

# Linear Stepper Motors

## Introducing: Advanced Performance Saia® ULE Series Linear Stepper Motors

### Features and Benefits

- Constant positioning force over full travel
- Compact design envelope
- NEMA 23 mounting flange
- Flexible design to accommodate many custom requirements

### Functional Advantages

- Unipolar or bipolar
- Position force to 400 N
- Strokes to 300 mm
- Flexible mounting

### Markets/Applications

- Valve controls
- Positioning and adjustment systems
- Handling systems for the automation industry



### Technical Data\*

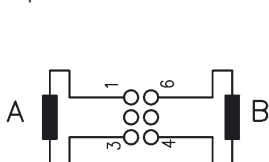
General Performance/ Mechanical Data	Dimensions	mm	Ø55 x 55
	Linear Travel Max	mm	Up to 300 (longer travels available upon request)
	Linear Travel Standard	mm	10
	Travel per Step	mm	0.031
	Thread Pitch	mm	1.5
	Speed	mm/s	6.25 @ 200 Hz
	Step Angle**	°	7.5
	Steps per mm		32
	Bearing System		ball bearing
	Duty Cycle		25% ... 100%
	Max. Force**	N	400
	Axial Play @ 20 N Force		0.3
	Max. Push/Pull Force*		
	25% Duty Cycle	N	400
100% Duty Cycle	N	205	
Electrical	Rated Voltage $U_N$	V	24
	Resistance per Winding $R_{20}$ ULE 1	$\Omega$	100
	Winding Temperature $T_{Max}$	°C	155
	Thermal Resistance at $f=0$ $R_{therm}$	K/W	8.7
Electrical Connection		lead wire (connectors available upon request)	

\*Data based on Bipolar models. Unipolar versions available upon request.

\*\* Performance depends on coil winding, frequency and life time requirement.

### Circuit Diagram

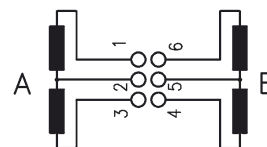
Bipolar



	0	I	II	III	IV
1	+	+	-	-	+
3	-	-	+	+	-
4	-	+	+	-	-
6	+	-	-	+	+

→ Pull (in)  
← Push (out)

Unipolar

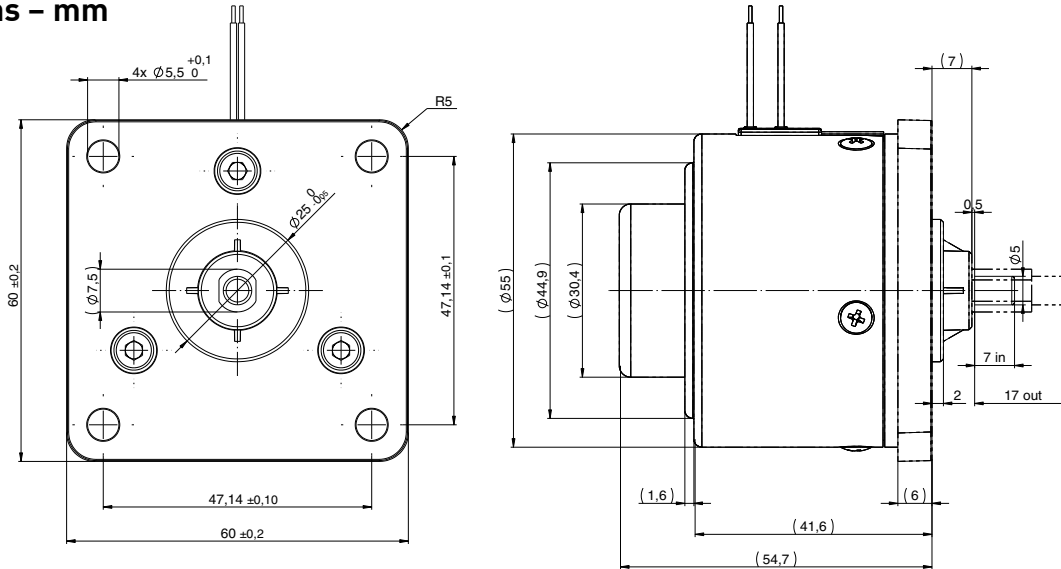


	0	I	II	III	IV
1	-	-			-
2	+	+	+	+	+
3			-	-	
4		-	-		
5	+	+	+	+	+
6	-				-

→ Pull (in)  
← Push (out)

# ULE Series Linear Stepper Motors

## Dimensions – mm



## Order Reference

Type	ULE Stepper Motor	Example:
Configuration	13 Bipolar, standard magnet	ULE 13 N 100 N 1A
Approval	N Approval Standard	
Resistance	Resistance per winding ( $\Omega$ ) (see previous page)	
Connection	N 150 mm lead wire (connectors available upon request)	
Shaft	1A Travel 10 mm $\pm$ 0.7 mm (others upon request)	

## Other Saia® Linear Stepper Solutions...

In addition to the new 20 mm diameter UAL, the Saia® motor brand linear stepper family includes models from 28 to 55 mm in diameter. Among these are stepper motor drives with integral electronic end stop detection.

Combining the proven 28 mm UCL unipolar linear stepper motor with control electronics mounted directly on the motor, the integral solution UCL offers a three-wire interface for 24 V supply voltage, ground and a control input.

The integral UCL stepper and control electronics package provides enormous advantages compared with conventional two part motor solutions. The automatic end stop detection eliminates noise, reduces mechanical stress, compensates for traverse distance tolerances and increases operating life. The drive produces positioning forces of up to 50 N, positioning speeds between 2 and 20 mm/sec, and positioning distances up to 50 mm.

Optionally the drive can be used as an open-close actuator with a switching contact as a control signal or as a continuously operating adjustment drive. In this configuration, the position set point can be a pulse width modulated (PWM) signal or a control voltage between 0-10 volts.

UCL linear stepper with integral electronic end stop detection.



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