# The motion platform KannMOTION

Integrated stepper motor Kann23Hxxxx-K23c   **CANOPEN - NEMA 23 - Gen 2**

Product description

The Kann23Hxxx-K23c is a versatile high-power stepper motor with an integrated controller. It achieves ultra-smooth and quiet operation with up to 1/256 micro-stepping, optimizing efficiency with its standstill power-saving option. Safety features include stall detection, undervoltage detection, dual power inputs, overcurrent protection, and thermal shutdown. Its integrated magnetic position encoder serves as a single-turn absolute position sensor, and automatic position saving converts it into a multi-turn absolute system. Additionally, the integrated PLC enables various standalone applications.
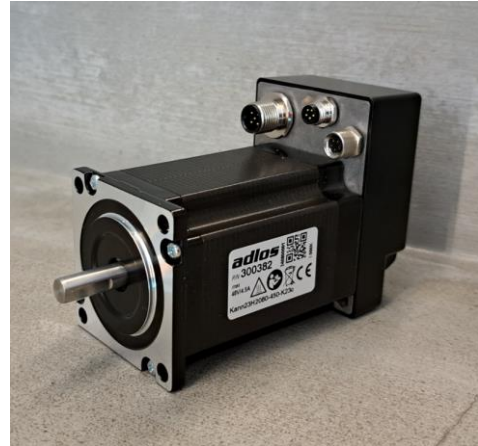
Interfaces

- CANOPEN CIA 301 & CIA402 – Link

Benefits / Software

- Closed loop operation
- Built in PLC functions
- Variety of software functions and error handling possibilities
- Fully controllable over CANopen
- Updates, documents, tutorials and videos at www.kannMOTION.com

Technical data (Maximum ratings)

Rated voltage (motor drive & Logic)	12 to 48 VDC ±10%
Rated current [1]	Pre-programmed / Up to 6A depending on motor
Ambient temperature range	-10°C to +40°C
Position control accuracy	Typ +/-1°[2]
Control mode	Multiple / Speed, position etc.
Microstepping levels	Up to 256

Connector

Connection J1 Power	M12, 5 pole, A-coded, Male
Connection J2 CANopen	M8, 5 pole, B-coded, Male
Connection J3 CANopen	M8, 5 pole, B-coded, Female

1) The maximum current is limited due to the maximum temperature caused by losses. Sufficient cooling is advised
2) Depending on mechanical positioning of the magnet

Dimensions (in mm)
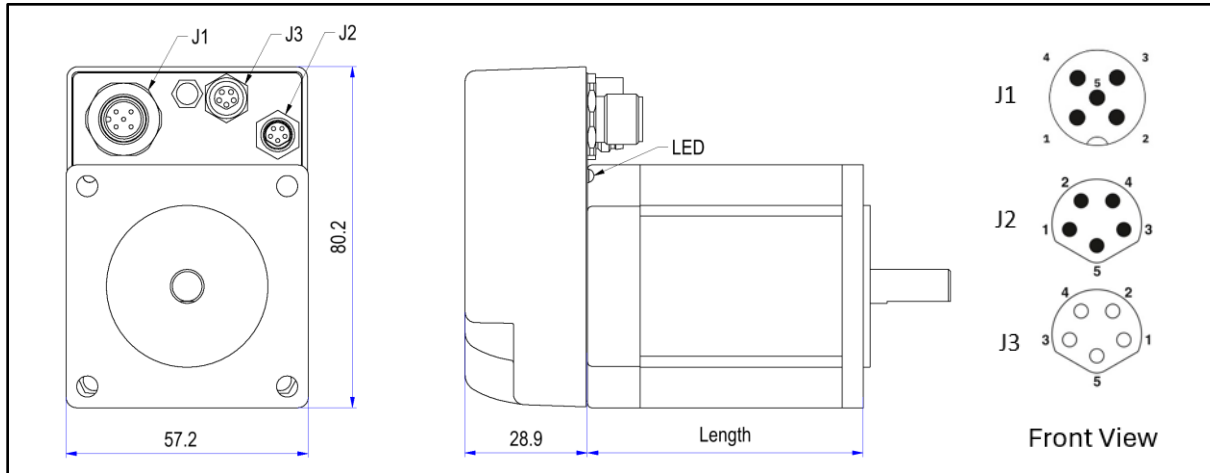
Ordering information

Part number	Description	Holding torque [Nm]	Length [mm]
300 381. xxx	Kann23H2055-280-K23c	1.2 Nm	55
300 382. xxx	Kann23H2080-450-K23c	2.2 Nm	80
300 383. xxx	Kann23H2101-450-K23c	2.8 Nm	101

Connection terminals J1

Pin	Description	Nominal	Absolute max	Comment
1	V_{motor} **+** [4]	24 / 48 VDC	54 VDC	Supply of motor drive (Power)
2	GND_{motor} [3] [4]	-	-	GND of motor drive (Power)
3	Out 1	GND..Vin Imax: 200mA	54 VDC	Short-circuit-proof
4	Din1	3.3V/ 5V / 12V / 24V / 48V	54 VDC	Thresholds defined in firmware
5	Din2			

Connection terminals J2+J3

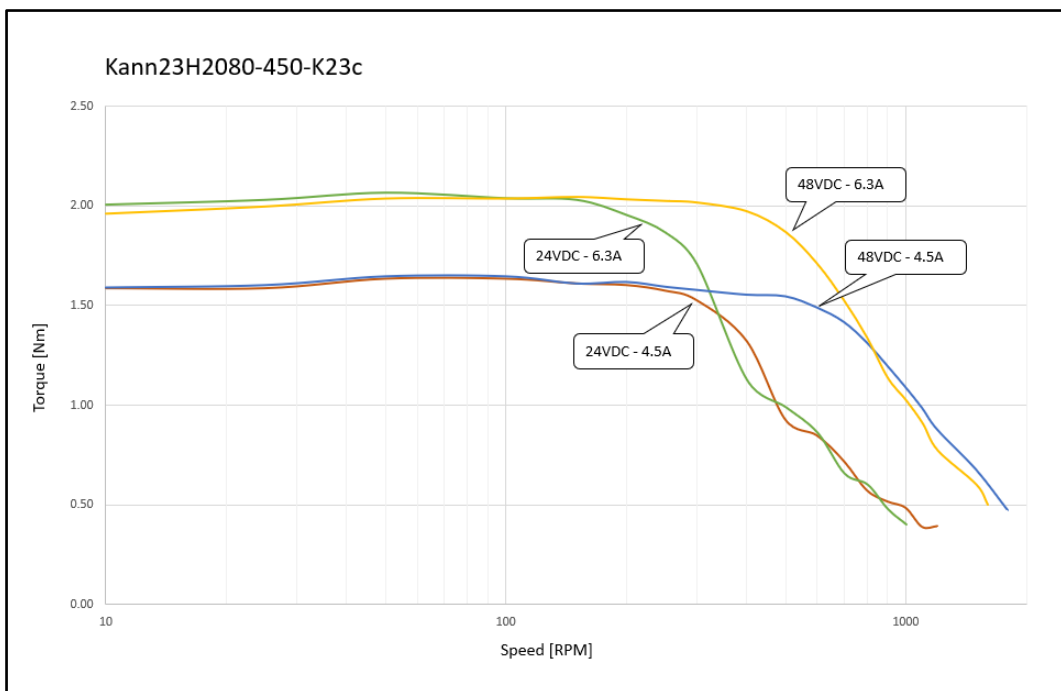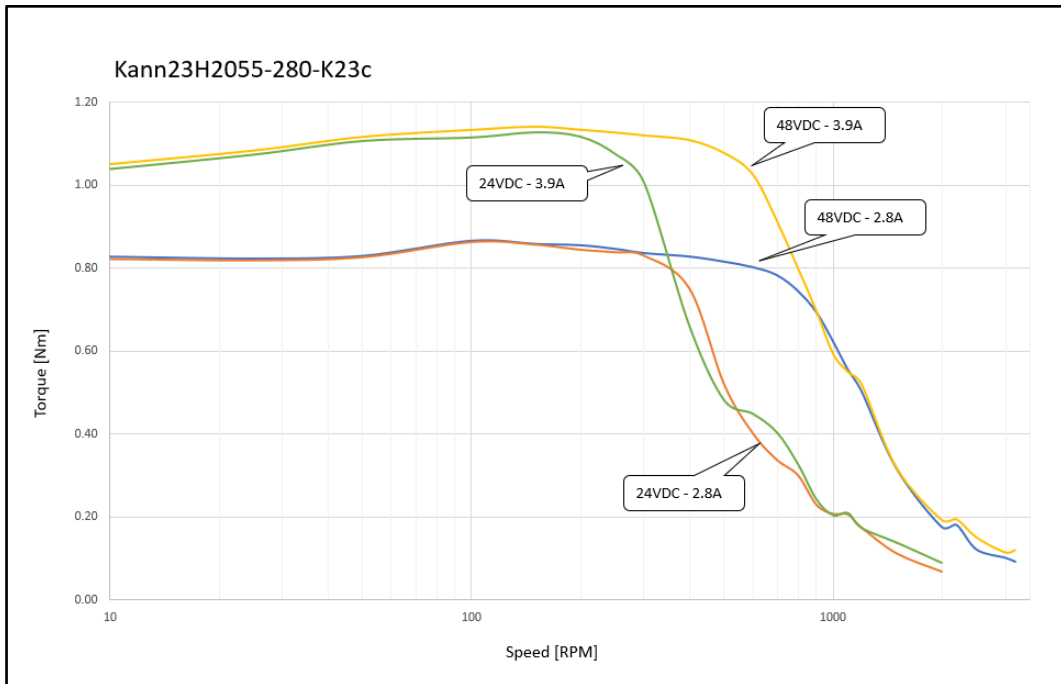| Pin	Description	Nominal	Absolute max	Comment
1	V_{In} [5]	24 / 48 VDC	54 VDC	Supply of control circuit
2	NC	-	-	-
3	CAN High	-	± 24VDC [6]	CAN Bus Signal, not terminated
4	CAN Low	-	± 24VDC [6]	CAN Bus Signal, not terminated
5	GND [3]	-	-	CAN Communication Ground

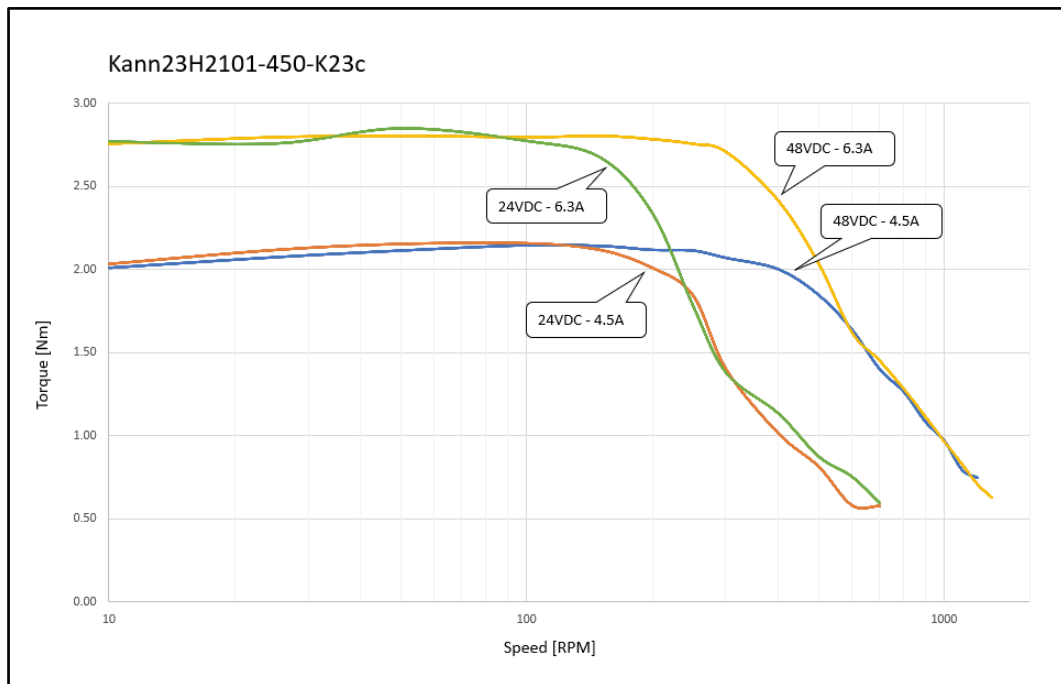Note 3: All ground connections (GNDs) are internally connected.
Note 4: The sizing for the cable should align with the motor current.
Note 5: Please note that the Vin only needs to be connected once, as the Vin pins are internally connected.
Note 6: The maximum differential voltage between CAN-High and CAN-Low is ±24V.

Torque Performance Curves

Kann23H2055-280-K23c

Kann23H2080-450-K23c

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Kann23H2101-450-K23c

Tools, further documents

Adlos provides its customers with supportive tools and resources for design integration.

Communication Description (100570)

Document on Serial Protocol Description, reference number 100570.

KannMotion Manager tool (190081), manage your drives

The KannMOTION Manager serves as the comprehensive software suite for our Generation 2 (GEN2) drives, featuring an integrated C-coder alongside a user-friendly visual drag-and-drop interface for personalized drive customization. Access to the tool is available in the download section. https://www.kannmotion.com/en/downloads/

ComWatch Communication Tool (190077), for Life values
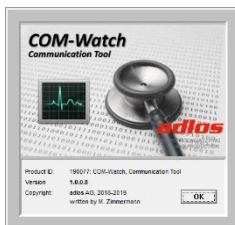
ComWatch is a free, specialized tool for engineers and technicians to check device details, get tracking data and settings, and update firmware. It's designed for kannMOTION customers and best for those familiar with Windows software. Users should have some technical knowledge.

For access, please refer to the download section.
https://www.kannmotion.com/en/downloads/

Additional Documentation and important information

The document Security Manual KannMOTION (you find the document in the download section of https://www.kannmotion.com/en/downloads/ 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.

Proper use

Do not connect or disconnect motor during operation

The motor cable and motor inductance might lead to voltage spikes when the motor is disconnected or connected while energized. These voltage spikes could exceed the voltage limits of the driver MOSFETs and may permanently damage them. Therefore, always disconnect the power supply before connecting or disconnecting the motor.

Ensure the power supply voltage remains below the upper limit

If the supply voltage exceeds the upper limit, the driver electronics can be seriously damaged. Especially when operating near the upper voltage limit, using a regulated power supply is strongly recommended.

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

Every motor can operate as a voltage generator; therefore, be mindful of the generated voltage, as this might damage your electronics through overvoltage. Incorporate voltage limiter units to maintain the supply voltage within the acceptable range.

Back-EMF

Back-EMF occurs when a motor rapidly decelerates, acting like a generator and sending a reverse current back to the power source. If the power source cannot absorb this surplus current, it could damage the motor's power supply and output pins. To prevent such damage, it is crucial to incorporate back-EMF considerations into the system's design.

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

Only switch on your supply when you are certain that GND is correctly connected. Do not remove GND while the system is running; in both situations, you risk damaging your electronics.

Aout shall be connected with minimum output impedance of 50 Ω

Aout must be connected with a minimum output impedance of over 50Ω to ensure safe operation. Directly connecting Aout to GND, especially when combined with 'hot-plugging' or incorrect GND connections, can damage the output under certain conditions. To prevent damage to the Aout output circuit, maintaining an impedance of at least 50Ω on the analog output is crucial.

Wiring Materials / Fuse

Use a wire size appropriate for the rated output current of the Power Supply. Extra caution is necessary if the output current from one Power Supply is distributed among multiple loads, as the Power Supply's overload protection circuit may not function properly in such cases. Therefore, incorporating a fuse in the line or other protective measures should be considered.

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