

## Controller dedicated for LCMR200 / GX YHX Controller

### Reduces production line configuration time

Supported product: **LCMR200** P.8 / **GXseries** P.20

**Controller for the linear conveyor module LCMR200 and single-axis robot GX series. Advanced production line can be constructed in a short period.**



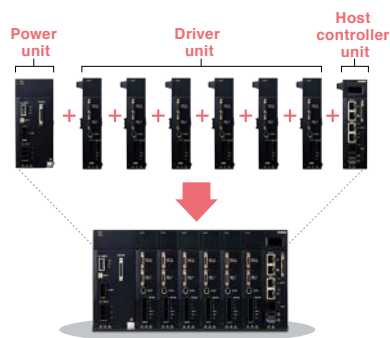
### Stacking modular structure

#### No wiring between modules needed.

Incorporation a control power supply, motor drive power supply, high speed network communication, safety circuit into a stacking modular structure.

Eliminates wiring between units, reducing conventional wiring cost and wiring man-hour to 30% to 50%.

The stacking structure including host, power and driver is the very first in the industry.

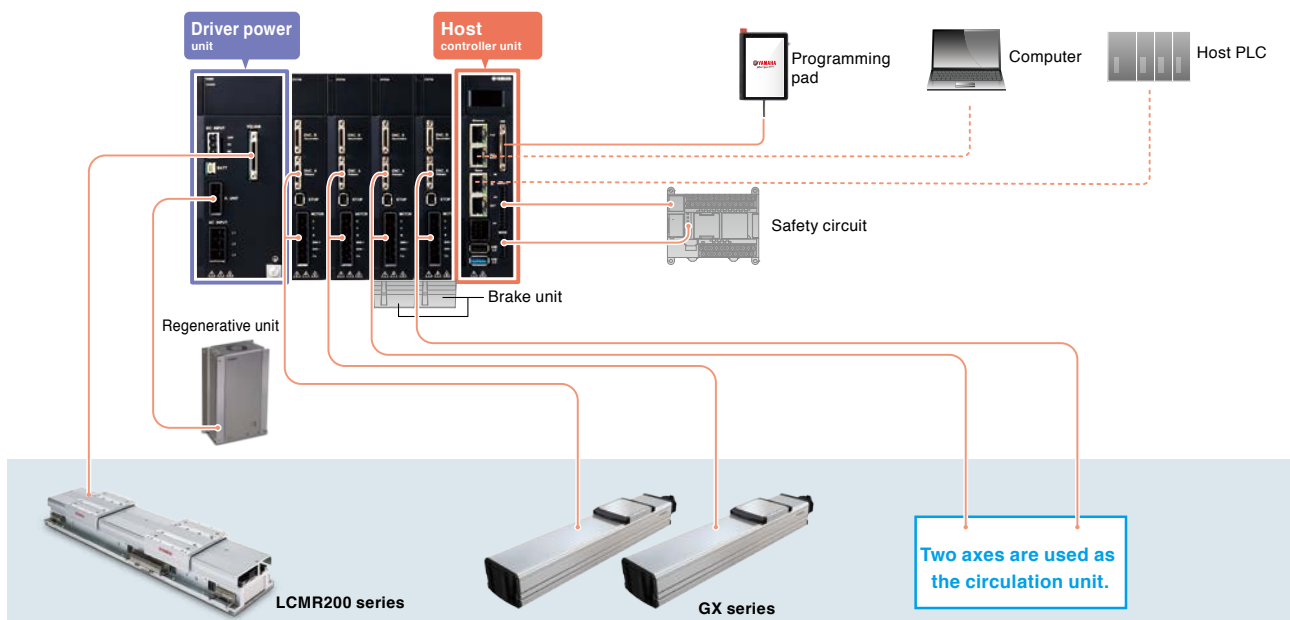


Typical photo image of stacking structure

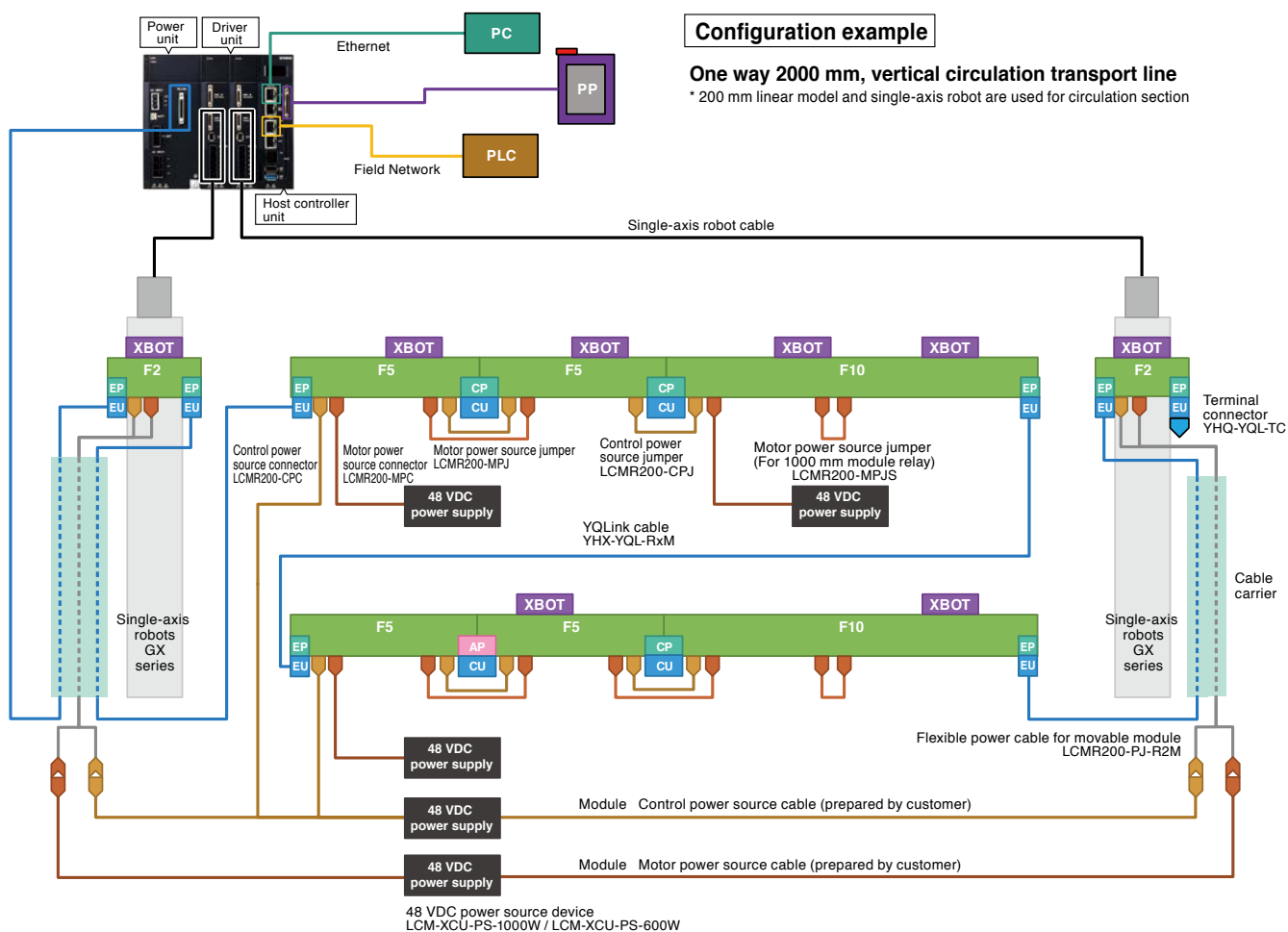

















Driver unit  
up to **16**  
Stackable

### Configuration example



## System configuration diagram



Icon	Name	Description
	<b>Linear module</b>	Size of modules selected here is for reference only. The cable extraction direction can be selected in units of cluster (multiple linear modules are connected to configure one line). A linear module used in the circulation part is also common.
	<b>Robot slider</b>	A slider that operates on the linear module.
	<b>End plate</b>	Position a linear module on both ends of a cluster.
	<b>Connection plate</b>	The adjacent modules are positioned and connected.
	<b>Adjuster plate</b>	This adjuster plate is used to adjust the return line length to match the reference line.
	<b>End unit</b>	Connect with the YQLink cable or YQLink terminal end unit on both ends of a cluster.
	<b>Connection unit</b>	Between module communication of adjacent modules is connected.
	<b>Control power source connector</b>	A connector to supply control power source from 48 VDC power source to the linear module.
	<b>Control power source jumper</b>	A jumper cable to supply control power source to adjacent modules.
	<b>Motor power source connector</b>	A connector to supply motor power source from 48 VDC power source to the linear module.
	<b>Motor power source jumper</b>	A jumper cable to supply motor power source to adjacent modules.
	<b>Motor power source jumper (for 1000 mm module relay)</b>	A jumper cable to relay motor power source in 1000 mm module. When 3 to 4 robot sliders stop in 1000 mm module, remove this motor power source jumper, and connect the power source device for additional motor with the motor power source connector.
	<b>YQLink cable</b>	A communication cable between each linear module cluster and the controller. As shown in the above figure, connect from left to right with one line. Connect the YQLink end connector to the terminal of the end cluster.
	<b>48 VDC power supply</b>	General-purpose 48 VDC power source device that can be applied to both control and motor operations. With one power source device, 10 m module control power source can be supplied. Also, one power source device can supply motor power source of two robot sliders. Prepare power source devices for each control power source and motor power source.
	<b>Flexible power cable for movable module</b>	Flexible cable to supply power source to the module that performs reciprocal operation mainly in the circulation part.

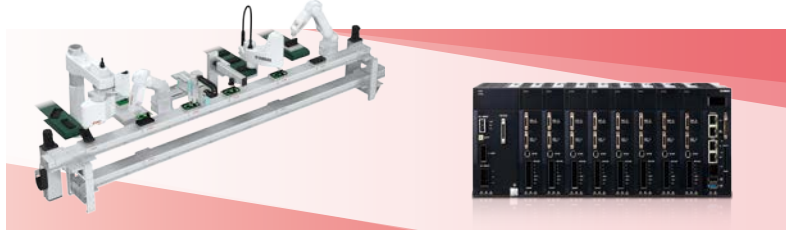
# Implementing a task is simple and easy

## Project file YHX Standard Profile

This standard profile is a project file for the LCMR200 that operates the single-axis robot or LCMR200 as a positioner from the host PLC via the field network.

### Features of YHX standard profile

- Eliminates writing ladder logic codes.
- Adding operation through a pendant.
- Perform simple direct value operation and specific point-to-point move.
- Servo ON of any slider individually.
- Obtain alarm information through the host PLC.



Significant reduction of launching man-hour.

Significant reduction of startup time and process.

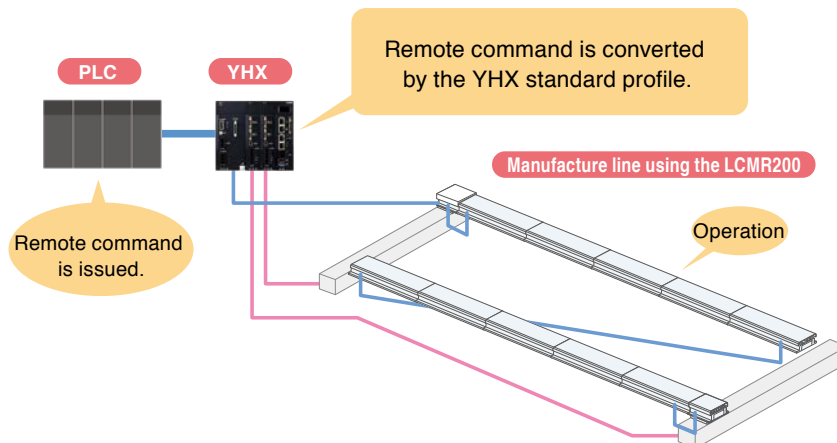
Controlled by program creation of the host PLC.

Numbers of improvements in line design and operation.

### POINT 1

## LCMR200 can be operated using your familiar PLC.

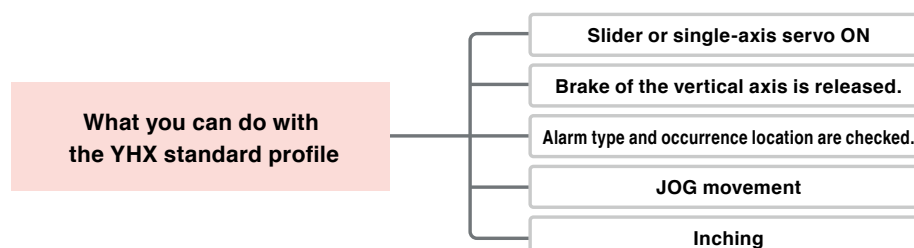
Use of YHX standard profile makes it possible to operate the LCMR200 from the host unit such as PLC via the I/O interface of each field network.



### POINT 2

## Creation of YHX ladder by the customer is not needed.

Dedicated input and output signals are already assigned to the word and bit area of the field network. Operations necessary for the robot motion such as servo ON or JOG movement can be performed without creating programs.

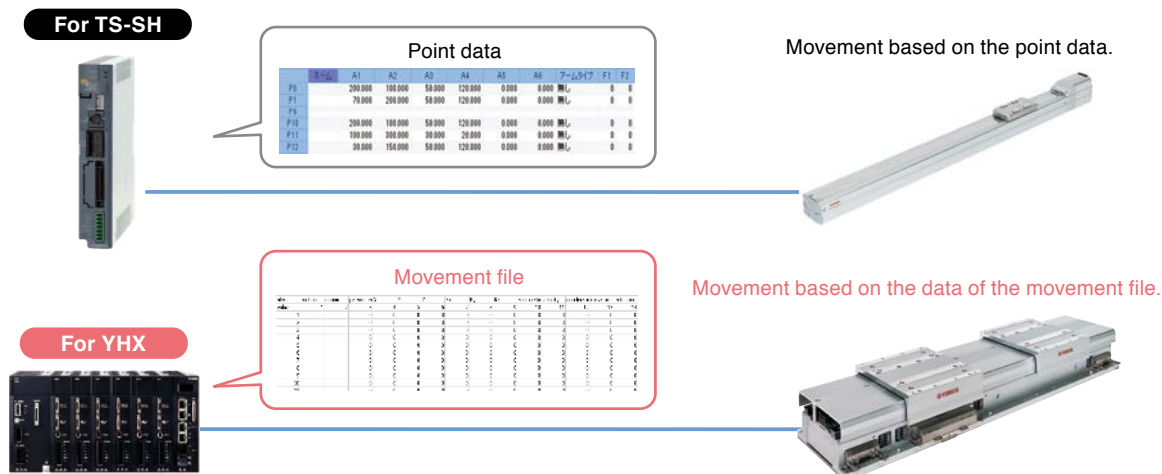


### POINT 3

#### Control using “movement file”

Control is performed using the point data “movement file” necessary to register the target position.

“Movement file” plays a role similar to point data.



### POINT 4

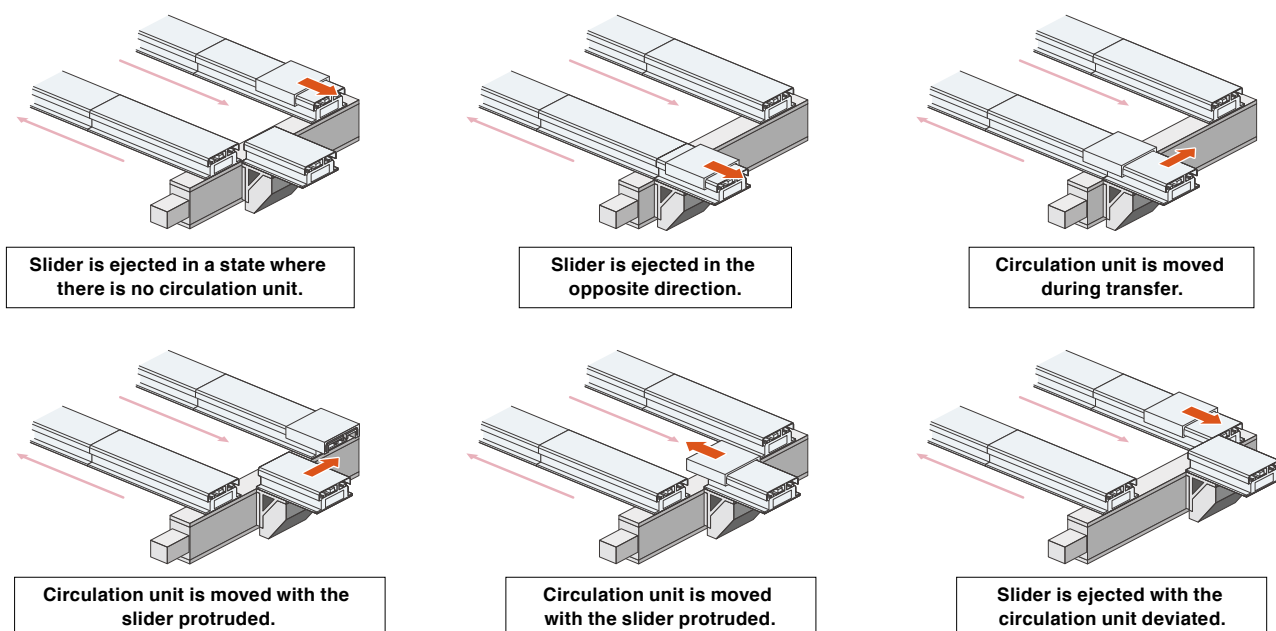
#### JOG or inching operation can be performed from the pendant even when no PLC is connected.

Even in a status where no PLC is connected, the axis can be operated using the JOG or inching operation from the programming pad. When the LCMR200 is used for the circulation layout, the necessary adjustment work can be performed immediately.

### POINT 5

#### Prevention of operation leading to damage to the circulation section is supported.

Registering the pallet size to the parameter determines the slider operable area. Even when a pallet or workpiece is larger than the overall length of the slider, a circulation operation failure can be detected. This avoids any slider transfer accident of the circulation unit and allows for safer software design.



## POINT 6

## Simple direct value operation and point designation movement can be performed.

## About point designation

- The operation pattern for up to 65,535 points in total can be designated.
- The coordinate value, speed, acceleration, deceleration, and tolerance are specified for each point.

## Designation image

Point	Coordinate value (mm)	Speed	Acceleration	Deceleration	Tolerance (mm)
1	100.000	1	0.5	1	0.01
2	823.500	0.5	1	1	0.05
3	472.000	1	1	1	0.02
4	1834.410	0.5	1	1	0.01
5	2755.350	1	1	1	0.01

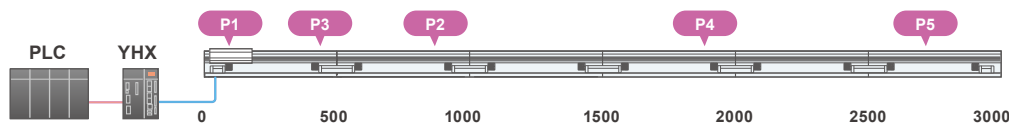
## Overview of remote command

Input
1. Command
2. Point designation
3. Direct value position designation

Output
1. Axis status
2. Point output
3. Current position output

1. Servo ON, return-to-origin, movement, JOG, inching, etc.
2. Point number to be used.
3. When the direct value is designated, the speed and acceleration use the values stated in 2 and only.

1. Servo status, during movement, or movement completion, etc.
2. Point number during movement
3. Current position is always output.



## Point designation operation

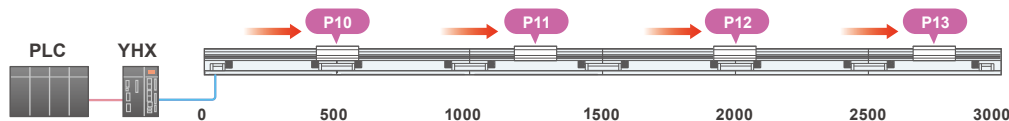
- Next the movement point number for each slider is designated.
- This operation is valid when each slider needs to be circulated to the predetermined stop position.

Point	Coordinate value (mm)	Speed	Acceleration	Deceleration	Tolerance (mm)
10	500.0	1	0.5	1	0.01
11	1250.0	0.5	1	1	0.05
12	2000.0	1	1	1	0.02
13	2750.0	0.2	1	1	0.01

The operation conditions such as coordinate, speed, and acceleration are entered into the point.

Step	Slider #01	Slider #02	Slider #03
1	P10	-	-
2	P11	P10	-
3	P12	P11	P10
4	P13	P12	P11

Point number is assigned to the slider.



## Direct value operation

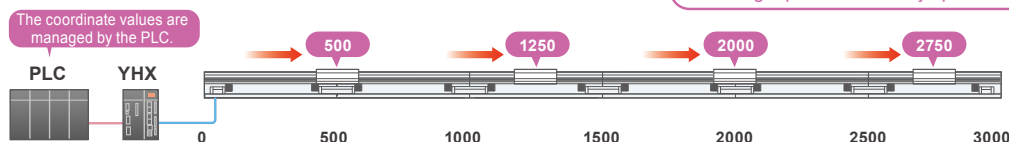
- The operation conditions such as speed are specified by the points and the target coordinates are directly specified by the numeric values.
- This operation is valid when each slider position is managed by the PLC or when the stop position needs to be changed as required.

Point	Coordinate value (mm)	Speed	Acceleration	Deceleration	Tolerance (mm)
10	Specified separately	1	0.5	1	0.01
11	Specified separately	0.5	1	1	0.05
12	Specified separately	1	1	1	0.02
13	Specified separately	0.2	1	1	0.01

The operation conditions are registered for the points and the target coordinates are specified separately.

Step	Slider #01		Slider #02		Slider #03	
	Point	Coordinate value (mm)	Point	Coordinate value (mm)	Point	Coordinate value (mm)
1	P10	500.0	-	-	-	-
2	P11	1250.0	P10	510.0	-	-
3	P12	2000.0	P11	1260.0	P10	500.0
4	P13	2750.0	P12	2010.0	P11	1250.0

Operation conditions: Registered point is referred to.  
+ Target position: Directly specified by the numeric values.



The coordinate values are managed by the PLC.

## Process

Preparation such as hardware connection.



Registration of robots and sliders, and parameter settings.



Registration of circulation part configuration.



Setting of each stop position.



Program creation of the host PLC

## Standard profile specification

Applicable controller		YHX-HCU
Operation method		Point trace point No. specified positioning and direct value coordinate specified positioning.
Comparative robot		LCMR200, LCM-X and GX series (LCMR200 and LCM-X cannot be controlled together).
Interface		YHX Studio, YHX-PP, and field network communication
Operation type		Absolute position moving
Maximum number of points that can be registered.		65535
No. of control axes (Total of sliders and single-axis robots, however, up to 16 axes for single-axis robot)	EtherCAT	64
	EtherNet/IP™	64
	PROFINET	64
	CC-Link	22
Main input and output See the manual for other functions.	All axes target input	Servo ON/OFF switch/Interlock/Alarm reset
	All axes target output	Servo State/Interlock State/Alarm State/Heart beat/Emergency stop State
	Individual axis target input	Servo ON/OFF switch/Return to Origin/Positioning moving inside the control range (including LCM relay operation)/Slider insertion preparation from outside the control range/Slider discharge to outside the control range/Jog movement, inching movement/Movement Stop
	Individual axis target output	Servo State/Return to origin State/Output specified point No. for various execution state display/Current position/Axis alarm State
Main remote command See the manual for other remote commands.		Writing/reading of setting data
		Alarm check
		Writing and reading of integrated running distance and No of transits.



YHX

● Dedicated for LCMR200 / GX series

Order model: **YHX-HD**

Controller	Language	Network
	J (Japanese)	N : None
	E (English)	CC : CC-Link <sup>*1</sup>
		PT : PROFINET <sup>*2</sup>
		EP : EtherNet/IP <sup>*3</sup>
		ES : EtherCAT <sup>*4</sup>

\*1. CC-Link is a registered trade mark of Mitsubishi Electric Corporation.

\*2. PROFINET is a registered trade mark of PROFIBUS Nutzerorganisation e.V. (PNO).

\*3. EtherNet/IP is a registered trade mark of ODVA, Inc.

\*4. EtherCAT is a patented technology and a registered trademark licensed by Beckhoff Automation GmbH (Germany).

The YHX-HD is a set model of the host controller unit, driver power unit, and related components shown below. Each unit should be assembled by the customer.

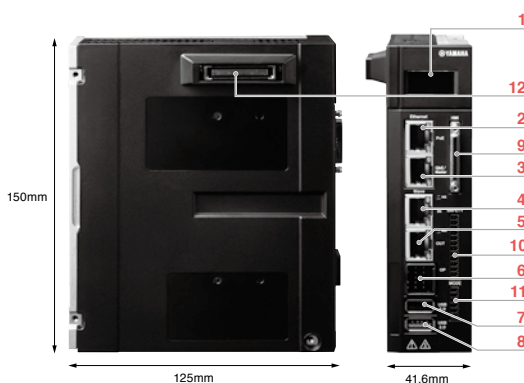


## YHX-HD Configuration parts

### ► Control unit

Host

#### Host controller unit



1	LCD	Indicates the status of the controller.
2	PoE	PoE compatible giga bit Ethernet connector.
3	GbE	PoE non-compatible giga bit Ethernet connector.
4	IN	LAN connector for connecting with master devices of field network communications connector (EtherNet/IP, EtherCAT, PROFINET)
5	OUT	LAN connector for connecting with other slave devices of field network communications connector (EtherNet/IP, EtherCAT, PROFINET)
6	OP	Connector for field network communications adaptors (CC-Link)
7	USB 2.0	Connector compatible with USB 2.0
8	USB 3.0	Connector compatible with USB 3.0
9	HMI	Connector for connecting with a programming pad, display and other devices
10	SAFETY	Connect with external PLC, safety devices and the like.
11	MODE	CPU OK output Programming pad AUTO/MANUAL select switch contact output
12	Connector for connection between units (control signal/Power)	

This unit can control multiple robots by combining with the linear conveyor. Although the unit is compact, it is multifunctional and has an enhanced interface.

Japanese	Model	YHX-HCU
	Parts No.	KEK-M4200-0A
English	Model	YHX-HCU-E
	Parts No.	KEK-M4200-1A

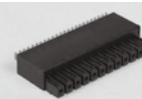


### Safety connector

Host YQLink

Used for building up an external safety circuit while connecting with the safety dedicated port of a host controller.

Model	YHX-CN-SAFE
Parts No.	KEK-M4432-00

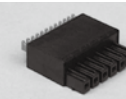


### Mode connector

Host

Used for building up an external safety circuit while using the mode switch output port of a host controller unit.

Model	YHX-CN-MODE
Parts No.	KEK-M4432-10

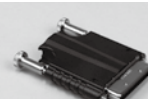


### HMI short circuit connector

Host

Used when a programming pad is not connected with a host controller. Note that if not connected, robots do not operate because the controller enters the state of emergency stop.

Model	YHX-CN-HMIS
Parts No.	KEK-M4429-00

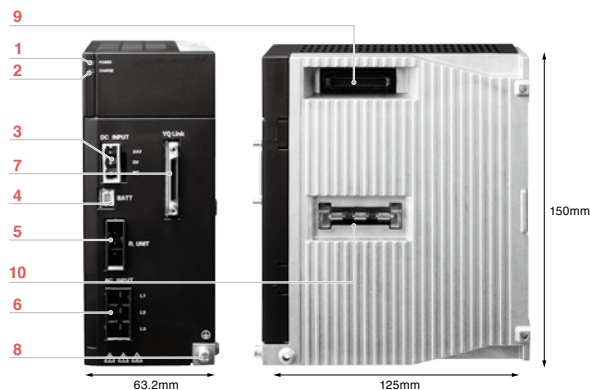


## Controller

### ► Power unit

D. Power

#### Driver power unit



1	<b>POWER</b>	Blue: 24V DC control power supply is available.
2	<b>CHARGE</b>	Orange: 200V AC main power supply is available and Charge*
3	<b>DC INPUT</b>	Control power supply connector (24V DC)
4	<b>BATT</b>	ABS battery connector
5	<b>R.UNIT</b>	Connector for connecting regenerative unit
6	<b>AC INPUT</b>	Main power supply connector (Single phase / 3-phase 200 to 230V AC)
7	<b>YQLink</b>	YQLink communications connector Connects with IO units and linear conveyor modules.
8		Grounding terminal
9	Connector for connection between units (control signal/Power)	
10	Connector for connection between units (high voltage power source for driving motors)	

\* Even when the main power is turned off, the lamp is lit while any charge remains in the internal capacitor.  
 Do not touch the main circuit and motor terminal while the lamp is lit. Doing so may cause electrical shock.

This unit supplies power to each unit. Be sure to use it together with the host controller unit or a YQLink expansion unit. Use the dedicated cables to connect with linear conveyor modules.



<b>Model</b>	YHX-DPU
<b>Parts No.</b>	KEK-M5880-0A

#### Control power supply connector

D. Power

Used when supplying the control power supply.

<b>Model</b>	YHX-CN-CP
<b>Parts No.</b>	KEK-M4512-00



#### Main power supply connector

D. Power

Used when supplying the main power supply.

<b>Model</b>	YHX-CN-DP
<b>Parts No.</b>	KEK-M5382-00



#### Regenerative unit short circuit connector

D. Power

Used when not connecting a regenerative unit.  
 An error is generated if the short circuit connector of a regenerative unit is not connected.

<b>Model</b>	YHX-CN-RUS
<b>Parts No.</b>	KEK-M4431-00



## Selection options

### Field network

#### EtherCAT slave

<b>Model</b>	YHX-NWS-ECAT
<b>Parts No.</b>	KEK-M440A-A0

#### EtherNet/IP adapter (slave)

<b>Model</b>	YHX-NWS-ENIP
<b>Parts No.</b>	KEK-M440A-E0

#### PROFINET slave

<b>Model</b>	YHX-NWS-PFNET
<b>Parts No.</b>	KEK-M440A-N0

#### CC-Link slave (with adapter and connector)

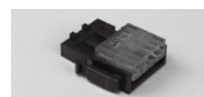
<b>Model</b>	YHX-NWS-CCL
<b>Parts No.</b>	KEK-M440A-C0



### Connector for CC-Link

#### CC-Link connector

<b>Model</b>	YHX-CN-CCL
<b>Parts No.</b>	KEK-M4872-C0



#### CC-Link branch-out connector

<b>Model</b>	YHX-CN-CCSP
<b>Parts No.</b>	KEK-M4873-00



#### <Cautionary notes on field networks>

The YHX controllers are not equipped with a field network board.  
 Entering the activation code, which is issued for each host controller, into the host controller unit enables field network functions.

The activation code certificate comes with a host controller unit.

\* If purchasing a field network only later on, inform us of the serial number of the host controller unit because it is necessary to issue the activation code.

\* When the CC-Link option is selected, the CC-Link adapter × 1, CC-Link connector × 2, and CC-Link branch connector × 1 are supplied with the product. When the CC-Link terminating connector is needed, order it separately.

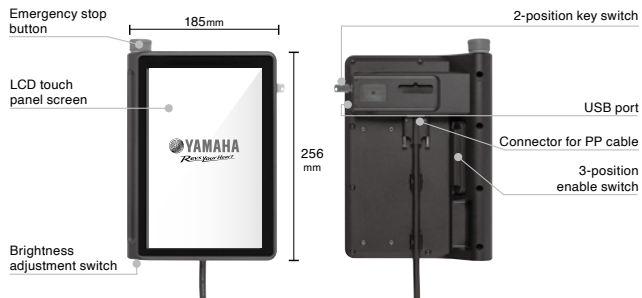
The parts with the marks below are their respective constituent parts.

Host ... Host controller unit D. Power ... Driver power unit Regenerative unit ... Regenerative unit YQLink ...YQLink expansion Drivers ... Driver unit



## Programming pad (cable set)

Order model: **YHX-PP6L** (KEK-M5110-0B) 6 m cable  
**YHX-PP12L** (KEK-M5110-1B) 12 m cable



Use the touch panel screen for various operation. Equipped with safety functions (emergency stop button and enable switch) and a USB connector.

### Programming pad

Model	YHX-PP
Parts No.	KEK-M5110-0A



### Programming pad cable

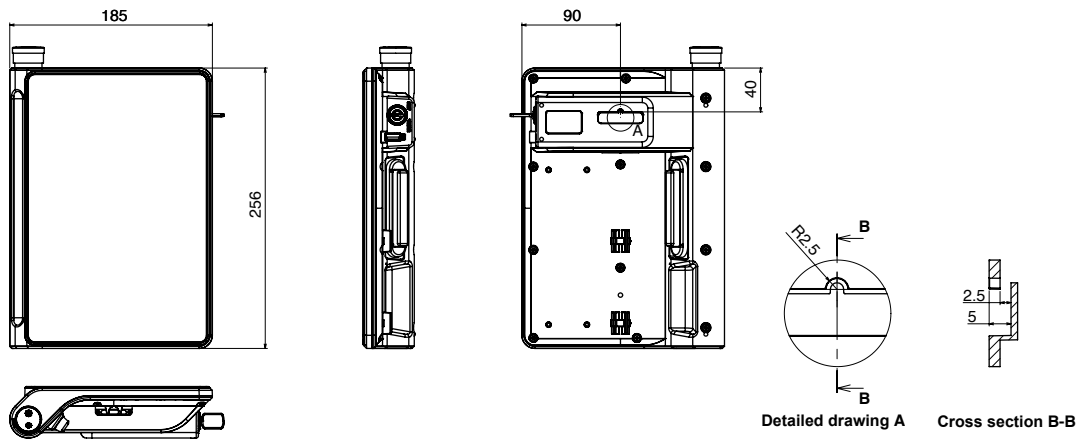
#### Host

Used when connecting a programming pad.

6 m	Model	YHX-PP-6M
	Parts No.	KEK-M5362-61
12 m	Model	YHX-PP-12M
	Parts No.	KEK-M5362-C0

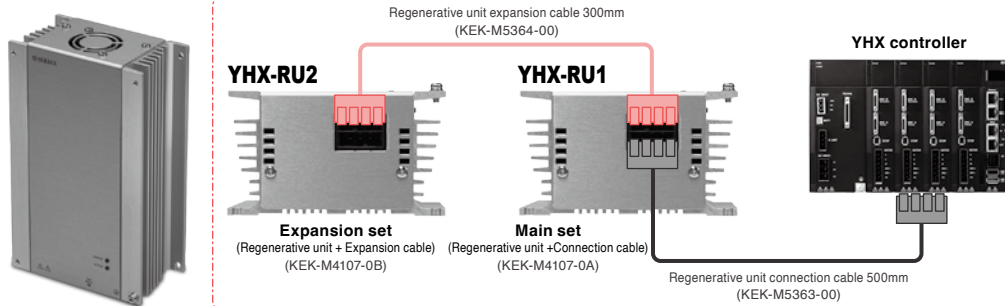


## Dimensions



## Regenerative unit set

\* For the required number of regenerative units, see page 571.



Absorbs regenerative energy generated during decelerating a robot with a large motor. Connecting two increases the capacity to absorb regenerative energy to two times.

Absorbable electric power	100W (Equivalent to RGU 3)
Momentary maximum power	1600W
Number of connected units	Maximum 2 units
Other	Forced cooling and exhaust by fan. Overheat detection for protection.

### Regenerative unit (Main set)

Set model of regenerative unit and regenerative unit connection cable

Order model: **YHX-RU1** (KEK-M4107-0A)

#### Regenerative unit

Model	YHX-RU
Parts No.	KEK-M5850-0A



#### Regenerative unit connection cable

D. Power Regenerative unit

Used when connecting a regenerative unit.

0.5 m	Model	YHX-RU-50C
	Parts No.	KEK-M5363-00



### Regenerative unit (Expansion set)

Set model of regenerative unit and regenerative unit expansion cable

Order model: **YHX-RU2** (KEK-M4107-0B)

#### Regenerative unit

Model	YHX-RU
Parts No.	KEK-M5850-0A



#### Regenerative unit expansion cable

Regenerative unit

Used when adding a regenerative unit.

0.3 m	Model	YHX-RU-EX30C
	Parts No.	KEK-M5364-00



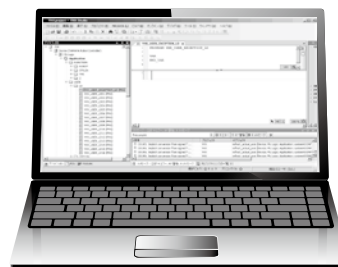
## Development environment software YHX Studio for Standard Profile

Order model: **YHX-SW-STUDIO-SP** (KEK-M4990-10)  
 \* No USB key is attached.

PC operating environment	OS	Windows 7 SP1/8.1/10 (64-bit version only for all)/11 (Supported version: V.2.0.6 or later)
	CPU	Equivalent to Intel Core (TM) i5-6200U 2.30 GHz or better.
	Memory	8 GB or larger
	Hard disc drive capacity	2 GB or more of empty space for destination of installing the YHX Studio.
	Communications port	Ethernet
	Display	1920 × 1080 or higher resolution is recommended.
Applicable controllers	Other	Ethernet cable (Category 5 or better)
	Applicable robots	YHX Host controller unit
Applicable robots		Robots connectable to YHX

Microsoft, Windows and Windows 7 are the registered trademarks or the trademarks of Microsoft Corporation in the United States. Other firms' names and product names appearing in this catalog are registered trademarks or the trademarks of the respective firms or products concerned.

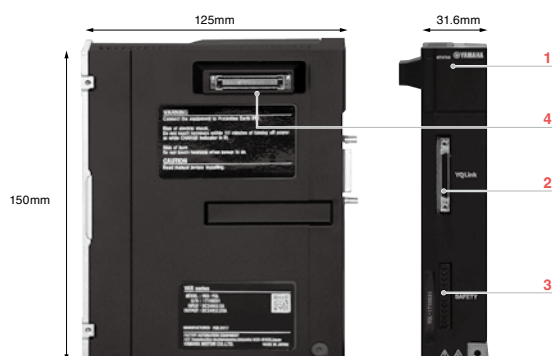
YHX Studio for Standard Profile is software that is used when the YHX host controller unit of the YAMAHA robot controller YHX series is set up.



Download from website

## YQLink expansion unit set

Order model: **YHX-YQL-SET** (KEK-M4406-0B)



1	<b>STATUS</b>	Blue: 24V DC power supply available Red: Error
2	<b>YQLink</b>	Connect with YQLink communications connector (input) driver power unit.
3	<b>SAFETY</b>	Connect with external PLC, safety devices and the like.
4	Connector for connection between units (control signal/Power)	

This unit cancels the physical restrictions of the universal controller for its expansion.

YQLink

### YQLink expansion unit

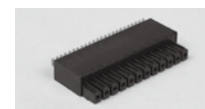
Model	YHX-YQL
Parts No.	KEK-M4406-0A

### Safety connector

Host YQLink

Used for building up an external safety circuit while connecting with the safety dedicated port of a host controller.

Model	YHX-CN-SAFE
Parts No.	KEK-M4432-00



## Other options

### Battery holder box

Order model: **YHX-BATT-HLD**

D Power

Used to store the ABS batteries.  
Up to eight batteries can be stored.

Model	YHX-BATT-HLD
Parts No.	KEK-M53G7-00



### STOP connector

Order model: **YHX-CN-STOIN**

Drivers

Used to shut off the drive power of each driver unit.

Model	YHX-CN-STOIN
Parts No.	KEK-M5869-10



### Battery holder connection cable

Order model: **YHX-BATT-15C**

D Power

Used when the battery holder box is connected.

Model	YHX-BATT-15C
Parts No.	KEK-M53G4-00



### Connector for brake power

Order model: **YHX-CN-BU**

Drivers

Used when the brake power is supplied externally.  
The driver is not needed when the brake power unit is used.

1 m	Model	YHX-CN-BU
	Parts No.	KEK-M4427-00



### CC-Link terminating connector

Order model: **YHX-CN-CCTM**

Model	YHX-CN-CCTM
Parts No.	KEK-M4874-00



The parts with the marks below are their respective constituent parts.

Host ... Host controller unit D. Power ... Driver power unit Regenerative unit ... Regenerative unit YQLink ... YQLink expansion Drivers ... Driver unit

## Driver for single-axis robot

Order model:

Driver	Brake unit <small>Note</small>	ABS battery
A10:YHX-A10-SET	V: With brake unit	B: With ABS battery
A30:YHX-A30-SET	N: None	N: None

Note: When the external brake power is input, the brake unit cannot be used.



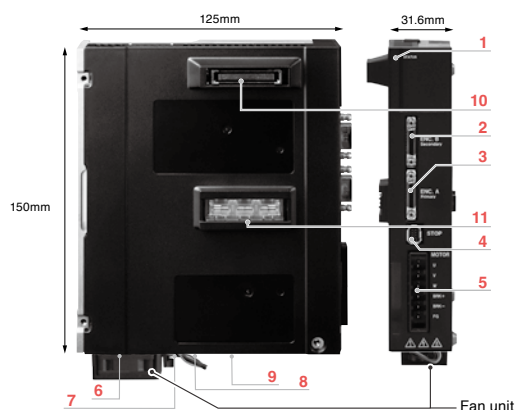
The customer assembles the necessary number of driver units between the host controller unit and driver power unit to use them.

## YHX-A10-SET / YHX-A30-SET Configuration parts

## ►Control unit

Drivers

## Host controller unit 10A/30A



No.	Symbol	Description
1	STATUS	Blue lamp lit: Servo ON Blue lamp flashing: Servo OFF and ready for operation Blue/Red flashing in an alternate fashion: Servo OFF and not yet ready for operation Red flashing: Error
2	ENC.B	Linear scale sensor cable connection connector dedicated for circulation unit
3	ENC.A	Connector for connecting robot cable (encoder cable)
4	STOP	Use this to build up a circuit to shut off the power to a motor. When not used, connect with the "STOP short circuit connector"
5	MOTOR	Connector for connecting robot cable (power line) · Output U/V/W current output, Brake output
6	Connector for connecting a fan	Fan unit connector *
7	BATT connector	ABS battery connector
8	Power supply output for brake	Brake unit connector
9	Power supply input for holding braking effort	External power supply connector for brake unit or brake
10	Connector for connection between units (control signal/Power)	
11	Connector for connection between units (high voltage power source for driving motors)	

\* Fan unit is equipped as standard for 30 A specifications.

This unit drives robots. Use cables to connect with robots. The unit is connected to the left of the control unit.

10A Specifications	Model	YHX-A10
	Parts No.	KEK-M5800-0A
30A Specifications	Model	YHX-A30
	Parts No.	KEK-M5800-1A



## Stop short circuit connector

Drivers

Used when it is not necessary to shut off the power supply to each driver unit separately.

Model	YHX-CN-STOEN
Parts No.	KEK-M5869-00



## Fan unit (30A specifications only)

Drivers

Cools down a driver unit. Attached at the bottom of a driver unit to send wind to heat sinks. A driver unit made to the 30 A specification is shipped out with a fan unit.

Model	YHX-AMP-FU
Parts No.	KEK-M6195-00



## Selection options

## ABS battery

D. Power Drivers

Model	YHX-AMP-BATT
Parts No.	KEK-M53G0-02



## Brake unit

Drivers

A unit for releasing braking effort of the robot\* with a brake. Enables robot brake control without an external electrical wiring. Installed at the bottom of a driver unit.

Model	YHX-AMP-BU
Parts No.	KEK-M5317-00



\* Unable to release the braking effort of a robot with a brake if a brake unit is not available or if a 24V DC power supply is not connected.

The parts with the marks below are their respective constituent parts.

Host ... Host controller unit D. Power ... Driver power unit Regenerative unit ... Regenerative unit YQLink ... YQLink expansion Drivers ... Driver unit

## Procedure to determine the regenerative unit quantity (Circulation unit/Traversing unit/Single-axis robot GX series)

The number of regenerative units to be connected to one **D. Power** is determined by the circulation unit and traversing unit to be operated by each **D. Power** connected to that **Regenerative unit** and the configuration of the single-axis robot GX series. Check the table below for the required number of regenerative units.

Number of regenerative units required for one D. Power.				
Usage configuration of single-axis robot	Number of junction axes (circulation unit and traversing unit)			
	Junction axis is not used.	Up to 2	Up to 4	5 or more
Single-axis robot is not used.	Regenerative unit is not needed.	1	2	*1
The following usage configuration ①	1	2	*1	For details, contact a YAMAHA sales representative.
The following usage configuration ②	2	*1	*1	For details, contact a YAMAHA sales representative.

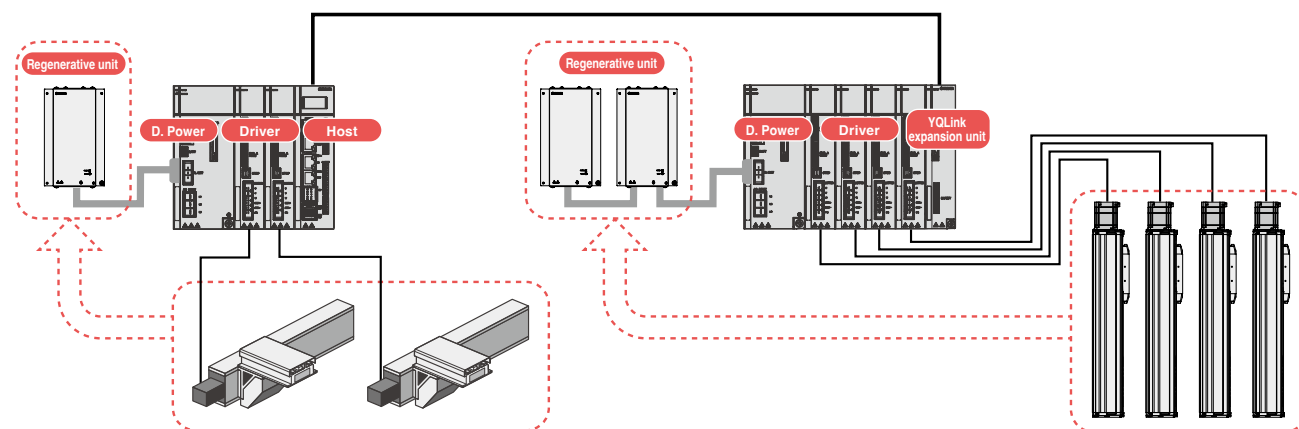
\*1 Add D. Power using the YQLink extension unit.

In addition, after the D. Power has been added, separate the junction axis and single-axis robot, and check the number of regenerative units required for each D. Power.

### Example of selecting the required number of regenerative units

When two horizontal circulation units and four axes of the vertically installed GX20 are connected, this corresponds to \*1 and add D. Power using the YQLink extension unit.

Then, separate the D. Power to which the junction axis (horizontal circulation unit) is connected and the D. Power to which the single-axis robot (GX20) is connected, and then select the number of regenerative units required for each D. Power.



### Usage configuration of single-axis robot ①

- The total motor capacity of vertically installed single-axis robots is 400 W or more.
- The vertically installed single-axis robots include the following.
  - GX07: Lead is 5 mm and stroke is 1000 mm or more.
  - GX10: Lead is 5 mm and stroke is 500 mm or more.
  - GX10: Lead is 10 mm and stroke is 500 mm or more.
  - GX10: Lead is 20 mm and stroke is 1200 mm or more.
- The horizontally installed single-axis robots include the following.
  - GX16: Lead is 20 mm and stroke is 500 to 800 mm.
  - GX20: Lead is 20 mm and stroke is 550 to 800 mm.
- The horizontally installed single-axis robots satisfy the following conditions.
  - The total number of GX12, GX16, and GX20 robots is 3 or more.
  - The total number of GX16 and GX20 robots is 2 or more.

### Usage configuration of single-axis robot ②

When the single-axis robot with an operating duty (\*) of 50% or more is used for 1 axis or more, two regenerative units are needed.

- The total number of vertically installed GX16 and GX20 robots is 4 axes or more.
- The total number of vertically installed GX12, GX16, and GX20 robots is 7 axes or more.
- The total number of vertically installed GX10, GX12, GX16, and GX20 robots is 8 axes or more.
- The total number of horizontally installed GX10, GX12, GX16, and GX20 robots is 6 axes or more.

\* The operating duty is calculated by the following formula.

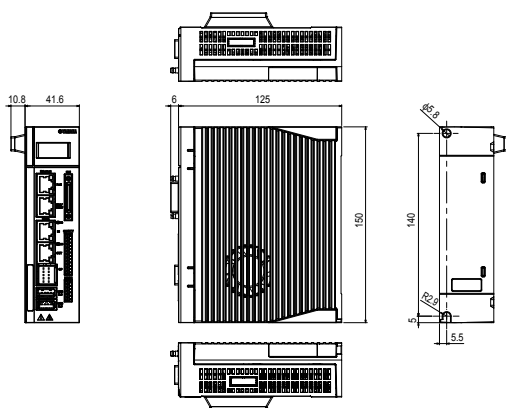
$$\text{Operating duty} = \text{Total robot movement time} \div 1 \text{ cycle time} \times 100[\%]$$

For the robot that reciprocates in one cycle, the total forward and backward movement time becomes the "total robot movement time".

## External view of each unit

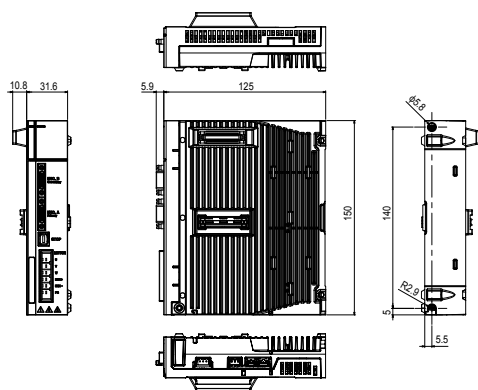
### Host controller unit

YHX-HCU KEK-M4200-0A



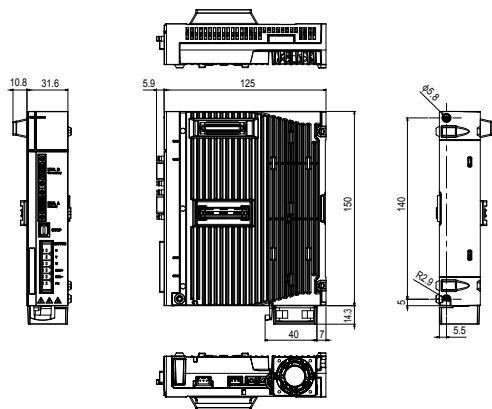
### Driver unit 10A

YHX-A10 KEK-M5800-0A



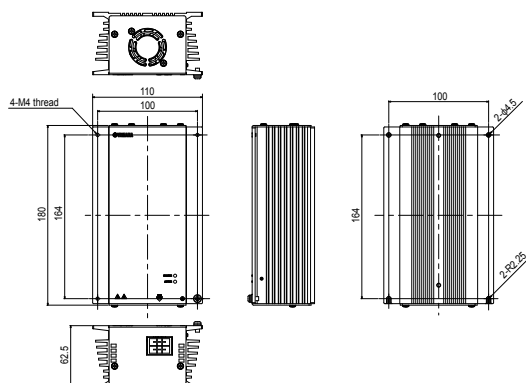
### Driver unit 30A

YHX-A30 KEK-M5800-1A



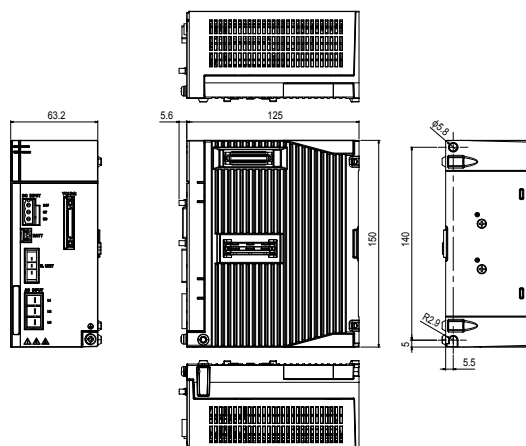
### Regenerative unit

YHX-RU KEK-M5850-0A



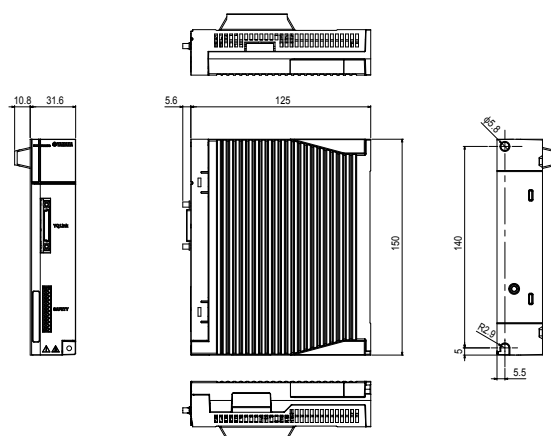
### Driver power unit

YHX-DPU KEK-M5880-0A



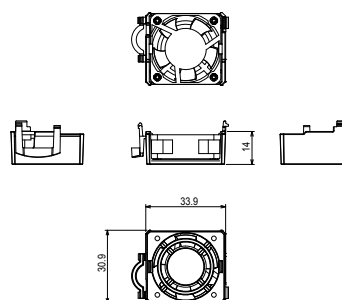
### YQLink expansion unit

YHX-YQL KEK-M4406-0A



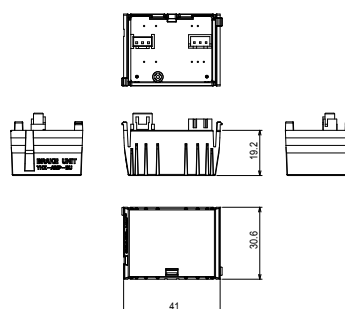
### Fan unit

YHX-AMP-FU KEK-M6195-00



### Brake unit

YHX-AMP-BU KEK-M5317-00



## Basic specifications

### Host

#### Host controller unit

Japanese	Model	YHX-HCU
	Parts No.	KEK-M4200-0A
English	Model	YHX-HCU-E
	Parts No.	KEK-M4200-1A

Item		Host controller unit
Power supply	Control power supply	Voltage: 21.6 to 26.4V DC (24V +/-10%) Current: 3.5 A (Including PoE)
		Giga bit Ethernet · Compatible with PoE yet 1 port (23W) · Not compatible with PoE yet 1 port
Connector	External I/F	Field network (Slave) Select one from the following 4 kinds. · EtherCAT · CC-Link* · EtherNet/IP * A separate adaptor is necessary. · PROFINET
		USB · USB 2.0 1 Port (Bus power 0.5 A) · USB 3.0 1 port (Bus power 1.0 A)
		HMI Connector for connecting programming pad
		SAFETY Emergency stop contact output Enable switch contact output Emergency stop input
		MODE CPU OK output Programming pad AUTO/MANUAL select key switch output
Indicator	LCD	128 x 64 dots, Yellow
Dimensions		41.6x150x125 (mm)
Weight		750g
Protection structure / Protection rating		IP20 / class 1

### D. power

#### Driver power unit

Model	YHX-DPU
Parts No.	KEK-M5880-0A

Item		Driver power unit
Power supply	Control power supply	Voltage: 21.6 to 26.4V DC (24V +/-10%) Current: 0.5A
	Main power supply	Input: Single phase / 3-phase 180 to 253V AC / (200 to 230V AC +/-10%), 50/60 Hz Power supply capacity: Single phase 3.5 kVA 3-phase 6 kVA
Connection motor capacity		Single phase within 1.6 kW, 3-phase within 3.0kW / Driver unit within 16 units (16 axes)
Connector	Regenerative	Regenerative unit connector
	External I/F	YQLink
	ABS Battery	ABS Battery connector
Dimensions		63.2x150x125 (mm)
Weight		1050g
Protection structure / Protection rating		IP20 / class 1

### Regenerative unit

#### Regenerative unit

Model	YHX-RU
Parts No.	KEK-M5850-0A

Item		Regenerative unit
Power supply	Input	254 to 357V DC (Controller DCBUS connected)
Connector		Regenerative connector (For connecting regenerative unit/ For adding regenerative unit)
Dimensions		62.5x180x110 (mm)
Weight		1450g
Protection structure / Protection rating		IP20 / class 1

### YQLink

#### YQLink expansion unit

Model	YHX-YQL
Parts No.	KEK-M4406-0A

Item		YQLink expansion unit
Power supply	Control power supply	Voltage: 21.6 to 26.4V DC (24V +/-10%) Current: 0.3A
		Voltage: 21.6 to 26.4V DC (24V +/-10%)
Connector	External I/F	YQLink
	SAFETY	Emergency stop input
Dimensions		31.6x150x125 (mm)
Weight		380g
Protection structure / Protection rating		IP20 / class 1

### Driver

#### Driver unit

##### Servo motor specifications (10A)

Model	YHX-A10
Parts No.	KEK-M5800-0A

#### Driver unit

##### Servo motor specifications (30A)

Model	YHX-A30
Parts No.	KEK-M5800-1A

Item		Driver unit 10A/30A
Power supply	Control power supply	Voltage: 21.6 to 26.4V DC (24V +/-10%) Current: 0.8A (Including brake unit power supply)
		Encoder input
Connector	ENC.A	Encoder input
	ENC.B	Encoder input (Dedicated use)
	STOP	Gate off input, 2 points Gate status output, 1 point
	MOTOR	Motor drive power supply output Brake power supply output
	ABS Battery	ABS Battery connector
	Fan unit connector	Accessory fan unit connection
	Brake unit connector	Brake unit is connectable.
Dimensions		31.6x150x125 (mm)
Weight		10A : 560g / 30A : 570g (Including accessory fan unit )
Protection structure / Protection rating		IP20 / class



