

OUTLINE

TM-1400 MINI CONVERTER UNIT is power supply and indication unit which is used in combination with Tokyo Keiso's TC-1000, TC-2000, TC-3000, and EP-TC-1000/2000V series mass flow controllers.

All necessary functions of power supply to the mass flow controllers and scaling indication of flow signal, and flow rate setting function with the change of external/manual setting are provided in DIN 72mm compact housing.

Additionally, totalizing pulse output is provided as option for easy composition of the flow-rate regulating system of various gases. Conventionally, each independent function is integrated, and space-saving and simple installation work are attained.



STANDARD SPECIFICATION

□ Flow rate

Indication: By 3-1/2 digit Red LED (10.2mm height)
 Accuracy: ± 1 digit additional to detector accuracy
 Output: Select from the following two functions (Factory set)
 (1) DC4 to 20mA Load resistance 550 Ω or less
 (2) DC0 to 5V Load resistance 5k Ω or more
 Output accuracy: (1) DC4 to 20mA $\pm 0.1\%$ F.S. additional to detector accuracy
 (2) DC0 to 5V Detector accuracy

□ Totalizing pulse rate (TM-14□1-2□)

Scaling factor: 60 to 12000c/h (F.S.)
 Totalizing pulse: Output Open collector pulse
 Rating $V_{CE} = 50V$ max.
 $V_{SAT} = 1.2V$ max.
 $I_{CE} = 20mA$ max.

Pulse width: 100ms (ON time)

□ Flow rate setting

- (1) External setting input signal
 A mass flow controller is controlled by inputting voltage or current signal into TM-1400 from external device.
- (2) Manual setting
 Switching and setting ratio of the input of setting from outside are possible with the model with minimum memory 1% manual setting function and 10 rotations analog dial vernier. And it is also with a compulsive control selection capability such as flow stop or full open.

□ External setting input signal

Select from the following three functions. (Factory setting)
 (1) DC4 to 20mA Input resistance 250 Ω
 (2) DC0 to 5V Input resistance 100k Ω
 (3) DC1 to 5V Input resistance 100k Ω
 Soft start function is possible as option. (Time constant: 5 seconds)

□ Other functions

Power supply: AC85 to 240V (50Hz/60Hz)
 Consumption power: 15VA
 Electric connection: (1) Connection with a mass flow controller
 Exclusive cable with connector
 (2) Connection with power supply and external device
 M3 screw terminal

Environmental condition: 0 to 50°C / 20 to 85%RH (To be free from condensation)

Withstand voltage: Power supply to Earth terminal AC1500V, 1min.
 Insulation resistance: Power supply to Earth terminal 20M Ω or more (DC500V)
 Enclosure: Indoor use (Equivalent to IP20)
 Housing material: Noryl resin containing glass fiber
 Weight: (Approx. 550g)

MODEL CODE

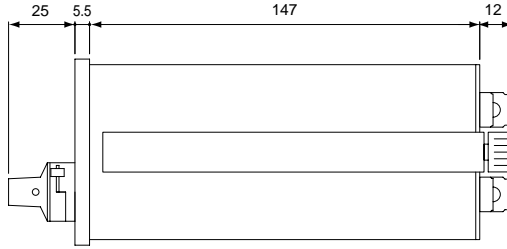
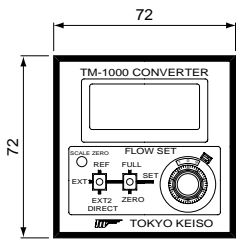
TM-14				Description
Analog output	1			DC4 to 20mA
	2			DC0 to 5V
Totalizing pulse output	0			Not provided
	1			Provided
Flow rate setting method	—	2		External setting / With manual setting change
External setting input signal	0			Not provided
	1			DC4 to 20mA
	2			DC0 to 5V
	3			DC1 to 5V

APPLICABLE FLOW CONTROLLERS AND EXCLUSIVE CABLE

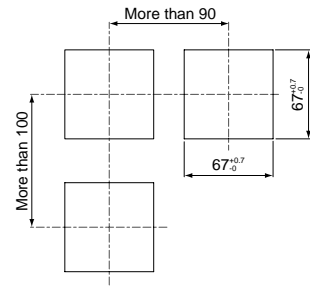
Applicable controller	Cable code	—	Cable length (m)
TC-1000, 2000, 3000	SC-CM	—	Standard: 2m
	SC-TM	—	
EP-TC-1000/2000V	SC-TM	—	Max.: 100m
	SC-TEPC	—	

Note) ·SC-CM cable 100m → "SC-CM-100"
 ·Maximum cable length of SC-TM and SC-T-EP is 100m.

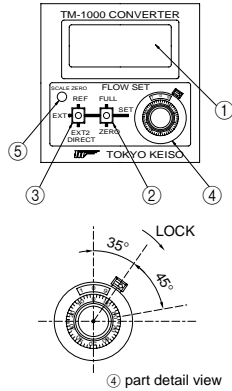
DIMENSIONS



Panel cut and installation interval

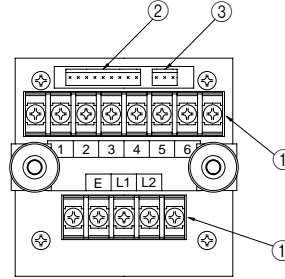


FRONT PANEL



No	Name	Contents
①	Flow indicator	Flow indication 3-1/2 digit by Red LED
	Flow setting switch	FULL Forcible setting to 100% of flow rate SET Switch ③ is set. ZERO Forcible setup to 0% of flow rate
②	Flow setting standard signal changing switch	Switch ③ functions when switch ② is in the state of SET.
		REF Flow rate setting can be made by flow rate setting dial. (0 to 100%)
		EXT(1) External setting input signal can be partial set by flow rate setting dial. Division setting of the external setting signal can be made by flow rate setting dial. (External setting signal × 0 to 100%)
		EXT(2) External setting input signal overrides flow rate setting signal. DIRECT Flow rate setting dial does not work.
③	Flow rate setting dial	Flow rate setting by 10 rotation analog dial (%)
		Clockwise rotation Flow rate increases.
		Counterclockwise rotation Flow rate decreases.
		Upper scale 1/10 division of full scale Lower scale 1/100 division of full scale
⑤	Zero adjustment trimmer	SCALE ZERO Zero adjustment trimmer of flow rate indication and Analog output

TERMINAL



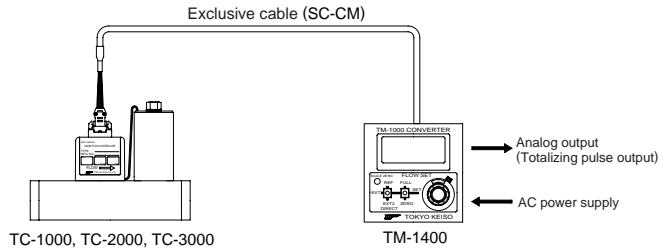
No	Contents
1 +	Analog output
2 -	
3 C (+)	Totalizing pulse output
4 E (-)	
5 +	External setting input signal
6 -	
E	Grounding
L1	AC power supply
L2	

① Terminal block
② Connector for mass flow controller
③ Connector for external power supply
*AC power supply is L1 and L2 of terminal block ①.
Be careful when wiring.

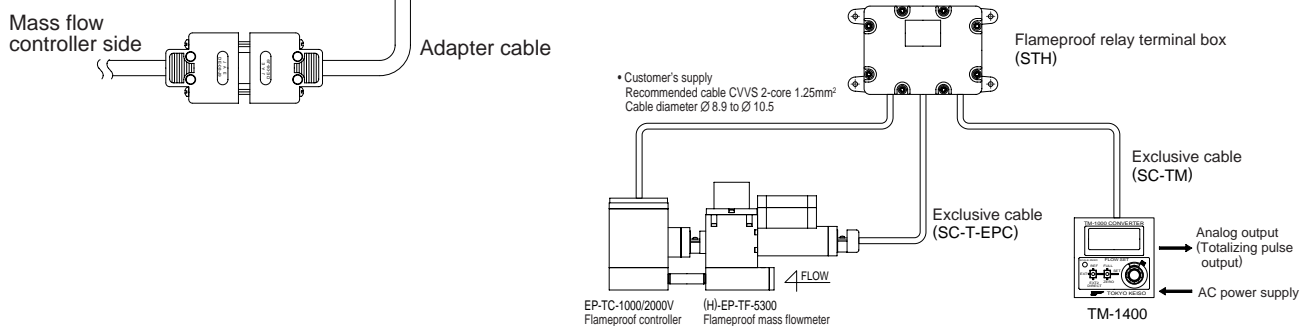
COMBINATION WITH MASS FLOW CONTROLLER

When a model change is made from TM-7000 series to TM-1400 series using an existing mass flow controller, a panel adapter case and an adapter cable are needed. (Please specify it at ordering.)

● Connection with TC-1000, TC-2000, and TC-3000



● Connection with EP-TC-1000 / 2000V



* Specification is subject to change without notice.

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