

# M86SH80-Txx

HIGH TORQUE Bipolar Stepping motor - 1,8°



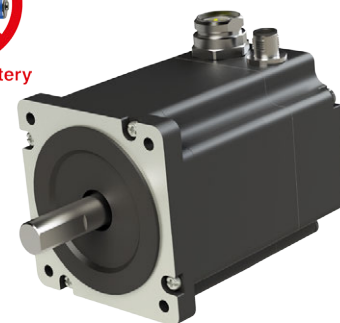
## Introduction

The M86SH80-Txx is a bipolar stepper motor with terminal-box, optionally equipped with a, incremental Push-Pull or Line-Driver incremental encoder, or a multiturn absolute encoder (WIEGAND technology, without battery).

The connection of the motor and the ecoder is made through M12 circular connectors.



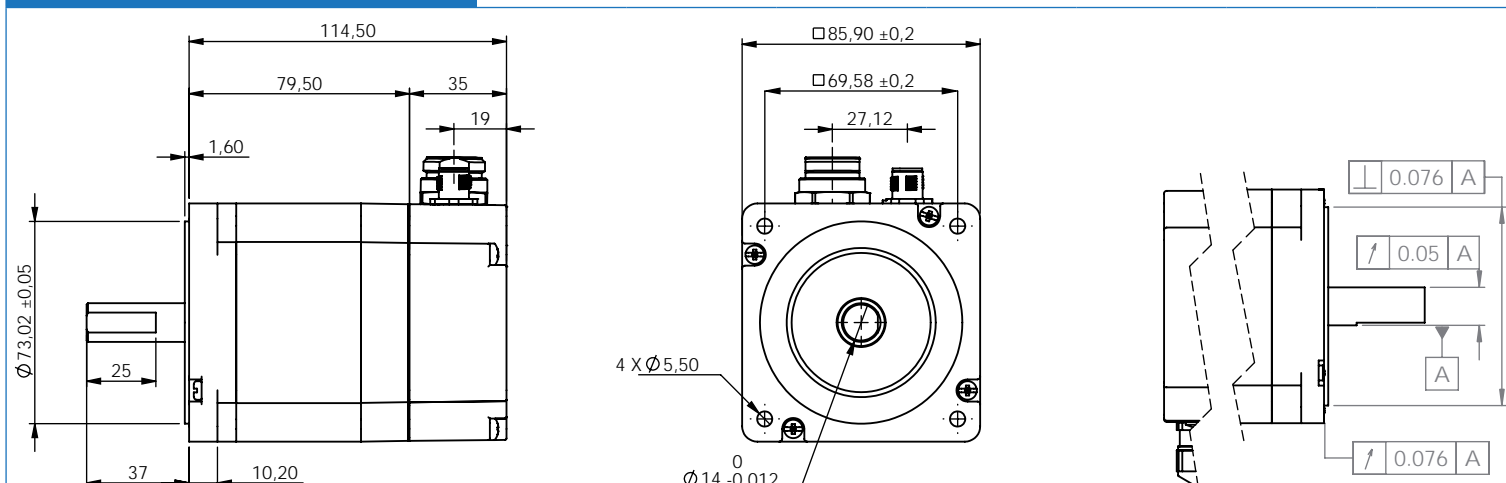
Without battery



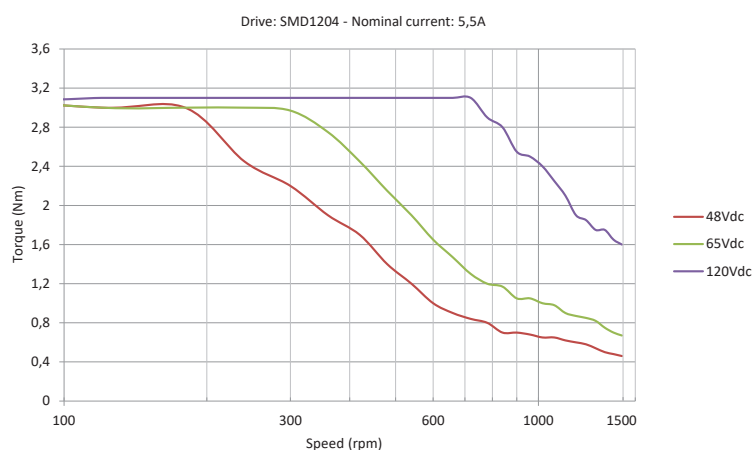
## Specifications

Model	Encoder	Current/ phase	Resistance/ phase	Inductance/ phase	Detent torque	Holding torque	Rotor inertia	Weight
M86SH80-T-C	-	5,5 A	0,42 $\Omega$	3,5 mH	130 mNm	4,6 Nm	1400 gcm <sup>2</sup>	2,3 Kg
M86SH80-TO0512P24C	Push-pull							
M86SH80-TO0512L05C	Line-driver							
M86SH80-TM1611S05C	SSI multiturn absolute							

## Mechanical dimensions



## Speed vs Torque curve



## Motor characteristics

Step Angle	1,8° ± 5%
Insulation Class	B
Ambient Temperature	-20 °C .. +50 °C
Temperature Rise	80°C max (2 phase ON)
Insulation Resistance	100 M $\Omega$ min 500Vdc
Dielectric Strength	820 VAC FOR ONE MINUTE
Shaft Radial Play	0,02mm (with 450g load)
Shaft Axial Play	0,08mm (with 450g load)
Max Radial Force	220N (20mm FROM FRONT FLANGE)
Max Axial Force	60 N max

## Caution

Insert and tighten firmly the connectors before powering the motor. **Never disconnect any connector when powered.** Installation and maintenance must be carried out by qualified technicians only. The operator must have detailed information to be able to carry out this work.

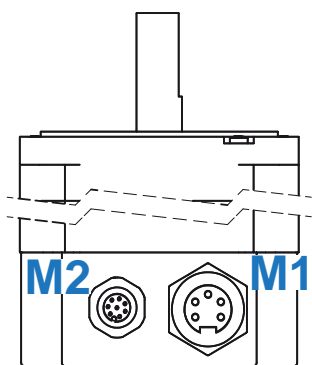
- Unexpected dangers may be encountered
- An incorrect use may destroy this product and the connected equipments.

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## Connectors layout



## Incremental encoders

	PUSH-PULL	LINE DRIVER
V <sub>SUPPLY</sub>	+24 VDC	+5 VDC
I <sub>MAX</sub> (NO LOAD)	80 mA	
I <sub>MAX</sub>	60 mA each channel	
F <sub>OUT MAX</sub>	300 KHz	
COUNT/REV	512	
PROTECTION DEGREE	IP54	
WORKING TEMPERATURE	-20 .. +80 °C	

## Absolute encoder

TYPE	SSI MULTITURN
V <sub>SUPPLY</sub>	+5 VDC
I <sub>MAX</sub>	100 mA
FRAME TOTAL LENGTH	35
INITIAL IGNORED BITS	8
MULTITURN RESOLUTION	16 BIT
SINGLE TURN RESOLUTION	11 BIT
ALIGNMENT	RIGHT
DATA CODING	BINARY
PROTECTION DEGREE	IP54
WORKING TEMPERATURE	-20 .. +80 °C

## Motor connector

M1	7/8" 5 Pin male		PIN	Description	Cable color matching	
			1	Phase A	BLACK	
			2	Phase A -	BLUE	
			3	GND	YEL/GRN	
			4	Phase B	BROWN	
			5	Phase B -	WHITE	

## Push-Pull encoder connector

M2	M12 5 Pin female		PIN	Description	Cable color matching	
			1	V <sub>IN</sub> (+24VDC)	BROWN	
			2	Channel A	WHITE	
			3	Common	BLUE	
			4	Channel B	BLACK	
			5	Channel Z	GREY	

## Line-Driver encoder connector

M2	M12 8 Pin male		PIN	Description	Cable color matching	
			1	Channel Z +	WHITE	
			2	V <sub>IN</sub> (+5VDC)	BROWN	
			3	Channel A +	GREEN	
			4	Channel A -	YELLOW	
			5	Channel B +	GREY	
			6	Channel B -	PINK	
			7	Common	BLUE	
			8	Channel Z -	RED	

## Absolute encoder connector

M2	M12 8 Pin Male		PIN	Description	Cable color matching	
			1	Common	WHITE	
			2	V <sub>IN</sub> (+5VDC)	BROWN	
			3	Clock +	GREEN	
			4	Clock -	YELOW	
			5	Data +	GREY	
			6	Data -	PINK	
			7	Preset	BLUE	
			8	Complement	RED	