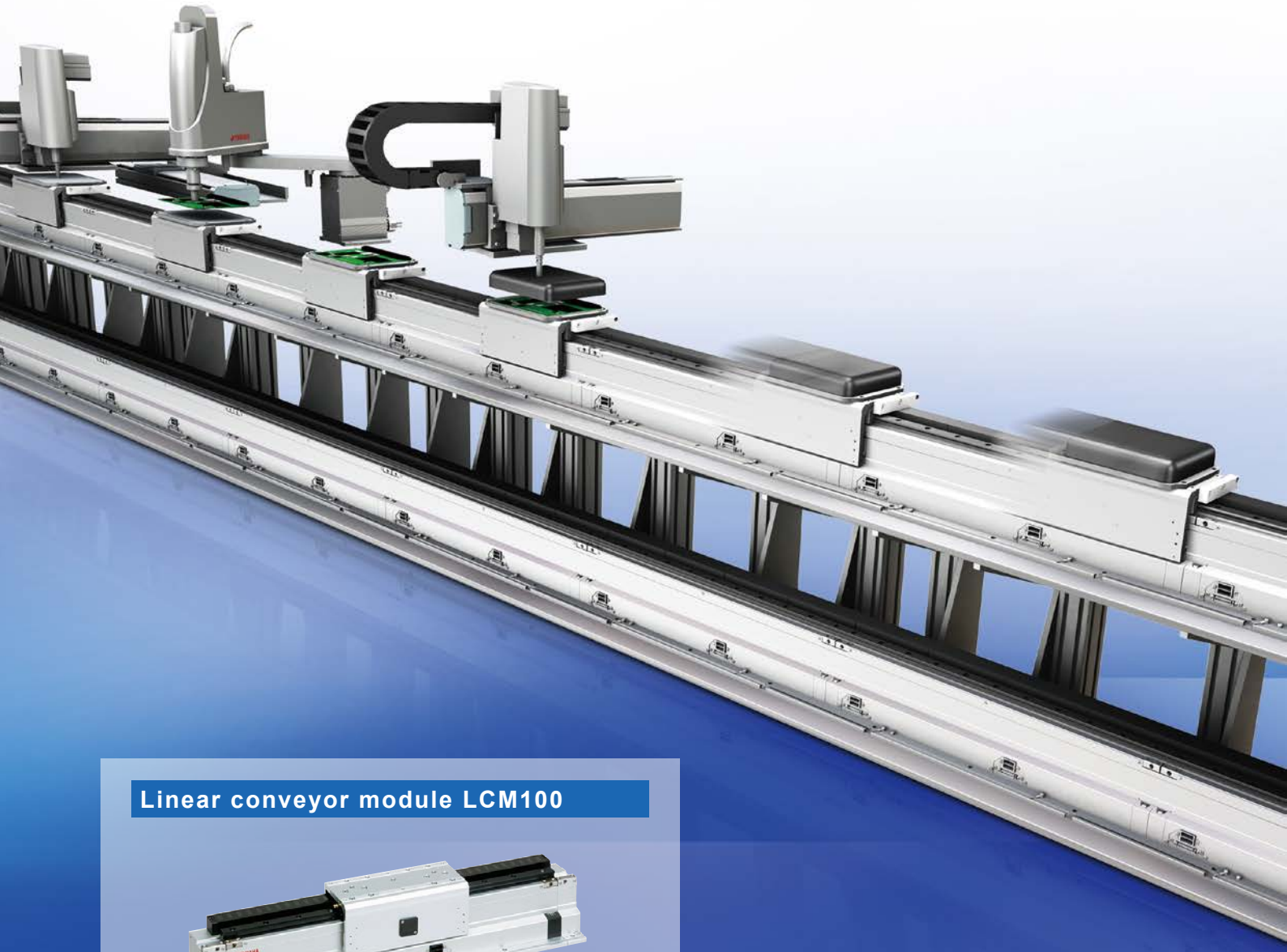
LCM100

Product Lineup

LCM200 is introduced on another page. ▶ P.8

LINEAR CONVEYOR MODULES

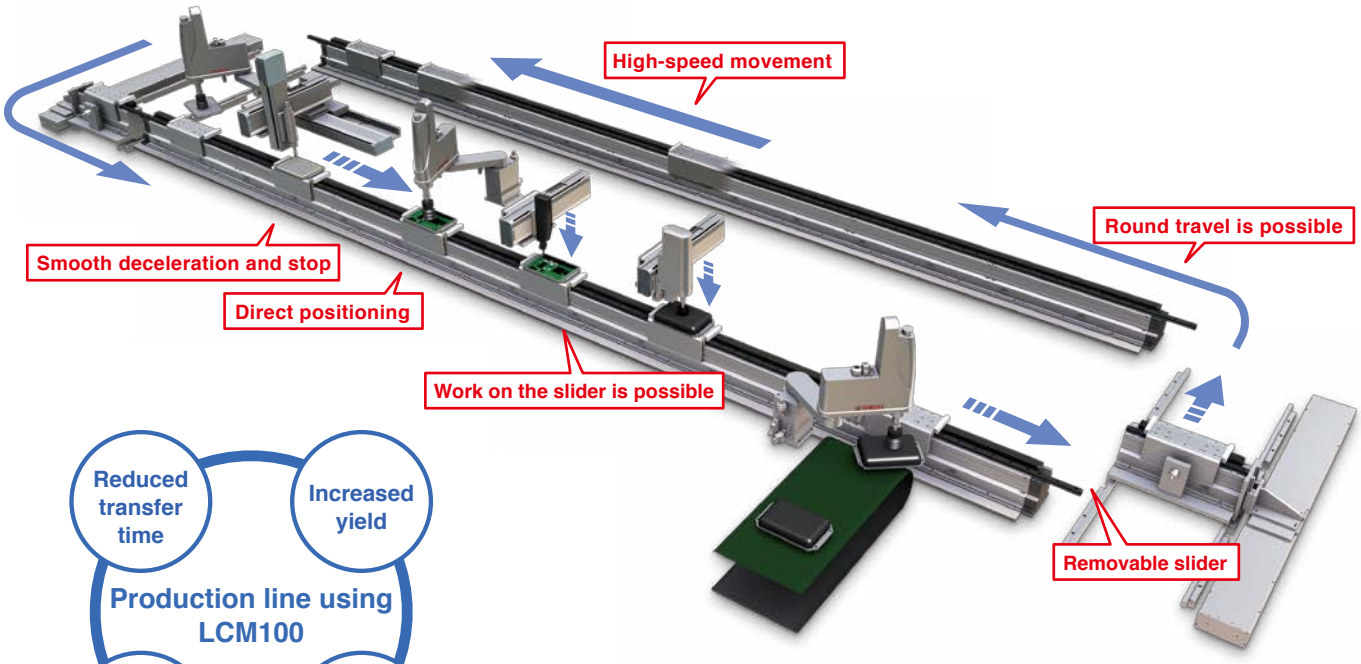
From "flow" to "move"
Efficient transfer processes for increased profitability



Linear conveyor module LCM100

Note. As the figure shown above illustrates CG images, they are different from the actual product.

Linear Conveyor Module LCM100
Constructing high-speed throughput lines.



High-speed and high-accuracy transfer

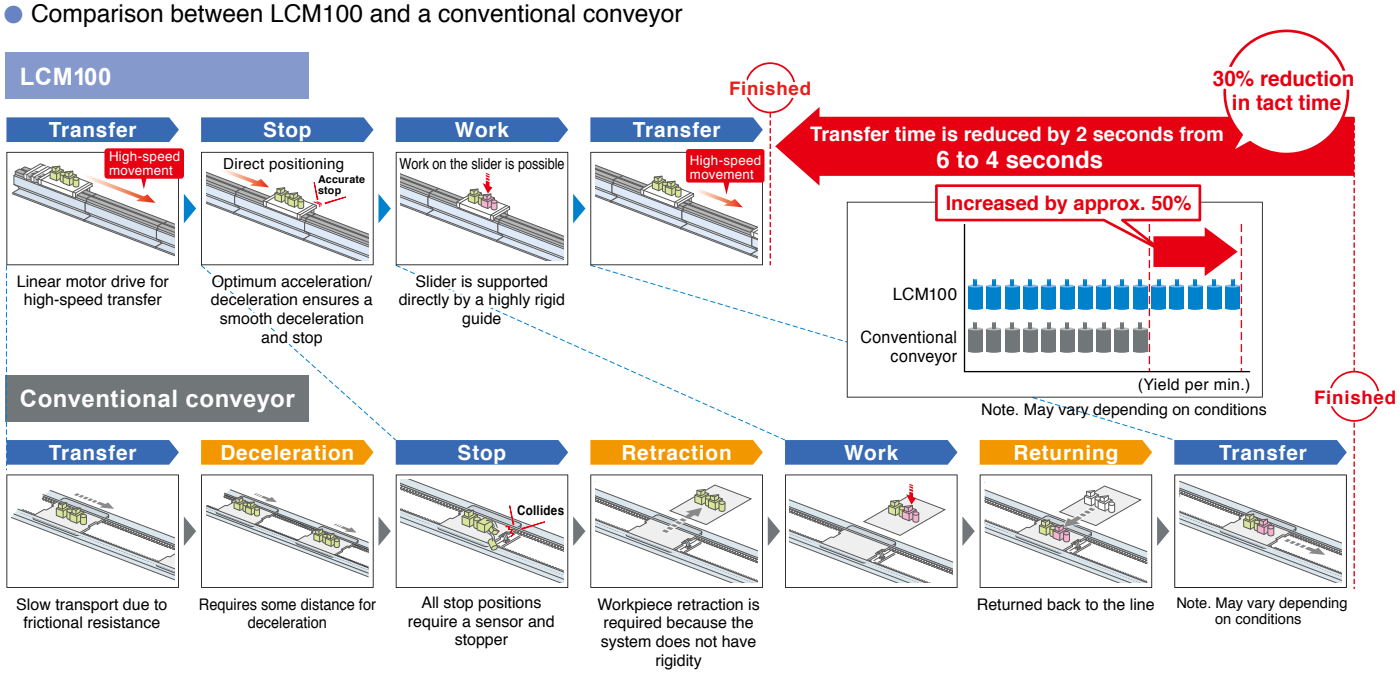
- Max. speed: **3000**mm/sec
- Max. acceleration: **2**G
- Max. load mass: **15**kg
- Repeated positioning accuracy: **+/-0.015**mm **(standalone slider)** Note

Note. This is the repeated positioning accuracy for a standalone slider when positioning from one direction (single-side approach).
Note. The positioning accuracy for the single-side approach after correction by RFID is 0.1 mm including the mutual difference between sliders.

POINT

Increase productivity by shortening transport time

- Comparison between LCM100 and a conventional conveyor

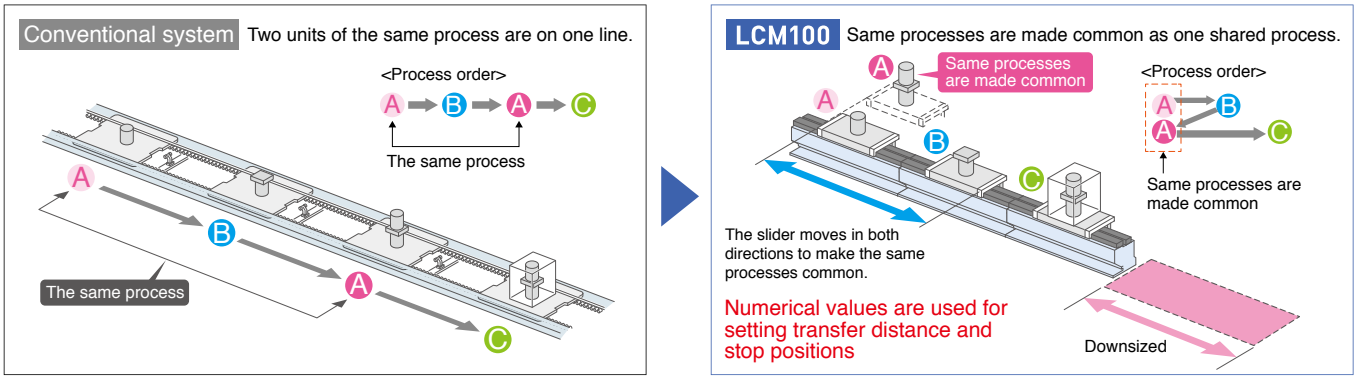


The length of the transfer line can be adjusted freely by adding modules.

POINT

Save equipment space.

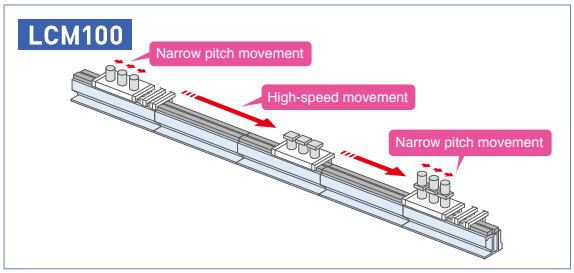
- Since the movement direction can be changed, the same processes are made common. This makes the equipment compact and results in cost reduction.
- Forward and backward movement at a high speed can be set freely.
- Flexible actions such as moving only some sliders backward is possible.



POINT

Can be moved efficiently between processes with different tacts

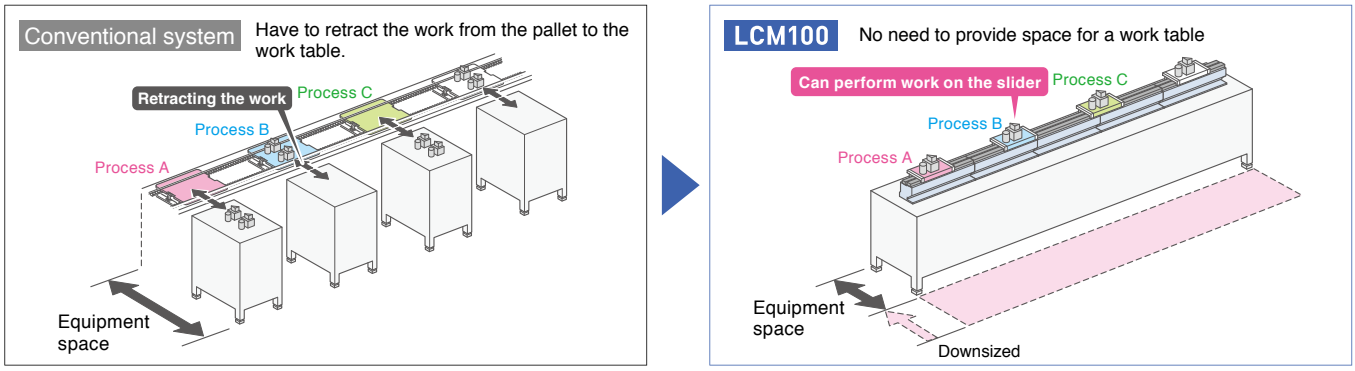
- Narrow pitch movement is possible.
- Movement time can be reduced by combining the use of different movements, such as using pitch-feed for the same processes in short-time processes while transferring three workpieces at the same time at a high speed in long-time processes.



POINT

Workpieces do not need to be retracted

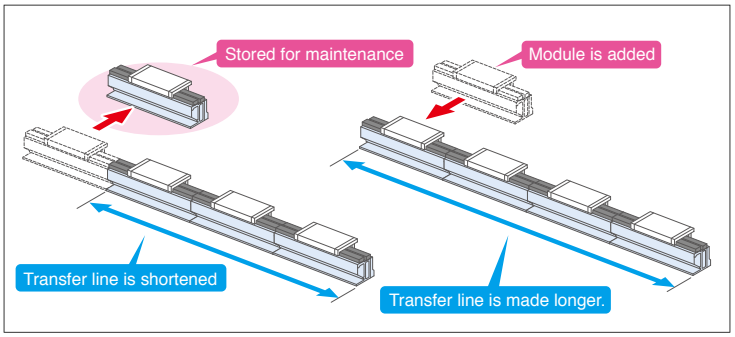
- As the work moves down, you can assemble and process them on the transfer line.
- Eliminates having to retract the work from the pallet to the work table.
- Reduces costs.



POINT

Significant reduction of start-up time

- Just connect modules for easy construction of a transfer line.
- Lifting cylinders, sensors, stoppers, and other complex parts are not necessary.
- Operations can be performed by using only the LCC140 Controller.
- Economical as excess modules can be used for other lines or stored for maintenance.

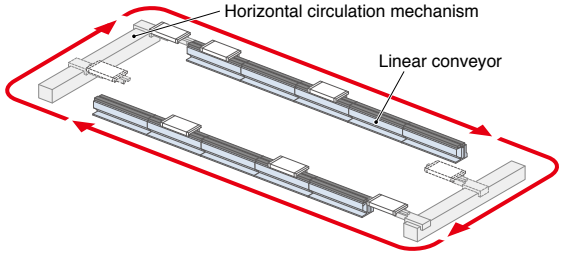


POINT

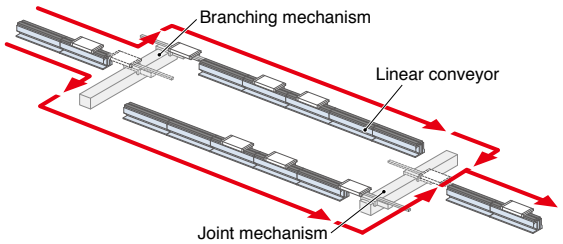
Construct branching lines, joint lines, and other lines in flexible configurations.

- Layout examples by combining modules with circulation mechanisms

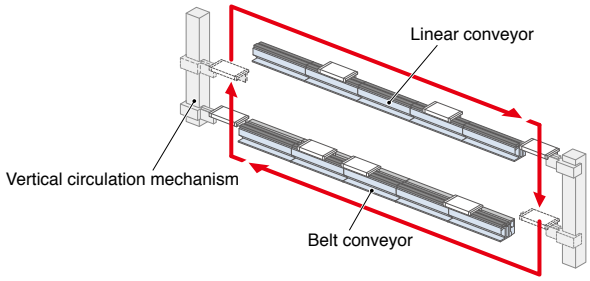
Example of horizontal circulation



Example of horizontal branching



Example of vertical circulation



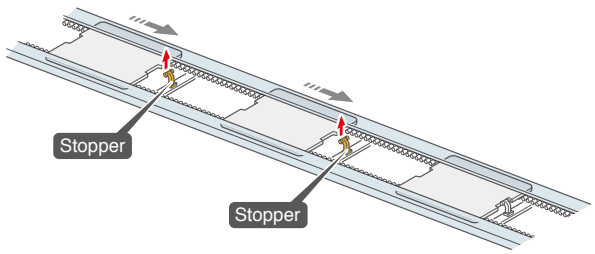
Note. The customer needs to prepare the return unit and the circulation mechanism.
Note. Modules convenient for the circulation are configured.

POINT

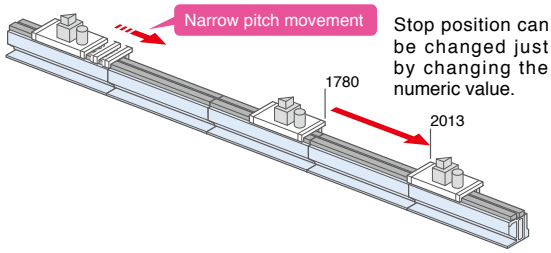
Optimal for small batch production of various product types

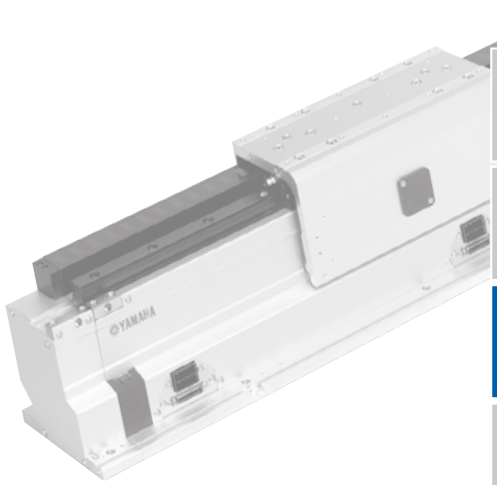
- No need for mechanical stoppers or sensors. Change layout easily.
- Reconstruction can be finished quickly by just changing the program to set a stop position.
- Frequent unit changes for different models can be handled flexibly.

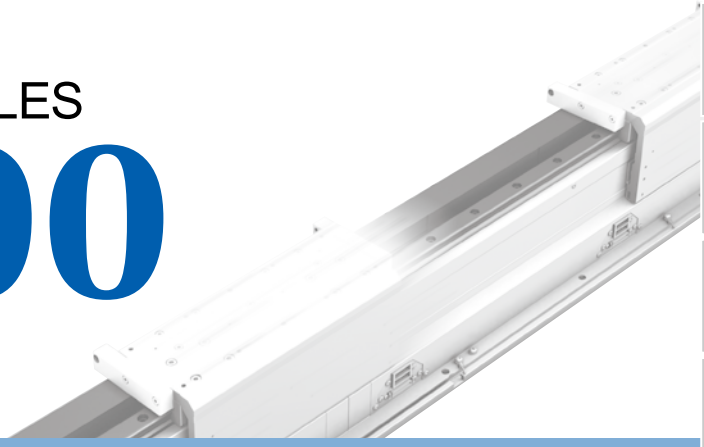
Conventional system Requires stopper position adjustment



LCM100 Stop positions can be set just by changing the program settings.







LINEAR CONVEYOR MODULES

LCM100

CONTENTS

■ LCM100 basic specifications ··· 62

■ Static tolerable load of slider ··· 62

■ Allowable overhang ····· 62

■ Ordering method ····· 62

■ External view of LCM100 ····· 63

● Accessory parts ····· 66

■ Controller for linear module
LCC140 basic specifications ··· 68

■ External view of LCC140 ····· 68

LCM100 basic specifications





Basic specifications of linear conveyor module

Model	LCM100-4M / 3M / 2MT
Drive method	Moving magnet type, Linear motor with flat core
Repeat positioning accuracy	+/-0.015mm (single slider) Note 1 / width 0.1mm (mutual difference among all sliders) Note 2
Scale	Electromagnetic type / resolution 5μm
Max. speed	3000mm/sec
Max. acceleration	2G
Max. payload	15kg Note 3 Note 4
Rated thrust	48N
Total module length	640mm (4M) / 480mm (3M) / 400mm (for 2MT circulation)
Max. number of combined modules	16 (total length: 10240 mm)
Max. number of sliders	16 (when 16 modules are combined)
Min. pitch between sliders	420mm
Mutual height difference between sliders	0.08mm
Max. external size of body cross-section	W136.5mm x H155mm (including slider)
Bearing method	1 guide rail / 2 blocks (with retainer)
Module weight	12.5kg (4M) / 9.4kg (3M) / 7.6kg (2MT)
Slider weight	2.4kg / 3.4kg (when the belt module is used.)
Cable length	3m / 5m
Controller	LCC140

Note 1. Repeated positioning accuracy when positioning in the same direction (pulsating).
Note 2. Positioning accuracy in the pulsating when using the position correction function with the RFID.
Note 3. Weight per single slider.
Note 4. When used together with the belt module, the max. payload becomes 14kg since the parts dedicated to the belt are attached to the slider.
Note. Operate LCM100 in the temperature environment (+/-5 °C) that installation and adjustment were performed.

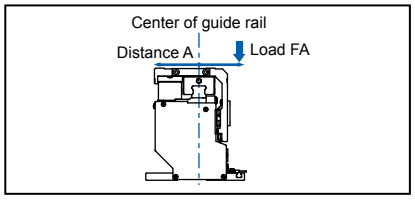
Basic specifications of belt module

Model	LCM100-4B / 3B
Drive method	Belt back surface pressing force drive Note 1
Bearing method	1 guide rail / 2 blocks (with retainer)
Max. speed	560mm/sec
Max. payload	14kg
Module length	640mm (4B) / 480mm (3B)
Max. number of sliders	1 slider / 1 module
Main unit maximum cross-section outside dimensions	W173.8mm×H155mm (including slider)
Cable length	None
Controller	Dedicated driver (Included)
Power supply	DC24V 5A
Communication I/F	Dedicated input/output 16 points
Module weight	11.2kg (4B) / 8.8kg (3B)

Note 1. Because the belt module works on the principle of using the friction of the belt to move the slider, the belt will be abraded and generate dust, making it unsuitable for environments that require a degree of cleanliness.

Static tolerable load of slider

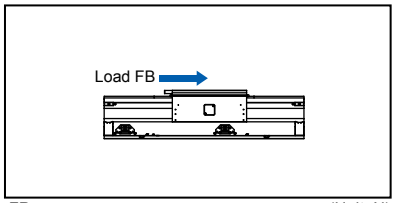
Static loads shown below are tolerable as references when performing the screw tightening, part assembly, or light press-fitting on the slider.



FA (Unit: N)

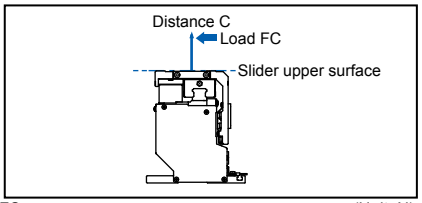
A (mm)	Payload		
	5 kg	10 kg	15 kg
0	2550	1560	1270
10	1790	1280	1170
20	1380	780	630
30	1130	520	420
40	900	390	310
50	720	310	250
60	600	260	210

Note. The loads shown above are tolerable loads at a position “A”mm away from the center of the guide rail.



FB (Unit: N)

Payload		
5 kg	10 kg	15 kg
38		



FC (Unit: N)

C (mm)	Payload		
	5 kg	10 kg	15 kg
0	1190	850	780
10	970	710	650
20	760	610	560
30	630	530	490
40	540	480	430
50	470	430	390
60	410	390	360

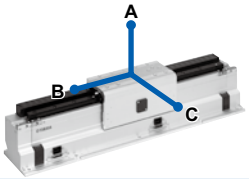
Note. The loads shown above are tolerable loads at a position “C”mm away from the slider upper surface.

Allowable overhang

Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000 km.

(Unit: mm)

	A	B	C
5kg	677	325	325
10kg	533	146	146
15kg	468	90	90



Ordering method

Linear module

LCM100 - [ ] - [ ] - LCC140 - 10 - [ ]

Model	Cable length Note 1	Controller	Current sensor	Network option Note 2
4M: 640mm	3L : 3m		10 : 10A	No entry : None
3M: 480mm	5L : 5m			CC : CC-Link
2MT: Module for circulation	3K: 3m (Flexible cable)			DN : DeviceNet™
	5K: 5m (Flexible cable)			EP : EtherNet/IP™

The above shows “one module + one controller” ordering method. When connecting modules, please separately inform the number of necessary modules.

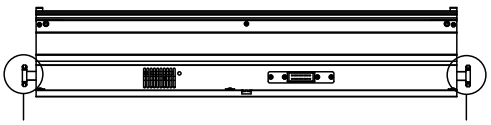
Note 1. The cable for 2MT has flexible specifications.
Note 2. For 2MT, be sure to select an appropriate network option.

Belt module

LCM100 - [ ] - [ ]

Model	Termination option for belt module Note 1, Note 2
4B: 640mm	No entry : None
3B: 480mm	R: Linear module is connected to the right.
	L: Linear module is connected to the left.
	RL: Linear module is connected to both sides.

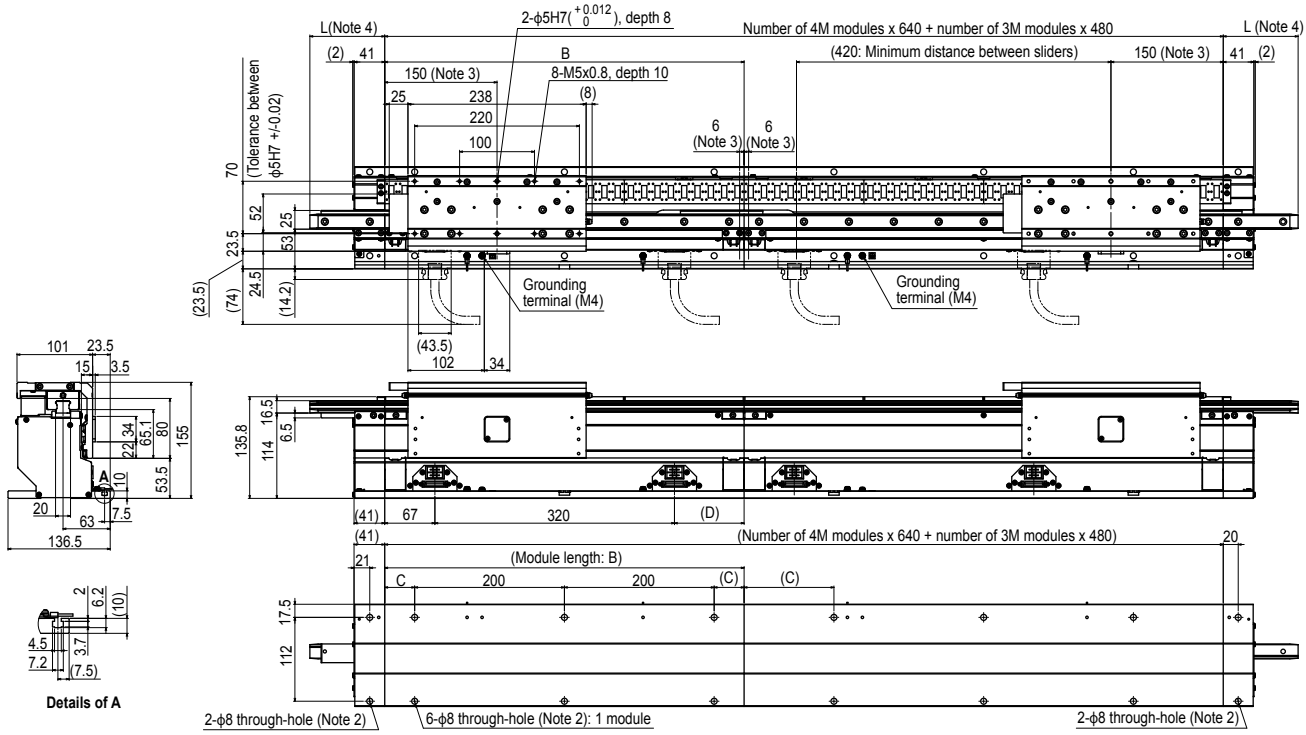
Note 1. Parts necessary to connect the belt module and linear module. Parts are incorporated into the belt module.
Note 2. Perform the bonding with the connection cable that comes from the belt module.



Connection cable (When the termination option L for the belt module is selected.)

Connection cable (When the termination option R for the belt module is selected.)

LCM100-4M/3M Linear conveyor module (640mm/ 480mm)



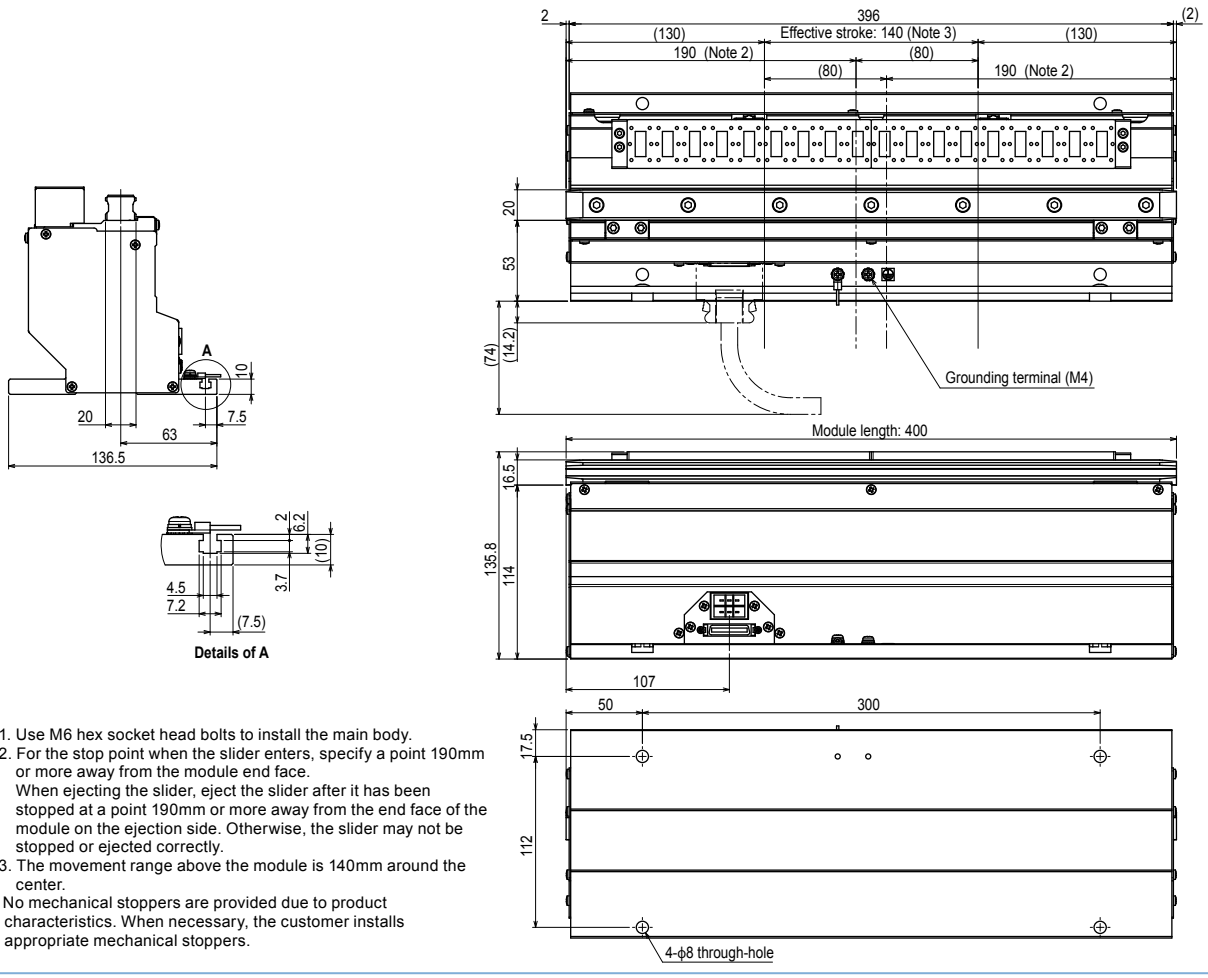
Stroke variations	B	C	D
4M	640	120	253
3M	480	40	93

Insertion/ejection rail length selection table

Insertion/ ejection rail (mm)	L
	44
	100
	340

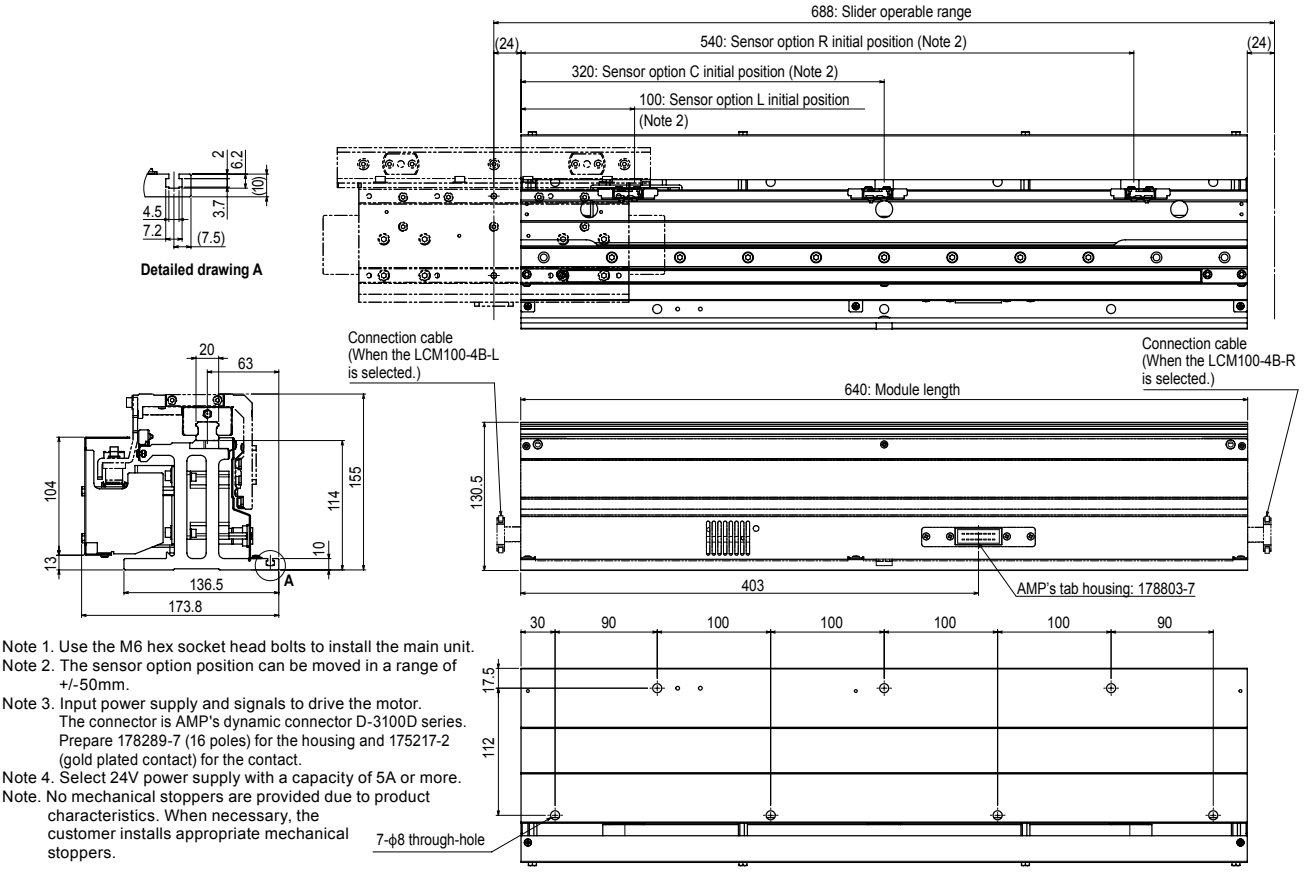
Note 1. All sliders and modules have the same dimensions.
Note 2. Use M6 hex socket head bolts to install the main body.
Note 3. An area of +/-6mm from both ends of each connected module and an area of 150mm from the line end become slider stop inhibited areas. (These dimensions are obtained when the slider is located at its center position.)
Note 4. Select an appropriate rail length of the insertion/ejection rail option from the "Insertion/ejection rail length selection table" shown on the left.
Note 5. The LCM100 is installed only in the horizontal direction.
Note 6. Module variations can be combined freely within the same line. (This figure shows that 3M on the left is combined with 4M on the right.)
Note 7. It is recommended to install rail support parts on the insertion/ejection rail. When no support parts are installed, the rail may be deflected by the slider's own weight, leading to poor rail accuracy or short service life of the guide.
Note. No mechanical stoppers are provided due to product characteristics. When necessary, the customer installs appropriate mechanical stoppers.

LCM100-2MT Module for circulation



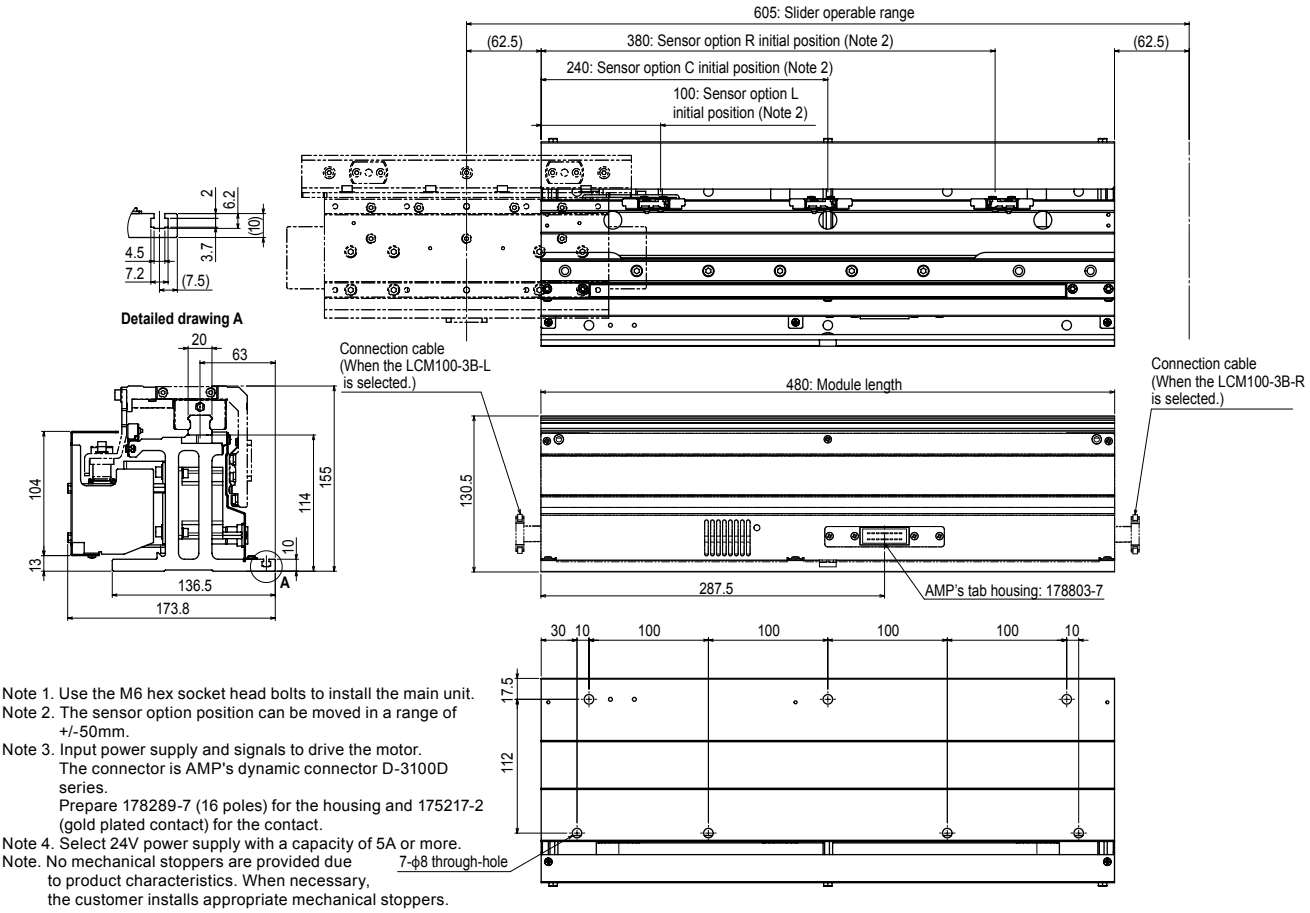
Note 1. Use M6 hex socket head bolts to install the main body.
Note 2. For the stop point when the slider enters, specify a point 190mm or more away from the module end face.
When ejecting the slider, eject the slider after it has been stopped at a point 190mm or more away from the end face of the module on the ejection side. Otherwise, the slider may not be stopped or ejected correctly.
Note 3. The movement range above the module is 140mm around the center.
Note. No mechanical stoppers are provided due to product characteristics. When necessary, the customer installs appropriate mechanical stoppers.

LCM100-4B Belt module (640mm)



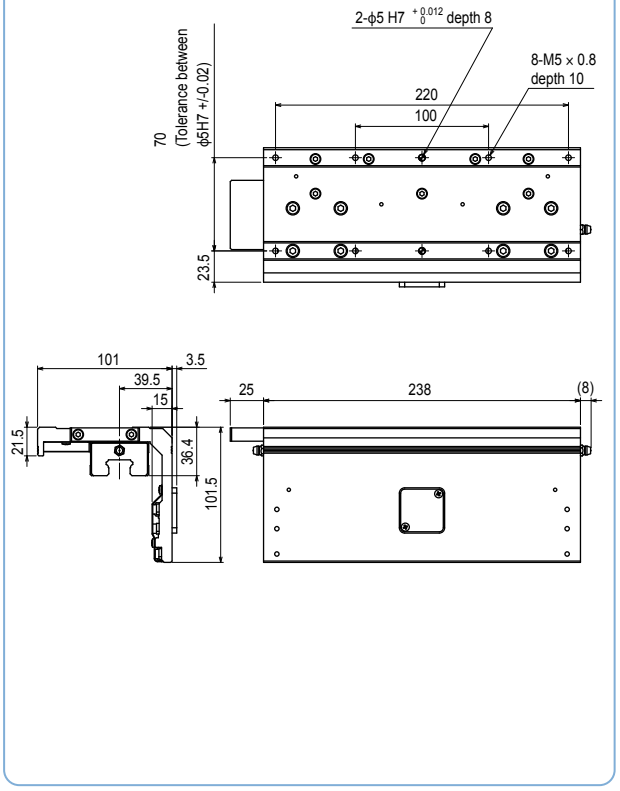
Note 1. Use the M6 hex socket head bolts to install the main unit.
Note 2. The sensor option position can be moved in a range of +/-50mm.
Note 3. Input power supply and signals to drive the motor.
The connector is AMP's dynamic connector D-3100D series.
Prepare 178289-7 (16 poles) for the housing and 175217-2 (gold plated contact) for the contact.
Note 4. Select 24V power supply with a capacity of 5A or more.
Note. No mechanical stoppers are provided due to product characteristics. When necessary, the customer installs appropriate mechanical stoppers.

LCM100-3B Belt module (480mm)

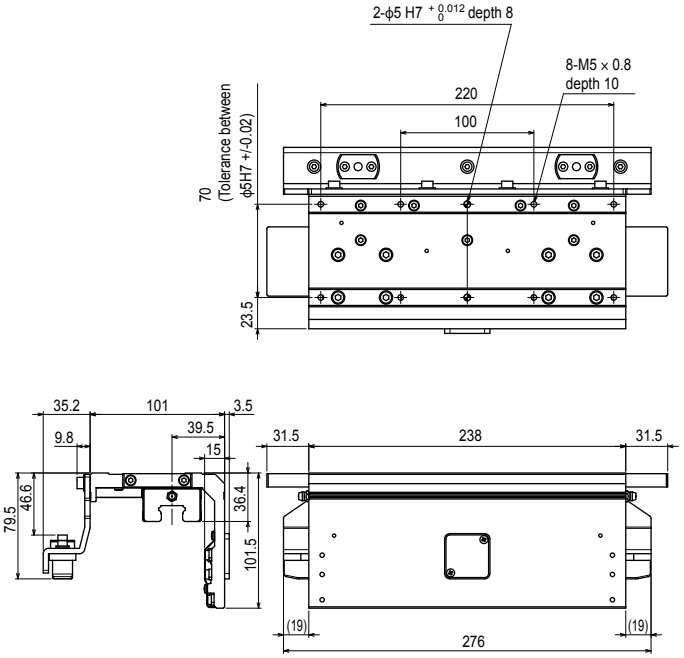


Note 1. Use the M6 hex socket head bolts to install the main unit.
Note 2. The sensor option position can be moved in a range of +/-50mm.
Note 3. Input power supply and signals to drive the motor.
The connector is AMP's dynamic connector D-3100D series.
Prepare 178289-7 (16 poles) for the housing and 175217-2 (gold plated contact) for the contact.
Note 4. Select 24V power supply with a capacity of 5A or more.
Note. No mechanical stoppers are provided due to product characteristics. When necessary, the customer installs appropriate mechanical stoppers.

Linear module slider



Belt module slider



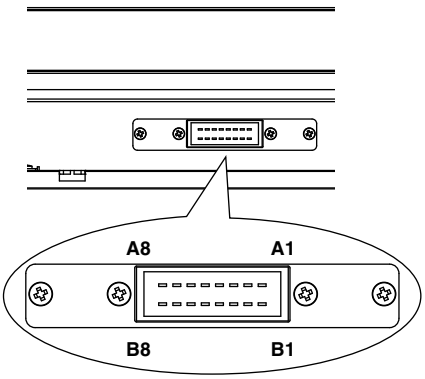
Belt module outline diagram of input/output signal wiring

Connector on front panel

Pin No.	Signal name	Function
A1	+24V	Power supply connection DC24V (+/-10%)
A2	GND	
A3	(Blank)	
A4	Option sensor L	Detection output
A5	Option sensor C	Detection output
A6	Option sensor R	Detection output
A7	ALARM	Alarm output
A8	SPEED	Speed output
B1	ALARM-RESET	Alarm reset input ON [L]: Reset OFF [H]: Normal
B2	INT.VR/EXT	Speed setting unit change-over input ON [L]: Internal OFF [H]: External
B3	CW/CCW	Rotation direction change-over input ON [L]: CW OFF [H]: CCW
B4	RUN/BRAKE	Brake input ON [L]: Run OFF [H]: Instantaneous stop
B5	START/STOP	Start/stop input ON [L]: Start OFF [H]: Stop
B6	VRH	(When using the dedicated speed setting unit)
B7	VRM	Minus (-) side DC power supply for speed setting
B8	VRL	Plus (+) side DC0 to 5V, 1mA or more

Note. For each input, a side to be connected to GND by the external switch is ON (L level).
Note. When both the START/STOP and RUN/BRAKE signals are turned ON (L level), the motor starts rotating. In this case, when the CW/CCW signal is turned ON (L level), the slider moves to the left as viewed from the connector side.
Conversely, when this signal is turned OFF (H level), the slider moves to the right.
Note. When the START/STOP signal is turned OFF (H level) in the RUN/BRAKE signal ON (L level) state, the motor stops naturally.
According to the operation speed, the slider may overrun several tens to hundreds of millimeters.
Note. When the RUN/BRAKE signal is turned OFF (H level) in the START/STOP signal ON (L level) state, the motor stops instantaneously to suppress the slider overrun to its minimal level.

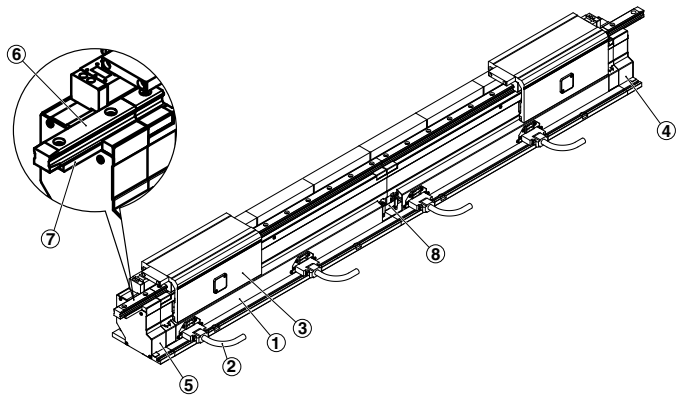
Pin assignment drawing



When investigating the linear conveyor module LCM100 actually, it is necessary to discuss the specifications and restrictions in detail. So, please contact YAMAHA or your dealer to hold hearings regarding your requests.

LCM100

LCM100/LCC140 Accessory parts



① Module
② Robot cable
③ Slider
④ Termination option (R side)
⑤ Termination option (L side)
⑥ Insertion/ejection rail
⑦ Module connection block (with fastening bolts)
⑧ Module connection cable

LCM100 main body

LCM100 module

Linear module



①

Belt module

Linear module

Model	LCM100-4M
	KDJ-M2020-40 (640mm)
	LCM100-3M
	KDJ-M2020-30 (480mm)
	LCM100-2MT (for circulation)
	KDJ-M2022-20 (400mm)

Belt module

Model	LCM100-4B
	KDJ-4K111-40 (640mm)
	LCM100-3B
	KDJ-4K111-30 (480mm)

Robot cable for linear module

Robot cables for the number of modules are required.



②

Model	For LCM100-4M/3M
	KDJ-M4710-30 (3m×2 pcs.) KDJ-M4710-50 (5m×2 pcs.)
	For LCM100-2MT
	KDJ-M4755-30 (Flexible cable 3m×1 pc.) KDJ-M4755-50 (Flexible cable 5m×1 pc.)

Slider

For linear module

For belt module



③

Linear module

Model	KDJ-M2264-00

Belt module

Model	KDJ-M2264-10

Parts for LCM100

Termination option for linear module (R side)

This part is attached to the right end of the module.
One termination module per line is required. Note 1
Additionally, even when using only one module without connections, one termination module is required.



④

Model	KDJ-M2021-R0

Termination option for linear module (L side)

This part is attached to the left end of the module.
One termination module per line is required. Note 1
Additionally, even when using only one module without connections, one termination module is required.

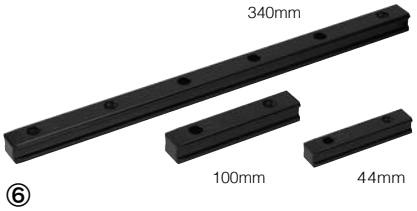


⑤

Model	KDJ-M2021-L0

Insertion/ejection rail

Tapered rail.
Up to two rails per line can be installed. Note 1



⑥

Model	44mm : KDJ-M6200-00 (With a dedicated 44mm connection block)
	100mm : KDJ-M2222-10
	160mm : KDJ-M2222-20 Note
	220mm : KDJ-M2222-30 Note
	280mm : KDJ-M2222-40 Note
	340mm : KDJ-M2222-50

Note. Not in stock. We require some lead time for delivery.

Module connection block (with fastening bolts)

This block connects modules.
([Number of modules making up the line Note 1] - 1) blocks are required.
Additionally, when installing insertion/ejection rails, one block per rail is required.



⑦

Model	KDJ-M6100-00 (44mm)
	KDJ-M6100-10 (100mm) Note

Note. Use this model when installing 100 mm insertion/ ejection rails to L side.

Module connection cable

This cable connects modules.
([Number of modules] - 1) cables per line are required. Note 1



⑧

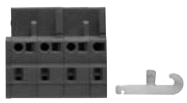
Model	KDJ-M4811-00

Note 1. A state, in which multiple modules are connected, is called “line”.

Parts for LCC140 controller

Power connector + connection lever

One set of parts per LCC140 is required.



Model	KAS-M5382-00

HPB dummy connector

When performing the operation with the programming box HPB removed, connect this dummy connector to the HPB connector.
One connector per LCC140 is required.



Model	KDK-M5163-00

SAFETY connector

One connector per LCC140 is required.



Not wired (plug + shell kit) Wired Note

Model	Not wired : KDK-M5370-10
	Wired Note : KDK-M5370-00

Note. The wired connector is that the wiring for the emergency stop cancel was performed inside the connector. Select this model when performing the operation check or debugging with single linear conveyor.

Parts for line configuration

LINK cable

([Number of modules] - 1) cables per line are required.



Model	1m : KDK-M5361-10
	3m : KDK-M5361-30
	5m : KDK-M5361-50

Terminator connector

When connecting modules, two connectors per line are required.



Model	KDK-M5361-00

Dust cover (for LINK connector)

This dust cover is attached to the insertion port, into which the LINK cable terminator connector is not inserted.
When using only one module without connections, two dust covers are required.

Note. The dust cover is essential for the 2MT.



Model	KDK-M658K-00 (for MDR20 pin)

Selection parts

Proximity sensor for belt module

A sensor for checking the slider position. Install this to prevent slider collisions and to ensure smooth action.



Model	L (Left): KDJ-M2205-L0
	C (Center): KDJ-M2205-C0
	R (Right): KDJ-M2205-R0

Programming box HPB/HPB-D

All operations, such as robot manual operation, program input or edit, teaching, and parameter setting can be performed with this programming box.
As an interactive interface with the screen display is used, even personnel who use this programming box for the first time can easily understand how to operate it.

Model	HPB: KBB-M5110-01
	HPB-D: KBB-M5110-21 (CE specifications / with 3-position enable switch)



HPB-D



Backside of HPB-D (with enable switch)

Support software POPCOM+

PC supporting software POPCOM+



POPCOM+ software model	KBG-M4966-00

POPCOM+ environment

OS	Windows XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.2.1.1 or later)
CPU	Processor that meets or exceeds the suggested requirements for the OS being used.
Memory	Suggested amount of memory or more for the OS being used.
Hard disk	50MB of available space required on installation drive.
Disk operation	RS-232C
Applicable controllers	SRCX to SR1, DRCX, TRCX, ERCX, ERCD, LCC140 Note 1

Note 1. LCC140 is applicable to Ver. 2.1.1 or later.
Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

Data cables (5m)

Communication cable for POPCOM+.
Select from USB cable or D-sub cable.



USB



D-Sub

Model	USB type (5m)	KBG-M538F-00
	D-Sub type 9pin-9pin (5m)	KAS-M538F-10

Note. This USB cable supports Windows 2000/XP or later.
Note. Data cable jointly used for POPCOM+, VIP+, RCX-Studio Pro.
Note. USB driver for communication cable can also be downloaded from our website.

LCM100

RFID

RFID (manufactured by BALLUFF GmbH)*

Reader/writer cable



* This cable is a flexible cable.

Model	3m : KDK-M6300-00
	5m : KDK-M6300-10
	10m : KDK-M6300-20

RFID (manufactured by OMRON)

Antenna amplifier controller cable



Model	0.5m+2m : KDK-M6300-A0

Dust cover (for RFID)

This cover is attached to the insertion port if RFID is not used. (Included as standard)



Model	KDK-M658K-10 (for MDR26 pin)

Whether or not the RFID system can be used may vary depending on the destination place (country). Before selecting a RFID system, please contact YAMAHA.

Maintenance parts

Robot cable for LCM100



Model	Fixed cable
	KDJ-M4751-30 (3m×1 pc.) KDJ-M4751-50 (5m×1 pc.)
	Flexible cable
	KDJ-M4755-30 (3m×1 pc.) KDJ-M4755-50 (5m×1 pc.)

Lithium battery for system backup



Model	KDK-M4252-00

Replacement filter for LCC140 (5 pcs. in package)



Model	KDK-M427G-00

Controller for linear module

LCC140 basic specifications

Basic specifications of LCC140 controller



Controllable robot	Linear conveyor module LCM series
Outside dimensions	W402.5×H229×D106.5mm
Main body weight	4.8kg
Input power voltage	Single-phase AC200 to 230V +/-10% or less (50/60Hz)
Maximum power consumption	350VA (LCM100-4M 1 slider is driven.)
External input/output	SAFETY
	RS-232C (dedicated to RFID)
	RS-232C (for HPB / doubles as POPCOM+)
Network option	CC-Link Ver. 1.10 compatible, Remote device station (2 stations)
	DeviceNet™ Slave 1 node
	EtherNet/IP™ adapter 2 ports
Programming box	HPB, HPB-D (Software version 24.01 or later)

External view of LCC140

