

Single axis

ERC D

- Robot controller
- Dedicated for T4L / T5L / C4L / C5L / YMS

Low price and compact in size.
In addition to the conventional functions,
a pulse train function is added for a wider application range.



Main functions ▶ P.35

Features

- Supports 4 operating methods including pulse train, programming, point trace, online instructions**
- Reinforced sequence function**
More system layout freedom! Now easier to use than ever before!
- Torque restriction control**
This function limits the maximum torque during robot movement via a program command. It allows operations such as press-fit, push, and gripping, etc.
- Zone output function**
This function controls the signal output (on/off) when the robot position enters within a specified range or zone. It can be set to trigger at area decision made by upstream device.

Model Overview

Name	ERC D
Power	DC24V
Operating method	Pulse train control / Programming / I/O point tracing / Remote command / Operation using RS-232C communication
Maximum number of controllable axes	Single-axis
Position detection method	Incremental
Controllable robot	Dedicated for T4L / T5L / C4L / C5L / YMS
Programming box	HPB / HPB-D (with enable switch) P.429
Support software for PC	POPCOM P.427

Standard accessories

24V power connector (for EXT. CN)



Model KAU-M4422-00

I/O flat cable (CN1)

Connector and flat cable used to connect the standard parallel I/O of the ERC D / SRCP30 controllers and an external equipment (sequencer). The cable is 1m long with its end cut and left as it is.



Model KAU-M4421-00

I/O twisted-pair cable (CN2)

Connector and twisted pair cable used to connect parallel I/O of ERC D / SRCP30 controllers and an external equipment. The cable is 2m long with its end cut and left as it is. Select CN2 when using the pulse train input equipment.

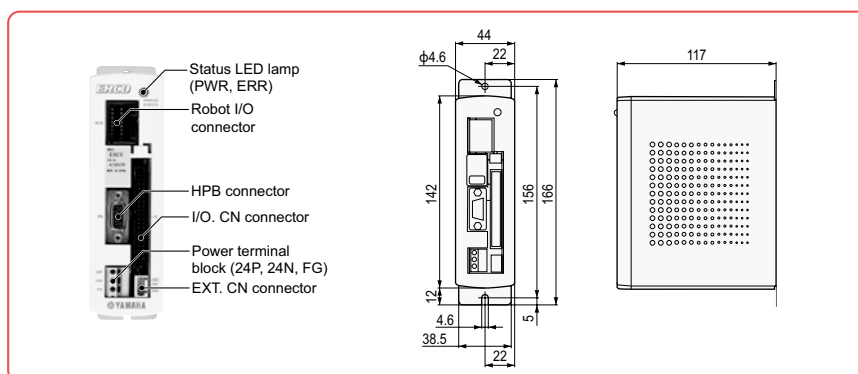


Model KAU-M4421-10

Ordering method

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

Part names / dimensions



APPLICATION
TRANSERVO
Compact single-axis robots
FLIP-X
Single-axis robots
PHASER
Linear motor single-axis robots
XY-X
Cartesian robots
YK-XG
SCARA robots
YP-X
Pick & place robots
CLEAN
CONTROLLER
INFORMATION
Robot positioner
Pulse string driver
Robot controller
IVY
Electric gripper
Option

Basic specifications

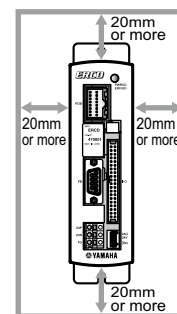
Item	Model	ERCD	
Number of controllable axes		Single-axis	
Controllable robots		Single-axis robot FLIP-X series T4L / T5L / C4L / C5L / YMS	
Basic specifications	Capacity of the connected motor	DC24V 30W or less	
	Dimensions	W44 × H166 × D117mm	
	Weight	0.45kg	
	Input power supply	DC24V +/-10% maximum 3A to 4.5A (Variable depending on robots in use.)	
	Drive method	AC full-digital software servo	
Axis control	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)	
Program	Resolution	16384 P/rev	
	Origin search method	Incremental	
	Program language	YAMAHA SRC	
	Multitasks	4 tasks	
Memory	Point-data input method	Manual data input (coordinates input), Direct teaching, Remote teaching	
	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 ^{Note1}	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 ^{Note1}	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
	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)	
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.

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. at right.).
- Ambient temperature : 0 to 40°C
- Ambient humidity : 35 to 85% RH (no condensation)

● ERCD



■ 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)

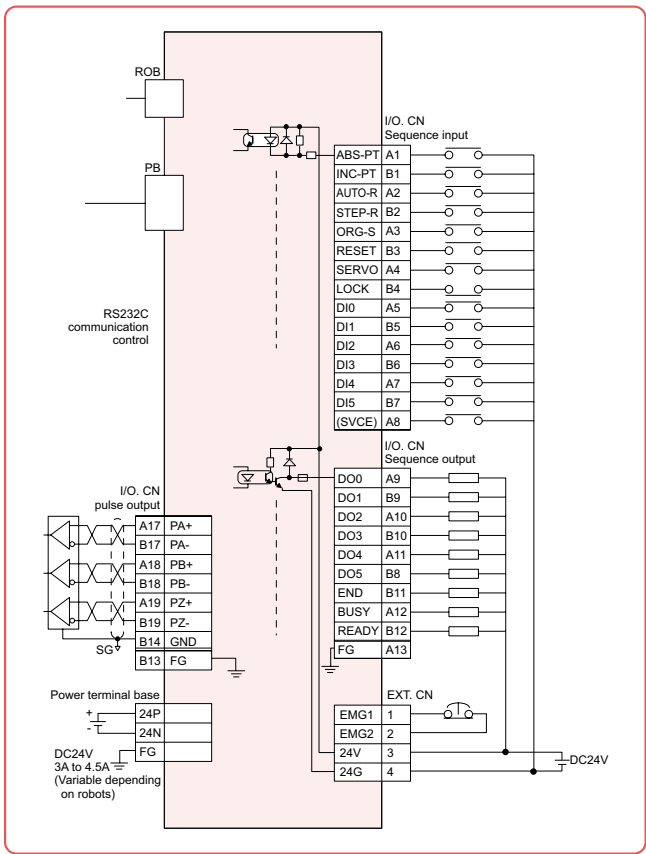
■ Pulse train I/O connector signals

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)

■ Pulse train input form

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

Input / output wiring diagram



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.
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.

Pulse train input / output wiring diagram

