min.	Тур.	Max.	Units
compliance		TTL / CMOS / Open-co			llector
Default state	Input floating (wiring disconnected)		Logic	HIGH	
	Logic "LOW"		0	0.8	
	Logic "HIGH"	2	5		
Input voltage	Floating voltage		4.4		V
input voltage	(not connected)				. '
	Absolute maximum, surge	-10		+15	
	(duration ≤ 1s)			4.0	
Input current	Logic "LOW"; Pull to GND Logic "HIGH"; Internal 4.7KΩ			1.2	mA
input current	pull-up to +5	0	0	0	IIIA
Minimum pulse		2			
width		- 2			μs
ESD protection	Human body model	±5			kV
Linear Hall Input	s (LH1, LH2, LH3)	Min.	Тур.	Max.	Units
Input voltage	Operational range	0	0.5÷4.5	4.9	V
	Absolute maximum values,	-7		+7	
Input voltage	Continuous	-			V
,	Absolute maximum, surge	-11		+14	
Innut ourrent	(duration ≤ 1s)	0		0.0	m A
Input current Interpolation	Input voltage 0+5V Depending on software	0		0.2	mA
Resolution	settings			11	bits
Frequency	- Commige	0		1	kHz
ESD protection	Human body model	±1			kV
Encoder2 Inputs		Min.	Тур.	Max.	Units
(A2+, A2-, B2+, E Differential	32-, Z2+, Z2-)¹		. , , .		•
Diπerential mode			TIA/EI/	\-422-A	
compliance			1174	1 722 /1	
	Hysteresis	±0.06	±0.1	±0.2	
	Differential mode	-14		+14	٧
Input voltage		-14		+14	
	Common-mode range	-11		+14	
Input	(A+ to GND, etc.)				-
impedance,	A2+, B2+, Z2+		150		Ω
differential	A2-, B2-, Z2-				
Input frequency	Differential mode	0		10	MHz
	Difference it also and a				
Minimum pulse	I Differential mode	50			ns
width	Differential mode				
width Sin-Cos Encoder (Sin+, Sin-, Cos+	r Inputs	50 Min.	Тур.	Max.	ns Units
width Sin-Cos Encoder	r Inputs		Typ.	Max. 1.25	
width Sin-Cos Encoder (Sin+, Sin-, Cos+ Input voltage,	r Inputs , Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range				Units
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values,	Min.	1	1.25	Units V _{PP}
width Sin-Cos Encoder (Sin+, Sin-, Cos+ Input voltage, differential Input voltage,	r Inputs , Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous	Min.	1	1.25	Units
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential	r Inputs , Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge	Min.	1	1.25	Units V _{PP}
width Sin-Cos Encoder (Sin+, Sin-, Cos+ Input voltage, differential Input voltage,	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s)	Min1 -7	1	1.25 4 +7	Units V _{PP}
width Sin-Cos Encoder (Sin+, Sin-, Cos+ Input voltage, differential Input voltage,	r Inputs , Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) Differential, Sin+ to Sin-, Cos+	Min1 -7	1	1.25 4 +7	Units V _{PP}
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) [†] Differential, Sin+ to Sin-, Cos+ to Cos- ²	-1 -7 -11	1 2.5	1.25 4 +7	Units V _{PP} V
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND	r Inputs , Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) Differential, Sin+ to Sin-, Cos+	Min. -1 -7 -11 4.2	1 2.5	1.25 4 +7 +14	Units V _{PP} V kΩ kΩ
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND Input impedance	r Inputs , Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) Differential, Sin+ to Sin-, Cos+ to Cos- ² Common-mode, to GND Software selectable, for one sine/cosine period	Min. -1 -7 -11 4.2	1 2.5	1.25 4 +7 +14	$\begin{array}{c} \text{Units} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND Input impedance Resolution with interpolation	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) † Differential, Sin+ to Sin-, Cos+ to Cos- 2 Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation	Min. -1 -7 -11 4.2	1 2.5	1.25 4 +7 +14 10 450	$\begin{array}{c} \text{Units} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) † Differential, Sin+ to Sin-, Cos+ to Cos- ² Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation	-1 -7 -11 4.2 2 0 0	1 2.5	1.25 4 +7 +14	$\begin{array}{c} \text{Units} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency ESD protection	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) Differential, Sin+ to Sin-, Cos+ to Cos- Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation Human body model	-1 -7 -11 4.2 2 0 0 0 ±1	1 2.5 4.7 2.2	1.25 4 +7 +14 10 450 10	Units V _{PP} V kΩ kΩ bits kHz MHz kV
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency ESD protection	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) Differential, Sin+ to Sin-, Cos+ to Cos- Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation Human body model puts (REF, FDBK)	Min. -1 -7 -11 4.2 2 0 0 thin in.	1 2.5	1.25 4 +7 +14 10 450 10 Max.	$\begin{array}{c} \text{Units} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency ESD protection	r Inputs , Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) Differential, Sin+ to Sin-, Cos+ to Cos- ² Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation Human body model puts (REF, FDBK) Operational range	Min. -1 -7 -11 4.2 2 0 0 ±1 Min. 0	1 2.5 4.7 2.2	1.25 4 +7 +14 10 450 10 Max. 5	Units V _{PP} V kΩ kΩ bits kHz MHz kV
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency ESD protection Analog 05V In	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) [†] Differential, Sin+ to Sin-, Cos+ to Cos- ² Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation Human body model puts (REF, FDBK) Operational range Absolute maximum values,	Min. -1 -7 -11 4.2 2 0 0 thin in.	1 2.5 4.7 2.2	1.25 4 +7 +14 10 450 10 Max.	$\begin{array}{c} \textbf{Units} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency ESD protection	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) Differential, Sin+ to Sin-, Cos+ to Cos- Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation Human body model Duts (REF, FDBK) Operational range Absolute maximum values, continuous Absolute maximum, surge	Min. -1 -7 -11 4.2 2 0 0 ±1 Min. 0	1 2.5 4.7 2.2	1.25 4 +7 +14 10 450 10 Max. 5 +18	Units V _{PP} V kΩ kΩ bits kHz MHz kV
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency ESD protection Analog 05V In	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) Differential, Sin+ to Sin-, Cos+ to Cos- Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation Human body model Duts (REF, FDBK) Operational range Absolute maximum values, continuous Absolute maximum, surge	Min. -1 -7 -11 4.2 2 0 0 ±1 Min. 0	1 2.5 4.7 2.2	1.25 4 +7 +14 10 450 10 Max. 5	$\begin{array}{c} \textbf{Units} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency ESD protection Analog 05V Input Input voltage	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) † Differential, Sin+ to Sin-, Cos+ to Cos- 2 Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation Human body model Duts (REF, FDBK) Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) †	Min. -1 -7 -11 4.2 2 0 0 ±1 Min. 0	1 2.5 4.7 2.2 Typ.	1.25 4 +7 +14 10 450 10 Max. 5 +18	Units V _{PP} V kΩ kΩ bits kHz MHz kV Units
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency ESD protection Analog 05V In	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) Differential, Sin+ to Sin-, Cos+ to Cos- Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation Human body model Duts (REF, FDBK) Operational range Absolute maximum values, continuous Absolute maximum, surge	Min. -1 -7 -11 4.2 2 0 0 ±1 Min. 0	1 2.5 4.7 2.2	1.25 4 +7 +14 10 450 10 Max. 5 +18	$\begin{array}{c} \textbf{Units} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency ESD protection Analog 05V In Input voltage Input voltage	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) † Differential, Sin+ to Sin-, Cos+ to Cos- 2 Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation Human body model Duts (REF, FDBK) Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) †	Min. -1 -7 -11 4.2 2 0 0 ±1 Min. 0	1 2.5 4.7 2.2 Typ.	1.25 4 +7 +14 10 450 10 Max. 5 +18 ±36	$\begin{array}{c} \text{Units} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency ESD protection Analog 05V In Input impedance Resolution input impedance Resolution Input Inpu	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) † Differential, Sin+ to Sin-, Cos+ to Cos- 2 Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation Human body model Duts (REF, FDBK) Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) †	Min. -1 -7 -11 4.2 2 0 0 ±1 Min. 0	1 2.5 4.7 2.2 Typ. 28 12	1.25 4 +7 +14 10 450 10 Max. 5 +18 ±36	$\begin{array}{c} \textbf{Units} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency ESD protection Analog 05V Input Input voltage Input voltage	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) † Differential, Sin+ to Sin-, Cos+ to Cos- 2 Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation Human body model Duts (REF, FDBK) Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) †	Min. -1 -7 -11 4.2 2 0 0 ±1 Min. 0	1 2.5 4.7 2.2 Typ. 28 12 ±2	1.25 4 +7 +14 10 450 10 Max. 5 +18 ±36	$\begin{array}{c} \textbf{Units} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency ESD protection Analog 05V In Input impedance Resolution input impedance Resolution Input voltage	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) Differential, Sin+ to Sin-, Cos+ to Cos- Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation Human body model puts (REF, FDBK) Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) To GND	Min. -1 -7 -11 4.2 2 0 0 ±1 Min. 0	1 2.5 4.7 2.2 Typ. 28 12	1.25 4 +7 +14 10 450 10 Max. 5 +18 ±36 ±2 ±10 ±3%	$\begin{array}{c} \textbf{Units} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
width Sin-Cos Encode (Sin+, Sin-, Cos+ Input voltage, differential Input voltage, any pin to GND Input impedance Resolution with interpolation Frequency ESD protection Analog 05V Input Input voltage Input voltage	r Inputs -, Cos-) Sin+ to Sin-, Cos+ to Cos- Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) † Differential, Sin+ to Sin-, Cos+ to Cos- 2 Common-mode, to GND Software selectable, for one sine/cosine period Sin-Cos interpolation Quadrature, no interpolation Human body model Duts (REF, FDBK) Operational range Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) †	Min. -1 -7 -11 4.2 2 0 0 ±1 Min. 0	1 2.5 4.7 2.2 Typ. 28 12 ±2	1.25 4 +7 +14 10 450 10 Max. 5 +18 ±36	$\begin{array}{c} \textbf{Units} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$

Serior Simple				1			
Safety function According to EN61800-5-2 STO (Safe Torque OFF) EN 61800-5-1-2 Safety integrity Level safety integrity level 3 (SIL3) 10-10 According to EN61800-5-2 safety integrity level 3 (SIL3) 10-10 According to EN61800-5-2 safety integrity level 3 (SIL3) 10-10 According to EN61800-5-2 safety integrity level 3 (SIL3) 10-10 PNP PNP 10-10 Mode compliance MTTFM (meantime to dangerous failure) MTTFM (meantime to dangerous failure) 10-10 Input floating (wiring disconnected) Logic *LOW* Logic *LOW* 10-10 Logic *LOW** 20 5.6 V 10-10 Logic *LOW** 20 5.6 V 10-10 Logic *LOW** 20 5.6 V 10-10 Logic *LOW** 20 5.6 N V 10-10 Logic *LOW** 10-10 0 m Mn Mn <th>Safe torque OFF (STO1+,STO1-; S</th> <th>TO2+, STO2+)</th> <th>Min.</th> <th>Тур.</th> <th>Max.</th> <th>Units</th>	Safe torque OFF (STO1+,STO1-; S	TO2+, STO2+)	Min.	Тур.	Max.	Units	
And EN 61508-5 37		According to EN61800-5-2	S	TO (Safe	Torque O	FF)	
P+HD (probability of dangerous S+10-10 Nour-1 (0.8 FIT)		Safety Integrity Level	safe	ety integrit	y level 3 (SIL3)	
Performance Level Cat3/PLe	3/ -4		8*10 ⁻¹⁰	ho	ur ⁻¹ (0.8 F	r ⁻¹ (0.8 FIT)	
MTTFM (meantime to dangerous failure) MTTFM (meantime to dangerous failure) Mode compliance PNP		Performance Level		Cat	3/PLe		
Mode compliance PNP					==		
Compliance Input floating (wiring disconnected) Logic LOW Logic LOW Input voltage Logic "LOW" -20 5.6 V Logic "LOW" 18 36 V Absolute maximum, continuous -20 +40 V Input current Logic "LOW"; pulled to GND 0 +40 MnA Repetitive test pulses Ignored high-low-high 5 13 mA Repetitive test pulses Ignored high-low-high 5 13 mA Fault reaction time Ignored high-low-high 20 ms Hz PWM operation delay From external STO low-high transition to PWM operation enabled 30 ms ESD protection Human body model ±2 kV BISS/SSI Encoder Interface from J3 Min. Typ. Max. Units Differential mode geral mode ger		dangerous failure)		3//		years	
Input voltage				P	NP		
Input voltage	Default state	disconnected)	00	Logic			
Absolute maximum, continuous -20	Innut voltage					- v	
Repetitive test pulses (high-low-high) Ignored high-low-high) From internal fault detection to register DER bit 14 = 1 and OUT2/Error high-to-low 30 ms Min. Typ. Max. Units Min. Typ. Max. Units Min.	mpat voltage					1 '	
Logic High pulled to +Vlog 5 13 ms	Input ourrent	Logic "LOW"; pulled to GND		0		mΛ	
Pulses (high-low-high) From internal fault detection to register DER bit 14 = 1 and OUT2/Error high-to-low 30 ms	Input current	Logic "HIGH", pulled to +Vlog		5	13	IIIA	
From internal fault detection to register DER bit 14 = 1 and OUT2/Error high-to-low		Ignored high-low-high			5	me	
Fault reaction time register DER bit 14 = 1 and OUT2/Error high-to-low register DER bit 14 = 1 and OUT2/Error high-to-low register DER bit 14 = 1 and OUT2/Error high-to-low register DER bit 14 = 1 and OUT2/Error high-to-low and out 2/Error high-to-low register DER bit 14 = 1 and OUT2/Error high-to-low and out 2/Error high-to-low and 2/Error hi					20		
Fault reaction time register DER bit 14 = 1 and OUT2/Error high-to-low 30 ms	(high-low-high)				20	4	
ESD protection Human body model ±2 kV kV		register DER bit 14 =1 and			30	ms	
Differential mode (CLOCK, DATA) September Sept		transition to PWM operation			30	ms	
Differential mode (CLOCK, DATA) ¹ see ¹ Differential; 50Ω differential load 2.0 2.5 5.0 V CLOCK Output voltage	ESD protection	Human body model	±2			kV	
CLOCK, DATA 1	BiSS/SSI Encode	er Interface from J3	Min.	Тур.	Max.	Units	
Differential; 50Ω differential load 2.0 2.5 5.0 V			TIA/EI	TIA/EIA-422			
Voltage Common-mode, referenced to GND 2.3 2.5 2.7 CLOCK frequency Software selectable 1000, 2000, 3000 kHz DATA Input hysteresis Differential mode ±0.1 ±0.2 ±0.5 V Data input impedance Termination resistor onboard 120 Ω DATA Input common mode range Referenced to GND -7 +12 Absolute maximum, surge (duration≤1s) † -25 +25 +25 DATA format Software selectable Binary / Gray Single-turn / Multi-turn Counting direction DATA resolution Single-turn 56 Bits Multi-turn and single-turn 56 Bits If total resolution >31 bits, some bits must be ignored by software setting to achieve a max 31 bits resolution Units Ethernet Ports Min. Typ. Max. Units Standard Compliance EtherCAT (IEC61158-3/4/5/6-12) Fast Ethernet 100BASE-TX (IEEE802.3u) Auto-negotiation for 100Mbps/s full-duplex Auto-detect MDI/MDI-X Auto-detect MDI/MDI-X requires separate +Vlog Auto-detect MDI/MDI-X		Differential; 50Ω	2.0	2.5	5.0	V	
CLOCK frequency Software selectable 1000, 2000, 3000 kHz DATA Input hysteresis Differential mode ±0.1 ±0.2 ±0.5 V Data input impedance Termination resistor onboard 120 Ω DATA Input common mode range Referenced to GND -7 +12 Absolute maximum, surge (duration≤1s) † -25 +25 DATA format Software selectable Single-turn / Multi-turn Counting direction DATA resolution Single-turn 56 Bits Multi-turn and single-turn 56 Bits If total resolution >31 bits, some bits must be ignored by software setting to achieve a max 31 bits resolution Units Ethernet Ports Min. Typ. Max. Units Standard Compliance EtherCAT (IEC61158-3/4/5/6-12) Fast Ethernet 100BASE-TX (IEEE802.3u) (IEEE802.3u) Auto-negotiation for 100Mbps/s full-duplex Auto-detect MDI/MDI-X requires separate +Vlog Auto-detect MDI/MDI-X compliant to IEEE802.3af mode A "Mixed DC & Data"		Common-mode,	2.3	2.5	2.7		
DATA Input hysteresis Data input impedance DATA Input common mode range DATA format DATA format DATA resolution DATA resolution Ethernet Ports DATA Gray Standard Compliance Power over Ethernet DATA input common mode range DATA input common mode range Termination resistor on-board DATA format Referenced to GND -7			1000, 2000, 3000		kHz		
Data input impedance Termination resistor on-board 120 Ω DATA Input common mode range Referenced to GND -7 +12 Absolute maximum, surge (duration≤1s) † -25 +25 DATA format Software selectable Binary / Gray Single-turn / Multi-turn Counting direction 56 Multi-turn and single-turn 56 If total resolution >31 bits, some bits must be ignored by software setting to achieve a max 31 bits resolution Ethernet Ports Min. Typ. Max. Units EtherCAT (IEC61158-3/4/5/6-12) Fast Ethernet 100BASE-TX (IEEE802.3u) Auto-negotiation for 100Mbps/s full-duplex Auto-detect MDI/MDI-X compliant to IEEE802.3af mode A "Mixed DC & Data" Power over Ethernet NOT used by the iPOS4810, requires separate +Vlog requires separate +Vlog A"Mixed DC & Data"	DATA Input	Differential mode	±0.1	±0.2	±0.5	V	
DATA Input common mode range Referenced to GND	Data input			120		Ω	
Absolute maximum, surge (duration≤1s) † -25	impedance		<u> </u>				
Tange			-7		+12		
DATA format DATA format Software selectable Single-turn / Multi-turn			-25		+25		
DATA format Software selectable Single-turn / Multi-turn Counting direction	range	(duration≤1s) '	<u> </u>				
Counting direction	DATA format	Coffware coloatable			11. 1		
Single-turn	DATATOTTIAL	Software selectable					
Multi-turn and single-turn		Single turn	Couriti	I directi			
If total resolution >31 bits, some bits must be ignored by software setting to achieve a max 31 bits resolution Ethernet Ports	DATA resolution	11 11 1 1 1				Bits	
Software setting to achieve a max 31 bits resolution	D/11/11/C30Idilo11		s some	hits must		ed by	
Ethernet Ports Min. Typ. Max. Units EtherCAT (IEC61158-3/4/5/6-12) Fast Ethernet 100BASE-TX (IEEB02.3u) Auto-negotiation for 100Mbps/s full-duplex Auto-detect MDI/MDI-X Auto-detect MDI/MDI-X compliant to IEEE802.3af mode requires separate +Vlog A "Mixed DC & Data"							
Standard Compliance Standard Compliance NOT used by the iPOS4810, requires separate +Vlog EtherCAT (IEC61158-3/4/5/6-12) Fast Ethernet 100BASE-TX (IEEE802.3u) Auto-negotiation for 100Mbps/s full-duplex Auto-detect MDI/MDI-X compliant to IEEE802.3af mode A "Mixed DC & Data"	Ethernet Ports						
Standard Compliance Standard Compliance Output Compliance Output Compliance Output Compliance Output Compliance Output Compliant to IEEE802.3u) Auto-negotiation for 100Mbps/s full-duplex Auto-detect MDI/MDI-X Compliant to IEEE802.3af mode A "Mixed DC & Data"				CAT (IEC6			
Full-duplex Auto-detect MDI/MDI-X Power over Ethernet Vog A "Mixed DC & Data"	Standard		Fast Ethernet 100BASE-TX				
Auto-detect MDI/MDI-X Power over NOT used by the iPOS4810, compliant to IEEE802.3af mode Ethernet requires separate +Vlog A "Mixed DC & Data"	Compliance		Auto-			Mbps/s	
Power over NOT used by the iPOS4810, compliant to IEEE802.3af mode thernet requires separate +Vlog A "Mixed DC & Data"						I_Y	
Ethernet requires separate +Vlog A "Mixed DC & Data"	Power over	NOT used by the iPOS/1910					
SELV/ PELV supply NOT compliant to IEEE802.3af mode B "DC on Spares"	Linomot	SELV/ PELV supply	NOT	compliant	to IEEE8	02.3af	
Isolation Requirement for motherboard 500 V _{rms}						V _{rms}	
GND0,GND1 PCB routing 1.5 kV _{pea}	-	PCB routing	1.5			kV _{peak}	
Maximum cable 2-pair UTP Cat5 100 150 m length	length	•		150		m	
ESD protection Human body model ±4 kV	ESD protection	Human body model	±4			kV	

^{3 &}quot;FS" stands for "Full Scale"

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EP	March 25, 2021		May 4, 2021	
TECHNOSOFT		Title of document	N° document	
		iPOS4810 XZ-CAT	P022.815.E122.DSH.01D	
		PRODUCT DATA SHEET		Page: 5 of 6

 $^{^1}$ Encoder2 differential input pins have internal 120 Ω termination resistors connected across 2 For many applications, a termination resistor should be connected across SIN+ to SIN-, and across COS+ to COS-. See SW2 settings.



Conformity		Min.	Тур.	Max.	Units
EU Declaration	2014/30/EU (EMC), 2014/35/EU (LVD), 2011/65/EU (RoHS), 1907/2006/EC (REACH), 93/68/EEC (CE Marking Directive), EC 428/2009 (non dual-use item, outp	out frequ	uency limi	ted to 590	OHz)

[†] 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.

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		Title of document iPOS4810 XZ-CAT	N° document P022.815.E122.DSH.01D	
		PRODUCT DATA SHEET		Page: 6 of 6