

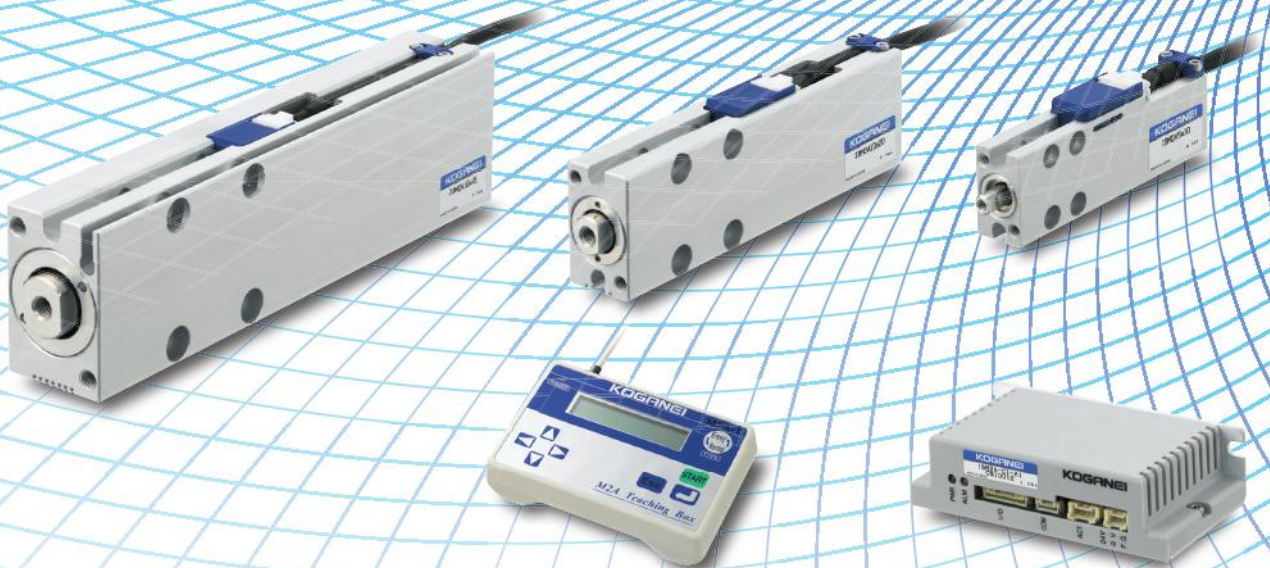


**iB** Series

Linear Stepping Actuator

# iB-Move

PAT. PEND.



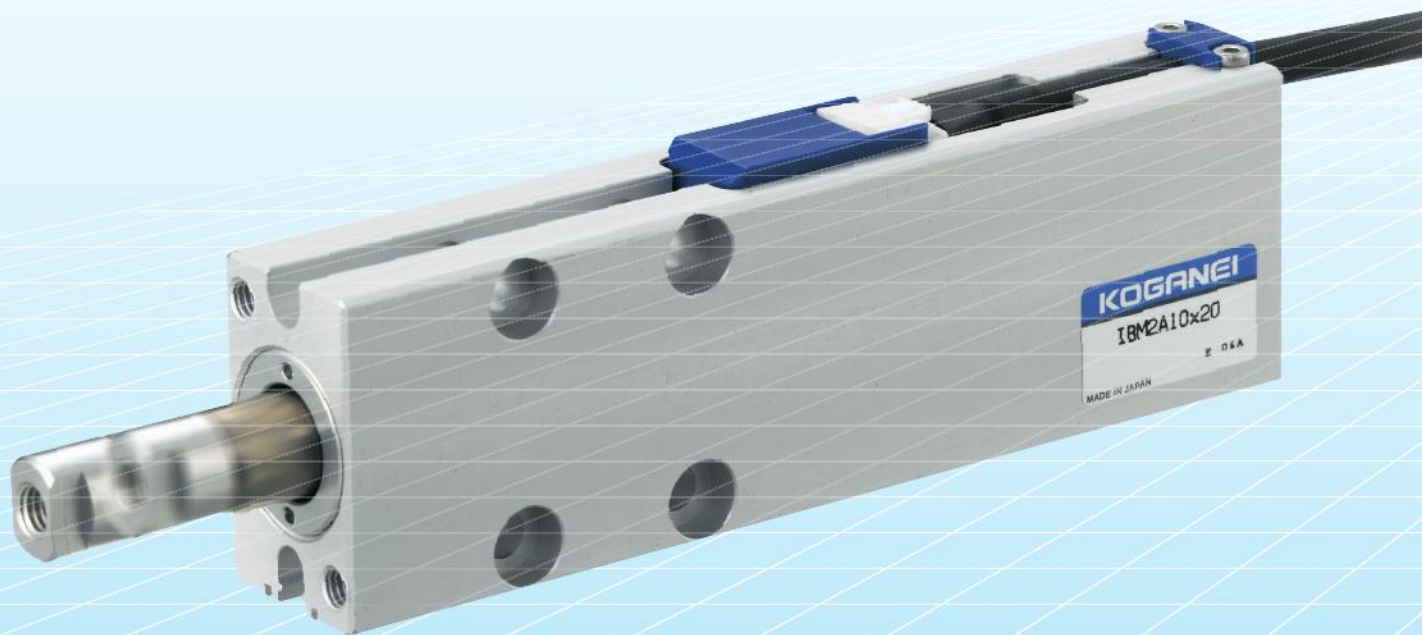
KOGANEI Brand

All products are **RoHS** compliant

**Linear Stepping Actuator**

# iB-Move

PAT. PEND.



**Simple operation**

Simple point-to-point operation.

**Simple setup**

Simple stroke, acceleration/deceleration, thrust level settings.

**Low cost**

Open-loop control enables low cost.

**Silent, clean**

A linear motor and no deceleration mechanism greatly reduces operating noise. Grease-less for cleaner operation.

**Maintenance-free**

Simple construction eliminates the need for maintenance.



**CAUTION**

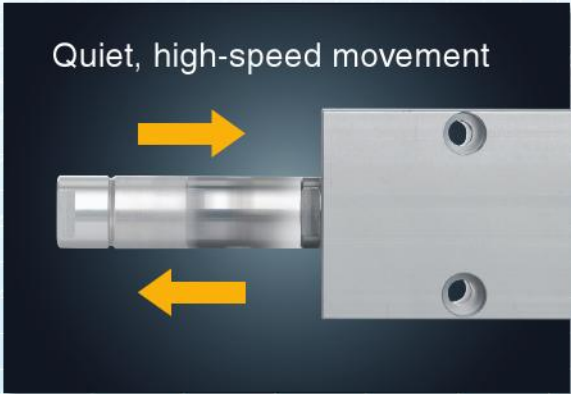
Read the safety precautions on page 3 before using this product.



- Use of air cylinder not sufficient
- Use of electric robot too much



KOGANEI provides solutions to user problems with **iB-Move**, which delivers new value.

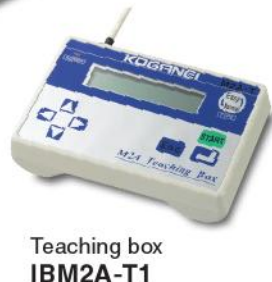


- iB-Move application example**
- High-speed positioning of lightweight workpieces
  - Frequent tooling change for pressing and extrusion
  - Carrying workpiece in a quiet environment
  - Workpiece movement when a buffer mechanism is required
  - Processes requiring high frequency and long life

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**Variations and Options**



Before selecting and using the products, please read all the Safety Precautions carefully to ensure proper product use. The Safety Precautions described below are to help you use the product safely and correctly, and to prevent injury or damage to you, other people, and assets.

Always be sure to comply with JIS B 8433 (General Code for Safety of Industrial Robots) safety regulations.

Directions are ranked according to degree of potential danger or damage as “DANGER”, “WARNING”, “CAUTION”, and “ATTENTION”

 DANGER	Indicates situations that can be clearly predicted as dangerous. Death or serious injury may result if the situation is not avoided. It could also result in damage or destruction of assets.
 WARNING	Indicates situations that, while not immediately dangerous, could become dangerous. Death or serious injury may result if the situation is not avoided. It could also result in damage or destruction of assets.
 CAUTION	Indicates situations that, while not immediately dangerous, could become dangerous. Failure to avoid the situation creates the risk of minor or semi-serious injury. It could also result in damage or destruction of assets.
 ATTENTION	While there is little chance of injury, this content refers to points that should be observed for appropriate use of the product.

- This product was designed and manufactured for use in general industrial machinery.
- In the selection and handling of the equipment, a system designer or another person with sufficient knowledge and experience should always read the Safety Precautions, catalog, instruction manual and other literature before commencing operation. Improper handling is dangerous.
- Note that you the customer bear full responsibility for confirming and judging whether or not this product is compatible with your system.
- After reading the catalog, instruction manual, etc., always keep it in a location where they are readily available for reference to users of this product.
- Whenever transferring or lending the product to another person, always attach the catalog, instruction manual, and other information to the product where they are easily visible in order to ensure that the new user can use the product safely and properly.
- The danger, warning and caution items listed in these Safety Precautions do not cover all possible cases. Read the catalog and instruction manual carefully, and always keep safety first.

 DANGER

- Do not use the product for the purposes listed below:
  1. Medical equipment related to maintenance or management of human lives or bodies
  2. Machines or equipment designed for the purpose of moving or transporting people
  3. Critical safety components in mechanical devices
 This product has not been planned or designed for purposes that require high levels of safety. Using the product in any of the ways described above creates the risk of loss of human life.
- Do not use the product in locations with or near dangerous substances such as flammable or ignitable substances. Doing so creates the risk of ignition and fire.
- Do not enter the area of machine operation while the product is operating or in an operational mode. In addition, do not make any adjustments to the interior or to the attached mechanisms. Under such conditions, the actuator may move suddenly, creating the risk of personal injury.
- Persons using a pacemaker or other similar medical devices should keep a distance of at least one meter [3.28 ft] away from the product. Getting too close to the product creates the risk of malfunction of a pacemaker due to the strong magnet built into the product.
- When mounting the product and workpiece, always make sure they are firmly supported and secured in place. Falling, dropping, or abnormal operation of the product creates the risk of personal injury.
- The product, especially its rod section, uses a strong magnet, and you should never try to modify it in any way. Doing so creates the risk of injury, electric shock, fire, etc.
- Never attempt unauthorized disassembly or assembly of the product relating to its basic construction, its performance, or its functions. Doing so creates the risk of injury, electric shock, fire, etc.
- Do not splash water on the product. Water spraying on the product, washing the product, or using the product under water creates the risk of malfunction, leading to injury, electric shock, fire, etc.

 WARNING

★The rod uses a strong magnet. Workpieces, tools, and metal components of magnetic materials in the vicinity can be drawn to the magnet, creating the risk of personal injury or damage to the machinery. Exercise sufficient caution while working.

★Be sure to fully implement shielding measures whenever using the product in the locations described below.

Failure to do so creates the risk of abnormal operation, damage to machinery, or personal injury.

1. Locations subject to large electric currents or strong magnetic fields
2. Locations where static electricity and other noise is generated
3. Locations that may be subject to radiation from radioactive emissions
4. Locations where iron or other magnetic material particles or dust is generated or dispersed

- Do not use the actuator as equipment intended to absorb the shock and vibration of mechanical devices. Doing so creates the risk of breakdown resulting in personal injury of mechanical device damage.
- Do not use the product in excess of its specification range. Doing so creates the risk of product breakdown, loss of function, or damage. It could also drastically reduce the product's operating life.
- Use safety circuits or design a system that prevents damage to machinery and personal injury when the machine is shut down due to an emergency stop or electrical power failure.
- Execute Class III grounding construction (grounding resistance lower than 100Ω) via the earth terminal. Failure to do so creates the risk of electric shock and abnormal operation.
- Before installing this product into equipment, check to ensure that mounting, wiring, and operation commands are correct and normal. Use of the product without checking these items creates the risk of personal injury and mechanical device damage due to contact with moving parts.
- Before supplying electricity to the device and before starting operation, always conduct a safety check of the area of machine operation. Unintentional supply of electricity creates the risk of electric shock or injury due to contact with moving parts.
- Do not touch terminals, switches, and other devices while power is turned on. Doing so creates the risk of electric shock and abnormal operation.
- Do not allow cables and other cords to become damaged. Allowing a cord to become cut, bent excessively, pulled, rolled up, or squeezed between two objects creates the risk of current leaks or defective continuity that can lead to fire, electric shock, or abnormal operation.
- Should you ever notice abnormal noise or abnormally strong

vibration, immediately stop operation. Continued use of the product creates the risk of product damage, resulting in abnormal operation, runaway operation, etc.

- Do not allow the product to be thrown into fire. Doing so creates the risk of explosion, resulting in the release of toxic gasses.
- Do not sit on the product, place your foot on it, or place other objects on it. Doing so creates the risk of injury due to tripping over or dropping the product or falling, resulting in product damage and abnormal or erratic operation, or runaway operation.
- Before conducting any kind of product inspection, maintenance, or replacement, be sure to completely cut off the power supply.
- Use the product within the recommended load and operating speed specifications.

## CAUTION

- ★ The surface of this unit and its rod can become very hot during operation (ambient temperature + 60 °C [140 °F]). While power is on and after cutting off the power supply, be sure to check carefully that the surface of the unit has cooled sufficiently before performing work, etc.
- ★ When performing return-to-origin (ORG input), the rod may move suddenly in the opposite direction. Be sure to take appropriate measures to avoid damage to the machinery and to ensure safety before performing return-to-origin.
- ★ Depending on how this unit is mounted, the rod may drop under its own weight whenever the electrical power supply is turned off or a power outage occurs. Use safety circuits or design a system that prevents damage to machinery and personal injury.
- Do not use the product in locations subject to direct sunlight (ultraviolet rays), dust, salt, iron particles, or humidity, or in ambient atmospheres that include organic solvents, phosphate ester type hydraulic oil, sulfur dioxide gas, chlorine gas, acids, etc. Doing so could lead to loss of function, sudden degradation of performance, and reduced service life.
- Do not use the product in ambient atmospheres that include corrosive gasses, combustible gasses, inflammable liquids, etc. Doing so could lead to the formation of rust, which causes deterioration of product strength, and creates the risk of combustion and explosion by the motor.
- Use only the controller specified for this product. Use of a non-specified controller creates the risk of product breakdown and runaway operation.
- Locate this product and the controller in an area where there is little dust and dirt. Locating them in a location that is dusty and/or dirty creates the risk of malfunction or runaway operation.
- Do not locate this product and the controller in an area subjected to strong vibration (4.9 m/s<sup>2</sup> [0.5 G] or greater). Strong vibration creates the risk of malfunction or runaway operation.
- When mounting the product, be sure to allow enough room around it for adequate working space. Failure to do so will make it more difficult to conduct daily inspections or maintenance, which could eventually lead to system shutdown or damage to the product.
- Keep floppy disks and other magnetic media at least one meter [3.28 ft] away from the product. Failure to do so creates the risk of destruction of the data on the media due to the magnetism of the product's magnet.
- Do not scratch, dent, or deform the actuator by climbing on the product, using it as a scaffold, or placing objects on top of it. Doing so creates the risk of damage to or breakage of the product, resulting in operational shutdown or degraded performance.
- Always be sure to post an "operation in progress" sign during installation, adjustment, or other operations, to avoid unintended electric power supply. Unintended power supply can cause electric shock and sudden activation of the actuator, creating the risk of personal injury.
- Never perform insulation resistance testing or dielectric strength testing on the controller.

## ATTENTION

- ★ Use only non-magnetic screws and washers to install the product.
- Whenever considering use of this product in situations or environments not specifically noted in the catalog or

instruction manual, or in applications where safety is an important requirement such as in an facilities, combustion equipment, leisure equipment, safety equipment, and other places where human life or assets may be greatly affected, take adequate safety precautions such as allowing plenty of margin for ratings and performance, or fail-safe measures. Be sure to contact KOGANEI before use in such applications.

- Use a protective cover and other means to ensure that the operating parts of mechanical devices are isolated and do not come into direct contact with human bodies.
- Do not configure control of the actuator in a way that could cause workpieces to fall due to power failure. Configure control of the actuator to prevent the rod, workpieces, and other items from falling due to power failure or by emergency stoppage of mechanical devices.
- Always check the instruction manual and other reference materials for product wiring.
- When handling the product, wear protective gloves, safety glasses, safety shoes, and other protective clothing.
- To prevent accidents, always conduct daily inspections and confirm that all requisite system functions are satisfied.
- When the product can no longer be used or is no longer necessary, dispose of it appropriately as industrial waste.
- For inquiries about the product, contact your nearest KOGANEI sales office or the KOGANEI overseas department. The addresses and telephone numbers are shown on the back cover of this catalog.

## Other

- Always observe the following items.
  1. When using this product in a system, use only genuine KOGANEI parts or equivalent (recommended) parts. When conducting maintenance and repairs, always use genuine KOGANEI parts or equivalent parts (recommended parts). Always observe the prescribed methods and procedures.
  2. Never attempt unauthorized disassembly or assembly of the product relating to its basic construction, its performance, or its functions.

KOGANEI shall not be held responsible for any problems that occur as a result of these items not being properly observed.

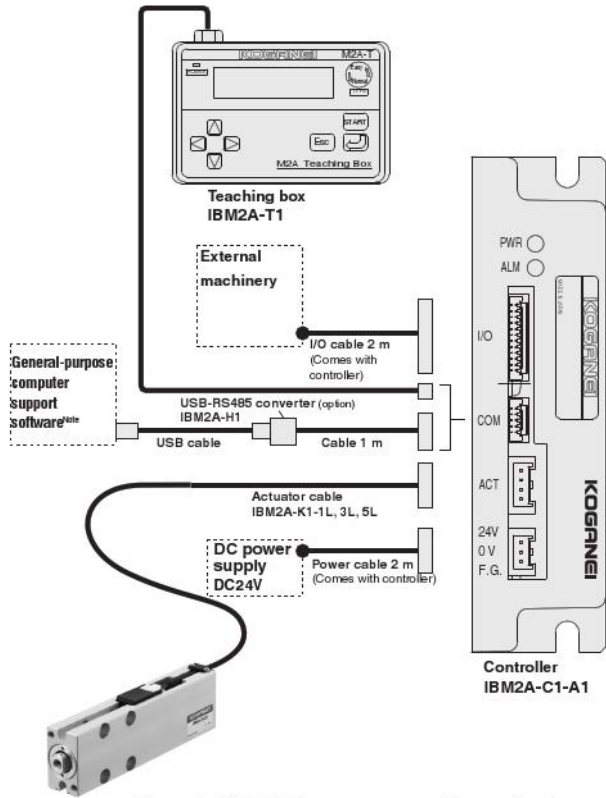
## Warranty and General Disclaimer

1. Warranty Period  
The warranty period for KOGANEI products is 180 days from the date of delivery.
2. Scope of Warranty and General Disclaimer
  - (1) The KOGANEI product warranty covers individual products. When a product purchased from KOGANEI or from an authorized KOGANEI distributor malfunctions during the warranty period in a way that is attributable to KOGANEI responsibility, KOGANEI will repair or replace the product free of charge. Even if a product is still within the warranty period, its durability is determined by its operation cycles and other factors. Contact your nearest KOGANEI sales office or the KOGANEI overseas department for details.
  - (2) KOGANEI shall not be held responsible for any losses or for any damage to other machinery caused by breakdown, loss of function, or loss of performance of KOGANEI products.
  - (3) KOGANEI shall not be held responsible for any losses due to use or storage of the product in a way that is outside of the product specifications prescribed in KOGANEI catalogs and the instruction manual, and/or due to actions that violate the mounting, installation, adjustment, maintenance and other safety precautions.
  - (4) KOGANEI shall not be held responsible for any losses caused by breakdown of the product due to factors outside the responsibility of KOGANEI, including but not limited to fire, natural disaster, the actions of third parties, and intentional actions or errors by you.



Selection

● System configuration diagram (example)



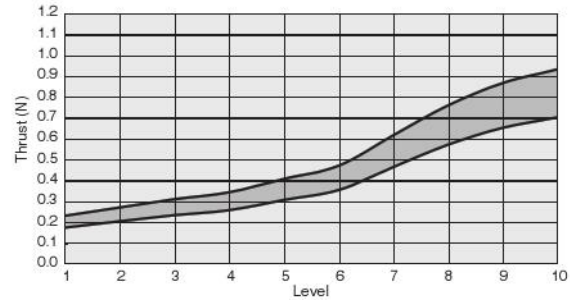
Note: A USB-RS485 converter is required to use the computer support software that comes with the product.

● Thrust

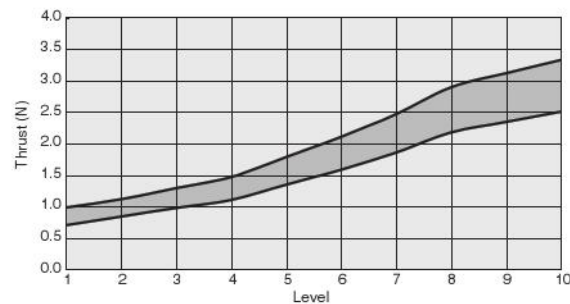
Note 1: These graphs show thrust and levels at an ambient temperature of 25 °C [77 °F].

2: Thrust changes within the graph range in accordance with the pressing point.

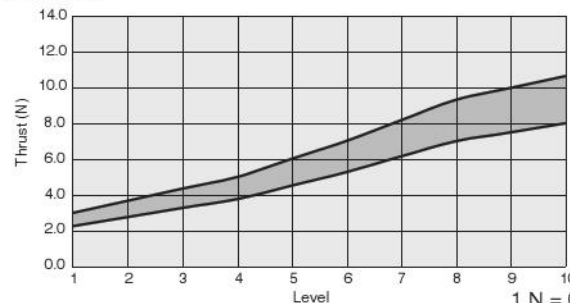
IBM2A5



IBM2A10



IBM2A16



1 N = 0.225 lbf

● iB-Move operation mode

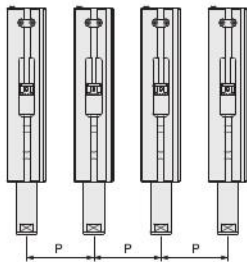
Operation mode	D mode operation (Move to P1)	H mode operation (Move to P1)								
Operation pattern	<p>Point specified speed</p> <p>P0 P1 (Point specified position)</p>	<p>Point specified speed</p> <p>PRM37 (H mode switching speed)</p> <p>P0 P1 (Point specified position)</p>								
Description	<p>· In the D mode, setting point P1 data and performing operation moves to the point specified as P1 and stops there in accordance with the specified speed, acceleration and deceleration.</p>	<p>· In the H mode, setting point P1 data and performing operation moves to the point specified as P1 in accordance with the specified speed, acceleration and deceleration, and then sends the deviation pulse in order to generate pressing force and stops.</p> <p>Note 1: If there is no stopper or workpiece at the specified point, the movement amount will overrun in accordance with the deviation pulse. The overrun amount is as shown below.</p> <table border="1"> <thead> <tr> <th>Model</th> <th>Overrun amount</th> </tr> </thead> <tbody> <tr> <td>IBM2A 5×□</td> <td>5 mm [0.197 in]</td> </tr> <tr> <td>IBM2A10×□</td> <td>5 mm [0.197 in]</td> </tr> <tr> <td>IBM2A16×□</td> <td>8 mm [0.315 in]</td> </tr> </tbody> </table> <p>2: After movement, additional movement in the same direction is not possible.</p>	Model	Overrun amount	IBM2A 5×□	5 mm [0.197 in]	IBM2A10×□	5 mm [0.197 in]	IBM2A16×□	8 mm [0.315 in]
Model	Overrun amount									
IBM2A 5×□	5 mm [0.197 in]									
IBM2A10×□	5 mm [0.197 in]									
IBM2A16×□	8 mm [0.315 in]									



## Mounting

### ● Installing the Main Unit

- (1) To prevent main unit heat buildup, be sure to mount it onto an item with the best possible heat conductivity in a location that has good heat dissipation properties.
- (2) Choose a flat surface as the mounting surface. Twisting or bending during mounting creates the risk of defective operation and loss of performance.
- (3) Note that a mounting surface that is scratched or dented can adversely affect mounting accuracy.
- (4) In cases where loosening of screws due to impact and/or vibration may be a factor, consider looseness prevention measures, etc.
- (5) When securing the main unit, use the front and bottom mounting threads or the side counterbore holes.
- (6) Use only non-magnetic screws and washers for installation.
- (7) After installing cables on the main unit, be sure to install a cable holder.
- (8) The main unit is not grounded to frame ground by the actuator cable. When main unit ground wiring is required as a static electricity countermeasure, use the small frame ground screw for ground wiring.
- (9) When mounting multiple main units in close proximity of each other, mount them so the distance between pitches is no less than P shown below.



mm [in]

	IBM2A5	IBM2A10	IBM2A16
P	22 [0.87]	30 [1.18]	46 [1.81]

- (10) When using the product in an area where iron particles or other magnetic material particles or dust is generated or dispersed, be sure to take adequate shielding measures. Failure to do so creates the risk of particles or dust being drawn into the main unit, which will lead to breakdown.

### ● Attaching to the rod end

- (1) Whenever attaching a tool, bracket or other object to the rod end, be sure to use a screw with a length that is no greater than those shown in the table below. Proper mounting is not possible using a screw with a length that exceeds the thread depth.
- (2) Use the rod flats when tightening a screw for attaching a tool, bracket, or other item to the rod end, and tighten within the allowable range.

Model	Screw size	Thread depth mm [in]	Maximum tightening torque N·m [in. lbf]
IBM2A5	M 3	6 [0.236]	0.63 [5.58]
IBM2A10	M 5	8 [0.315]	3.0 [26.6]
IBM2A16	M 6	10 [0.394]	5.2 [46.0]

\* For outside dimensions, see page 9-10.

- (3) Use only non-magnetic screws and washers for installation.
- (4) Take care to ensure that tools, bracket, and other items on the rod do not apply lateral load.

Note 1: The rod uses a strong magnet, which may magnetize the workpiece.

2: Rod operation can cause it to become extremely hot, and the heat may have an effect on the workpiece.

3: When a tool, bracket, or other item is attached to the rod end, cut off the power supply to the main unit and check to ensure that the rod surface has cooled sufficiently before performing work.



## General Precautions

### Environment

1. Avoid use in locations where there is the chance of water droplets, oil droplets, or other liquid getting on the main unit or controller, and locations subject to large amounts of dust.
2. Avoid use in locations where sulfuric acid, hydrochloric acid, and other corrosive gasses are generated.
3. Avoid use in locations subjected to strong vibration or impact.

### Other

Before use, be sure to carefully read the instruction manual that comes with the main unit and controller.



# Actuator



## Specifications

Item	Model	IBM2A5		IBM2A10		IBM2A16		
Motor		2-phase stepping, moving magnet system						
Stroke	mm [in]	10 [0.394]	20 [0.787]	20 [0.787]	30 [1.181]	32 [1.260]	48 [1.890]	
Maximum thrust	N [lbf]	Vertical use <sup>Note</sup>	0.55 [0.124]		2 [0.45]		6 [1.35]	
		Horizontal use	0.7 [0.16]		2.5 [0.56]		8 [1.80]	
Maximum speed	mm/s [in/sec]	300 [11.8]	400 [15.7]	500 [19.7]	600 [23.6]	600 [23.6]	700 [27.6]	
Position sensing		None						
Cable		Flexible cable ø4.5 25AWG 4-lead 1000, 3000, 5000 mm [3.28, 9.84, 16.40 ft]						
Mounting methods		Side mount A, B, and front mount						
Materials		Main unit: Aluminum alloy						
Mass (excluding cable)	g [oz]	60 [2.12]	70 [2.47]	160 [5.64]	180 [6.35]	500 [17.64]	550 [19.40]	
Operating temperature/humidity range		0~40°C [32~104°F] 35 to 85% RH (non-condensation, non-freezing)						
Storage temperature		-10~65°C [14~149°F] (non-condensation, non-freezing)						

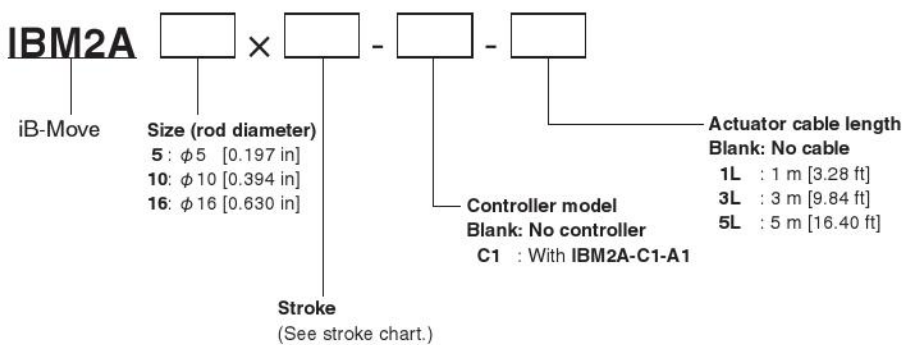
Note: Values shown for thrust during vertical use are the thrust during horizontal use minus the mass of the moving part as it rises.

The actual payload varies in accordance with customer use conditions.

In particular, confirmation of the acceleration and deceleration and operating frequency in the case of vertical use, and drive system friction in the case of horizontal use on the actual machine is recommended.

- For information about controller specifications, see page 11.

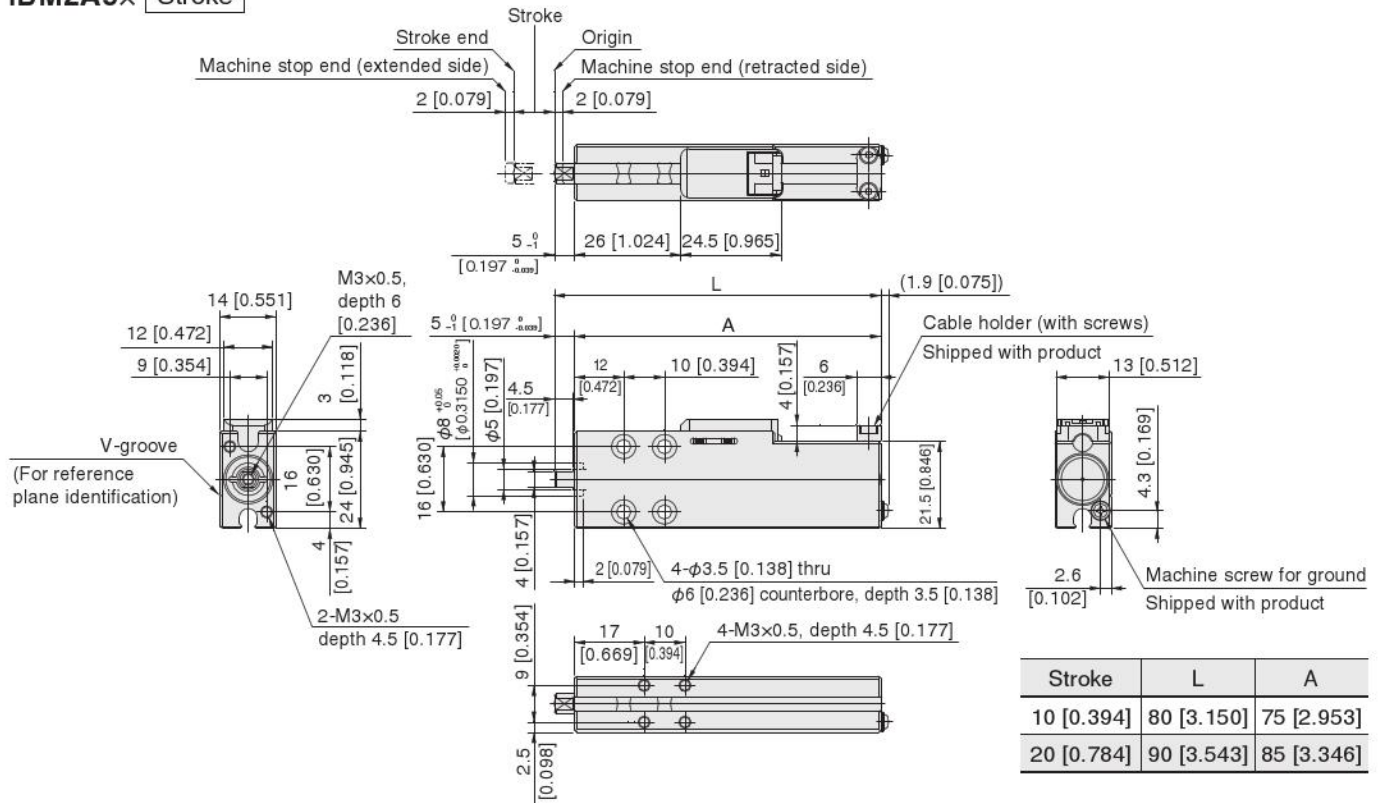
## Order Codes



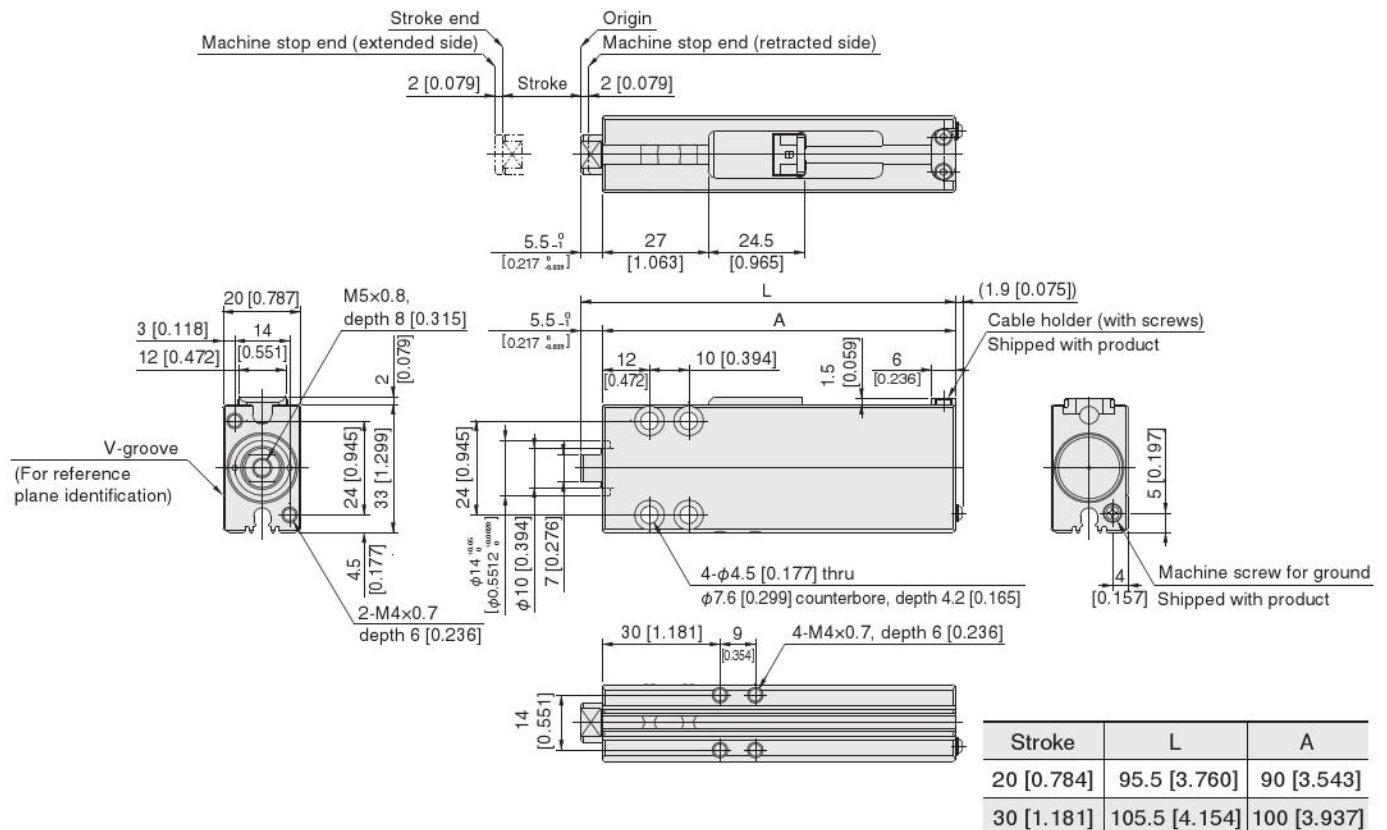
Stroke chart (mm)

Size	Standard stroke
5	10, 20
10	20, 30
16	32, 48

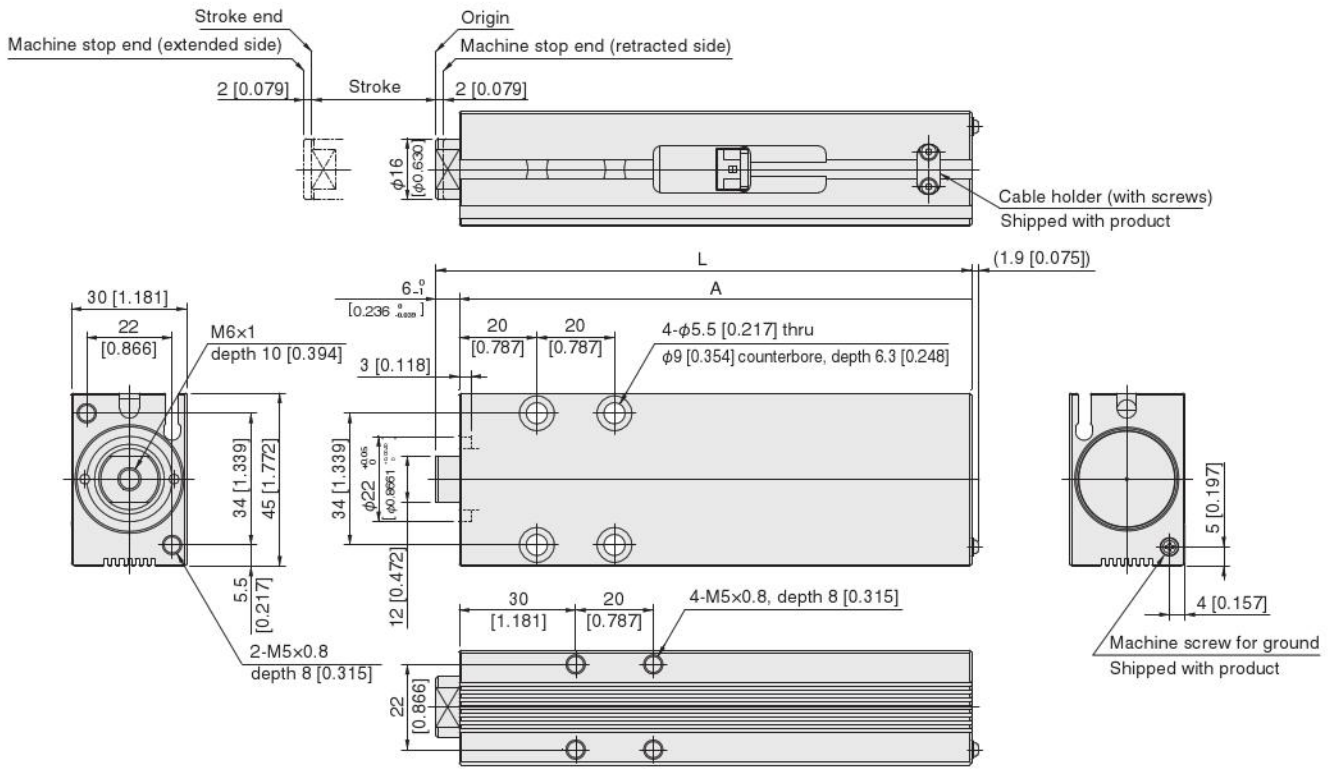
**IBM2A5x** Stroke



**IBM2A10x** Stroke



**IBM2A16x Stroke**



Stroke	L	A
32 [1.260]	138 [5.433]	132 [5.197]
48 [1.890]	154 [6.063]	148 [5.827]

# Controller



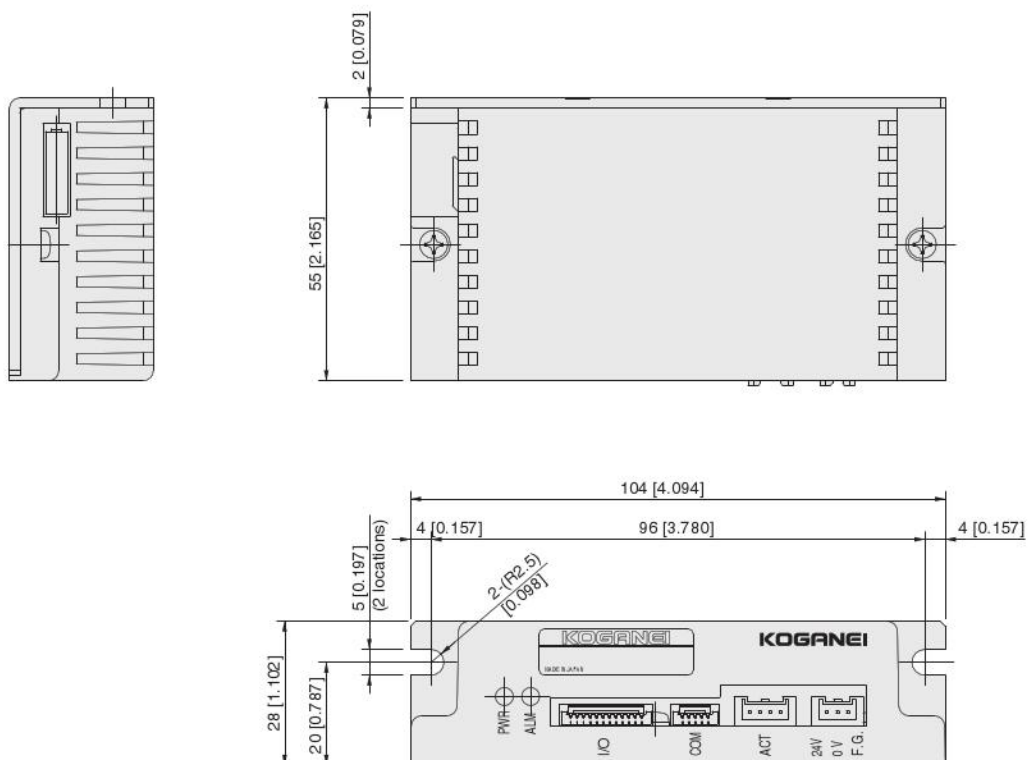
## Specifications

Item	Model	IBM2A-C1-A1	
Axis control	Motor drive system	Microstep drive	
	Control system	Open loop control	
	Operation system	PTP, force control	
	Origin sensing method	Excitation phase	
	Minimum setting distance	mm [in]	0.1 [0.004]
	Speed setting	%	1~100
	Acceleration, deceleration setting	%	1~100
	Point setting	Points	2
	Point input method		Value input, teaching input
External input/output	Control input	4 points (ORG, STOP, GO-P0, GO-P1) photo coupler receptacle 5mA TYP/1 point	
	Control output	4 points (READY, BUSY, STAY-P0, STAY-P1) 30 mA MAX. TYP/1 point	
	Abnormality detection output	Data abnormality, system abnormality	
	External communication	RS485 (computer communication)	
	Motor drive output	Dedicated cable	
General Specifications	Encoder input	None	
	Power supply	24VDC (IBM2A5: 1A min., IBM2A10: 1.5A min., IBM2A16: 2A min.)	
	Materials	Case: Plastic	
	Mass	kg [oz.]	0.1 [3.53]
	Operating temperature/humidity range	0~40°C [32~104°F] 35 to 85% RH (non-condensation, non-freezing)	
	Storage temperature	-10~65°C [14~149°F] (non-condensation, non-freezing)	
	Environmental protection	None	
	Noise resistance	IEC61000-4-4 Level 2	
Backup	EEPROM backup of setting conditions		

Accessories: I/O cable, power cable

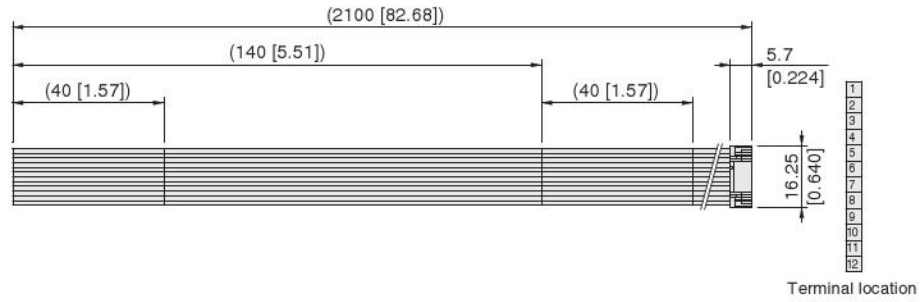
## Dimensions mm [in]

### IBM2A-C1-A1

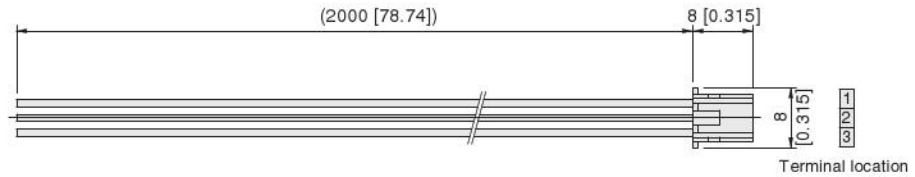


# Cable Dimensions mm [in]

- Supplied with controller
  - I/O cable



- Power cable



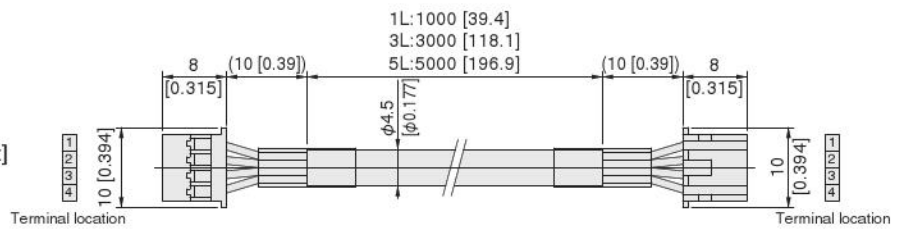
## Additional Parts

- Actuator cable

### IBM2A-K1-□

Cable length

- 1L: 1000 mm [3.28 ft]
- 3L: 3000 mm [9.84 ft]
- 5L: 5000 mm [16.40 ft]



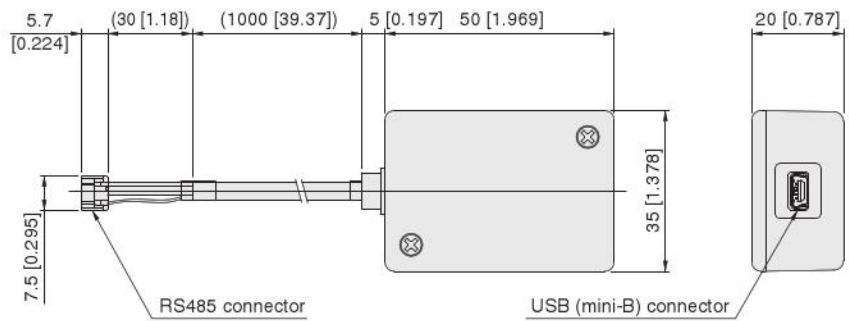
- USB-RS485 converter

### IBM2A-H1-□

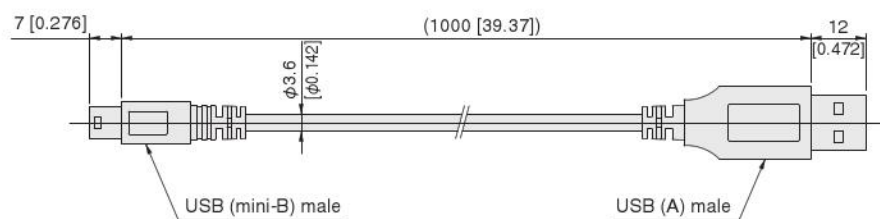
Included cable

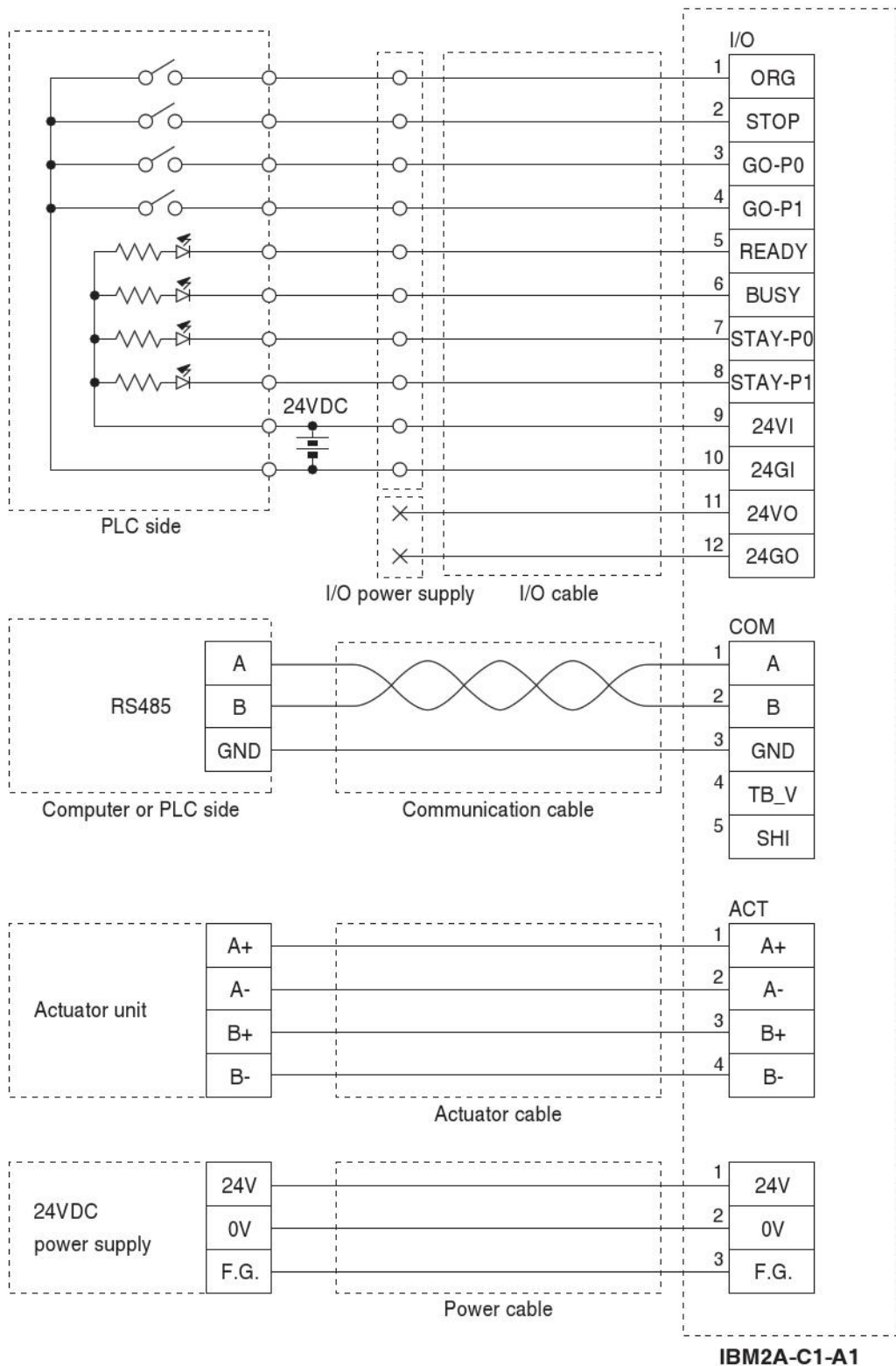
Blank: USB (min-B) male ⇔ USB (A) male

**N** : Cable not included



- USB cable





# Teaching box

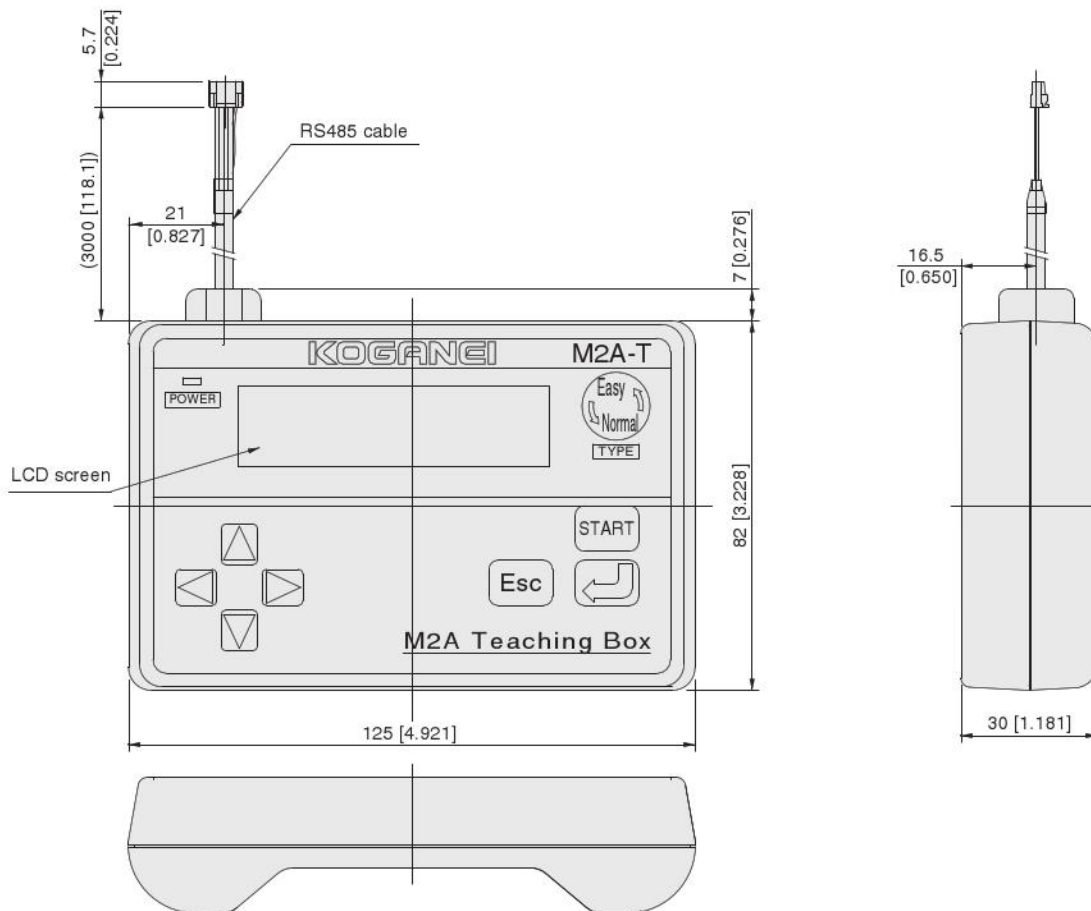


## Specifications

Item	Model	IBM2A-T1
Power	Power supply voltage	24VDC (supplied from controller)
	Consumption current	50 MAX.
Indicators	Setting display	LCD 16 characters x 2 lines
	Power indicators	LED lighted (internal 5V) while power is on
General	Setting method	Key operation: 8 buttons
	Communication protocol	RS485
	Cable length	3 m [9.84 ft]
	Mass	Main unit: 200 [7.05]
	Operating temperature/humidity range	0~40°C [32~104°F] 35 to 85% RH (non-condensation, non-freezing)
	Storage temperature	-10~65°C [14~149°F] (non-condensation, non-freezing)
	Noise resistance	IEC61000-4-4 Level 2

## Dimensions mm [in]

### IBM2A-T1



# Limited Warranty

KOGANEI CORP. warrants its products to be free from defects in material and workmanship subject to the following provisions.

**Warranty Period** The warranty period is 180 days from the date of delivery.

**Koganei Responsibility** If a defect in material or workmanship is found during the warranty period, KOGANEI CORP. will replace any part proved defective under normal use free of charge and will provide the service necessary to replace such a part.

**Limitations**

- This warranty is in lieu of all other warranties, expressed or implied, and is limited to the original cost of the product and shall not include any transportation fee, the cost of installation or any liability for direct, indirect or consequential damage or delay resulting from the defects.

- KOGANEI CORP. shall in no way be liable or responsible for injuries or damage to persons or property arising out of the use or operation of the manufacturer's product.

- This warranty shall be void if the engineered safety devices are removed, made inoperative or not periodically checked for proper functioning.

- Any operation beyond the rated capacity, any improper use or application, or any improper installation of the product, or any substitution upon it with parts not furnished or approved by KOGANEI CORP., shall void this warranty.

- This warranty covers only such items supplied by KOGANEI CORP. The products of other manufacturers are covered only by such warranties made by those original manufacturers, even though such items may have been included as the components.

The specifications are subject to change without notice.

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