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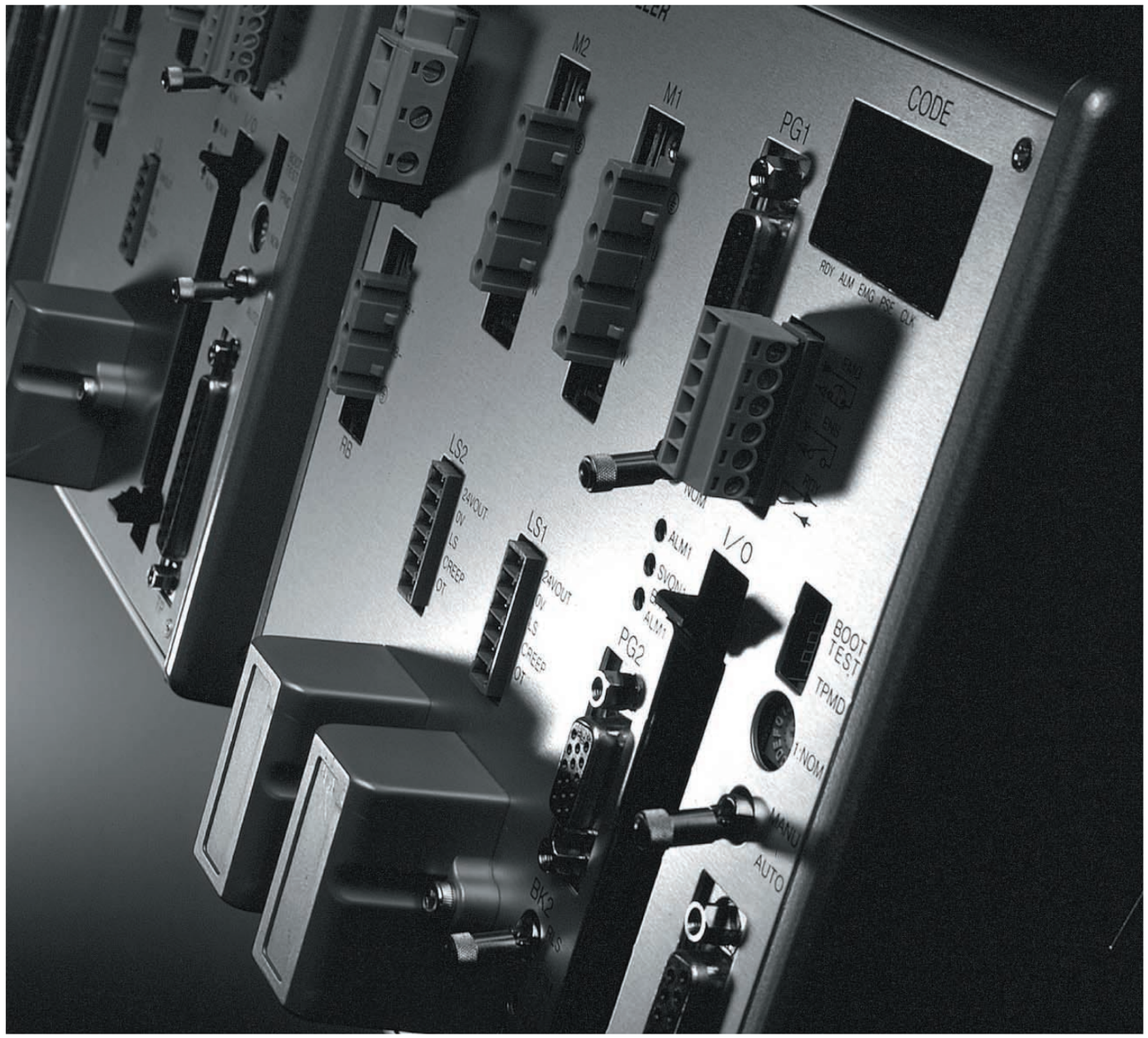
IAI
Quality and Innovation

GB



X-SEL
CONTROLLER

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IAI
Quality and Innovation

X-SEL

New Generation Controller strives for Convenience

The next generation of controllers with the performance far exceeding the previous models are finally here.

The dynamic performance & basic software package (SEL Language) are greatly improved with more commands, a greater program data capacity, and improved safety and maintainability.

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Super High Potential X-SEL Controller

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System Construction

Compact Type with Limited Function

Compact Type: 1 Axis

Features Dedicated I/O

All-Purpose EU Type with Advanced Function

All-Purpose EU Type: 1 Axis

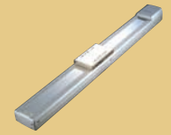
All-Purpose EU Type: 2 Axes

All-Purpose EU Type: 3 / 4 Axes

Features Expandable I/O

1 Axis Actuator — Actuators corresponding to the X-SEL

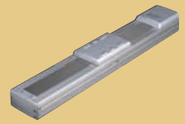
ISP High Speed & Accuracy
Maximum Stroke Length 2,500mm
Maximum Horizontal Payload 150kg
Maximum Velocity 2,000mm/sec



ISPD ISP Clean Room Type
Maximum Stroke Length 1,600mm
Maximum Horizontal Payload 150kg
Maximum Velocity 2,000mm/sec

FS Long Stroke Belt Drive Slim Type
Maximum Stroke Length 3,000mm
Maximum Horizontal payload 60kg
Maximum Velocity 2,000mm/sec

IS Motor/Ballscrew shaft integrated,
Base/Guide in single integrated structure.
Maximum Stroke 2,500mm.
Maximum Horizontal Payload 80kg
Maximum Velocity 1,000mm/sec.

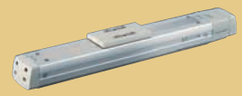


ISD Dust Shield Type
Maximum Stroke Length 1,600mm
Maximum Horizontal Payload 80kg
Maximum Velocity 1,000mm/sec

IF High Rigidity Base Structure
Belt Drive Type Actuator
Maximum Stroke Length 2,500mm
Maximum Horizontal Payload 40kg
Maximum Velocity 1,750mm/sec

SS Solid System Compact Type
Maximum Stroke Length 1,000mm
Maximum Horizontal Payload 60kg
Maximum Velocity 1,000mm/sec

ISD-CR
Clean Room Type
Class 10 Compliance
Maximum Stroke Length 1,200mm
Maximum Horizontal Payload 80kg
Maximum Velocity 1,000mm/sec



DS
Dynamic System Compact Type
Maximum Stroke Length 600mm
Maximum Horizontal Payload 12kg
Maximum Velocity 800mm/sec

RS
Rotary actuator can be used
with IS, IF, etc.
Moving Range 360 degree
Maximum Velocity 360 degree/sec

ISD-CR ESD
Electrostatic Discharge
Maximum Stroke Strength 1,000mm
Maximum Horizontal Payload 80kg
Maximum Velocity 1,000mm/sec

Robo Cylinder

Many RCS actuators are compatible with the X-SEL controller and capable of inexpensive, interpolated motion. RCP or RCS actuators may be used with the X-SEL using discrete I/O.

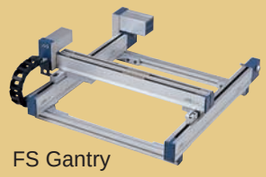
The single-axis actuators above may be combined in a multitude of multi-axis configurations.

2 Axes Configuration

Configuration Example

ICS/XYS

ICS/XYG

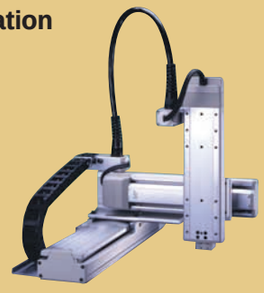


FS Gantry

The overall length of the IS/ICS series is slightly different for the SEL E/G controller and X-SEL controller specifications. When using the X-SEL Controller, please refer to the IS catalogue for X-SEL.

3 · 4 Axes Configuration

Configuration Example



For additional configurations, please contact your Intelligent Actuator representative.

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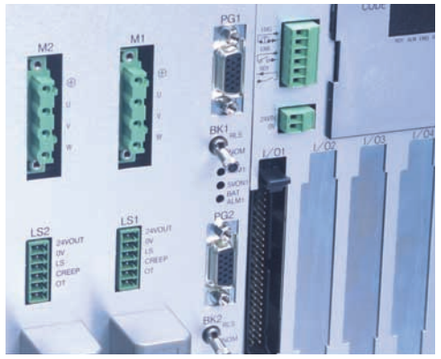
New Features

Since the introduction of our first Single Controller in 1986, Intelligent Actuator, Inc., has pursued innovation in speed, power, safety and service-ability. The high performance X-SEL controller is the culmination of 15 years of technological advancement.



All-in-one controller with newly developed digital servo driver.

A newly developed digital-servo driver is used in con-junction with a 17-bit serial encoder. Compared to the previous models (E/G Type), acceleration and decelera-tion of the velocity function is improved drastically, which shortens tact time.

High Speed

All control boards and components are easily accessible.

Expansion I/O cards can be inserted in seconds, and the source of any trouble quickly diagnosed.

Easy

Enhanced safety features and CE certification.

X-SEL Controller System has protection for external equipment following RAS(Reliability · Availability · Serviceability) guidelines. The safety function is enhanced by improving emergency stop and motor drive power shut off functionality when an error occurs.

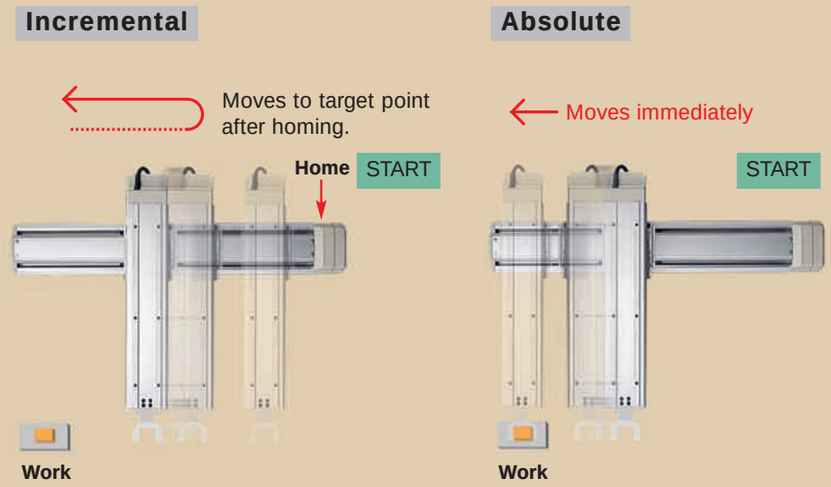
CE

Safety

X-SEL

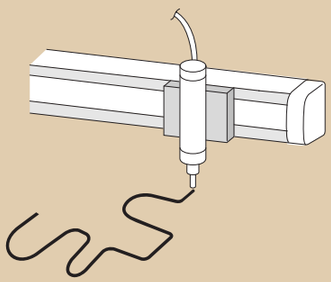
Work efficiency is improved with absolute encoders

Since the 17 bit absolute encoder data has battery back-up, homing is not required after power up or when it recovers from an emergency stop. This option increases efficiency and productivity by reducing start-up and recovery time.



Increased PATH Speed & Accuracy

Due to the increased processing speed of the controller, the locus accuracy is greatly improved.
Moreover, the speed of a path and a circle are faster with greater accuracy for dispensing.



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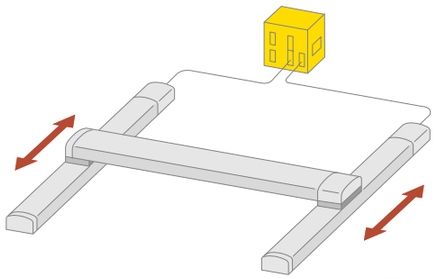
New Functions

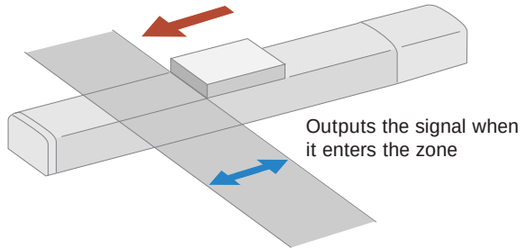
With improved movement performance in acceleration/deceleration, locus accuracy, and new functions such as synchronised axis operation, infinite stroke movement, push mode, and zone signal, the X-SEL can be used for various applications.



Synchro Operation

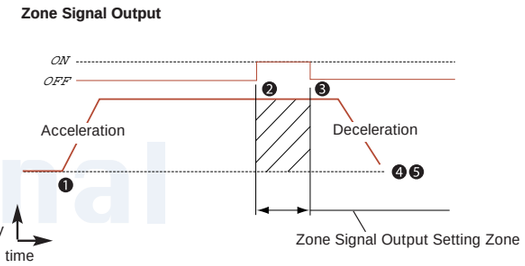
2 axis synchronous motion can handle payload which was not possible with single axis. Also it allows a longer Y axis for the gantry type.

Synchro

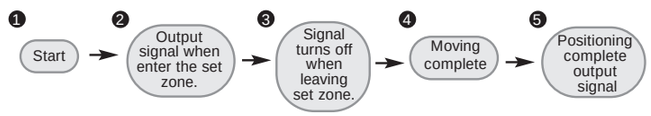


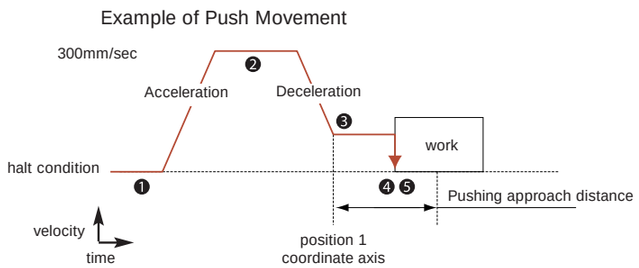
Zone Signal

The zone signal is the function that can output a signal when a slider moves inside a zone defined by the user. This function is convenient for interlocking and timing with peripherals devices.
The maximum setting points are 4 (4 zones) for each axis.



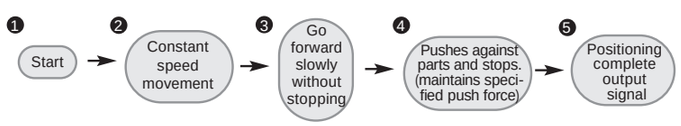
Zone signal





Push Movement

It can continue to push a slider against a load like an air cylinder. You can use it for pushing parts, clamping, press fitting, etc. Since a signal can be output when it pushes against parts, distinction of work loads is possible.

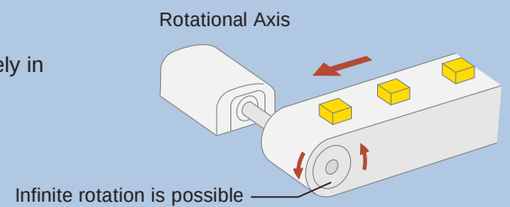


Work

X-SEL

Infinite Stroke Operation

By using the jog function, you can move infinitely in one direction like a conveyer.



Infinity

Program Data Memory is Increased

Program step number is 6,000 steps (Top level class).
Point number is 3,000 positions.
Since a maximum of 16 programs can be multi-tasked simultaneously, complex control is possible.

Supports Virtual Ladder Task

You can construct ladder logic similar to a PLC using the program (ladder mnemonic). Since expansion condition supports not only ladder logic but also AND Block and OR Block in all programs, complicated conditions can be easily managed and organised.

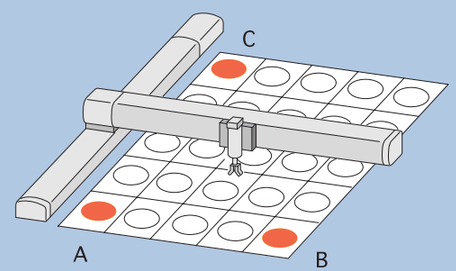
72 new Commands are added to the Program. E/G Type 111 Commands -> X-SEL 186 Commands

The Super SEL Language has a reputation for making complicated control easy. New commands are added to the program.

Example
- Palletise Commands • Arch Motion Commands
- Spline Commands and more

Expansion of Variables and Symbol Definition

Number of variables that can be used in the program is doubled. (100 ->200) You can symbolise (name) variables, input and output ports, flags, points. Therefore, the program is easier to understand now.



You can set the palletise points by just teaching 3 points, A, B & C.

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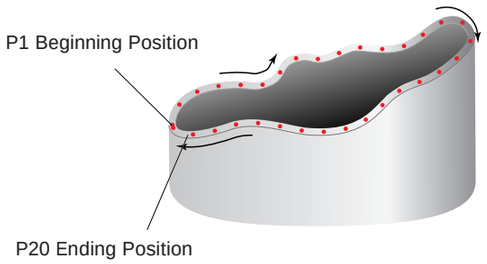
Upgraded Function - Path Operation

Various kinds of path movements including 3D path movement are available.



Command	Operation 1	Operation 2
PATH	P1	P20

Regardless of number of points, Path command uses only one line.

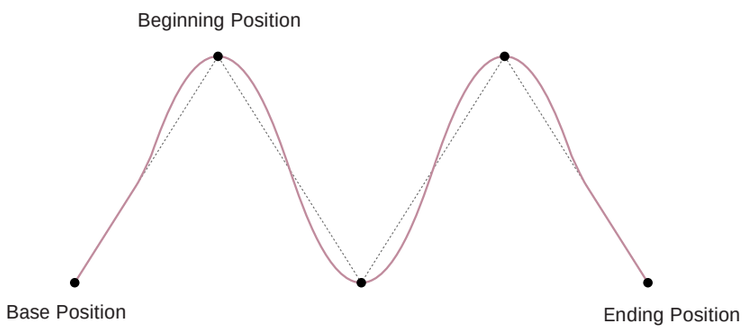
3D Path Movement

It can complete continuous motion from the designated start position (ex. P1) to end position (ex. P20) without stopping.

Dispensing on a complicated shape is as simple as designating the start position No. and the end position No. With all the points in between listed consecutively in the point table. Path movement can be 3D, therefore, dispensing operation of 3D objects is possible. Moreover, since the processing speed of the controller is much faster, the velocity and locus accuracy are greatly improved and thus can accommodate more complex shapes.

Spline Movement

Moves continuously from the designated base position to the ending position via spline interpolated curved motion.



(This diagram is for illustrative purpose only).

3D Path

3D Arc Motion

You can easily execute arc motion by simply selecting 2 conditions using the following commands.

CIRS

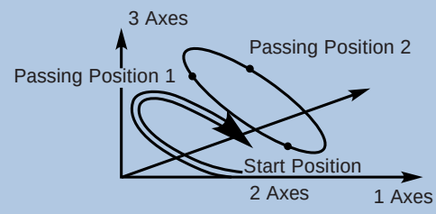
Circle movement (3-dimensional movement) that passes along the passage positions 1 and 2 in order with the present position as the starting point is performed.

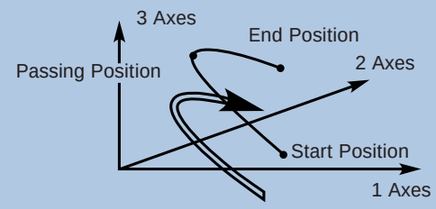
ARCS

It passes along a passage position with the present position as the starting point, and arc movement (3-dimensional movement) to an end position is performed.

PRDQ

It reads into the variable, which specified the present position of axial No. specified by operand 1 by operand 2. The present position is acquirable from a PRED command at high speed.

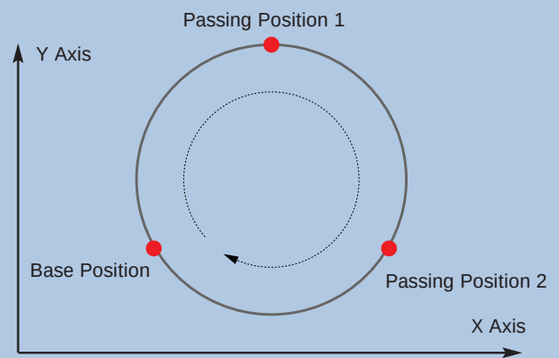




Arc Motion

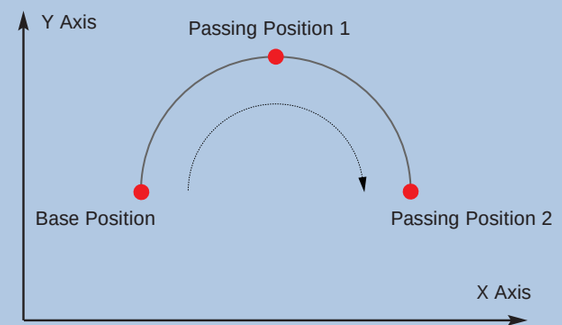
CIR, CIR2

Executes circular motion from the current position and passing through positions 1 and 2.



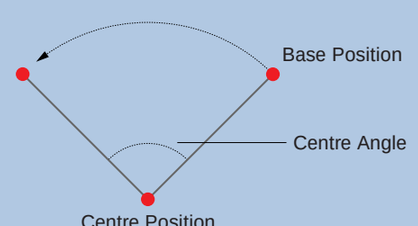
ARC, ARC2

Execute arc motion from the current position passing through positions 1 and 2.



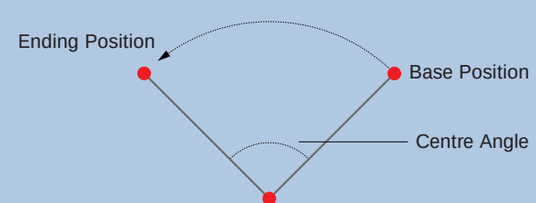
ARCC

Executes arc motion from the current position based on the designated centre angle and with a designated centre position as the radius.



ARCD

Executes arc motion from the base position to a designated ending position based on the centre angle.



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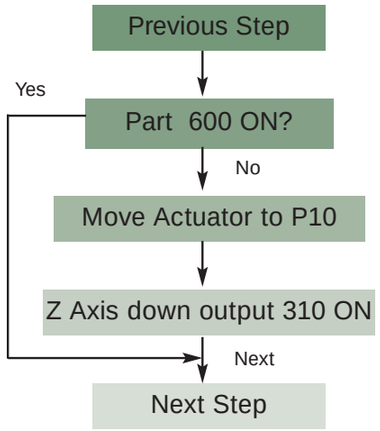
Super SEL Language Exceptional Control, and Simplicity!

Super SEL Language which allows advanced control with simple program has been improved. New function such as palletise command, virtual ladder task and spline command are added to X-SEL controller. The result is an increase in the number of commands from 111 to 186 and using the Super SEL Language has become even easier.

What is Super SEL Language?

Super SEL Language is the simplest language among the many robot languages. Super SEL Language solves difficult problems, achieving advanced control using simple expression.

The flow chart below is one example.



Operation Explanation

When there is no part (flag 600 off), the actuator moves and the Z axis descends.
When there is a part (flag 600 on), the Z axis moves to the next step
(Flag is equivalent to PLC's auxiliary relay.)

It takes only one step with the Super SEL Language.

Step	Condition	Command	Output
1	N600	MOVL10	310

BASIC Language requires 3 steps.

Step	Label	Command
1		IF(600)=1 THEN NEXT
2		MOVE P10
3		DOUT(310)=1B
4	NEXT	The following operation command

Super SEL

X-SEL

Comparison to Previous Model (E/G Type)

X-SEL's programming related function and spec are improved dramatically compared to the previous model (E/G Type).

Item		Content	SEL-E/G	X-SEL
Program Step		The total step capacity of a program	3000	6000
Position		Positioning Points	2000	3000
	Global	The integer variable which can be used by all programs	100	200
	Local	The integer variable which can be used by each programs	99	198
	Global	The integer variable which can be used by all programs	100	200
	Local	The integer variable which can be used by each programs	100	200
Flag	Global	Equivalent to the auxiliary relay of PLC	288	300
	Local		100	100
Virtual Imput Port		Internal monitor of e-stop, program, error, etc.	–	300
Virtual Output Port		Internal monitor of the e-stop	–	300
Symbol Definition		Contain symbols for variables, points, axes, etc.	–	1000

*Global is used in all programs.
*Local is used in each program.

Introduction of New Function

Virtual Input/Output Port

System information can be output by SEL Program.

ex) Port No.7002: Controller back up battery low voltage warning.

No.	Imput Condition (Cnd)	Command (Cmnd)	Operation 1 (Operand 1)	Operation 2 (Operand 2)	Output (Pst)	Comment
	7002	BTON	301			

By executing above step, output 301 turns on when back up battery is low.

Symbol Definition

You can name various symbols in the program with X-SEL Controller. Thus it is easier to understand the program.
* Maximum 9 small letters of alphabet and number.

Symbolised Sign : Variables (Integers and real number), Flag No, Input and Output Port No.,Program No., Tag No., Subroutine No., Position No., and Axis No..

No.	Imput Condition (Cnd)	Command (Cmnd)	Operation 1 (Operand 1)	Operation 2 (Operand 2)	Output (Pst)	Comment
1		BTOF	complete			Positioning complete signal turns OFF
2		MOVP	waitpoint			It moves to a waiting point
3		BTON	complete			Signal turns on after the completion of move
4		MOVP	supplypt			It moves to a supplying point
5						

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New Commands for Palletising

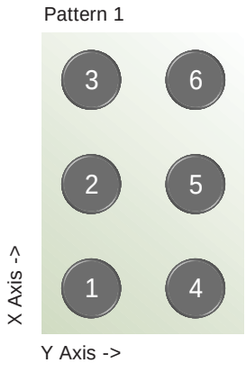
Palletise Commands were added to make palletising easier.
The Palletising is set by designating palletise points (work payload position, order, etc.) and executed by using movement commands. You can set-up 10 palletising pattern (Pallet No.1~10) in 1 program.

Palletise Pattern Setting

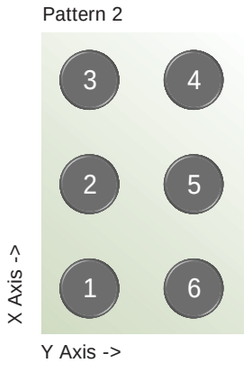
You can select the pattern for palletising.

Standard Patterns

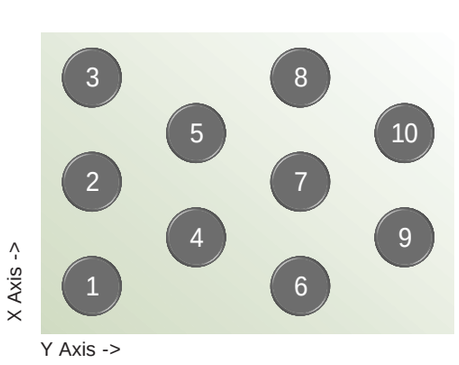
Pattern 1



Pattern 2

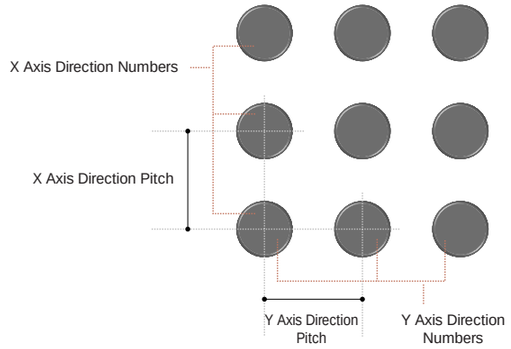


Zig-zag Pattern



Palletise the Number of Setting points

You can set number for X axis / Y axis direction.

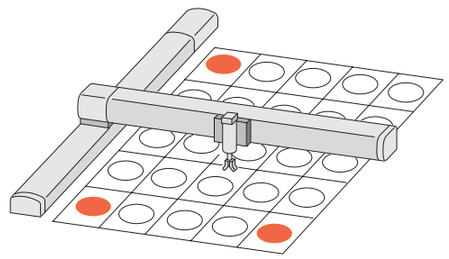


Setting the Pitch

You can set the pitch for X axis / Y axis direction.

3 Point Teaching

You can set up a pallet just by teaching 3 points. The first point i the base point, the second is the end point in the X axis direction, and the third is the end point in the Y axis direction. Pitch is automatically calculated from the setting of each axis. Setting of 3 point teaching is also possible in XYZ 3D plane.

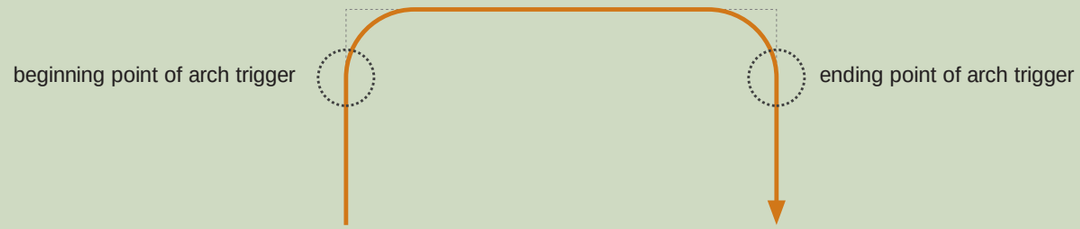


Palletise

X-SEL

Arch Motion

When you execute palletising or pick & place using Z axis, this function moves X & Y axes before the Z axis reaches the point, thereby reducing moving time. You can change the beginning point and the ending point of the arch by arch trigger setting.



Movement Commands

PMVP Executes PTP (Point to Point) movement to computed palletise point.
PMVL Executes interpolated movement to a palletise point.
PACH Executes arch motion from the current position to the selected palletise point.

*Sample Program *

Step No.	Expansion Condition (E)	Imput Condition (Cnd)	Command (Comnd)	Operation 1 (Operand 1)	Operation 2 (Operand 2)	Output (Pst)	Comment
1			BGPA	1			Palette No.1 setting start
2			PASE	1	2		Set palletise axis
3			PAPI	5	5		Set palletise numbers
4			PAPN	1			Set palletise pattern
5			PAPT	20	20		Set palletise pitch
6			EDPA				Palette No.1 setting completion
7							
8			HOME	11			returns home
9			VEL	500			Set velocity 500mm/sec
10			TAG	1			GOTO jump place of Step 17
11			MOVL	1			Moves to position 1 (supplying point)
12			PMVL	1			Moves to a palletise position
13			PINC	1			One advance about palletise position No.1
14			PTNG	1	1		Acquires current palletise position
15			CPGE	1	25	900	When palletise position reaches 25, output flag
16		900	PSET	1	1		Returns to position 1 after reaches position 25
17			GOTO	1			Jumps to TAG 1 of step 1

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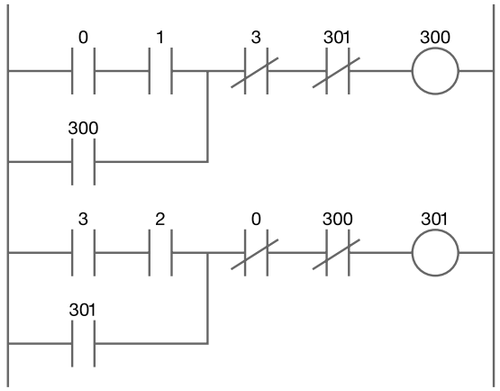
New Command - Virtual Ladder Task

The Ladder Task used by the PLC can be executed by the Super SEL Language.
The program structure is similar to ladder logic, so, it's easy to convert from a ladder sequence.

Caution: Since this program is a software ladder which uses an interpreter, processing time is much slower compared to a PLC. Therefore, it's not suitable for large scale ladder processing.

For example, a ladder task shown in the following figure can be expressed in X-SEL ladder command structure as shown below.

Ladder Task



X-SEL Ladder Command

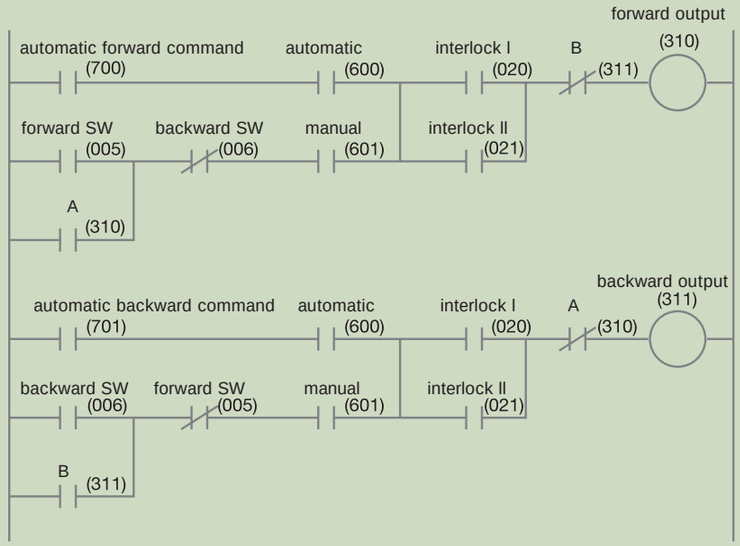
Command	Common PLC command
LD	LOAD
A	AND
O	OR
OUTR	OUT

No.	Expansion Condition (E)	N	Imput Condition (Cnd)	Command (Cmnd)	Operation 1 (Operand 1)	Operation 2 (Operand 2)	Output Port (Pst)
1	LD		0				
2	A		1				
3	O		300				
4	A	N	3				
5	A	N	301				
6	LD		3	OUTR	300		
7	A		2				
8	O		301				
9	A	N	0				
10	A	N	300	OUTR	301		
11							
12							
13							
14							

Rudder task

X-SEL supports And and Or Block logic which is essential to program complicated circuitry requiring multiple conditions.

Command	Common PLC Command
LD	ANB or AND LD
OB	ORB or OR LD



X-SEL Program

No	E	N	Cnd	Cmnd	Operand 1	Operand 2	Pst	Comment
1	LD		700					Automatic forward command
2	A		600					Automatic operation
3	LD		5					Forward SW
4	O		310					Self-sustaining contact point
5	A	N	6					Backward SW
6	A		601					Manual mode
7	OB							Parallel circuit junction
8	LD		20					Interlock I
9	O		21					Interlock II
10	AB							Series circuit junction
11	A	N	311	OUTR	310			Forward output
12	LD		701					Automatic backward command
13	A		600					Automatic operation
14	LD		6					Backward SW
15	O		311					Self-sustaining contact point
16	A	N	5					Forward SW
17	A		601					Manual mode
18	OB							Parallel circuit junction
19	LD		20					Interlock I
20	O		21					Interlock II
21	AB							Series circuit junciton
22	A	N	310	OUTR	311			Backward output

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Super SEL Language Main Command Chart

There are 186 commands in Super SEL Language and all of those commands have symbols related to the meaning. A simple control program can be written using just 5-10 commands. It also allows you to write advanced control programs using various commands.

Actuator control declaration

Command	Function
VEL	Set velocity
OVRD	Set velocity ratio
ACC	Set acceleration
DCL	Set deceleration
SCRV	Set S-motion ratio
OFST	Set offset
DEG	Set angle of division
BASE	Set base axis
GRP	Set group axis
HOLD	Hold port
CANC	Cancellation
VLMX	Set VLMX velocity
DIS	Set spline
POTP	Set PATH output type
PAPR	Set push
QRTN	Quick return mode

Actuator control command

SVON	Servo on
SVOF	Servo off
HOME	Home
MOVP	Move to designated position
MOVL	Interpolated move to designated position
MVPI	Incremental move to a position
MVLI	Incremental interpolated move to a position
PATH	Path movement
CIR	Circular movement
ARC	Arc movement
JBWF	Jog backward at input off
JBWN	Jog backward at input on
JFWF	Jog forward at input off
JFWN	Jog forward at input on
STOP	Axis slows to a halt
PSPL	Spline move
PUSH	Push move
CIR2	Circular movement 2
ARC2	Arc movement 2
CHVL	Velocitry change
ARCD	End position designated arc movement
ARCC	Centre position designated arc movement
PBND	Set positioning range
CIRS	3D circular movement
ARCS	3D arc movement

Program control

GOTO	Jump
TAG	Declarare jump target
EXSR	Execute subroutine
BGSR	Begin subroutine
EDSR	End subroutine

Position command

Command	Function
PGET	Assign position to variable 199
PPUT	Assign value of variable 199
PCLR	Clear position data
PCPY	Copy position data
PRED	Read current position of axis
PTST	Confirm position data
PVEL	Assign position velocity
PACC	Assign position acceleration
PDCL	Assign position deceleration
PAXS	Read axis pattern
PSIZ	Check position size
GVEL	Acquire velocity data
GACC	Acquire acceleration data
GDCL	Acquire deceleration data
PRDQ	Read current position of designated axis

Input/output flag operation

BTON	Output port. Flag on
BTOF	Output port. Flag off
BTNT	Output port. Flag reverse
WTON	Input & Output port. Wait flag on
WTOF	Input & Output port. Wait flag off
IN	Binary input
INB	BCD input
OUT	Binary output
OUTB	BCD output
BTPN	ON pulse output
BTPF	OFF pulse output

Timer

TIMW	Timer
TIMC	Cancel timer
GTTM	Acquire time

Task control

EXIT	Exit program
EXPG	Execute program
ABPG	Stop other program
SSPG	Pause program
RSPG	Restart program

Virtual ladder task construction

TPCD	Designate a process when input conditions are not designated
CHPR	Change task level
TSLP	Task sleep
OUTR	Output relay for a ladder
TIMR	Timer relay for a ladder

Variable

Command	Function
LET	Assign
TRAN	Copy
CLR	Clear variables

Arithmetic calculation

ADD	Add
SUB	Subtract
MULT	Multiply
DIV	Divide
MOD	Remainder

Functional calculation

SIN	Sine
COS	Cosine
TAN	Tangent
ATN	Arctangent
SQR	Square root

Logical calculation

AND	Logic and
OR	Logic or
EOR	Exclusive logic

Comparison

CPEQ	Compare equal
CPNE	Compare not equal
CPGT	Compare greater than
CPGE	Compare greater or equal
CPLT	Compare less than
CPLE	Compare less or equal

Zone

WZNA	Zone ON AND wait
WZNO	Zone ON OR wait
WZFA	Zone OFF AND wait
WZFO	Zone OFF OR wait

Palletising related

Command	Function
ARCH	Arch motion
ACHZ	Arch motion Z axis declaration
ATRG	Set arch triger
OFPZ	Set palletise Z axis offset
BGPA	Declare the start of palletise setting
EDPA	Declare the end of palletise setting
PASE	Set palletising axis
PAPT	Set palletising pitch
PAPI	Set palletising No.
PAPS	Set palletising points (3 points teaching)
PAPN	Set palletising pattern
PSLI	Set zig-zag
PCHZ	Set the palletising Z axis
PACH	Arch motion at the palletising points
OFAZ	Set the Z axis offset value of arch motion
PMVP	PTP move to palletising points
PMVL	Move between the palletising points
PTNG	Acquire palletising position No.
PING	Calculate the palletise position No. +1
PDEC	Calculate the palletise position No. -1
PSET	Direct set of the palletising position No.
PAPG	Acquire palletising calculation data
PTRG	Set arch trigger of palletising
PEXT	Set palletising combination
AEXT	Set arch motion combination
PARG	Acquire palletising angle
PAST	Set the base point of palletising

System information and acquisition

AXST	Acquire axis status
PGST	Acquire program status
SYST	Acquire system status

Communication

OPEN	Open channel
CLOS	Close channel
READ	Input from channel
WRIT	Output to channel
SCHA	Set ending character
TMRD	Set the value of READ time out

String operation

SCPY	Copy strings
SCMP	Compare strings
SGET	Acquire strings
SPUT	Set strings
STR	Decimal conversion of strings
STRH	Hexaecimal conversion of strings
VAL	Decimal conversion of data in strings
VALH	Hexadecimal conversion of data in strings
SLEN	Set length

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RAS

RAS stands for Reliability, Availability, and Serviceability.
X-SEL employs control, driver, and power units RAS to protect the controller.

RAS Control Unit

When the system starts up, it reads various device structure information stored in the controller and checks the adjustments of hardware and parameters.
You can check various errors detected by the main CPU from the teaching pendant and the PC software.

RAS Driver Unit

This system can shut off motor driver power for safety through hardware or software according to various conditions.
(emergency stop input from outside, internal system error, encoder disconnection, etc.)

RAS Power Source Unit

RAS checks for heating up of switching the power source and the over heat of the regenerative resistance, AC power input voltage abnormality, motor driver power voltage abnormality, etc. and shuts off motor and commands an emergency stop to the driver.
When the power is turned ON, it checks emergency stop relay contact. If there are problems, the system will not operate.

Other Function

Holds more than 700 error messages
The number of error messages has increased and it makes troubleshooting faster and more accurate compared to the E/G Type Controller.

Stores Maximum of 50 Error Message History
Maximum of 50 error message history with related information can be stored and this would help solve problems faster and make operation more efficient.

I/O Processing Program during All Operation Stop
The I/O processing program which starts up when emergency stop or operation pause signal is input, is added.

Emergency ABS-> INC Switching Function
When the data battery is gone while using absolute type, it would able to be used as incremental type by adjusting the parameters.

System Error Output By Virtual Input/Output Port
By setting virtual input port which indicates error occurrence classified by level, you can output output occurrence. You can also output error contents of each axis and program by using SEL language commands.

X-SEL

Network

Recently, Network Systems are widely used with less wiring and data communication. X-SEL Controller corresponds to domestic and international main network systems.

Various Network specification

	DeviceNet	CC-Link	PROFIBUS
Communication Standard	DeviceNet 2.0 Group 2 Only Server	CC-Link Ver.1.10 Remote device station Remote I/O station	PROFIBUS-DP Ver. 1.10 Slave
Communication Speed	500K/250K/ 125K band	10M/5M/2.5M/ 625K/156Kbps	12M/1.5M/ 500K/187.5Kbps
Transmission Distance	100m/250m/500m	100m/160m/400m/ 900m/1200m	100m/200m/400m 1000m
Power	Supply from DeviceNet side (24V)	Supply from X-SEL Controller	Supply from X-SEL Controller
I/O Points(1 card)	Input 256 points(Max) Output 256 points(Max)	Input 256 points(Max) Output 256 points(Max)	Input 256 points(Max) Output 256 points(Max)
Max Card Installation	1	1	1

DeviceNet

CC-Link

PROFIBUS

Network Corresponding Model Type

	Controller Type	Network I/O Points	Standard Slot	Expansion Slot 1	Expansion Slot 2	Expansion Slot 3	Type
DeviceNet	KE Type	256/256	•	1*	1*	1*	XSEL-KE-❐-❐-D-❐
CC-Link	KE Type	256/256	•	1*	1*	1*	XSEL-KE-❐-❐-C-❐
PROFIBUS	KE Type	256/256	•	1*	1*	1*	XSEL-KE-❐-❐-R-❐

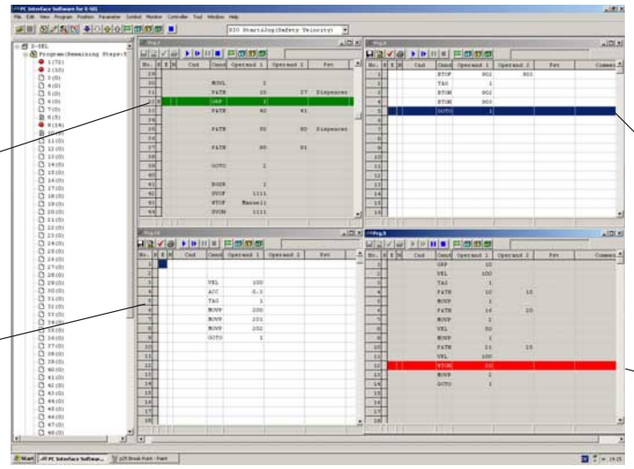
*Total up to 3 boards of I/O and SIO can be expanded when a network board is installed in the standard I/O connector slot.

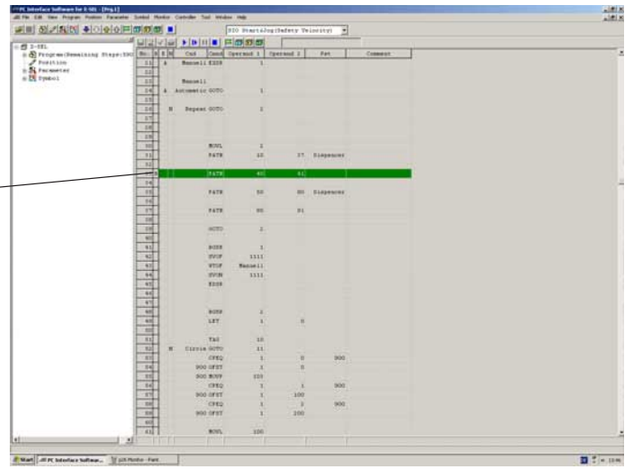
Substantial Debug Function - PC Software

This start up supporting software makes programming, setting position input, testing of axes, and monitoring of input & output signals of the controller possible. By adding debug functions such as step by step tracing and break point functions, it makes debugging more efficient.

- You can open several windows and operate them at the same time
- When the program is running, the current steps are classified by 3 colours making easy to check program status (Steps are classified by blue, red and green according to status).
- You can execute the program step by step (Step Execution Function).
- You can pause the program at an arbitrary position (Break Point Function).

Program Edit Window

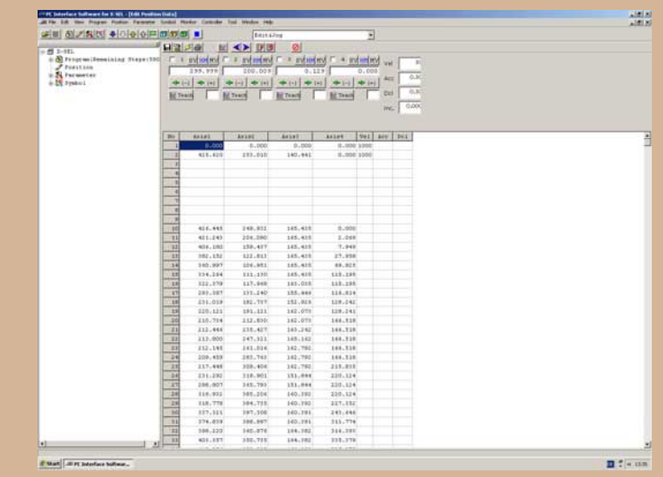




X-SEL

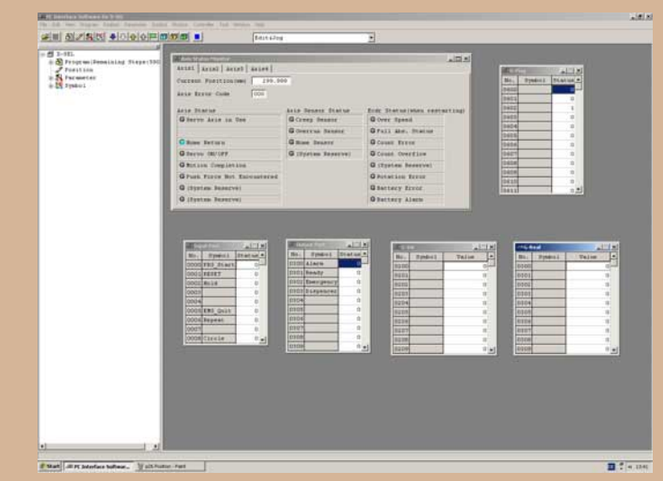
- You can do direct value input, jog movement, incremental movement and obtain the current position or obtain current position from manual operation with the SERVO OFF in the position edit window.

Position Edit WIndow



- You can monitor Input & Output Ports, Flags, Integer Variables, Real Number Variables, and Axis status in the monitor window.

Monitor Window



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Type

Controller

XSEL-KE-3-20A-10A-06IBL-P-EEE-2

1 2 3 4 5 6 7 8 9

1. Series Name

2. Controller Type
J : Compact
KE : All-Purpose EU

3. Axis Number
1 : 1 Axis
2 : 2 Axes
3 : 3 Axes
4 : 4 Axes

4. 1st Axis Motor W
5. 2nd Axis Motor W
6. 3rd Axis Motor W
02 : 20W
03 : 30W
06 : 60W
10 : 100W
15 : 150W
20 : 200W
40 : 400W
60 : 600W
75 : 750W
I : Incremental
A : Absolute
B : Brake
C : Creep
L : Limit Switch
M : Master Axis for synchronous motion
S : Slave Axis for synchronous motion

7. Standard I/0 Slot (Slot1)
N : NPN
P : PNP
D : DeviceNet
C : CC-Link
PR: PROFIBUS

8. Expansion Slots (Slot 2, 3, 4)
E: Not used
N1: Expansion 1/0 (NPN 32/16)
N2: Expansion 1/0 (NPN 16/32)
P1: Expansion 1/0 (PNP 32/16)
P2: Expansion 1/0 (PNP 16/32)
SA: Expansion SIO A type (RS 232C)
SB: Expansion SIO B type (RS 422)
SC: Expansion SIO C type (RS 485)

9. 1 : 100V
2 : 230V

Type simplified chart

J Type (Compact type)	1 Axis
Absolute	XSEL-J-1-☐A
Incremental	XSEL-J-1-☐I
Remarks	Motor wattage of axis is 30~750w.

* When power supply voltage is 100V, keep in mind that the maximum total wattage of axes is limited to 400W.

KE Type (all-purpose EU type)	1 Axis	2 Axes	3 Axes	4 Axes
Absolute	XSEL-KE-1-☐A	XSEL-KE-2-☐A-☐A	XSEL-KE-3-☐A-☐A-☐A	XSEL-KE-4-☐A-☐A-☐A-☐A
Incremental	XSEL-KE-1-☐I	XSEL-KE-2-☐I-☐I	XSELE-KE-3-☐I-☐I-☐I	XSEL-KE-4-☐I-☐I-☐I-☐I
Remarks	Motor wattage of 1 axis is 30~750w.	Motor wattage of 2 axes is total of 1600W.	Motor wattage of 3 axes is total of 1600W.	Motor wattage of 4 axes is total of 1600W.

* When power supply voltage is 100V, keep in mind that the maximum total wattage of axes is limited to 800W.

Option/Cable Type

Name	Type	Remarks
Teaching Pendant	IA-T-X	Cable 4m
Teaching Pendant (with Deadman Switch)	IA-T-XD	
PC Interface Software	IA-101-X-MW	Included cable 2m
Expansion I/O Card (32 In/16 Out) PNP	IA-103-X-32-P	Total of 3 cards (All-Purpose EU Type)
Expansion I/O Card (16 In/32 Out) PNP	IA-103-X-16-P	
Regenerative Resistance Unit	REU-1	Included Controller Connection Cable (1m)
Battery for holding absolute data	IA-XAB-BT	integrated with case
Motor Cable	CB-XEU-MA-☐☐☐	Standard 5m
Encoder Cable	CB-X(C)EU-PA-☐☐☐	Standard 5m
Limit Switch Cable	CB-X(C)EU-LC-☐☐☐	Standard 5m
I/O Flat Cable	CB-X-PIO-☐☐☐	Standard 2m
Expansion SIO Card	IA-105-X-MW	1 card corresponds 2ch Max 3 cards (6ch)

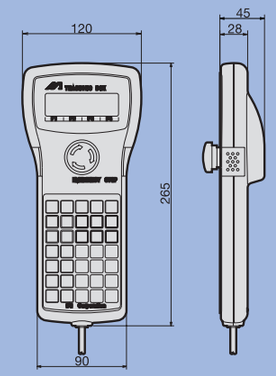
* ☐☐☐= length of cables. ex) 050=5m

Option

X-SEL

Teaching Pendant

Model
IA-T-X (standard)
IA-T-XD (features deadman switch)



Feature
- This has program / position input, test operation, monitoring functions.
- Since it uses dialogue style operation, it's very easy to operate.
- Deadman switch option is available for more safety.

Specification

Term	Specification
Ambient temperature & humidity	0-40 Celsius RH less than 85%
Enviroment	No corrosive gas and heavy coarse particulate
Mass	650g
Length of cable	4m
Display	20 letters x 4 lines LCD display

PC Interface Software (for Windows)

Model
IA-101-X-MW

Feature
- The software is used for debugging, executing programs, changing points and parameters, etc.
- The PC software and teaching pendant both have the same functional capability (refer to P.21 & 22).

Specification
Software
- Runs on WIndows 95, 98, NT, 2000, ME 2 metres communication cable

Expansion I/O Board (PNP)

Model
IA-103-X-32-P (32 input points / 16 output points)
IA-103-X-16-P (16 input points / 32 output points)

Feature
- This board is for expansion of I/O.
- Special design accommodates easy expansion, simply remove the cover and insert your choice of I/O cards.
- All-Purpose EU Type accommodates up to 3 expansion boards, totaling 192 inputs/outputs

Battery for Absolute Data

Model
IA-X-BT

Feature
- This is the data back up battery for the absolute encoder application. Exchange the battery when the controller displays the battery alarm signal.

Specification
Battery and case are integrated into a single unit.

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Name and Function of Each Part

1. FG Connection Terminal — This is the connection end to connect to the FG. The PE and Box are connected within the controller.
2. Circuit Protecter — This is the protective device for overcurrent protection of AC input.
3. AC Input Connector — This is the connector for AC100/230V single phase input (plug to the cable side is included).
4. External Regenerative Unit Connection Connector — This is the connector to connect the regenerative resistance unit that connects in case capacity is lacked in internal generative resistance in high speed/high load.
5. Motor Connector — This is the connector for motor driver within the actuator.
6. Axis Sensor Connector — This is the connector for the sensor connection for LS, CREEP and OT.
7. Battery for Absolute Data — This is the battery unit for encoder backup for absolute encoder application.
8. Brake Switch (only for brake specifications) — This is the alternator switch with lock used to release the axis brake. During usage, pull it towards you to operate. The upper position will release (RLS side) brake, and the lower position will allow controller to control.
9. Axis Driver Status LED — This is the LED used for monitoring movement status of the driver CPU that controls the motor.

Code	Colour	Content when turned ON
ALM	Orange	Indicates error detection in the driver area.
SVON	Green	Indicates executing driver to motor during servo On status
BATT ALM	Orange	Indicates battery voltage drop of battery for absloute

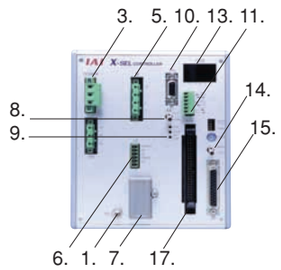
10. Encoder Connector — This is the 15 pin D-sub connector used to connect the actuator encoder.
11. System I/O Connector — This is the connector to execute I/O for two inputs that control the actuator movement and output the device status (plug is included on the cable side).

Code	Name	Content when turned ON
EMG	Emergency Stop Input	Movement possible during ON, emergency stop during OFF.
ENB	Safety Gate Input	Movement possible during ON, Servo OFF during OFF.
RDY	System Ready Relay Output	Outputs status of main controller. Cascade connection is possible. Ready short, not ready in open.

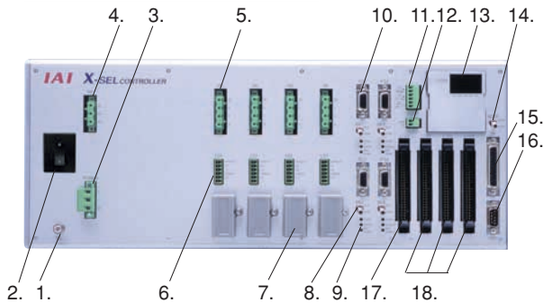
12. I/O 24V DC Power — This is the connector that supplies insulated I/O power externally when DI, DO are mounted to the I/O of 17 & 18 (plug to the cable side is included).
13. Panel Window — Displays four character of 7 segment LED and five LED lamps, which indicate device status.
14. Mode Switch — This is the alternator switch with lock used to instruct the movement mode of the controller. During operation, you will need to pull it towards you before operating. MANU Mode (manual) is on the top and AUTO mode (automatic) is on the bottom. Teaching operation is allowed only in MANU mode and automatic operation with external I/O is not possible in MANU mode.
15. Connector for Teaching* — This is the D-sub 25 pin connector used to con nect the teaching pendant or PC to input the program.
16. PC Connection Connector* — This is the D-sub 9 pin connector used to exe cute serial communication (RS232C) and host device in auto mode (DTE Terminal is inter changeable to PC-AT).
17. Standard I/O Connector — This is composed of 50 pin flat connector, and has DIO of 32 input/16 output.
18. Expansion I/O Connector — Connects to I/O board for expansion (option).

*15 & 16 cannot be used simultaneously.

J Type (compact)



KE Type (All-Puropose EU)



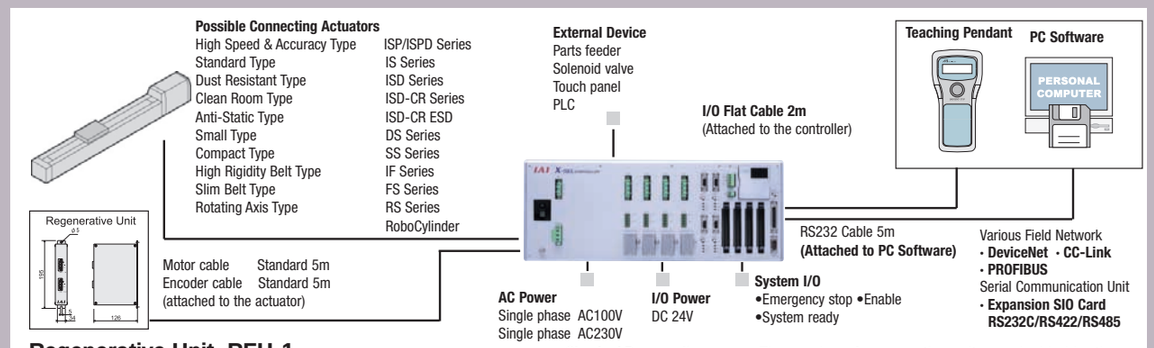
	J Type (Compact)		KE Type (All-Purpose EU)	
Feature	Compact size, reasonable price with high performance		Superior in expansion capability	
Model	J		KE	
Encoder Type	Incremental	Absolute	Incremental	Absolute
Mximum number of Axes	1 axis		4 axes	
Total number of wattage*	800W <400A>		1600W <800W>	
I/O expansion	Unavailable		Total of 192 points	
Network compliance	Unavailable		Available	
Electric disconnect during emergency stop**	Semi-conductor		Relay	

*When power voltage is 230V. (For 100V, please refer to inside of < >.)

**J Type required an external hardware circuit for EMG and ENB.

X-SEL

	J Type (Compact)	KE Type (All-Purpose EU)			
Model Type	J	KE			
Control number of axes	Axis 1	Axis 1	Axis 2	Axis 3	Axis 4
Connecting axis output	Max 800W (Power voltage 230V) Max 400W (Power voltage 100V)	Max 800W	Max 1600W (Power voltage 230V) Max 800W (Power voltage 100V)		
Weight	2.6kg	6.0kg		7.0kg	
Power voltage	Single phase AC 100 ~115/200-230 (setting done at the time of factory shipment)				
Power voltage range	±10%				
Power frequency	50 Hz/60 Hz				
Power draw	Max 830VA	Max 830VA	Max 1570VA	Max 2310VA	Max 3050VA
Ambient temperature range	0°C ~ 40°C				
Ambient humidity range	30% ~ 85%				
Storage temperature range	-10°C ~ 65°C				
Axis control method	AC full digital servo				
Position detection method	17 bit incremental encoder (minimised cable type) 17 bit multiple rotational data backup absolute encoder (minimised cable type) (Control resolution 14 bit for both types)				
Battery for absolute	ER3V Toshiba Battery				
Speed setting	1mm/sec ~ 2000mm/sec				
Acc./Dec.setting	0.01G ~ 1G (depends on axis structure)				
Program language	Super SEL Language				
Program step	6000 steps (total)				
Number of positions	3000 positions (total)				
Number of programs	64 programs				
Multi-task	16 programs				
Memory capacity	FLASH ROM+SRAM battery bachup				
Data input method	Teaching Pendant or PC Software				
Standard input	32 points (Exclusive input + user input total)				
Standard output	16 points (Exclusive output + user out put total)				
Total I/O (STD/EXP)	48 (48/0)	192 (48/144)			
Serial communication	Expansion System I/O Board (option)				
Other I/O	Emergency stop input, Safety gate input, System ready output				
Protective function	Motor excessive current, Excessive load, Motor driver temperature check, Excessive load check, Encoder breakage detection, Excessive soft limit, System abnormality, Battery abnormality				
Regenerative resistance	Built-in (1kΩ20W) Outer expansion is available (Regenrative resistance Unit option)	Built-in (220Ω80W) Outer expansion is available (Regenrative resistance unit option)			
Accessory	I/O flat cable				
Option	Teaching Pendant, PC Software, Battery Unit for Absolute, Expansion I/O Card, Expansion SIO Card Network Card, and Regeneraive Resistance Unit				



Regenerative Unit REU-1

This unit changes the regenerative current which is generated when the motor decelerates into heat.

Dimension	W34mm X H195mm X D126mm
Weight	0.9kg
Rregenerarive resistance	220 / 80W
Accessory	Controller connection cable (Type CB-ST-REU010) 1m

Standard Regenerative Unit Setting

The number of regenerative units are decided by the total wattage of the motors connected to the controller.

Z Axis Motor Total Wattage	KE Type (All-Purpose EU)	J Type (Compact)
0 ~ 200W	Not necessary	Not necessary
~ 400W	Not necessary	Need 1
~ 600W	Need 1	Need 1
~ 800W	Need 1	Need 2
~ 1200W	Need 2	-
~ 1600W	ASK	-

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External Input and Output (I/O)

Standard X-SEL Controller has 32 inputs and 16 outputs. The All-Purpose EU type can have a maximum of 192 inputs and outputs by adding the expansion I/O cards, (The Compact Type can't be expanded). The I/O card comes in 32 inputs and 16 outputs or 16 inputs and 32 outputs. Select one according to your needs. The first slot must be 32 inputs and 16 outputs.

I/O Signal Switching Function

Assigned function of each I/O port can be changed by the parameters. For example, all inputs and outputs can be set to user I/O and exclusive function assigned to each port can be also selected (The standard I/O signal chart of the next page is the standard setting at the time of shipping).

External Input and Output Specification

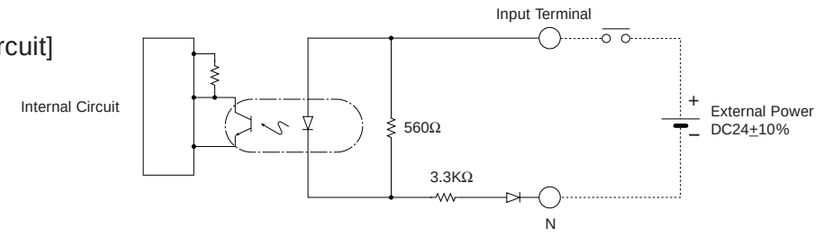
To use I/O, 24 V DC power source is required. Supply 24 V to pin1 and pin 50 of the I/O on J Type. Supply 24V DC to the I/O power source connecter on the KE Type. Refer to specification and circuit below.

External input specification

Input

Term	Specification
Input power supply	DC 24V ± 10%
Input current	7mA 1 circuit
ON/OFF voltage	On Voltage - Max DC 8V OFF Voltage - Min DC 19V
Insulation method	Photo coupler insulation
External connection Device	1. No-voltage contact (minimum load about DC 5V. 1mA) 2. Photoelectronic proximity sensor(PNP Type) 3. PLC transister output(Open collector type) 4. PLC contact output (minimum load about DC5V. 1mA)

[Input Circuit]

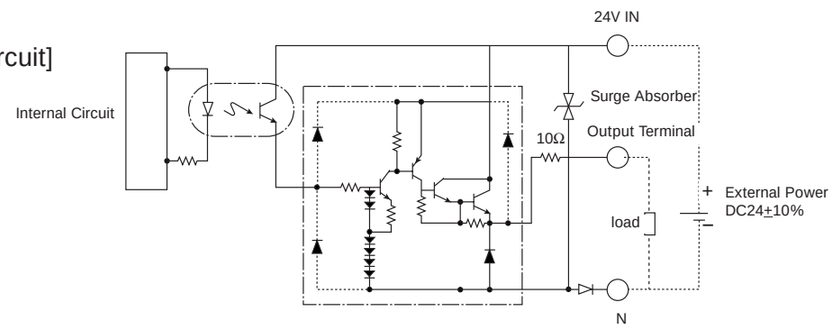


External output specification

Output

Term	Term	
Load voltage	DC24V	Use TD62784 (equivalent)
Maximum load current	100mA/1 point 400mA peak(all current)	
Leak current	Max 0.1mA/1 point	
Insulation method	Photo coupler insulation	
External connection Device	1. Miniature relay 2. PLC input unit	

[Output Circuit]



Standard I/O Signal Chart

Pin No.	Section	Port No.	Function
1		-	All-Purpose EU:NC; Compact:+24V input
2		000	Program start
3		001	User Input
4		002	User Input
5		003	User Input
6		004	User Input
7		005	User Input
8		006	User Input
9		007	PRG 1 Input
10		008	PRG 2 Input
11		009	PRG 4 Input
12		010	PRG 8 Input
13		011	PRG 10 Input
14		012	PRG 20 Input
15		013	PRG 40 Input
16		014	User Input
17	Input	015	User Input
18		016	User Input
19		017	User Input
20		018	User Input
21		019	User Input
22		020	User Input
23		021	User Input
24		022	User Input
25		023	User Input
26		024	User Input
27		025	User Input
28		026	User Input
29		027	User Input
30		028	User Input
31		029	User Input
32		030	User Input
33		031	User Input
34		300	Alarm output
35		301	Ready output
36		302	Emergency stop output
37		303	User Input
38		304	User Input
39		305	User Input
40		306	User Input
41		307	User Input
42	Output	308	User Input
43		309	User Input
44		310	User Input
45		311	User Input
46		312	User Input
47		313	User Input
48		314	User Input
49		315	User Input
50		-	All-Purpose EU:NC; Compact:0V

Expansion I/O Signal Chart

Pin No.	Section	Port No.	Port No. Content
1		-	NC
2			User Input
3			User Input
4			User Input
5			User Input
6			User Input
7			User Input
8			User Input
9			User Input
10			User Input
11			User Input
12			User Input
13			User Input
14			User Input
15			User Input
16			User Input
17	Input		User Input
18			User Input
19			User Input
20			User Input
21			User Input
22			User Input
23			User Input
24			User Input
25			User Input
26			User Input
27			User Input
28			User Input
29			User Input
30			User Input
31			User Input
32			User Input
33			User Input
34			User Input
35			User Input
36			User Input
37			User Input
38			User Input
39			User Input
40			User Input
41			User Input
42	Output		User Input
43			User Input
44			User Input
45			User Input
46			User Input
47			User Input
48			User Input
49			User Input
50		-	NC

Expansion I/O Signal Chart

Pin No.	Section	Port No.	Port No. Content
1		-	NC
2			User Input
3			User Input
4			User Input
5			User Input
6			User Input
7			User Input
8			User Input
9			User Input
10			User Input
11			User Input
12			User Input
13			User Input
14			User Input
15			User Input
16			User Input
17			User Input
18			User Input
19			User Input
20			User Input
21			User Input
22			User Input
23			User Input
24			User Input
25			User Input
26			User Input
27			User Input
28			User Input
29			User Input
30			User Input
31			User Input
32			User Input
33			User Input
34	Output		User Input
35			User Input
36			User Input
37			User Input
38			User Input
39			User Input
40			User Input
41			User Input
42			User Input
43			User Input
44			User Input
45			User Input
46			User Input
47			User Input
48			User Input
49			User Input
50		-	NC

Pins No. 1 and 50 are not used in All-Purpose EU type.
For compact type, connect +24V to Pin No.1 and 0V to Pin No. 50.

External Dimensions

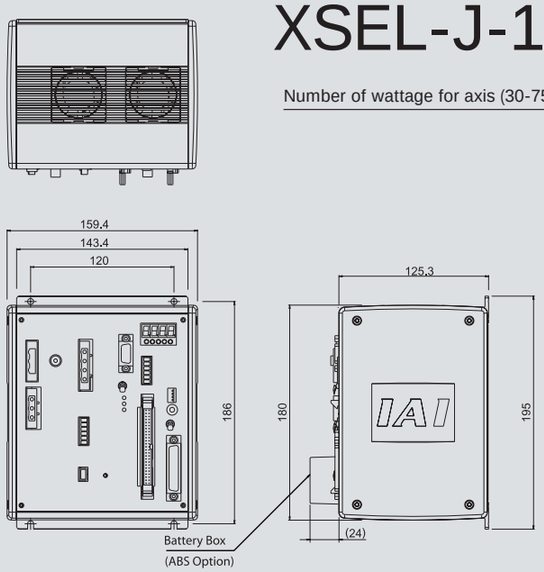
Compact Type 1 Axis

XSEL-J-1-□□-□

Power voltage 1:100V 2:230V

Number of wattage for axis (30-750W)

Encoder I :Incremental A :Absolute



All-Purpose EU Type 1-2 Axes

XSEL-KE-□-□□-□□-□

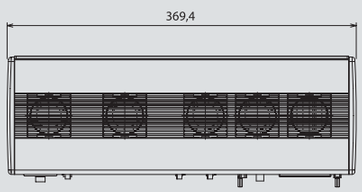
Axis 2 Number of wattage for axis (30-750W)

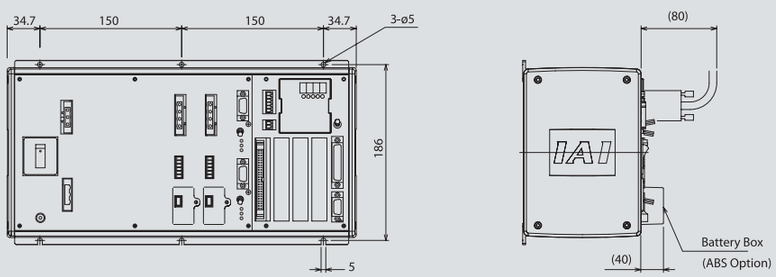
Power voltage 1:100V 2:230V

Number Axes 1:1 Axis 2:2 Axes

Axis 1 Number of wattage for axis (30-750W)

Encoder I :Incremental A :Absolute





All-Purpose EU Type 3-4 Axes

XSEL-KE-□-□□-□□-□□-□□-□

Encoderl : Incremental A:Absolute

Power voltage 1:100V 2:230V

Number Axes 3:3 Axis 4:4 Axes

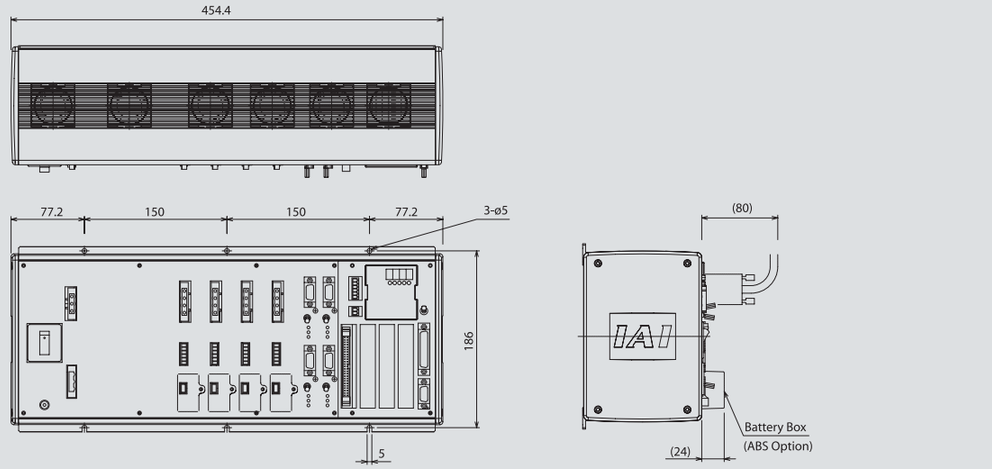
Axis 1 Number of wattage for axis (30-750W)*

Axis 2 Number of wattage for axis (30-750W)*

Axis 3 Number of wattage for axis (30-750W)*

Axis 4 Number of wattage for axis (30-750W)*

*Motor wattage of 3/4 axes is total of 1600W.



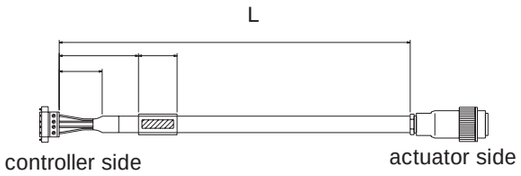
Cables

Motor and encoder cables are included with the purchase of both actuator and controller together. Controllers include I/O and power cables. For purchasing cables, refer to the cable types below.

Cable

Motor Cable

Type CB-XEU-MA-□□□

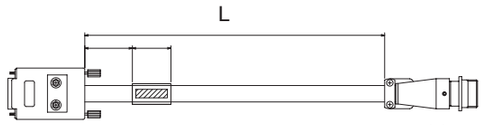


□□□is length of cable (L).
The maximum length is 10m.
ex) 080=8m

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

No.	Signal	Colour	Wiring
⏚	PE	Green	0.75sq (crimp)
1	U	Red	
2	V	White	
3	W	Black	

Encoder Cable (to Actuator)



Type CB-XEU-PA-□□□

□□□is length of cable (L).
The maximum length is 10m.
ex) 080=8m

Wiring	Colour	Signal	No.
0.15sq (crimp)	-	-	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
	Grey	BK-	13
	Red	BK+	14
	-	-	15

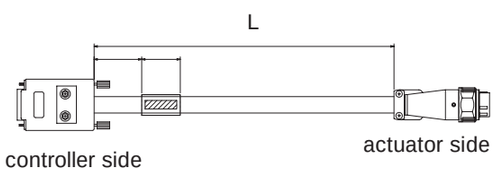
A shield is cramp-connected to a hood.

No.	Signal	Colour	Wiring
1	SD	Blue	0.15sq soldered
2	$\overline{SD}$	Orange	
3	-	-	
4	-	-	
5	-	-	
6	-	-	
7	-	-	
8	-	-	
9	-	-	
10	VCC	Green	
11	GND	Brown	
12	BAT+	Black	
13	BAT-	Yellow	
14	-	-	
15	BK-	Grey	
16	BK+	Red	

A shield is connected to shield soldered part

Drain line or shield braided wire

Encoder Cable (to Connector Box)



Type CB-XCEU-PA-□□□

□□□is length of cable (L).
The maximum length is 10m.
ex) 080=8m

Wiring	Colour	Signal	No.
0.15sq (crimp)	-	-	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
	Grey	BK-	13
	Red	BK+	14
	-	-	15

A shield is cramp-connected to a hood.

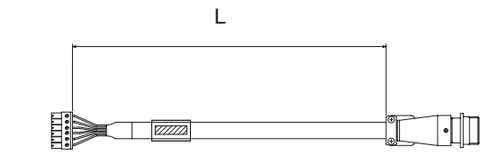
No.	Signal	Colour	Wiring
1	SD	Blue	0.15sq soldered
2	$\overline{SD}$	Orange	
3	-	-	
4	-	-	
5	-	-	
6	-	-	
7	-	-	
8	-	-	
9	-	-	
10	VCC	Green	
11	GND	Brown	
12	BAT+	Black	
13	BAT-	Yellow	
14	-	-	
15	BK-	Grey	
16	BK+	Red	

A shield is connected to shield soldered part

Drain line or shield braided wire

LS Cable (to Actuator)

Type CB-XEU-LC-□□□



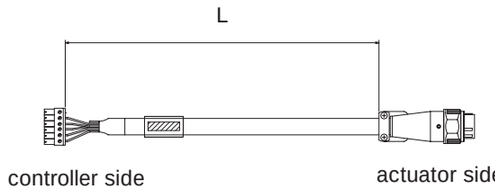
□□□is length of cable (L).
The maximum length is 10m.
ex) 080=8m

Wiring	Colour	Signal	No.
AWG 24	Sky blue	24V OUT	6
	Pink	N	5
	Lime Green	LS	4
	Orange	CREEP	3
	Grey	O.T	2
	1B/Sky blue	RSV	1

No.	Signal	Colour	Wiring
1	24V OUT	Sky blue	AWG24 (crimp)
2	n	Pink	
3	-	-	
4	LS	Lime Green	
5	CREEP	Orange	
6	O.T	Grey	
7	RSV	1B/Sky blue	
8	-	-	
9	-	-	
10	-	-	

LS Cable (to Connector Box)

Type CB-XCEU-LC-□□□



□□□is length of cable (L).
The maximum length is 10m.
ex) 080=8m

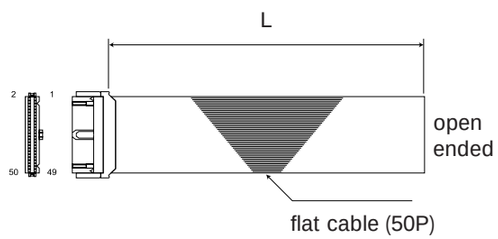
Wiring	Colour	Signal	No.
AWG 24	Sky blue	24V OUT	6
	Pink	N	5
	Lime Green	LS	4
	Orange	CREEP	3
	Grey	O.T	2
	1B/Sky blue	RSV	1

No.	Signal	Colour	Wiring
1	24V OUT	Sky blue	AWG24 (crimp)
2	n	Pink	
3	-	-	
4	LS	Lime Green	
5	CREEP	Orange	
6	O.T	Grey	
7	RSV	1B/Sky blue	
8	-	-	
9	-	-	
10	-	-	

I/O Flat Cable

Type CB-X-PIO-□□□

□□□is length of cable (L).
The maximum length is 10m.
ex) 080=8m



No.	Colour	Wiring	No.	Colour	Wiring	No.	Colour	Wiring
1	Brown-1	Flat Cable Cramp	18	Grey-2	Flat Cable Cramp	35	Green-4	Flat Cable Cramp
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	Grey-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	Grey-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	Grey-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	Grey-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				

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The connectors below have connection plugs on the controller's side. Cables need to be wired by the customer.

AC Power Source Input Connecter

This connecter is for AC 100V/230V power source
(Cable is not included.)

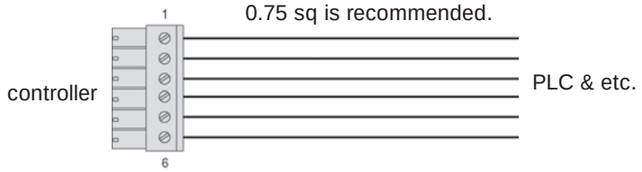
Plug : GMSTB2.5/3-Stf-7.62 (Phoenix)

wiring diagram

Signal	No.
N	1
L	2
PE	2

System I/O Connecter

This connecter is for supplying power to the emergency stop, enable, and system ready terminals from the controller to PLC, etc.
(Cable is not included.)



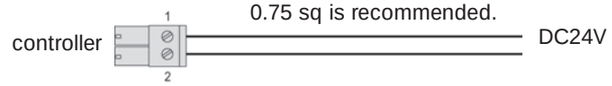
Plug : MC1.5/6-ST-3.5 (Phoenix)

wiring diagram

Signal	No.
RDY-	1
RDY+	2
ENBIN	3
ENB+24VOUT	4
EMGIN	5
ENG+24VOUT	6

I/O Power Source Connecter

This connecter is for supplying 24 V DC power source when using I/O at the controller.
(Cable is not included.)



Plug : MC1.5/2-ST-3.5 (Phoenix)

wiring diagram

Signal	No.
OV	1
24VIN	2

Remarks

New generation controller

X-SEL

Some of the new features unique to the X-SEL controller include the following:

- Absolute encoders
- Highspeed multi-tasking
- synchronous drive control
- Infinite motion
- Expansive I/O
- Network capability
- Push function
- Enhanced safety
- Enhanced Serviceability

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Catalogue No. 0502-E

Providing quality products since 1986

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