

## Integrated stepper motor Kann23Hxxxx-K23ex

RS485 - NEMA 23 - Gen 2

### Product description

The Kann23Hxxx-K23ex 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

- RS485
- Digital and analog IO's (Option)

### Benefits / Software

- Closed loop operation
- Built in PLC functions
- Variety of software functions and error handling possibilities
- Fully controllable over RS485
- Updates, documents, tutorials and videos at [www.KannMOTION.com](http://www.KannMOTION.com)

## Technical data (Maximum ratings)

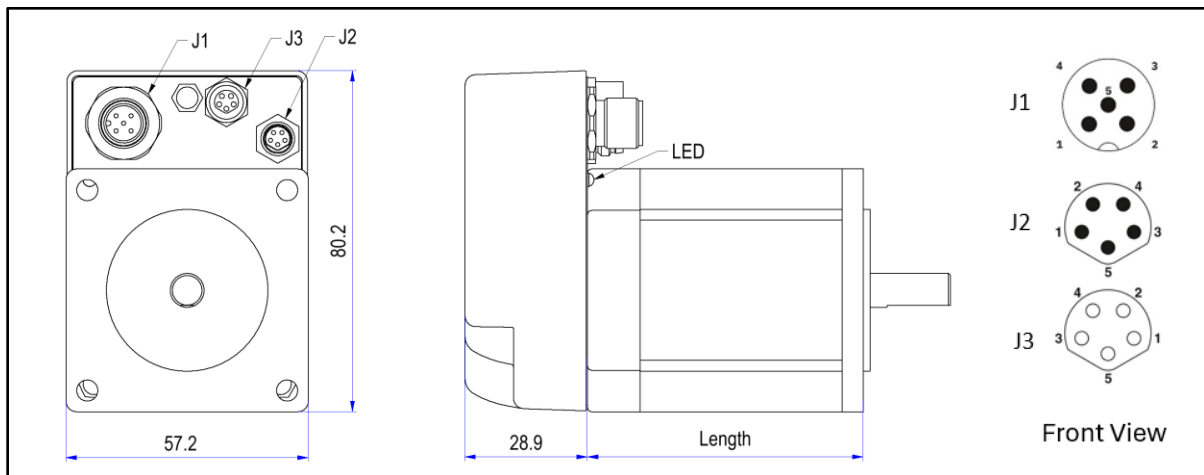
<b>Rated voltage (motor drive &amp; Logic)</b>	12 to 48 VDC $\pm 10\%$
<b>Rated current <sup>1)</sup></b>	Pre-programmed / Up to 6A depending on motor
<b>Ambient temperature range</b>	-10°C to +40°C
<b>Position control accuracy</b>	Typ $\pm 1^{\circ 2)}$
<b>Control mode</b>	Multiple / Speed, position etc.
<b>Microstepping levels</b>	Up to 256

## Connector

<b>Connection J1 Power</b>	M12, 5 pole, A-coded, Male
<b>Connection J2 RS485</b>	M8, 5 pole, B-coded, Male
<b>Connection J3 Analog and digital IOs</b>	M8, 8 pole, A-coded, Female      Version IO (Input & Output)
<b>Connection J3 RS485</b>	M8, 5 pole, B-coded, Female      Version RS485 In-Out

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) – RS485 IN-Out Version



## Ordering information – RS485 IN-Out Version

Part number	Description	Holding torque [Nm]	Length [mm]
300 553. xxx	Kann23H2055-280-K23e1	1.2 Nm	55
300 554. xxx	Kann23H2080-450-K23e1	2.2 Nm	80
300 555. xxx	Kann23H2101-450-K23e1	2.8 Nm	101

## Connection terminals J1 – RS485 IN-Out Version

Pin	Description	Nominal	Absolute max	Comment
1	$V_{\text{motor}} + ^{4)}$	24 / 48 VDC	55 VDC	Supply of motor drive (Power)
2	$\text{GND}_{\text{motor}} ^{3) 4)}$	-	-	GND of motor drive (Power)
3	NC	-	-	-
4	NC	-	-	-
5	NC	-	-	-

## Connection terminals J2+J3 – RS485 IN-Out Version

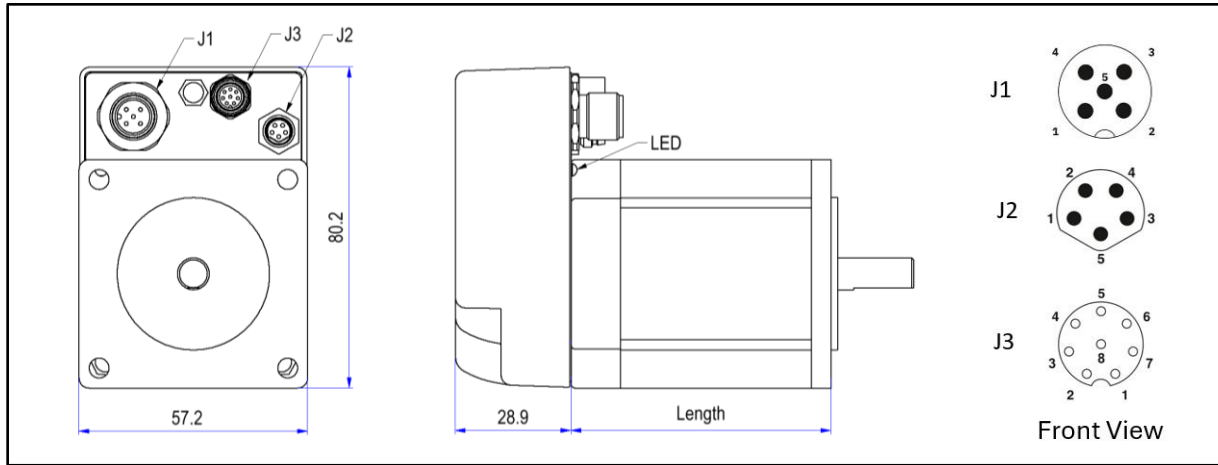
Pin	Description	Nominal	Absolute max	Comment
1	$V_{\text{in}} ^{5)}$	24 / 48 VDC	54 VDC	Supply of control circuit
2	NC	-	-	-
3	RS485-n	2.5 V	$\pm 6\text{V}$	RS485 negative Line
4	RS485-p	2.5 V	$\pm 6\text{V}$	RS485 positive Line
5	$\text{GND} ^{3)}$	-	-	Communication Ground

Note 3: All ground connections (GNDs) are internally connected.

Note 4: The sizing for the cable should align with the motor current.

Note 5: The  $V_{\text{in}}$  requires only a single connection since the  $V_{\text{in}}$  pins are internally connected.

## Dimensions (in mm) – IO Version



## Ordering information – IO Version

Part number	Description	Holding torque [Nm]	Length [mm]
300 556. xxx	Kann23H2055-280-K23e2 - AI: 0-10VDC	1.2 Nm	55
300 557. xxx	Kann23H2080-450-K23e2 - AI: 0-10VDC	2.2 Nm	80
300 558. xxx	Kann23H2101-450-K23e2 - AI: 0-10VDC	2.8 Nm	101
300 559. xxx	Kann23H2055-280-K23e3 - AI: 4-20mA	1.2 Nm	55
300 560. xxx	Kann23H2080-450-K23e3 - AI: 4-20mA	2.2 Nm	80
300 561. xxx	Kann23H2101-450-K23e3 - AI: 4-20mA	2.8 Nm	101

## Connection terminals J1 – IO Version

Pin	Description	Nominal	Absolute max	Comment
1	$V_{\text{motor}} + ^{4)}$	24 / 48 VDC	54 VDC	Supply of motor drive (Power)
2	$\text{GND}_{\text{motor}} ^{3) 4)}$	-	-	GND of motor drive (Power)
3	NC	-	-	-
4	NC	-	-	-
5	NC	-	-	-

Note 3: All ground connections (GNDs) are internally connected.

Note 4: The sizing for the cable should align with the motor current.

## Connection terminals J2 – IO Version

Pin	Description	Nominal	Absolute max	Comment
1	$V_{\text{in}} ^{5)}$	24 / 48 VDC	54 VDC	Supply of control circuit
2	NC	-	-	-
3	RS485-n	2.5 V	$\pm 6\text{V}$	RS485 negative Line
4	RS485-p	2.5 V	$\pm 6\text{V}$	RS485 positive Line
5	$\text{GND} ^{3)}$	-	-	Communication Ground

### Connection terminals J3 - IO Version

Pin	Description	Nominal	Absolute max	Comment
1	V <sub>in</sub> <sup>5)</sup>	24 / 48 VDC	54 VDC	Supply of control circuit
2	GND	-	-	Reference
3	Out1	GND..Vin	54VDC	Short-circuit-proof
4	Out2	I <sub>max</sub> : 200mA		
5	A <sub>in</sub> <sup>6)</sup>	0..10V or 4-20mA	54V	Analog input
6	Din1	3.3V/ 5V / 12V / 24V / 48V	54V	Thresholds defined in firmware
7	Din2			
8	Din3			

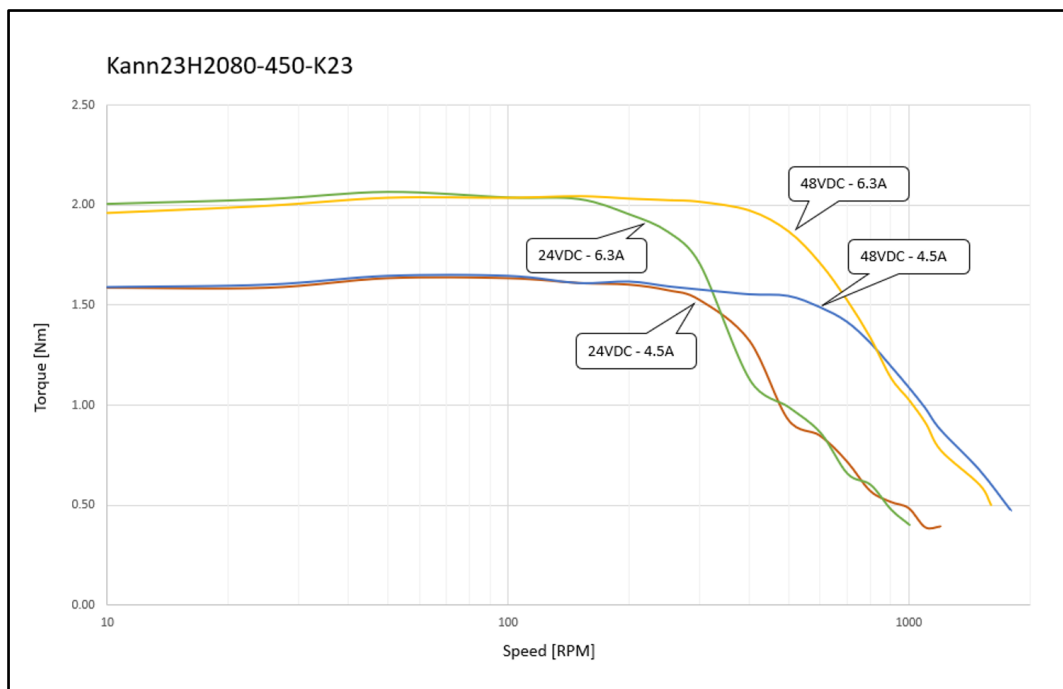
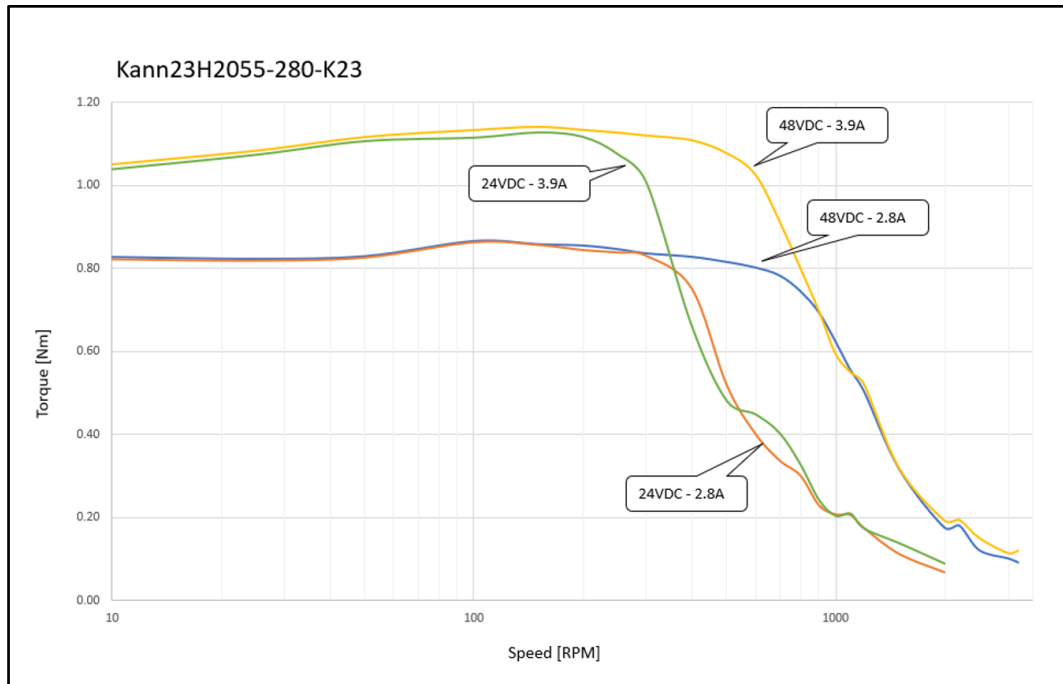
Note 3: All ground connections (GNDs) are internally connected.

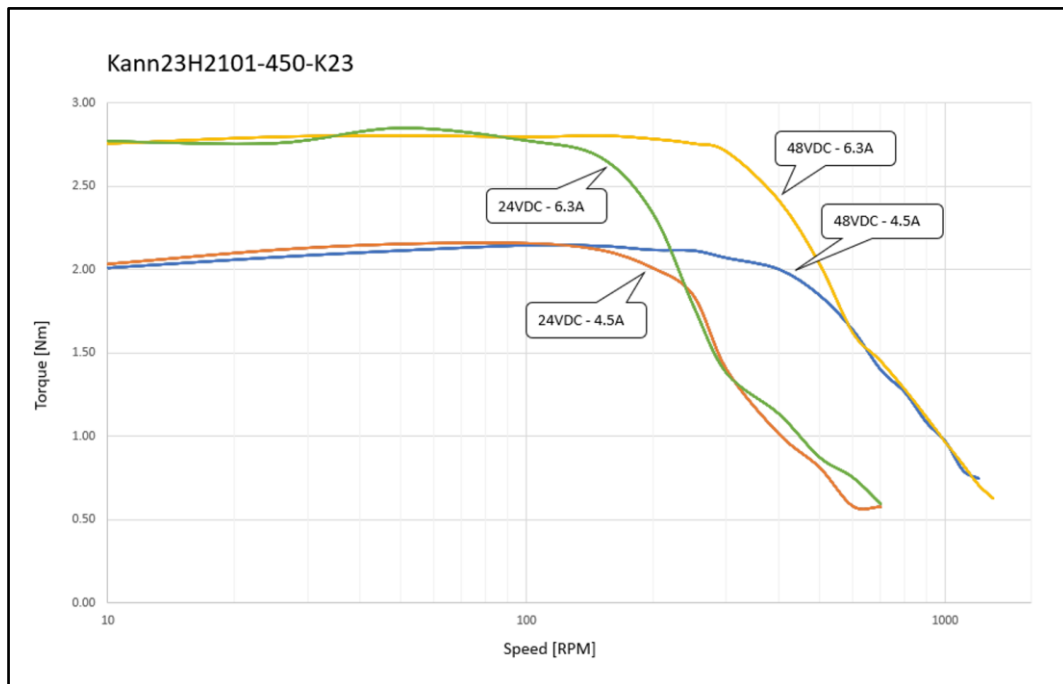
Note 4: The sizing for the cable should align with the motor current.

Note 5: The V<sub>in</sub> requires only a single connection since the V<sub>in</sub> pins are internally connected.

Note 6: Available in two versions, the analog input accepts either 4-20mA or 0-10V signals. Refer to the ordering information.

RS485 IO Version RS485 IO Version RS485 IO Version RS485 IO Version RS485 IO Version

**Torque Performance Curves**




## 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!**

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 disconnect power supply before connecting / disconnecting the motor



### **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 a 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.



### **Back-EMF**

When a motor rapidly decelerates, it behaves like a generator, sending a reverse current back to the power source due to back-EMF. If the power source lacks the capacity to absorb this surplus current, it could harm the motor's power supply and output pins. To prevent such damage, it's essential to incorporate considerations for back-EMF into the system's design.



### **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 50 $\Omega$**

Aout must be connected with a minimum output impedance exceeding 50  $\Omega$  to ensure safe operation. Direct connection of Aout to GND, particularly when combined with 'hot-plugging' or erroneous GND connections, poses a risk of damaging the output under certain scenarios. To avoid harm to the Aout output circuit, it is crucial to maintain an impedance of at least 50  $\Omega$  on the analog output.

## Contact information

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