IAI
Quality and Innovation

High-Function Multi-Axes Controller X-SEL

Comprehensive

www.intelligentactuator.com

X-SEL

Program Controller

1 Making Compact Industrial Robots Even Easier to Use

You can operate your single-axis/cartesian robot according to the preferred control method. Select the type you find easy to use.

1 - Positioner Operation: All you need is to specify position numbers from the host PLC via PIOs, and the actuator will move as commanded.

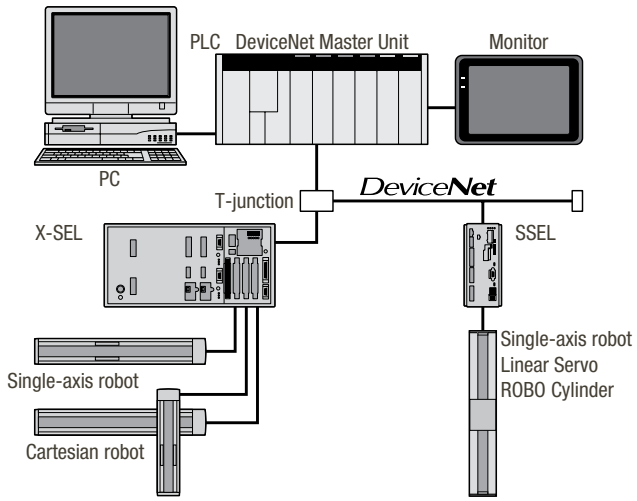
2 - Program Operation: By creating a program, the host device is no longer required. Also, the SEL language lets anyone, even a beginner, program complex operations with ease.

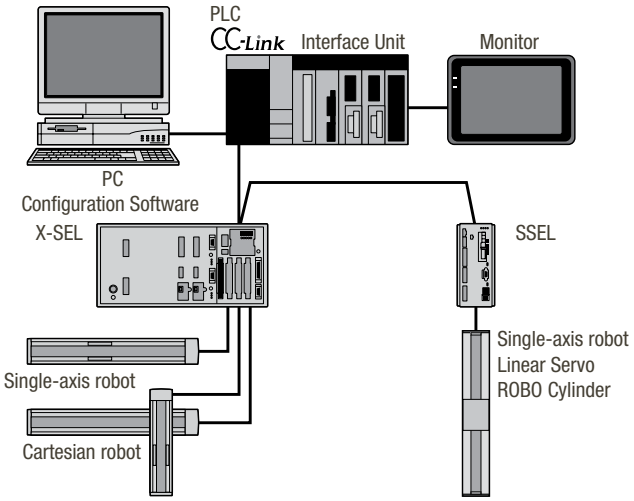
3 - Pulse-train Input Operation: The actuator can be controlled with pulse trains using a positioning module, etc. You can perform desired positioning operations without worrying about position data.

2 Supports Various Field Networks

The X-SEL controllers support representative field networks such as DeviceNet, CC-Link, ProfiBus and Ethernet.

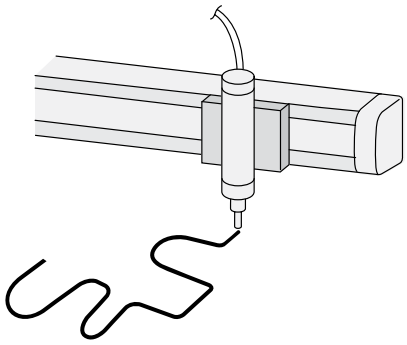
(Note) DeviceNet is a registered trademark of ODVA.
CC-Link is a registered trademark of Mitsubishi Electric Corporation.





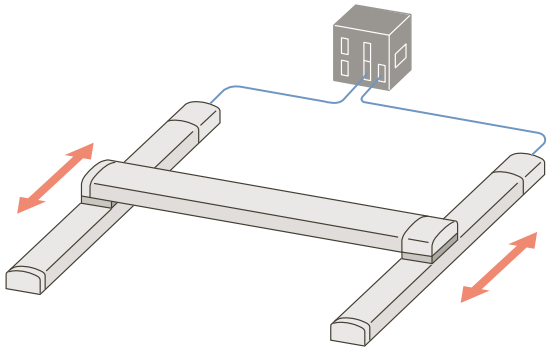
3 Significantly Higher Trace Accuracy

The higher processing speed of the X-SEL controller facilitates a significant improvement in trace accuracy.
The speed of path and arc movement has also increased, allowing for faster, more accurate coating operation.



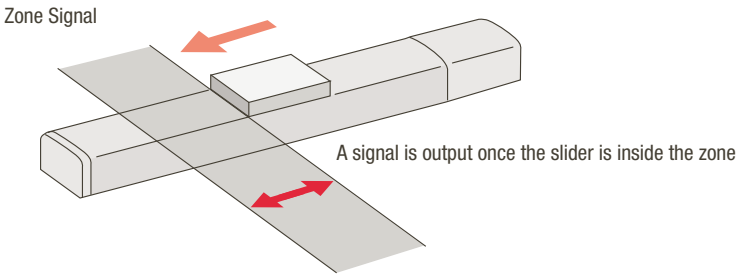
4 Synchronized Operation

The operations of two actuators can be synchronized, allowing the transfer of load weight more than the load capacity of a single axis. The synchronized operation function is also useful when a gantry-type model is used with an extended Y-axis.
(Certain conditions apply, please consult with IAI)



5 Zone Signals

The zone signal functions lets you set a desired zone within the stroke range and cause a signal to be output once the slider enters the zone. Use this function to set interlocks or align timings with peripheral equipment.
Up to four signals (four zones) can be set.



6 Push & Hold Operation

The slider can be held in position while pressing against the load, as in similar operations achieved with an air cylinder.
This function lets the user easily handle various operations such as applying pressure, clamping and press-fitting works.

The presence/absence of load is detected by setting the controller in such a way that a signal will be output upon contact with a load.

7 Compliant with the CE Mark Standard (Enhanced Safety Functions)

The X-SEL controller system provides various RAS functions designed to protect your system.
For example, the motor drive source is cut off when an emergency stop is actuated or an error occurs, and the noise resistance has also been improved to ensure greater safety.
X-SEL controllers are also compliant with the CE Mark standard, which is an overseas safety standard.

CE

Controller Types

1 to 6-axis Types

XSEL-J

Program Operation
Multi-Axis Controller
Small Type

P659

Operating Method: Program Operation
Number of Programs that can be registered: 64 programs (6,000 steps)
Number of Positions that can be registered: 3,000 positions
Input Power Supply: Single-phase 100/200 VAC
Field Networks: DeviceNet, CC-Link, ProfiBus, Ethernet

XSEL-K

Program Operation,
Multi-axis Controller
General Purpose Type

P659

Operating Method: Program Operation
Number of Programs that can be registered: 64 programs (6,000 steps)
Number of Positions that can be registered: 3,000 positions
Input Power Supply: Single-phase 100/200 VAC
Field Networks: DeviceNet, CC-Link, ProfiBus, Ethernet

XSEL-P

Program Operation
Multi-axis Controller
High Capacity Type

P659

Operating Method: Program Operation
Number of Programs that can be registered: 128 programs (9,999 steps)
Number of Positions that can be registered: 20,000 positions
Input Power Supply: Single-phase/Three-phase 200 VAC
Field Networks: DeviceNet, CC-Link, ProfiBus, Ethernet

XSEL-Q

Program Operation
Multi-axis Controller
High Capacity Type
Global Specification

P659

Operating Method: Program Operation
Number of Programs that can be registered: 128 programs (9,999 steps)
Number of Positions that can be registered: 20,000 positions
Input Power Supply: Single-phase/Three-phase 200 VAC
Field Networks: DeviceNet, CC-Link, ProfiBus, Ethernet

SCARA Types

XSEL-KE

Program Operation
Multi-axis Controller
CE Compliant Type

*The above image shows the XSEL-K type.
The KE type has a built-in circuit protector on the left side of the front controller panel.
(The external dimensions are the same as with the K type.)

P659

Operating Method: Program Operation
Number of Programs that can be registered: 64 programs (6,000 steps)
Number of Positions that can be registered: 3,000 positions
Input Power Supply: Single-phase 230 VAC
Field Networks: DeviceNet, CC-Link, ProfiBus, Ethernet

XSEL-KT/KET

Program Operation
Multi-axis Controller
Global Spec (KT)
Global CE Compliant
Spec (KET)

P659

Operating Method: Program Operation
Number of Programs that can be registered: 64 programs (6,000 steps)
Number of Positions that can be registered: 3,000 positions
Input Power Supply: Single-phase 200 VAC
Field Networks: DeviceNet, CC-Link, ProfiBus, Ethernet

XSEL-JX/KX/KETX

Program Operation
Multi-axis Controller
Dedicated SCARA Type

P681

Operating Method: Program Operation
Number of Programs that can be registered: 64 programs (6,000 steps)
Number of Positions that can be registered: 3,000 positions
Input Power Supply: Single-phase 200 VAC
Field Networks: DeviceNet, CC-Link, ProfiBus, Ethernet

XSEL-PX/QX

Program Operation
Multi-axis Controller
High Capacity
Dedicated SCARA Type

P681

Operating Method: Program Operation
Number of Programs that can be registered: 128 programs (9,999 steps)
Number of Positions that can be registered: 20,000 positions
Input Power Supply: Three-phase 200 VAC
Field Networks: DeviceNet, CC-Link, ProfiBus, Ethernet

Controller Specification Table

Classification			Program Type Controllers						SCARA Dedicated Controllers			
Controller Type			XSEL-J	XSEL-K	XSEL-KE	XSEL-KT	XSEL-P	XSEL-Q	XSEL-JX	XSEL-KX	XSEL-PX	XSEL-QX
External Image												
Input Power			Single-phase 100 VAC Single-phase 200 VAC		Single-phase 200 VAC		Single-phase 200 VAC Three-phase 200 VAC		Single-phase 200 VAC		Three-phase 200 VAC	
Number of Controllable Axes			1, 2-axis	3, 4-axis	1, 2, 3, 4-axis		1, 2, 3, 4, 5, 6-axis		Dedicated 4-axis Type		4, 5, 6-axis Type	
Motor Capacity (W)			20, 30, 60, 100, 150, 200, 300, 400, 600, 750						MAX800W	MAX1600W	MAX2400W	
Supported Actuators	ROBO Cylinder	RCP2 Series										
		RCA Series										
		RCS2 Series	●	●	●	●	●	●			●	●
	Single-axis robots	ISA/ISPA Series	●	●	●	●	●	●			●	●
		ISDA/ISPDA Series	●	●	●	●	●	●			●	●
		NS Series					●	●			●	●
		IF/FS Series	●	●	●	●	●	●			●	●
		RS Series	●	●	●	●	●	●			●	●
		ZR Series					●	●				
	Linear Servo	LSA Series	●	●	●	●	● (*2)	● (*2)				
	Cleanroom Types	RCP2CR Series										
		RCACR Series										
		RCS2CR Series	●	●	●	●	●	●			●	●
		ISDACR/ISPDACR Series	●	●	●	●	●	●			●	●
	Splash-proof Types	ISWA/ISPWA Series	●	●	●	●	●	●			●	●
		RCP2W Series										
		RCAW Series										
		RCS2W Series	●	●	●	●	●	●			●	●
	Cartesian Robots	IK Series	●	●	●	●	●	●				
		ICSA2 Series	●	●	●	●	●	●			●	●
		ICSA3,4/ICSPA3,4,6 Series	●	●	●	●	●	●				
	SCARA	IX Series							●	●	●	●
Position Detection Method			Incremental Absolute						Absolute		Incremental Absolute	
Number of Programs			64				128		64		128	
Number of Program Steps			6,000				9,999		6,000		9,999	
Number of Multi-task Programs			16									
Number of Positions			3,000 points				20,000 points		3,000 points		20,000 points	
Data Input Device	Teaching Pendant		IA-T-X / XD SEL-TG	IA-T-X / XD SEL-TG / TD / TG				SEL-TD / TG	IA-T-X / XD	IA-T-X / XD SEL-TG / TD / TG		SEL-TD / TG
	PC Software		IA-101-X-MW IA-101-X-USBMW			IA-101-XA-MW	IA-101-X-MW IA-101-X-USBMW	IA-101-XA-MW	IA-101-X-MW IA-101-X-USBMW			IA-101-XA-MW
Standard I/Os (PIOs)			Inputs: 32 points as a total of dedicated and general-purpose inputs (Dedicated input or general-purpose input can be set with a parameter.) Outputs: 16 points as a total of dedicated and general-purpose outputs (Dedicated output or general-purpose output can be set with a parameter.)									
Expansion I/Os (PIOs)			Not Expandable	Total 48 input/output points	Expandable to a total of 96 input/output points x 3 units (when a multi-point I/O board is used)							
Field Network Support			○ (When a network board is used)									

(*2) The LSA series cannot be operated with XSEL-P/Q types having 5/6 axes.

X-SEL

Single-Axis Robot/Cartesian Robot/Linear Robot

Program Controller

Model List

Multi-axis program controller capable of operating an actuator with up to 6 axes. Up to 6 axes can be simultaneously controlled.

	J	K	P	Q
Title	Compact Type	General Purpose Type	Large-Capacity Type	Large-capacity type (conforming to safety category specifications)
External view				
Description	Compact, low-cost type ideal for operating low-output actuators	Standard type offering excellent expandability	Large-capacity type capable of controlling up to six axes or 2,400 W	Large-capacity type conforming to Safety Category 4
Maximum number of control axes	4 axes		6 axes	
Number of programs	64 programs		128 programs	
Number of program steps	6,000 steps		9,999 steps	
Number of positions	3,000 positions		20,000 positions	
Total number of connectable W	800W (See Note 1)	1600W	2400W	
Power	Single-phase AC100V/Single-phase AC200V		Single-phase AC200V/3-phase AC200V	
Safety category	B		B	Category 4 Applications Enabled
Safety rating	–	–	CE	CE, ANSI
ROBO Cylinder gateway function	–	–	Standard equipment	Standard equipment

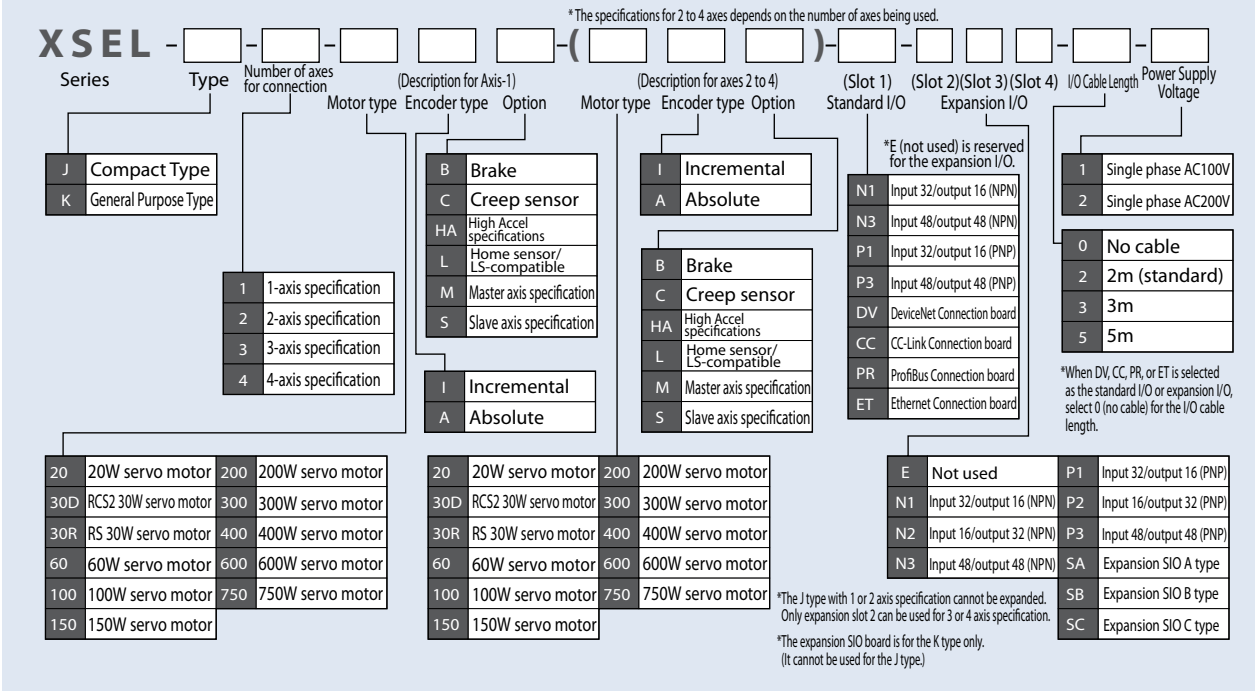
Note 1: During vertical operation, the 400W maximum output per axis is the upper limit.

Type name	KE	KT	KET
Title	CE-compliant type	Safety category compatible type	CE, safety category compliant type
External view			
Description	General purpose type with CE-compliant specification	General purpose type conforming to Safety Category 4	CE-compliant Safety category compatible type
Maximum number of control axes	4 axes		
Number of programs	64 programs		
Number of program steps	6,000 steps		
Number of positions	3,000 positions		
Total number of connectable W	1600W		
Power	Single phase AC200V		
Safety category	B	Category 4 Applications Enabled	
Safety rating	CE	ANSI	CE, ANSI
ROBO Cylinder gateway function	–	–	–

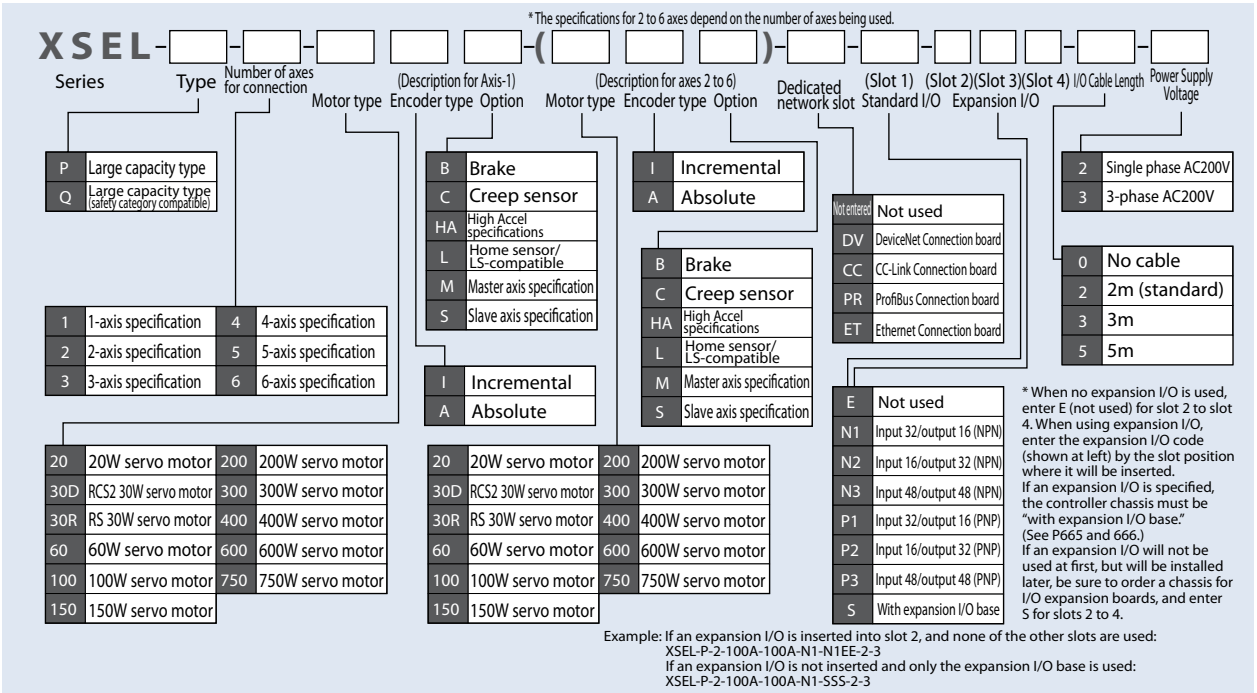
Model

[XSEL-J/K Type]

***If multiple options are selected, specify them in alphabetical order. (For example, brake + origin sensor → BL)**



[XSEL-P/Q Type]



* When no expansion I/O is used, enter E (not used) for slot 2 to slot 4. When using expansion I/O, enter the expansion I/O code (shown at left) by the slot position where it will be inserted.
If an expansion I/O is specified, the controller chassis must be "with expansion I/O base." (See P665 and 666.)
If an expansion I/O will not be used at first, but will be installed later, be sure to order a chassis for I/O expansion boards, and enter S for slots 2 to 4.

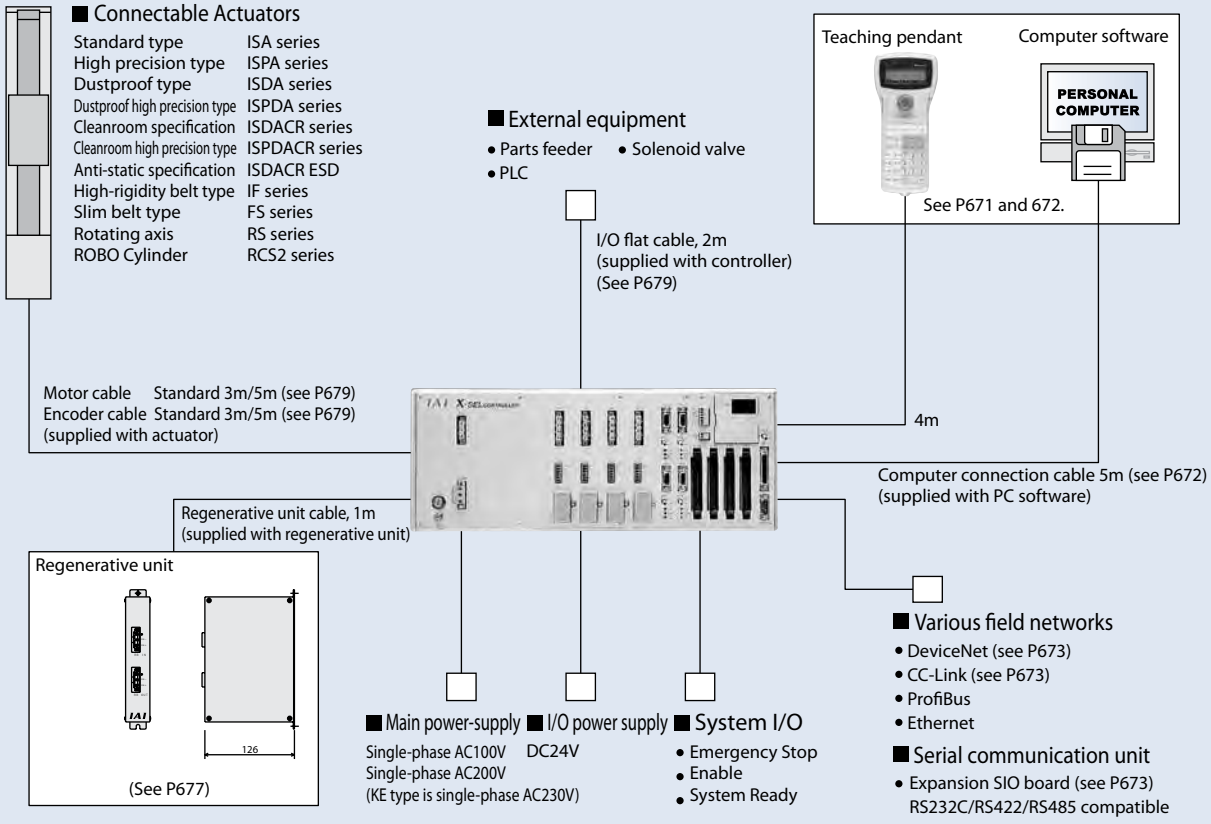
Example: If an expansion I/O is inserted into slot 2, and none of the other slots are used:
XSEL-P-2-100A-100A-N1-N1EE-2-3
If an expansion I/O is not inserted and only the expansion I/O base is used:
XSEL-P-2-100A-100A-N1-SSS-2-3

Caution

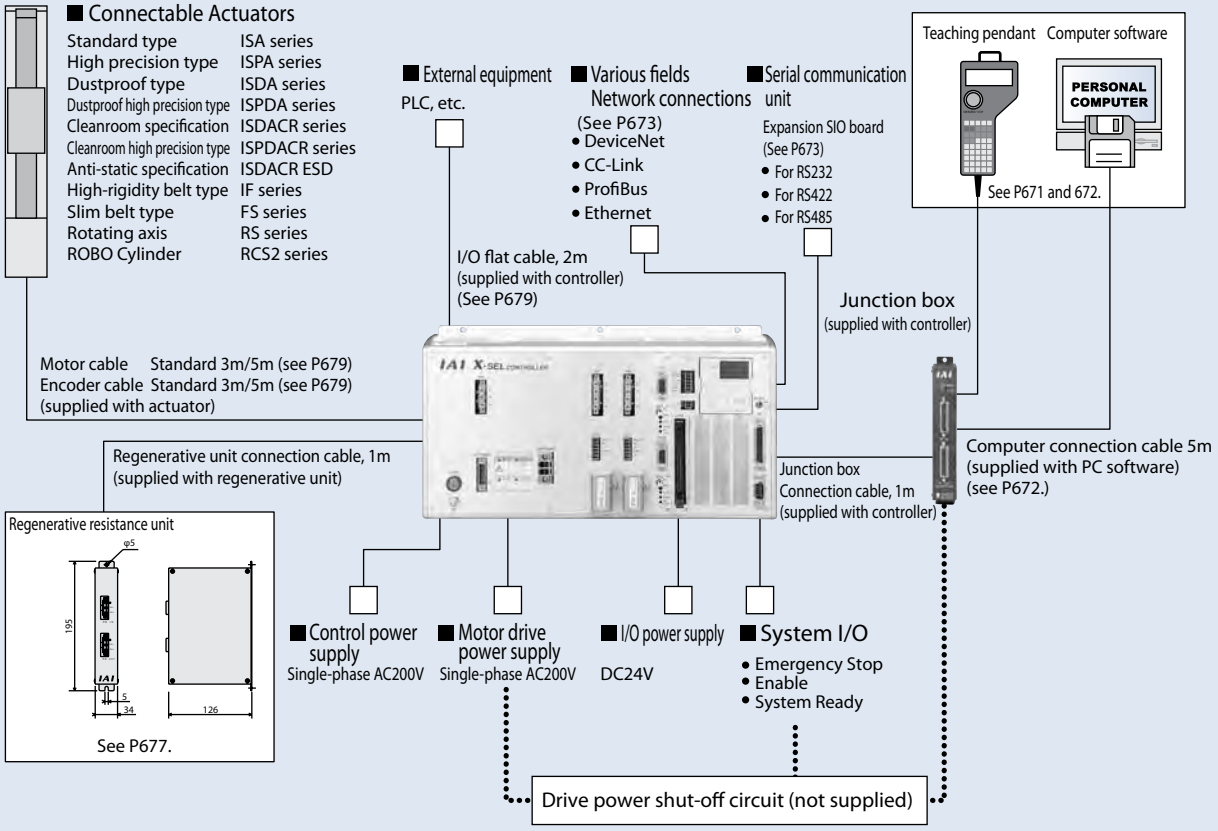
Note that the 5th/6th axes of XSEL-P/Q types cannot operate LSA series/ RCS2 series actuators.

System Configuration

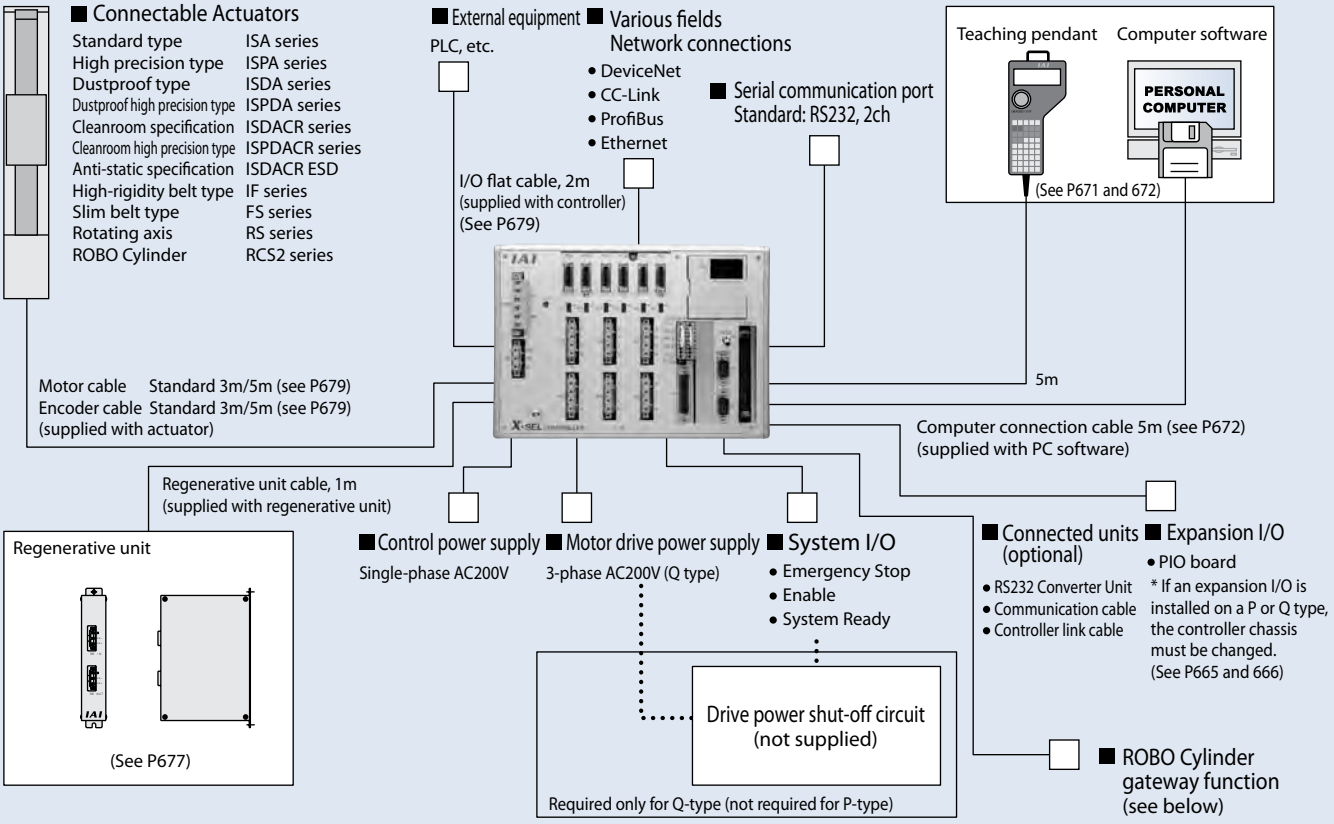
J (compact)/K (general purpose)/KE (CE type)



KT (safety category) type

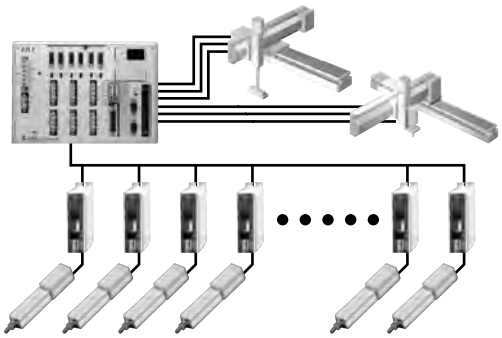


P (large-capacity type)/Q (for large-capacity safety category type)



ROBO Cylinder gateway function

The ROBO Cylinder gateway function controls the ROBO Cylinder using serial communication from the XSEL controller. Wiring work is greatly reduced compared to PIO control, and the ROBO Cylinder can be operated using the SEL language for the XSEL controller.



■ The ROBO Cylinder gateway function can be used when the controller firmware (main CPU application) is V0.68 or later (P/Q types) or V0.34 or later (PX/QX types).
■ The computer software (IA-101-X-MW) supports the ROBO Cylinder gateway function from V7.2.0.0 onward.
■ The teaching box supports the ROBO Cylinder gateway function from V1.4.6 onward for IA-T-X (XD), and from V1.0.1 onward for SEL-T (TD).

■ Specifications

Item	Description
ROBO Cylinder maximum axis connections	16 axes
XSEL controller maximum axis operations	6 axes
Usable ROBO Cylinder Series	ERC2/RCP2/RCP3/RCA/RCA2/RCS2
Connectable Controllers	ERC2/PCON/ACON/SCON/ROBONET
Communication method	Modbus

[Comparing PIO control and gateway function]

	PIO control	Gateway function
Wiring time	Large number of cables	Only 2 cables
Control method	I/O ON/OFF only	Can use program
Movement position	Requires input into controller ahead of time	Can send command from XSEL controller
Current chuck position	Verify with end position No.	Can numerically check current position

■ Connected units

The following units are required to use the ROBO Cylinder gateway function.
Contact us for cabling instructions, etc.

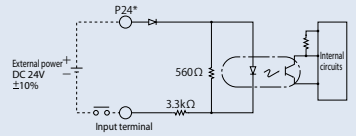
Title	Model	Reference
RS232 Converter Unit	RCB-CV-GW	One of these is required for each XSEL controller.
Communication cable	CB-RCB-SIO050	One of these is required for each XSEL controller.
Controller link cable	CB-RCB-CTL002	One of these is required for each ROBO Cylinder controller to be connected.

I/O Wiring Diagram

■Input Section External Input Specification (NPN Specifications)

Item	Specifications
Input voltage	DC24V ±10%
Input current	7mA 1 circuit
ON/OFF voltage	ON voltage… DC 16.0V (min.), OFF voltage… DC5.0V (max.)
Insulation method	Photocoupler Insulation
Externally Connected Equipment	(1) Non-Voltage Contact (minimum load around DC5V, 1mA) (2) Photoelectric Proximity Sensor (NPN Type) (3) Sequencer Transistor Output (Open Collector Type) (4) Sequencer Contact Output (minimum load around DC5V, 1mA)

[Input circuit]



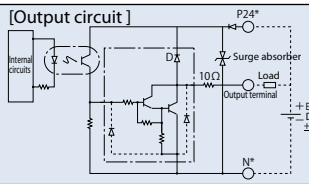
*

	K Type	J/P/Q type
P24	IO24V connector 24VIN	I/O interface Pin No. 1

■Output Section External Output Specification (NPN Specifications)

Item	Specifications	
Load voltage	DC24V	TD62084 (or equivalent)
Maximum load current	100mA/1 point 400mA Peak (Total Current)	
Leak current	Max 0.1mA/point	
Insulation method	Photocoupler insulation	
Externally Connected Equipment	(1) Miniature Relay, (2) Sequencer Input Unit	

[Output circuit]



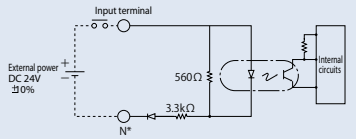
*

	K Type	J/P/Q type
P24	IO24V connector 24VIN	I/O interface Pin No. 1
N	IO24V connector 0V	I/O interface Pin No. 50

■Input Section External Input Specification (PNP Specifications)

Item	Specifications
Input voltage	DC24V ±10%
Input current	7mA 1 circuit
ON/OFF voltage	ON voltage… DC8V (min.), OFF voltage… DC19V (max.)
Insulation method	Photocoupler Insulation
Externally Connected Equipment	(1) Non-Voltage Contact (minimum load around DC5V, 1mA) (2) Photoelectric Proximity Sensor (PNP Type) (3) Sequencer Transistor Output (Open Collector Type) (4) Sequencer Contact Output (minimum load around DC5V, 1mA)

[Input circuit]



*

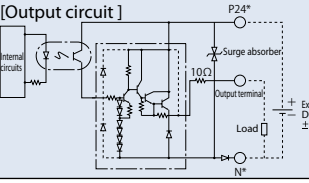
	K Type	J/P/Q type
N	IO24V connector 0V	I/O interface Pin No. 50

■Output Section External Output Specification (PNP Specifications)

Item	Specifications	
Load voltage	DC24V	TD62784 (or equivalent)
Maximum load current	100mA/1 point 400mA/8 ports (Note)	
Leak current	Max 0.1mA/point	
Insulation method	Photocoupler insulation	
Externally Connected Equipment	(1) Miniature Relay, (2) Sequencer Input Unit	

Note: The maximum load current from output port No.300 becomes 400mA at each of the 8 ports. (Max. load current between output port No.300 + n to No. 300 + n + 7. n = factor of 0 or 8.)

[Output circuit]



*

	K Type	J/P/Q type
P24	IO24V connector 24VIN	I/O interface Pin No. 1
N	IO24V connector 0V	I/O interface Pin No. 50

I/O signal table

Standard I/O Signal Table (when N1 or P1 is selected)

Pin No.	Classification	Port No.	Standard Settings
1		—	(J/P/Q Type: 24V connection/K Type: NC)
2		000	Program Start
3		001	General Purpose Input
4		002	General Purpose Input
5		003	General Purpose Input
6		004	General Purpose Input
7		005	General Purpose Input
8		006	General Purpose Input
9		007	Program Specification (PRG No. 1)
10		008	Program Specification (PRG No. 2)
11		009	Program Specification (PRG No. 4)
12		010	Program Specification (PRG No. 8)
13		011	Program Specification (PRG No. 10)
14		012	Program Specification (PRG No. 20)
15		013	Program Specification (PRG No. 40)
16		014	General Purpose Input
17		015	General Purpose Input
18	Input	016	General Purpose Input
19		017	General Purpose Input
20		018	General Purpose Input
21		019	General Purpose Input
22		020	General Purpose Input
23		021	General Purpose Input
24		022	General Purpose Input
25		023	General Purpose Input
26		024	General Purpose Input
27		025	General Purpose Input
28		026	General Purpose Input
29		027	General Purpose Input
30		028	General Purpose Input
31		029	General Purpose Input
32		030	General Purpose Input
33		031	General Purpose Input
34		300	Alarm Output
35		301	Ready Output
36		302	Emergency Stop Output
37		303	General Purpose Output
38		304	General Purpose Output
39		305	General Purpose Output
40		306	General Purpose Output
41		307	General Purpose Output
42	Output	308	General Purpose Output
43		309	General Purpose Output
44		310	General Purpose Output
45		311	General Purpose Output
46		312	General Purpose Output
47		313	General Purpose Output
48		314	General Purpose Output
49		315	General Purpose Output
50		—	(J/P/Q Type: 0V connection/K Type: NC)

Expansion I/O Signal Table (when NP or P1 is selected)

Pin No.	Classification	Standard Settings
1		(J/P/Q Type: 24V connection/K Type: NC)
2		General Purpose Input
3		General Purpose Input
4		General Purpose Input
5		General Purpose Input
6		General Purpose Input
7		General Purpose Input
8		General Purpose Input
9		General Purpose Input
10		General Purpose Input
11		General Purpose Input
12		General Purpose Input
13		General Purpose Input
14		General Purpose Input
15		General Purpose Input
16		General Purpose Input
17		General Purpose Input
18	Input	General Purpose Input
19		General Purpose Input
20		General Purpose Input
21		General Purpose Input
22		General Purpose Input
23		General Purpose Input
24		General Purpose Input
25		General Purpose Input
26		General Purpose Input
27		General Purpose Input
28		General Purpose Input
29		General Purpose Input
30		General Purpose Input
31		General Purpose Input
32		General Purpose Input
33		General Purpose Input
34		General Purpose Output
35		General Purpose Output
36		General Purpose Output
37		General Purpose Output
38		General Purpose Output
39		General Purpose Output
40		General Purpose Output
41		General Purpose Output
42	Output	General Purpose Output
43		General Purpose Output
44		General Purpose Output
45		General Purpose Output
46		General Purpose Output
47		General Purpose Output
48		General Purpose Output
49		General Purpose Output
50		(J/P/Q Type: 0V connection/K Type: NC)

Expansion I/O Signal Table (when N2 or P2 is selected)

Pin No.	Classification	Standard Settings
1		(J/P/Q Type: 24V connection/K Type: NC)
2		General Purpose Input
3		General Purpose Input
4		General Purpose Input
5		General Purpose Input
6		General Purpose Input
7		General Purpose Input
8		General Purpose Input
9	Input	General Purpose Input
10		General Purpose Input
11		General Purpose Input
12		General Purpose Input
13		General Purpose Input
14		General Purpose Input
15		General Purpose Input
16		General Purpose Input
17		General Purpose Input
18		General Purpose Output
19		General Purpose Output
20		General Purpose Output
21		General Purpose Output
22		General Purpose Output
23		General Purpose Output
24		General Purpose Output
25		General Purpose Output
26		General Purpose Output
27		General Purpose Output
28		General Purpose Output
29		General Purpose Output
30		General Purpose Output
31		General Purpose Output
32		General Purpose Output
33		General Purpose Output
34	Output	General Purpose Output
35		General Purpose Output
36		General Purpose Output
37		General Purpose Output
38		General Purpose Output
39		General Purpose Output
40		General Purpose Output
41		General Purpose Output
42		General Purpose Output
43		General Purpose Output
44		General Purpose Output
45		General Purpose Output
46		General Purpose Output
47		General Purpose Output
48		General Purpose Output
49		General Purpose Output
50		(J/P/Q Type: 0V connection/K Type: NC)

Specification Table

■ J (Compact)/K (General Purpose)/KE (CE compliant) *For information about the KT type, please contact us.

Item	Description							
Controller Series, Type	J (Compact) Type				K (General Purpose) Type/KE (CE Compatible) Type			
Connection actuator	RCS2/ISA/ISPA/ISP/ISDA/ISDACR/ISPDACR/IF/FS/RS							
Compatible motor output (W)	20/30/60/100/150/200/300/400/600/750							
Number of control axes	1axis	2 axes	3 axes	4 axes	1 axis	2 axes	3 axes	4 axes
Maximum connected axes output (W)	Max 800 (When power supply voltage is 200V) (See Note 1.) Max 400 (When power supply voltage is 100V)				Max 800	Max 1600 (When power supply voltage is 200V) Max 800 (When power supply voltage is 100V)		
Input power	100V Specification: Single-phase AC100 to 115V 200V Specification: Single-phase AC200 to 230V							
Operating power-supply voltage range	±10%							
Power supply frequency	50Hz/60Hz							
Power-supply capacity	Max 1670VA		Max 1720VA	Max 1810VA	Max 1670VA	Max 3120VA	Max 3220VA	Max 3310VA
Position detection method	Incremental Encoder (Minimal Wiring Model) Absolute encoder with rotation data backup (wire-saving type)							
Speed setting	1mm/sec and up, maximum depends on actuator specifications							
Acceleration setting	0.01G and up, maximum depends on actuator							
Programming language	Super SEL language							
Number of programs	64 programs							
Number of program steps	6,000 steps (total)							
Number of multi-tasking programs	16 programs							
Number of positions	3,000 positions							
Data memory device	FLASH ROM+SRAM Battery Backup							
Data input method	Via teaching pendant or PC-compatible software							
Standard Input/Output	32 points (total of dedicated inputs + General purpose inputs)/16 points (total of dedicated outputs + General purpose outputs)							
Expansion Input/Output	No		48 points per unit (1 additional unit can be installed)		48 points per unit (3 more units can be installed)			
Serial communications function	RS232 Port (25-pin D-sub) Standard Equipment				Standard RS232 Port + Expansion SIO Board Installable (optional)			
Other Input/Output	System I/O (Emergency Stop Input, Enable Input, System Ready Output)							
Protective function	Motor overcurrent, overload, motor driver temperature check, overload check, encoder open-circuit check, soft limit over, system error, battery error, etc.							
Ambient operating temperature, humidity	Temperature 0 to 40°C, Humidity 30 to 85%							
Ambient operating environment	Free from corrosive gases. In particular, there shall be no significant powder dust.							
Weight	2.6kg	3.3kg	5.0kg		6.0kg		7.0kg	
Accessory	I/O Flat Cable							

Note 1: During vertical operation, 400W per axis is the upper limit.

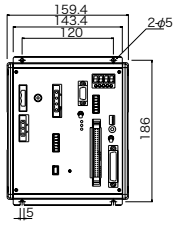
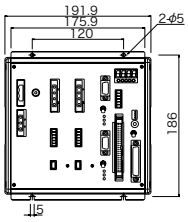
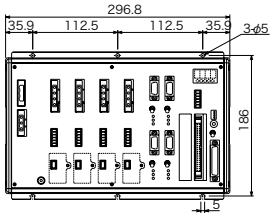
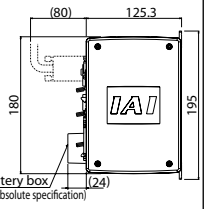
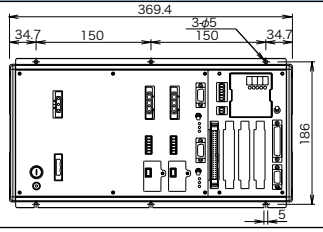
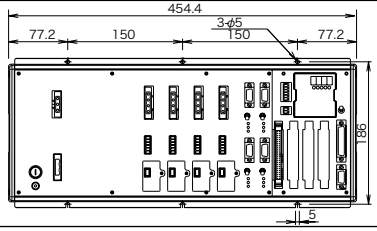
■ P (Large-Capacity Type)/Q (Large capacity type that is safety category-compliant)

Item	Description											
Controller Series, Type	P (Standard) Type						Q (Global) Type					
Connection Actuator	RCS2/ISA/ISPA/ISP/ISDA/ISDACR/ISPDACR/IF/FS/RS/LSA											
Compatible Motor Output	20/30/60/100/150/200/300/400/600/750											
Number of Controlled Axes	1 axis	2 axes	3 axes	4 axes	5 axes	6 axes	1 axis	2 axes	3 axes	4 axes	5 axes	6 axes
Maximum Connected Axes Output (W)	Max 2400W (Single-phase AC200V specification is 1600W)											
Control Power Input	AC200/230 Single-phase –15%, +10%						AC200/230 Single-phase –15%, +10%					
Motor Power Input	AC200/230 Single-phase/3-phase –10%, +10%						AC200/230 Single-phase/3-phase –10%, +10%					
Power Supply Frequency	50/60Hz											
Insulation Resistance	10MΩ or more (between the power-supply terminal and I/O terminals, and between all external terminals and case, at 500VDC)											
Withstand Voltage	AC1500V (1 minute)						AC1500V (1 minute)					
Power Supply Capacity (*1)	Max 1744VA	Max 3266VA	Max 4787VA	Max 4878VA	Max 4931VA	Max 4998VA	Max 1744VA	Max 3266VA	Max 4787VA	Max 4878VA	Max 4931VA	Max 4998VA
Position detection method	Incremental Encoder (Minimal Wiring Model) Absolute encoder with rotation data backup (wire-saving type)											
Safety Circuit Configuration	Redundancy not supported						Duplex Enabled					
Drive Source Breaker System	Internal cutoff relay						External Safety Circuit					
Enable Input	B Contact Input (Internal Power Supply Model)						B Contact Input (External Power Supply Model, Duplex)					
Speed setting	1mm/sec and up, Max. depends on actuator used											
Acceleration/Deceleration Setting	From 0.01G, the maximum limit varies depending on the actuator.											
Programming language	Super SEL language											
Number of programs	128 programs											
Number of program steps	9,999 steps (Total)											
Number of multi-tasking programs	16 programs											
Number of Positions	20,000 positions (Total)											
Data memory device	FLASH ROM+SRAM Battery Backup											
Data input method	Teaching pendant or PC software											
Standard Input/Output	48-point I/O PIO Board (NPN/PNP), 96-point I/O PIO Board (NPN/PNP), 1 board can be installed.											
Expansion Input/Output	48-point I/O PIO Board (NPN/PNP), 96-point I/O PIO Board (NPN/PNP), Up to 3 boards can be installed.											
Serial communications function	Teaching Pendant (25-pin D-sub) Port + 2ch RS232C Port (9-pin D-sub (2)											
Protective function	Motor overcurrent, overload, motor driver temperature check, overload check encoder open-circuit check, soft limit over, system error, battery error, etc.											
Ambient operating temperature, humidity, atmosphere	0 to 40°C, 10 to 95% (non- condensing). Free from corrosive gases. In particular, there shall be no significant powder dust.											
Weight (*2)	5.2kg					5.7kg	4.5kg					5kg
Accessory	I/O Flat Cable											

*1 When the connected axes represent the maximum wattage.
*2 Including the absolute-data backup battery, brake mechanism and expansion I/O box.

External Drawing

■ J (Compact) Type/K (General Purpose) Type/K E (CE Compatible) Type

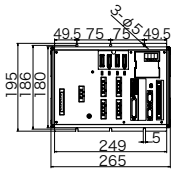
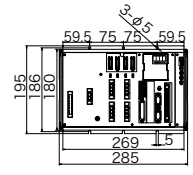
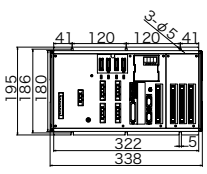
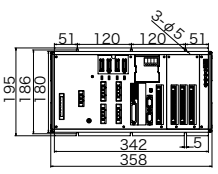
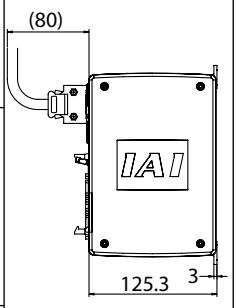
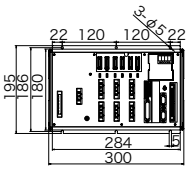
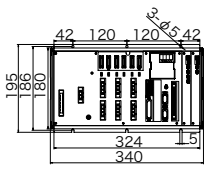
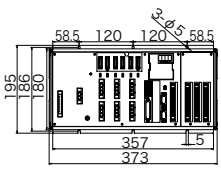
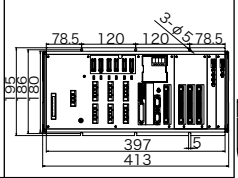
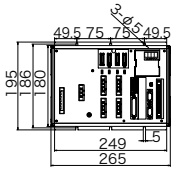
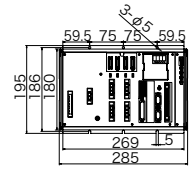
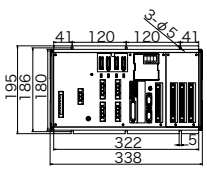
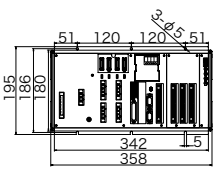
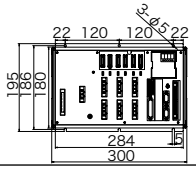
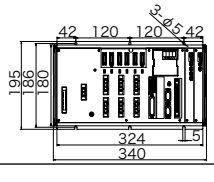
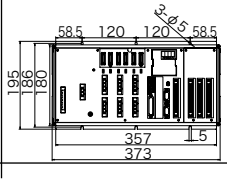
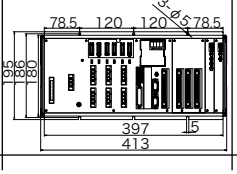
	1-axis specification	2-axis specification	3/4-axis specification	Side View
J Type (Compact Type)				
	1/2-axis specification		3/4-axis specification	
K Type KE Type (General Purpose Type)				

■ P (large-capacity standard) Type/Q (large-capacity global) Type

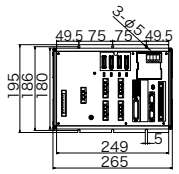
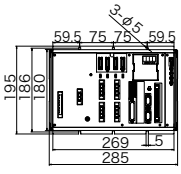
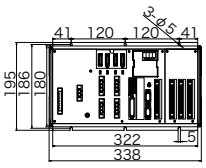
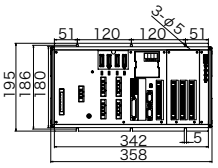
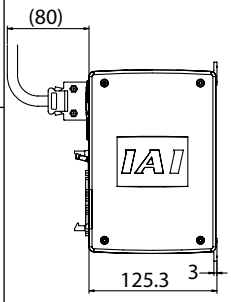
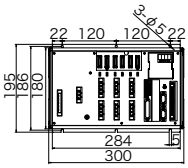
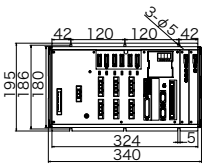
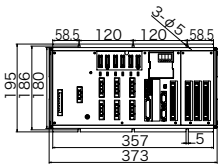
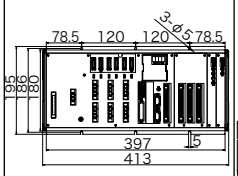
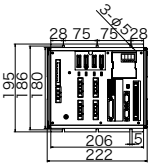
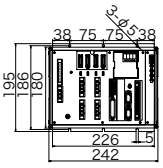
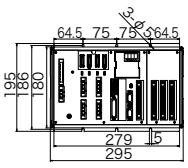
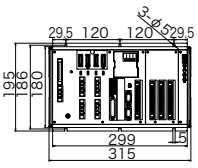
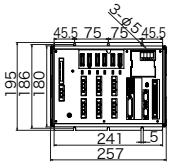
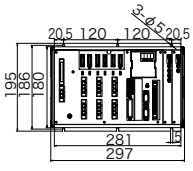
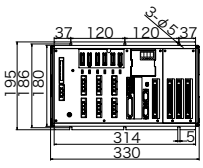
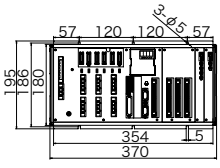
The XSEL-P/Q types have different shapes and dimensions according to controller specifications (encoder type, with/without brake, with/without I/O expansion, and power supply type).

The 4 layouts below are available. Confirm the dimensions to match the desired type and number of axes.

[P Type]

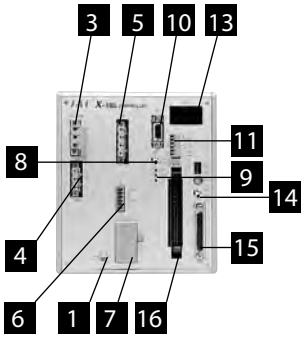
		Basic Layout (Incremental specification)	With Brake/Absolute Unit	With I/O Expansion Base	With Brake/Absolute Unit + I/O expansion base	Side View
Controller Specifications	Encoder	Incremental	Absolute	Incremental	Absolute	
	Brake	No	Yes	No	Yes	
	I/O	Standard Only	Standard Only	Standard + Expansion	Standard + Expansion	
Single-phase Specifications	1 to 4-axis Specifications					
	5 to 6-axis Specifications					
3-phase Specifications	1 to 4-axis Specifications					
	5 to 6-axis Specifications					

[Q Type]

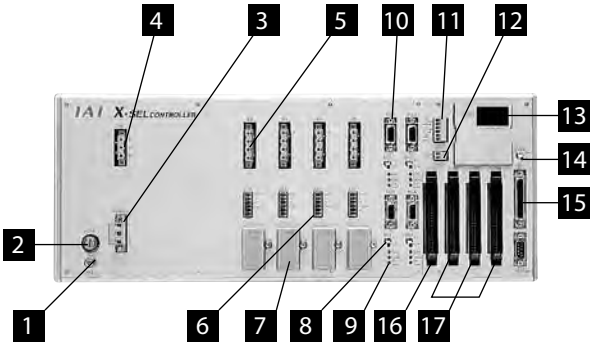
		Basic Layout (Incremental specification)	With Brake/Absolute Unit	With I/O Expansion Base	With Brake/Absolute Unit + I/O expansion base	Side View
Controller Specifications	Encoder	Incremental	Absolute	Incremental	Absolute	
	Brake	No	Yes	No	Yes	
	I/O	Standard Only	Standard Only	Standard + Expansion	Standard + Expansion	
Single-phase Specifications	1 to 4-axis Specifications					
	5 to 6-axis Specifications					
3-phase Specifications	1 to 4-axis Specifications					
	5 to 6-axis Specifications					

Part Names

J type (compact)



K type (general purpose)



1 FG Connection Terminal

A terminal for connecting to the FG terminal on the case.
The PE of the AC input is connected to the case inside the controller.

2 Fuse holder (K type only)

This is the single-pole fuse holder for overcurrent protection in the AC input.

3 Main Power Input Connector

This connector is for AC100/200V single-phase input.
(See page at right for cable-side plug accessories)

4 Regeneration Resistance Unit Connector

This connector is for the regenerative resistance unit (optional/REU-1) that is connected when there is insufficient capacity with the built-in regenerative resistor for high-acceleration/high-loads, etc.

5 Motor Cable Connector

A connector for the motor power-supply cable of the actuator.

6 Actuator Sensor Input Connector

A connector for axis sensors such as LS, CREEP and OT.

7 Absolute-data backup battery

This is the encoder backup battery unit when an absolute encoder is used.
This battery is not connected for a non-absolute axis.

8 Brake Release Switch (Brake-equipped specification only)

ALT switch with lock for releasing axis brake.
Pull the switch forward prior to moving.
Set the switch to the top position (RLS) to forcibly release the brake, or to the bottom position (NOM) to have the brake automatically controlled by the controller.

9 Axis Driver Status LED

These are LEDs that monitor the operating status of CPU that controls the motor drive.
Features the following 3 LEDs.

Title	Color	Description when lit
ALM	Orange	Indicates when an error has been detected by the driver.
SVON	Green	Indicates that the servo ON and that the motor is being driven.
BATT ALM	Orange	Indicates low absolute battery charge.

10 Encoder Cable Connector

15-pin D-sub connector for the actuator encoder cable.

11 System IO Connector

A terminal for connecting to the FG terminal on the case.
The PE of the AC input is connected to the case inside the controller.

Title		
EMG	Emergency Stop Input	ON=operation enabled, OFF=emergency stop
ENB	Safety Gate Input	ON=operation enabled, OFF=servo OFF
RDY	System Ready Relay Output	This signal outputs the status of this controller. Cascade connection is supported. Short=ready, Open=not ready

12 IO24V Power Connector (K Type only)

16 17 This connector is used to supply external I/O power to the insulator when DIs and DOs are installed in the IO boards.

13 Panel Window

This window has a 4-digit, 7-segment LED and five LED lamps showing the system status.

14 Mode Switch

This is a locking alternate switch for designating the controller operating mode.
Pull the switch forward and then tilt it up or down.
The top position indicates the MANU (manual operation) mode, while the bottom position indicates the AUTO (automatic operation) mode.)
Teaching can only be performed as manual operation, and automatic operation using external I/Os is not possible in the MANU mode.

15 Teaching Connector

This is a 25-pin D-sub connector for connecting a teaching pendant or PC and inputting positions.

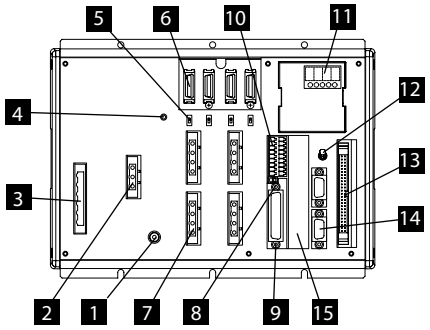
16 Standard I/O Slot (Slot 1)

A 32-point input/16-point output DIO board is installed as standard equipment.

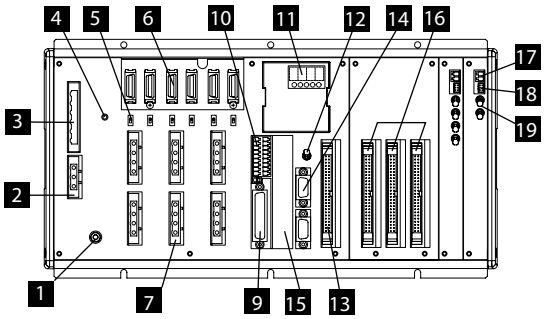
17 Expansion I/O Slots (Slot 2, Slot 3, Slot 4)

Install an expansion I/O board. (option)

P type (standard 4 axes)



Q type (Absolute brake unit + with expansion base, 6 axes)



1 FG Connection Terminal

This connecting terminal is used to connect the case FG. The PE of the AC input is connected to the case inside the controller.

2 External Regenerative Unit Connector

A connector for the regenerative resistor that must be connected when the built-in regenerative resistor alone does not offer sufficient capacity in high acceleration/ high-load operation, etc. Whether or not an external regenerative resistor is necessary depends on the conditions of your specific application such as the axis configuration.

3 AC Power Input Connector

This connector is for AC200V 3-phase input. It consists of six terminals, including motor power-supply, control power-supply and PE terminals.
Standard equipment only includes terminal block.
Caution Due to risk of electric shock, do not touch this connector while power is supplied.

4 Control Power Monitor LED

A green light illuminates while the control power supply is properly generating internal controller power.

5 Enable/Disable Switch for Absolute Battery

This switch enables/disables the absolute battery backup operation for the encoder. At the factory, the switch is set to the disabled setting. Connect the encoder/axis sensor cable and turn on the power before flipping the switch to the upper position.

6 Encoder/Axis Sensor Connector

This connector is used to connect an actuator encoder and axis sensors such as LS, CREEP and OT. *: LS, CREEP and OT are optional.

7 Motor Connector

A connector for driving the motor in the actuator.

8 Teaching Pendant Type Selection Switch

8 This switch selects the type of teaching pendant connected to the teaching connector. An IAI standard teaching pendant or an ANSI-compliant teaching pendant can be selected. Change the switch setting in accordance with a teaching pendant using a switch installed on the front of the board.
*Q type can only be used with an ANSI-compliant teaching pendant.

9 Teaching Connector

The teaching interface is used for connecting the IAI teaching pendant or the software on a PC to operate and configure the system, etc.

10 System I/O Connector

This I/O connector governs the controller safety operation control. According to the global specification, a safety circuit conforming up to Safety Category 4 may be configured using this connector and an external safety circuit.

11 Panel Window

This window consists of a 4-digit, 7-segment LED and five LED lamps showing the system status.

Description of 5 LEDs

Name	Status when LED is lit
RDY	CPU Ready (programs can be run)
ALM	CPU Alarm (System Down Level Error) CPU Hardware Problem
EMG	Emergency stop status, CPU hardware problem, or power system hardware problem
PSE	Power supply problem
CLK	System clock problem

12 Mode Switch

This ALT switch with lock is used to specify the controller operating mode. Pull the switch forward prior to moving. Set the switch to the top position (MANU) for the manual mode, or to the bottom position (AUTO) for the automatic mode. Teaching operations can be implemented with MANU operation only. In the MANU mode, however, auto-start programs will not start.

13 Standard I/O Connector

50-pin flat connector structure, comprising 32 input/16 output DIOs.

Overview of Standard I/O Interface Specifications

Item	Description
Connector Name	I/O
Applicable connector	50-Pins, Flat Connector
Power supply	Power is supplied through connector pins No. 1 and No. 50.
Input	32 points (including General purpose and dedicated inputs)
Output	16 points (including General purpose and dedicated inputs)
Connected to	External PLC, sensors, etc.

14 General purpose RS232C Port Connector

This port is for the General purpose RS232C equipment. (Two channels can be used.)

15 Field network board slot

A slot that accepts a fieldbus interface module.

16 Expansion I/O Board (optional)

Slots that accept optional expansion I/O boards.

17 Brake Power Input Connector

This power input connector is for use of actuator brake drive. DC24V must be supplied externally. Unless this power is supplied, it will not be possible to release the actuator brake. Be sure that power is supplied to the axes with brakes. Use a shielded cable for the brake power cable, and connect the shield to the 24V power side.

18 Brake Release Switch Connector

This is a connector for the switch that releases the actuator brake externally to the controller. Shorting the COM terminal and the BKMRL terminal causes the brake to be released. Use this method if you wish to manually operate the actuator after the controller has experienced a power failure or malfunction.

19 Brake Switch

This is the ALT switch with lock to release axis brake. Pull the switch forward to start operating. Set the switch to the top position (RLS) to forcibly release the brake, or to the bottom position (NOM) to have the brake automatically controlled by the controller.

XSEL Controller Option List

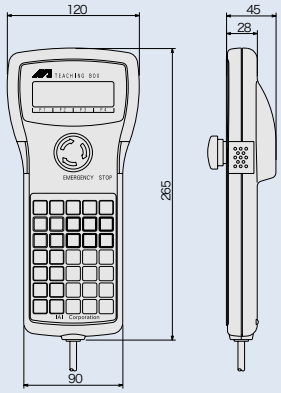
Product name		Details	Option unit model	Compatibility/Controller model Compact Type J Standard 1 and 2 axis	Compatibility/Controller model Compact Type J Standard 3 and 4 axis	Compatibility/Controller model Compact Type JX SCARA 4 axis	
Teaching Pendant		Standard type	IA-T-X	○			
		Splash-proof	SEL-T	—			
		Splash-proof (with enable switch)	SEL-TD	—			
		Safety category compatible type	SEL-TG	○			
Computer software		For DOS/V , XP, 2K, etc.	IA-101-X-MW	○			
		For PC-98	IA-101-X-CW	○			
		Safety category compatible	IA-101-XA-MW	—			
		For USB port	IA-101-X-USBMW	○			
Expansion I/O board	PIO board	Expansion PIO (Input 32/Output 16 NPN)	IA-103-X-32	Cannot install	XSEL-□-□-□-N1-N1EE-□-□ (Can install only one)		
		Expansion PIO (Input 32/Output 16 PNP)	IA-103-X-32-P		XSEL-□-□-□-P1-P1EE-□-□ (Can install only one)		
		Expansion PIO (Input 16/Output 32 NPN)	IA-103-X-16		XSEL-□-□-□-N1-N2EE-□-□ (Can install only one)		
		Expansion PIO (Input 16/Output 32 PNP)	IA-103-X-16-P		XSEL-□-□-□-P1-P2EE-□-□ (Can install only one)		
	SIO board	Expansion SIO A type (for RS232C)	IA-105-X-MW-A	Cannot install			
		Expansion SIO B type (for RS422)	IA-105-X-MW-B				
		Expansion SIO C type (for RS485)	IA-105-X-MW-C				
	Network board	DeviceNet (Input 256/Output 256 for compact type)	IA-NT-3206-DV	XSEL-□-□-□-DV-EEE-□-□ (Install in standard slot)			
		DeviceNet (Input 256/Output 256 for general purpose type)	IA-NT-3204-DV	—			
		DeviceNet (Input 256/Output 256 for large-capacity type)	(None)	—			
		CC-Link (Input 256/Output 256 for compact type)	IA-NT-3206-CC256	XSEL-□-□-□-CC-EEE-□-□ (Install in standard slot)			
		CC-Link (Input 256/Output 256 for general purpose type)	IA-NT-3204-CC256	—			
		CC-Link (Input 256/Output 256 for large-capacity type)	(None)	—			
		ProfiBus (Input 256/Output 256 for compact type)	IA-NT-3206-PB	XSEL-□-□-□-PR-EEE-□-□ (Install in standard slot)			
		ProfiBus (Input 256/Output 256 for general purpose type)	IA-NT-3204-PB	—			
		ProfiBus (Input 256/Output 256 for large-capacity type)	(None)	—			
		Ethernet (for compact type)	IA-NT-3206-ET	XSEL-□-□-□-ET-EEE-□-□ (Install in standard slot)			
		Ethernet (for general purpose type)	IA-NT-3204-ET	—			
		Ethernet (for large capacity type)	(None)	—			
	Multipoint I/O Board	Multi-point I/O board for compact type (Input 48/Output 48 NPN)	IA-IO-3205-NP	XSEL-□-□-□-N3-EEE-□-□ (Install in standard slot)			
		Multi-point I/O board for general purpose and large capacity types (Input 48/Output 48 NPN)	IA-IO-3204-NP	—			
		Multi-point I/O board for compact type (Input 48/Output 48 PNP)	IA-IO-3205-PN	XSEL-□-□-□-P3-EEE-□-□ (Install in standard slot)			
		Multi-point I/O board for general purpose and large capacity types (Input 48/Output 48 PNP)	IA-IO-3204-PN	—			
		Multi-point I/O board terminal block (NPN)	TU-MA96	Cannot use			
		Multi-point I/O board terminal block (PNP)	TU-MA96-P				
ROBO Cylinder gateway connector unit			RCB-CV-GW CB-RCB-SIO 050 CB-RCB-CTL 002	—			
Regenerative resistance unit			REU-1	○		Not needed	
Externally-attached brake box			IA-110-X-0	○		Not needed	
Absolute data storage battery (for compact and general purpose types)			IA-XAB-BT	○		Not needed	
Absolute data storage battery (for large capacity type)			AB-5	—		—	

Compatibility/Controller model								
General Purpose Type					Large-Capacity Type			
K	KE	KT	KX	KETX	P	Q	PX	QX
Standard 1 to 4 axes	CE compatible 1 to 4 axes	Global 1 to 4 axes	SCARA 1 to 4 axes	Global SCARA 4 axes	Standard 1 to 6 axes	Global 1 to 6 axes	SCARA 4 to 6 axes	Global SCARA 4 to 6 axes
○					○	—	○	—
○					○	—	○	—
○					○			
○					○			
○		—	○	—	○	—	○	—
○		—	○	—	○	—	○	—
—		○	—	○	—	○	—	○
○					○	—	○	—
XSEL-□-□-□-N1-N1EE-□-□ (Install one) XSEL-□-□-□-N1-N1N1E-□-□ (Install two) XSEL-□-□-□-N1-N1N1N1-□-□ (Install three)					XSEL-□-□-□-N1-N1EE-□-□ (Install two) XSEL-□-□-□-N1-N1N1E-□-□ (Install three) XSEL-□-□-□-N1-N1N1N1-□-□ (Install four)			
XSEL-□-□-□-P1-P1EE-□-□ (Install one) XSEL-□-□-□-P1-P1P1E-□-□ (Install two) XSEL-□-□-□-P1-P1P1P1-□-□ (Install three)					XSEL-□-□-□-P1-P1EE-□-□ (Install two) XSEL-□-□-□-P1-P1P1E-□-□ (Install three) XSEL-□-□-□-P1-P1P1P1-□-□ (Install four)			
XSEL-□-□-□-N1-N2EE-□-□ (Install one) XSEL-□-□-□-N1-N2N2E-□-□ (Install two) XSEL-□-□-□-N1-N2N2N2-□-□ (Install three)					XSEL-□-□-□-N2-N2EE-□-□ (Install two) XSEL-□-□-□-N2-N2N2E-□-□ (Install three) XSEL-□-□-□-N2-N2N2N2-□-□ (Install four)			
XSEL-□-□-□-P1-P2EE-□-□ (Install one) XSEL-□-□-□-P1-P2P2E-□-□ (Install two) XSEL-□-□-□-P1-P2P2P2-□-□ (Install three)					XSEL-□-□-□-P2-P2EE-□-□ (Install two) XSEL-□-□-□-P2-P2P2E-□-□ (Install three) XSEL-□-□-□-P2-P2P2P2-□-□ (Install four)			
XSEL-□-□-□-□-SAEE-□-□ (Can install only one) XSEL-□-□-□-□-SBEE-□-□ (Can install only one) XSEL-□-□-□-□-SCEE-□-□ (Can install only one)					Cannot install (2ch RS232C standard equipment)			
—					—			
XSEL-□-□-□-DV-EEE-□-□ (Install in standard slot)					—			
—					XSEL-□-□-□-DV-□-EEE-□-□ (Install in dedicated network slot)			
—					—			
XSEL-□-□-□-CC-EEE-□-□ (Install in standard slot)					—			
—					XSEL-□-□-□-CC-□-EEE-□-□ (Install in dedicated network slot)			
—					—			
XSEL-□-□-□-PR-EEE-□-□ (Install in standard slot)					—			
—					XSEL-□-□-□-PR-□-EEE-□-□ (Install in dedicated network slot)			
—					—			
XSEL-□-□-□-ET-EEE-□-□ (Install in standard slot)					—			
—					XSEL-□-□-□-ET-□-EEE-□-□ (Install in dedicated network slot)			
—					—			
XSEL-□-□-□-N1-N3EE-□-□ (Install one) XSEL-□-□-□-N1-N3N3E-□-□ (Install two) XSEL-□-□-□-N1-N3N3N3-□-□ (Install three)					XSEL-□-□-□-N3-EEE-□-□ (Install one) XSEL-□-□-□-N3-N3EE-□-□ (Install two) XSEL-□-□-□-N3-N3N3E-□-□ (Install three) XSEL-□-□-□-N3-N3N3N3-□-□ (Install four)			
—					—			
XSEL-□-□-□-P1-P3EE-□-□ (Install one) XSEL-□-□-□-P1-P3P3E-□-□ (Install two) XSEL-□-□-□-P1-P3P3P3-□-□ (Install three)					XSEL-□-□-□-P3-EEE-□-□ (Install one) XSEL-□-□-□-P3-P3EE-□-□ (Install two) XSEL-□-□-□-P3-P3P3E-□-□ (Install three) XSEL-□-□-□-P3-P3P3P3-□-□ (Install four)			
○					Cannot use			
○								
—					○			
○			Not needed		○			
○			Not needed		Not needed			
○			Not needed		—			
—					○		Not needed	

Teaching Pendant

Model **IA-T-X** (standard)
IA-T-XD (equipped with Deadman switch)

Dimensional Drawing



Features
- A teaching device offering program/position input function, test operation function, monitoring function, and more.
- Interactive operation enables anyone to use this device easily.
- Has Deadman switch specification with improved safety performance.

Specification

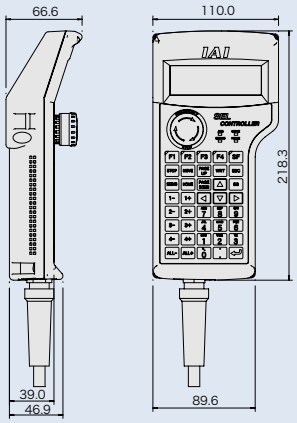
Item	Specifications
Ambient operating temperature and humidity	Temperature 0 to 40°C, Humidity 85%RH or less
Ambient operating environment	Free from corrosive gases. In particular, there shall be no significant amount of dust.
Weight	Approx. 650g
Cable length	4m
Display	20 character × 4 row LCD display

Caution
* Versions earlier than Ver. 1.13 cannot be used for XSEL-P/Q.
* Versions earlier than Ver. 1.08 cannot be used for SCARA.

ANSI standard/CE mark compliant teaching pendant (for use with General purpose type only)

Model **SEL-T**
SEL-TD (ANSI-compliant)
SEL-TG (Safety category compatible)

Dimensional Drawing



Features
Splash-proof type that complies with IP54 protection class. Usability has been enhanced with dedicated keys set for each function. SEL-TD/SEL-TG are also equipped with a 3-position enable switch and support ANSI standards.

Specification

Item	Specifications
Ambient operating temperature and humidity	Temperature 0 to 40 °C, Humidity 30 to 85% RH or less (non- condensing)
Ambient operating environment	IP54 (not including the cable connector part)
Weight	400g or less (not including the cable)
Cable length	5m
Display	32 character × 8 row LCD display
Safety Rating	CE mark, ANSI standards (*)

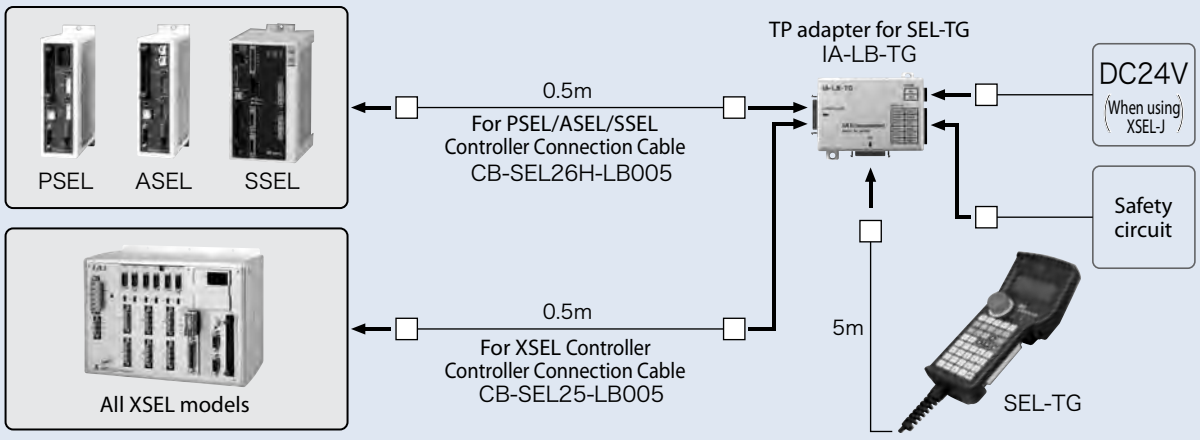
(*) ANSI standards support SEL-TD/SEL-TG only.

Teaching Pendant – Controller Compatibility Chart

		IA-T-X	IA-T-XD	SEL-T	SEL-TD	SEL-TG
		Standard type	Equipped with Deadman switch	Standard type	Safety category compatible type	Safety category compatible type
Program Controller	PSEL/ASEL/SSEL	○ (Note 1)	○ (Note 1)	○ (Note 1)	○ (Note 1)	◎
	XSEL-J	○	○	×	×	○ (Note 2)
	XSEL-K	○	○	○	○	○
	XSEL-P	○	○	○	○	◎
	XSEL-Q	○	○	○	◎	◎
	XSEL-KT	○	○	○	◎	◎
	XSEL-KE	○	○	○	○	○
	XSEL-JX	○	○	×	×	○ (Note 2)
	XSEL-KX	○	○	○	○	○
	XSEL-PX	○	○	○	○	◎
	XSEL-QX	○	○	○	◎	◎

*◎ complies with safety categories B to 4,
○ indicates that non-compliance with the safety category, but that connection is possible.
Note 1: A conversion cable is also needed when connecting to PSEL/ASEL/SSEL.
Note 2: If connecting SEL-TG to the XSEL-J/JX controller, DC24V must be supplied to the TP adapter.

SEL-TG wiring diagram



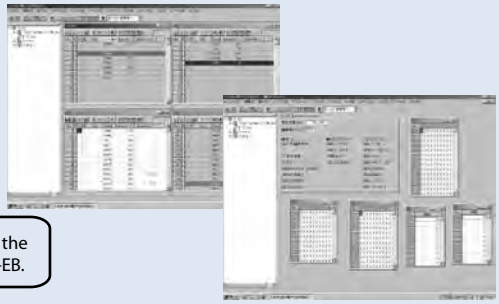
PC-compatible software (Windows only)

Model **IA-101-X-MW** (DOS/V version)

*For information about the PC98 version, please contact us.

Caution
* Versions earlier than Ver.3.0.0 cannot be used for XSEL-P/Q.
* Versions earlier than Ver. 2.0.0 cannot be used for SCARA.
* When using a safety category 4 controller, use IA-101-XA-MW.

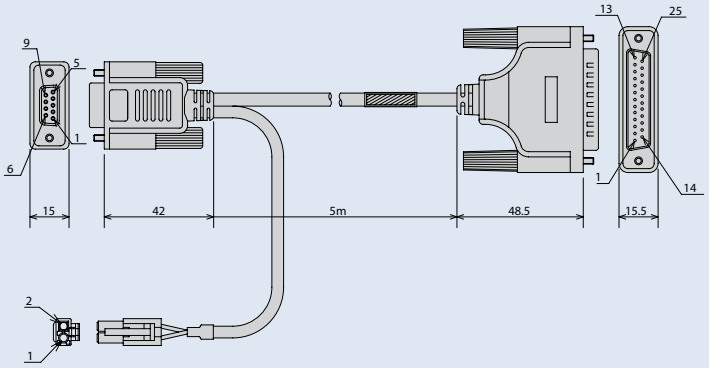
Features A startup support software program offering program/position input function, test operation function, monitoring function.
The functions needed for debugging have been enhanced significantly to help reduce the startup time.



Description
• Software (CD-ROM) – compatible with Windows 98, NT, 2000, ME, XP
• PC connection cable 5m + emergency stop box (model no. CB-ST-E1MW050-EB)

PC connection cable component (Model No. CB-ST-E1MW050)

Caution
When ordering computer connection cables separately for maintenance, note that the model number for the cable alone is CB-ST-E1MWO50. When bundled with the EMO box, the model number is CB-ST-E1MWO50-EB.



Wiring Diagram

D-sub 9P socket		D-sub 25P plug	
Connector hood FG		Connector hood FG	
BROWN	2	2	BROWN
BROWN/BLACK	3	3	BROWN/BLACK
ORANGE	5	7	ORANGE
ORANGE/BLACK			ORANGE/BLACK
	4	4	
	6	5	
	7	6	
	8	20	
		18	
		19	
ELP-02V		13	RED
RED	1	12	RED/BLACK
BLACK	2	1	Shield FG

(Shield)

Software for Safety Category 4 Compliant PC

Model **IA-101-XA-MW** (DOS/V version)

*Cannot be used with XSEL-J/JX/K/KE/KX/P/PX

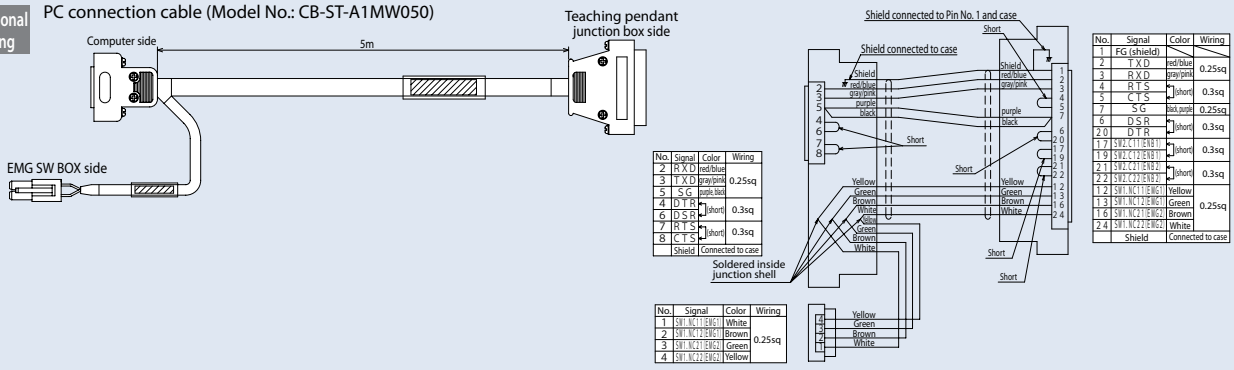
Features A startup support software program offering program/position input function, test operation function, monitoring function.
The functions needed for debugging have been enhanced significantly to help reduce startup time.
Also, the PC connection cable provides a redundant emergency stop circuit and complies with Safety Category 4.

Caution
When ordering computer connection cables separately for maintenance, note that the model number for the cable alone is CB-ST-A1MW050. When bundled with the EMO box, the model number is CB-ST-A1MW050-EB.

Description (supplied accessory)
• Software (CD-ROM) – compatible with Windows 98, NT, 2000, ME, XP
• PC connection cable 5m + emergency stop box (Model No.: CB-ST-A1MW050-EB)

Dimensional Drawing

PC connection cable (Model No.: CB-ST-A1MW050)

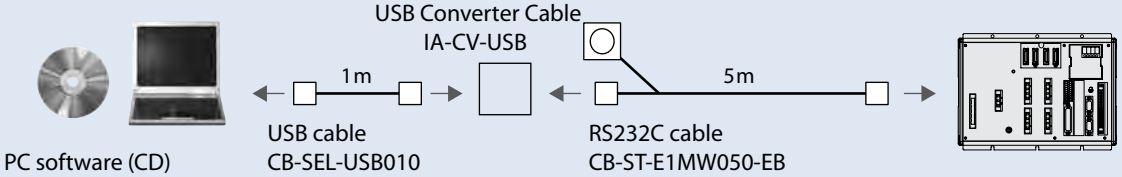


USB-compatible PC software

Model **IA-101-X-USBMW**

Features A USB conversion adapter is attached to the RS232C cable to enable use with the USB port of a PC.

Description
• Software (CD-ROM) – compatible with Windows 98, NT, 2000, ME, XP
• PC connection cable 5m + emergency stop box + USB conversion adapter + USB cable 1m



■Expansion SIO board (dedicated General purpose type)

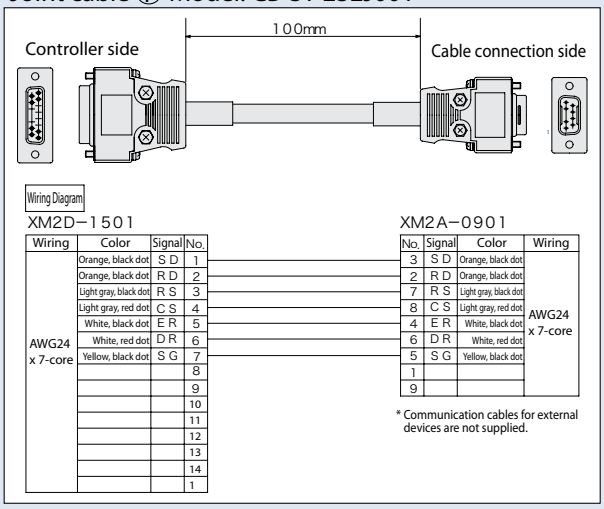
Model/ Specifications

IA-105-X-MW-A (for RS232C connection) (main unit + joint cable(1), 2 included)
IA-105-X-MW- B (for RS422 connection) (main unit + joint cable(2), 1 cable is supplied)
IA-105-X-MW- C (for RS485 connection) (main unit + joint cable(2), 1 cable is supplied)

Description

Board for serial communications with external equipment. This board has two port channels and implements three communication modes using the supplied joint cable(s).

Joint cable ① Model: CB-ST-232J001



Wiring Diagram

XM2D−1501

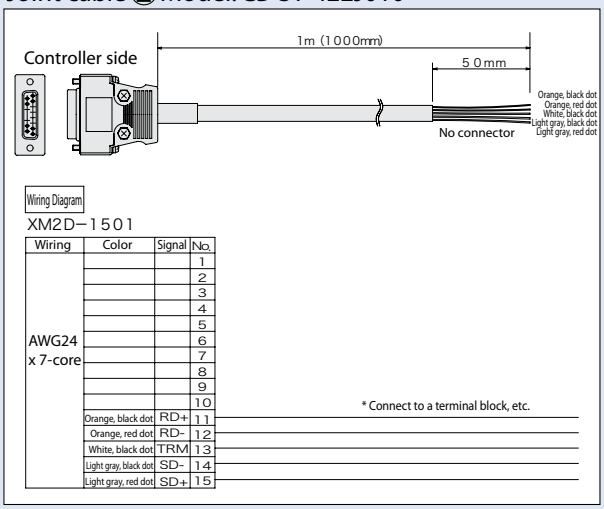
Wiring	Color	Signal	No.
AWG24 x 7-core	Orange, black dot	SD	1
	Orange, black dot	RD	2
	Light gray, black dot	RS	3
	Light gray, red dot	CS	4
	White, black dot	ER	5
	White, red dot	DR	6
	Yellow, black dot	SG	7
			8
			9
			10
			11
			12
			13
			14
			1

XM2A−0901

No.	Signal	Color	Wiring
3	SD	Orange, black dot	AWG24 x 7-core
2	RD	Orange, black dot	
7	RS	Light gray, black dot	
8	CS	Light gray, red dot	
4	ER	White, black dot	
6	DR	White, red dot	
5	SG	Yellow, black dot	
1			
9			

* Communication cables for external devices are not supplied.

Joint cable ② Model: CB-ST-422J010



Wiring Diagram

XM2D−1501

Wiring	Color	Signal	No.
AWG24 x 7-core			1
			2
			3
			4
			5
			6
			7
			8
			9
			10
	Orange, black dot	RD+	11
	Orange, red dot	RD-	12
	White, black dot	TRM	13
	Light gray, black dot	SD-	14
	Light gray, red dot	SD+	15

* Connect to a terminal block, etc.

■DeviceNet Connection Board

A board for connecting the XSEL controller to DeviceNet.

Item	Specifications			
Number of I/O Points	1 board: 256 input points/256 output points *1 Only 1 board can be installed			
Communication Standard	Interface module certified under DeviceNet 2.0 (certification to be obtained)			
	Group 2 only server			
	Network Insulated node operating on network power supply			
Communication Specification	Controller	Bit strobe		
		Polling		
		Cyclic		
Baud rate	500k/250k/125kbps (Selectable by DIP switch)			
Communication Cable-side connector	Baud rate	Max. network length	Max. branch length	Total branch length
	500kbps	100m	6m	39m
	250kbps	250m		78m
	125kbps	500m		156m
	*When large DeviceNet cable is used			
Communication Power Supply	24VDC (supplied from DeviceNet)			
Communication Power Supply Current	60mA or higher			
Number of Reserved Nodes	1			
Controller	MSTBA2.5/5-G.08AUM by Phoenix Contact (*1)			

(*1) Cable-side connector Controller (Controller SMSTB2.5/5-ST-5.08AU) is a standard accessory.

■CC-Link Connection Board

A board for connecting the XSEL controller to CC-Link.

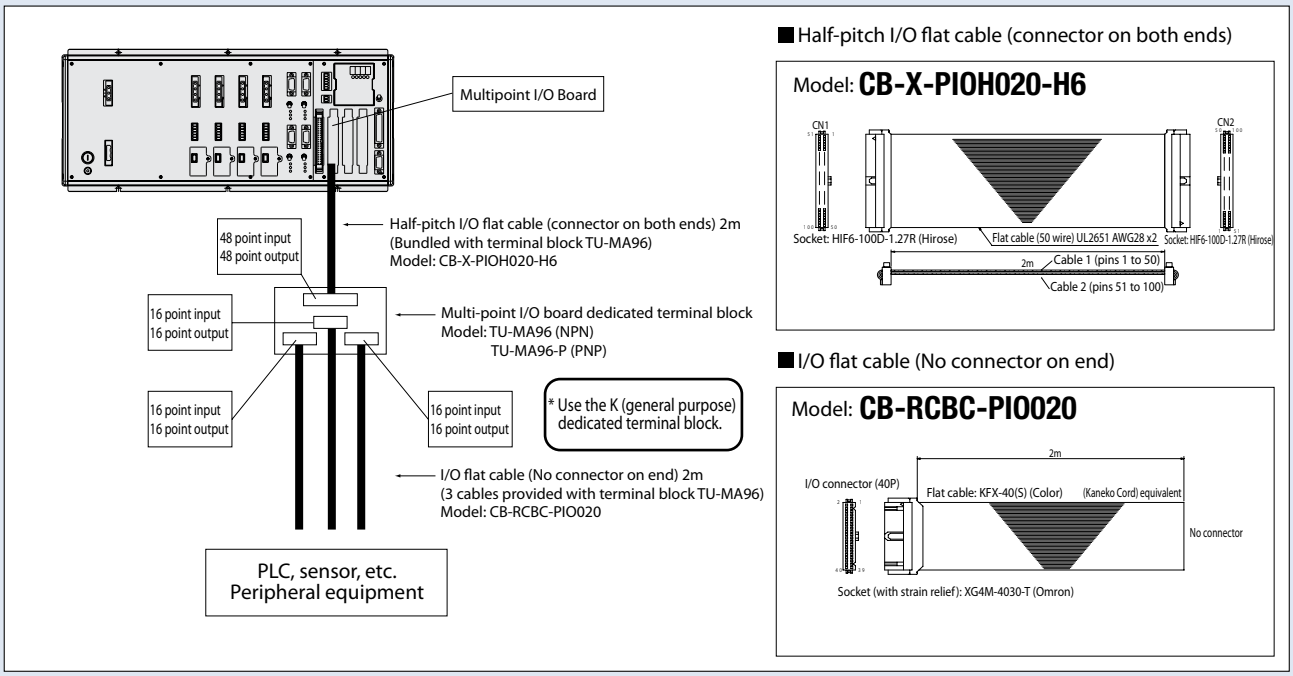
Item		Specifications				
Number of I/O Points	Remote Device	1 board: 256 inputs/256 outputs *Only 1 board can be installed				
Communication Standard		CC-Link Ver1.10 (already certified)				
Baud rate		10M/5M/2.5M/625k/156kbps (Switched via the rotary switch)				
Communication method		Broadcast polling method				
Asynchronous		Frame synchronization method				
Encoding Format		NRZI				
Transmission path type		Bus Format (EIA RS485 Compliant)				
Transmission format error		HDLC Compliant				
Control method		CRC($X^{16}+X^{12}+X^5+X1$)				
Number of Reserved Stations		1 to 3 stations (Remote device station)				
Communication cable length		Baud rate (bps)	10M	5M	2.5M	625k	156k
		Cable Length (m)	100	160	400	900	1200
Controller (Controller-side)		MSTBA2.5/5-G-5.08-AUM made by Phoenix Contact (*1)					

(*1) Cable-side connector (Made by Phoenix Contact SMSTB2.5/5-ST-5.08AU) is a standard accessory.

■Multipoint I/O Board & Terminal Block

This board and terminal block are to be used when a large number of controller PIO inputs and outputs are needed.

System Configuration

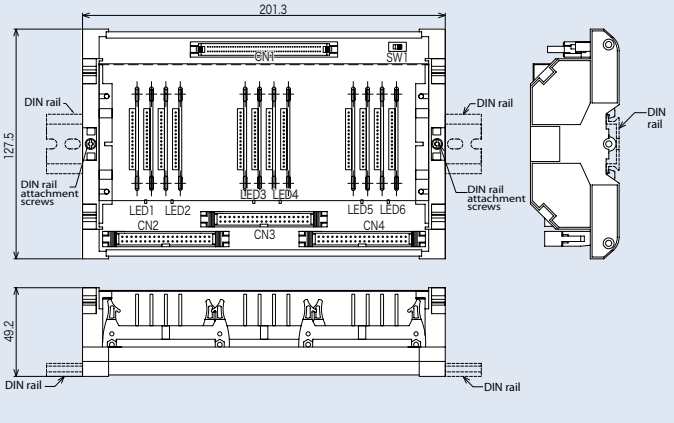


Multipoint I/O Board ***K (General purpose) type only (cannot be used with compact type)**

Description The use of half-pitch connectors enables this I/O board to provide 48 inputs/48 outputs.
The supplied half-pitch flat cable has thin wires which make wiring difficult. So use the terminal block to connect external devices.

(Multipoint I/O board dedicated terminal block)

Model **TU-MA96** (NPN Specifications)
TU-MA96-P (PNP Specifications)



Description Terminal block for wiring a multipoint I/O block
Not only is the wiring process made easier, the following functions are provided:

1. The transistor buffer enables 500 mA/1 point (0.8/8 point) output.
2. It is possible to separate with power supply circuit input at 6 input channels (8 input points each), 6 output channels (8 output points each).
3. An LED is provided to confirm power to output signal circuit. The LED goes off when no power is input at 6 output channels (at each of 8 points) for a total of 6 points at each channel, or when the fuse on the board breaks.

Caution If using a terminal block, the multipoint I/O board must be configured to NPN specifications.
(Since NPN and PNP are switched on the terminal block side, connection is not possible with a board configured to PNP specifications.)

Standard Multipoint I/O Signal Chart

■Note: Dedicated J (Compact) Type

Pin No.	Classification	Port No.	Standard Settings
1		–	For external power supply (DC24V) pin numbers 2 to 25 and 51 to 74
2		000	Program Start
3		001	General Purpose Input
4		002	General Purpose Input
5		003	General Purpose Input
6		004	General Purpose Input
7		005	General Purpose Input
8		006	General Purpose Input
9		007	Program Specification (PRG No. 1)
10		008	Program Specification (PRG No. 2)
11		009	Program Specification (PRG No. 4)
12		010	Program Specification (PRG No. 8)
13	Input	011	Program Specification (PRG No. 10)
14		012	Program Specification (PRG No. 20)
15		013	Program Specification (PRG No. 40)
16		014	General Purpose Input
17		015	General Purpose Input
18		016	General Purpose Input
19		017	General Purpose Input
20		018	General Purpose Input
21		019	General Purpose Input
22		020	General Purpose Input
23		021	General Purpose Input
24		022	General Purpose Input
25		023	General Purpose Input
26	–	–	For external power supply (DC24V) pin numbers 27 to 50 and 76 to 99
27		024	General Purpose Input
28		025	General Purpose Input
29		026	General Purpose Input
30		027	General Purpose Input
31		028	General Purpose Input
32		029	General Purpose Input
33		030	General Purpose Input
34		031	General Purpose Input
35		032	General Purpose Input
36		033	General Purpose Input
37		034	General Purpose Input
38	Input	035	General Purpose Input
39		036	General Purpose Input
40		037	General Purpose Input
41		038	General Purpose Input
42		039	General Purpose Input
43		040	General Purpose Input
44		041	General Purpose Input
45		042	General Purpose Input
46		043	General Purpose Input
47		044	General Purpose Input
48		045	General Purpose Input
49		046	General Purpose Input
50		047	General Purpose Input
51		300	Alarm Output
52		301	Ready Output
53		302	Emergency Stop Output
54		303	General Purpose Output
55		304	General Purpose Output
56		305	General Purpose Output
57		306	General Purpose Output
58		307	General Purpose Output
59		308	General Purpose Output
60		309	General Purpose Output
61		310	General Purpose Output
62		311	General Purpose Output
63	Output	312	General Purpose Output
64		313	General Purpose Output
65		314	General Purpose Output
66		315	General Purpose Output
67		316	General Purpose Output
68		317	General Purpose Output
69		318	General Purpose Output
70		319	General Purpose Output
71		320	General Purpose Output
72		321	General Purpose Output
73		322	General Purpose Output
74		323	General Purpose Output
75	–	–	For external power supply (0V) pin numbers 2 to 25 and 51 to 74
76		324	General Purpose Output
77		325	General Purpose Output
78		326	General Purpose Output
79		327	General Purpose Output
80		328	General Purpose Output
81		329	General Purpose Output
82		330	General Purpose Output
83		331	General Purpose Output
84		332	General Purpose Output
85		333	General Purpose Output
86		334	General Purpose Output
87	Output	335	General Purpose Output
88		336	General Purpose Output
89		337	General Purpose Output
90		338	General Purpose Output
91		339	General Purpose Output
92		340	General Purpose Output
93		341	General Purpose Output
94		342	General Purpose Output
95		343	General Purpose Output
96		344	General Purpose Output
97		345	General Purpose Output
98		346	General Purpose Output
99		347	General Purpose Output
100	–	–	For external power supply (0V) pin numbers 2 to 27 to 50 and 76 to 99

Expanded Multipoint I/O Signal Chart

■Note: Dedicated K (General Purpose) Type

Pin No.	Classification	Port No.	Standard Settings
1		–	For external power supply (DC24V) pin numbers 2 to 25 and 51 to 74
2			General Purpose Input
3			General Purpose Input
4			General Purpose Input
5			General Purpose Input
6			General Purpose Input
7			General Purpose Input
8			General Purpose Input
9			General Purpose Input
10			General Purpose Input
11			General Purpose Input
12			General Purpose Input
13	Input		General Purpose Input
14			General Purpose Input
15			General Purpose Input
16			General Purpose Input
17			General Purpose Input
18			General Purpose Input
19			General Purpose Input
20			General Purpose Input
21			General Purpose Input
22			General Purpose Input
23			General Purpose Input
24			General Purpose Input
25			General Purpose Input
26	–	–	For external power supply (DC24V) pin numbers 27 to 50 and 76 to 99
27			General Purpose Input
28			General Purpose Input
29			General Purpose Input
30			General Purpose Input
31			General Purpose Input
32			General Purpose Input
33			General Purpose Input
34			General Purpose Input
35			General Purpose Input
36			General Purpose Input
37			General Purpose Input
38	Input		General Purpose Input
39			General Purpose Input
40			General Purpose Input
41			General Purpose Input
42			General Purpose Input
43			General Purpose Input
44			General Purpose Input
45			General Purpose Input
46			General Purpose Input
47			General Purpose Input
48			General Purpose Input
49			General Purpose Input
50			General Purpose Input
51			General Purpose Output
52			General Purpose Output
53			General Purpose Output
54			General Purpose Output
55			General Purpose Output
56			General Purpose Output
57			General Purpose Output
58			General Purpose Output
59			General Purpose Output
60			General Purpose Output
61			General Purpose Output
62			General Purpose Output
63	Output		General Purpose Output
64			General Purpose Output
65			General Purpose Output
66			General Purpose Output
67			General Purpose Output
68			General Purpose Output
69			General Purpose Output
70			General Purpose Output
71			General Purpose Output
72			General Purpose Output
73			General Purpose Output
74			General Purpose Output
75	–	–	For external power supply (0V) pin numbers 2 to 25 and 51 to 74
76			General Purpose Output
77			General Purpose Output
78			General Purpose Output
79			General Purpose Output
80			General Purpose Output
81			General Purpose Output
82			General Purpose Output
83			General Purpose Output
84			General Purpose Output
85			General Purpose Output
86			General Purpose Output
87	Output		General Purpose Output
88			General Purpose Output
89			General Purpose Output
90			General Purpose Output
91			General Purpose Output
92			General Purpose Output
93			General Purpose Output
94			General Purpose Output
95			General Purpose Output
96			General Purpose Output
97			General Purpose Output
98			General Purpose Output
99			General Purpose Output
100	–	–	For external power supply (0V) pin numbers 2 to 27 to 50 and 76 to 99

Connector Assignment for Multipoint I/O Port Dedicated Terminal Block

Connectors are used to connect external I/O devices. 16 DI points and 16 DO points can be connected to a single connector.

List of External I/O Connector Specifications

Item	Description				
Applicable connector	XG4A-403 (OMRON) 40 pin MIL flat Connector				
DI	48 points				
DO	48 points				
Unit to connect to	External I/O Device				
Connector Name			CN2 Connector	CN2 Connector	CN2 Connector
Assigned Input Pins	1	Common	Common Pins (COM):	Common Pins (COM):	Common Pins (COM):
	2	Common	For IN00 to IN07	For IN16 to In23	For IN32 to IN39
	3	General Purpose Input	IN00	IN16	IN32
	4	General Purpose Input	IN01	IN17	IN33
	5	General Purpose Input	IN02	IN18	IN34
	6	General Purpose Input	IN03	IN19	IN35
	7	General Purpose Input	IN04	IN20	IN36
	8	General Purpose Input	IN05	IN21	IN37
	9	General Purpose Input	IN06	IN22	IN38
	10	General Purpose Input	IN07	IN23	IN39
	11	General Purpose Input	IN08	IN24	IN40
	12	General Purpose Input	IN09	IN25	IN41
	13	General Purpose Input	IN10	IN26	IN42
	14	General Purpose Input	IN11	IN27	IN43
	15	General Purpose Input	IN12	IN28	IN44
	16	General Purpose Input	IN13	IN29	IN45
	17	General Purpose Input	IN14	IN30	IN46
	18	General Purpose Input	IN15	IN31	IN47
	19	Common	Common Pins (COM):	Common Pins (COM):	Common Pins (COM):
	20	Common	For IN08 to IN15	For IN24 to IN31	For IN40 to IN47
Assigned Output Pins	21	+24V	External 24V Power Supply Input:	External 24V Power Supply Input:	External 24V Power Supply Input:
	22	0V	For OUT00 to OUT07	For OUT16 to OUT23	For OUT32 to OUT39
	23	General Purpose Input	OUT00	OUT16	OUT32
	24	General Purpose Input	OUT01	OUT17	OUT33
	25	General Purpose Input	OUT02	OUT18	OUT34
	26	General Purpose Input	OUT03	OUT19	OUT35
	27	General Purpose Input	OUT04	OUT20	OUT36
	28	General Purpose Input	OUT05	OUT21	OUT37
	29	General Purpose Input	OUT06	OUT22	OUT38
	30	General Purpose Input	OUT07	OUT23	OUT39
	31	General Purpose Input	OUT08	OUT24	OUT40
	32	General Purpose Input	OUT09	OUT25	OUT41
	33	General Purpose Input	OUT10	OUT26	OUT42
	34	General Purpose Input	OUT11	OUT27	OUT43
	35	General Purpose Input	OUT12	OUT28	OUT44
	36	General Purpose Input	OUT13	OUT29	OUT45
	37	General Purpose Input	OUT14	OUT30	OUT46
	38	General Purpose Input	OUT15	OUT31	OUT47
	39	+24V	External 24V Power Supply Input:	External 24V Power Supply Input:	External 24V Power Supply Input:
	40	0V	For OUT08 to OUT15	For OUT24 to OUT31	For OUT40 to OUT47

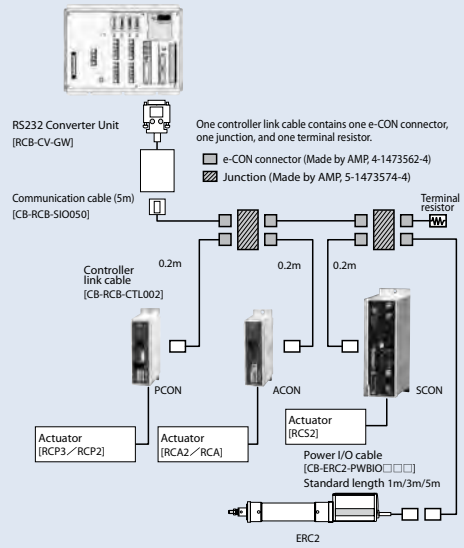
Option

■Connection unit for ROBO Cylinder gateway

Model **RCB-CV-GW** (RS232 Converter Unit)
CB-RCB-SIO050 (Communication cable)
CB-RCB-CTL (Controller Link Cable)

Description

Connection unit is required when using the ROBO Cylinder gateway function with the XSEL-P/Q/PX/QX controller.
An RS232 conversion unit and a communication cable are required for each XSEL controller, and a controller link cable is required for each ROBO Cylinder controller to be connected. (See diagram at right.)



■Regenerative resistor unit

Model **REU-1**

Description

This unit converts the regenerative current generated during deceleration into heat. Although the controller has a built-in regenerative resistor, its capacity may be insufficient if the axis is positioned vertically and the load is large. In this case, a regenerative unit will be required. (See table at right.)

Specification

Item	Specifications
Unit Dimensions	W34mm×H195mm×D126mm
Unit weight	0.9kg
Built-in regenerative resistor	220Ω 80W
Accessory	Controller Connection Cable (Model No. CB-ST-REU010) 1m

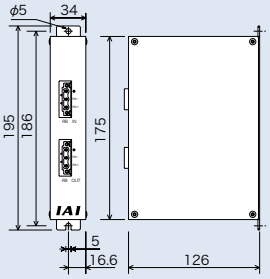
Installation Standard Determined by total motor capacity of vertical axes connected.

Horizontal Application

Number of connecting units	P/Q Type	J Type	K Type
0 pc	to 100W	to 200W	to 800W
1 pc	to 600W	to 800W	to 1200W
2 pc	to 1200W	–	to 1600W
3 pc	to 1800W	–	–
4 pc	to 2400W	–	–

Vertical Application

Number of connecting units	P/Q Type	J Type	K Type
0 pc	to 100W	to 200W	to 400W
1 pc	to 600W	to 600W	to 800W
2 pc	to 1000W	to 800W	to 1200W
3 pc	to 1400W	–	When exceeding 1200W, please contact IAI.
4 pc	to 2000W	–	
5 pc	to 2400W	–	



■Battery for absolute data storage (for XSEL-J/K/KE/KT/KET)

Model **IA-XAB-BT**

Features A battery that retains the data stored in an absolute type controller
Replace when controller battery alarm sounds.

Packaging Single units (One battery is required for each axis. Specify a quantity for the number of axes used.)

■Battery for absolute data storage (for XSEL-P/Q)

Model **AB-5**

Features A battery that retains the data stored in an absolute type controller

Packaging Single units
(1 unit per axis)

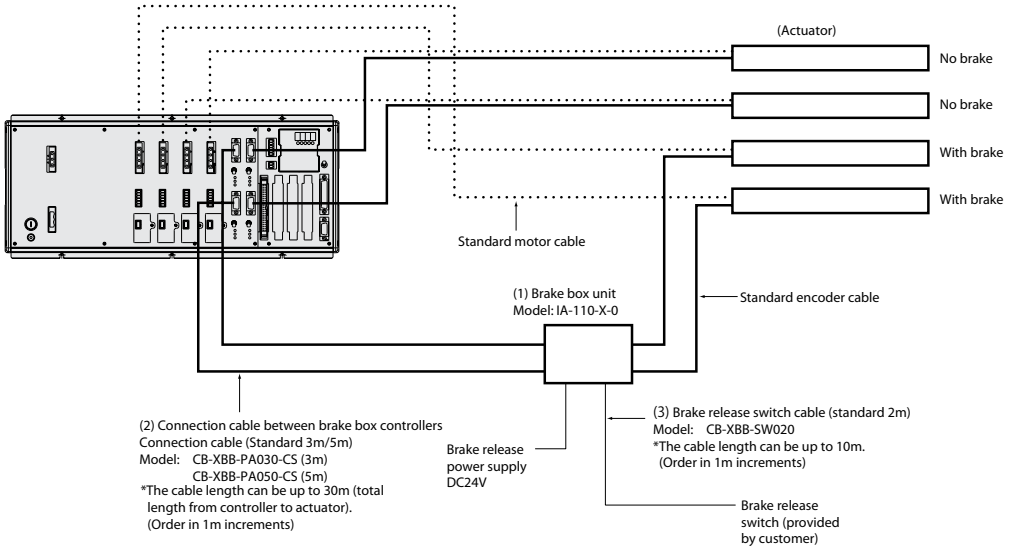
■Expansion PIO Board

Description An optional board for adding I/O (input/output) points.
With the General purpose and large-capacity types, up to three expansion PIO boards can be installed in the expansion slots.
(With the compact types, one expansion PIO board can be installed in the expansion slot, only if the controller is 3 or 4-axis type.)

Externally-attached brake box

Description Brake forced release box can release the actuator brake even when controller's power supply is OFF. (See Note 1.)
The brake release operation is performed via the switch on the brake box or the externally-attached switch (using the accompanying dedicated cable).
When ordering, specify the model numbers of the main unit and the cable. (A single brake box supports connection of up to 2 axes.)
Note 1: A dedicated 24V power supply is required to release the brake.

System Configuration

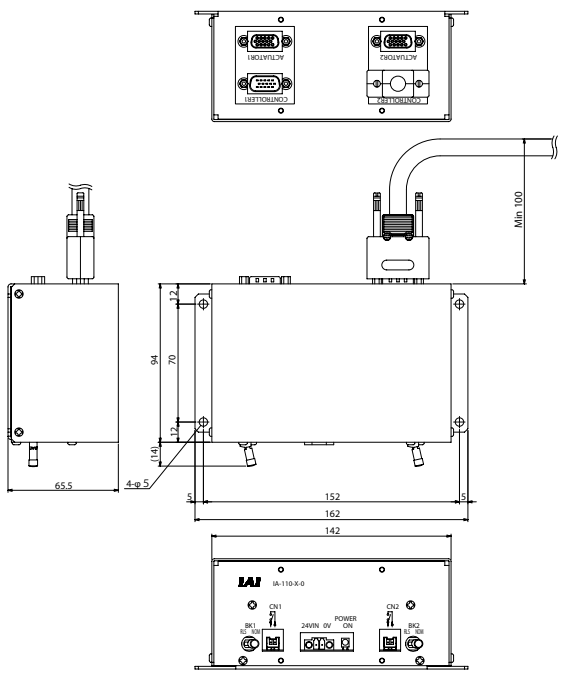


*Using an external brake box requires (1) a main unit and (2) a cable from the brake box to the controller.
Order (3) a brake release switch cable as needed.

(1) Brake box unit	Model: IA-110-X-0
(2) Connection cable between brake box controllers	Model: CB-XBB-PA□□□-CS
(3) Brake release switch cable	Model: CB-XBB-SW□□□

■Brake box unit external dimension drawing

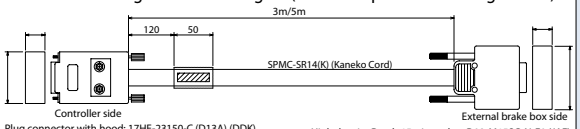
Model: **IA-110-X-0**



■Connecting cable for brake box and controller

Model: **CB-XBB-PA030-CS** (3m)
CB-XBB-PA050-CS (5m)

*The length can be changed. (See description in drawing above.)

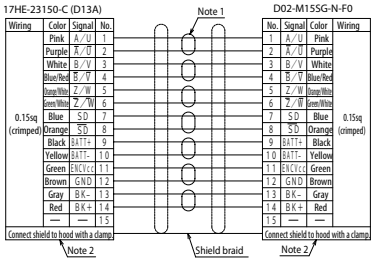


Plug connector with hood: 17HE-23150-C (D13A) (DDK)
Contact: 17H-7PCR-102 (P500) (DDK) x14

High density D-sub 15-pin socket: D02-M15SG-N-F0 (JAE)
Socket contact: D02-22-26S-PKG100 (JAE) X14
Hood: DE-C8-J9-F4-1 (JAE)

Wiring Diagram

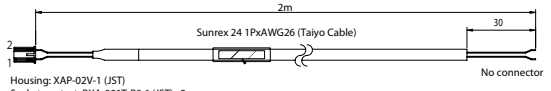
Note 1: Indicates a twist pair cable.
Note 2: Wrap the shield braid with several layers of shield tape, and secure with a cable clamp.



■Brake release switch cable

Model: **CB-XBB-SW020** (2m)

*The length can be changed. (See description in drawing above.)



Housing: XAP-02V-1 (JST)
Socket contact: BXA-001T-P0.6 (JST) x2

Wiring Diagram

Wiring	Color	Signal	No.
AWG26	Orange 1 Black	BKMRL	1
X1P	Orange 1 Red	COM	2

No connector

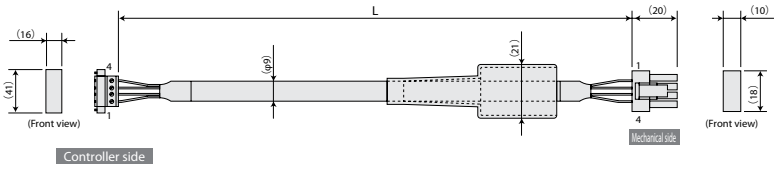
Maintenance parts

The following cables are provided as an accessory with the purchase of an actuator or controller product.
Refer to the models below if it is necessary to replace cables after your purchase of the product.

Motor cable (XSEL-J/K/KE-type for single axis robot connection)

Model CB-X-MA□□□

*□□□ indicates the cable length (L), up to a maximum of 30m
Example: 080=8m



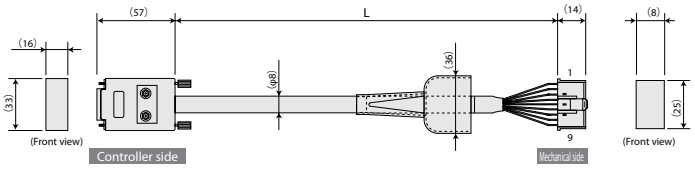
Wiring	Color	Signal	No.
0.75sq	Green	PE	1
	Red	U	2
	White	V	3
	Black	W	4

No.	Signal	Color	Wiring
1	U	Red	0.75sq (crimped)
2	V	White	
3	W	Black	
4	PE	Green	

Encoder cable (XSEL-J/K/KE-type for single axis robot connection)

Model CB-X-PA□□□

*□□□ indicates the cable length (L), up to a maximum of 30m
Example: 080=8m



Wiring	Color	Signal	No.
0.15sq (crimped)	—	—	1
	—	—	2
	—	—	3
	—	—	4
	—	—	5
	—	—	6
	Blue	SD	7
	Orange	$\overline{SD}$	8
	Black	BAT+	9
	Yellow	BAT−	10
	Green	VCC	11
	Brown	GND	12
	Gray	BK−	13
	Red	BK+	14
	—	—	15

The shield is connected to the hood with a clamp.

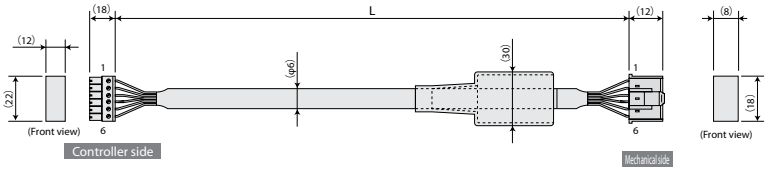
No.	Signal	Color	Wiring
1	BAT+	Black	0.15sq (crimped)
2	BAT−	Yellow	
3	SD	Blue	
4	$\overline{SD}$	Orange	
5	VCC	Green	
6	GND	Brown	
7	FG	Drain	
8	BK−	Gray	
9	BK+	Red	

Drain wire and shield braiding

Limit switch cable (XSEL-J/K/KE-type for single axis robot connection)

Model CB-X-LC□□□

*□□□ indicates the cable length (L), up to a maximum of 30m
Example: 080=8m



Wiring	Color	Signal	No.
AWG24	Light blue	24VOUT	6
	Pink	N	5
	Light green	LS	4
	Orange	CREEP	3
	Gray	OT	2
	1B/light blue	RSV	1

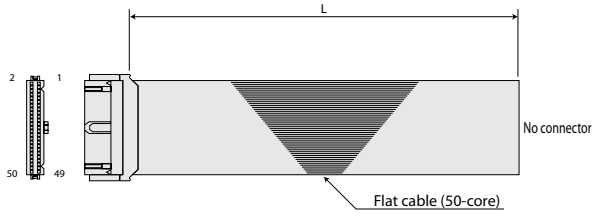
No.	Signal	Color	Wiring
1	24VOUT	Light blue	AWG24 (crimped)
2	N	Pink	
3	LS	Light green	
4	CREEP	Orange	
5	OT	Gray	
6	RSV	1B/light blue	

Note: 1B signifies one black dot.

I/O flat cable (for X-SEL)

Model CB-X-PIO□□□

*□□□ indicates the cable length (L), up to a maximum of 10m.
Example: 080=8m

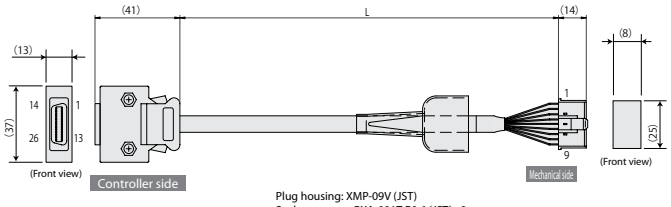


No.	Color	Wiring	No.	Color	Wiring	No.	Color	Wiring
1	Brown 1	Flat cable, crimped	18	Gray 2	Flat cable, crimped	35	Green 4	Flat cable, crimped
2	Red 1		19	White 2		36	Blue 4	
3	Orange 1		20	Black 2		37	Purple 4	
4	Yellow 1		21	Brown-3		38	Gray 4	
5	Green 1		22	Red 3		39	White 4	
6	Blue 1		23	Orange 3		40	Black 4	
7	Purple 1		24	Yellow 3		41	Brown-5	
8	Gray 1		25	Green 3		42	Red 5	
9	White 1		26	Blue 3		43	Orange 5	
10	Black 1		27	Purple 3		44	Yellow 5	
11	Brown-2		28	Gray 3		45	Green 5	
12	Red 2		29	White 3		46	Blue 5	
13	Orange 2		30	Black 3		47	Purple 5	
14	Yellow 2		31	Brown-4		48	Gray 5	
15	Green 2		32	Red 4		49	White 5	
16	Blue 2		33	Orange 4		50	Black 5	
17	Purple 2		34	Yellow 4				

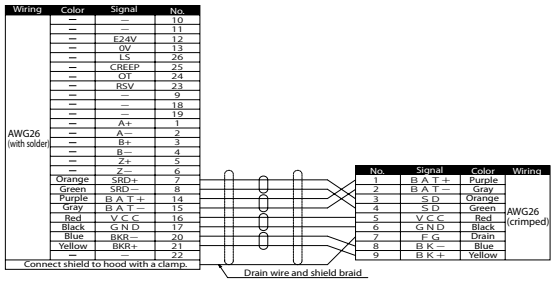
Encoder Cable/Encoder Robot Cable (for connecting XSEL-P/Q type for single-axis robot)

Model CB-X1-PA□□□

*□□□ indicates the cable length (L), up to a maximum of 30m
Example: 080=8m



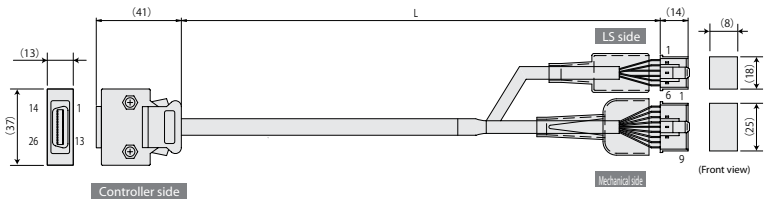
Plug housing: XMP-09V (JST)
Socket contact: BXA-001T-P0.6 (JST) x9
Retainer: XMS-09V (JST)
Note 6: Use the crimper recommended by the contact manufacturer.

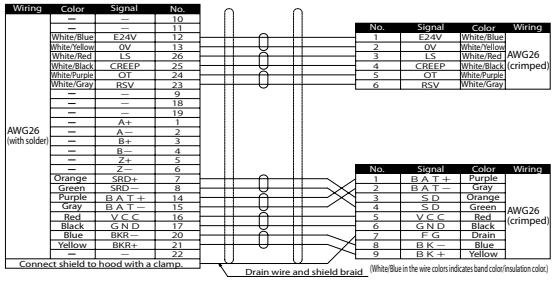


Encoder Cable (for connecting XSEL-P/Q-type, single-axis robot with LS specification)

Model CB-X1-PLA□□□

*□□□ indicates the cable length (L), up to a maximum of 30m
Example: 080=8m

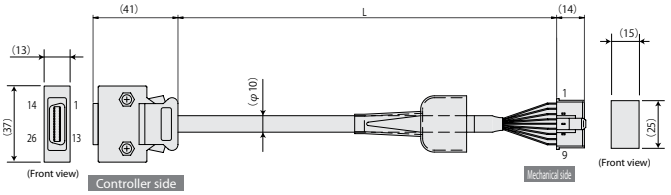


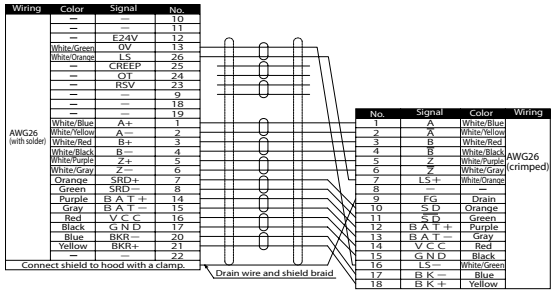


Encoder Cable (for connecting XSEL-P/Q-type linear servo/RCS2)

Model CB-X3-PA□□□

*□□□ indicates the cable length (L), up to a maximum of 30m
Example: 080=8m

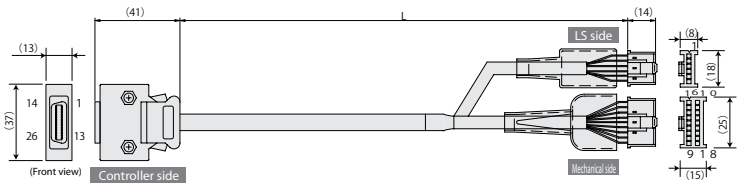


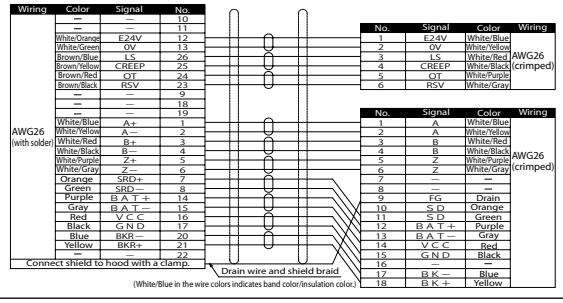


Encoder Cable (for connecting XSEL-P/Q-type large linear servo/RCS2 rotary)

Model CB-X2-PLA□□□

*□□□ indicates the cable length (L), up to a maximum of 30m
Example: 080=8m

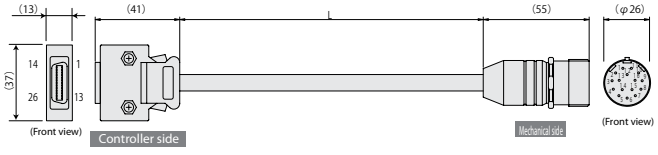


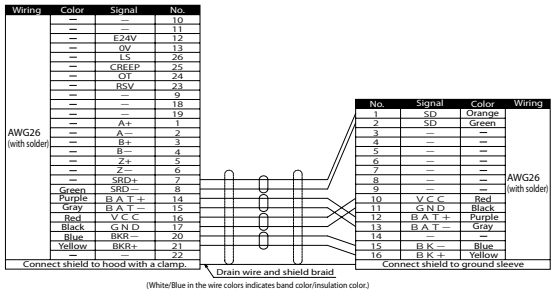


Encoder Cable (for connecting XSEL-P/Q-type drip-proof slider ISWA)

Model CB-X1-PA□□□-WC

*□□□ indicates the cable length (L), up to a maximum of 30m
Example: 080=8m





X-SEL

JX/KX/KETX/PX/QX

SCARA robot

Program Controller

Model List

Multi-axis program controllers capable of operating a SCARA robot. Up to 6 axes can be simultaneously controlled.

	JX	KX	KETX
Title	Compact Type	General Purpose Type	CE-compliant global type
External view			
Description	Arm length 250/350 only Compact type	All-model-operable Standard type	CE-compliant Global type
Maximum number of control axes	4 axes		
Number of programs	64 programs		
Number of program steps	6,000 steps		
Number of positions	3,000 positions		
Total number of connectable W	450W	1750W	
Power	Single phase AC200V		
Safety category	B		Category 4 Applications Enabled
Safety rating	–		CE, ANSI
ROBO Cylinder gateway function	–		

	PX	QX
Title	Large-Capacity Type	Large-capacity type (specification conforms to safety category)
External View		
Description	SCARA robot + single axis robot 2-axis operation is possible	Type capable of conforming to PX safety category
Maximum number of control axes	6 axes	
Number of programs	128 programs	
Number of program steps	9,999 steps	
Number of positions	20,000 positions	
Total number of connectable W	2400W	
Power	3-phase 200V	
Safety category	B	Category 4 Applications Enabled
Safety rating	CE	CE, ANSI
ROBO Cylinder gateway function	Standard equipment	Standard equipment

Model

[XSEL-JX/KX/KETX Type]

XSEL – □ – □ – □ – □ – □ – □ – □ – □

Series | IX unit type | Number of axes for connection | (Slot 1) Standard I/O | (Slot 2) | (Slot 3) Expansion I/O | (Slot 4) | I/O Cable Length | Power Supply Voltage

JX	Compact Type
KX	General Purpose Type
KETX	CE-compliant global type

NNN2515～8040	Standard type
NSN5016～6016	High-speed type
NNC2515～8040	Cleanroom compatible type
NNW2515～8040	Splash-proof
TNN3015～3515	Wall-mountable type
UNN3015～3515	Wall mounting inverse type
HNN5020～8040	Ceiling Mount Type
INN5020～8040	Inverse type

*E (not used) is reserved for the expansion I/O.

E	Not used
N1	Input 32/output 16 (NPN)
N2	Input 16/output 32 (NPN)
N3	Input 48/output 48 (NPN)
P1	Input 32/output 16 (PNP)
P2	Input 16/output 32 (PNP)
P3	Input 48/output 48 (PNP)
DV	DeviceNet Connection board
CC	CC-Link Connection board
PR	ProfiBus Connection board
ET	Ethernet Connection board
SA	Expansion SIO A type
SB	Expansion SIO B type
SC	Expansion SIO C type

*See P471 for details on standard I/O and expansion I/O.

* Expansion SIO boards are exclusively for KX and KETX.

0	No cable
2	2m
3	3m
5	5m

2	Single phase AC200V

[XSEL-PX/QX Type]

*Enter descriptions of the 5th/6th axes when using PX5/QX5/PX6/QX6.
*The maximum number of connected axes is 5 (SCARA + 1 axis) for a 700/800 arm length.
*The maximum number of connected axes is 4 (SCARA + 1 axis) for a high-speed type.

XSEL – □ – □ – (□ □ □) – (□ □ □) – □ – □ – □ – □ – □ – □ – □

Series | Type | IX unit type | (Description for Axis 5) Motor type | Encoder type | Option | (Description for Axis 6) Motor type | Encoder type | Option | Dedicated network slot | (Slot 1) Standard I/O | (Slot 2) | (Slot 3) | (Slot 4) Expansion I/O | I/O Cable Length | Power Supply Voltage

PX4	Large-capacity 4-axis type
PX5	Large-capacity 5-axis type
PX6	Large-capacity 6-axis type
QX4	Large-capacity global 4-axis type
QX5	Large-capacity global 5-axis type
QX6	Large-capacity global 6-axis type

NNN1205～8040	Standard type
NNN1205B～1805B	Standard ultra-compact type, with brake option
NSN5016～6016	High-speed type
NNC1205～8040	Cleanroom compatible type
NNC1205B～1805B	Cleanroom compatible ultra-compact type, with brake option
NNW2515～8040	Splash-proof
TNN3015～3515	Wall-mountable type
UNN3015～3515	Wall-mount inverse type
HNN5020～8040	Ceiling-mount type
INN5020～8040	Inverse type

Note: When brake option is selected for IX-NNN or NNC types 1205, 1505, or 1805, be sure to include the brake in the model number of the IX unit type (1205B, 1505B, 1805B).

B	Brake
C	Creep sensor
L	Home sensor/ LS-compatible
M	Master axis specification
S	Slave axis specification

I	Incremental
A	Absolute

20	20W servo motor	200	200W servo motor
30D	RCS2 30W servo motor	300	300W servo motor
30R	RS 30W servo motor	400	400W servo motor
60	60W servo motor	600	600W servo motor
100	100W servo motor	750	750W servo motor
150	150W servo motor		

I	Incremental
A	Absolute

B	Brake
C	Creep sensor
L	Home sensor/ LS-compatible
M	Master axis specification
S	Slave axis specification

20	20W servo motor	200	200W servo motor
30D	RCS2 30W servo motor	300	300W servo motor
30R	RS 30W servo motor	400	400W servo motor
60	60W servo motor	600	600W servo motor
100	100W servo motor	750	750W servo motor
150	150W servo motor		

Not entered	Not used
DV	DeviceNet Connection board
CC	CC-Link Connection board
PR	ProfiBus Connection board
ET	Ethernet Connection board

E	Not used
N1	Input 32/output 16 (NPN)
N2	Input 16/output 32 (NPN)
N3	Input 48/output 48 (NPN)
P1	Input 32/output 16 (PNP)
P2	Input 16/output 32 (PNP)
P3	Input 48/output 48 (PNP)

*See P669 for standard I/O and expansion I/O details.

*If the expansion I/O is not used, enter E (not used) for slots 2 to 4.

If an expansion I/O is used, enter the code for the expansion I/O on the left for the slot position you wish to use.

If an expansion I/O is specified, the controller chassis must be "with expansion I/O base". (See P685.)

If an expansion I/O will not be used at first, but will be installed later, make sure to order a chassis for I/O expansion boards, and enter S for slots 2 to 4.

0	No cable
2	2m
3	3m
5	5m

2	Single phase AC200V
3	3-phase 200V

Example: If the expansion I/O is inserted into slot 2, and none of the other slots is used: XSEL-PX4-NNN1205-N1-N1EE-2-3
If no expansion I/O is inserted, and only the expansion I/O base is installed: XSEL-PX4-NNN1205-N1-SSS-2-3

Caution
Note that the 5th/6th axes of XSEL-P/Q types cannot operate LSA series/RCS2 series actuators.

System Configuration

Connectable Actuators

Caution
The SCARA robot motor cables and encoder cables differ according to unit type. See the SCARA robot unit specifications for details.

Motor cable
Encoder cable

High-speed high-precision type	ISPA series
Standard type	ISA series
Dustproof type	ISDA series
Cleanroom specification	ISDACR series
Anti-static specification	ISDACR ESD
Compact Type	DS/DSCR (T1) series
Compact type	SS/SSCR series
High-rigidity belt type	IF series
Slim belt type	FS series
Rotating axis	RS series
ROBO Cylinder	RCS-SS/SM RCS-SSR/SMR RCS-RA55/F55 RCS-RB7530/RB7535

External equipment
PLC, etc.

Various fields
Network connections
- DeviceNet
- CC-Link
- ProfiBus
- Ethernet

Serial communication port
Standard: RS232, 2ch

Teaching Pendant
Computer software
PERSONAL COMPUTER
See P687 and 688

I/O flat cable, 2m
(supplied with controller)

4m

RS232 cable, 5m
(supplied with PC software)

Regenerative unit cable, 1m
(supplied with regenerative unit)

Regenerative resistance unit
(See P686.)

Control power supply
Single-phase AC200V

Motor drive power supply
3-phase AC200V

System I/O
- Emergency Stop
- Enable
- System Ready

Drive source interrupt circuit
(customer responsibility)

* Global type only (not required for standard type)

Expansion I/O
- I/O board
- Multi-point I/O board

Specification Table

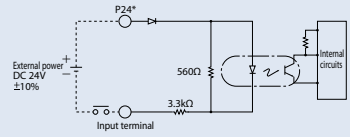
Item	Description				
Controller type	JX	KX	KETX	PX	QX
Number of control axes	4 axes			6 axes	
Maximum output of connected axes	450W	1750W		2400W	
Control power input	Single-phase AC200/230V -15% +10%				
Motor power input	Single-phase AC200/230V ±10%			3-phase AC200/230V ±10%	
Power-supply capacity	Max 1750VA	Max 3050VA		Max 3350VA	
Safety circuit configuration	Redundancy not supported		Duplex Enabled	Redundancy not supported	Duplex enabled
Drive source breaker system	Internal cutoff relay		External relay cutoff	Internal cutoff relay	External relay cutoff
Enable input	B contact input		B contact input (Redundancy)	B contact input	B contact input (Redundancy)
Position detection method	Absolute			incremental/absolute	
Programming language	Super SEL language				
Number of programs	64 programs			128 programs	
Number of program steps	6,000 steps (total)			9,999 steps (total)	
Number of positions	3,000 positions			20,000 positions	
Multi-tasking	16 programs				
Standard inputs	32 points (total of dedicated inputs + General purpose inputs)				
Standard outputs	16 points (total of dedicated outputs + General purpose outputs)				
Expansion Input/Output	144 total inputs and outputs	336 total inputs and outputs			
Serial communications	Disabled	Expansion SIO Board (optional)		Standard equipment	
Ambient operating temperature, humidity	0 to 40°C 10 to 95% (no condensation)				
Unit weight	5.0kg	7.0kg		5.2 to 5.7kg	4.5 to 5kg

I/O Wiring Diagram

■Input Section External Input Specification (NPN Specifications)

Item	Specifications
Input voltage	DC24V ±10%
Input current	7mA 1 circuit
ON/OFF voltage	ON voltage… DC 16.0V (min.), OFF voltage… DC5.0V (max.)
Insulation method	Photocoupler insulation
Externally Connected Equipment	(1) Non-Voltage Contact (Minimum load around DC5V, 1mA) (2) Photoelectric Proximity Sensor (NPN Type) (3) Sequencer Transistor Output (Open Collector Type) (4) Sequencer Contact Output (Minimum Load around DC5V, 1mA)

[Input circuit]

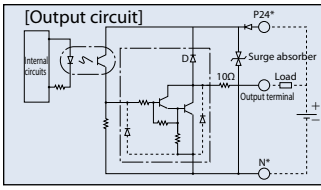


	K Type	J/P/Q type
P24	IO24V connector 24VIN	I/O interface Pin No. 1

■Output Section External Output Specification (NPN Specifications)

Item	Specifications	
Load voltage	DC24V	TD62084 (or equivalent)
Maximum load current	100mA/1 point 400mA Peak (Total Current)	
Leak current	Max 0.1mA/point	
Insulation method	Photocoupler insulation	
Externally Connected Equipment	(1) Miniature Relay, (2) Sequencer Input Unit	

[Output circuit]

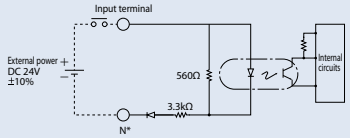


	K Type	J/P/Q type
P24	IO24V connector 24VIN	I/O interface Pin No. 1
N	IO24V connector 0V	I/O interface Pin No. 50

■Input Section External Input Specification (PNP Specifications)

Item	Specifications
Input voltage	DC24V ±10%
Input current	7mA 1 circuit
ON/OFF voltage	ON voltage… DC8V (min.), OFF voltage… DC19V (max.)
Insulation method	Photocoupler Insulation
Externally Connected Equipment	(1) Non-Voltage Contact (minimum load around DC5V, 1mA) (2) Photoelectric Proximity Sensor (PNP Type) (3) Sequencer Transistor Output (Open Collector Type) (4) Sequencer Contact Output (minimum Load around DC5V, 1mA)

[Input circuit]



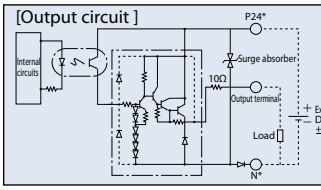
	K Type	J/P/Q type
N	IO24V connector 0V	I/O interface Pin No. 50

■Output Section External Output Specification (PNP Specifications)

Item	Specifications	
Load voltage	DC24V	TD62784 (or equivalent)
Maximum load current	100mA/1 point 400mA/8 ports (Note)	
Leak current	Max 0.1mA/point	
Insulation method	Photocoupler insulation	
Externally Connected Equipment	(1) Miniature Relay, (2) Sequencer Input Unit	

Note: The maximum load current from output port No.300 becomes 400mA at each of the 8 ports. (Max. load current between output port No.300 + n to No. 300 + n + 7. n = factor of 0 or 8.)

[Output circuit]



	K Type	J/P/Q type
P24	IO24V connector 24VIN	I/O interface Pin No. 1
N	IO24V connector 0V	I/O interface Pin No. 50

I/O signal table

Standard I/O Signal Table (when N1 or P1 is selected)

Pin No.	Classification	Port No.	Standard Settings
1		—	(J/P/Q Type: 24V connection/K Type: NC)
2		000	Program Start
3		001	General Purpose Input
4		002	General Purpose Input
5		003	General Purpose Input
6		004	General Purpose Input
7		005	General Purpose Input
8		006	General Purpose Input
9		007	Program Specification (PRG No. 1)
10		008	Program Specification (PRG No. 2)
11		009	Program Specification (PRG No. 4)
12		010	Program Specification (PRG No. 8)
13	Input	011	Program Specification (PRG No. 10)
14		012	Program Specification (PRG No. 20)
15		013	Program Specification (PRG No. 40)
16		014	General Purpose Input
17		015	General Purpose Input
18		016	General Purpose Input
19		017	General Purpose Input
20		018	General Purpose Input
21		019	General Purpose Input
22		020	General Purpose Input
23		021	General Purpose Input
24		022	General Purpose Input
25		023	General Purpose Input
26	–	024	General Purpose Input
27		025	General Purpose Input
28		026	General Purpose Input
29		027	General Purpose Input
30		028	General Purpose Input
31		029	General Purpose Input
32		030	General Purpose Input
33		031	General Purpose Input
34		300	Alarm Output
35		301	Ready Output
36		302	Emergency Stop Output
37		303	General Purpose Output
38		304	General Purpose Output
39	Output	305	General Purpose Output
40		306	General Purpose Output
41		307	General Purpose Output
42		308	General Purpose Output
43		309	General Purpose Output
44		310	General Purpose Output
45		311	General Purpose Output
46		312	General Purpose Output
47		313	General Purpose Output
48		314	General Purpose Output
49		315	General Purpose Output
50		—	(J/P/Q Type: 0V connection/K Type: NC)

Expansion I/O Signal Table (when N1 or P1 is selected)

Pin No.	Classification	Standard Settings
1		(J/P/Q Type: 24V connection/K Type: NC)
2		General Purpose Input
3		General Purpose Input
4		General Purpose Input
5		General Purpose Input
6		General Purpose Input
7		General Purpose Input
8		General Purpose Input
9		General Purpose Input
10		General Purpose Input
11		General Purpose Input
12		General Purpose Input
13	Input	General Purpose Input
14		General Purpose Input
15		General Purpose Input
16		General Purpose Input
17		General Purpose Input
18		General Purpose Input
19		General Purpose Input
20		General Purpose Input
21		General Purpose Input
22		General Purpose Input
23		General Purpose Input
24		General Purpose Input
25		General Purpose Input
26	–	General Purpose Input
27		General Purpose Input
28		General Purpose Input
29		General Purpose Input
30		General Purpose Input
31		General Purpose Input
32		General Purpose Input
33		General Purpose Input
34		General Purpose Output
35		General Purpose Output
36		General Purpose Output
37		General Purpose Output
38		General Purpose Output
39	Output	General Purpose Output
40		General Purpose Output
41		General Purpose Output
42		General Purpose Output
43		General Purpose Output
44		General Purpose Output
45		General Purpose Output
46		General Purpose Output
47		General Purpose Output
48		General Purpose Output
49		General Purpose Output
50		(J/P/Q Type: 0V connection/K Type: NC)

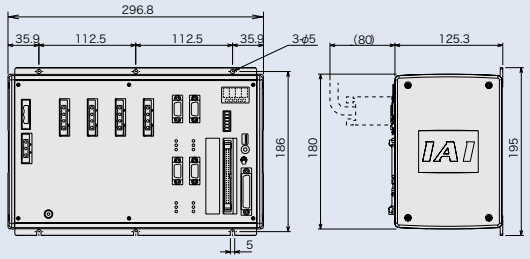
Expansion I/O Signal Table (when N2 or P2 is selected)

Pin No.	Classification	Standard Settings
1		(J/P/Q Type: 24V connection/K Type: NC)
2		General Purpose Input
3		General Purpose Input
4		General Purpose Input
5		General Purpose Input
6		General Purpose Input
7		General Purpose Input
8		General Purpose Input
9		General Purpose Input
10		General Purpose Input
11		General Purpose Input
12		General Purpose Input
13	Input	General Purpose Input
14		General Purpose Input
15		General Purpose Input
16		General Purpose Input
17		General Purpose Input
18		General Purpose Output
19		General Purpose Output
20		General Purpose Output
21		General Purpose Output
22		General Purpose Output
23		General Purpose Output
24		General Purpose Output
25		General Purpose Output
26	–	General Purpose Output
27		General Purpose Output
28		General Purpose Output
29		General Purpose Output
30		General Purpose Output
31		General Purpose Output
32		General Purpose Output
33		General Purpose Output
34		General Purpose Output
35		General Purpose Output
36		General Purpose Output
37		General Purpose Output
38		General Purpose Output
39	Output	General Purpose Output
40		General Purpose Output
41		General Purpose Output
42		General Purpose Output
43		General Purpose Output
44		General Purpose Output
45		General Purpose Output
46		General Purpose Output
47		General Purpose Output
48		General Purpose Output
49		General Purpose Output
50		(J/P/Q Type: 0V connection/K Type: NC)

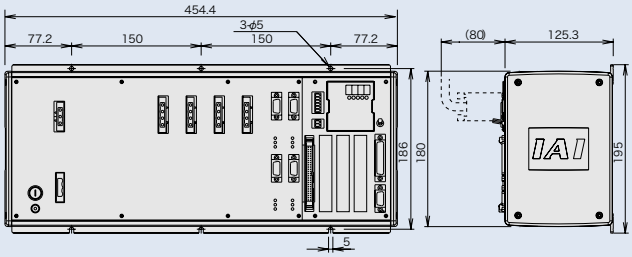
External Drawing

■JX (Compact) Type/KX (General Purpose) Type/KETX (CE-compliant global) Type

JX Type



KX/KETX Type

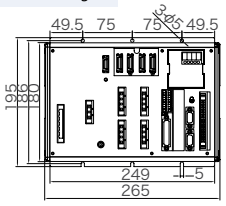
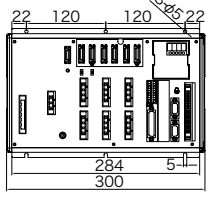
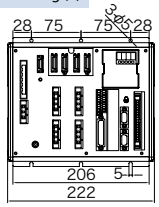
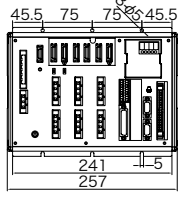
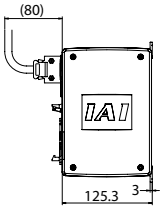
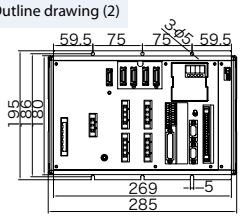
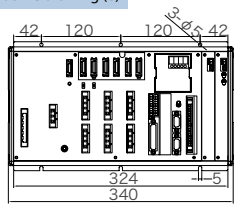
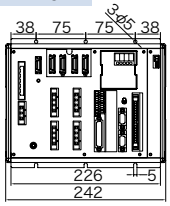
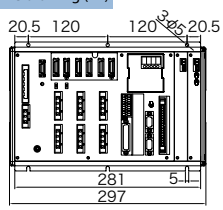
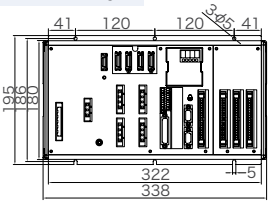
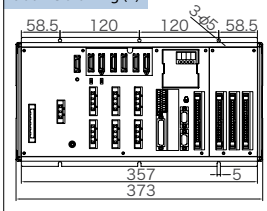
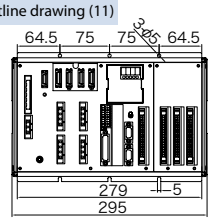
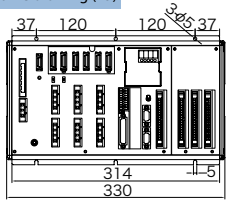
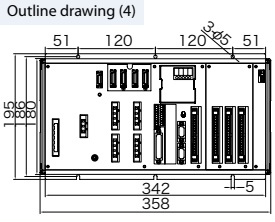
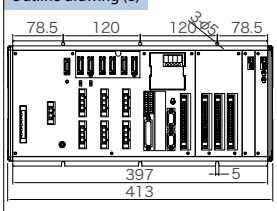
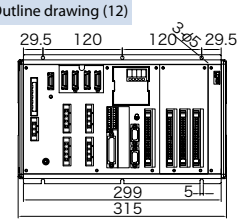
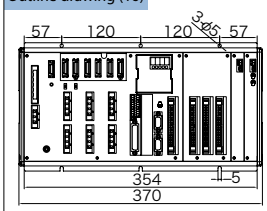


■PX (Large-capacity) type/Q) X (large-capacity global) Type

External dimensions of the X-SEL PX/QX controllers vary according to the SCARA type (arm length) to be connected, number of axes, absence or presence of expansion I/O and type of linear axis.
Select the corresponding controller number from the table below, and view the drawing of the same number.

SCARA main unit		Controller							
		Large-capacity type (PX)				Large-capacity global type (QX)			
Type	Arm length	SCARA only (PX4)		SCARA + linear axis (PX5/PX6)		SCARA only (QX4)		SCARA + linear axis (QX5/QX6)	
		No expansion I/O	Has expansion I/O	No expansion I/O	Has expansion I/O	No expansion I/O	Has expansion I/O	No expansion I/O	Has expansion I/O
Standard type Cleanroom Type Wall-mountabletype Ceiling Mount Type	120 to 180	Outline drawing (2)	Outline drawing (3) (*2)	Outline drawing (5) (*3)	Outline drawing (7) (*4)	Outline drawing (9)	Outline drawing (11)	Outline drawing (13) (*5)	Outline drawing (15) (*6)
	250 to 600	Outline drawing (1) (*1)	Outline drawing (4)	Outline drawing (6)	Outline drawing (8)	Outline drawing (10)	Outline drawing (12)	Outline drawing (14)	Outline drawing (16)
	700 to 800	Outline drawing (6) (*7)	Outline drawing (8) (*7)			Outline drawing (14) (*5)	Outline drawing (16) (*5)		
High-speed type	500 to 600	–	–	–	–			–	–

(*1) Dimensions for the case of a brake-assisted specification are as shown in outline drawing (2).
(*2) Dimensions for the case of a brake-assisted specification are as shown in outline drawing (4).
(*3) Dimensions for the case of a brake-assisted linear axis specification are as shown in outline drawing (6).
(*4) Dimensions for the case of a brake-assisted linear axis specification or absolute encoder specification are as shown in outline drawing (8).
(*5) Dimensions for the case of a brake-assisted linear axis specification or absolute encoder specification are as shown in outline drawing (14).
(*6) Dimensions for the case of a brake-assisted linear axis specification or absolute encoder specification are as shown in outline drawing (16).
(*7) Due to the large motor W number for SCARA robots, the external dimensions of a six-axis configuration shall be used even in the case of a 4-axis specification.

	Large-capacity type (PX)		Large-capacity global type (QX)		
	SCARA only (PX4)	SCARA + linear axis (PX5/PX6)	SCARA only (QX4)	SCARA + linear axis (QX5/QX6)	Side view (common)
No expansion I/O	Outline drawing (1) 	Outline drawing (5) 	Outline drawing (9) 	Outline drawing (13) 	
	Outline drawing (2) 	Outline drawing (6) 	Outline drawing (10) 	Outline drawing (14) 	
Has expansion I/O	Outline drawing (3) 	Outline drawing (7) 	Outline drawing (11) 	Outline drawing (15) 	
	Outline drawing (4) 	Outline drawing (8) 	Outline drawing (12) 	Outline drawing (16) 	

The controller's height dimension is the same for all types.

■Regenerative resistor unit

Model **REU-1**

Description

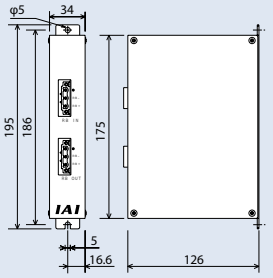
This unit converts the regenerative current generated during deceleration into heat. Although the controller has a built-in regenerative resistor, its capacity may be insufficient if the axis is positioned vertically and the load is large. In this case, a regenerative unit will be required. (See table at right.)

Specification

Item	Specifications
Unit Dimensions	W34mm×H195mm×D126mm
Unit weight	0.9kg
Built-in regenerative resistor	220Ω 80W
Accessory	Controller Connection Cable (Model No. CB-ST-REU010) 1m

Installation Standard Guideline for when a single axis is added to the 5th/6th axes with PX/QX.

Motor W number	Horizontal Application	Vertical Application
0 to 100W	Not required	Not required
to 200W	Not required	1 unit
to 400W	1 unit	1 unit
to 600W	1 unit	1 unit
to 800W	1 unit	1 unit
to 1000W	1 unit	2 units
to 1200W	2 units	2 units
to 1500W	2 units	3 units



Regenerative resistor is unnecessary if used with the SCARA robot only.

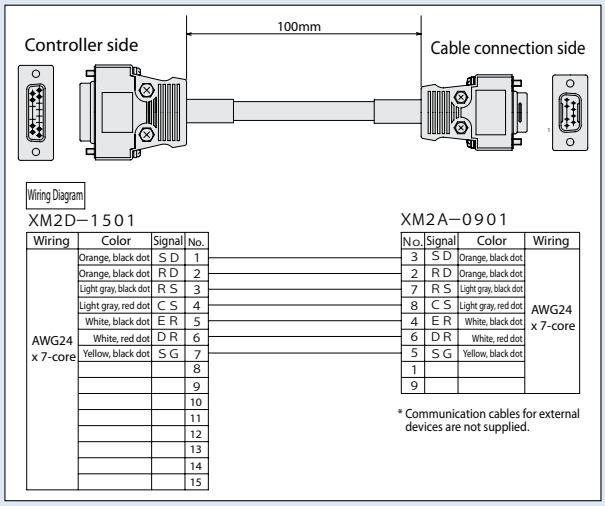
■Expansion SIO board (dedicated General purpose type)

Model/ Specifications

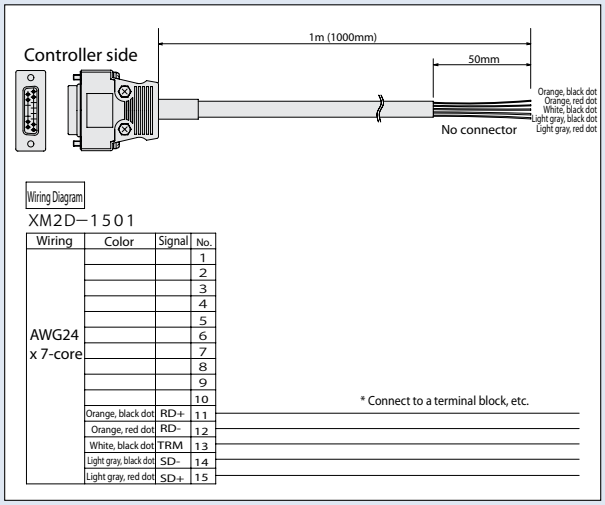
IA-105-X-MW- A (for RS232C connection) (main unit + joint cable(1), 2 included)
IA-105-X-MW- B (for RS422 connection) (main unit + joint cable(2), 1 cable is supplied)
IA-105-X-MW- C (for RS485 connection) (main unit + joint cable(2), 1 cable is supplied)

Description Board for serial communications with external equipment. This board has two port channels and implements three communication modes using the supplied joint cable(s).

Joint cable ① Model: CB-ST-232J001



Joint cable ② Model: CB-ST-422J010



■DeviceNet Connection Board

A board for connecting the XSEL controller to DeviceNet.

Item	Specifications			
Number of I/O Points	1 board: 256 input points/256 output points *1 Only 1 board can be installed			
Communication Standard	Interface module certified under DeviceNet 2.0 (certification to be obtained)			
	Bus Format (EIA RS485 Compliant)			
	Insulated node operating on network power supply			
Communication Specification	Controller	Bit strobe		
		Polling		
		Cyclic		
Baud rate	500k/250k/125kbps (Selectable by DIP switch)			
Communication Cable-side connector	Baud rate	Max. network length	Max. branch length	Total branch length
	500kbps	100m	6m	39m
	250kbps	250m		78m
	125kbps	500m		156m
	Note: When large DeviceNet cable is used Cable-side connector			
Communication Power Supply	24VDC (supplied from DeviceNet)			
Communication Power Supply Current	60mA or higher			
Number of Reserved Nodes	1			
Controller	MSTBA2.5/5-G.08AUM by Phoenix Contact (*1)			

(*1) Cable-side connector Controller (Controller SMSTB2.5/5-ST-5.08AU) is a standard accessory.

■CC-Link Connection Board

A board for connecting the XSEL controller to CC-Link.

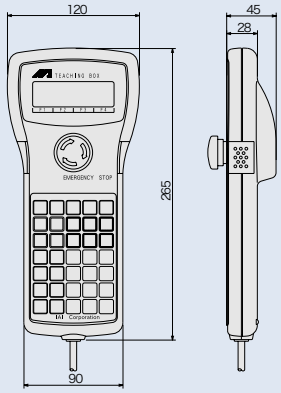
Item	Specifications					
Number of I/O Points / Remote Device	1 board: 256 inputs/256 outputs *1 Only 1 board can be installed					
Communication Standard	CC-Link Ver1.10 (already certified)					
Baud rate	10M/5M/2.5M/625k/156kbps (Switched via the rotary switch)					
Communication method	Broadcast polling method					
Asynchronous	Frame synchronization method					
Encoding Format	NRZI					
Transmission path type	Bus Format (EIA RS485 Compliant)					
Transmission format error	HDLC Compliant					
Control method	CRC($X^{16}+X^{12}+X^5+X1$)					
Number of Reserved Stations	1 to 3 stations (Bus Format (EIA RS485 Compliant)					
Communication cable length	Baud rate (bps)	10M	5M	2.5M	625k	156k
	Cable Length (m)	100	160	400	900	1200
Controller (Controller-side)	MSTBA2.5/5-G-5.08AUM by Phoenix Contact (*1)					

(*1) Cable-side connector Controller (Controller SMSTB2.5/5-ST-5.08AU) is a standard accessory.

Teaching Pendant

Model **IA-T-X** (standard)
IA-T-XD (equipped with Deadman switch)

Dimensional Drawing



Features

- A teaching device offering program/position input function, test operation function, monitoring function, and more.
- Interactive operation enables anyone to use this device easily.
- Has Deadman switch specification with improved safety performance.

Specification

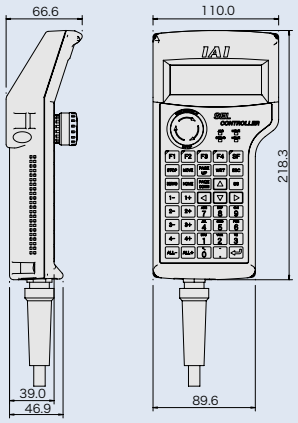
Item	Specifications
Ambient operating temperature and humidity	Temperature 0 to 40°C, Humidity 85%RH or less
Ambient operating environment	Free from corrosive gases. In particular, there shall be no significant amount of dust.
Weight	Approx. 650g
Cable length	4m
Display	20 character × 4 row LCD display

Caution
* Versions earlier than Ver. 1.13 cannot be used for XSEL-P/Q.
* Versions earlier than Ver. 1.08 cannot be used for SCARA.

ANSI standard/CE mark compliant teaching pendant (for use with General purpose type only)

Model **SEL-T**
SEL-TD (ANSI-compliant)
SEL-TG (Safety category compatible)

Dimensional Drawing



Features

Splash-proof type that complies with IP54 protection class. Usability has been enhanced with dedicated keys set for each function. SEL-TD/SEL-TG are also equipped with a 3-position enable switch and support ANSI standards.

Specification

Item	Specifications
Ambient operating temperature and humidity	Temperature 0 to 40 °C, Humidity 30 to 85% RH or less (non-condensing)
Protective structure	IP54 (not including the cable connector part)
Weight	400g or less (not including the cable)
Cable length	5m
Display	32 character × 8 row LCD display
Safety Rating	CE mark, ANSI standards (*)

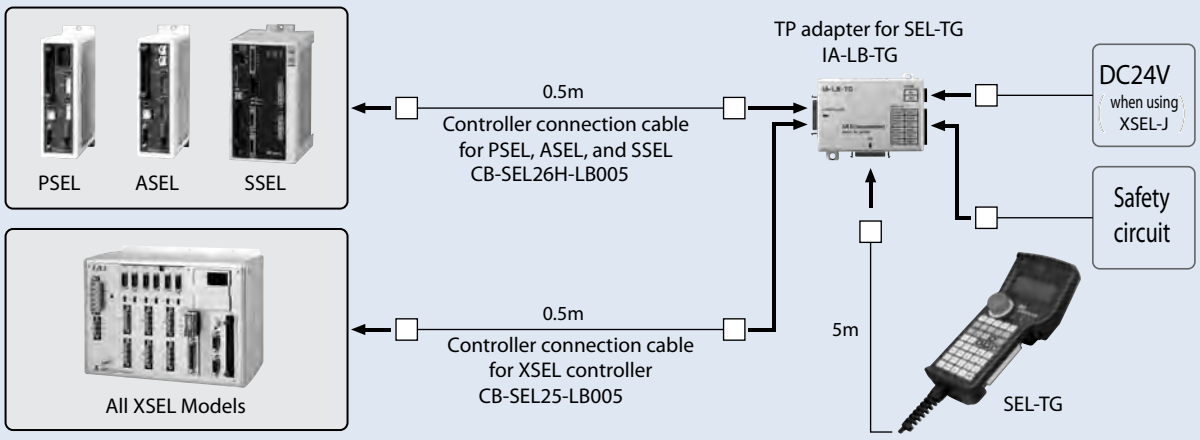
(*) ANSI standards support SEL-TD/SEL-TG only.

Teaching Pendant – Controller Compatibility Chart

		IA-T-X	IA-T-XD	SEL-T	SEL-TD	SEL-TG
		Standard type	Equipped with Deadman switch	Standard type	Safety category compatible type	Safety category compatible type
Program Controller	PSEL/ASEL/SSEL	○ (Note 1)	○ (Note 1)	○ (Note 1)	○ (Note 1)	◎
	XSEL-J	○	○	×	×	○ (Note 2)
	XSEL-K	○	○	○	○	○
	XSEL-P	○	○	○	○	◎
	XSEL-Q	○	○	○	◎	◎
	XSEL-KT	○	○	○	◎	◎
	XSEL-KE	○	○	○	○	○
	XSEL-JX	○	○	×	×	○ (Note 2)
	XSEL-KX	○	○	○	○	○
	XSEL-PX	○	○	○	○	◎
	XSEL-QX	○	○	○	◎	◎

*◎complies with safety categories B to 4,
○indicates that non-compliance with the safety category, but that connection is possible.
Note 1: A conversion cable is also needed when connecting to PSEL/ASEL/SSEL.
Note 2: If connecting SEL-TG to the XSEL-J/JX controller, DC24V must be supplied to the TP adapter.

SEL-TG wiring diagram



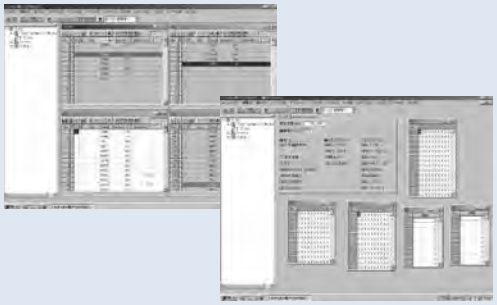
PC-compatible software (Windows only)

Model **IA-101-X-MW** (DOS/V version)

*For information about the PC98 version, please contact us.

Caution
* Versions earlier than Ver.3.0.0 cannot be used for XSEL-P/Q.
* Versions earlier than Ver. 2.0.0 cannot be used for SCARA.
* When using a safety category 4 controller, use IA-101-XA-MW.

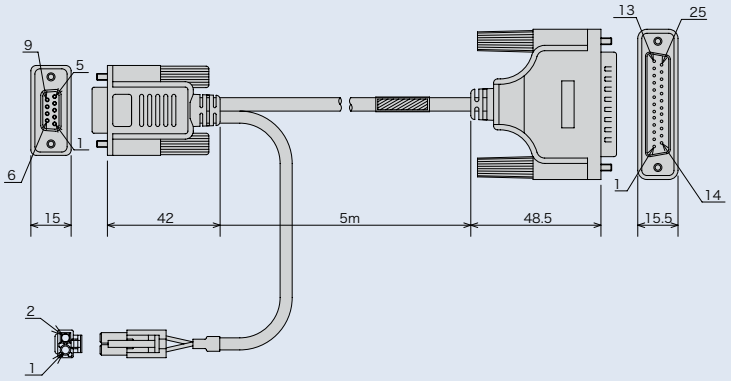
Features A startup support software program offering program/position input function, test operation function, monitoring function.
The functions needed for debugging have been enhanced significantly to help reduce the startup time.



Description
- Software (CD-ROM) – compatible with Windows 98, NT, 2000, ME, XP
- PC connection cable 5m + emergency stop box (model no. CB-ST-E1MW050-EB)

PC connection cable component (Model No. CB-ST-E1MW050)

Caution
When ordering computer connection cables separately for maintenance, note that the model number for the cable alone is CB-ST-E1MWO50. When bundled with the EMO box, the model number is CB-ST-E1MWO50-EB.



D-sub 9P socket Connector hood FG		Wiring Diagram		D-sub 25P plug Connector hood FG
BROWN	2		2	BROWN
BROWN/BLACK	3		3	BROWN/BLACK
ORANGE	5		7	ORANGE
ORANGE/BLACK				ORANGE/BLACK
	4		4	
	6		5	
	7		6	
	8		20	
			18	
			19	
ELP-02V				
RED	1		13	RED
BLACK	2		12	RED/BLACK
			1	Shield FG

(Shield)

Software for Safety Category 4 Compliant PC

Model **IA-101-XA-MW** (DOS/V version)

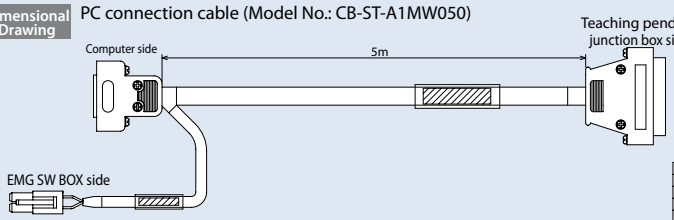
*Cannot be used with XSEL-J/JX/K/KE/KX/P/PX

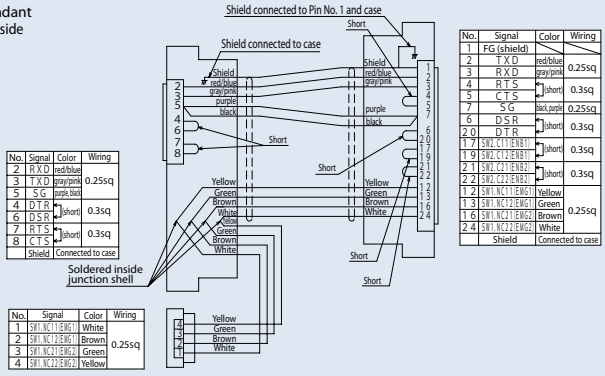
Features A startup support software program offering program/position input function, test operation function, monitoring function.
The functions needed for debugging have been enhanced significantly to help reduce startup time. Also, the PC connection cable provides a redundant emergency stop circuit and complies with Safety Category 4.

Caution
When ordering computer connection cables separately for maintenance, note that the model number for the cable alone is CB-ST-A1MW050. When bundled with the EMO box, the model number is CB-ST-A1MW050-EB.

Description **(supplied accessory)**
- Software (CD-ROM) – compatible with Windows 98, NT, 2000, ME, XP
- PC connection cable 5m + emergency stop box (Model No.: CB-ST-A1MW050-EB)

Dimensional Drawing PC connection cable (Model No.: CB-ST-A1MW050)





No.	Signal	Color	Wiring
2	RXD	red/blue	0.25sq
3	TXD	gray/pink	
5	SG	purple, black	
4	DTR	[short]	0.3sq
6	DSR		
7	RTS	[short]	0.3sq
8	CTS		
	Shield	Connected to case	

No.	Signal	Color	Wiring
1	FG (shield)		0.25sq
2	TXD	red/blue	
3	RXD	gray/pink	
4	RTS	[short]	0.3sq
5	CTS		
7	SG	black, purple	0.25sq
6	DSR	[short]	0.3sq
20	DTR		
17	SW2.C11(ENB1)	[short]	0.3sq
19	SW2.C12(ENB1)		
21	SW2.C21(ENB2)	[short]	0.3sq
22	SW2.C22(ENB2)		
12	SW1.NC11(EMG1)	Yellow	0.25sq
13	SW1.NC12(EMG1)	Green	
16	SW1.NC21(EMG2)	Brown	
24	SW1.NC22(EMG2)	White	
	Shield	Connected to case	

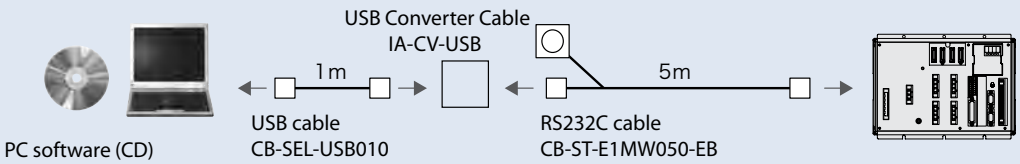
No.	Signal	Color	Wiring
1	SW1.NC11(EMG1)	White	0.25sq
2	SW1.NC12(EMG1)	Brown	
3	SW1.NC21(EMG2)	Green	
4	SW1.NC22(EMG2)	Yellow	

USB-compatible PC software

Model **IA-101-X-USBMW**

Features A USB conversion adapter is attached to the RS232C cable to enable use with the USB port of a PC.

Description
- Software (CD-ROM) – compatible with Windows 98, NT, 2000, ME, XP
- PC connection cable 5m + emergency stop box + USB conversion adapter + USB cable 1m



Quality and Innovation

IAI America, Inc.
Headquarters: 2690 W. 237th St. Torrance, CA 90505
Chicago Office: 1261 Hamilton Parkway Itasca, IL 60143
Atlanta Office: 1220 Kennestone Circle, Suite E. Marietta, GA 30066

The IAI logo and the XSEL logo is a registered trademark of IAI America, Inc.

The information contained in this catalog is subject to change without notice for the purpose of product improvement.