

Technical Reference 1.0

I-Driver4810

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1. Safety information

CAUTION ! THE DRIVE IS ELECTROSTATIC SENSITIVE. DO NOT TOUCH THE ELECTRONIC COMPONENTS AND PCB (PRINTED CIRCUIT BOARD) !

CAUTION ! THE VOLTAGE USED IN THE DRIVE CAN CAUSE ELECTRICAL SHOCKS !

CAUTION ! BEFORE THE CONNECTING / DISCONNECTING ANY OF THE SIGNALS PLEASE TURN OFF ALL POWER SUPPLIES. ELSE SEVER DAMAGE MAY OCCUR !

CAUTION ! WHEN JUST ONE POWER SUPPLY IS USED, THE LOGIC AND MOTOR WIRES MUST HAVE DIFFERENT FUSES IN SERIES.

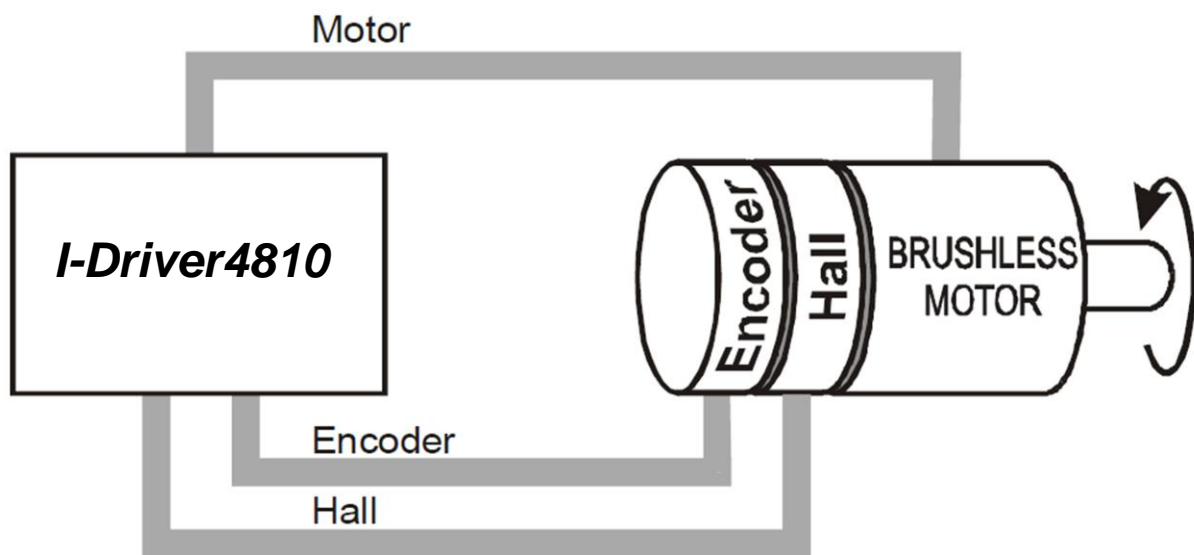
CAUTION ! THE FUSES MUST BE FITTED WITH SUITABLE PROTECTION AGAINST OVERLOAD AND SHORT-CIRCUITS.

2. Key Features

- 2 channel quadrature TTL with index encoder interface
- Hall sensor interface (TTL levels 5V)
- 5 Input-lines (24V positive logic)
- 3 output lines (24V 200mA)
- STOP/RESET input (24V positive logic)
- RS-232 serial interface (38400bps)
- CAN-Bus 2.0B 500Kbit/s
- 2K E2ROM to store controller data
- Nominal PWM switching frequency: 20 kHz
- Nominal update frequency for speed/position loop: 2.5 kHz
- Logic power supply: 24 VDC
- Motor power supply: 12-48 V; 5 A; 16 A PEAK
- Minimal load inductance 200 micro Henry
- Operating ambient temperature: 0-40°C

3. Supported Motor-Sensor Configuration

- Brushless motor

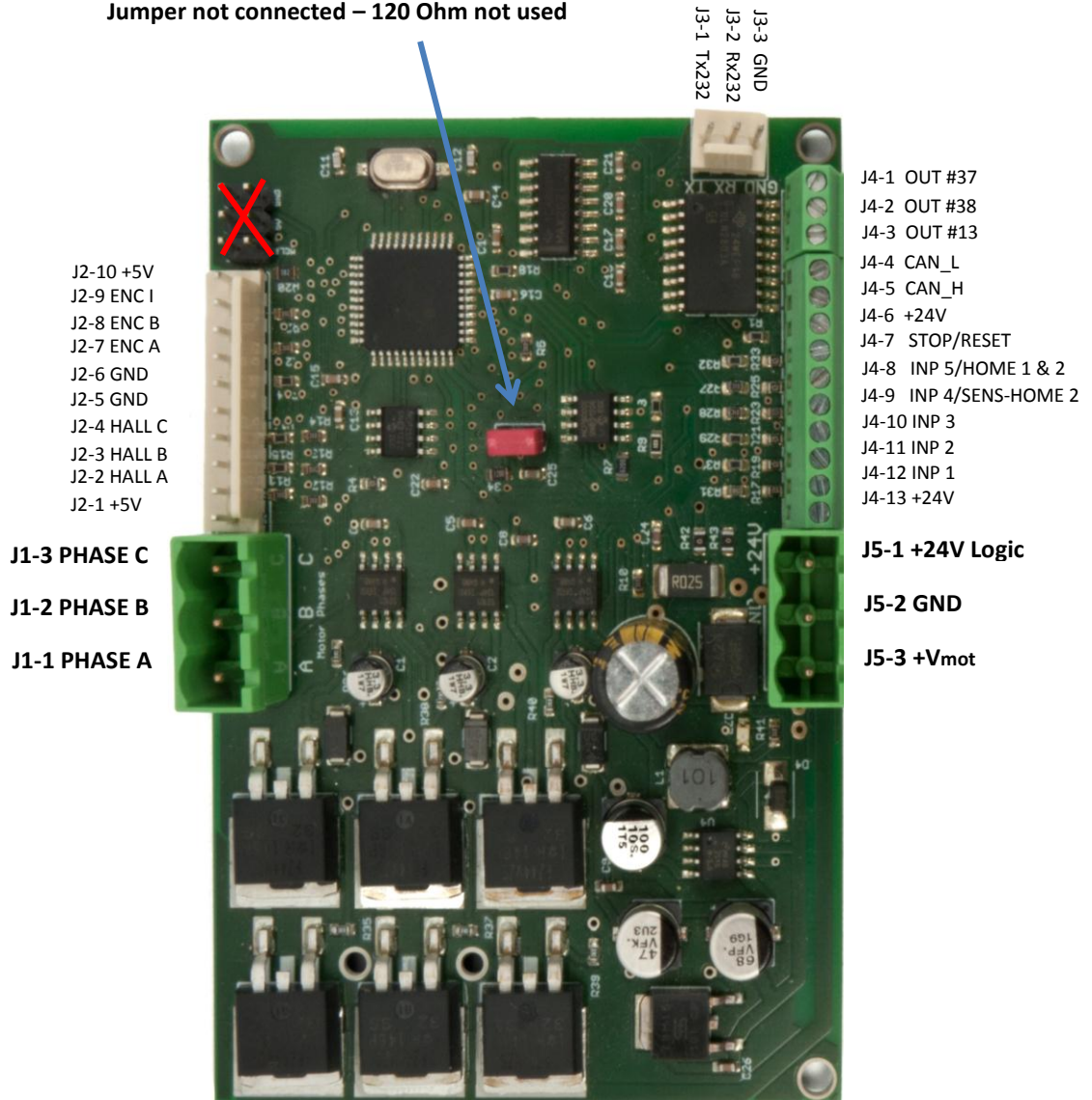


4. Driver Picture

I-Driver4810

Jumper connected – 120 Ohm CAN-Bus termination

Jumper not connected – 120 Ohm not used



5. Connectors and Connection Diagrams

5.1. Connector pins description

5.1.1. J1 connector

Pin	Pin Name	Type	Function / Alternate function / Comments
1	A	Out	Phase A for Brushless Motors
2	B	Out	Phase B for Brushless Motors
3	C	Out	Phase C for Brushless Motors

5.1.2. J2 connector

Pin	Pin Name	Type	Function / Alternate function / Comments
1	+5V	Out	+5V; 300mA
2	HALL A	In	Hall A signal in TTL levels (5V)
3	HALL B	In	Hall B signal in TTL levels (5V)
4	HALL C	In	Hall C signal in TLL levels (5V)
5	GND	X	Ground
6	GND	X	Ground
7	ENC A	In	Encoder signal A TTL levels (5V)
8	ENC B	In	Encoder signal B TTL levels (5V)
9	ENC I	In	Encoder signal Index TTL levels (5V)
10	+5V	Out	+5V; 300mA

5.1.3. J3 connector

Pin	Pin Name	Type	Function / Alternate function / Comments
1	Tx232	Out	RS-232 Data Transmission
2	Rx232	In	RS-232 Data Reception
3	GND	X	Ground

5.1.4. J4 connector

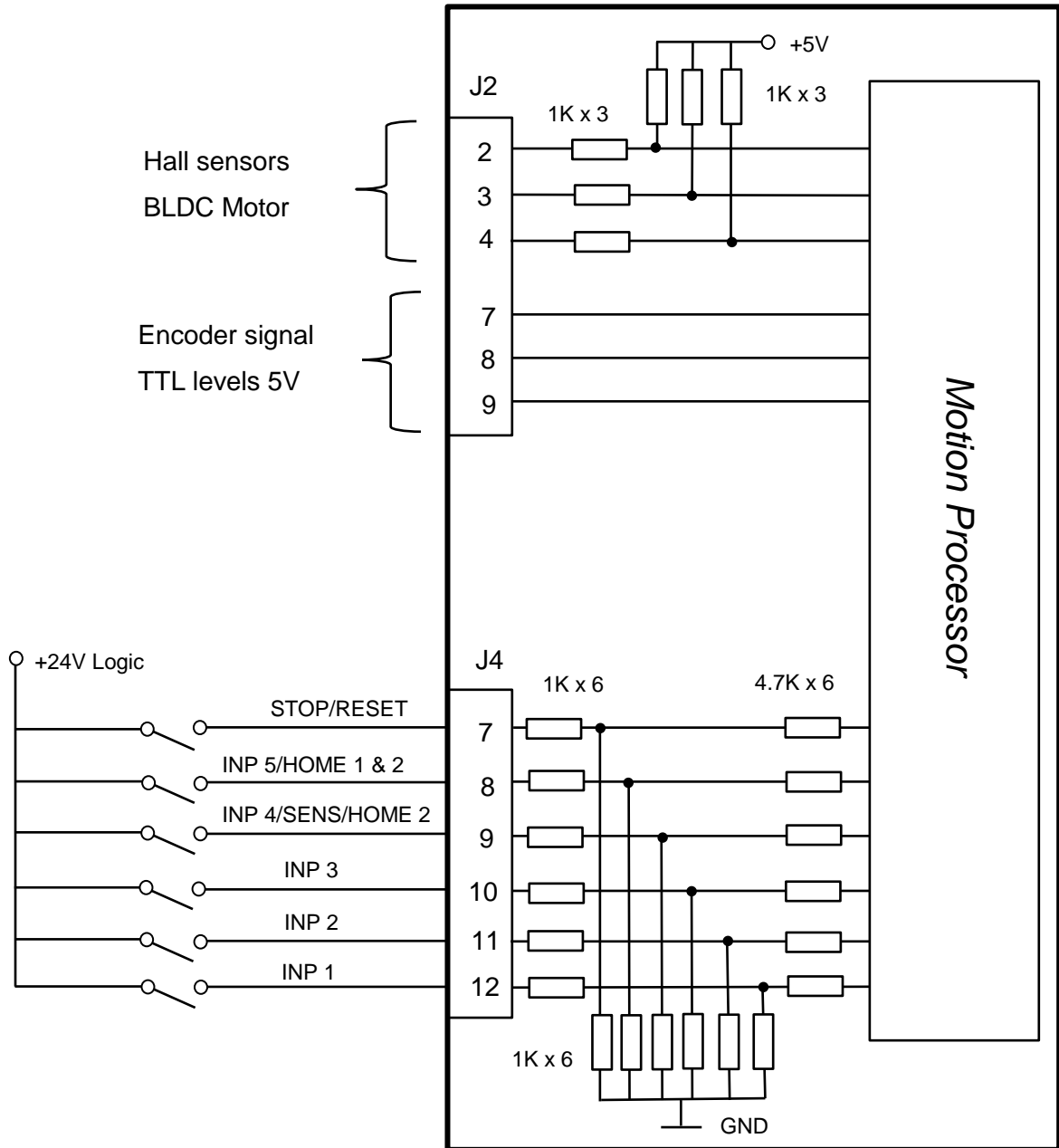
Pin	Pin Name	Type	Function / Alternate function / Comments
1	OUT #37	Out	GPIO 24V; 200mA driver
2	OUT #38	Out	GPIO 24V; 200mA driver
3	OUT #13	Out	GPIO 24V; 200mA driver
4	CAN_L	I/O	CAN-Bus negative line (negative during dominant bit)
5	CAN_H	I/O	CAN-Bus positive line (negative during dominant bit)
6	+24V	Out	+24V
8	INP 5/HOME 1 & 2	In	Input 24V Positive Logic
9	INP 4/SENS/HOME 2	In	Input 24V Positive Logic
10	INP 3	In	Input 24V Positive Logic
11	INP 2	In	Input 24V Positive Logic
12	INP 1	In	Input 24V Positive Logic
13	+24V	Out	+24V

5.1.5. J5 connector

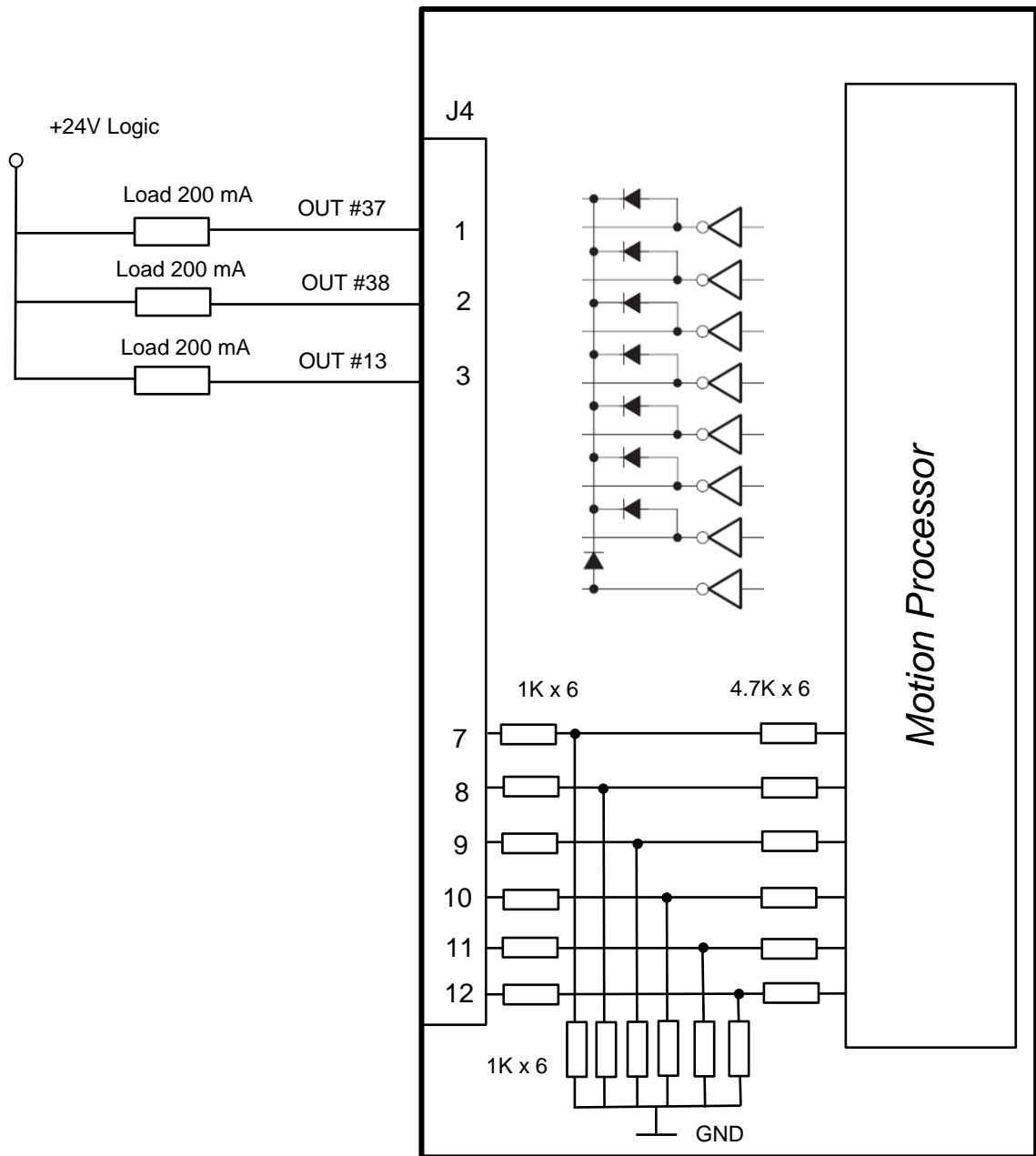
Pin	Pin Name	Type	Function / Alternate function / Comments
1	+24 Logic	Out	Positive terminal of the logic supply: 24 VDC
2	GND	X	Ground
3	+Vmot	X	Positive terminal of the motor supply: 12 to 48VDC

5.2. Digital 24V GPIO connection

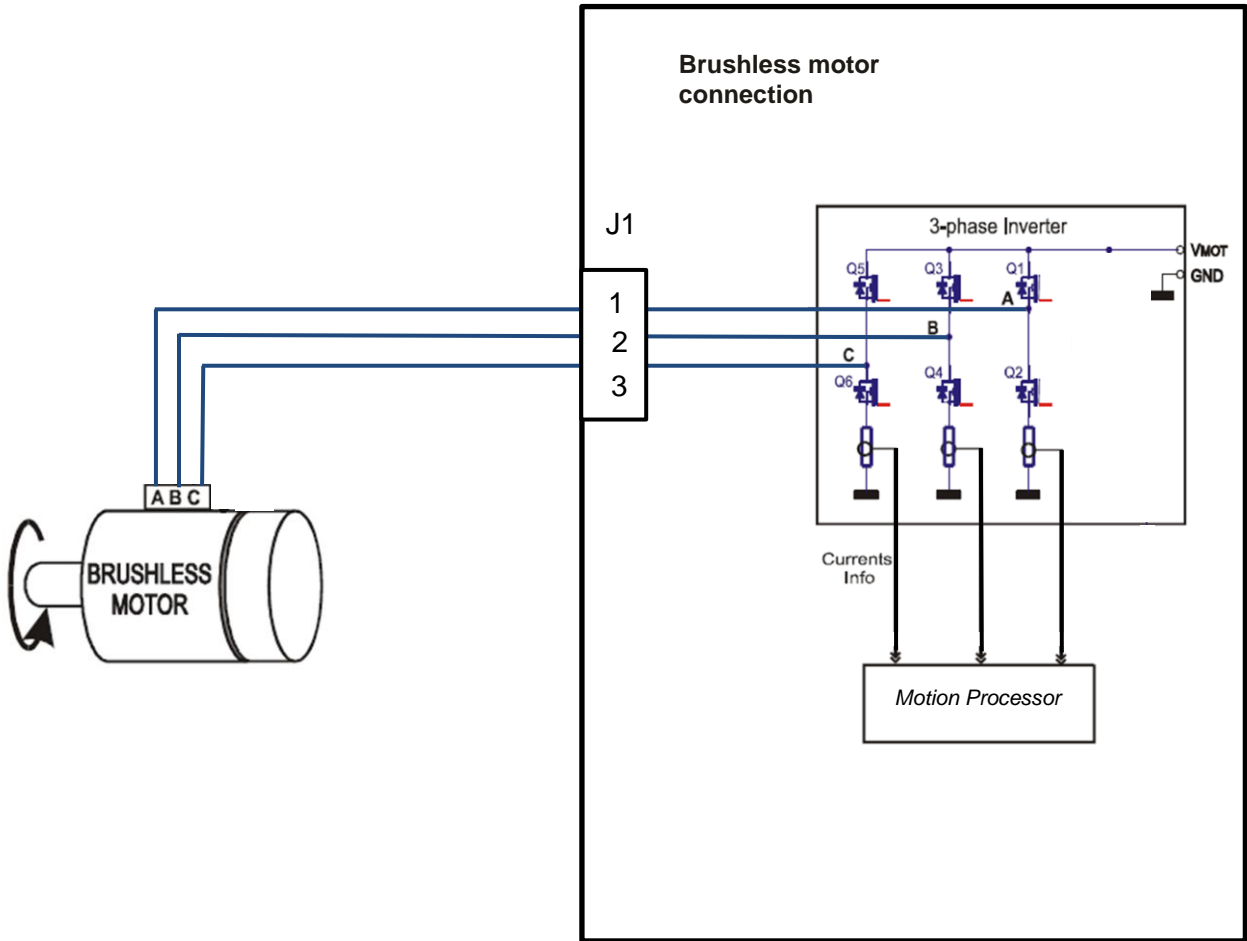
5.2.1. Digital inputs connection



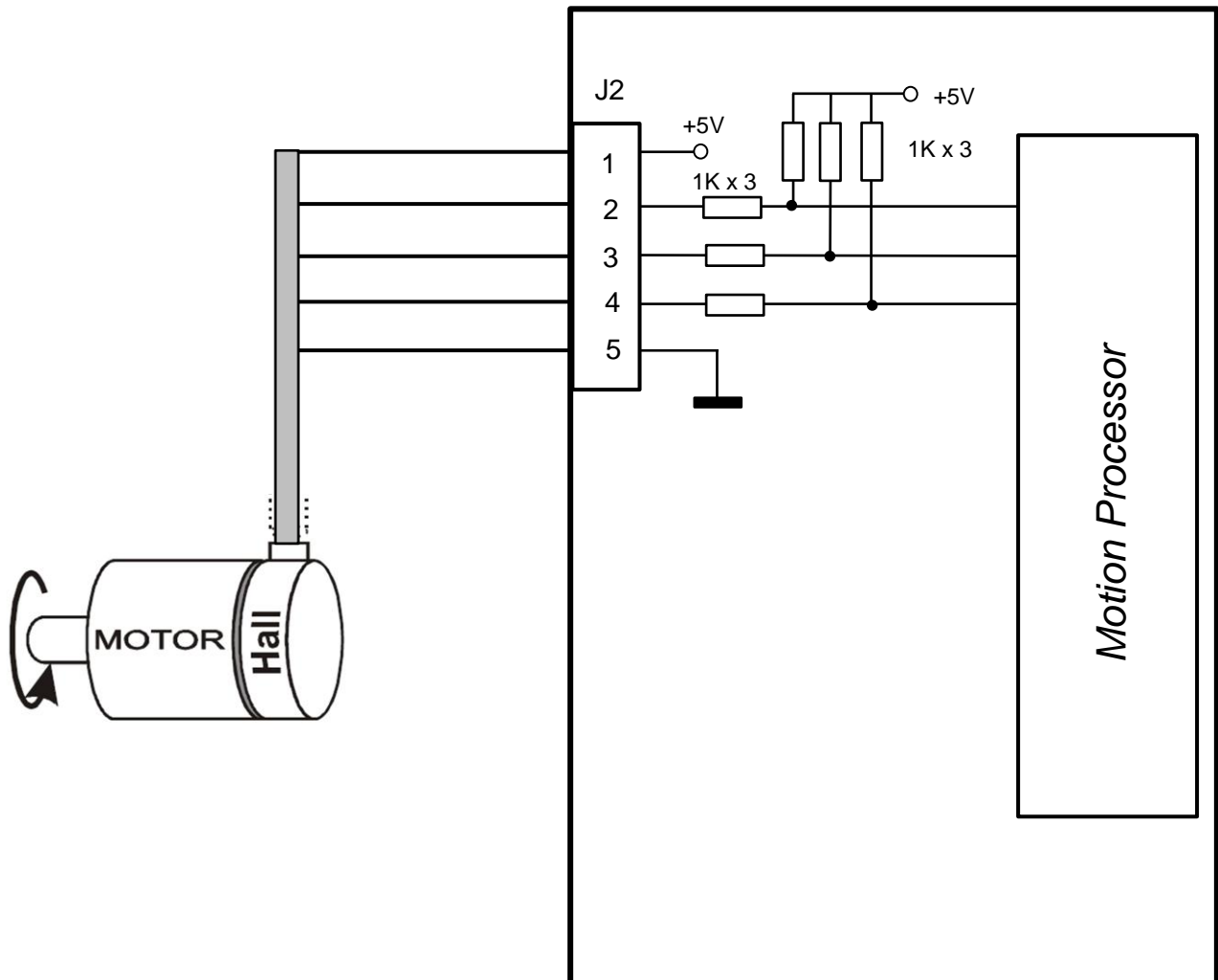
5.2.2. Digital outputs connection



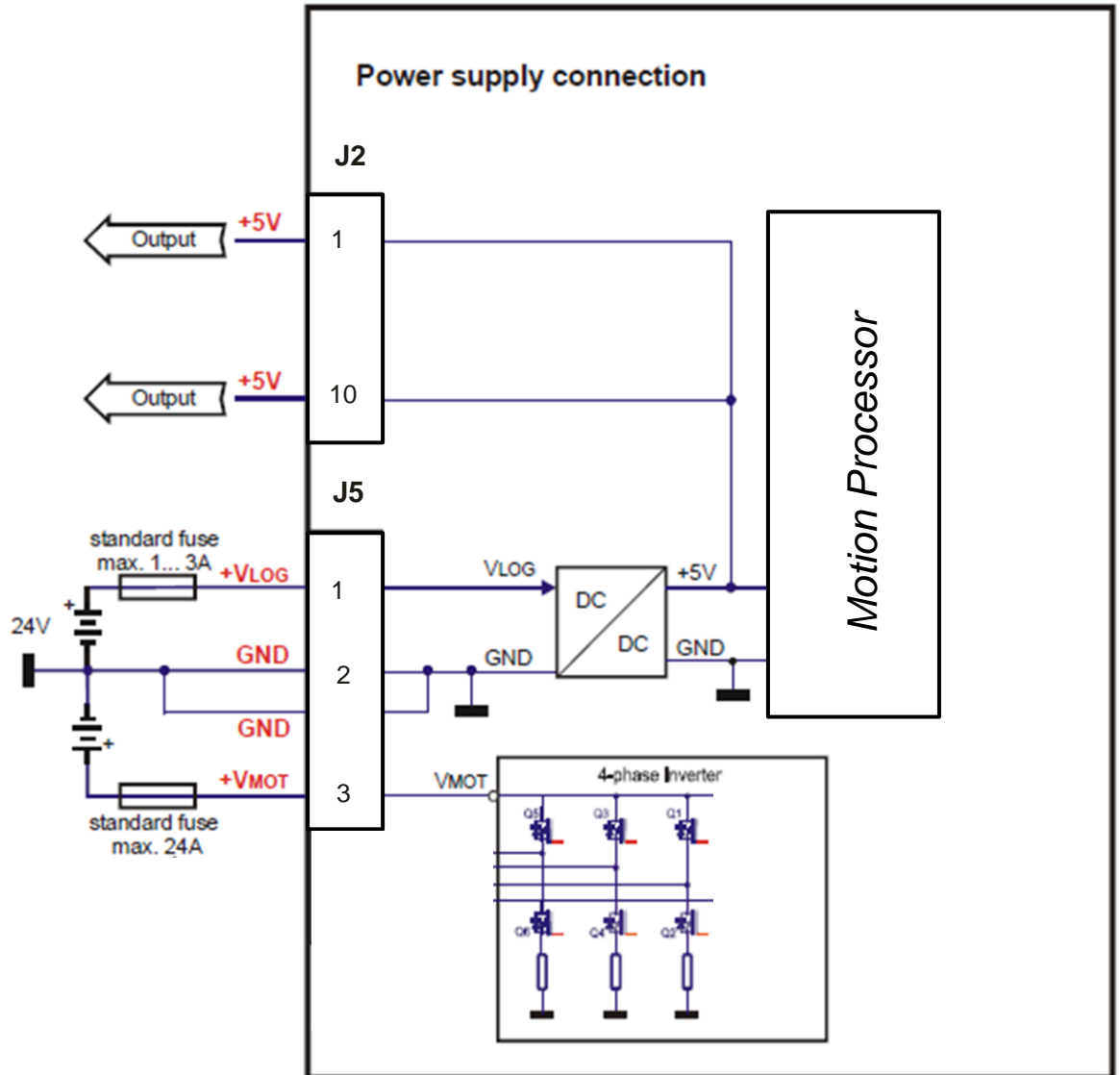
5.3. Brushless Motor connection



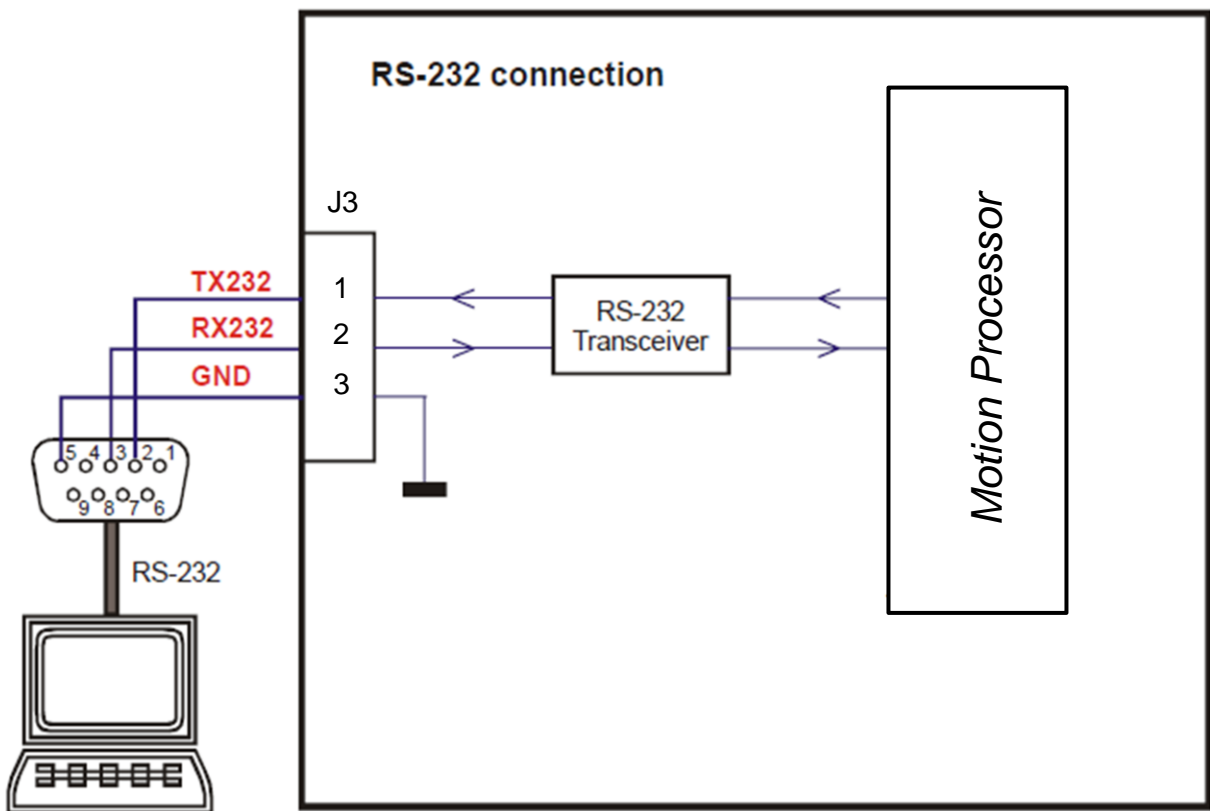
5.4. Hall connection



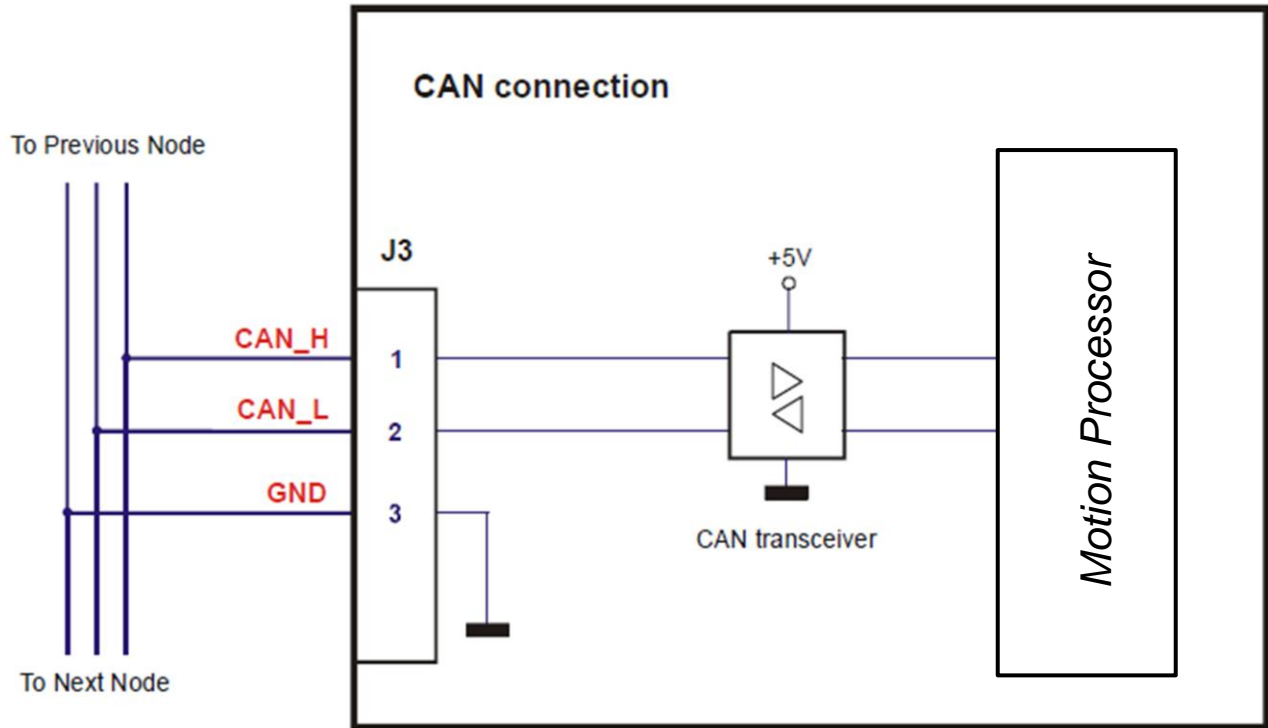
5.5. Supply connection



5.6. Serial RS-232 connection



5.7. CAN connection



Note1: The CAN network requires a 120-Ohm terminator. This resistor is included on board and it can be activated through a jumper.

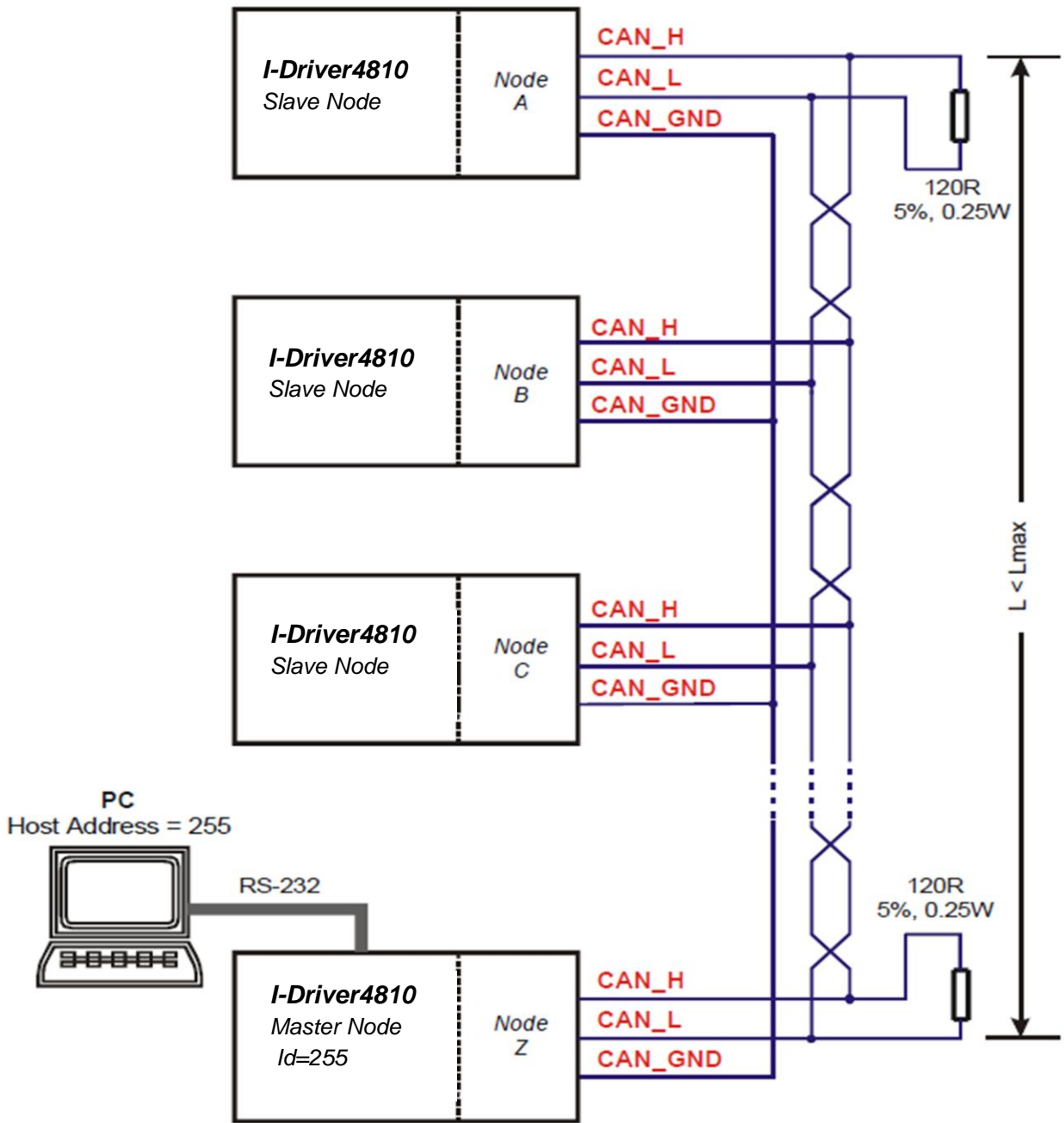
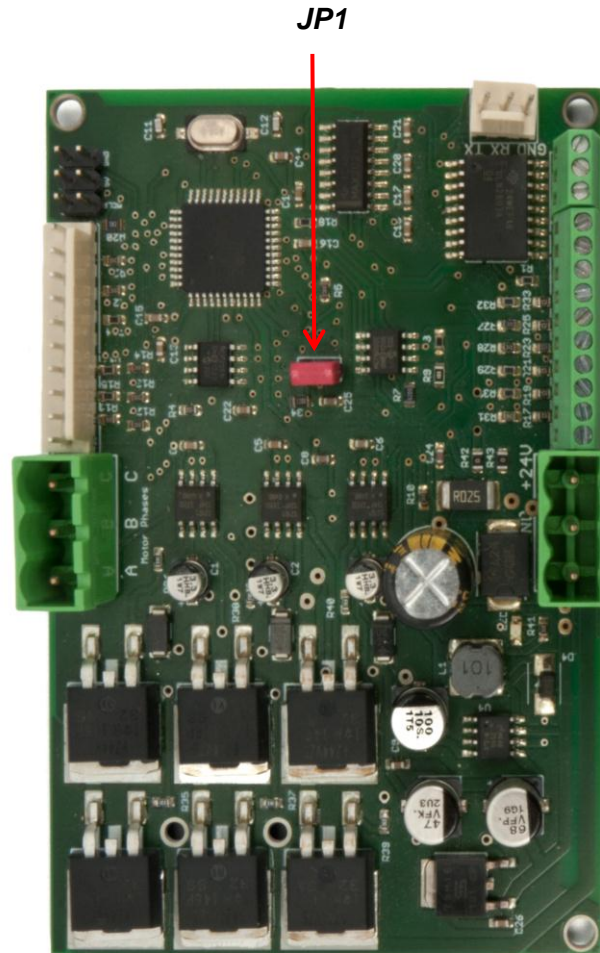


Figure 5.1. Multiple-Axis CAN network

5.8. Jumpers configuration



Jumper Configurations

JP1	Description
OPEN	CAN-Bus terminator 120 Ohm resistor is not connected
SHORT	CAN-Bus terminator 120 Ohm resistor is connected

6. Electrical Specifications

Electrical characteristics:

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

- Tamb = 25°C, logic supply (VLOG) = 24 VDC, motor supply (VMOT) = 48VDC (I-Driver4810);
- Supplies start-up / shutdown sequence: *-any-* ;
- Load current 4 ARMS .

Logic Supply Input

Measured between +V _{LOG} and GND.		Min.	Typ.	Max.	Units
Supply voltage	Nominal values	12	24	30	V _{DC}
	Absolute maximum values, continuous †	-0.5		35	V _{DC}
Supply current	Normal operation		70		mA

Motor Supply Input

Measured between +V _{MOT} and GND.		Min.	Typ.	Max.	Units
Supply voltage I-Driver4810	Nominal values, including ripple & braking-induced over-voltage up to ±15%	12		48	V _{DC}
	Absolute maximum values, continuous	0		54	V _{DC}
	Absolute maximum values, surge † (duration ≤ 10mS)	-0.5		60	V
Supply current	Idle		0.5	1	mA
	Operating	-16.5	±5	+16.5	A

Motor Outputs

All voltages referenced to GND.		Min.	Typ.	Max.	Units
Motor output current	Continuous operation	-5		+5	A _{RMS}
Motor output current, peak		-16.5		+16.5	A
Short-circuit protection threshold		Programmable			
Short-circuit protection delay		Programmable			
On-state voltage drop	Output current = ±5A	-800	±150	+250	mV
Off-state leakage current		-1	±0.1	+1	mA
Motor inductance	F _{PWM} = 20kHz, +V _{MOT} = 12V	50			μH
	F _{PWM} = 20kHz, +V _{MOT} = 48V	200			μH

24 V Digital Inputs

All voltages referenced to GND.		Min.	Typ.	Max.	Units
Input voltage	Logic "LOW"	-0.5	0	5	V
	Logic "HIGH"	14	24	30	
	Absolute maximum, surge (duration ≤ 1S) †	-12		+48	
Input current	Logic "HIGH"; Internal pull-up to +5V	0	0	0	mA
	Logic "LOW"	4	5	6	

24V digital Outputs

All voltages referenced to GND.		Min.	Typ.	Max.	Units
Output voltage	Logic "HIGH"; +V _{LOG} = 24V _{DC} ; External load = 330Ω	22	23	24.5	V
	Absolute maximum, surge (duration ≤ 1S) †	-0.5	0	V _{LOG} +0.5	
Output current	Logic "HIGH"; [+V _{LOG} - V _{OUT}] ≤ 2V			80	mA
	Logic "LOW" (leakage crt.)		0.05	0.2	
	Absolute maximum, surge (duration ≤ 1S) †	-350		350	
ESD Protection	Human Body Model (100 pF, 1.5 kΩ)			±25	KV

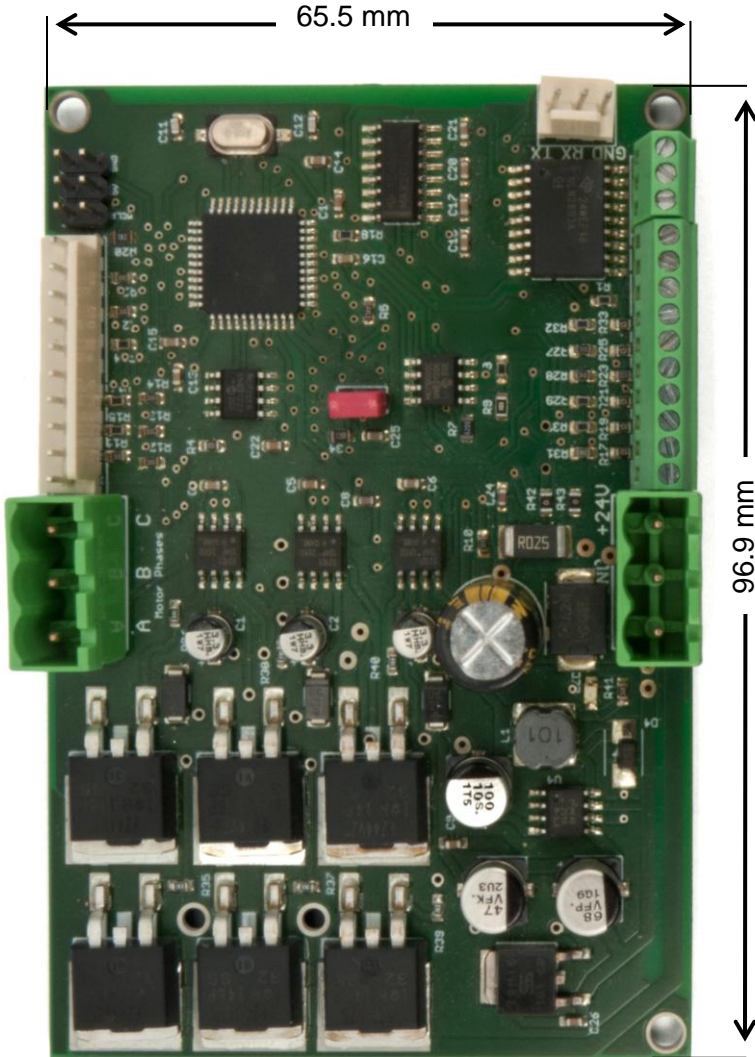
RS-232

		Min.	Typ.	Max.	Units
Standards compliance		TIA/EIA-232-C			
Bit rate	Depending on software settings	9600		115200	Baud
ESD Protection	Human Body Model (100pF, 1.5 K Ω)			± 15	KV
Input voltage	RX232 input	-25	-	+25	V
Output short-circuit withstand	TX232 output to GND	Guaranteed			

CAN-Bus

	All voltages referenced to GND	Min.	Typ.	Max.	Units
Standards compliance		CAN-Bus 2.0B error active; ISO 11898-2			
Recommended transmission line impedance	Measured at 1MHz	90	120	150	Ω
Bit rate	Depending on software settings	125K		1M	Baud
Number of network nodes	Depending on software settings			64	-
ESD Protection	Human Body Model			± 15	KV

7. I-Driver4810 Dimensions



8. Connector Type and Mating Connectors

Connectors	Manufacturer and part number	Details
J1	Phoenix Contact MSTBVA 2,5.08/ 3-G	Connector PCB 5.08mm 3-pol
J2	Molex KK 6410-10A 2.54	Connector PCB 2.54mm 10-pol
J3	Molex KK 6410-3A 2.54	Connector PCB 2.54mm 3-pol
J4	Phoenix Contact MPT 0,5/10-2,54 + Contact MPT 0,5/3-2,54	Connector PCB 2.54mm 13-pol
J5	Phoenix Contact MSTBVA 2,5.08/ 3-G	Connector PCB 5.08mm 3-pol