

Stepper motor Driver / Kann-K11a motor driver PCB Second Generation

KannMOTION series

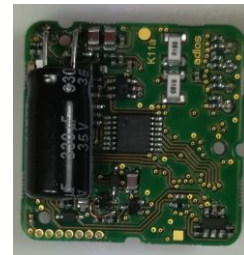
Product description

- Stepper motor driver for bipolar motors
- Integrated magnetic position encoder
- Motor drive up to 24V / 2.8A ¹⁾



Interfaces

- 1 digital inputs / with adjustable thresholds
- 1 analogue input (4-20mA)
- 1 analogue output (4-20mA)
- 1x RS232 – (TTL, 3V3 Logic Level) ³⁾



Benefits / Software

- Closed operation
- Build in PLC functions
- Variety of software functions
- Fully controllable over a terminal. Protocol is open and free to use
- Flexible configuration and programming via free KannMOTION Manager
- Updates, documents, tutorials and videos at www.KannMOTION.com

Technical data (Maximum ratings)

Rated supply voltage (motor drive & Logic)	12 to 30 VDC
Max. motor phase current ¹⁾	2.8 A
Ambient temperature range	-10 to +40°C
Connection interface	Molex CLIK-Mate Wire-to-Board Connectors 5023801000
Connection motor	JST 4 pole / B4B-EH
Position control accuracy	+/-1° ²⁾
Motor control mode	Micro stepping

Ordering information

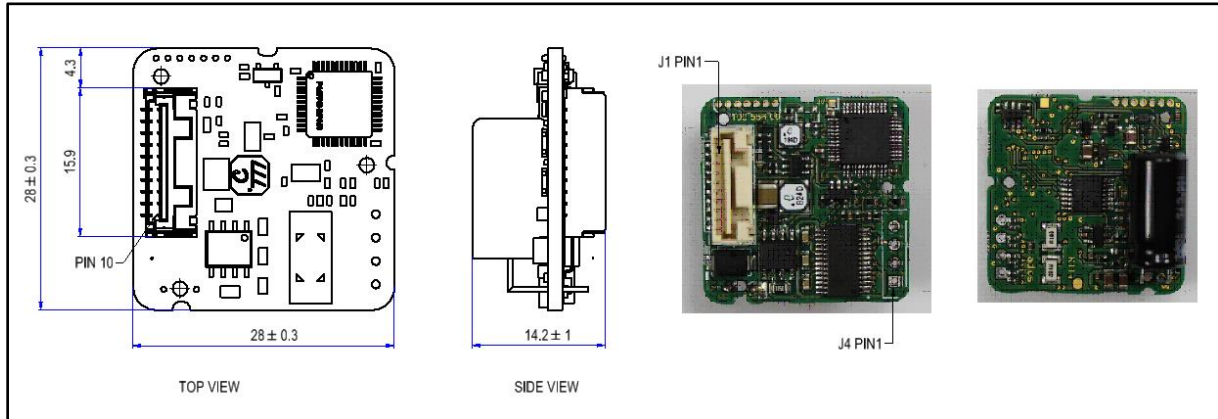
Part number	Description	Accessories
100 557. xxx	Kann-K11a motor driver PCB, 4-20mA Version, Standard	
NA	Molex CLIK-Mate Wire-to-Board Connectors 5023801000	x
100 534. xxx	USB-to RS232-TTL Converter, electrically isolated	x
NA	FTDI cable / TTL-232R-3V3-WE / USB to RS232-TTL	x

1) Might be limited in time, restricted by losses! <Chip temperature>, take care about PCB cooling depending on application

2) Depending on mechanical positioning of the magnet

3) Only for maintenance and setup use. Max cable length 10cm.

Dimensions (in mm)



Connection terminals J1

Pin	Description	Nominal	Absolute max	Comment
1	RTSin / Boot ³⁾	3.3V (0..3.3V)	3.5V	Update control input
2	R _x ³⁾	3.3V (0..3.3V)	3.5V	RS232 Receiver (input)
3	T _x ³⁾	3.3V (0..3.3V)	3.5V	RS232 Transmitter (output)
4	A_OUT	4-20mA	22mA	Analog output
5	DIn ⁴⁾	3.3V / 5V / 12V / 24V	30V	Thresholds defined in firmware
6	A_IN	4-20mA	22mA/30V	Analog input
7/8	GND	-	-	Reference
9/10	Vmot/Vin	12 / 24 VDC	30V	Supply motor drive

3) Only for maintenance and setup use. Max cable length 10cm.

4): See section software configuration of inputs

5) Hot-plug of J1 might destroy Analog output (see section proper use)

Connection terminals J4

Pin	Description	Comment
1	A-	Motor phase A+
2	A+	Motor phase A-
3	B+	Motor phase B+
4	B-	Motor phase B-

Software Configuration of Input Thresholds

Setting	V _{IH} (High level input voltage)	V _{IL} (Low level input voltage)
SPS_24V	>15.0	<5.0
SPS_12V	>7.5	<2.5
TTL_5V	>2.7	<1.5
TTL_3V3	>2.0	<1.0

EU-Declaration of Conformity

In the wiring to the KannMOTION, a ferrite with 200Ω impedance at 100MHz is needed to comply the EMC regulations. As a reference the Ferrite from Würth Elektronik 742 701 712 with two turns will be sufficient.

Proper use



Do not connect or disconnect motor during operation!

Motor cable and motor inductivity might lead to voltage spikes when the motor is disconnected / connected while energized. These voltage spikes might exceed voltage limits of the driver MOSFETs and might permanently damage them. Therefore, always switch off power supply before connecting / disconnecting the motor



Do not Powerup without GND connection Do not remove GND connection before Vin/Vmot

Switch on your supply only when you know, that GND is correctly connected. Do not remove GND while running, in both situations you risk a damage of your electronics.



Aout shall be connected with minimum output impedance of >50R

Direct connecting of Aout to GND (Amperemeter) might damage your output under some circumstances. Especially combined with 'hot-plug' or GND misconnection might damage Aout output circuit.



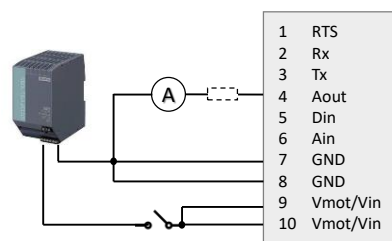
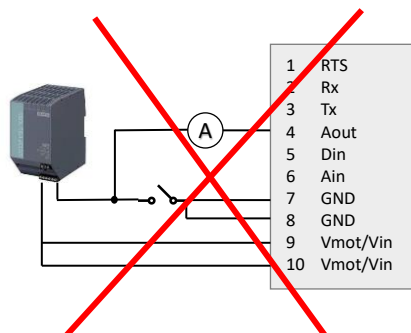
Keep the power supply voltage below the upper limit!

Otherwise the driver electronics will seriously be damaged! Especially, when the selected operating voltage is near the upper limit a regulated power supply is highly recommended.



Check your mechanical system, is it able to drive the motor, avoid motor being used as generator

Every motor could be operated as an voltage generator, so take care about generated voltage, this might damage your electronics by overvoltage. Add some voltage limiter units to keep supply voltage in range.



Tools, further documents

Adlos offers for its customers some helping and design-in tools.

Communication Description (100570)

Serial protocol description document, 100570.

KannMotion Manager tool (190081), manage your drives



KannMOTION Manager is the general tool for our generation 2 (GEN2) drives. This tool comes with an integrated C-coder and a visual drag and drop user interface for customizing your drive.

<https://kannmotion.adlos.com/download/kannmotionmanager/application/SetupKannMOTIONManager.zip>

ComWatch Communication Tool (190077), for Life values



ComWatch is a tool for engineers and technicians to explore device specific parameters, read out tracking data and settings and doing firmware updates.

The software is as it is, and in principle for free for adlos customers. The software is not made for a broad range of standard users, it's made in principle for technical engineers which are used in working with windows-based software. A minimum technical know-how is needed.

<https://kannmotion.adlos.com/download/comwatchtool/ComWatchSetup.zip>

KannMOTION API

Adlos offers a windows API (Library) to communicate with our drives. The API enables much shorter implementation of KannMOTION communication with your own Windows based toolset and application.

Part number	Short / level	Description	
190073	LEVEL1 API-LLL	Low Level Abstraction offers RD/WR functions to Com, organizes Checksum and protocol Itself	
190074	LEVEL2 API-HAL	Hardware abstraction offers data object modeling, means it will take care bout device specific XML-files	
190080	LEVEL3 API-BAL	Bus abstraction Offers bus data support like CAN	

Additional Documentation and important information

The document **Security Manual** (http://www.kannmotion.de/man_doc.php) specifies the intended use of the KannMOTION. It also has useful information related to all KannMOTION products and defines the laws and standard the KannMOTION is designed for and with. Please read this document carefully and comply with the information given in this document.

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