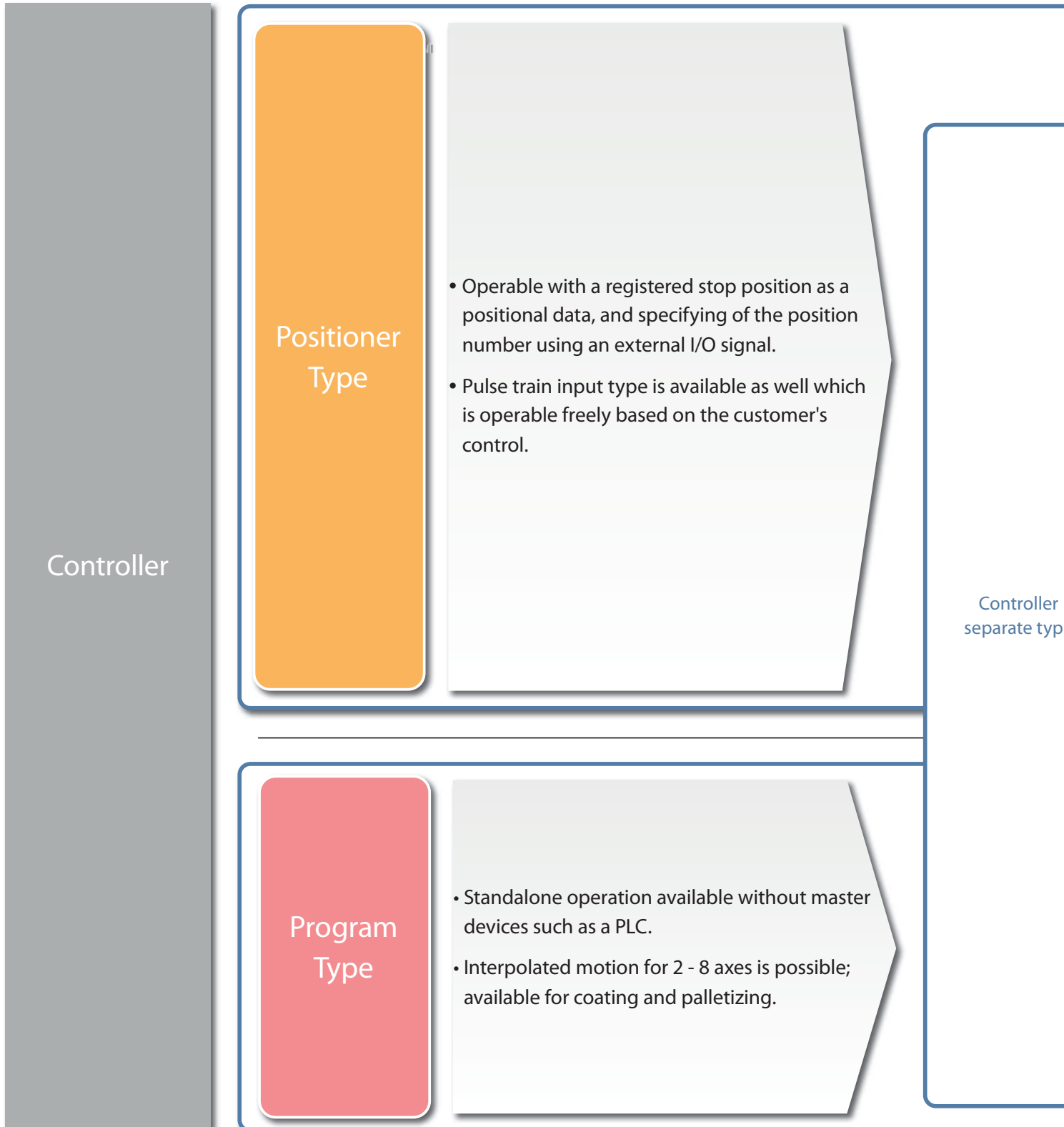


# Controller Overview

The controller model can be selected from an ultra-simple type, which is operable with the same controller as a solenoid valve, to a high functionality type that enables program control. A variety of models are available according to the customer's usage.

Controller types can be categorized according to the 3 groups below based on their operations.



Controller integrated type



EleCylinder



Gateway for network connection

REC

Controller for single axis



Position controller 24VDC/AC230V type

PCON/ACON/DCON/SCON

R-unit Series



Unit-linkage system position controller 24VDC/230VAC types

RCON

Controller for multi-axes



Position controller 24VDC type

MCON

Position controller AC230V type

MSCON

Controller for multi-axes



Program controller AC230V type

MSEL/SSEL/XSEL



Unit-linkage system program controller 24VDC/230VAC types

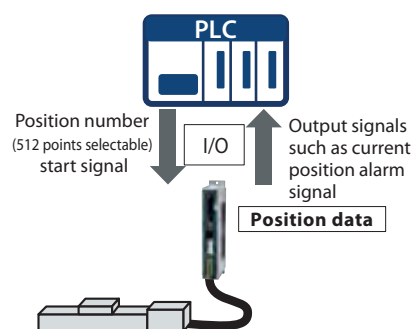
RSEL

# Positioner Type

The positioner type stores positions to which the actuator is moved by specifying a target position number. Integration with existing devices is easy because existing air cylinder control signals can be used.

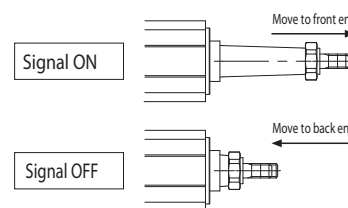
### 1 No programming needed

The positioner type controller operates by selecting the target position number externally using I/O after teaching the position data. Therefore, no operation programming is needed, allowing for immediate operation directly after mounting the equipment.



### 2 Operation using the same signal as solenoid valve possible (PCON/ACON/DCON/SCON controllers)

Same as single solenoid valve, traveling between front/back ends is possible only by the single ON/OFF.



### 3 Reasonable price

A reasonable price range is offered for the pulse motor type controllers which maintain the effective functionality of a servo motor.



### 4 Wide range of variations with full of functions

A wide range of variations offers the optimum type that best suits the usage, from a 2-point positioning band type that operates using the same signal as air cylinder's, to a 512-point positioning band type and a space-saving type that can connect up to 8 axes in one controller.

In addition, the actuator can provides its best performance thanks to the smart tuning and maintenance functions.

PCON/ACON/DCON/SCON/RCON/MCON/MSCON Controllers

- Positioning is possible for up to 512 points (Except for RCON, MCON and MSCON).
- Compatible with pulse train input control (Except for RCON, MCON and MSCON).
- PCON-CB, RCON and MCON provide 1.5 times of max. speed and 2 times of payload compared to conventional models when combined with RCP6, RCP5 and RCP4.
- ACON, SCON and MSCON provide max. 2G of acceleration/deceleration thanks to the off-board tuning function.
- MCON can accommodate max. 8 axes of actuators inside the compact cabinet.
- RCON is a unit connection system and can operate up to 16 axes of actuators.
- Setting of an absolute specification by PCON, ACON, SCON, MCON, RCON or MSCON, thereby requiring no home return.  
Battery-less absolute type, absolute type using a battery and incremental type actuators can be used in a same way as an absolute type.  
Simple absolute type is available (battery needed).
  - The absolute type varies depending on the controller type. Please refer to the relevant controller page.



See  
P7-137



See  
P7-163



See  
P7-187



See  
P7-25/  
P7-59



See  
P7-117



See  
P7-231

## Program Type

The program type controller executes programs that are loaded to it.

The programs loaded to the controller are used to perform various tasks such as operating the actuator and communicating with external equipment. Ideal for small systems whether a PLC is not required which leads to cost savings.

### 1 High-level control available using simple language

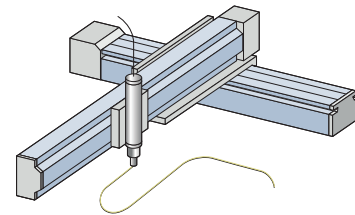
A program is generated for the program type controller using the simple and easy Super SEL Language to execute operation of the actuator and communication between peripheral equipment. Expert knowledge is not needed to use the Super SEL Language, so it's easy to create programs even for beginners.

No.	B	E	R	Cmd	Cond	Operand 1	Operand 2
1				HOME		100	
2				HOME		11	
3				VEL		200	
4				WTON		1	
5				MOVL		1	
6				OTON		301	
7				WTON		2	
8				BTOF		301	
9				MOVL		2	
10				BTON		302	

### 2 Interpolation possible up to 8 axes

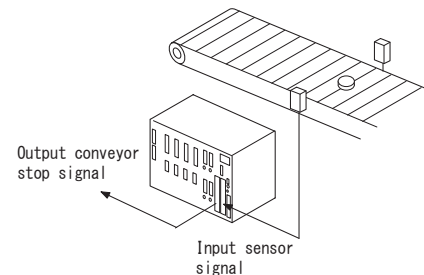
Simultaneous operations of actuators are possible for up to 2 axes for SSEL controller, up to 4 axes for MSEL controller and up to 8 axes for RSEL/XSEL controller, respectively.

Depending on the program, interpolation is available to easily perform dispensing.



### 3 Controlling external equipment is possible

Multi-purpose I/O signals are available for the controller which makes communication with peripheral equipment possible. Therefore, receiving signals from sensors and such through the controller or outputting signals from the controller to lamps or moving equipment, etc. to operate them is possible.



### 4 No homing needed for absolute type

Homing is not needed for the following combinations of the actuator and controller.

RSEL

\* Battery-less absolute type actuator + controller (battery-less absolute specification).

\* Incremental type actuator + simple absolute unit + controller.

SSEL/XSEL

\* Battery-less absolute type actuator + controller (battery-less absolute).

\* Absolute type actuator + controller (absolute spec)

MSEL

\* Incremental type actuator + battery box + controller (simple absolute spec)

\* Battery-less absolute type actuator + controller (battery-less absolute spec)

### RSEL Controller

- Highly functional controller that enables simultaneous operations up to 8 axes.
- Different types of drivers can be combined thanks to the unit-linkage system.
- Driver unit can be shared with RCON.
- Supports control of cartesian type 6-axis robots.
- Possible to register positioning points up to 36000.
- Supports battery-less absolute encoder, simple abso unit, incremental encoder and quasi-abso encoder.



See  
P7-27/  
P7-61

### SSEL Controller

- Program controller with reasonable price and compact body.
- Interpolation of up to 2 axes is possible which is applicable for dispensing jobs.
- By selecting the positioner mode, it can be used in the same manner as the position controller.
- Communication via PC USB port and direct USB cable is possible with integrated USB port.
- Possible to register positioning points up to 20000.
- Absolute type available for ASEL/SSEL controllers can be set up as a battery-less type which requires no battery, or as an absolute type that uses a battery.
- Controller power supply is single-phase AC230V for SSEL.



See  
P7-243

### MSEL Controller

- Actuator with built-in pulse motor can control up to 4 axes.
- Actuator with built-in battery-less absolute is compatible with RCP6, RCP5, RCP4 and IXP series.
- Positioning points is up to 30000 points.
- I/O (input/output) signals can be expanded up to 32 points.



See  
P7-257

### XSEL Controller

- High-function controller with up to 8 axes that can be simultaneously controlled.
- Precise dispensing jobs are possible through high velocity uniformity and tracking accuracy.
- Absolute type available for selection.
- 55000 points can be stored for positioning.
- Expansion I/O is available up to a maximum of 384 points.



See  
P7-271

## Network Compatibility

Compatible with the majority of main field networks widely used over the world.  
It is also highly compatible with FA devices such as PLCs and touch panels.

### 1 Compatible with main field networks

Direct connection is possible with main field networks such as DeviceNet or CC-Link, etc.

A position controller is available for an operation defined by movement specified with position number and direct coordinate value using the network.

(When defining coordinate values directly, there is no restriction for the number of positioning points.)



### Compatible network and functions

Controller series		Ellipsis	Position controller									Program controller						
			PCON -CB	ACON -CB	SCON -CB	SCON -CAL	SCON-CB (servo press specification)	DCON -CB	MCON -C	MSCON	RCON	SSEL	TTA	RSEL	MSEL	XSEL -P/Q	XSEL -RA/SA	
Field network type	DeviceNet	DV	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	CompoNet	CN	●	●	●	●	●	●	●	●	—	—	—	—	—	—	—	
	EtherCAT	EC	●	●	●	●	●	●	●	●	●	—	●	●	●	—	●	
	EtherCAT Motion	ECM	—	—	●	—	—	—	●	—	●	—	—	—	—	—	—	
	EtherNet/IP	EP	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	CC-Link	CC	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	CC-Link IE Field CIE	CIE	●	●	●	—	●	●	●	—	●	—	—	●	—	—	—	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	PROFIBUS- DP	PR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	PROFINET IO	PRT	●	●	●	●	●	●	●	●	●	—	—	●	●	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Number of positioning points (*1)			768						256			128	20000	30000	36000	30000	20000	55000
Operating method	Position No. Movement by specifying positions		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	Direct number Movement by specifying direct values		●	●	●	●	—	●	●	●	●	—	—	—	—	—	—	
Reference page for controllers			P7-137	P7-163	P7-187	P7-217	P7-203	P7-163	P7-117	P7-231	P7-25	P7-243	P7-615	P7-27	P7-257	P7-271	P7-289	

(\*1) When it is operated by movement by specifying direct values, the number of positioning points is unlimited.  
(\*2) Able to cope with EtherNet (TCP/IP: message communication) when switching the parameters for EtherNet/IP.  
(\*3) It corresponds to Ethernet (TCP/IP: message communication) only for standard Ethernet.

## Network

### 3 Vision system

The XSEL controller can directly be connected to major vision systems to easily take in coordinate values and operate.

(1) Able to directly connect with major vision systems

It is possible to easily use sophisticated vision systems of specialized suppliers such as Omron, Cognex and Keyence.

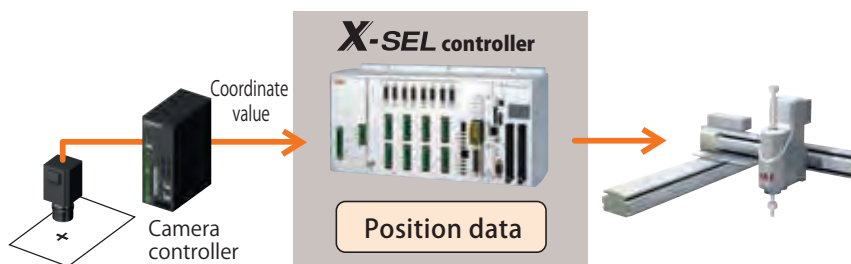


Manufacturer	Applicable model	Communication method
OMRON	FH series	RS232C
COGNEX	In-Sight5000 series In-Sight EZ series	Ethernet
Keyence	CV-5000 series XG-7000 series XG-8000 series	RS232C Ethernet

\* Please contact us for connection with vision systems other than listed above.

(2) No communication programs needed

Coordinate values from the camera are stored as position data in the robot controller by dedicated instruction. Communication programs are not necessary.



(3) While communicating with a vision system via Ethernet, communication with another network is possible.

The XSEL-RA/SA type can communicate via DeviceNet, CC-Link or PROFIBUS-DP, while communicating via either EtherNet/IP or EtherCAT. It can be used for communication with a vision system via Ethernet, and with peripheral devices via PROFIBUS-DP using I/Os.

\* XSEL-P/Q type can select one of the networks shown above.

