

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

Motor – sensor configurations						
Motor Sensor	PMSM	BLDC	DC BRUSH	STEP (2-ph)	STEP <sup>2</sup> (3-ph)	
Incr. Encoder	3		T	5	$\overline{\mathbf{O}}$	
Incr. Encoder + Hall	T	3				
Analog Sin/Cos encoder	3	3	1	3	9	
SSI	T	3	T	3	9	
BiSS-C	T	T	T	5	$\overline{\mathbf{v}}$	
EnDAT <sup>1</sup>	T	3	T	B	9	
Linear Halls	3					
Tacho			3			
Open-loop (no sensor)				T	લ	

<sup>1</sup> Available starting with F515K firmware version

<sup>2</sup> Sensor used only for step loss detection

First edition

June 2, 2020

TECHNOSOFT

#### Features

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Name

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- 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<sub>PEAK</sub>, up to 100kHz PWM

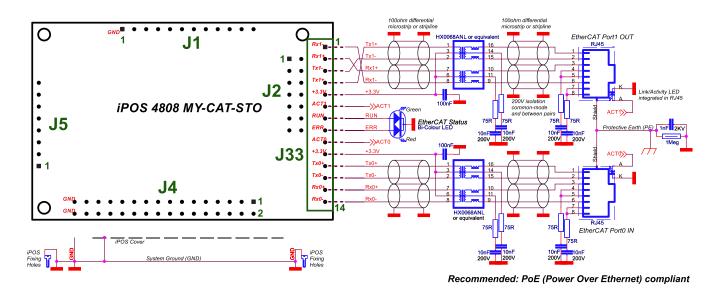
		( <b>1 1 1</b>					
•	Feedback Devices						
	1 <sup>st</sup> feedback device						
	<ul> <li>Incremental enco</li> </ul>	oder interface (single ended or o	lifferential)				
	Analogue sin/cos	encoder interface (differential	1V <sub>pp</sub> )				
	<ul> <li>Digital Hall sensor interface (single-ended and open collector)</li> </ul>						
	Linear Hall sensors interface						
		interface (single ended) for extended	ernal (master)				
	digital reference						
	2 <sup>nd</sup> feedback device						
	<ul> <li>Incremental enco</li> </ul>	oder interface (differential)					
	<ul> <li>pulse &amp; direction reference</li> </ul>	interface (differential) for extern	nal (master) digital				
	BISS-C / SSI / E	nDAT <sup>1</sup> 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: purpose	12-bit, 0-5V: Reference, Feedba	ack or general				
•	RS-232 serial & du	al 100Mbps EtherCAT® interfac	es				
•		AN application protocol over Eth E) and Ethernet over EtherCAT					
•	127 h/w addresses	selectable by h/w pins configur	ation				
•	16k x 16 SRAM me	emory for data acquisition					
•	16k x16 E <sup>2</sup> ROM to	store setup data, TML motion p	rograms, cam				
	tables and other us	er data	<b>0</b>				
•	Operating ambient	temperature: 0-40°C (over 40°C	C with derating)				
•	NTC/PTC analogue	e Motor Temperature sensor inp	out				
		Last edition	Visa :				
		April 24, 2024	GC				
		N° document	1				
<b>\T-</b>	STO	P027.314.E121.DSH.10G					

iPOS4808 MY-CAT-STO PRODUCT DATA SHEET

Document template: P099.TQT.564.0001

Title of document





Pin

Name

Туре

	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					
	FCI	87606-307LF	2x7 contacts, socket, 2.54mm-pitch					
J2	TE Connectivity	534206-7	accepting 0.635mm square pin					
J33	Samtec	SSQ-114-01-G-S	1x14 contacts, socket 2.54mm-pitch accepting 0.635mm square pin					
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					

	Pin	Name	Туре	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	reserved - Reserved	Reserved	
	3	Axis ID Bit6	I	
	4	Axis ID Bit5	Ι	
	5 Axis ID Bit4	I	8 bit H/W Axis ID register.	
5	6	Axis ID Bit3	I	Connect pin to GND to set bit to 1.
	7	Axis ID Bit2	I	Up to 127 H/W axis ID combinations.
	8	Axis ID Bit1	Ι	
	9	Axis ID Bit0	1	
	10	reserved	-	Reserved for interface extensions <sup>†</sup>
	11	reserved	-	Reserved for interface extensions <sup>†</sup>
	12	reserved	-	Reserved for interface extensions <sup>†</sup>

	Pin	Name	Туре	Description
	1,2	A/A+	ο	Phase A for 3-ph motors, A+ for 2-ph steppers, Motor+ for DC brush motors
J5	3,4	B/A-	0	Phase B for 3-ph motors, A- for 2-ph steppers, Motor- for DC brush motors
	5,6	C/B+	0	Phase C for 3-ph motors, B+ for 2-ph steppers
	7,8	Cr/B-	0	Chopping resistor / Phase B- for 2-ph steppers

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First edition

June 2, 2020

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Receive/Transmit negative, OUT port. Connect to 1 RX1-I/O magnetics PHY RX1 Receive/Transmit positive, OUT port. Connect to RX1+ 2 I/O magnetics PHY RX1. Transmit/Receive negative, OUT port. Connect to TX1-3 I/O magnetics PHY TX1. Transmit/Receive positive, OUT port. Connect to TX1+ I/O 4 magnetics PHY TX1. Return for center tap of magnetics PHY TX1 and RX1. 5 3.3V ο Internally connected to J33 pin 10. 6 ACT1 0 Anode of Link/Activity LED for port OUT 7 RUN 0 Anode of Run LED (EtherCAT status machine). 33 Anode of Error LED (EtherCAT status machine). 8 ERR 0 9 ACTO 0 Anode of Link/Activity LED for port IN Return for center tap of magnetics PHY TX0 and RX0. 10 3.3V ο Internally connected to J33 pin 5. Transmit/Receive positive, IN port. Connect to 11 TX0+ I/O magnetics PHY TX0. Transmit/Receive negative, IN port. Connect to magnetics PHY TX0. 12 TX0-I/O Receive/Transmit positive, IN port. Connect to 13 RX0+ I/O magnetics PHY RX0. Receive/Transmit negative, IN port. Connect to 14 RX0-I/O magnetics PHY RX0.

Description

		Pin	Name	Туре	Description			
bit to 1. binations.		1	STO1+	Т	Safe Torque Off input 1, positive input (opto-isolated, 18÷40V)	Apply between both		
		2	STO2+	I	Safe Torque Off input 2, positive input(opto-isolated, 18÷40V)	STO1+, STO2+ and STO1-, STO2- 24V DC from SELV/ PELV		
nsions†		3 STO		Т	Safe Torque Off input 1, negative return (opto-isolated, 0V)	power supply for		
nsions <sup>†</sup>		4	STO2-	I	Safe Torque Off input 2, negative return (opto-isolated, 0V)	motor PWM output operation		
nsions†		5	LH1		Linear Hall 1 input			
		6	LH2	-	Linear Hall 2 input			
on		7	IN4		12-36V general-purpose digital PNP/NPN input			
-	2	8	IN5	1	12-36V general-purpose digital PNP/NPN input			
6	د	9	OUT0	0	5-36V 0.5A, general-purpose digital output, NPN open- collector/TTL pull-up			
- for 2-ph steppers,		10	OUT3/ Ready	0	5-36V 0.5A, drive Ready output, active low, NPN open- collector/TTL pull-up. Also drives the green LED.			
3+ for 2-ph		11	OUT1	0	5-36V 0.5A, general-purpose digi collector/TTL pull-up	tal output, NPN open-		
3- for 2-ph steppers		12	OUT2/ Error	0	5-36V 0.5A, drive Error output, ac collector/TTL pull-up. Also drives t			
		13	REF	Т	Analogue input, 12-bit, 0-5V. Read general purpose analogue input	ds analog reference, or		
		14	FDBK / LH3	I	Analogue input, 12-bit, 0-5V. Read feedback (tacho), or general purpo			
plate: P099.TQT.564.00	001				Last edition	Visa :		
					April 24, 2024	GC		
ent					N° document	1		
iPOS4808 MY-CAT-STO P027.314.E121.DSH.10G								

### P027.314.E121.DSH.10G

# **PRODUCT DATA SHEET**

Document template: P099.TQT.564.0001

Title of document



	Pin	Name	Туре	Description
	1	IN0	Т	12-36V general-purpose digital PNP/NPN input
	2	IN1	Т	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 & EnDAT, or Master- for BiSS; has $120\Omega$ 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 & EnDAT, or Master+ for BiSS; has $120\Omega$ 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+	Т	Incr. encoder2 A+ diff. input, or Pulse+, or Data+ for SSI & EnDAT, or Slave+ for BiSS; has $120\Omega$ 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 & EnDAT, or Slave- for BiSS; has $120\Omega$ resistor between pins 9 and 11
	12	A1- /Sin-	I	Incr. encoder1 A- diff. input, or analogue encoder Sin- diff. input
5	13	Z2+	Т	Incr. encoder2 Z+ diff. input ; has $120\Omega$ 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 $120\Omega$ resistor between pins 13 and 15
	16	Z1-	I	Incr. encoder1 Z- diff. input
	17	Hall 1	I	Digital input Hall 1 sensor
	18	Reserved	-	Reserved. Do not connect.
	19	Hall 2	1	Digital input Hall 2 sensor
	20	Reserved	-	Reserved. Do not connect.
	21	Hall 3	I.	Digital input Hall 3 sensor
1	22	232TX	0	RS-232 Data Transmission
	23	+5V <sub>OUT</sub>	0	5V output supply for I/O usage
i	24	232RX		RS-232 Data Reception NTC/PTC input. Used to read an analog
	25	Temp Mot	I	temperature value
i	26	Reserved	-	Reserved. Do not connect.
	27	+V <sub>LOG</sub>	I	Positive terminal of the logic supply input: 9 to 36V <sub>DC</sub> from SELV/ PELV type power supply.
,	28	OUT4	0	5-36V 0.5A, general-purpose digital output, NPN open-collector/TTL pull-up
	29	+Vмот	I	Positive terminal of the motor supply: 11 to $48 V_{\text{DC}}.$
	30	+Умот	I	Positive terminal of the motor supply: 11 to $48 V_{\text{DC}}.$
	31	GND	-	Return ground for all signals. Internally
	32	GND	-	connected to J4 pin 32, to J1 pin 1, to metallic cover, and to the 3 fixing screws

<sup>†</sup> leave unconnected if interface extensions are not used

#### **Electrical characteristics**

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

- VLOG = 24 VDC; VMOT = 48VDC Supplies start-up / shutdown sequence: -any-

<ul> <li>Supplies star-up / shutdown sequenceany-</li> <li>Load current (sinusoidal amplitude / continuous BLDC, DC, stepper) = 8A</li> </ul>							
Operating Conditions			Min.	Тур.	Max.	Units	
Ambient temperatu			0		40 <sup>1</sup>	°C	
Ambient humidity		Non-condensing	0		90	%Rh	
Altitude / pressure	2	Altitude (vs. sea level)	-0.1	0 ÷ 2.5	2	Km	
Allitude / pressure		Ambient Pressure	0 <sup>2</sup>	0.75 ÷ 1	10.0	atm	
Storage Condition	าร		Min.	Тур.	Max.	Units	
Ambient temperature			-40		100	°C	
Ambient humidity		Non-condensing	0		100	%Rh	
Ambient Pressure			0		10.0	atm	
ESD capability		Not powered; applies to any accessible part			±0.5	kV	
(Human body mod	el)	Original packaging			±15	kV	
Mechanical Mounting			Min.	Тур.	Max.	Units	
Airflow			natura	al convecti	on <sup>3</sup> , close	d box	
Spacing required		ween adjacent drives	30			mm	
for vertical	Bet wal	ween drives and nearby Is	30			mm	
mounting	Bet	ween drives and roof-top	20			mm	
		ween adjacent drives	4			mm	
Spacing required for horizontal	wal		5			mm	
mounting		ace needed for drive noval	10			mm	
	Bet	Between drives and roof-top				mm	
Insertion force		ng recommended mating		TBD	TBD	N	
Extraction force		nectors	TBD	TBD		N	
Environmental Cl	harac	teristics	Min.	Тур.	Max.	Units	
Size (Length x	Glo	bal size	64 x 43.6 x 22 mm ~2.52 x 1.72 x 0.87 inch				
Width x Height) Weight							
	Drv	cleaning is		-		g	
Cleaning agents		ommended	Only	ased			
Protection degree		cording to IEC60529, 508	IP20			-	
Logic Supply Inp	ut (+\	/LOG)	Min.	Тур.	Max.	Units	
			0		26	11	
		ninal values	9		36	V <sub>DC</sub>	
	Abs driv	solute maximum values, ve operating but outside	8		40	V <sub>DC</sub>	
Supply voltage	Abs driv gua Abs	solute maximum values, re operating but outside aranteed parameters solute maximum values,					
Supply voltage	Abs driv gua Abs con Abs	solute maximum values, re operating but outside aranteed parameters solute maximum values, tinuous solute maximum values,	8		40	V <sub>DC</sub>	
Supply voltage	Abs driv gua Abs con Abs sur	solute maximum values, re operating but outside aranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\leq 10$ ms) <sup>†</sup>	8	130	40 42	V <sub>DC</sub>	
Supply voltage	Abs driv gua Abs con Abs sur +VL	solute maximum values, re operating but outside aranteed parameters solute maximum values, tinuous solute maximum values,	8	130 90	40 42	V <sub>DC</sub>	
	Abs driv gua Abs con Abs sur +VL	solute maximum values, re operating but outside aranteed parameters solute maximum values, tinuous solute maximum values, ge (duration $\leq 10$ ms) <sup>†</sup> $_{OG} = 12V$	8		40 42 +45	V <sub>DC</sub> V <sub>DC</sub> V	
	Abs driv gua Abs con Abs sury +VL +VL	solute maximum values, re operating but outside irranteed parameters solute maximum values, titinuous solute maximum values, ge (duration $\leq 10$ ms) <sup>†</sup> $_{OG} = 12V$ $_{OG} = 24V$ $_{OG} = 40V$	8	90	40 42 +45	V <sub>DC</sub> V <sub>DC</sub> V mA Units	
Supply current	Abs driv gua Abs con Abs sur +V <sub>L</sub> +V <sub>L</sub> +V <sub>L</sub>	solute maximum values, re operating but outside irranteed parameters solute maximum values, titinuous solute maximum values, $ge (duration \le 10ms)^{\dagger}$ $ge (duration \le 10ms)^{\dagger}$ ge = 24V ge = 24V ge = 24V ge = 40V <b>V</b> <sub>MoT</sub> ) minal values	8 -0.6 -1	90 85	40 42 +45 280	V <sub>DC</sub> V <sub>DC</sub> V mA	
Supply current	Abs driv gua Abs con Abs sur +VL +VL +VL +VL +VL driv	solute maximum values, re operating but outside aranteed parameters solute maximum values, titinuous solute maximum values, ge (duration $\leq 10$ ms) <sup>†</sup> $_{OG} = 12V$ $_{OG} = 24V$ $_{OG} = 24V$ $_{OG} = 40V$ <b>V</b> Mor) minal values solute maximum values, re operating but outside	8 -0.6 -1 <b>Min.</b>	90 85	40 42 +45 280 Max.	V <sub>DC</sub> V <sub>DC</sub> V mA Units	
Supply current	Abs driv gua Abs con Abs sur +VL +VL +VL +VL +VL (+ V ut (+ Nor Abs driv gua	solute maximum values, re operating but outside arranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\leq 10$ ms) <sup>†</sup> $_{CG} = 12V$ $_{CG} = 24V$ $_{CG} = 40V$ $_{MoT}$ minal values solute maximum values,	8 -0.6 -1 <u>Min.</u> 11	90 85	40 42 +45 280 <b>Max.</b> 50	V <sub>DC</sub> V <sub>DC</sub> V mA Units V <sub>DC</sub>	
Supply current Motor Supply Inp	Abs driv gua Abs con Abs sur +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi	solute maximum values, re operating but outside irranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\leq 10$ ms) <sup>†</sup> $_{OG} = 12V$ $_{OG} = 24V$ $_{OG} = 24V$ $_{OG} = 40V$ <b>V</b> <b>Wao7)</b> minal values solute maximum values, tranteed parameters solute maximum values, ttinuous	8 -0.6 -1 <u>Min.</u> 11 9	90 85	40 42 +45 280 <u>Max.</u> 50 52	V <sub>DC</sub> V <sub>DC</sub> V           mA           Units           V <sub>DC</sub>	
Supply current Motor Supply Inp	Abs driv gua Abs con Abs sur +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi	solute maximum values, re operating but outside irranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\leq 10$ ms) <sup>†</sup> $_{CG} = 12V$ $_{CG} = 24V$ $_{CG} = 40V$ <b>V</b> <sub>MoT</sub> ) minal values solute maximum values, re operating but outside irranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\leq 10$ ms) <sup>†</sup>	8 -0.6 -1 <u>Min.</u> 11 9 -0.6	90 85	40 42 +45 280 <b>Max.</b> 50 52 54	V <sub>DC</sub> V <sub>DC</sub> W           mA           Units           V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub>	
Supply current Motor Supply Inp	Abs driv gua Abs con Abs sur +Vi +Vi +Vi +Vi +Vi Abs driv gua Abs con Abs sur Idle	solute maximum values, re operating but outside irranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\leq 10$ ms) <sup>†</sup> $_{CG} = 12V$ $_{CG} = 24V$ $_{CG} = 40V$ <b>V</b> <sub>MoT</sub> ) minal values solute maximum values, re operating but outside irranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\leq 10$ ms) <sup>†</sup>	8 -0.6 -1 <u>Min.</u> 11 9 -0.6	90 85 <b>Typ.</b>	40 42 +45 280 <b>Max.</b> 50 52 52 54 57	V <sub>DC</sub> V <sub>DC</sub> V       mA       Units       V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub>	
Supply current Motor Supply Inp	Abs driv gua Abs con Abs sur +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi	solute maximum values, re operating but outside irranteed parameters solute maximum values, titinuous solute maximum values, ge (duration $\le 10$ ms) <sup>†</sup> $ge (duration \le 10$ ms) <sup>†</sup> $ge (duration \le 10$ ms) <sup>†</sup> $ge (duration \le 10$ ms) <sup>†</sup> ge (duration duration) solute maximum values, ranteed parameters solute maximum values, titinuous solute maximum values, ge (duration $\le 10$ ms) <sup>†</sup> $ge (duration \le 10$ ms) <sup>†</sup>	8 -0.6 -1 <u>Min.</u> 11 9 -0.6 -1	90 85 <b>Typ.</b>	40 42 +45 280 <b>Max.</b> 50 52 52 54 57 5	Vbc           Vbc           V           mA           Units           Vbc	
Supply current Motor Supply Inp Supply voltage Supply current	Abs driv gua Abs con Abs sur +Vi +Vi +Vi +Vi +Vi 4 +Vi 4 +Vi 4 +Vi 4 hos con Abs con Abs con Abs driv (+) +Vi (+) +Vi (-) Abs (-) - - - - - - - - - - - - - - - - - -	solute maximum values, re operating but outside irranteed parameters solute maximum values, titinuous solute maximum values, ge (duration $\leq 10$ ms) <sup>†</sup> $_{OG} = 12V$ $_{OG} = 24V$ $_{OG} = 24V$ $_{OG} = 40V$ <b>Wwor)</b> minal values solute maximum values, tranteed parameters solute maximum values, titinuous solute maximum values, ge (duration $\leq 10$ ms) <sup>†</sup> erating solute maximum value,	8 -0.6 -1 <u>Min.</u> 11 9 -0.6 -1 -20	90 85 <b>Typ.</b> 1 ±8	40 42 +45 280 50 52 54 57 5 +20 26	V <sub>DC</sub> V           mA           Units           V <sub>DC</sub> A           A	
Supply current Motor Supply Inp Supply voltage Supply current Supply Output (+	Abs driv gua Abs con Abs sum +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi	solute maximum values, re operating but outside irranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\le 10$ ms) <sup>†</sup> $_{OG} = 12V$ $_{OG} = 24V$ $_{OG} = 24V$ $_{OG} = 40V$ <b>W</b> <sub>torn</sub> ) minal values solute maximum values, tranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\le 10$ ms) <sup>†</sup> erating solute maximum value, rt-circuit condition ration $\le 10$ ms) <sup>†</sup>	8 -0.6 -1 <u>Min.</u> 11 9 -0.6 -1 -20 <u>Min.</u>	90 85 <b>Typ.</b> 1 ±8 <b>Typ.</b>	40 42 +45 280 <b>Max.</b> 50 52 54 57 5 +20 26 <b>Max.</b>	V <sub>DC</sub> V V MA Units V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub>	
Supply current Motor Supply Inp Supply voltage Supply current Supply Output (+ Output voltage	Abs driv gua Abs con Abs sum +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi	solute maximum values, re operating but outside irranteed parameters solute maximum values, titinuous solute maximum values, ge (duration $\le 10$ ms) <sup>†</sup> $ge (duration \le 10$ ms) <sup>†</sup> $ge (duration \le 10$ ms) <sup>†</sup> $ge (duration \le 10$ ms) <sup>†</sup> ge (duration duration) solute maximum values, ranteed parameters solute maximum values, titinuous solute maximum values, ge (duration $\le 10$ ms) <sup>†</sup> $ge (duration \le 10$ ms) <sup>†</sup>	8 -0.6 -1 <u>Min.</u> 11 9 -0.6 -1 -20 <u>Min.</u> 4.8	90 85 <b>Typ.</b> 1 ±8 <b>Typ.</b> 5	40 42 +45 280 50 52 54 57 5 +20 26	Vbc           Vbc           V           mA           Units           Vbc           V           MA           A           V	
Supply current Motor Supply Inp Supply voltage Supply current Supply Output (+ Output voltage Output current	Abs driv gua Abs con Abs sum +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi	solute maximum values, re operating but outside irranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\le 10$ ms) <sup>†</sup> $_{OG} = 12V$ $_{OG} = 24V$ $_{OG} = 24V$ $_{OG} = 40V$ <b>W</b> <sub>torn</sub> ) minal values solute maximum values, tranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\le 10$ ms) <sup>†</sup> erating solute maximum value, rt-circuit condition ration $\le 10$ ms) <sup>†</sup>	8 -0.6 -1 <u>Min.</u> 11 9 -0.6 -1 -20 <u>Min.</u>	90 85 <b>Typ.</b> 1 ±8 <b>Typ.</b> 5 250	40 42 +45 280 Max. 50 52 54 57 5 5 4 26 <b>Max.</b> 5.2	V <sub>DC</sub> V V MA Units V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub>	
Supply current Motor Supply Inp Supply voltage Supply current Supply Output (+ Output voltage Output current Short-circuit	Abs driv gua Abs con Abs sum +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi	solute maximum values, re operating but outside irranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\le 10$ ms) <sup>†</sup> $_{OG} = 12V$ $_{OG} = 24V$ $_{OG} = 24V$ $_{OG} = 40V$ <b>W</b> <sub>torn</sub> ) minal values solute maximum values, tranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\le 10$ ms) <sup>†</sup> erating solute maximum value, rt-circuit condition ration $\le 10$ ms) <sup>†</sup>	8 -0.6 -1 <u>Min.</u> 11 9 -0.6 -1 -20 <u>Min.</u> 4.8	90 85 <b>Typ.</b> 1 ±8 <b>Typ.</b> 5 250 NOT pro	40 42 +45 280 Max. 50 52 54 57 5 5 +20 26 Max. 5.2 5.2 5.2	Vbc           Vbc           V           mA           Units           Vbc           V           MA           A           V	
Supply current Motor Supply Inp Supply voltage Supply current Supply Output (+ Output voltage Output current	Abs driv gua Abs con Abs sur +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi +Vi	solute maximum values, re operating but outside irranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\le 10$ ms) <sup>†</sup> $_{OG} = 12V$ $_{OG} = 24V$ $_{OG} = 24V$ $_{OG} = 40V$ <b>W</b> <sub>torn</sub> ) minal values solute maximum values, tranteed parameters solute maximum values, ttinuous solute maximum values, ge (duration $\le 10$ ms) <sup>†</sup> erating solute maximum value, rt-circuit condition ration $\le 10$ ms) <sup>†</sup>	8 -0.6 -1 <u>Min.</u> 11 9 -0.6 -1 -20 <u>Min.</u> 4.8	90 85 <b>Typ.</b> 1 ±8 <b>Typ.</b> 5 250	40 42 +45 280 Max. 50 52 54 57 5 5 +20 26 Max. 5.2 5.2 5.2	Vbc           Vbc           V           mA           Units           Vbc           V           MA           A           V	

<sup>1</sup>Operating temperature at higher temperatures is possible with reduced current and power ratings <sup>2</sup> iPOS4808 can be operated in vacuum (no altitude restriction), but at altitudes over 2,500m,

<sup>3</sup> 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

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( <b>-^-)</b> te	CHNOSOFT	iPOS4808 MY-CAT-STO	P027.314.E121.DSH.10G	
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Name	First edition	Document template: P099.TQT.564.0001	Last edition	Visa :

4



Motor Outputs (A	/A+, B/A-, C/B+, CR		Min.	Тур.	Max.	Units	
	for DC brushed, st and BLDC motors				8		
	based trapezoidal				0		
Nominal output current,	for PMSM motors with FOC						
continuous <sup>1</sup>	sinusoidal control			8	A		
	amplitude value) for PMSM motors						
	sinusoidal control			5.66			
Matan autout	effective value)						
Motor output current, peak	maximum 2.5s	-20		+20	Α		
Short-circuit protect		±22	±26	±30	Α		
Short-circuit protect			5	10		μS	
On-state voltage	Nominal output cu including typical m		±0.3	±0.5	v		
drop	connector contact		10.0	10.0	v		
Off-state leakage of	current	_		±0.5	±1	mA	
	Recommended	F <sub>PWM</sub> 20 kHz	330			-	
	value, for current	40 kHz	150			-	
	ripple max. ±5% of	60 kHz	120			μH	
Material sets s	full range; +V <sub>MOT</sub> = 36 V	80 kHz	80			1	
Motor inductance (phase-to-phase)	· • MOI = 30 •	100 kHz	60			1	
(p	Minimum value,	20 kHz	120			-	
	limited by short-	60 kHz	40				
	circuit protection;	40 kHz 80 kHz	30 15			μH	
	$+V_{MOT} = 36 V$	80 кнz 100 kHz	15 8			1	
	Recommended	20 kHz	250				
Motor electrical	value for ±5%	40 kHz	125				
time-constant	current measure-ment	60 kHz	100			μs	
(L/R)		80 kHz	63				
0	error	100 kHz	50				
Current measurement	FS = Full Scale ac	curacy		±4	±8	%FS	
Digital Inputs		12	Min.	Тур.	Max.	Units	
Mode compliance	9, IN3/LSN, IN4, IN5	-	PNP				
Mode compliance				Logic LOW			
Default state	Input floating (wirin	ng					
Default state	Input floating (wirin disconnected)	ng		Logic	LOW	1	
Default state	disconnected) Logic "LOW"	ng	-10	Logic 0	LOW 2.2		
Default state	disconnected)	ng	-10 6.3	Logic	LOW		
Default state	disconnected) Logic "LOW" Logic "HIGH" Hysteresis			Logic 0	LOW 2.2		
	disconnected) Logic "LOW" Logic "HIGH" Hysteresis Floating voltage (n		6.3	Logic 0 24	LOW 2.2 36		
	disconnected) Logic "LOW" Logic "HIGH" Hysteresis Floating voltage (n connected)	ot	6.3 1.2	Logic 0 24 2.4	LOW 2.2 36 2.8	V	
	disconnected) Logic "LOW" Logic "HIGH" Hysteresis Floating voltage (n	ot	6.3	Logic 0 24 2.4	LOW 2.2 36	v	
	disconnected) Logic "LOW" Logic "HIGH" Hysteresis Floating voltage (n connected) Absolute maximun continuous Absolute maximun	ot n,	6.3 1.2 -10	Logic 0 24 2.4	LOW 2.2 36 2.8 +39	v	
	disconnected) Logic "LOW" Hysteresis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) <sup>†</sup>	ot n, n, surge	6.3 1.2	Logic 0 24 2.4	LOW 2.2 36 2.8	V	
Input voltage	disconnected) Logic "LOW" Hysteresis Floating voltage (n connected) Absolute maximum continuous Absolute maximum (duration ≤ 1s) <sup>†</sup> Logic "LOW"; pulle	ot n, n, surge	6.3 1.2 -10	Logic 0 24 2.4 0	LOW 2.2 36 2.8 +39 +40		
Input voltage	disconnected) Logic "LOW" Hysteresis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) <sup>†</sup>	ot n, n, surge	6.3 1.2 -10	Logic 0 24 2.4 0	LOW 2.2 36 2.8 +39	V	
Input voltage	disconnected) Logic "LOW" Hysteresis Floating voltage (n connected) Absolute maximum continuous Absolute maximum (duration ≤ 1s) <sup>†</sup> Logic "LOW"; pulle	ot n, n, surge	6.3 1.2 -10	Logic 0 24 2.4 0	LOW 2.2 36 2.8 +39 +40 10		
Input voltage Input current Mode compliance	disconnected) Logic "LOW" Hysteresis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) Logic "LOW"; pulle	ot n, n, surge id to GND	6.3 1.2 -10	Logic 0 24 2.4 0 0 8 NF	LOW 2.2 36 2.8 +39 +40 10 PN		
Input voltage Input current Mode compliance	disconnected) Logic "LOW" Logic "HIGH" Hysteresis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) <sup>†</sup> Logic "LOW"; pulle Logic "HIGH"	ot n, n, surge id to GND	6.3 1.2 -10	Logic 0 24 2.4 0 0 8 NF	LOW 2.2 36 2.8 +39 +40 10		
Input voltage Input current Mode compliance	disconnected) Logic "LOW" Logic "HIGH" Hysteresis Floating voltage (n connected) Absolute maximun (duration ≤ 1s) Logic "LOW"; pulle Logic "HIGH"	ot n, n, surge id to GND	6.3 1.2 -10	Logic 0 24 2.4 0 0 8 NF	LOW 2.2 36 2.8 +39 +40 10 PN		
Input voltage Input current Mode compliance	disconnected) Logic "LOW" Logic "HIGH" Hysteresis Floating voltage (n connected) Absolute maximun (duration ≤ 1s) <sup>†</sup> Logic "LOW"; pulle Logic "HIGH" Input floating (wirir disconnected)	ot n, n, surge id to GND	6.3 1.2 -10	Logic 0 24 2.4 0 0 8 NF Logic	LOW 2.2 36 2.8 +39 +40 10 PN HIGH		
Input voltage Input current Mode compliance	disconnected) Logic "LOW" Hysteresis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) Logic "LOW"; pulle Logic "HIGH" Input floating (wirir disconnected) Logic "LOW"	ot n, n, surge id to GND	6.3 1.2 -10 -20 6.3	Logic 0 24 2.4 0 0 0 8 NF Logic 0 24	LOW 2.2 36 2.8 +39 +40 10 N HIGH 2.2 36		
Input voltage Input current Mode compliance Default state	disconnected) Logic "LOW" Hysteresis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) Logic "LOW"; pulle Logic "HIGH" Input floating (wirir disconnected) Logic "LOW" Logic "HIGH"	ot n, surge nd to GND	6.3 1.2 -10 -20	Logic 0 24 0 0 0 8 NF Logic 0 24 2.4	LOW 2.2 36 2.8 +39 +40 10 PN HIGH 2.2	mA	
Input voltage Input current Mode compliance Default state	disconnected) Logic "LOW" Hysteresis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) Logic "LOW"; pulle Logic "HIGH" Input floating (wirir disconnected) Logic "LOW"	ot n, surge nd to GND	6.3 1.2 -10 -20 6.3	Logic 0 24 2.4 0 0 0 8 NF Logic 0 24	LOW 2.2 36 2.8 +39 +40 10 N HIGH 2.2 36		
Input voltage Input current Mode compliance Default state	disconnected) Logic "LOW" Logic "HIGH" Hysteresis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) <sup>†</sup> Logic "LOW"; pulle Logic "HIGH" Input floating (wirir disconnected) Logic "LOW" Logic "HIGH" Hysterezis Floating voltage (n connected) Absolute maximun	ot n, surge ed to GND ng	6.3 1.2 -10 -20 6.3	Logic 0 24 0 0 0 8 NF Logic 0 24 2.4	LOW 2.2 36 2.8 +39 +40 10 N HIGH 2.2 36	mA	
Input voltage Input current Mode compliance Default state	disconnected) Logic "LOW" Logic "HIGH" Hysteresis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) <sup>†</sup> Logic "LOW"; pulle Logic "HIGH" Input floating (wirir disconnected) Logic "LOW" Logic "HIGH" Hysterezis Floating voltage (n connected) Absolute maximun continuous	ot n, surge d to GND ng ot	6.3 1.2 -10 -20 6.3 1.2	Logic 0 24 0 0 0 8 NF Logic 0 24 2.4	LOW 2.2 36 2.8 +39 +40 10 PN HIGH 2.2 36 2.8	mA	
Input voltage Input current Mode compliance Default state	disconnected) Logic "LOW" Hysteresis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) Logic "LOW"; pulle Logic "HIGH" Input floating (wirrir disconnected) Logic "HIGH" Hysterezis Floating voltage (n connected) Absolute maximun continuous Absolute maximun	ot n, surge d to GND ng ot	6.3 1.2 -10 -20 6.3 1.2	Logic 0 24 0 0 0 8 NF Logic 0 24 2.4	LOW 2.2 36 2.8 +39 +40 10 PN HIGH 2.2 36 2.8	mA	
Input voltage Input current Mode compliance Default state	disconnected) Logic "LOW" Hysteresis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) <sup>†</sup> Logic "HIGH" Input floating (wirir disconnected) Logic "HIGH" Hysterezis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) <sup>†</sup>	ot n, surge d to GND ng ot n, surge	6.3 1.2 -10 -20 6.3 1.2 -10	Logic 0 24 0 0 0 8 NF Logic 0 24 2.4	LOW 2.2 36 2.8 +39 +40 10 N HIGH 2.2 36 2.8 +39 +39	mA	
Input voltage Input current Mode compliance Default state Input voltage	disconnected) Logic "LOW" Hysteresis Floating voltage (n connected) Absolute maximum continuous Absolute maximum (duration ≤ 1s) Logic "LOW"; pulle Logic "HIGH" Hysterezis Floating voltage (n connected) Logic "HIGH" Hysterezis Floating voltage (n connected) Absolute maximum continuous Absolute maximum (duration ≤ 1s) Logic "LOW"; Pulle	ot n, surge ed to GND ig ot n, surge ed to GND	6.3 1.2 -10 -20 6.3 1.2 -10 -20	Logic 0 24 2.4 0 0 8 NF Logic 0 24 2.4 15 8	LOW 2.2 36 2.8 +39 +40 10 N HIGH 2.2 36 2.8 +39 +40 10 10	mA	
Input voltage Input current Mode compliance Default state Input voltage Input voltage	disconnected) Logic "LOW" Hysteresis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) <sup>†</sup> Logic "HIGH" Input floating (wirir disconnected) Logic "HIGH" Hysterezis Floating voltage (n connected) Absolute maximun continuous Absolute maximun (duration ≤ 1s) <sup>†</sup>	ot n, surge ed to GND ig ot n, surge ed to GND	6.3 1.2 -10 -20 -20 -20 -10 -20 -20 0	Logic 0 24 2.4 0 0 8 NF Logic 0 24 2.4 15	LOW 2.2 36 2.8 +39 +40 10 N HIGH 2.2 36 2.8 +39 +40 10 0	V mA	
Input current Mode compliance Default state Input voltage	disconnected) Logic "LOW" Hysteresis Floating voltage (n connected) Absolute maximum continuous Absolute maximum (duration ≤ 1s) Logic "LOW"; pulle Logic "HIGH" Hysterezis Floating voltage (n connected) Logic "HIGH" Hysterezis Floating voltage (n connected) Absolute maximum continuous Absolute maximum (duration ≤ 1s) Logic "LOW"; Pulle	ot n, surge ed to GND ig ot n, surge ed to GND	6.3 1.2 -10 -20 6.3 1.2 -10 -20	Logic 0 24 2.4 0 0 8 NF Logic 0 24 2.4 15 8	LOW 2.2 36 2.8 +39 +40 10 N HIGH 2.2 36 2.8 +39 +40 10 10	V	

Digital Outputs (OUT0, OUT1, OU OUT4)	IT2/Error, OUT	3/ Ready,	Min.	Тур.	Max.	Units
Mode compliance	All outputs (O OUT2/Error, O			NP	1 24V	
	Not supplied ( or to GND)	, C	High-Z (floating)			
	Immediately after power-		Logic "HIGH"			
Default state	up	OUT2/Error, OUT3/ Ready OUT0, OUT1,	Logic "LOW"			
	Normal operation	Logic "HIGH"				
	Logic "LOW";	OUT3/Ready		Logic	"LOW"	
	= 0.5A				0.8	
	Logic "HIGH";	OUT2/Error, OUT3/ Ready	2.9	3	3.3	
Output voltage	output current = 0, no load	OUT0, OUT1, OUT4	4	4.5	5	V
	Logic "HIGH", to +V <sub>LOG</sub>	external load		$V_{\text{LOG}}$		
	Absolute maxi continuous		-0.5		V <sub>LOG</sub> +0.5	
	Absolute maximum, surge $(duration \le 1s)^{\dagger}$		-1		$V_{LOG}$ +1	
	Logic "LOW",			0.5	А	
	Logic "LOW", pulse ≤ 5 sec.			1	А	
Output current	Logic "HIGH", source curren external load t				2	mA
	GND; V <sub>OUT</sub> >= 2.0V				4	mA
	Logic "HIGH", current; exterr +V <sub>LOG</sub> ; V <sub>OUT</sub> = 40V	nal load to		0.1	0.2	mA
Minimum pulse wid	dth		2			μs
ESD protection	Human body r	nodel	±15			kV
Digital Hall Inputs	s (Hall1, Hall2,	Hall3)	Min.	Тур.	Max.	Units
Mode compliance	1	•	TTL		Open-coll	ector
	Input floating			Logic	HIGH	
Default state				LUQIC		
Default state	(wiring discon	nected)			0.8	
Default state	Logic "LOW"	nected)	2	0	0.8	
		·	2	0 5	0.8	.,
	Logic "LOW" Logic "HIGH" Floating voltag (not connected	ge d)	2	0	0.8	V
	Logic "LOW" Logic "HIGH" Floating voltag (not connected Absolute maxi (duration ≤ 1s	ge d) mum, surge	2	0 5	0.8	V
Input voltage	Logic "LOW" Logic "HIGH" Floating voltag (not connected Absolute maxi (duration ≤ 1s Logic "LOW";	ge d) mum, surge ) Pull to GND		0 5		v
Input voltage	Logic "LOW" Logic "HIGH" Floating voltag (not connected Absolute maxi (duration ≤ 1s Logic "LOW";	ge d) mum, surge		0 5	+15	V mA
Input voltage Input current Minimum pulse wid	Logic "LOW" Logic "HIGH" Floating voltag (not connected Absolute maxi (duration ≤ 1s Logic "LOW"; Logic "HIGH"; pull-up to +5	ge d) mum, surge † Pull to GND Internal 4.7KΩ	-10 0 2	0 5 4.4	+15	V mA µs
Input voltage Input current Minimum pulse wid ESD protection	Logic "LOW" Logic "HIGH" Floating voltag (not connecter Absolute maxi (duration ≤ 1s Logic "LOW"; Logic "HIGH"; pull-up to +5 dth Human body r	ge d) mum, surge t Pull to GND Internal 4.7KΩ	-10 0	0 5 4.4 0	+15 1.2 0	μs kV
Input voltage Input current Minimum pulse wid ESD protection Linear Hall Inputs	Logic "LOW" Logic "HIGH" Floating voltas (not connecter Absolute maxi (duration ≤ 1s Logic "LOW"; Logic "HIGH"; pull-up to +5 tth Human body r s (LH1, LH2, LH	ge d) mum, surge t Pull to GND Internal 4.7KΩ model	-10 0 2 ±5 Min.	0 5 4.4 0 <b>Typ.</b>	+15 1.2 0 Max.	µs kV <b>Units</b>
Input voltage Input current Minimum pulse wid ESD protection Linear Hall Inputs	Logic "LOW" Logic "HIGH" Floating voltag (not connecte Absolute maxi (duration ≤ 1s Logic "LOW"; Logic "HIGH"; pull-up to +5 dth Human body rr <b>s (LH1, LH2, LH</b> Operational rar Absolute maxin	ge d) mum, surge t Pull to GND Internal 4.7KΩ nodel	-10 0 2 ±5 Min. 0	0 5 4.4 0	+15 1.2 0 Max. 4.9	μs kV
Input voltage Input current Minimum pulse wid ESD protection Linear Hall Inputs Input voltage	Logic "LOW" Logic "HIGH" Floating voltaq (not connecter Absolute maxi (duration ≤ 1s Logic "LOW"; Logic "HIGH"; pull-up to +5 th Human body r s (LH1, LH2, LH Operational rar Absolute maxin continuous Absolute maxin	ge d) mum, surge t Pull to GND Internal 4.7KΩ nodel (3) ge num values, num, surge	-10 0 ±5 Min. 0 -7	0 5 4.4 0 <b>Typ.</b>	+15 1.2 0 Max. 4.9 +7	µs kV <b>Units</b>
Default state Input voltage Input current Minimum pulse wid ESD protection Linear Hall Inputs Input voltage Input voltage	Logic "LOW" Logic "HIGH" Floating voltag (not connected Absolute maxii (duration $\leq$ 1s Logic "LOW"; Logic "HIGH"; pull-up to +5 th Human body r s (LH1, LH2, LH Operational ran Absolute maxin (duration $\leq$ 1s)	ge d) mum, surge f Pull to GND Internal 4.7KΩ model (3) ge num values, num, surge	-10 0 2 ±5 Min. 0 -7 -11	0 5 4.4 0 <b>Typ.</b>	+15 1.2 0 <b>Max.</b> 4.9 +7 +14	μs kV Units V
Input voltage Input current Minimum pulse wid ESD protection Linear Hall Inputs Input voltage Input voltage Input voltage	Logic "LOW" Logic "HIGH" Floating voltag (not connecte Absolute maxi (duration ≤ 1s Logic "LOW"; Logic "LOW"; Logic "HIGH"; pull-up to +5 th Human body r s (LH1, LH2, LH Operational rar Absolute maxin continuous Absolute maxin (duration ≤ 1s) Input voltage 0.	ge d) mum, surge f Pull to GND Internal 4.7KΩ model (3) ge num values, num, surge +5V	-10 0 ±5 Min. 0 -7	0 5 4.4 0 <b>Typ.</b>	+15 1.2 0 Max. 4.9 +7	μs kV Units V
Input voltage Input current Minimum pulse wid ESD protection Linear Hall Inputs Input voltage	Logic "LOW" Logic "HIGH" Floating voltag (not connected Absolute maxii (duration $\leq$ 1s Logic "LOW"; Logic "HIGH"; pull-up to +5 th Human body r s (LH1, LH2, LH Operational ran Absolute maxin (duration $\leq$ 1s)	ge d) mum, surge f Pull to GND Internal 4.7KΩ model (3) ge num values, num, surge +5V	-10 0 2 ±5 Min. 0 -7 -11	0 5 4.4 0 <b>Typ.</b>	+15 1.2 0 <b>Max.</b> 4.9 +7 +14	μs kV Units V

<sup>1</sup> @20kHz F <sub>PV</sub>	M	<sup>2</sup> The digital inputs are software selectable as PNP or NPN				
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		Title of document	N° document			
<b>((()</b> <sup>⊺</sup>	ECHNOSOFT	iPOS4808 MY-CAT-STO	P027.314.E121.DSH.10G			
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Encoder1 Inputs (A1/A1+, A1-, B1/E	Min.	Тур.	Max.	Units		
Single-ended mode compliance	Leave negative inputs TTL / CMOS / Open-collect			ector		
	Logic "LOW"			1.6		
Input voltage, single-ended	Logic "HIGH"	1.8			v	
mode A/A+, B/B+	Floating voltage (not		3.3		v	
	connected)	-	0.0	1.0		
Input voltage,	Logic "LOW" Logic "HIGH"	1.4		1.2	-	
single-ended	Floating voltage (not	1.4			V	
mode Z/Z+	connected)		4.7			
Input current,	Logic "LOW"; Pull to GND		5.5	6		
single-ended mode A/A+,	Logic "HIGH"; Internal 2.2K $\Omega$ pull-up to +5	0	0	0	mA	
B/B+, Z/Z+ Differential mode	For full RS422 compliance,		TIA/EIA-422-A			
compliance	see <sup>1</sup> Hysteresis	±0.06	±0.1	±0.2		
Input voltage,	Common-mode range		10.1		v	
differential mode	(A+ to GND, etc.)	-7		+7		
Input impedance,	A1+ to A1-, B1+ to B1-		1		kΩ	
differential	Z1+ to Z1-		1		1132	
	Single-ended mode, Open- collector / NPN	0		5	MHz	
Input frequency	Differential mode, or Single-					
input noquonoy	ended driven by push-pull (TTL / CMOS)	0		10	MHz	
Minimum nulse	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, any	Absolute maximum values, continuous	-7		+7		
pin to GND	Absolute maximum, surge	-11		+14	V	
FCD anotestica	(duration ≤ 1s)	. 4			kV	
ESD protection Encoder2 Inputs (A2+/Data+, A2-/D	Human body model ata-, B2+/Clk+, B2-/Clk-, Z2+,	±1 Min.	Тур.	Max.	Units	
<b>Z2-)</b> <sup>2</sup>	ana , <u> </u>		. , p.	mast	••	
Differential mode compliance	For full RS422 compliance, see <sup>1</sup>	TIA/EIA-422-A				
	Hysteresis	±0.06	±0.1	±0.2		
Input voltage	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 (Sin+, Sin-, Cos+,		Min.	Тур.	Max.	Units	
Input voltage, differential	Sin+ to Sin-, Cos+ to Cos-		1	1.25	$V_{PP}$	
	Operational range	-1	2.5	4		
Input voltage, any	Absolute maximum values,	-7		+7	1	
pin to GND	continuous	'			V	
	Absolute maximum, surge $(duration \le 1s)^{\dagger}$	-11		+14		
Input impedance	Differential, Sin+ to Sin-, Cos+ to Cos- <sup>3</sup>	4.2	4.7		kΩ	
	Common-mode, to GND		2.2		kΩ	
Resolution with	Software selectable, for one	2		10	bits	
interpolation	sine/cosine period					
Frequency	Sin-Cos interpolation	0		450 10	kHz MHz	
	Culladrature no internolation					
ESD protection	Quadrature, no interpolation Human body model	±1		10	kV	

uts (REF, FDBK)	Min.	Тур.	Max.	Units
Operational range	0		5	
Absolute maximum values,	-12		+18	
Absolute maximum, surge				V
$(duration < 1s)^{\dagger}$			±36	
To GND		28		kΩ
		12		bits
			±2	bits
		±2	±10	bits
		±1%	±3%	% FS
			1	kHz
Human body model				kV
	Min.			Units
		TIA/EIA		
Software selectable	9600			Baud
		Guara	nteed	
Human body model	±2			kV
	Min.	Tvp.	Max.	Units
Sarety Integrity Level	safe	ety integrity	vievel 3 (	SIL3)
PFHD (probability of dangerous failures per hour)	8*10 <sup>-10</sup>	hou	ur <sup>-1</sup> (0.8 F	IT)
· ·		0.10		
		Cat3	/PLe	-
MTTFM (meantime to dangerous failure)	377 yea			years
	PNP			
Input floating (wiring disconnected)	Logic LOW			
	-20		5.6	
	18		36	V
Absolute maximum, continuous	-20		+40	
Logic "LOW"; pulled to GND Logic "HIGH", pulled to +Vlog		0 5	13	mA
Ignored high-low-high			5	ms
			20 H	
From internal fault detection to register DER bit 14 =1 and OUT2/Error bigh-to-low			30	ms
From external STO low-high transition to PWM operation enabled			30	ms
Human body model	±2			kV
		Typ.	Max.	Units
EtherCAT (IEC	61158-3	3/4/5/6-12)		
EtherCAT (IEC Fast Ethernet 100E			.3u)	
EtherCAT (IEC Fast Ethernet 100E Auto-negotiation fo	BASE-TX	(IEEE802		
Fast Ethernet 100E Auto-negotiation fo	BASE-TX r 100Mb	(IEEE802 ps/s full-du		
Fast Ethernet 100E Auto-negotiation fo Auto-dete NOT used by the	BASE-TX r 100Mb ct MDI/N comp	(IEEE802 ps/s full-du /IDI-X liant to IEE	E802.3a	
Fast Ethernet 100E Auto-negotiation fo Auto-dete NOT used by the iPOS4808MY, requires separate +Vlog SELV/ PELV	ASE-TX r 100Mb ct MDI/N comp NOT	(IEEE802 ps/s full-du /IDI-X liant to IEE A "Mixed E compliant	EB02.3a DC & Data to IEEE8	a" 02.3af
Fast Ethernet 100E Auto-negotiation fo Auto-dete NOT used by the iPOS4808MY, requires separate +Vlog SELV/ PELV supply	BASE-TX r 100Mb cct MDI/N comp NOT m	(IEEE802 ps/s full-du /IDI-X liant to IEE A "Mixed I	EB02.3a DC & Data to IEEE8	a" 02.3af es"
Fast Ethernet 100E Auto-negotiation fo Auto-dete NOT used by the iPOS4808MY, requires separate +Vlog SELV/ PELV supply Requirement for motherboard	BASE-TX r 100Mb ct MDI/N comp NOT m 500	(IEEE802 ps/s full-du /IDI-X liant to IEE A "Mixed E compliant	EB02.3a DC & Data to IEEE8	a" 02.3af es" V <sub>rms</sub>
Fast Ethernet 100E Auto-negotiation fo Auto-dete NOT used by the iPOS4808MY, requires separate +Vlog SELV/ PELV supply Requirement for motherboard PCB routing	ASE-TX r 100Mb ct MDI/N comp NOT m 500 1.5	(IEEE802 ps/s full-du //DI-X liant to IEE A "Mixed I compliant node B "DC	EB02.3a DC & Data to IEEE8	a" 02.3af es" V <sub>rms</sub> kV <sub>peal</sub>
Fast Ethernet 100E Auto-negotiation fo Auto-dete NOT used by the iPOS4808MY, requires separate +Vlog SELV/ PELV supply Requirement for motherboard PCB routing 2-pair UTP Cat5	3ASE-TX r 100Mb cct MDI/N comp NOT m 500 1.5 100	(IEEE802 ps/s full-du /IDI-X liant to IEE A "Mixed E compliant	EB02.3a DC & Data to IEEE8	a" 02.3af es" V <sub>rms</sub> kV <sub>peal</sub> m
Fast Ethernet 100E Auto-negotiation fo Auto-dete NOT used by the iPOS4808MY, requires separate +Vlog SELV/ PELV supply Requirement for motherboard PCB routing	ASE-TX r 100Mb ct MDI/N comp NOT m 500 1.5	(IEEE802 ps/s full-du //DI-X liant to IEE A "Mixed I compliant node B "DC	EB02.3a DC & Data to IEEE8	a" 02.3af es" V <sub>rms</sub> kV <sub>peal</sub>
Fast Ethernet 100E Auto-negotiation fo Auto-dete NOT used by the iPOS4808MY, requires separate +Vlog SELV/ PELV supply Requirement for motherboard PCB routing 2-pair UTP Cat5	BASE-TX r 100Mb ct MDI/N comp NOT m 500 1.5 100 ±4 <b>Min.</b>	(IEEE802 ps/s full-du /IDI-X liant to IEE A "Mixed I compliant node B "DC 150	E802.3a DC & Data to IEEE8 on Spare	a" 02.3af es" V <sub>rms</sub> kV <sub>peal</sub> m kV Units
Fast Ethernet 100E Auto-negotiation fo Auto-dete NOT used by the iPOS4808MY, requires separate +Vlog SELV/ PELV supply Requirement for motherboard PCB routing 2-pair UTP Cat5	BASE-TX r 100Mb ct MDI/N comp NOT m 500 1.5 100 ±4 <b>Min.</b> Cc	(IEEE802 ps/s full-du /IDI-X liant to IEE A "Mixed E compliant node B "DC 150 Typ.	EB02.3a C & Data to IEEE8 on Spare Max. hode to G	a" 02.3af es" Vrms kVpeal m kV Units
Fast Ethernet 100E Auto-negotiation fo Auto-dete NOT used by the iPOS4808MY, requires separate +Vlog SELV/ PELV supply Requirement for motherboard PCB routing 2-pair UTP Cat5	BASE-TX r 100Mb ct MDI/N comp NOT m 500 1.5 100 ±4 <b>Min.</b> Cc	(IEEE802 ps/s full-du /IDI-X liant to IEE A "Mixed I compliant oode B "DC 150 Typ. mmon cat	EB02.3a C & Data to IEEE8 on Spare Max. hode to G	a" 02.3af es" Vrms kVpeal m kV Units
Fast Ethernet 100E Auto-negotiation fo Auto-dete NOT used by the iPOS4808MY, requires separate +Vlog SELV/ PELV supply Requirement for motherboard PCB routing 2-pair UTP Cat5	BASE-TX r 100Mb ct MDI/N comp NOT m 500 1.5 100 ±4 <b>Min.</b> Cc	(IEEE802 ps/s full-du /DI-X liant to IEEA A "Mixed C compliant code B "DC 150 Typ. Typ.	EB02.3a C & Data to IEEE8 c on Spare Max. node to G ries resis	a" 02.3af es" Vrms kVpea m kV Units
Fast Ethernet 100E Auto-negotiation fo Auto-dete NOT used by the iPOS4808MY, requires separate +Vlog SELV/ PELV supply Requirement for motherboard PCB routing 2-pair UTP Cat5	BASE-TX r 100Mb ct MDI/N comp NOT m 500 1.5 100 ±4 <b>Min.</b> Cc	(IEEE802 ps/s full-du ADI-X liant to IEE A "Mixed I compliant compliant ode B "DC 150 Typ. Typ. mmon cati irect, no se 8	E802.3a OC & Data to IEEE8 on Spare Max. hode to G aries resis 10 3.45	a" 02.3af es" Vrms kV <sub>peal</sub> m kV Units SND tor MA V
Fast Ethernet 100E Auto-negotiation fo Auto-dete NOT used by the iPOS4808MY, requires separate +Vlog SELV/ PELV supply Requirement for motherboard PCB routing 2-pair UTP Cat5	BASE-TX r 100Mb ct MDI/N comp NOT m 500 1.5 100 ±4 <b>Min.</b> Cc	(IEEE802 ps/s full-du ADI-X liant to IEE A "Mixed I compliant compliant ode B "DC 150 Typ. Typ. mmon cati irect, no se 8	E802.3a C & Date to IEEE8 c on Spare Max. hode to G eries resis 10	a" 02.3af es" Vrms kVpea m kV Units ND tor mA
	Absolute maximum values, continuous Absolute maximum, surge (duration ≤ 1s) <sup>†</sup> To GND Software selectable Human body model Software selectable 232TX short to GND Human body model TO2+, STO2+) According to EN61800-5-2 Safety Integrity Level PFHD (probability of dangerous failures per hour) Performance Level MTTFM (meantime to dangerous failure) PFHD (probability of dangerous failures per hour) Performance Level MTTFM (meantime to dangerous failure) Input floating (wiring disconnected) Logic "LOW" Logic "HIGH" Absolute maximum, continuous Logic "LOW"; pulled to HVog Ignored high-low-high From internal fault detection to register DER bit 14 = 1 and OUT2/Error high-to-low From external STO low-high transition to PWM operation enabled Human body model	Operational range       0         Absolute maximum values, continuous       -12         Absolute maximum, surge (duration ≤ 1s) <sup>†</sup> -12         To GND       -         Software selectable       0         Human body model       ±5         Min.       -         Software selectable       9600         232TX short to GND       -         Human body model       ±2         TO2+, STO2+)       Min.         According to EN61800-5-2       S         Safety Integrity Level       safet         PFHD (probability of dangerous failures per hour)       8*10 <sup>-10</sup> Performance Level       MTTFM (meantime to dangerous failure)         Input floating (wiring disconnected)       -20         Logic "LOW"       -20         Logic "LOW"; pulled to GND       -20         Logic "LOW"; pulled to FVlog       Ignored high-low-high         From internal fault detection to register DER bit 14 = 1 and OUT2/Error high-to-low       -20         From external STO low-high transition to PVWM operation enabled       +2         Human body model       ±2         Min.       -20	Operational range0Absolute maximum values, continuous-12Absolute maximum, surge (duration $\leq 1s$ )-12To GND28112212112112112112112112112112112112112112112112113Software selectable0232TX short to GNDGuaraHuman body model±21232TX short to GNDAccording to EN61800-5-2STO (Safe TSafety Integrity Levelsafety integrityPHD (probability of dangerous failures per hour)8*10 <sup>-10</sup> Performance LevelCat3MTTFM (meantime to dangerous failure)377PhInput floating (wiring disconnected)LogicLogic "LOW"-20Logic "HIGH"18Absolute maximum, continuous-20Logic "LOW"; pulled to GND0Logic "HIGH", pulled to +Vlog5Ignored high-low-high1From internal fault detection to register DER bit 14 = 1 and OUT2/Error high-to-lowFrom external STO low-high transition to PVWM operation enabled±2Human body model±2Human body model±2	Operational range05Absolute maximum values, continuous-12+18Absolute maximum, surge (duration $\leq 1s$ )±36To GND281122±21±1%1±1%2±1%4±1%4±1%511±1%1±1%4±1%51111Human body model4±5232TX short to GNDGuaranteed1Human body model4±2111Guaranteed1Human body model4±2111Safety Integrity Level3afety Integrity Levelsafety integrity level 3 (33afety Integrity Levelsafety integrity level 3 (3Performance LevelCat3/PLeMTTFM (meantime to dangerous failure)37711836Absolute maximum, continuous-205.6Logic "LOW"-205.6Logic "LOW"; pulled to GND0Logic "HIGH", pulled to +Vlog513Ignored high-low-high514<=1 and OUT2/Error high-to-low30From internal fault detection to register DER bit 14 = 1 and OUT2/Error high-to-low30From external STO low-high transition to PWM operation enabled30Human body model±24Human body model

<sup>†</sup> 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.

 $^{1}$  For full RS-422 compliance, 120 $\Omega$  termination resistors must be connected across the differential pairs, as close as possible to the drive input pins.

<sup>3</sup> 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.

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<b>(S</b> ) TH	ECHNOSOFT	iPOS4808 MY-CAT-STO	P027.314.E121.DSH.10G		
<u> </u>		Title of document	N° document		
EP	June 2, 2020		April 24, 2024	GC	
Name	First edition	Document template: P099.TQT.564.0001	Last edition	Visa :	
<sup>2</sup> Encoder2 differential input pins have internal 120Ω termination resistors connected across <sup>4</sup> "FS" stands for "Full Scale"					



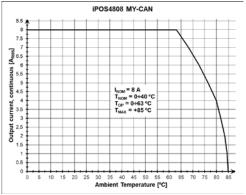
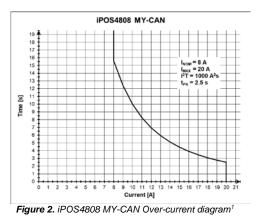


Figure 1. iPOS4808 MY-CAN De-rating with ambient temperature<sup>1</sup>



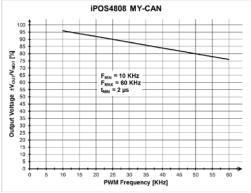
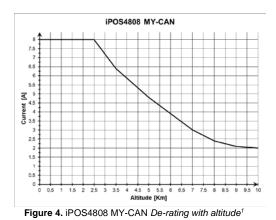


Figure 3. iPOS4808 MY-CAN Output Voltage De-rating with PWM frequency1



<sup>1</sup> Measured under the following conditions: BLDC: Vmot=48V\_Vlog=24V\_PWM=20kHZ

Measured under the following conditions: BLDC; Vmot=48V, Vlog=24V, PWM=20kHZ					
Name	First edition	Document template: P099.TQT.564.0001	Last edition	Visa :	
EP	June 2, 2020		April 24, 2024	GC	
		Title of document	N° document		
TE CO	CHNOSOFT	iPOS4808 MY-CAT-STO	P027.314.E121.DSH.10G		
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