

RoboCylinder Miniature Models

4th Revised Edition

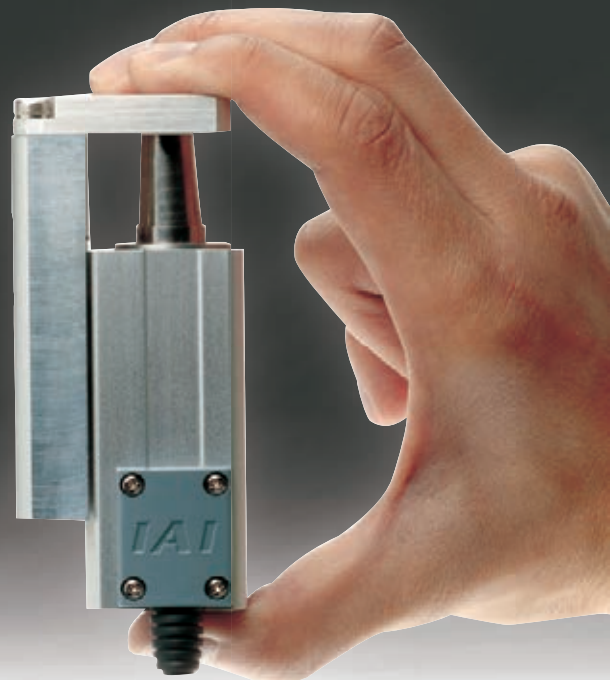


New
RCA2 & RCS2 Rod Types available with Cleanroom and Dust/Splash-proof Specification

Electric Cylinders of Miniature Size

Mini RoboCylinder

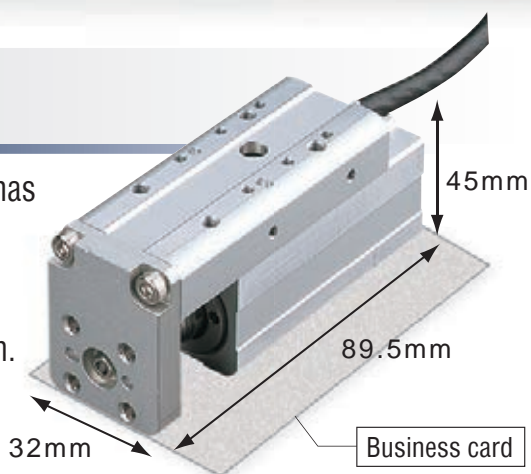
Also special variants of many standard types:
Cleanroom suitable or dust-/splashproof
rod types according to ISO cleanliness class 5
or IP52 protection class



Space Saving

Incorporating a newly developed motor, the Mini RoboCylinder has achieved smaller size with significantly reduced overall length, width and height which are comparable to air cylinders. Systems that could only use air cylinders previously due to size constraints, can now benefit from IAI's electromechanical solution.

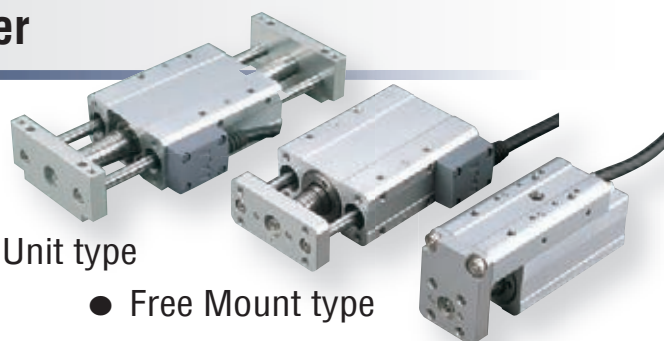
The mini table type RCA2-TCA3NA has a footprint smaller than a business card.



Shape & Usability like an Air Cylinder

The Mini RoboCylinder is available in shapes similar to that of air cylinders. Users who are comfortable with the handling and operation of pneumatic systems are now able to switch to RoboCylinder effortlessly.

- Slide Unit type
- Free Mount type
- Table type

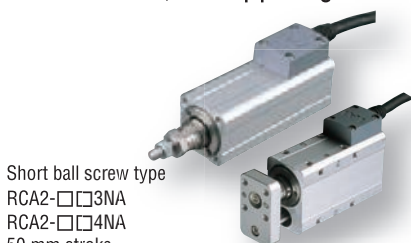


Wide Range of Model Variations

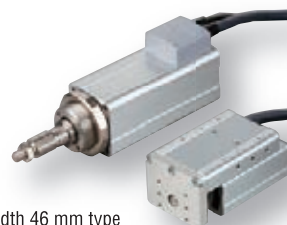
Further models have been added, including slim type with contracted actuator width and high-payload, long-stroke types of 46 mm in actuator width, to support greater applications.





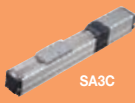

Slim BLDC Motor type
RCD-RA1D



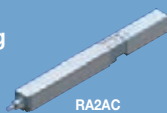

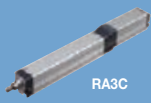

Short ball screw type
RCA2-□□3NA
RCA2-□□4NA
50 mm stroke












Actuator width 46 mm type
RCS2-□□5N

Mini Slider Type																						
Motor Unit	Type Description	Model		Encoder Type	Motor		Feed Screw	Lead (mm)	Rated Thrust (N)	Max. Load Capacity (kg)		Max. Speed (mm/s)	Stroke (mm)	Repeat-ability (mm)	Width (mm)							
		Series	Type		Motor Type	Motor Size				Horizontal	Vertical											
Separate Motor (Removable)	Tiny Coupling Slider Type 	RCP3	SA2AC SA2AR	Incremental	Pulse Motor	20□	Lead Screw	4	—	0.25	—	200	25-100 (25-mm steps)	±0.05	22							
								2	—	0.5	—	100										
								1	—	1	—	50										
	6	—	0.25					—	300	25-150 (25-mm steps)												
	4	—	0.5					—	200													
	2	—	1					—	100													
Tiny Motor-reversing Slider Type 	RCA2	SA2AC SA2AR	Incremental	Servo Motor	5W	Ball Screw	4	21.4	0.5	0.25	200	25-100 (25-mm steps)	±0.02	20								
							2	42.3	1	0.5	100											
							1	85.5	2	1	50											
Built-in Motor (Direct-coupled)	Tiny Coupling PowerCon Slider Type 	RCP4 RCP4CR*					SA3C	Incremental	High-end Pulse Motor	28□	Ball Screw				6	—	3	1.5	420	25-300 (25-mm steps)	±0.02	32
															4	—	5	2.5	280			
															2	—	8	3.5	140			
	6	—	3	1.5	420																	
	4	—	5	2.5	280																	
	2	—	8	3.5	140																	
Tiny Motor-reversing PowerCon Slider Type 	RCA2	SA2AC SA2AR	Incremental	High-end Pulse Motor	28□	Ball Screw	6	—	3	1.5	420	25-300 (25-mm steps)	±0.02	32								
							4	—	5	2.5	280											
							2	—	8	3.5	140											

* RCP4CR : Cleanroom type (ISO class 4) only available with straight motor (model type RCP4CR-SA3C)




Mini Rod Type																		
Motor Unit	Type Description	Model		Encoder Type	Motor		Feed Screw	Lead (mm)	Rated Thrust (N)	Max. Load Capacity (kg)		Max. Speed (mm/s)	Stroke (mm)	Repeat-ability (mm)	Width (mm)			
		Series	Type		Motor Type	Motor Size				Horizontal	Vertical							
Separate Motor (Removable)	Tiny Coupling Rod Type 	RCP3	RA2AC RA2AR	Incremental	Pulse Motor	20□	Lead Screw	4	—	0.25	0.125	200	25-100 (25-mm steps)	±0.05	22			
								2	—	0.5	0.25	100						
								1	—	1	0.5	50						
								4	—	0.5	0.2	200				25-150 (25-mm steps)		
								2	—	1	0.375	100						
								1	—	2	0.75	50						
	Tiny Motor-reversing Rod Type 	RCA2	RA2AC RA2AR			Incremental	Pulse Motor	20□	Ball Screw	4	—	1	0.325	200	25-150 (25-mm steps)	±0.02	28	
										2	—	2	0.625	100				
										1	—	4	1.25	50				
										6	—	0.5	0.2	300				25-300 (25-mm steps)
										4	—	1	0.375	200				
										2	—	2	0.75	100				
Built-in Motor (Direct-coupled)	Tiny Coupling PowerCon Rod Type 	RCP4	RA3C	Incremental	High-end Pulse Motor	28□	Ball Screw	16	—	6	1.5	1120	25-300 (25-mm steps)	±0.02	32			
								10	—	12	2.5	700						
								5	—	24	5	350						
								2.5	—	36	10	175						
								16	—	5	1	1120						
								10	—	12	2.5	700						
	Tiny Motor-reversing PowerCon Rod Type 	RCA2	RA2AC RA2AR			Incremental	High-end Pulse Motor	28□	Ball Screw	5	—	24	5	350	25-300 (25-mm steps)	±0.02	32	
										2.5	—	36	10	175				
										16	—	5	1	1120				
										10	—	12	2.5	700				
										5	—	24	5	350				
										2.5	—	36	10	175				

Mini Rod Type

Motor Unit	Type Description	Model		Encoder Type	Motor		Feed Screw	Lead (mm)	Rated Thrust (N)	Max. Load Capacity (kg)		Max. Speed (mm/s)	Stroke (mm)	Repeat-ability (mm)	Width (mm)		
		Series	Type		Motor Type	Motor Size				Horizontal	Vertical						
Built-in Motor (Direct-coupled)	Short Fixed Nut Rod Type 	RCA2	RN3N	RN3N RP3N	Incremental	Servo Motor (24V)	10W	Lead Screw	4	25.1	0.25	0.125	200	30 50	±0.05	28	
			2						50.3	0.5	0.25	100	±0.02				
		1	100.5	1				0.5	50	±0.02							
		RCA2 RCA2CR* RCA2W**	Ball Screw	4				42.7	0.75		0.25	200	±0.02				
				2				85.5	1.5	0.5	100						
		1	170.9	3				1	50	±0.02							
	Short Tapped Hole Rod Type 	RCA2	RN4N RP4N	Servo Motor (24V)	20W	Lead Screw	6	19.9	0.25		0.125	300	30 50	±0.05	34		
							4	29.8	0.5	0.25	200	±0.02					
		2	59.7			1	0.5	100	±0.02								
		RCA2 RCA2CR* RCA2W**	Ball Screw			6	33.8	2		0.5	300	±0.02					
						4	50.7	3	0.75	200							
		2	101.5			6	1.5	100	±0.02								
Short Free Mount Rod Type with Single-Guide 	RCS2 RCS2CR* RCS2W**	RN5N RP5N	Servo Motor (230V)	60W	Ball Screw	10	89	5		1.5	380<330>	50 75	±0.02	46			
						5	178	10	3	250	±0.02						
	2.5	356			20	6	125	±0.02									
	RCA2	GS3N			Servo Motor (24V)	10W	Lead Screw		4	25.1	0.25		0.125		200	30 50	±0.05
								2	50.3	0.5	0.25		100		±0.02		
	1	100.5					1	0.5	50	±0.02							
RCA2 RCA2CR* RCA2W**	Ball Screw	4	42.7	0.75			0.25	200	±0.02								
		2	85.5	1.5			0.5	100									
1	170.9	3	1	50			±0.02										
Short Free Mount Rod Type with Double-Guide 	RCA2	GS4N	Servo Motor (24V)	20W	Lead Screw	6		19.9	0.25	0.125	220	30 50	±0.05	34			
						4	29.8	0.5	0.25	200	±0.02						
	2	59.7			1	0.5	100	±0.02									
	RCA2 RCA2CR* RCA2W**	Ball Screw			6	33.8	2		0.5	270<220>	±0.02						
					4	50.7	3	0.75	200								
	2	101.5			6	1.5	100	±0.02									
Short Free Mount Rod Type with Double-Guide 	RCS2 RCS2CR* RCS2W**	GS5N	Servo Motor (230V)	60W	Ball Screw	10	89		5	1.5	380<330>	50 75	±0.02	46			
						5	178	10	3	250	±0.02						
	2.5	356			20	6	125	±0.02									
	RCA2	GD3N			Servo Motor (24V)	10W	Lead Screw		4	25.1	0.25		0.125		200	30 50	±0.05
								2	50.3	0.5	0.25		100		±0.02		
	1	100.5					1	0.5	50	±0.02							
RCA2 RCA2CR* RCA2W**	Ball Screw	4	42.7	0.75			0.25	200	±0.02								
		2	85.5	1.5			0.5	100									
1	170.9	3	1	50			±0.02										
Short Free Mount Rod Type with Double-Guide 	RCA2	GD4N	Servo Motor (24V)	20W	Lead Screw	6		19.9	0.25	0.125	220	30 50	±0.05	34			
						4	29.8	0.5	0.25	200	±0.02						
	2	59.7			1	0.5	100	±0.02									
	RCA2 RCA2CR* RCA2W**	Ball Screw			6	33.8	2		0.5	270<220>	±0.02						
					4	50.7	3	0.75	200								
	2	101.5			6	1.5	100	±0.02									
Short Free Mount Rod Type with Double-Guide 	RCS2 RCS2CR* RCS2W**	GD5N	Servo Motor (230V)	60W	Ball Screw	10	89		5	1.5	380<330>	50 75	±0.02	46			
						5	178	10	3	250	±0.02						
	2.5	356			20	6	125	±0.02									
	RCA2	SD3N			Servo Motor (24V)	10W	Lead Screw		4	25.1	0.25		0.125		200	25 50	±0.05
								2	50.3	0.5	0.25		100		±0.02		
	1	100.5					1	0.5	50	±0.02							
RCA2 RCA2CR* RCA2W**	Ball Screw	4	42.7	0.75			0.25	200	±0.02								
		2	85.5	1.5			0.5	100									
1	170.9	3	1	50			±0.02										
Short Slide Unit Rod Type with Double-Guide 	RCA2	SD4N	Servo Motor (24V)	20W	Lead Screw	6		19.9	0.25	0.125	300	25 50 75	±0.05	72			
						4	29.8	0.5	0.25	200	±0.02						
	2	59.7			1	0.5	100	±0.02									
	RCA2 RCA2CR* RCA2W**	Ball Screw			6	33.8	2		0.5	300	±0.02						
					4	50.7	3	0.75	200								
	2	101.5			6	1.5	100	±0.02									
Short Slide Unit Rod Type with Double-Guide 	RCS2 RCS2CR* RCS2W**	SD5N	Servo Motor (230V)	60W	Ball Screw	10	89		5	1.5	380<330>	50 75	±0.02	94			
						5	178	10	3	250	±0.02						
	2.5	356			20	6	125	±0.02									

* RCA2CR, RSC2CR : Cleanroom type (ISO class 5) ** RCA2W, RSC2W : Dust/splash-proof type (IP52)

Value inside < > : Max. speed with vertical usage

Mini Table Type																			
Motor Unit	Type Description	Model		Encoder Type	Motor		Feed Screw	Lead (mm)	Rated Thrust (N)	Max. Load Capacity (kg)		Max. Speed (mm/s)	Stroke (mm)	Repeat-ability (mm)	Width (mm)				
		Series	Type		Motor Type	Motor Size				Horizontal	Vertical								
Built-in Motor (Direct-coupled)	Short Compact Table Type 	RCA2	TCA3NA	Incremental	Servo Motor (24 V)	10W	Lead Screw	4	25.1	0.25	0.125	200	30 50	±0.05	32				
								2	50.3	0.5	0.25	100							
								1	100.5	1	0.5	50							
			Ball Screw				4	42.7	0.75	0.25	200								
							2	85.5	1.5	0.5	100								
							1	170.9	3	1	50								
		TCA4NA	Lead Screw	6	19.9	0.25	0.125	220	30 50	±0.05	36								
				4	29.8	0.5	0.25	200											
				2	59.7	1	0.5	100											
	Ball Screw	6	33.8	2	0.5	270/220													
		4	50.7	3	0.75	200													
		2	101.5	6	1.5	100													
	RCS2	TCA5N	Ball Screw	Servo Motor (230 V)	60W	10	89	5	1.5	380/330	50 75	±0.02	48						
							5	178	10	3				250					
							2.5	356	20	6				125					
	Short Wide Table Type 	RCA2	TWA3NA			Incremental	Servo Motor (24 V)	10W	Lead Screw	4		25.1		0.25	0.125	200	30 50	±0.05	50
										2		50.3		0.5	0.25	100			
										1		100.5		1	0.5	50			
			Ball Screw	4	42.7				0.75	0.25	200								
				2	85.5				1.5	0.5	100								
				1	170.9				3	1	50								
		TWA4NA	Lead Screw	6	19.9	0.25	0.125	220	30 50	±0.05	58								
				4	29.8	0.5	0.25	200											
				2	59.7	1	0.5	100											
Ball Screw	6	33.8	2	0.5	270/220														
	4	50.7	3	0.75	200														
	2	101.5	6	1.5	100														
RCS2	TWA5N	Ball Screw	Servo Motor (230 V)	60W	10	89	5	1.5	380/330	50 75	±0.02	80							
						5	178	10	3				250						
						2.5	356	20	6				125						
Short Flat Table Type 	RCA2	TFA3NA			Incremental	Servo Motor (24 V)	10W	Lead Screw	4		25.1		0.25	0.125	200	30 50	±0.05	61	
									2		50.3		0.5	0.25	100				
									1		100.5		1	0.5	50				
		Ball Screw	4	42.7				0.75	0.25	200									
			2	85.5				1.5	0.5	100									
			1	170.9				3	1	50									
	TFA4NA	Lead Screw	6	19.9	0.25	0.125	220	30 50	±0.05	71									
			4	29.8	0.5	0.25	200												
			2	59.7	1	0.5	100												
Ball Screw	6	33.8	2	0.5	270/220														
	4	50.7	3	0.75	200														
	2	101.5	6	1.5	100														
RCS2	TFA5N	Ball Screw	Servo Motor (230 V)	60W	10	89	5	1.5	380/330	50 75	±0.02	95							
						5	178	10	3				250						
						2.5	356	20	6				125						

Value inside <> : Max. speed with vertical usage

Mini Slider Type


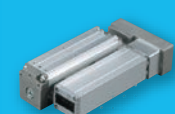
- Features**
- The motor can easily perform switching operations for the unit model.
 - Select from Side-Mounted Motor type with a reduced total length and Tiny Straight type (Coupling type).

Usage Used for jig and workpiece positioning, table travel, etc



Mini Rod Type

- Features**
- Select from Tiny Motor Unit types and Short Length types having greatly reduced overall length.
 - Select from Guide types with highly rigid/linear built-in guides and those without guides having drastically miniaturized main body sizes.

Usage Used for raising/lowering products and jigs, pushing, clamping, etc.

Mini Table Type																	
Motor Unit	Type Description	Model		Encoder Type	Motor		Feed Screw	Lead (mm)	Rated Thrust (N)	Max. Load Capacity (kg)		Max. Speed (mm/s)	Stroke (mm)	Repeat-ability (mm)	Width (mm)		
		Series	Type		Motor Type	Motor Size				Horizontal	Vertical						
Separate Motor (Removable)	Coupling Table Type 	RCP3	TA3C	Incremental	Pulse Motor	20□	Ball Screw	6	—	~0.7	~0.3	300 <200>	20~100 (10-mm steps)	±0.02	36		
			4					—	~1.4	~0.6	200 <133>						
			2					—	~2	~1	100 <67>						
		RCA2	TA4C					10W	Ball Screw	6	—	~1				~0.5	300
			4							—	~2	~1				200	
			2							—	~3	~1.5				100	
	Motor-reversing Table Type 	RCP3	TA3R	Incremental	Pulse Motor	20□	Ball Screw	6	—	~0.7	~0.3	300 <200>					
			4					—	~1.4	~0.6	200 <133>						
			2					—	~2	~1	100 <67>						
		RCA2	TA4R					10W	Ball Screw	6	—	~1			~0.5	300	
			4							—	~2	~1			200		
			2							—	~3	~1.5			100		

Value inside < > : Max. speed with vertical usage

Mini BLDC Motor Type															
Motor Unit	Type Description	Model		Encoder Type	Motor		Feed Screw	Lead (mm)	Rated Thrust/Gripping Force (N)	Max. Load Capacity (kg)		Max. Speed (mm/s)	Stroke (mm)	Repeat-ability (mm)	Width (mm)
		Series	Type		Motor Type	Motor Size				Horizontal	Vertical				
Combined Motor-to-Body System (Micro Cylinder)	Slim Brushless DC Motor Rod Type 	RCD	RA1D	Incremental	BLDC Servo-Motor	2.5W	Lead Screw	2	4.2	0.7	0.3	300	10 20 30	±0.05	ø12
	Slim Brushless DC Motor Gripper Type 		GRSNA					2	10 (5 per side)	—	—	67	4 (2 per side)		

Mini Table Type

- Features**
- Comes equipped with an integrated guide that keeps overhung loads balanced
 - Select from Compact, Short Length types and Separate Motor Unit types

Usage Used for raising/lowering products and jigs, horizontal moving, and pushing (handles overhung loads from the main unit)

Mini BLDC Motor Type

- Features**
- Equipped with a high acceleration/ deceleration brushless DC motor capable of operation at up to 1G and a maximum speed of 300mm/s
 - Available in Rod type and 2-finger Gripper type
 - Adjustable Pushing and Gripping forces

Usage Used for transfers requiring short cycle times, etc.

Operate using the same Signals used for Air Cylinder Solenoid Valves

MEC & SEP Operating Methods

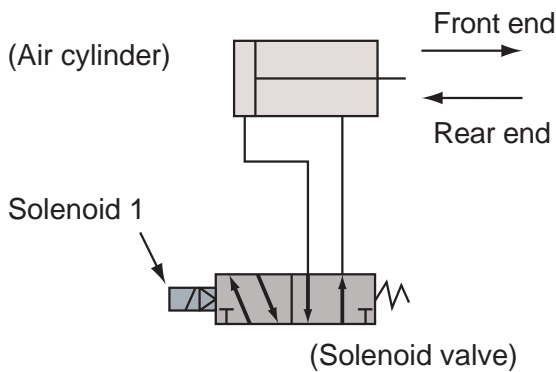
MEC and SEP controllers (24VDC/230VAC) can be operated with the same signals used for air cylinder solenoid valves.

Solenoid valves come in two types: Single solenoids and Double solenoids.

The P MEC and PSEP/ASEP/DSEP support signals for both.

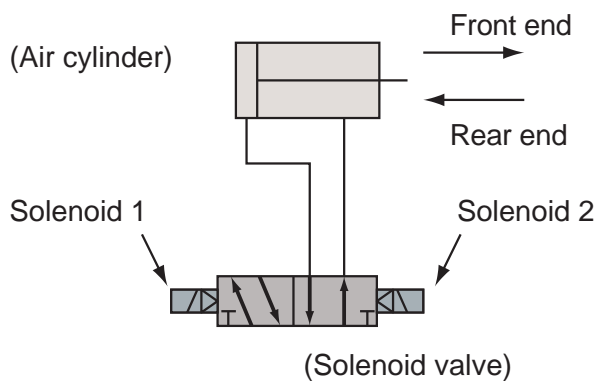
■ When using an air cylinder solenoid valve:

<Single solenoid>



Signal to solenoid 1	Rod movement
ON	Front end
OFF	Rear end

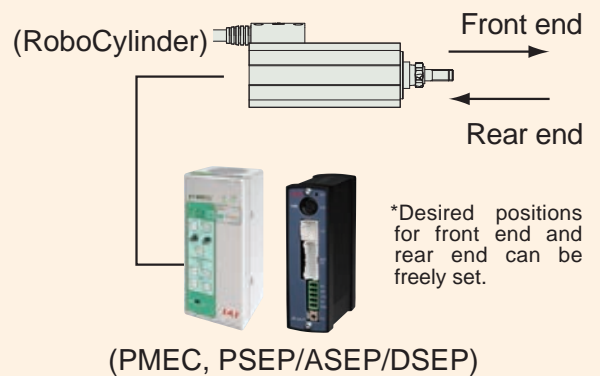
<Double solenoid>



Signal to solenoid 1	Signal to solenoid 2	Rod movement
ON	OFF	Front end
OFF	ON	Rear end

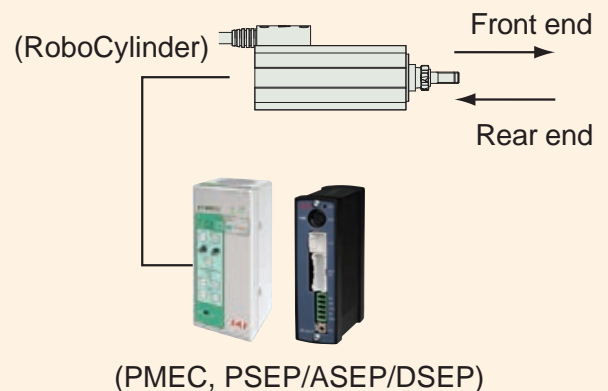
■ P MEC, PSEP/ASEP/DSEP:

<Replacement of single solenoid>



Signal to controller Input 0	Rod movement
ON	Front end
OFF	Rear end

<Replacement of double solenoid>



Signal to controller Input 1	Signal to controller Input 0	Rod movement
ON	OFF	Front end
OFF	ON	Rear end

* The actuator can also be moved among 3 points by switching the parameters

Lineup of Controllers meeting various Applications, from 3-point Positioning Types controlled like Solenoid Valves to Network Types

You can choose a desired controller from those of various control methods, such as 3-point positioning types whose teaching and trial operation can be done using the controller's operation panel, multi-point positioning types supporting up to 512 positioning points, and network types that can be connected to various networks.

Since 3-point positioning types (3 position controller) can be operated with the same signal as the ones of solenoid valves, the device with the currently used air can be changed to an electric cylinder.

Refer to the table below for the various actuator models (series) and controllers that can be connected.

Type of controller	Positioner type		Network type	Program type
	3-position controller	512-position controller		
Features	<ul style="list-style-type: none"> Easy to operate, as the actuator can be operated simply by turning signals ON/OFF. Can be operated using the same signals used for solenoid valves. 	<ul style="list-style-type: none"> Multi-point positioning to 512 points is possible. Pulse-train control is also supported (only PCON, ACON, SCON). 	<ul style="list-style-type: none"> Directly connectable to key field networks. Coordinate values can be specified directly using numeric values to move the actuator. The current position and axis condition can be checked with a host device. 	<ul style="list-style-type: none"> Standalone operation is possible without using a PLC or other host device. Simultaneous control of up to 2 axes (PSEL, ASEL, SSEL) or 6 axes (XSEL, MSEL) is possible.
RCP3/4 	 PMEC PSEP	 PCON MSEP	 PCON MSEP MCON	 PSEL MSEL
RCA2 	 ASEP	 ACON MSEP	 ACON MSEP MCON	 ASEL
RCS2 		 SCON	 SCON MSCON	 SSEL XSEL
RCD 	 DSEP	 DCON MSEP	 MSEP MCON	