

News Release

Yamaha Motor Adds LBAR and ABAR Rod Types to Robonity Series

Slider type lineup gains slimmer LBAS12 and ABAS12 models

Yamaha Motor Europe Robotics, FA Section announced today that its Robotics Operations has added new rod type models to the basic model lineup of the Robonity industrial robot series* and that slimmer models with reduced height will be added to the existing lineup of slider types. These additions to the Robonity Series will expand it to 29 models, offering clients an even greater range of products to choose from.

The Robonity Series includes motorless single-axis actuators that enable clients to use motors and drivers they are accustomed to and single-axis robots that are bundled with the EP-01 robot positioner. The Series is composed of “basic models” featuring high rigidity, compact construction, and low cost, and “advanced models” boasting high precision, high durability, and cleanroom-ready specifications, allowing clients to select models that best suit their needs.

Newly added to the basic model range are the LBAR motorless single-axis rod type actuator and the ABAR single-axis rod type robot. Their main features include 1) a built-in linear guide design that ensures rigidity so that straight-line performance is unaffected even when a radial load is applied and high operational precision with $\pm 0^\circ$ rod non-rotating accuracy, 2) construction contributing to equipment downsizing with a size some 65% more compact compared to conventional models, and 3) support for long strokes up to 800 mm.

Added to the slider type lineup are the slimmer LBAS12 motorless single-axis actuator and ABAS12 single-axis robot. Greater stability has been achieved by reviewing the design and reducing the height. These are ideal when used for the X-axis of Cartesian robots and also contribute to overall downsizing.



*LBAR motorless single-axis rod type actuator (left)
and ABAS12 slim single-axis slider type robot (right)*

**“Robonity” is a coined word combining “robot” and “infinity” together and the name is meant to express the series’ rich array of variations.

Contact:
Oumayma Grad
Marketing Communications Manager
Yamaha Motor Europe N.V.
German Branch Office,
IM Business

Mobile: +49-151-70233297
Phone: +49-2131-2013538
Fax: +49-2131-2013529
oumayma.grad@yamaha-motor.de

Yamaha Motor Europe N.V.
German Branch Office,
IM Business
Hansemannstrasse 12
41468 Neuss • Germany
www.yamaha-motor-im.eu

Main Features of Robonity Series' *LBAR* and *ABAR* Rod Type Models

High rigidity, compact design, long stroke availability

• High-rigidity specification with built-in linear guide:

Thanks to the one-piece construction with built-in linear guide, straight-line performance is not impaired even when a radial load is applied. Further, juddering in the direction of rotation is inhibited and tools attached to the tip of the rod achieve $\pm 0^\circ$ of non-rotating accuracy. It also becomes possible to eliminate the need for an external guide, which saves on the time, effort, and cost involved in installing one.

• Approx. 65% greater compactness than conventional models:

Compared to a conventional model (TRANSERVO Series *SRD05*), a *LBAR05* of the same size is some 65% narrower in width. This contributes to the downsizing of factory equipment.

• Supports long strokes:

Features a maximum stroke of 800 mm. Compared to a conventional model (TRANSERVO Series *SRD05*), a *LBAR05* of the same size supports approximately twice its stroke capability at 600 mm.

Main Features of Robonity Series' *LBAS12* and *ABAS12* Slim Slider Type Models

Slim construction enables a lower center of gravity, making it ideal for the X-axis of Cartesian robots

By completely reviewing the design, external width has been reduced to 120 mm and the height lowered to 76 mm, thereby contributing to the downsizing of facility equipment. In addition, the center of gravity is lower thanks to the slimmer construction, making the unit ideal for use as the X-axis of a Cartesian robot. It can also be used across a wide range of situations as it is compatible with both 200W and 400W motors with the same frame width.

Other Features of the Robonity Series

Simulator makes it easier to select optimum specifications

You can check projected cycle time and ball screw life by entering basic parameters into the simulator on the website.

*For rod types, only cycle time can be checked.³

Robinity Series Basic Specifications
Basic model (rod type): LBAR motorless single-axis actuator

Model		LBAR04		LBAR05			LBAR08			
Compatible motor (W)		50		100			200			
Repeatability (mm) ^{*1}		±0.01		±0.01			±0.01			
Deceleration mechanism		Rolled ball screw Φ10 (C7 class)		Rolled ball screw Φ12 (C7 class)			Rolled ball screw Φ16 (C7 class)			
Stroke (mm)		50–500 (50 mm pitch)		50–600 (50 mm pitch)			50–800 (50 mm pitch)			
Maximum speed (mm/sec) ^{*2*3}		720	360	1,200	600	300	1,200	600	300	
Ball screw lead (mm)		12	6	20	10	5	20	10	5	
Maximum payload (kg) ^{*3}	Horizontal	15	25	15	25	50	30	60	80	
	Vertical	3	5	4	8	16	8	20	30	
Maximum pressing force (N) ^{*3}		83	167	100	200	400	201	402	804	
Rod non-rotating accuracy		±0°								
Main unit maximum cross-sectional form (mm)		W44 x H46		W54 x H54.7			W82 x H73.5			
Overall length (mm)	Straight	ST +263		ST +269.5			ST +326			
	Folding	ST +245		ST +249			ST +312.5			
Operating environment temperature (°C), humidity (% RH)		0–40 °C, 35–85% RH (non-condensing)								
Compatible servo motors		Yaskawa Electric, Keyence, Mitsubishi Electric, Omron, Panasonic, Sanyo Denki, Tamagawa Seiki, Delta Electronics, FANUC Corporation, Siemens, Schneider, Beckhoff, Allen-Bradley			Yaskawa Electric, Keyence, Mitsubishi Electric, Omron, Panasonic, Sanyo Denki, Tamagawa Seiki, Delta Electronics, FANUC Corporation, Kingservo, Siemens, Schneider, Beckhoff, Allen-Bradley			Yaskawa Electric, Keyence, Mitsubishi Electric, Omron, Panasonic, Sanyo Denki, Tamagawa Seiki, Delta Electronics, Siemens, Schneider, Kingservo		
Compatible stepping motors		Oriental Motor, NEMA standard								

*1: Positioning repeatability in one direction

*2: Maximum speed may not be reached when the movement distance is short or under some operating conditions. When the effective stroke exceeds 300 mm (350 mm for the LBAR05, 400 mm for the LBAR08), resonance of the ball screw may occur depending on the operating area (critical speed). In this case, adjust to reduce the speed using the maximum speed shown in the table as a guide.

*3: May not meet the stated specifications depending on the motor installed.

Basic model (rod type): ABAR single-axis robot

Model		ABAR04		ABAR05			ABAR08		
Motor output AC (W)		50		100			200		
Repeatability (mm) ^{*1}		±0.01		±0.01			±0.01		
Deceleration mechanism		Rolled ball screw Φ10 (C7 class)		Rolled ball screw Φ12 (C7 class)			Rolled ball screw Φ16 (C7 class)		
Stroke (mm)		50–500 (50 mm pitch)		50–600 (50 mm pitch)			50–800 (50 mm pitch)		
Maximum speed (mm/sec) ^{*2}		720	360	1,200	600	300	1,200	600	300
Ball screw lead (mm)		12	6	20	10	5	20	10	5
Maximum payload (kg)	Horizontal	15	25	15	25	50	30	60	80
	Vertical	3	5	4	8	16	8	20	30
Maximum pressing force (N)		83	167	100	200	400	201	402	804
Rod non-rotating accuracy		±0°							
Main unit maximum cross-sectional form (mm)		W44 x H46		W54 x H54.7			W82×73.5		
Overall length (mm)	Straight	ST +326.5		ST +344			ST +401		
	Folding	ST +245		ST +249			ST +312.5		
Position detection		Absolute encoder Batteryless absolute encoder							
Resolution		23 bits							
Operating environment temperature (°C), humidity (% RH)		0–40 °C, 35–85% RH (non-condensing)							

*1: Positioning repeatability in one direction

*2: Maximum speed may not be reached when the movement distance is short or under some operating conditions. When the effective stroke exceeds 300 mm (350 mm for the *ABAR05*, 400 mm for the *ABAR08*), resonance of the ball screw may occur depending on the operating area (critical speed). In this case, adjust to reduce the speed using the maximum speed shown in the table as a guide.

Contact:
Oumayma Grad
Marketing Communications Manager
Yamaha Motor Europe N.V.
German Branch Office,
IM Business

Mobile: +49-151-70233297
Phone: +49-2131-2013538
Fax: +49-2131-2013529
oumayma.grad@yamaha-motor.de

Yamaha Motor Europe N.V.
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Basic model (slim slider type): LBAS12 motorless single-axis actuator

Model		LBAS12							
Compatible motor (W)		200W				400W			
Repeatability (mm)* ¹		±0.01							
Deceleration mechanism		Rolled ball screw Φ 16 (C7 class)							
Stroke (mm)		50–1,250 (50 mm pitch)							
Maximum speed (mm/sec)* ²		1,800	1,200	600	300	1,800	1,200	600	300
Ball screw lead (mm)		32	20	10	5	32	20	10	5
Maximum payload (kg) ^{*3}	Horizontal	20	40	80	100	35	50	95	115
	Vertical	3	8	20	30	8	15	25	40
Rated thrust (N) ^{*3}		105	170	341	683	218	339	678	1,360
Main unit maximum cross-sectional form (mm)		W120 x H76							
Overall length (mm)	Straight	ST +294							
	Folding	ST +270.5							
Operating environment temperature (°C), humidity (% RH)		0–40 °C, 35–85% RH (non-condensing)							
Compatible servo motor		Yaskawa Electric, Keyence, Mitsubishi Electric, Omron, Panasonic, Sanyo Denki, Tamagawa Seiki, Delta Electronics, Siemens, Schneider, Kingservo							

*1: Positioning repeatability in one direction

*2: Maximum speed may not be reached when the movement distance is short or under some operating conditions. When the effective stroke exceeds 600 mm, resonance of the ball screw may occur depending on the operating area (critical speed). In this case, adjust to reduce the speed using the maximum speed shown in the table as a guide.

*3: Maximum payload / rated thrust is the value assuming that the installed motor outputs the rated torque.

Contact:
Oumayma Grad
Marketing Communications Manager
Yamaha Motor Europe N.V.
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IM Business

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Phone: +49-2131-2013538
Fax: +49-2131-2013529
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Basic model (slim slider type): ABAS12 single-axis robot

Model		ABAS12				ABAS12H			
Motor Output AC (W)		200				400			
Repeatability (mm)* ¹		±0.01							
Deceleration mechanism		Rolled ball screw Φ16 (C7 class)							
Stroke (mm)		50–1,250 (50 mm pitch)							
Maximum speed (mm/sec)* ²		1,800	1,200	600	300	1,800	1,200	600	300
Ball screw lead (mm)		32	20	10	5	32	20	10	5
Maximum payload (kg) ^{*3}	Horizontal	20	40	80	100	35	50	95	115
	Vertical	3	8	20	30	8	15	25	40
Rated thrust (N)		105	170	341	683	218	339	678	1,360
Main unit maximum cross-sectional form (mm)		W120 x H76							
Overall length (mm)	Straight	ST +369				ST +385			
	Folding	ST +270.5				ST +270.5			
Position detection		Absolute encoder Batteryless absolute encoder							
Resolution		23 bits							
Operating environment temperature (°C), Humidity (% RH)		0–40 °C, 35–85% RH (non-condensing)							

*1: Positioning repeatability in one direction

*2: Maximum speed may not be reached when the movement distance is short or under some operating conditions. When the effective stroke exceeds 600 mm, resonance of the ball screw may occur depending on the operating area (critical speed). In this case, adjust to reduce the speed using the maximum speed shown in the table as a guide.

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ABOUT YAMAHA Robotics FA Section

Yamaha Factory Automation Section (FA Section), a subdivision of Yamaha Motor Robotics Business Unit in Yamaha Motor Corporation, is focused on delivering flexible, high-accuracy industrial robots for precision automation challenges.

With its roots in the introduction of robot technology to Yamaha motorcycle assembly activities, the division has over 40 years' experience solving automation challenges from factory-scale to micron-level. Yamaha's industrial robots are now trusted by leading corporations worldwide, in activities as diverse as semiconductor fabrication and assembling electronic products, domestic appliances, automotive components, and large liquid-crystal panels.

Yamaha Motor FA Section offers a unified range of solutions for robotic assembly, including single-axis robots, SCARA, cartesian, and articulated robots. Innovations such as the LCMR200 linear conveyor module; a smoother, space-saving and more versatile successor to conventional belt and roller conveyors continue to set the pace in factory automation. Core robotic technologies as well as key components and complete robot systems are all produced in-house, ensuring consistent quality and control over lead-times.

Headquartered in Neuss, Germany, Yamaha FA Section serves customers in all Europe.

<https://fa.yamaha-motor-im.de/>

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