

Teaching Pendant IA-T-X, IA-T-XD

First Step Guide First Edition



Thank you for purchasing our product.
Make sure to read the Safety Guide and detailed Instruction Manual (CD) included with the product in addition to this First Step Guide to ensure correct use.
This Instruction Manual is original.

Warning : Operation of this equipment requires detailed installation and operation instructions which are provided on the CD Manual included in the box this device was packaged in. It should be retained with this device at all times.
A copy of the CD Manual can be requested by contacting your nearest IAI Sales Office listed at the back cover of the Instruction Manual or on the First Step Guide.

- Using or copying all or part of this Instruction Manual without permission is prohibited.
- The company names, names of products and trademarks of each company shown in the sentences are registered trademarks.

Product Check

This product is comprised of the following parts if it is of standard configuration.
If you find any fault in the contained model or any missing parts, contact us or our distributor.

1. Parts (The option is excluded.)

No.	Part Name	Model	Reference
1	Main Body	Refer to "How to read the model plate", "How to read the model"	
Accessories			
2	First Step Guide		
3	Instruction Manual (CD)		
4	Safety Guide		

2. Instruction Manuals related to this product, which are contained in the Instruction Manuals (CD).

No.	Name	Manual No.
1	XSEL Teaching Pendant IA-T-X, IA-T-XD Instruction Manual	ME0160
2	XSEL-J/K Controller Instruction Manual	ME0116
3	XSEL-JX/KX Controller Instruction Manual	ME0119
4	XSEL-P/Q Controller Instruction Manual	ME0148
5	XSEL-PX/QX Controller Instruction Manual	ME0154
6	Table Top Type Robot TT Instruction Manual	ME0149
7	SSEL Controller Instruction Manual	ME0157
8	ASEL Controller Instruction Manual	ME0165
9	PSEL Controller Instruction Manual	ME0172

3. How to read the model plate

Model	MODEL	IA-T-X
Serial number	SERIAL No.	900109944 A1
		MADE IN JAPAN

4. How to read the model

IA-T-X
<Model>
IA-T-X : Standard type
IA-T-XD: Deadman switch equipped type

Support Models

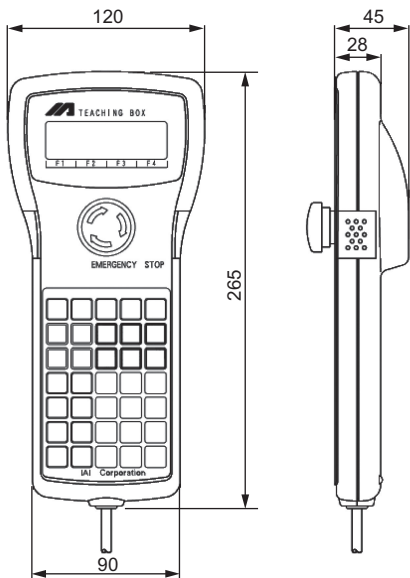
List of Support Models

Model No.	Support Started Version
X-SEL-J/K	V0.01
X-SEL-JX/KX	V1.08
X-SEL-P/Q	V1.13
TT	V1.14
X-SEL-PX/QX	V1.20
SSEL	V1.30
ASEL	V1.40
PSEL	V1.40

Basic Specifications

Item	Specification
Surrounding Air Temperature & Humidity	Temperature : 0 to 40°C Humidity : 85% RH or less (non-condensing)
Surrounding Environment	There should be no corrosive gas or extremely heavy dust.
Weight	Approx. 650g
Cable Length	4m

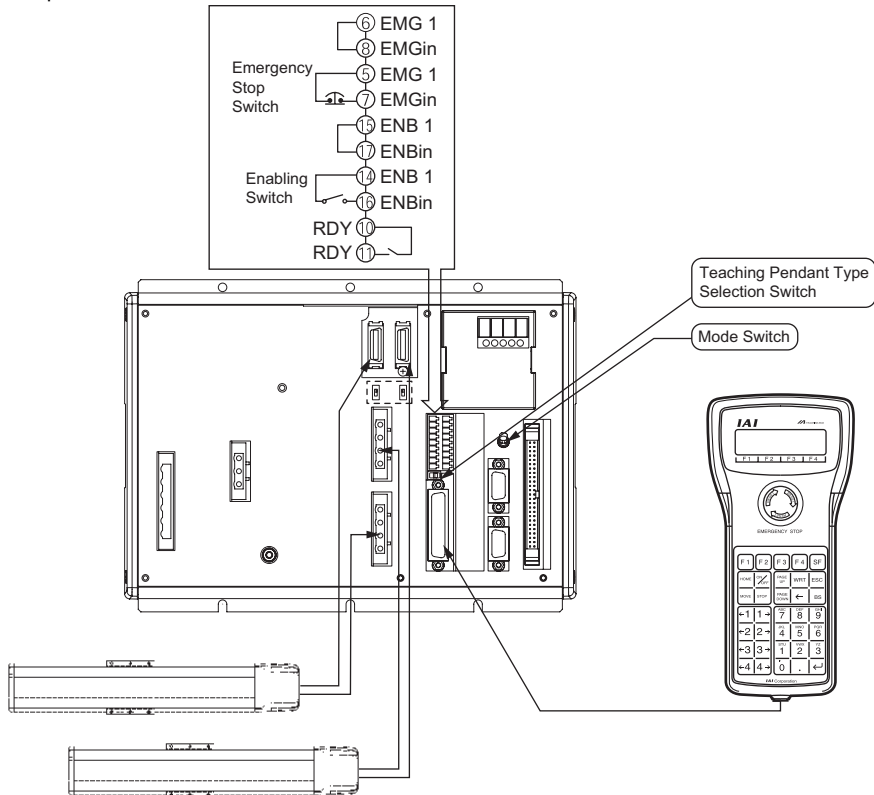
External Dimensions



Connection Diagram

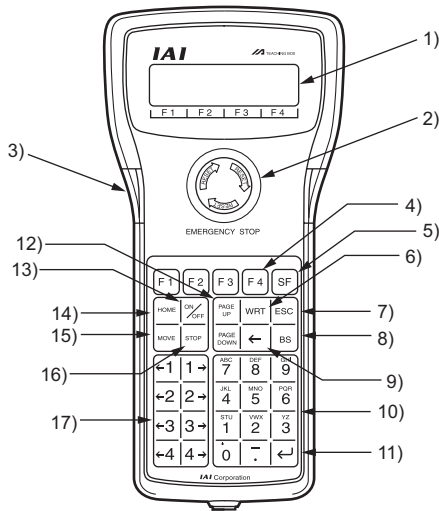
[SEL-T]

Connect to the teaching connector. Shown below is a connection to XSEL-P type for an example.

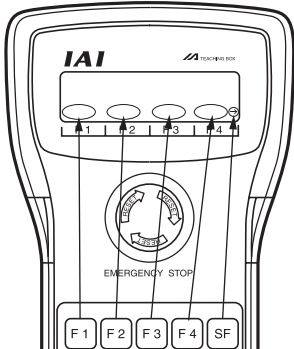


(Note) Set the teaching pendant type selection switch of the XSEL-P type to the right.

Operation Panel



- 1) LCD Screen
- 2) Emergency Stop Button
Executes emergency stop.
- 3) Deadman Switch (Option)
When performing an operation to turn the servo from OFF to ON, press and hold down both of these switches (ON) before starting the key operations.
The key operation would not be accepted if only one or none of these switches is pressed while in a key operation to turn the servo from OFF to ON.
Also, both switches should be pressed while the servo is ON. The operation will be finished once these switches are released and the panel window 7-segment LED will show 'def'.
For P/Q and PX/QX types, 'def' would not be shown.
- 4) **F1** **F2** **F3** **F4** keys (Function keys)
Correspond to each item in the LCD Screen (function key section).



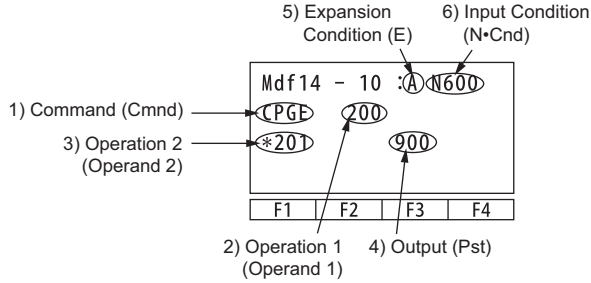
- 5) **SF** key (Shift key)
If there are more than 5 selectable functions ('→' will be displayed at right side of the function key area), it will change the display items in the function key area.
- 6) **WRT** key (Write key)
Transmits edit data to the controller. (Data will be saved in the memory of the controller.)
Only the data shows on the LCD Screen will be transmitted. (Plural Position No., Program Step No., etc., can't be transmitted all together at the same time.)
- 7) **ESC** key (Escape key)
Returns to the previous status from the current status.
If you press this key during data input, the data will be cancelled.
- 8) **BS** key (Backspace key)
If you press this key during data input, clear one letter before.
At other time, clear the data where the cursor is placed.
- 9) **←** (Cursor backward key)
This key moves the cursor in the back order to the return key.
- 10) Numeral keys
You can input numeric, alphabet, and sign.
When the cursor is at any item requiring the input of characters other than "0" to "9" (such as hexadecimal and character strings), the input mode selection is displayed in the function key area.
(Alph: alphabet symbol input, Num: numerical value input)
- 11) **↵** key (Return key)
This key is used to confirm the input data and to forward the cursor.
- 12) **PAGE UP** **PAGE DOWN** key (PAGE UP · PAGE DOWN key)
Increment or decrement edit and display item No. (Position No., Program No., Step No., etc.)
- 13) **ON/OFF** key
This key is used to switch ON/OFF the axis servo. (It is valid in the Teac (teach) mode area.)

- 14) **[HOME]** key
This key exercises the home-return operation. (It is valid in the Teac (teach) mode area with the servo ON)
- 15) **[MOVE]** key
This key is used to start the actuator movement and continuous operation. (It is valid in the Teac (teach) mode area with the servo ON)
- 16) **[STOP]** key
Stops actuator movement or continuous movement. (It is valid in the Teac (teach) mode area with the servo ON)
- 17) **[←1]** **[1→]** **[←2]** **[2→]** **[←3]** **[3→]** **[←4]** **[4→]** (Jog keys)
- [←1]** Negative direction jog movement for the 1st axis and 5th axis
[1→] Positive direction jog movement for the 1st axis and 5th axis
[←2] Negative direction jog movement for the 2nd axis and 6th axis
[2→] Positive direction jog movement for the 2nd axis and 6th axis
[←3] Negative direction jog movement for the 3rd axis
[3→] Positive direction jog movement for the 3rd axis
[←4] Negative direction jog movement for the 4th axis
[4→] Positive direction jog movement for the 4th axis
- (It is valid in the Teac (teach) mode area with the servo ON)

- Such jog actions with the JOG button are also valid for any not-homed axes. However, coordinate values in this case have no meaning. Therefore, be extremely careful about interference with the stroke end.
- If jog operation is performed to the axis in action under the operation-button-acceptable condition, the operation of the applicable axis is aborted when the JOG operation button is turned OFF. (The next operation starts, if any.)

Program Table Input Window

Create a program in the program table. Refer to SEL language programming manual for the details how to create a program.



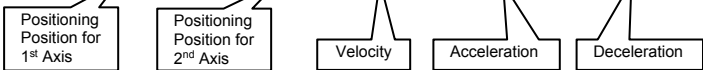
- 1) Command (Cmd) : It is to input commands and declarations.
- 2) Operation 1 (Operand 1) : It is to input details of Operation 1 related to commands and declarations. For PATH Operation for instance, it is to input the start Position No..
- 3) Operation 2 (Operand 2) : It is to input details of Operation 1 related to commands and declarations. For PATH Operation for instance, it is to input the completion Position No..
- 4) Output (Pst) : It is to input the output port and input port to output the operation completion result after the command is executed.
- 5) Expansion Condition (E) : It is used to join multiple input terms with “AND” or “OR”.
- 6) Input Condition (N•Cnd) : If a negative condition is desired for the input term, put N.
If the command is to be executed with the conditions of I/O or the flag, put the I/O or flag.

Position Table Input Window

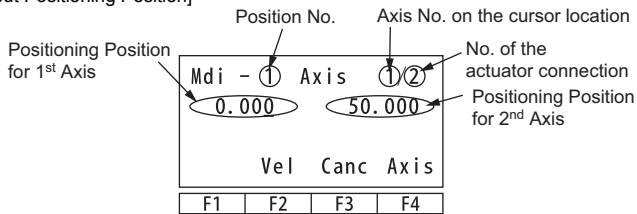
It is required to set the position (coordinate values), velocity, acceleration and deceleration to the position table.
The items to set differ depending on the model. Refer to the Instruction Manual of the used controller for the details.

Position Table : Example for Connecting 2 Actuator Axes

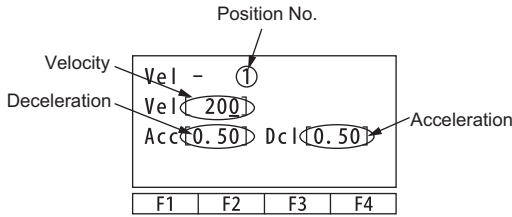
Position No.	Axis1	Axis2	Vel	Acc	Dcl
1	0.000	200.000			
2	0.000	400.000	400	0.30	0.30
3					
4					
5	0.000	300.000	200	0.10	0.10
6					



[Window to Input Positioning Position]

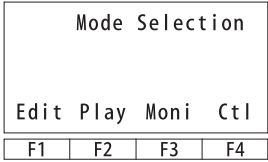
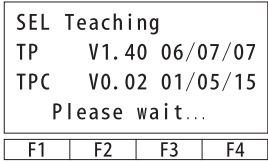


[Window to Input Velocity, Acceleration and Deceleration]



Operation

After the power is supplied to the controller, a window shown below will be displayed.
An operation can be performed on the operation panel. [Refer to the operation panel]



- Select a menu and execute.
- Edit (F1 key) : To perform teaching operation to edit program table, position table, etc.
 - Play (F2 key) : To drive program.
 - Moni (F3 key) : To monitor input and output ports, error list, etc.
 - Ctl (F4 key) : To control software reset, absolute reset, safety speed valid/invalid, etc.
- The operation window is constructed with a few layers and a selected menu shows some related operation windows.
[Refer to XSEL Teaching Pendant IA-T-X, IA-T-XD Instruction Manual for details.]

How to Operate (Examples)

Data Input to Position Table

The chart below shows how to set 0mm to Position No.0 on the 1st axis and 50mm to the position on the 2nd axis when 2 axes are connected for example.

No.	Operation	Screen	Reference
1	Press [F1] key (Edit).	Mode Selection [Edit] Play Moni Ctl F1 F2 F3 F4	
2	Press [F1] key (Posi).	Edit [Pos] Prog Sym Para F1 F2 F3 F4	
3	Press [F1] key (Mdi).	Edit - Posi [Mdi] Teac Copy Clr F1 F2 F3 F4	
4	Input a number “0” and press the return key. The display shows “0.000”, and the axis number changes to “2” and the cursor position moves to the position data for the 2 nd axis.	Mdi - 1 Axis 2/2 0.000 x.xxx Vel Canc Axis F1 F2 F3 F4	“x.xxx” will be displayed when the position data is not registered.

No.	Operation	Screen	Reference
5	Input “50” to the 2 nd axis position data and press the return key.	Mdi - 1 Axis 1/2 0.000 50.000 Vel Canc Axis F1 F2 F3 F4	The cursor position moves each time the return key is pressed. When you made a typing error, put the cursor to the position where you would like to correct and rewrite. It is also available to change the input data back to “x.xxx” with the (Canc) key.
6	Press [WRT] key to transfer the data. The Position No. gets forwarded to “2”.	Position No.2 Mdi - 2 Axis 1/2 x.xxx x.xxx Vel Canc Axis F1 F2 F3 F4	
7	Press [ESC] key to move the cursor back to the Position No..	Mdi - 2 Axis1 - 2/2 x.xxx x.xxx Axis F1 F2 F3 F4	
8	Press [ESC] key again to return to Edit Mode.	Edit - Posi Mdi Teac Copy Clr F1 F2 F3 F4	
9	Press [ESC] key once again to go to the flash ROM writing window.	Edit Posi Prog Sym Para F1 F2 F3 F4	
10	Press [F1] (Yes) key if you desire to write the data to the flash ROM.	Flsh Flash Write? [Yes] No F1 F2 F3 F4	Press [F2] (No) key if you do not desire a writing.
11	‘Please wait...’ blinks while in the flash ROM writing process.	Flsh Writing Flash ROM Please wait... F1 F2 F3 F4	* Do not turn off the controller during this process.
12	Return to the edit window by pressing [ESC] key.	Flsh Complete! F1 F2 F3 F4	
13		Edit Posi Prog Sym Para F1 F2 F3 F4	

Data Input to Program Table

The chart below shows how to input 'HOME 11' to Program No.0 for example.

No.	Operation	Screen	Reference
1	Press F1 key (Edit).	<div>Mode Selection</div> <div>Edit Play Moni Ctl</div> <div>F1F2F3F4</div>	
2	Press F1 key (Prog).	<div>Prog</div> <div>Posi Prog Sym Para</div> <div>F1F2F3F4</div>	
3	Press F1 key (Mdfy).	<div>Edit-Prog</div> <div>Mdfy Copy Clr</div> <div>F1F2F3F4</div>	
4	The display switches to the Program No. input mode window. You will be able to see the cursor on the Program No.. Press the return key to move the cursor to the Step No..	<div>Program No. Step No.</div> <div>Mdf ① - ① :</div> <div>F1F2F3F4</div> <div>No. of steps stored in the controller</div>	If program data is already input, you should either overwrite (the original data will be erased) the data or select another Program No. with no data being written. The Program No. or the Step No. which the cursor is on can be changed with PAGE UP and PAGE DOWN keys. Also, the Program No. and the Step No. can be changed by an input of numeral keys and pressing the return key.
5	The cursor moves to the Step No.. Press the return key.	<div>Mdf 1- 1 :</div> <div>Ins Del Cmnt / 0</div> <div>F1F2F3F4</div>	
6	<p>Input the command. The command is displayed in the function key line.</p> <p>How to Search Command 1) Press SF key when the cursor is on the command input line to show the commands in the function line in the alphabetical order. Press . key to show them in the back order. 2) Alphabets are allocated to each numeral key. (e.g. For "9", G,H and I are allocated.) Press a numeral key when the cursor is on the command input line, and the first command that starts with an alphabet allocated to the pressed numeral key is displayed in the function key line.</p> <p>Display the command to input on the function line with the methods 1) and 2), and press the corresponding function key</p> <p>How to Search HOME Command Press the 9 key to show a command start with either of G, H or I. (Some of the commands cannot be displayed only with the numeral keys. For those, combine the numeral key with SF key to display.)</p> <p>Show "HOME" on the function key line, and then press F4 (HOME) key. (Press BS key if desired to turn the command input line to blank.) Press the return key.</p>	<div>Mdf 1 - 1 :</div> <div>-</div> <div>ABPG ACC ACHZ ADD→</div> <div>F1F2F3F4</div> <div>Command starting with "G"</div> <div>Mdf 1 - 1 :</div> <div>-</div> <div>GACC GDCL GOTO GRP→</div> <div>F1F2F3F4</div> <div>Command starting with "H"</div> <div>Mdf 1 - 1 :</div> <div>-</div> <div>GTTM GVEL HOLD HOME→</div> <div>F1F2F3F4</div> <div>Command starting with "I"</div> <div>Mdf 1 - 1 :</div> <div>-</div> <div>IFEG IFGE IFGT IFLE→</div> <div>F1F2F3F4</div> <div>Mdf 1 - 1 :</div> <div>HOME</div> <div>GTTM GVEL HOLD HOME→</div> <div>F1F2F3F4</div>	

No.	Operation	Screen	Reference
7	The cursor moves to Operation 1. Input "11" and press the return key.	<div>Mdf 1 - 1 :</div> <div>HOME -</div> <div>Sym *</div> <div>F1F2F3F4</div>	
8	Press WRT key to transfer the data key to the controller. The Step No. goes forward to 2.	<div>Mdf 1 - 1 :</div> <div>HOME 11</div> <div>-</div> <div>F1F2F3F4</div>	
9	Press ESC key.	<div>Step No.</div> <div>Mdf 1 - ② :</div> <div>-</div> <div>ABPG ACC ACHZ ADD→</div> <div>F1F2F3F4</div>	
10	Press ESC key. (The cursor moves to the Program No..)	<div>Mdf 1 - 2 :</div> <div>Ins Del Cmnt / 1</div> <div>F1F2F3F4</div>	
11	Press ESC key. The display goes back to the program edit window.	<div>Mdf 1 - 2 :</div> <div>/ 1</div> <div>F1F2F3F4</div>	
12	Press ESC key. The display goes back to the edit window.	<div>Edit-Prog</div> <div>Mdfy Copy Clr</div> <div>F1F2F3F4</div>	
13	Press ESC key.	<div>Edit</div> <div>Posi Prog Sym Para</div> <div>F1F2F3F4</div>	
14	Press F1 (Yes) key if you desire to write the data to the flash ROM.	<div>Flsh</div> <div>Flash Write?</div> <div>Yes No</div> <div>F1F2F3F4</div>	Press F2 (No) key if you do not desire a writing.
15	'Please wait...' blinks while in the flash ROM writing process.	<div>Flsh</div> <div>Writing Flash ROM</div> <div>Please wait...</div> <div>F1F2F3F4</div>	<div>* Do not turn off the controller during this process.</div>
16	Now, it is completed to write the flash ROM. Return to the edit window by pressing ESC key.	<div>Flsh</div> <div>Complete!</div> <div>F1F2F3F4</div>	

Troubleshooting

If the connection does not work properly, check the following item.

Description	Measure
Communication connection with the controller is disabled.	Set the mode switch on the controller to "MANU" if it is on "AUTO" side.
"enb" is displayed on the LED.	For XSEL-P and PX controllers, set the teaching pendant changeover switch to the "right side" if it is on the "left side".



IAI Corporation

Head Office: 577-1 Obane Shimizu-KU Shizuoka City Shizuoka 424-0103, Japan
TEL +81-54-364-5105 FAX +81-54-364-2589
website: www.iai-robot.co.jp/

Technical Support available in USA, Europe and China

IAI America, Inc.

Head Office: 2690 W, 237th Street Torrance, CA 90505
TEL (310) 891-6015 FAX (310) 891-0815
Chicago Office: 1261 Hamilton Parkway Itasca, IL 60143
TEL (630) 467-9900 FAX (630) 467-9912
Atlanta Office: 1220 Kennestone Circle Suite 108 Marietta, GA 30066
TEL (678) 354-9470 FAX (678) 354-9471
website: www.intelligentactuator.com

IAI Industrieroboter GmbH

Ober der Röth 4, D-65824 Schwalbach am Taunus, Germany
TEL 06196-88950 FAX 06196-889524

IAI (Shanghai) Co.,Ltd.

SHANGHAI JIAHUA BUSINESS CENTER A8-303, 808, Hongqiao Rd. Shanghai 200030, China
TEL 021-6448-4753 FAX 021-6448-3992
website: www.iai-robot.com