







ETA 201606

Perfect combination of actuator and controller
(Servo cylinder series controller)

Applicable model			
			
METSC series	MEQYC series	MES* series	MEHC series

The controller which is the first and innovative in the industry can simultaneously support 3 different control modes and the controller can do the outputting signal of the motor encoder (optional) to the host control unit. (Pulse / I/O / Communication)

Abundant collocation

The same controller which is compatible to various modules and cables. It can be easily set up and adjusted and reduce the cost for repairing spare parts.

- Slider cylinder: **METSC** series
- Rod cylinder: **MEQYC** series
- Miniature cylinder: **MES*** series
- Electric gripper: **MEHC** series

Easy-to-use UI software

Support Traditional Chinese / English / Japanese use interfaces.

- Position teaching
- Software edition
- Operation monitoring
- Parameter setting
- Error log
- Data backup and reading

Operational current auto setting

Operational current is the main factor determining the efficiency and lifetime of the robot. If the operational current is set too high, the extra performance will be wasted, or even the motor might be burnt. TC series controller can adjust operational current automatically based on the moving load, motor output and lifetime of the rail.

Flexible control interface

One single unit can support 3 different control interfaces.

- Pulse control: Support line driver and open collector Max. pulse receiving speed: 500K/200K Hz.
- I/O control: By I/O control, max. 127 positioning points can be executed.
- Communication control: Use MODBUS as the interface of RS485 (connect max. 16 controllers) and 1 set mini USB (special for single)

Various control mode

Following control modes can be combined randomly to maximize the action mode.

- Position control
- Speed control
- Gripping force control (Electric gripper only)
- Measure control (Electric gripper only)
- Pushing force control

Possible to connect 16 stations via RS485

The user can connect PC, PLC or other devices which can transfer data via RS485 to TC100 controller. It is very convenient to do the setting, controlling and monitoring up to 16 units of TC100 at once.

Excellent performance

Smooth operation

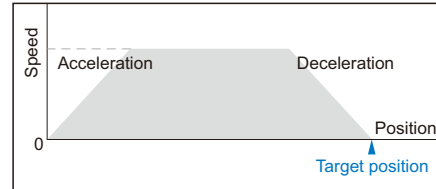
- High performance closed circuit stepping motor with encoder will not be out of steps even with high speed movement.
- Smoother movement and more accurate positioning.
- The speed can be increased 20% (depending on aircraft types) by switching the power voltage to DC48V, normally use DC24V.

Adjustable data settings

Setting	Content
Operation mode	Position setting mode, total 5 types including INC and ABS...etc.
Moving position	Set absolute position or moving amount
Moving speed	Set speed of movement (%)
Torque limit	Set operational current limit
Minimum value of trigger range	Set the max and min value of the trigger range
Maximum value of trigger range	
Dowel time	Set dowel time after movement.
Next item number	Jump to the next operational item after current one has ended.

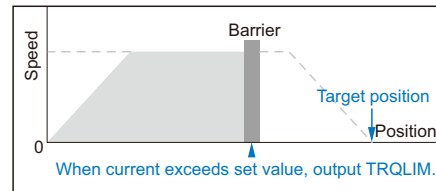
Main operation modes

- **ABS mode**
Move to appointed position



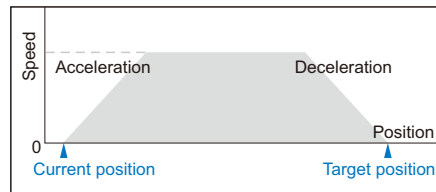
Use ORG as origin, move to the appointed position.

- **+/- TSL thrust mode**
Constant thrust output



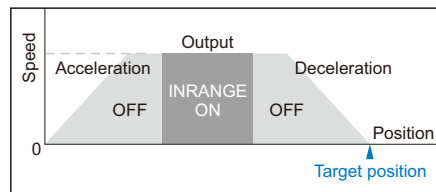
Set a max. current value, when the current reach the value, it will not proceed further.

- **INC mode**
Move to related position from current position



Use current position as origin, move to the relative position.

- **Output signal in specified mode**



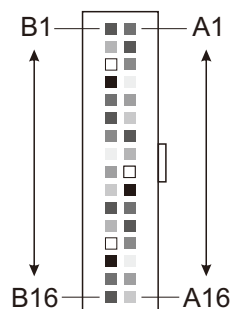
Set up a special range. The "INRANGE" signal will be output when moving in the range. The "OFF" signal will be output when it is outside of the range.

Specification and connectors

■ Specification

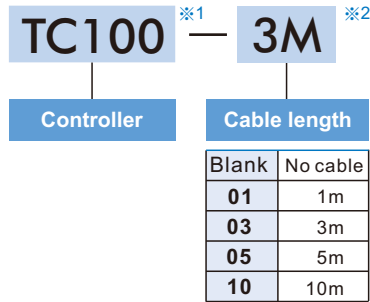
Item	Specification	
Number of controlled axis	Single axis	
Compatible product series	METSC / MEQYC / MESH / MESF / MESS / MEHC	
Dimension (mm)	W30*H153*D74.5	
Weight (kg)	≐0.2	
Input power	Control power	DC24V ±10%
	Power supply	DC24V ±10%, DC48V ±10%
Operation mode	Pulse control, I/O controller, Communication control	
Motor controlling method	Close loop vector control	
Position detection method	Encoder	
Motor resolution	□25= 9600ppr; □42, □56= 16000ppr	
Homing method	Torque / Sensor to select one	
Motion control mode	ABS mode	
	INC mode	
	TSL thrust mode	
	Continuous mode	
Position	Total number of points	1~127 points
	Points setting method	Communication / I/O / Software
Pulse	Connection method	Line driver / Open collector (500K/200K Hz)
	Input method	CW/CWW ; Pulse / dir ; A phase / B phase
Communication	USB (visual COM port): mini USB RS485 (half-duplex): RJ45	
Software	Single	
Operation temperature, humidity	0~50°C, 85% RH max. (Dew free)	
Storage temperature, humidity	-20~85°C, 85% RH max. (Dew free)	
Surrounding environment	Indoor without direct sun shine, free from corrosive or flammable gas, oil mist or massive dusts.	

■ IO plug



Dimension and terminal

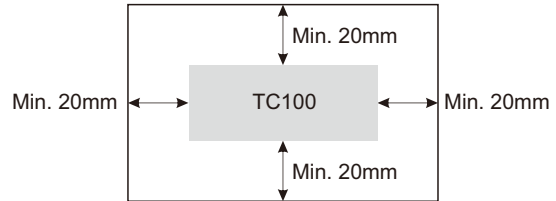
■ Ordering model



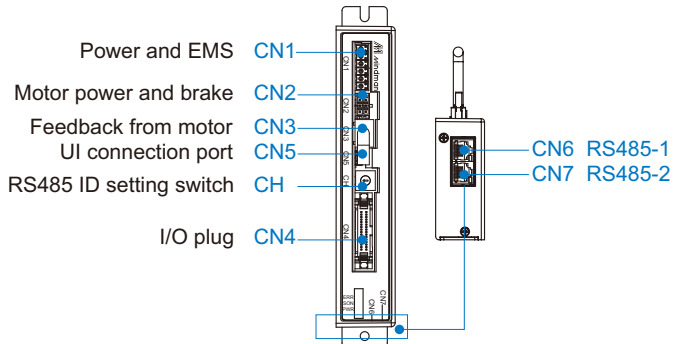
※1. Standard length of I/O cable is 1.5 meter.

※2. Standard: 3m

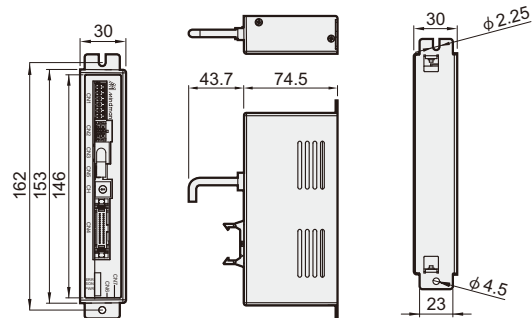
■ Recommended assembly method



■ Port explanation



■ Controller dimension



■ I/O signal (Factory default)

NO.	Signal name	Color	Explanation	NO.	Signal name	Color	Explanation
A1	COM+	Brown	I/O power + 24V	B1	OUT 1	Violet	ORG-S
A2	COM-	Red	I/O power 0V	B2	OUT 2	Grey	INP
A3	IN 1	Orange	ORG	B3	OUT 3	White	READY
A4	IN 2	Yellow	SERVO	B4	OUT 4	Black	SERVO-S
A5	IN 3	Green	ALM_RESET	B5	OUT 5	Brown	PRGSEL0-S
A6	IN 4	Blue	START	B6	OUT 6	Red	PRGSEL1-S
A7	IN 5	Violet	PRGSEL0	B7	OUT 7	Orange	PRGSEL2-S
A8	IN 6	Grey	PRGSEL1	B8	OUT 8	Yellow	PRGSEL3-S
A9	IN 7	White	PRGSEL2	B9	OUT 9	Green	PRGSEL4-S
A10	IN 8	Black	PRGSEL3	B10	OUT 10	Blue	PRGSEL5-S
A11	IN 9	Brown	PRGSEL4	B11	P1+	Violet	CW, B phase, PULSE
A12	IN 10	Red	PRGSEL5	B12	P1-	Grey	
A13	IN 11	Orange	PRGSEL6	B13	P2+	White	CCW, A phase, DIR
A14	IN 12	Yellow	ORG-S	B14	P2-	Black	
A15	Reserved	Green	-	B15	-	Brown	-
A16	Reserved	Blue	-	B16	FG	Red	Grounding

■ Restricted setting condition

- Environment with corrosive, explosive and flammable gas and combustible liquids.
- Environment with heavy dust.
- Locations where can be polluted by other equipments coolant.
- Locations with high vibrations (0.5G or above).
- Please locate the controller as shown on the right for correct installation position.

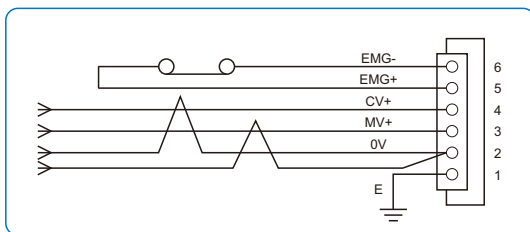
Wiring diagram (Power / I/O / EMS)

■ Pin designation

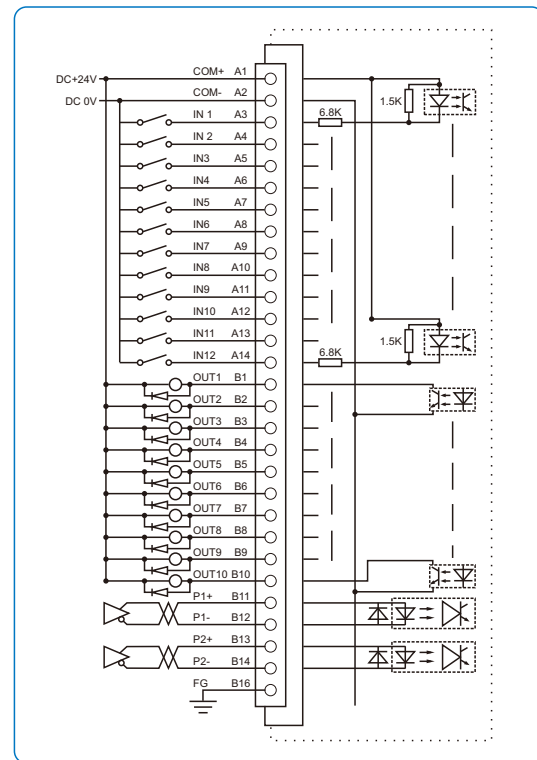
NO.	Signal name	Explanation
1	E	Grounding (Ensure to connect to ground to avoid disturbance)
2	0 V	GND
3	MV +	Main power supply: DC24V ± 10%; DC48 ± 10%
4	CV +	Controlling power: DC24V ± 10%
5	EMG +	EMS (Please use normal close connection)
6	EMG -	



■ EMS and power wiring

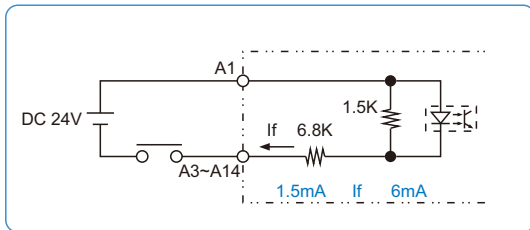


■ IN/OUT wiring (NPN)

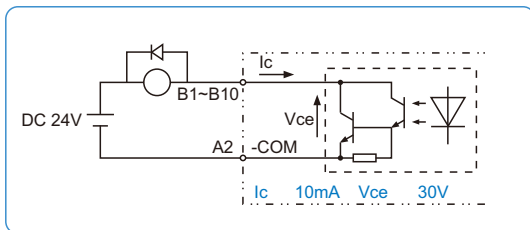


Relay wiring

- Input circuit

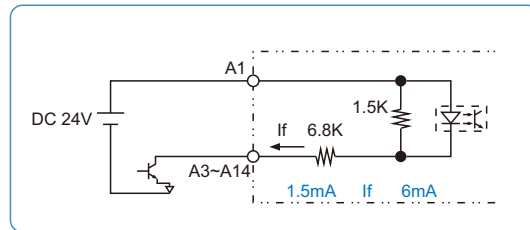


- Output circuit

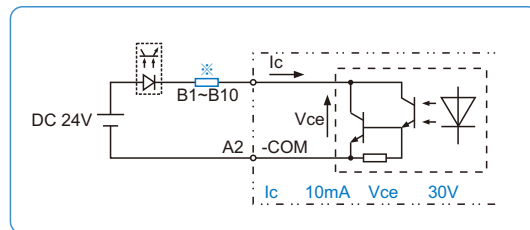


Transistor wiring

- Input circuit



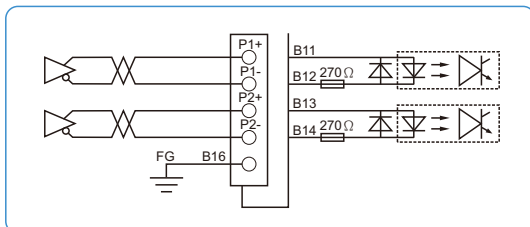
- Output circuit



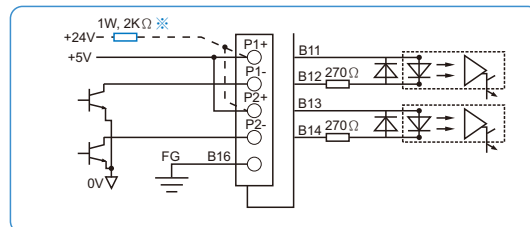
※ Note: Please consider the output saturation voltage of optocoupler 1 V_{typ} (When output current is 10mA).

Pulse output wiring

- Line drive



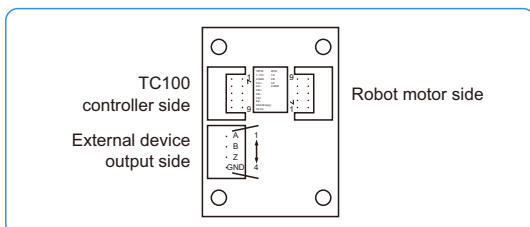
- Open collector



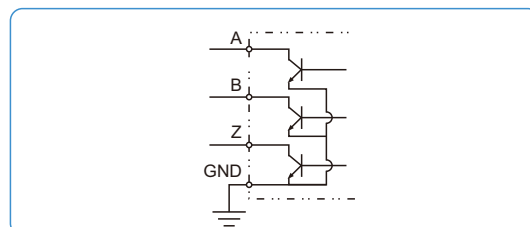
※ If use +24V, it is a must to connect 1W 2KΩ (Recommended) resistor.

Encoder output module wiring

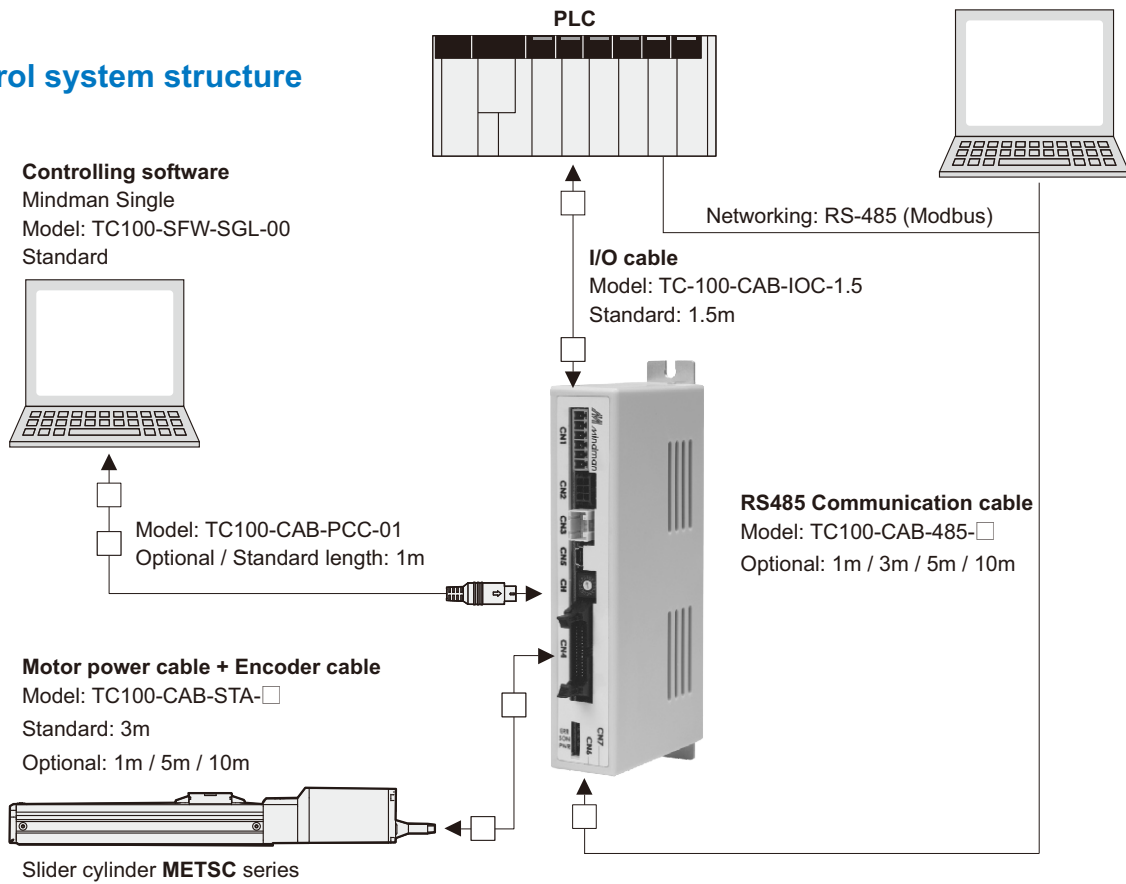
- Encoder output module



- External device output wiring



Control system structure



Accessories list

Standard accessories

Power supply connector		I/O cable (1.5m)		Standard cable (Motor power + Encoder)											
Model	TC100-CON-POW-00	Model	TC100-CAB-IOL-1.5	Model	TC100-CAB-STA-□										
				<table border="1"> <thead> <tr> <th colspan="2">Cable length</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>1m</td> </tr> <tr> <td>03</td> <td>3m</td> </tr> <tr> <td>05</td> <td>5m</td> </tr> <tr> <td>10</td> <td>10m</td> </tr> </tbody> </table>		Cable length		01	1m	03	3m	05	5m	10	10m
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10	10m														

Optional accessories

Encoder output module		Mini USB cable for supporting software		RJ45 Cable for RS485 connections											
Model	TC100-PCB-ENC-00	Model	TC100-CAB-PCL-01	Model	TC100-CAB-485-□										
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