

Single axis

TS-S/TS-X/TS-P

TS series

- Robot positioner
- Dedicated I/O point tracing

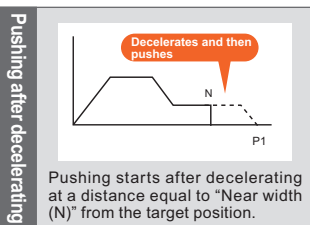
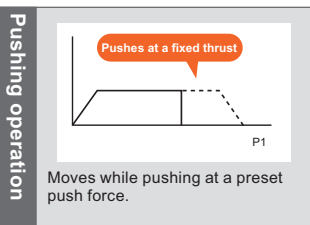
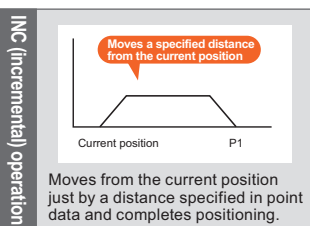
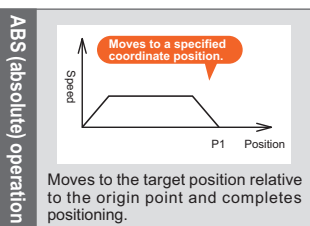
TS series are positioner type controllers that only performs point trace. No program is needed. Operation is simple. After setting point data, specify the point number and enter a START signal from host controller such as a PLC. Positioning or pushing operation then begins.



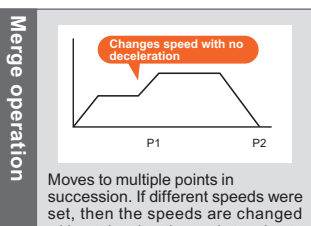
Features

1 Main operation patterns

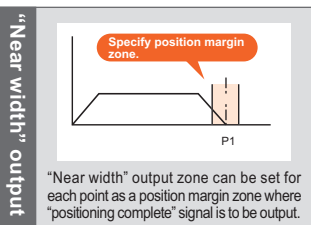
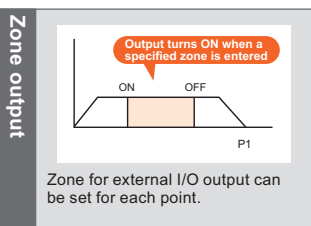
Normal operation



Merge operation



Output pattern



2 Detailed data can be set for each point

Settings such as acceleration, deceleration, zone output range, and position margin zone can be set for each point. Different operations can be easily specified by combining these settings with the above operation patterns.

Setting items

Setting item	Description
1 Run type	Specifies operation pattern such as ABS, INC, positioning, push, and point-to-point link.
2 Position	Specifies position or distance to move.
3 Speed	Specifies maximum speed during operation.
4 Accel.	Specifies acceleration during operation.
5 Decel.	Specifies deceleration during operation (Percentage of acceleration)
6 Push	Specifies motor current limitation during pushing operation.
7 Zone (-)	Specifies upper and lower limits of "personal zone" for each point data.
8 Zone (+)	Specifies upper and lower limits of "personal zone" for each point data.
9 Near width	Specifies position margin zone where "near width" output should turn on.
10 Jump	Specifies next movement destination after positioning or linked destination for point-to-point operation.
11 Flag	Specifies stop mode and others.

Note: Acceleration and deceleration can be set in easy-to-understand percentage (%) units (standard setup) or in SI units (custom setup) which make it easy to calculate the cycle time.

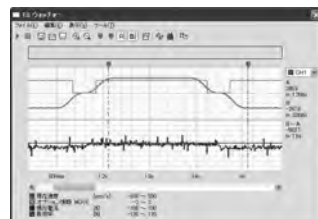
3 Maximum acceleration auto setting

Acceleration is a critical parameter that determines how long the robot can continue operating (or service life). In worst cases, setting the acceleration too high may cause the robot to breakdown after a short time. On the TS series, the maximum acceleration is finely set by taking into account the service life span of the motor output and the guide for each robot model and payload. This eliminates any worry about setting the acceleration too high by mistake.

4 Full range of monitor functions

The TS-Manager developed exclusively for the TS series not only does data write, edit, backup tasks and parameter settings but also comes loaded with cycle-time, simulator, and monitor functions of all types. A run-distance monitor for maintenance use is provided as a standard unit feature. Design emphasizes easy, user-friendly operation.

- Main monitor displays**
- Position · Speed
 - Current · Load factor
 - Voltage · Temperature
 - Input information
 - Output information



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5 LCD monitor showing easy-to-understand operation status display

TS-X TS-P

A main-unit integrated type LCD monitor is available as an optional unit. The operation status, current position, load factor, and/or error contents can be understood at a glance.

Model Overview

Name	TS-S	TS-X	TS-P
Power	DC24V +/-10%	Single phase 200 to 230V +/-10% maximum (50/60Hz)	
Operating method	I/O point tracing		
Maximum number of controllable axes	Single-axis		
Position detection method	Incremental	Absolute / Incremental	Incremental / Semi-absolute
Controllable robot	Compact single-axis robot TRANSERVO	Single-axis robot FLIP-X	Linear motor single-axis robot PHASER
Support software for PC	TS-Manager		

Ordering method

TS-S

TS-S	
Controller	I/O
	NP: NPN PN: PNP CC: CC-LINK DN: DeviceNet

TS-X / TS-P

TSX						
Controller	Driver: Power-supply voltage / Power capacity	Regenerative unit	LCD monitor	Usable for CE	Input/Output Selection	Battery Note1
TSX: TS-X TSP: TS-P	205: 200V / 100W more less 210: 200V / 200W 220: 200V / 400 to 600W	No entry: None R: With RGT	No entry: None L: With LCD	No entry: Standard E: CE marking	NP: NPN PN: PNP CC: CC-LINK DN: DeviceNet	B: With battery (Absolute model) N: None (Incremental model)

Note1. Battery can only be selected for TS-X. (Not provided for TS-P).

TS-X / TS-P specification selection table

Some specifications are automatically determined by the robot model.

TS-X

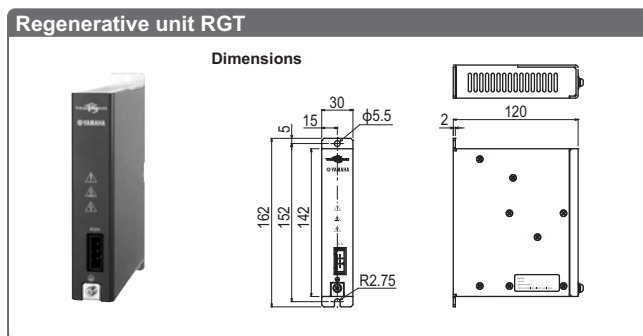
		T4H / C4H	T5H / C5H	T6 / C6	T9	T9H	F8 / C8	F8L / C8L	F8LH / C8LH	F10 / C10	F14 / C14	F14H / C14H	F17 / C17	F17L / C17L	F20 / C20	F20N	N15 / N15D	N18 / N18D	B10	B14	B14H	R5	R10	R20
Power supply voltage / Current sensor	TS-X 205	●	●	●	●		●	●	●	●	●								●	●	●	●	●	
	210					●						●												●
	220												●	●	●	●	●	●						
Regenerative unit	No entry (None)				(1)	(2)				(1)	(1)	(2)	(3)		(3)	(4)						(5)		
	R (RGT)				(1)	(2)				(1)	(1)	(2)	(3)	●	(3)	(4)	●	●				(5)		

- (1) Regenerative unit is needed if using in a perpendicular position and movement stroke is 700mm or more.
- (2) Regenerative unit is needed if using in a perpendicular position.
- (3) Regenerative unit is needed if using in a perpendicular position, using at maximum speeds exceeding 1000mm per second, or if using high leads (40).
- (4) Regenerative unit is needed if using at maximum speeds exceeding 1000mm per second.
- (5) Regenerative unit is needed if using at maximum speeds exceeding 1250mm per second.

TS-P

		MF15 / 15D	MF20 / 20D	MF30 / 30D	MF50 / 50D
Power supply voltage / Current sensor	TS-P 205				
	210	●	●		
	220			●	●
Regenerative unit	No entry (None)	●			
	R (RGT)		●	●	●

Regenerative unit RGT



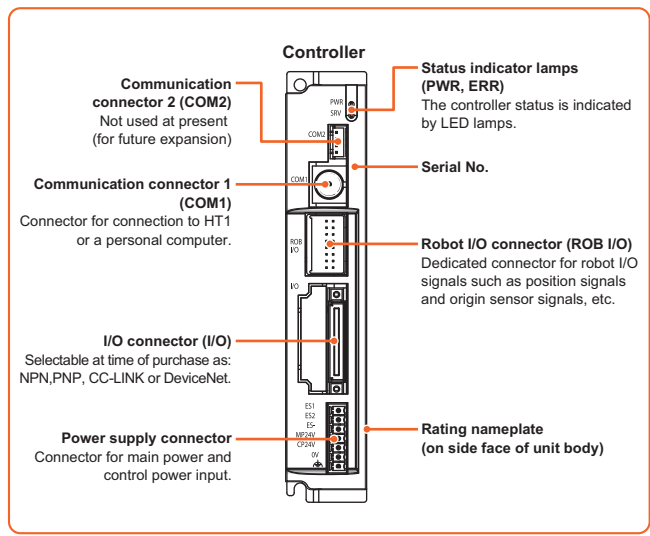
Basic specifications

Item	RGT
Model	KCA-M4107-0A
Dimensions	W30 × H142 × D118mm (Not including installation stay)
Weight	470g
Regenerative voltage	Approx. 420V or more
Regenerative stop voltage	Approx. 380V or less
Accessory	Cable for connection with controller (300mm)

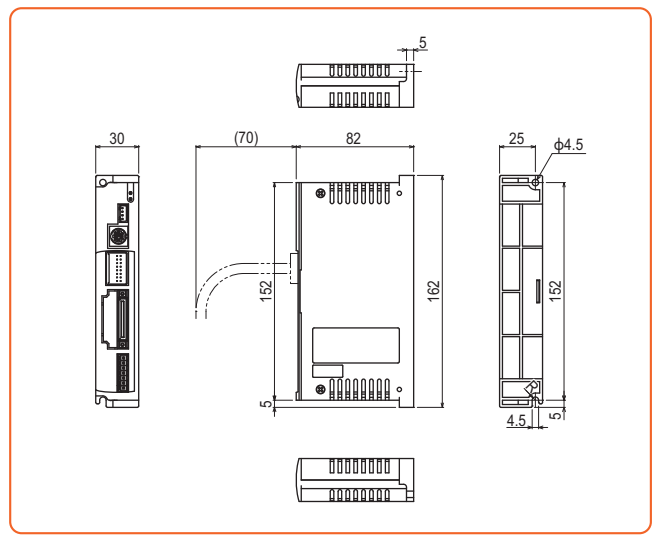
Note. Always leave an empty space (gap of about 20mm) between this unit and the adjacent controller. Also, always use the dedicated cable when connecting the controller.

TS-S/TS-X/TS-P

TS-S part names



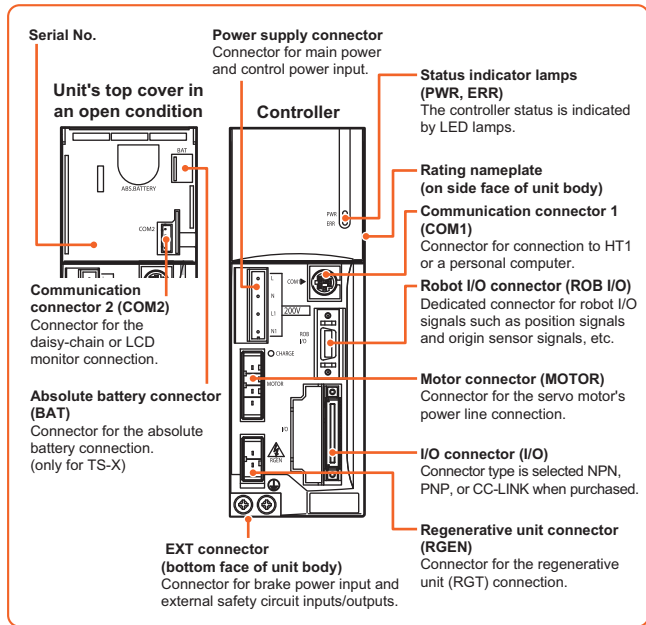
TS-S dimensions



TS-S basic specifications

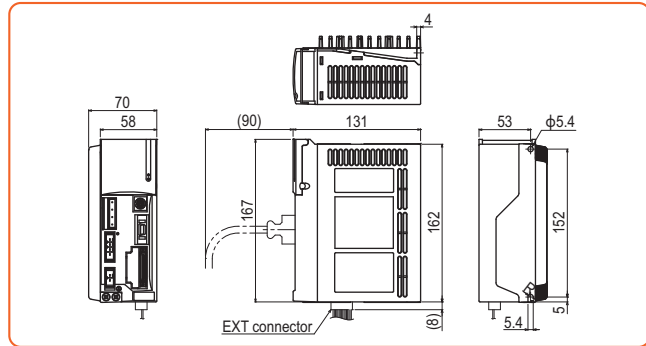
Item	Model	TS-S
Basic specifications	Number of controllable axes	Single-axis
	Controllable robots	TRANSERVO series
	Maximum power consumption	70VA
	Dimensions	W30 × H162 × D82mm
	Weight	Approx. 0.2kg
Input power supply	Control power supply	DC24V +/-10%
	Motor power supply	DC24V +/-10%
Axis control	Operating method	I/O point tracing (Positioning operation by specifying point number)
	Operation types	Positioning, merge-positioning, push, and jog operations
	Position detection method	Resolver
	Resolution	20480 P/rev
	Origin search method	Incremental
Points	Points	255 points
	Point type setting	(1) Standard setting: Set speed and acceleration in percent of the respective maximum settings. (2) Custom setting: Set speed and acceleration in SI units.
	Point teaching method	Manual data input (coordinates input), Teaching, Direct teaching
External input/output	I/O interface	Selectable from the following: NPN, PNP, CC-Link, DeviceNet
	Input	Servo ON (SERVO), reset (RESET), start (START), interlock (/LOCK) origin search (ORG), manual mode (MANUAL), jog motion - (JOG-), jog motion + (JOG+), Point number selection (PIN0 to PIN7)
	Output	Servo status (SRV-S), alarm (/ALM), operation end (END), operation in-progress (BUSY), control outputs (OUT0 to 3), Point number output 0 to 7 (POUT0 to POUT7)
	External communications	RS-232C 1CH
Safety circuit	Safety circuit	Emergency stop input (2 contact points), main power supply ready output
	Options	Handy terminal: HT1, HT1-D (with enable switch) Support software for PC: TS-Manager
General specifications	Operating temperature	0°C to 40°C
	Storage temperature	-10°C to 65°C
	Operating humidity	35% to 85%RH (non-condensing)
	Atmosphere	Indoor location not exposed to direct sunlight. No corrosive, flammable gases, oil mist, or dust particles
Anti-vibration	All XYZ directions 10 to 57Hz unidirectional amplitude 0.075mm 57 to 150Hz 9.8m/s ²	
Protective functions	Positioning detection error, power module error, temperature abnormality, overload, overvoltage, low voltage, gross position error	

TS-X / TS-P part names



TS-X / TS-P dimensions

TS-X / TS-P (220)



TS-X / TS-P basic specifications

Item	Model	TS-X / TS-P		
Driver model		TS-X205 / TS-P205	TS-X210 / TS-P210	TS-X220 / TS-P220
Number of controllable axes		Single-axis		
Controllable robots		TS-X: Single-axis robot FLIP-X series TS-P: Linear motor single-axis robot PHASER series		
Maximum power consumption		400VA	600VA	1400VA
Dimensions		W58 × H162 × D131mm		W70 × H162 × D131mm
Weight		Approx. 0.9kg		
Input power supply	Control power supply	Single phase AC200 to 230V+/-10% 50/60Hz		
	Motor power supply	Single phase AC200 to 230V+/-10% 50/60Hz		
Operating method		I/O point tracing (Positioning operation by specifying point number)		
Operation types		Positioning, merge-positioning, push, and jog operations		
Position detection method		TS-X: Resolver with multi-rotation absolute function TS-P: Magnetic type linear scale		
Resolution		TS-X: 16384 P/rev TS-P: 1μm		
Origin search method		TS-X: Absolute / Incremental TS-P: Incremental / Semi-absolute		
Number of points		255 points		
Point type setting		(1) Standard setting: Set speed and acceleration in percent of the respective maximum settings. (2) Custom setting: Set speed and acceleration in SI units.		
Point teaching method		Manual data input (coordinates input), Teaching, Direct teaching		
I/O interface		Selectable from the following: NPN, PNP, CC-Link, DeviceNet		
Input		Servo ON (SERVO), reset (RESET), start (START), interlock (/LOCK) origin search (ORG), manual mode (MANUAL), jog motion - (JOG-), jog motion + (JOG+), Point number selection (PIN0 to PIN7)		
	Output	Servo status (SRV-S), alarm (/ALM), operation end (END), operation in-progress (BUSY), control outputs (OUT0 to 3), Point number output 0 to 7 (POUT0 to POUT7)		
External communications		RS-232C 1CH		
Power supply for brake		DC24V+/-10% 300mA (prepared by the customer)		
Safety circuit		Emergency stop input (2 contact points), main power supply ready output		
Handy terminal		HT1, HT1-D (with enable switch)		
Support software for PC		TS-Manager		
Operating temperature		0°C to 40°C		
Storage temperature		-10°C to 65°C		
Operating humidity		35% to 85%RH (non-condensing)		
Atmosphere		Indoor location not exposed to direct sunlight. No corrosive, flammable gases, oil mist, or dust particles		
Anti-vibration		All XYZ directions 10 to 57Hz unidirectional amplitude 0.075mm 57 to 150Hz 9.8m/s ²		
Protective functions		Positioning detection error, power module error, temperature abnormality, overload, overvoltage, low voltage, gross position error		
Protective structure		IP20		

Data overview

Point data and parameter data settings must be specified in order to operate a robot from a TS series controller.

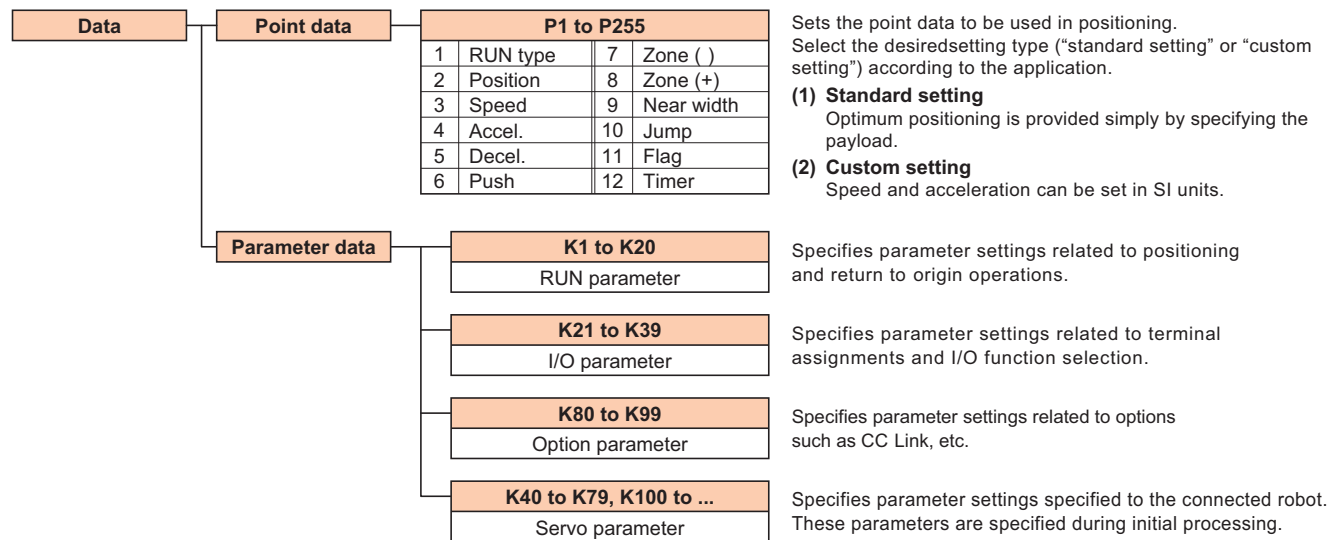
Point data

The point data used in positioning operations includes items such as the “RUN type”, “Position”, and “Speed”, etc. Up to 255 points (P1 to P255) can be registered. There are two point data setting types: “Standard setting” type that automatically defines optimal positioning simply by specifying the payload and “Custom setting” type that allows setting the speed (mm/s) and acceleration (m/s²) in SI units. Select the desired setting type according to the application.

Parameter data

Parameter data is divided into the following categories: “RUN parameters”, “I/O parameters”, “option parameters”, and “servo parameters”.

Data structure



Point data

Point data item list

P1 to P255		
Item		Description
1	RUN type	Specifies the positioning operation pattern.
2	Position	Specifies the positioning target position or movement amount.
3	Speed	Specifies the positioning speed.
4	Accel.	Specifies the positioning acceleration.
5	Decel.	Specifies the positioning deceleration (as a percentage of the acceleration).
6	Push	Specifies the electrical current limit value for “Push” operations.
7	Zone (-)	Specifies the “personal zone” output range.
8	Zone (+)	
9	Near width	Specifies the “near width” zone (distance tolerance relative to target position).
10	Jump	Specifies the next movement destination, or the next merge operation merge destination point No. following positioning completion.
11	Flag	Specifies other information related to the positioning operation.
12	Timer	Specifies the waiting time (delay) after positioning completion.

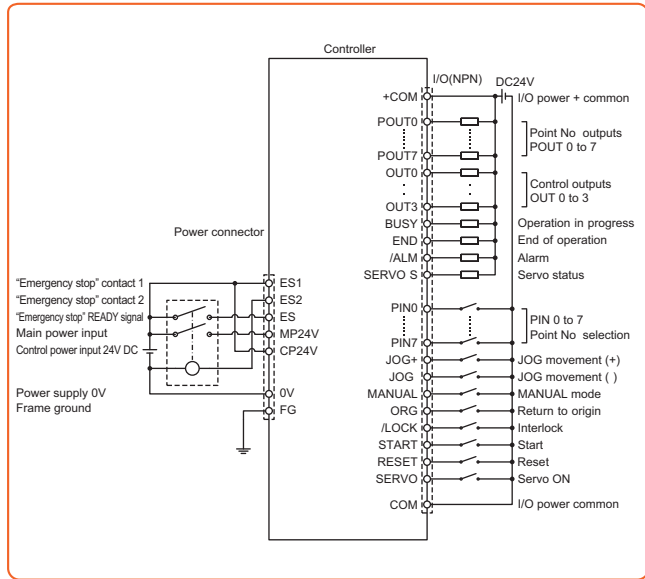
“Standard setting” and “custom setting”

There are 2 setting types for point data (“standard setting” or “custom setting”). Select the desired setting type according to the application. The maximum number of setting points for both setting types is 255 points (P1 to P255).

Setting Type	Description
Standard setting	Optimum positioning is provided simply by specifying the payload. This setting type is well-suited to assembly and transport applications.
Custom setting	Allows changing the speed and acceleration in SI units so the desired positioning operation can be set. This setting type is suited for machining and inspection systems.

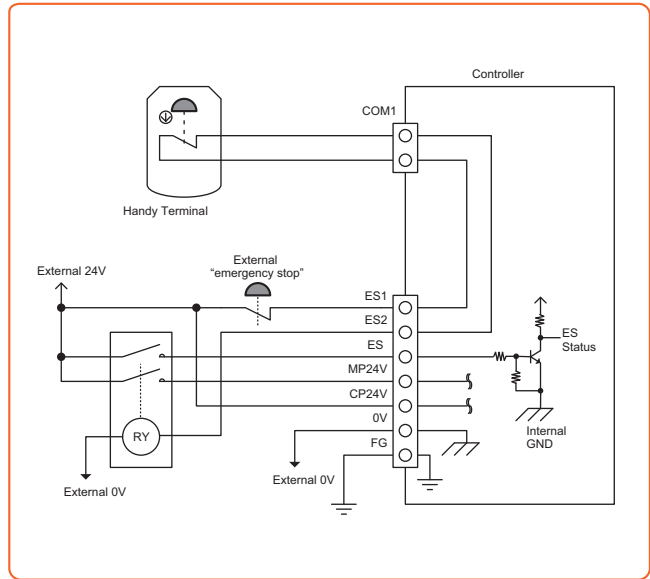
NPN type input / output wiring diagram

TS-S

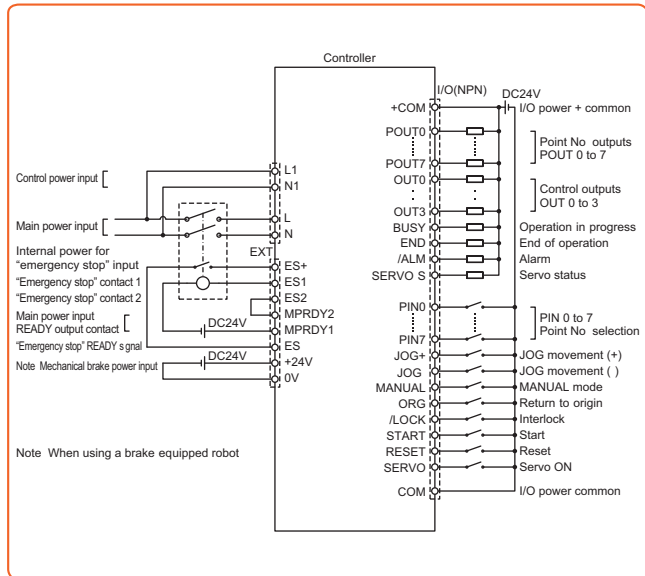


Emergency stop circuit example

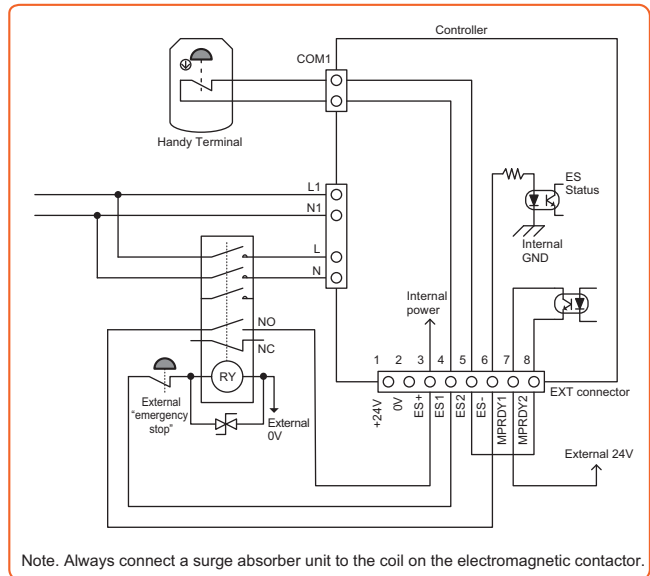
TS-S (power connector and host unit connection example)



TS-X

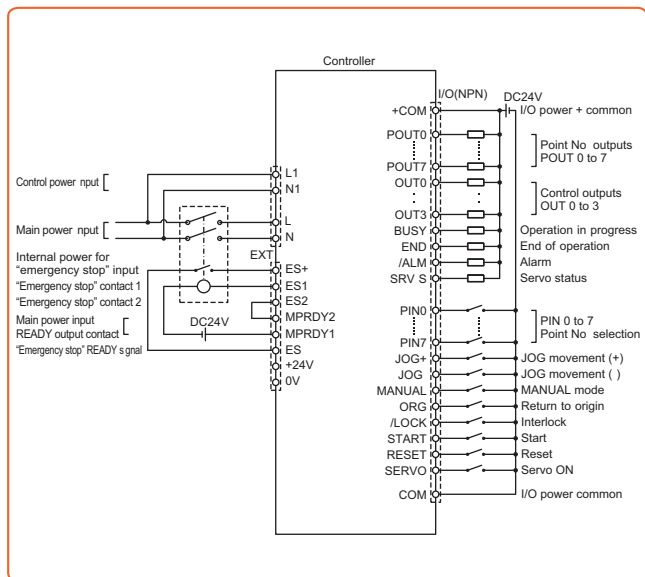


TS-X / TS-P (EXT connector and host unit connection example)



Note. Always connect a surge absorber unit to the coil on the electromagnetic contactor.

TS-P



APPLICATION
 TRANSSERVO
 FLIP-X
 PHASER
 XY-X
 YK-XG
 YP-X
 CLEAN
 CONTROLLER
 INFORMATION
 Robot positioner
 Pulse string driver
 Robot controller
 I/VV
 Option

I/O Specifications

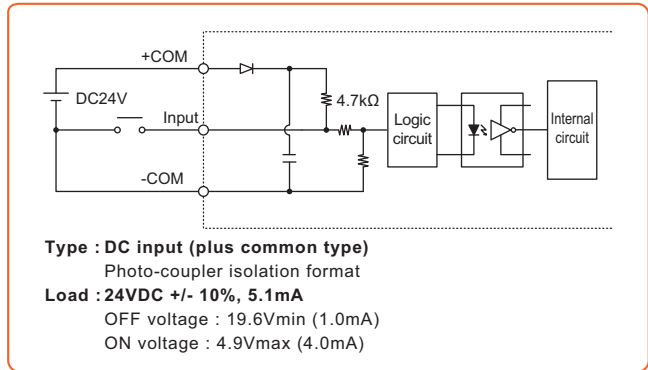
Item	Description
NPN	Input 16 points, 24VDC +/-10%, 5.1mA/point, positive common Output 16 points, 24VDC +/-10%, 50mA/point, sink type
PNP	Input 16 points, 24VDC +/-10%, 5.5mA/point, minus common Output 16 points, 24VDC +/-10%, 50mA/point, source type
CC-Link	CC-Link Ver.1.10 compatible, Remote station device (1 node)
DeviceNet	DeviceNet Slave 1 node

I/O signals (NPN / PNP)

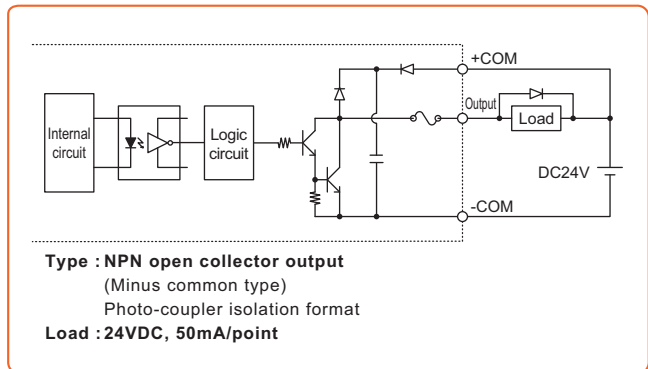
No.	Signal name	Description
1		
2	+COM	Input power + common
3	NC	Use prohibited
4	NC	
5	PIN0	
6	PIN1	
7	PIN2	Point No. select
8	PIN3	
9	PIN4	
10	PIN5	
11	PIN6	
12	PIN7	
13	JOG+	
14	JOG-	JOG movement (- direction)
15	MANUAL	MANUAL mode
16	ORG	Return-to-origin
17	/LOCK	Interlock
18	START	Start
19	RESET	Reset
20	SERVO	Servo ON
21	POUT0	Point No. outputs
22	POUT1	
23	POUT2	
24	POUT3	
25	POUT4	
26	POUT5	
27	POUT6	
28	POUT7	
29	OUT0	Control outputs
30	OUT1	
31	OUT2	
32	OUT3	
33	BUSY	Operation-inprogress
34	END	Operation-end
35	/ALM	Alarm
36	SRV-S	Servo status
37	NC	Use prohibited
38	NC	
39		
40	-COM	Input power - common

NPN type I/O circuit details

Input circuit

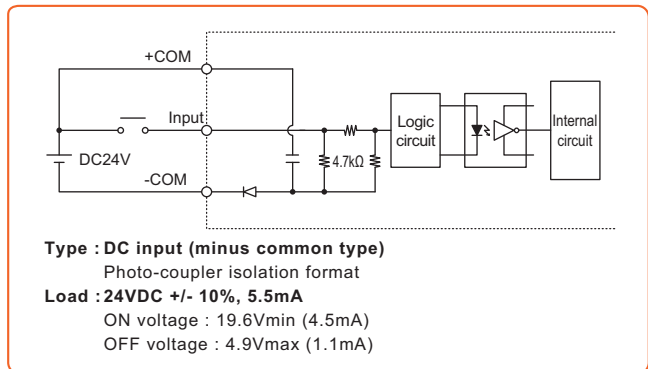


Output circuit

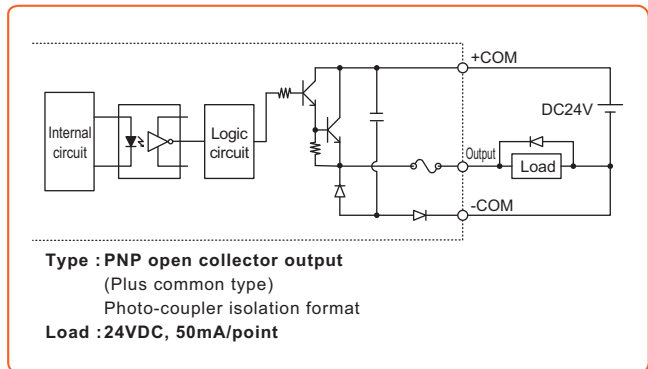


PNP type I/O circuit details

Input circuit



Output circuit



Accessories and part options

Standard accessories

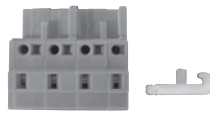
Power connector



TS-S

Model KCC-M4421-00

Power connector



TS-X
TS-P

Model KAS-M5382-00

EXT connector

For braking power and safety circuit connections.



TS-X
TS-P

Model KCA-M5370-00

Dummy connector



TS-S
TS-X
TS-P

Model KCA-M5163-00

I/O cables (2m)



TS-S
TS-X
TS-P

Model KCA-M4421-20

Absolute battery



TS-X

Model KCA-M53G0-00

Absolute battery basic specifications

Item	Absolute battery
Model	KCA-M53G0-00
Battery type	Lithium metallic battery
Data holding time	1year
Dimensions	φ17 × L50mm
Weight	20g

Note. The absolute battery is subject to wear and requires replacement. If trouble occurs with the memory then remaining battery life is low so replace the absolute battery. The battery replacement period depends on usage conditions. But generally you should replace the battery after about 1 year counting the total time after connecting to the controller and left without turning on the power.

Options

Handy terminal HT1 / HT1-D

Has graphic LCD display with backlight for easy viewing.



TS-S
TS-X
TS-P

	HT1	HT1-D
Model	KCA-M5110-0E	KCA-M5110-1E
Enable switch	—	3-position
CE marking	Not supported	Applicable

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TS-Monitor (LCD monitor)

A liquid crystal display is integrated into this unit. It allows checking each operating state, current position, electrical current and voltage values, etc.



TS-X
TS-P

Model	For TS-X	KCA-M5119-00
	For TS-P	KCA-M5119-10

Support software TS-Manager

Besides data writing, editing and backup functions, the TS-Manager also offers cycle time simulation and various types of monitor functions.



TS-S
TS-X
TS-P

Model KCA-M4966-00

TS-Manager environment

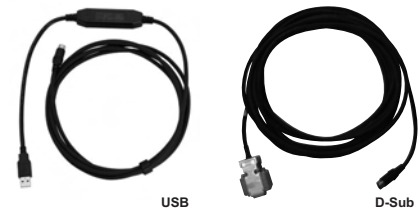
OS	Microsoft Windows 2000/XP/Windows Vista
CPU	Exceeding the environment recommended by the OS being used
Memory	Exceeding the environment recommended by the OS being used
Hard disk	Vacant capacity of more than 20MB in the installation destination drive
Communication port	Serial (RS-232C), USB
Applicable controllers	TS-S / TS-X / TS-P

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

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Data cables

TS-Manager data cable. Select from USB cable or D-sub cable.



Model	USB type (5m)	KCA-M538F-A0
	D-Sub type (5m)	KCA-M538F-00

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
Option

Support software for PC

TS-Manager

Applicable controllers ▶ TS-S TS-X TS-P

Besides basic functions, such as point data edit and backup, this support software TS-Manager incorporates various convenient functions to efficiently process the system debugging and analysis. The TS-Manager helps you in every scene from the system setup to the maintenance.

Features

1 Basic functions

Detailed settings by point, such as the position information, operation pattern, speed, acceleration, and deceleration settings, and robot parameter settings can be set, edited, and backed up. Additionally, the basic operation of the robot, such as JOG movement or inching operation can also be controlled through the TS-Manager.

Only clicking relevant icon will show the operation panel or I/O monitor.

JOG movement, inching operation, and current position acquisition buttons.

Turns ON or OFF the operation point monitoring.

Shows the data in easy to read tabular format. Exchanging data with a spreadsheet application, such as Excel is also easy.

Operation panel for servo status, brake ON/OFF, and stop.

Shows the servo or emergency stop status, and operation mode.

Shows the current position at real time.

Note. Excel is a registered trademark of Microsoft Corporation in the United States and/or other countries.

2 Real-time trace

This function traces the current position, speed, load factor, current value, and voltage value at real-time. Additionally, as trigger conditions are set, data can be automatically obtained when these conditions are satisfied. Furthermore, as a zone is specified from the monitor results, the maximum value, minimum value, and average value can be calculated. These values are useful for the analysis if a trouble occurs.

Real-time traceable items (up to four items)		
• Voltage value	• Current value	• Motor load factor
• Command speed	• Current speed	• Internal temperature
• Command current value	• Present current value	• Input/output I/O status
• Word input/output status		

Specify a zone for calculation.

Calculates the maximum value, minimum value, average value, and root mean square value in a specified zone.

Traces data at real time.

3 Various monitor functions and detailed error logs

The robot operation status (operation mode or servo status) and I/O status can be monitored. Additionally, the Alarm Log screen also displays the input/output I/O status in addition to the carrier position, speed, operation status, current value, and voltage value in case of an alarm. This greatly contributes to the status analysis.

I/O status monitor panel

Detailed status monitor panel

4 Operation simulation

As the operation condition data or point data is input, a period of time necessary for operation is simulated.

Use of this function makes it possible to select an optimal model before purchase and simulate the speed and acceleration/deceleration settings without use of actual machine.

It is also possible to link this operation simulation function with the TS-Manager main software. This easily affects the point data you have edited in the actual machine.

Point data list

Operation setting list

Result display list

Displays the detailed simulation results graphically.



HT1/HT1-D

Applicable controllers ▶ TS-S TS-X TS-P

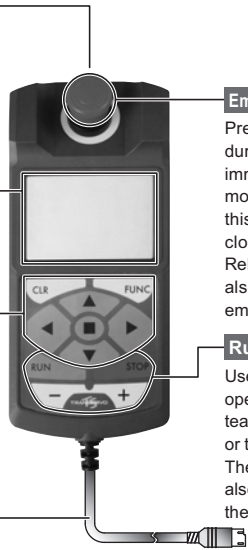
This Handy Terminal is a device that can perform any operation such as robot manual operation, point data edit, teaching, and parameter setting, etc.



Has graphic LCD display with backlight for easy viewing.

HT1 / HT1-D basic specifications

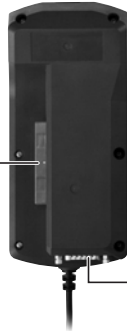
Name		HT1	HT1-D
External view			
Applicable controllers		TS-S / TS-X / TS-P	
Model	Japanese specifications	KCA-M5110-0J	KCA-M5110-1J
	English specifications	KCA-M5110-0E	KCA-M5110-1E
Display		Dot matrix monochrome display (with backlighting) 32 characters × 10 lines	
Operation keys		Mechanical switch	
Emergency stop button		Normally closed contact point (with lock function)	
Enable switch		-	3-position
Safety connector		-	15 pin D-sub connector (male)
CE marking		Not supported	Applicable
Operating temperature		0°C to 40°C	
Operating humidity		35% to 85%RH (non-condensing)	
Dimensions		W88 × H191 × D45mm (Emergency stop button not included.)	
Weight		260g (not including cable)	300g (not including cable)
Cable length		3.5m	

Part names and function



- Strap holder**
Attaching a short strap or necklace strap here prevents dropping the HT1 while operating it or installing it onto equipment.
- LCD screen**
This is a liquid crystal display (LCD) screen with 32 characters × 10 lines (pixel display), showing the operation menus and various types of information.
- Data edit keys**
Use these keys to select menus and edit various data.
- Connector cable**
This cable connects to the controller. One end of this cable is terminated with an 8-pin MD connector (male). Plug this cable into the COM1 connector on the controller front panel.
- Emergency stop button**
Pressing this button during operation immediately stops robot movement. To release this button, turn it clockwise. Releasing this button also cancels emergency stop.
- Run/stop keys**
Use these keys to operate the robot for teaching or positioning, or to stop operation. The  and  keys are also provided to move the robot in jog mode.

HT1-D rear side



- Enable switch (only on HT1-D)**
This switch is effective for use with remote safety circuits. This switch cuts off the circuit when pressed or released but allows circuit operation when in the middle position.
- Safety connector (only on HT1-D)**
Use with remote safety circuits triggered by the emergency stop button or enable switch.

- 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
- Option

NETWORK

Applicable controllers ▶ TS-S TS-X TS-P

Network modules CC-Link

- Option unit with networking functions that can be incorporated in YAMAHA robot controllers, TS-S / TS-X / TS-P.
- As connection of the robot system and the sequencer requires only one (4-wire) dedicated cable, it is possible to save wiring of the entire system, which contributes to efficient wiring work, reduction of installation and maintenance costs, etc.
- 16 input/outputs usable as I/O.
- Operation occurs as a CC-Link remote device station, on a one-unit to one-station basis.
- Remote commands can read or write point data and load each type of status.

Basic specifications for network modules CC-Link

Item	Network modules CC-Link
Applicable controllers	TS-S / TS-X / TS-P
Version supporting CC-Link	Ver. 1.10
Remote node type	Remote device node
Number of occupied nodes	1 node
Node number setting	1 to 64
Communication speed setting	10Mbps, 5Mbps, 2.5Mbps, 625Kbps, 125Kbps
No. of CC-Link inputs/outputs	Input 16 points, Output 16 points
Shortest distance between nodes ^{Note1}	0.2m or more
Overall extension distance ^{Note1}	100m/10Mbps, 160m/5Mbps, 400m/2.5Mbps, 900m/625Kbps, 1200m/156Kbps
Monitor LED	L RUN, L ERR, SD, RD

Note 1. These values apply when a cable that supports CC-Link Ver.1.10 is used.

Network modules DeviceNet

- Option unit with networking functions that can be incorporated in YAMAHA robot controllers, TS-S / TS-X / TS-P.
- As connection of the robot system and the sequencer requires only one (4-wire) dedicated cable, it is possible to reduce wiring of the entire system, which contributes to efficient wiring work, reduction of installation and maintenance costs, etc.
- 16 input/outputs usable as I/O.
- Operate as slave stations, with each unit occupying 6 input and 6 output channels.
- Remote commands can read or write point data and load each type of status.

Basic specifications for network modules DeviceNet

Item	Network modules DeviceNet	
Applicable controllers	TS-S / TS-X / TS-P	
Applicable DeviceNet specifications	Volume 1 Release2.0/Volume 2 Release2.0	
Device type	Generic Device (device number 0)	
Number of occupied CH	Input 6ch, Output 6ch	
MAC ID setting	0 to 63	
Communication speed setting	500Kbps, 250Kbps, 125Kbps	
DeviceNet inputs/outputs	Input 16 points, Output 16 points	
Network length	Overall extension distance	100m/500Kbps, 250m/250Kbps, 500m/125Kbps
	Branch length	6m or less
	Overall branch length	39m or less/500Kbps, 78m or less/250Kbps, 156m or less/125Kbps
Monitor LED	Module, Network	