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

Motor – sensor configurations

Sensor \ Motor	PMSM	BLDC	DC BRUSH	STEP (2-ph)	STEP[2] (3-ph)
Incr. Encoder	T		T	T	T
Incr. Encoder + Hall	T	T			
Analog Sin/Cos encoder	T	T	T	T	T
SSI	T	T	T	T	T
BiSS-C	T	T	T	T	T
EnDAT[1]	T	T	T	T	T
Linear Halls	T				
Tacho			T		
Open-loop (no sensor)				T	T

[1] Available starting with F515K firmware version

[2] Sensor used only for step loss detection

Features

- Motion controller and drive in a single compact unit based on MotionChip ™ technology
- Universal solution for control of rotary and linear brushless, brushed and 2 or 3-phase step motors
- Advanced motion control capabilities (PVT,S-curve, electronic cam)
- Motor supply: 11-50V; Logic SELV/ PELV supply: 9-36V; STO SELV/ PELV supply: 18-40V
- Output current: 8A cont. (BLDC mode); 20A$_{PEAK}$, up to 100kHz PWM

- Feedback Devices (dual-loop support)
- 1st feedback devices supported:
  - Incremental encoder interface (single ended or differential)
  - 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) for external (master) digital reference
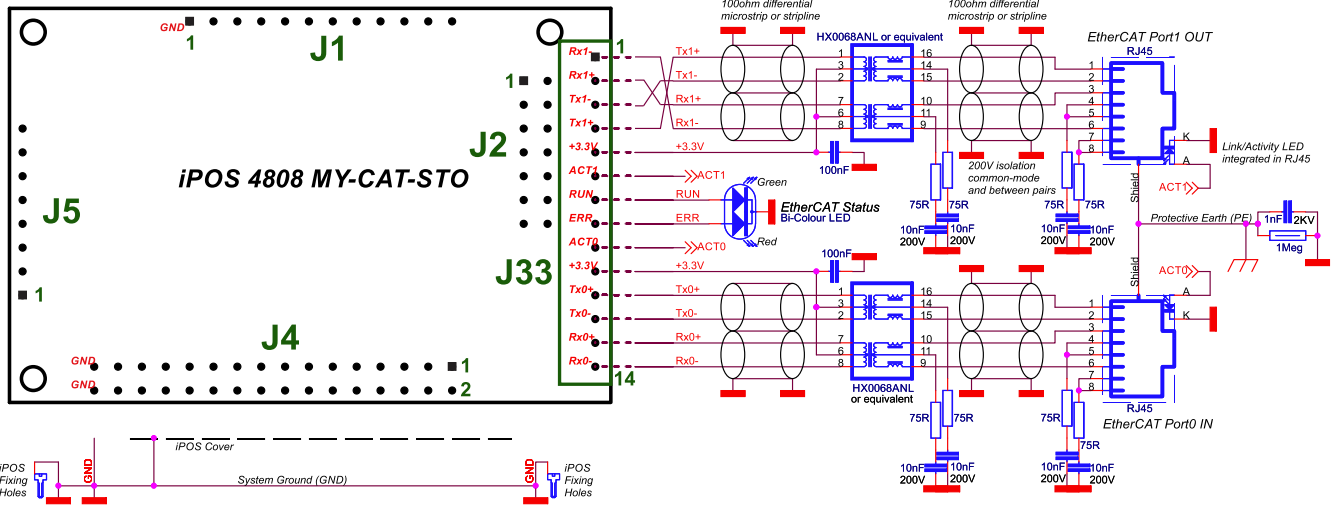- 2nd feedback devices supported:
  - Incremental encoder interface (differential)
  - pulse & direction interface (differential) for external (master) digital reference
  - BISS-C / SSI / EnDAT[1] encoder interface
- STO: 2 safe torque-off inputs, safety integrity level (SIL3/Cat3/PLe) acc. to EN61800-5-1;-2/ EN61508-3;-4/ EN ISO 13849-1.
- 6 digital inputs, 12-36V, PNP/NPN programmable: 2 for limit switches, 4 general-purpose
- 5 digital outputs, 5-36V, 0.5A, NPN open-collector: Ready, Error, 3 general-purpose
- 2 analogue inputs: 12-bit, 0-5V: Reference, Feedback or general purpose
- RS-232 serial & dual 100Mbps EtherCAT® interfaces
- EtherCAT® with CAN application protocol over EtherCAT (CoE), File over EtherCAT (FoE) and Ethernet over EtherCAT (EoE)
- 127 h/w addresses selectable by h/w pins configuration
- 16k x 16 SRAM memory for data acquisition
- 16k x16 E^{2}ROM to store setup data, TML motion programs, cam tables and other user data
- Operating ambient temperature: 0-40°C (over 40°C with derating)
- NTC/PTC analogue Motor Temperature sensor input

Recommended: PoE (Power Over Ethernet) compliant

Mating Connectors

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

J1

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

J5

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

J33

Pin	Name	Type	Description
1	RX1-	I/O	Receive/Transmit negative, OUT port. Connect to magnetics PHY RX1.
2	RX1+	I/O	Receive/Transmit positive, OUT port. Connect to magnetics PHY RX1.
3	TX1-	I/O	Transmit/Receive negative, OUT port. Connect to magnetics PHY TX1.
4	TX1+	I/O	Transmit/Receive positive, OUT port. Connect to magnetics PHY TX1.
5	3.3V	O	Return for center tap of magnetics PHY TX1 and RX1. Internally connected to J33 pin 10.
6	ACT1	O	Anode of Link/Activity LED for port OUT.
7	RUN	O	Anode of Run LED (EtherCAT status machine).
8	ERR	O	Anode of Error LED (EtherCAT status machine).
9	ACT0	O	Anode of Link/Activity LED for port IN.
10	3.3V	O	Return for center tap of magnetics PHY TX0 and RX0. Internally connected to J33 pin 5.
11	TX0+	I/O	Transmit/Receive positive, IN port. Connect to magnetics PHY TX0.
12	TX0-	I/O	Transmit/Receive negative, IN port. Connect to magnetics PHY TX0.
13	RX0+	I/O	Receive/Transmit positive, IN port. Connect to magnetics PHY RX0.
14	RX0-	I/O	Receive/Transmit negative, IN port. Connect to magnetics PHY RX0.

J2

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

TECHNOSOFT

Title of document	N° document
iPOS4808 MY-CAT-STO **PRODUCT DATA SHEET**	**P027.314.E121.DSH.10G**

Pin	Name	Type	Description
1	IN0	I	12-36V general-purpose digital PNP/NPN input
2	IN1	I	12-36V general-purpose digital PNP/NPN input
3	IN2/LSP	I	12-36V digital PNP/NPN input. Positive limit switch input
4	IN3/LSN	I	12-36V digital PNP/NPN input. Negative limit switch input
5	B2-/Dir-/CLK-/MA-	I/O	Incr. encoder2 B- diff. input, or Dir--, or Clock- for SSI & EnDAT, or Master- for BiSS; has 120Ω 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 120Ω resistor between pins 5 and 7
8	B1+/Cos+	I	Incr. encoder1 B single-ended, or B+ diff. input, or analogue encoder Cos+ diff. input
9	A2+/Pulse+/Data+/SL+	I	Incr. encoder2 A+ diff. input, or Pulse+, or Data+ for SSI & EnDAT, or Slave+ for BiSS; has 120Ω 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 120Ω resistor between pins 9 and 11
12	A1- /Sin-	I	Incr. encoder1 A- diff. input, or analogue encoder Sin- diff. input
13	Z2+	I	Incr. encoder2 Z+ diff. input ; has 120Ω 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 120Ω 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	I	Digital input Hall 2 sensor
20	Reserved	-	Reserved. Do not connect.
21	Hall 3	I	Digital input Hall 3 sensor
22	232TX	O	RS-232 Data Transmission
23	+5V$_{OUT}$	O	5V output supply for I/O usage
24	232RX	I	RS-232 Data Reception
25	Temp Mot	I	NTC/PTC input. Used to read an analog temperature value
26	Reserved	-	Reserved. Do not connect.
27	+V$_{LOG}$	I	Positive terminal of the logic supply input: 9 to 36V$_{DC}$ from SELV/ PELV type power supply.
28	OUT4	O	5-36V 0.5A, general-purpose digital output, NPN open-collector/TTL pull-up
29	+V$_{MOT}$	I	Positive terminal of the motor supply: 11 to 48V$_{DC}$.
30	+V$_{MOT}$	I	Positive terminal of the motor supply: 11 to 48V$_{DC}$.
31	GND	-	Return ground for all signals. Internally connected to J4 pin 32, to J1 pin 1, to metallic cover, and to the 3 fixing screws
32	GND	-	

(Left side label: J4)

† 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-
- Load current (sinusoidal amplitude / continuous BLDC, DC, stepper) = 8A

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

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

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

Environmental Characteristics		Min.	Typ.	Max.	Units
Size (Length x Width x Height)	Global size	64 x 43.6 x 22			mm
		~2.52 x 1.72 x 0.87			inch
Weight		45			g
Cleaning agents	Dry cleaning is recommended	Only Water- or Alcohol- based			
Protection degree	According to IEC60529, UL508	IP20			-

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

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

Supply Output (+5V)		Min.	Typ.	Max.	Units
Output voltage	Current sourced = 250mA	4.8	5	5.2	V
Output current		200	250		mA
Short-circuit		NOT protected			
Over-voltage		NOT protected			
ESD protection	Human body model	±1			kV

[1] Operating temperature at higher temperatures is possible with reduced current and power ratings
[2] iPOS4808 can be operated in vacuum (no altitude restriction), but at altitudes over 2,500m, current and power rating are reduced due to thermal dissipation efficiency.

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

Name	First edition	Document template: P099.TQT.564.0001		Last edition	Visa :
EP	June 2, 2020			April 24, 2024	GC

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

Digital Inputs (IN0, IN1, IN2/LSP, IN3/LSN, IN4, IN5)[2]		Min.	Typ.	Max.	Units
Mode compliance			PNP		
Default state	Input floating (wiring disconnected)		Logic LOW		
Input voltage	Logic "LOW"	-10	0	2.2	V
	Logic "HIGH"	6.3	24	36	
	Hysteresis	1.2	2.4	2.8	
	Floating voltage (not connected)		0		
	Absolute maximum, continuous	-10		+39	
	Absolute maximum, surge (duration ≤ 1s)[†]	-20		+40	
Input current	Logic "LOW"; pulled to GND		0		mA
	Logic "HIGH"		8	10	

		Min.	Typ.	Max.	Units
Mode compliance			NPN		
Default state	Input floating (wiring disconnected)		Logic HIGH		
Input voltage	Logic "LOW"		0	2.2	V
	Logic "HIGH"	6.3	24	36	
	Hysterezis	1.2	2.4	2.8	
	Floating voltage (not connected)		15		
	Absolute maximum, continuous	-10		+39	
	Absolute maximum, surge (duration ≤ 1s)[†]	-20		+40	
Input current	Logic "LOW"; Pulled to GND		8	10	mA
	Logic "HIGH"; Pulled to +24V	0	0	0	
Input frequency		0		10	kHz
Minimum pulse		6			µs
ESD protection	Human body model	±5			kV

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

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

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

TECHNOSOFT

Title of document	N° document
iPOS4808 MY-CAT-STO PRODUCT DATA SHEET	**P027.314.E121.DSH.10G**

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

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

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

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

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

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

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			
Power over Ethernet	NOT used by the iPOS4808MY, requires separate +Vlog SELV/ PELV supply	compliant to IEEE802.3af mode A "Mixed DC & Data"			
		NOT compliant to IEEE802.3af mode B "DC on Spares"			
Isolation GND0,GND1	Requirement for motherboard PCB routing	500			V_rms
		1.5			kV_peak
Maximum cable length	2-pair UTP Cat5	100	150		m
ESD protection	Human body model	±4			kV

LED signals		Min.	Typ.	Max.	Units
LED connection		Common cathode to GND			
		Direct, no series resistor			
LED current			8	10	mA
3.3 output voltage		3.15	3.3	3.45	V
3.3 output current				60	mA

[†] 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, 120Ω termination resistors must be connected across the differential pairs, as close as possible to the drive input pins.

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

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

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

T TECHNOSOFT

Title of document
iPOS4808 MY-CAT-STO
PRODUCT DATA SHEET

N° document
P027.314.E121.DSH.10G
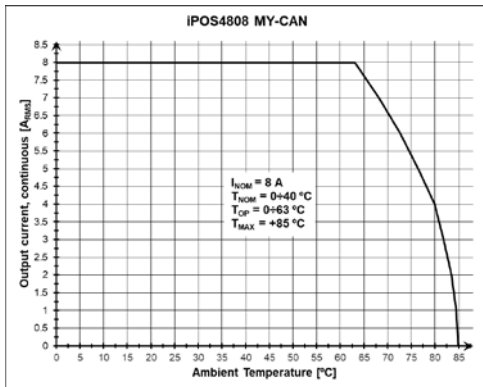
Page: 5 of 6

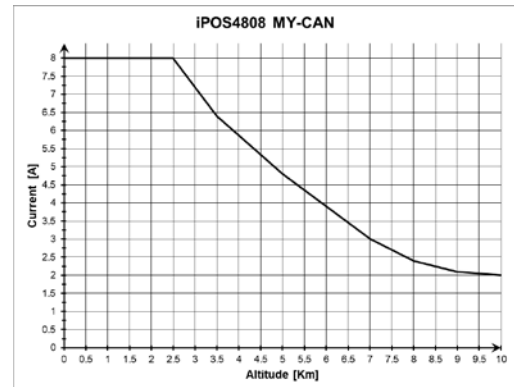**Figure 1.** iPOS4808 MY-CAN *De-rating with ambient temperature*[1]

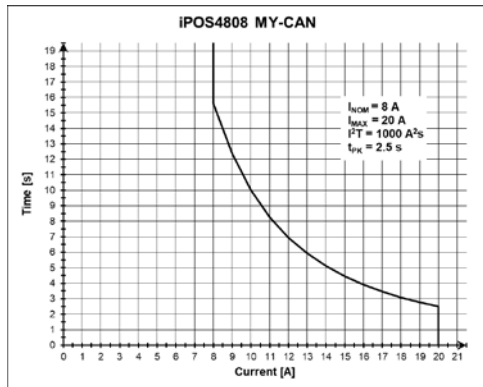

Figure 4. iPOS4808 MY-CAN *De-rating with altitude*[1]

Figure 2. iPOS4808 MY-CAN *Over-current diagram*[1]

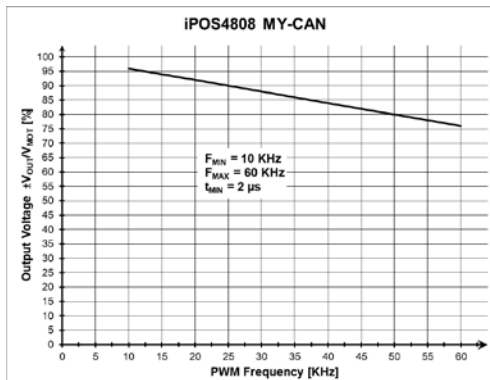**Figure 3.** iPOS4808 MY-CAN *Output Voltage De-rating with PWM frequency*[1]

---

[1] 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