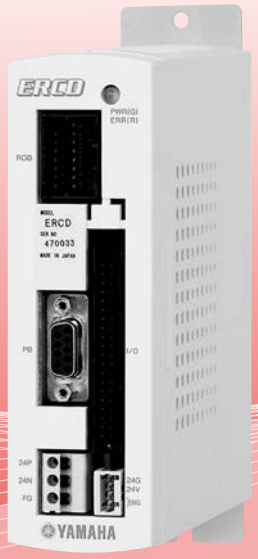
ERCD

● Dedicated for T4L / T5L / C4L / C5L

Low price and compact in size.
In addition to the conventional functions, a pulse train function is added for a wider application range.
This is a dedicated controller for the FLIP-X series models T4L, T5L, C4L, and C5L.



ERCD

Main functions ▶ P.98

Programming box
▶ HPB/HPB-D
P.699

Support software for PC
▶ POPCOM+
P.690

Basic specifications

Item					ERCD
Number of controllable axes					Single-axis
Controllable robots					Single-axis robot FLIP-X series T4L / T5L / C4L / C5L
Basic specifications	Capacity of the connected motor				DC24V 30W or less
	Dimensions				W44 × H166 × D117mm
	Weight				0.45kg
	Input power supply				DC24V +/-10% maximum 3A to 4.5A (Variable depending on robots in use.)
Axis control	Drive method				AC full-digital software servo
	Position detection method				Resolver
	Operating method				Normal mode: point trace movement, program operation, operation using RS-232C communication Pulse Train mode: operation by pulse train input
	Position indication units				mm (millimeters)
	Speed setting				1% to 100% (Setting by 1% unit)
	Acceleration setting				1. Automatic speed setting per robot No. and payload 2. Setting based on acceleration and deceleration parameter 1% to 100% (Setting by 1% unit)
	Resolution				16384 P/rev
	Origin search method				Incremental
Program	Program language				YAMAHA SRC
	Multitasks				4 tasks
	Point-data input method				Manual data input (coordinates input), Direct teaching, Remote teaching
Memory	RAM				32 Kbytes with lithium battery backup (5-year life) Retains programs, point data, parameters and alarm history
	Programs				100 programs (Maximum program number) 255 steps per program 1024 steps / total or less
	Points				1000 points (256 when point tracing)
External input/output	I/O interface	Normal mode Note 1	Sequence input		Dedicated input 8 points, General input 6 points
			Sequence output		Dedicated input 3 points, General input 6 points, Open collector output
		Pulse train mode Note 1	Sequence input		Dedicated input 5 points, General input 6 points
			Sequence output		Dedicated input 3 points, General input 6 points, Open collector output
			Command pulse input	Type	1.Phase A / phase B, 2.Pulse / code, 3.CW / CCW
				Mode	Line driver (+5V)
				Frequency	Maximum 2 Mpps
		Feedback pulse output		Terminal name	PA+, PA-, PB+, PB-, PZ+, PZ-
				Type	Phase A / phase B / phase Z
				Mode	Line driver (+5V)
				Number of pulse	16 to 4096 P/rev
		Power supply for sequence I/O			External DC +24V input
	Emergency stop input				Normal close contact point input
	Brake output				Relay output (for 24V/300mA brake) 1CH
	External communications				RS-232C 1CH (For communication with HPB or PC)

Controllable robot	FLIP-X Dedicated for T4L/T5L P.300 Dedicated for C4L/C5L P.568		
CE marking	—	Field networks	—

Model Overview

Name	ERCD
Controllable robot	Deicated for T4L / T5L / C4L / C5L
Input power	DC24V +/-10% maximum 3A to 4.5A (Variable depending on robots in use.)
Operating method	Pulse train control / Programming / I/O point tracing / Operation using RS-232C communication
Maximum number of controllable axes	Single-axis
Origin search method	Incremental

Ordering method

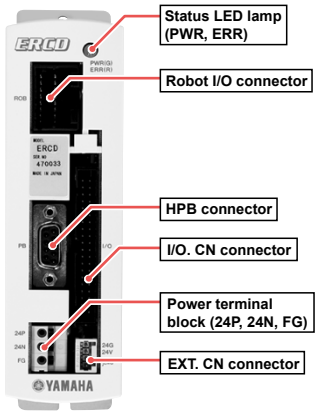
ERCD – [ ]

Controller	–	I/O connector specification
		CN1: I/O flat cable 1m (Standard)
		CN2: Twisted-pair cable 2m (pilse train function)

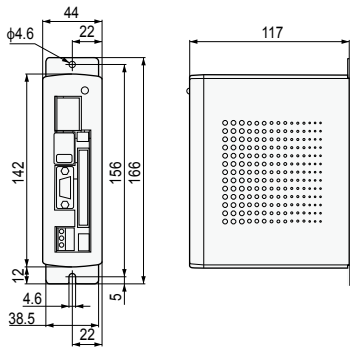
	Item	ERCD
Options	Programming box	HPB, HPB-D (with enable switch)
	Support software for PC	POPCOM+
General specifications	Operating temperature	0°C to 40°C
	Storage temperature	-10°C to 65°C
	Operating humidity	35% to 85%RH (non-condensing)
	Noise resistance capacity	IEC61000-4-4 Level 2
	Protective functions	Overload, overvoltage, voltage drop, resolver wire breakage, runaway detection, etc.

Note 1. Switching between the normal mode and pulse train mode is done by use of the parameter.

Part names

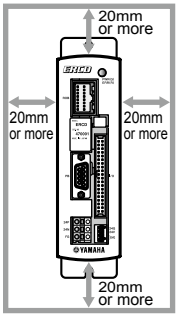


Dimensions



Installation conditions

- Install the ERCD inside the control panel.
- Install the ERCD on a vertical wall.
- Install the ERCD in a well ventilated location, with space on all sides of the ERCD (See fig. below).
- Ambient temperature : 0 to 40˚C
- Ambient humidity : 35 to 85% RH (no condensation)



Connector I/O signals

Terminal number	Signal name	Function
A-1	ABS-PT	Move the point from the origin position
B-1	INC-PT	Move the point from the current position
A-2	AUTO-R	Start automatic operation
B-2	STEP-R	Start step operation
A-3	ORG-S	Return to the origin
B-3	RESET	Reset
A-4	SERVO	Return to servo on
B-4	LOCK	Interlock
A-5	DI 0	General input 0
B-5	DI 1	General input 1
A-6	DI 2	General input 2
B-6	DI 3	General input 3
A-7	DI 4	General input 4
B-7	DI 5	General input 5
A-8	(SVCE)	Service mode input
B-8	DO 5	General output 5
A-9	DO 0	General output 0
B-9	DO 1	General output 1
A-10	DO 2	General output 2
B-10	DO 3	General output 3
A-11	DO 4	General output 4
B-11	END	End normal execution
A-12	BUSY	Executing the command
B-12	READY	Ready for operation
A-13	FG	Frame ground
B-13	FG	Frame ground
A-14	GND	Signal ground
B-14	GND	Signal ground
A-15	NC	Reserved (use inhibited)
B-15	NC	Reserved (use inhibited)
A-16	NC	Reserved (use inhibited)
B-16	NC	Reserved (use inhibited)
A-17	PA+	Feedback pulse output
B-17	PA-	Feedback pulse output
A-18	PB+	Feedback pulse output
B-18	PB-	Feedback pulse output
A-19	PZ+	Feedback pulse output
B-19	PZ-	Feedback pulse output
A-20	NC	Reserved (use inhibited)
B-20	NC	Reserved (use inhibited)

Pulse train I/O connector signals

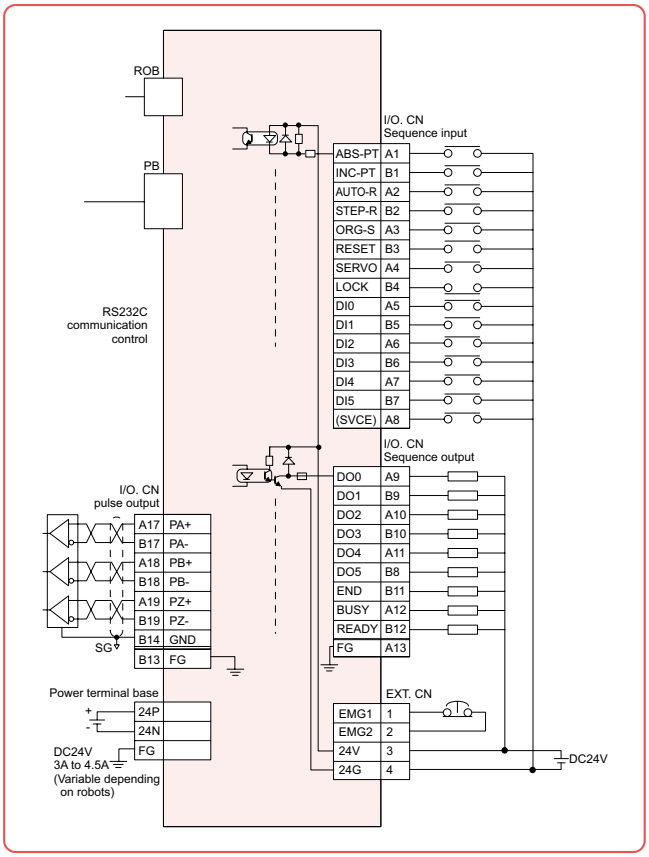
Terminal number	Signal name	Function
A-1	NC	Reserved (use inhibited)
B-1	NC	Reserved (use inhibited)
A-2	NC	Reserved (use inhibited)
B-2	PCLR	Differential clear input
A-3	ORG-S	Return to the origin input
B-3	RESET	Alarm reset input
A-4	SERVO	Servo-ON input
B-4	INH	Command pulse inhibition input
A-5	DI 0	General input 0
B-5	DI 1	General input 1
A-6	DI 2	General input 2
B-6	DI 3	General input 3
A-7	DI 4	General input 4
B-7	DI 5	General input 5
A-8	NC	Reserved (use inhibited)
B-8	DO 5	General output 5
A-9	DO 0	General output 0
B-9	DO 1	General output 1
A-10	DO 2	General output 2
B-10	DO 3	General output 3
A-11	DO 4	General output 4
B-11	IN-POS	In-position output
A-12	SRDY	Servo ready output
B-12	ALM	Alarm output
A-13	FG	Frame ground
B-13	FG	Frame ground
A-14	GND	Signal ground
B-14	GND	Signal ground
A-15	PULS+	Command pulse input
B-15	PULS-	Command pulse input
A-16	DIR+	Command direction input
B-16	DIR-	Command direction input
A-17	PA+	Feedback pulse output
B-17	PA-	Feedback pulse output
A-18	PB+	Feedback pulse output
B-18	PB-	Feedback pulse output
A-19	PZ+	Feedback pulse output
B-19	PZ-	Feedback pulse output
A-20	NC	Reserved (use inhibited)
B-20	NC	Reserved (use inhibited)

Robot Language Table

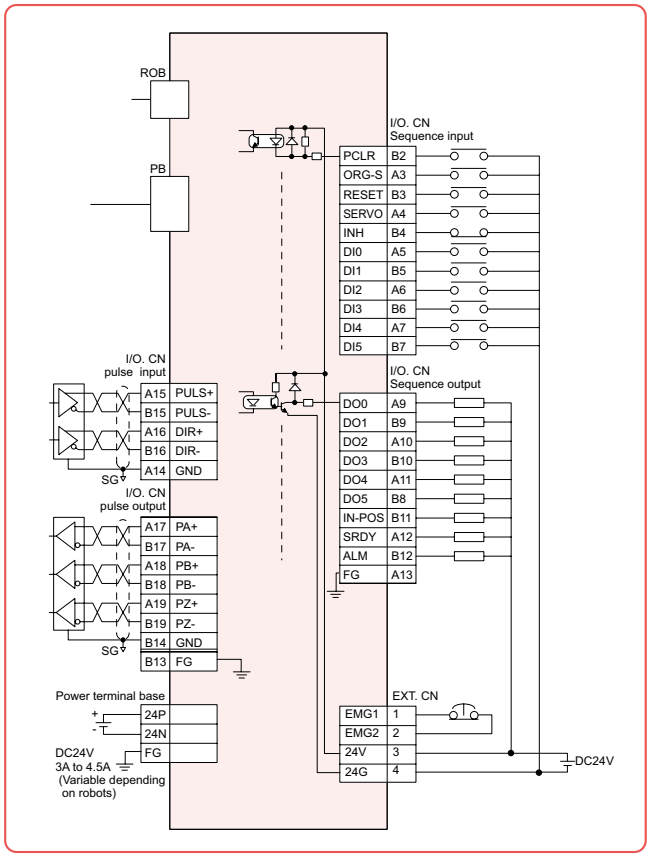
Command	Description
MOVA	Moves to a point data position.
MOVI	Moves from current position by amount of point data.
MOVF	Moves until a specified DI input is received.
JMP	Jumps to a specified label in the specified program.
JMPF	Jumps to a specified label in a specified program according to the input condition.
JMPB	Jumps to a specified label when general-purpose input or memory input is in the specified state.
L	Defines the jump destination for a JMP or JMPF statement, etc.
CALL	Runs another program.
DO	Turns general-purpose output or memory output on or off.
WAIT	Waits until general-purpose input or memory input is in the specified state.
TIMR	Waits the specified amount of time before advancing to the next step.
P	Defines point variable.
P+	Adds 1 to point variable.
P-	Subtracts 1 from point variable.
SRVO	Turns servo on or off.
STOP	Temporarily stops program execution.
ORGN	Performs return-to-origin.
TON	Runs a specified task.
TOFF	Stops a specified task.

Command	Description
JMPP	Jumps to a specified label when the axis position condition meets the specified conditions.
MAT	Defines a matrix.
MSEL	Specifies a matrix to move.
MOVM	Moves to a specified pallet work position on matrix.
JMPC	Jumps to a specified label when the counter array variable C equals the specified value.
JMPD	Jumps to a specified label when the counter variable D equals the specified value.
CSEL	Specifies an array element for counter array variable C.
C	Defines counter array variable C.
C+	Adds a specified value to counter array variable C.
C-	Subtracts a specified value from counter array variable C.
D	Defines counter variable D.
D+	Adds a specified value to counter variable D.
D-	Subtracts a specified value from counter variable D.
SHFT	Shifts the coordinate position by amount of specified point data.
IN	Stores bit information on specified general-purpose input or memory input into counter variable D.
OUT	Outputs the value of counter variable D to specified generalpurpose output or memory output.
LET	Assigns the value of a specified variable to another variable.
TORQ	Defines the maximum torque command value.

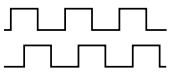
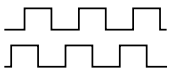
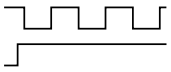
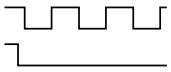
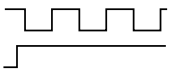
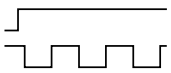
Input / output wiring diagram

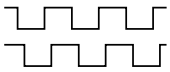
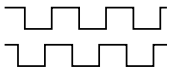
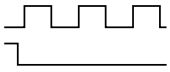
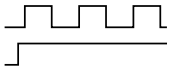
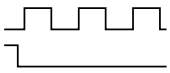
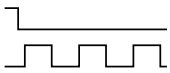


Pulse train input / output wiring diagram



Pulse train input form

Logic	Command pulse form	CW direction	CCW direction
Positive logic	Phase A / phase B		
	Pulse / code		
	CW / CCW		

Logic	Command pulse form	CW direction	CCW direction
Positive logic	Phase A / phase B		
Negative logic	Pulse / code		
	CW / CCW		

Accessories and part options

ERCD

Standard accessories

24V power connector (for EXT. CN)

Model	KAU-M4422-00	ERCD

I/O flat cable (CN1): 1m

Connects the standard parallel I/O to an external device. The end of the cable is cut and left as it is.

Model	KAU-M4421-00	ERCD

I/O twisted-pair cable (CN2): 2m

Connects the parallel I/O to an external device. The end of the cable is cut and left as it is.

Note. Select CN2 when using the pulse train input equipment.

Model	KAU-M4421-10	ERCD

Options

Support software for PC POPCOM+ P.690

POPCOM+ is a simple to use application software that makes tasks such as robot operation, writing-editing programs, and point teaching easy to visually understand.

Model	KBG-M4966-00	LCC140 ERCD SR1-X SR1-P

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

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


USB


D-Sub

Model			LCC140 ERCD SR1-X SR1-P RCX320 RCX221 RCX222 RCX340
	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 and RCX-Studio 2020.
Note. USB driver for communication cable can also be downloaded from our website.

Programming box HPB/HPB-D P.699

This device can perform all operations such as manual robot operation, program entry and edit, teaching and parameter settings.


HPB


HPB-D

	HPB	HPB-D	LCC140 ERCD SR1-X SR1-P
Model	KBB-M5110-01	KBB-M5110-21	
Enable switch	–	3-position	
CE marking	Not supported	Applicable	