



# TECHNICAL GUIDANCE

## TM-2000 MINI CONVERTOR UNIT

### OUTLINE

TM-2000 MINI CONVERTOR UNIT is power supply and indication unit which is used in combination with Tokyo Keiso's TF-900, TF-1000, TF-5000, TF-6000 and (H-) EP-TF-5300 series MASS FLOW-METERS.

All necessary functions of power supply to the detectors and scaled flow indication is provided in DIN 72mm compact housing. Additionally, either totalization (with scaled pulse output) of flow or high and low alarm is available for total gas volume management or stable gases supply applications.

Also, analog re-output function (4 to 20 mA DC or 0 to 5 V DC) is provided as standard for further connection to recorders and/or process control loop.

### STANDARD SPECIFICATION

#### ● FLOW RATE INDICATION

- Indication : By 4 digit LCD (13 mm height)
- Accuracy :  $\pm 0.1\%$  F.S.  $\pm 1$  last digit additional to detector accuracy
- Analog re-output (Alternative)
  - : a) 4 to 20 mA DC Max.load 500 $\Omega$
  - : b) 0 to 5 V DC Min.load 100k $\Omega$
- Output accuracy :  $\pm 0.1\%$  F.S. additional to detector accuracy

#### ● TOTALIZATION FUNCTION

- Indication : By 7 digit LCD (6mm height)
- Scaled pulse : Output Open collector  
Rating 30 V DC, 20 mA Max.  
Pulse width 100 mS (Fixed)  
Pulse rate Equal to counter increments
- Indication accuracy :  $\pm 0.1\%$  F.S. additional to detector accuracy
- Scaling factor : 18,000 c/h (Max.)
- Total re-set : By manual push button or short-circuiting of terminal

#### ● LOW CUT

- : Standard 2% (Freely programmable)
- Corresponding function: Flow rate indication, Flow rate output, Totalization indication, and Scaled pulse output

#### ● ALARM FUNCTION

- Alarm indication : Red color LED (The light is turned on in operation)
- Alarm output : SPST NO (Make contact) or NC (Break contact)  
(The contact will be opened without power supply.)
- Setting accuracy :  $\pm 1.0\%$  F.S.
- Contact rating : 125 V AC, 0.4A/30 V DC, 2A
- Setting point : 2 points (High and Low)
- Setting range : 0 to 100% of span
- Setting : Field adjustable through front panel key
- Hysteresis width :  $1 \pm 0.5\%$  F.S.(Fixed)

#### ● ANALOG INPUT (Alternative)

- : a) 4 to 20 mA DC Input resistance 250 $\Omega$
- : b) 0 to 5 V DC Input resistance 200k $\Omega$

#### ● OTHER FUNCTION

- Multi-data : Max.8 different data can be programmed.  
(Channel selection by front panel key)
- Linearise function (Option)
  - : a) Fourth formula multiplier method
  - : b) Extraction of square-root multiplier method
- Data back up : Total count and operation parameters are memorized by EEROM for 10 years.



- EXTERNAL POWER SUPPLY :  $\pm 12$  V DC, +200 mA, -200 mA
- OTHER SPECIFICATION
  - Power supply : 85 AC to 250 V 50/60Hz
  - Power consumption : 15VA
  - Electrical connection : Pin terminal
  - Ambient temp : 0 to 50°C (To be free from condensation)
  - Withstand voltage : Power supply to Earth terminal  
1500 V AC, 1 min.
  - Insulation resistance : Power supply to Earth terminal  
More than 20 M $\Omega$  (500 V DC)
  - Construction : Indoor use (IP20 equ.)
  - Housing material : ABS resin containing glass fiber
  - Weight : Approx.450g

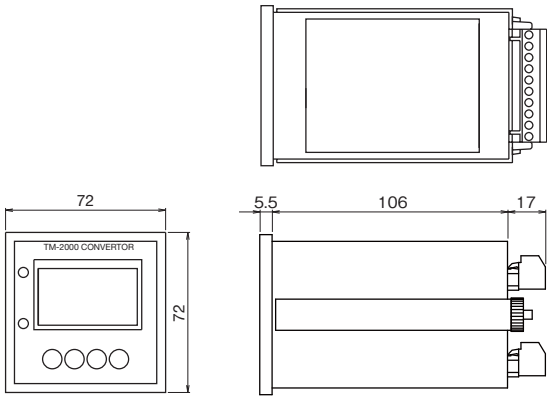
### MODEL CODE

Model code		Description	
TM -	2		
Analog Input	1		4 to 20 mA DC
	2		0 to 5 V DC
Analog Output	1		4 to 20 mA DC
	2		0 to 5 V DC
Alarm Output	1		H : NO, L : NO
	2		H : NC, L : NC
	3		H : NO, L : NC
	4		H : NC, L : NO
Input & Output characteristics	Standard	—	Linear
	Option	— H	Fourth formula multiplier method
	Option	— R	Extraction of square-root multiplier method

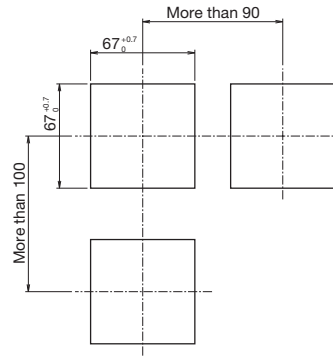
### APPLICABLE FLOWMETERS AND EXCLUSIVE CABLE

Applicable flowmeters	Cable code	Cable length
TF-900/1000/1100/1300	SC-MM2	2m : Standard 100m (Max.)
TF-1200/1400	SC-MA2	
TF-5300/6300	SC-FM2	
(H-) EP-TF-5300	SC-EP2	
HM-1000/5000 (Option)	SC-HM	

**DIMENSIONS**

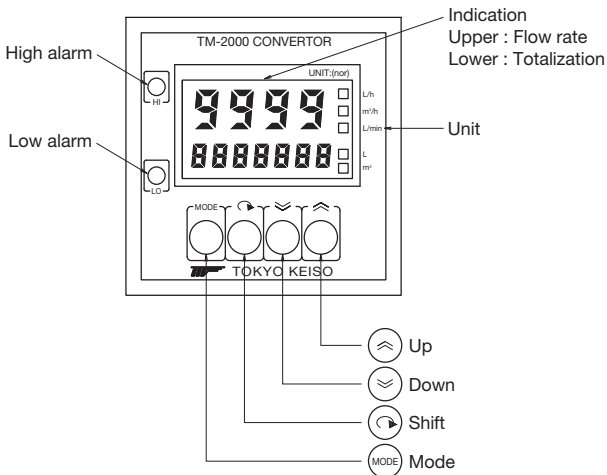


**PANEL CUT AND MOUNT DISTANCE**

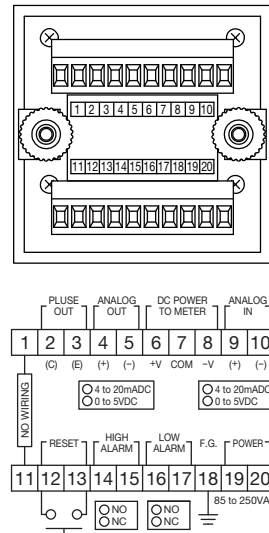


Note) Recommending mount panel in 1 to 5mm thickness.

**FRONT PANEL**



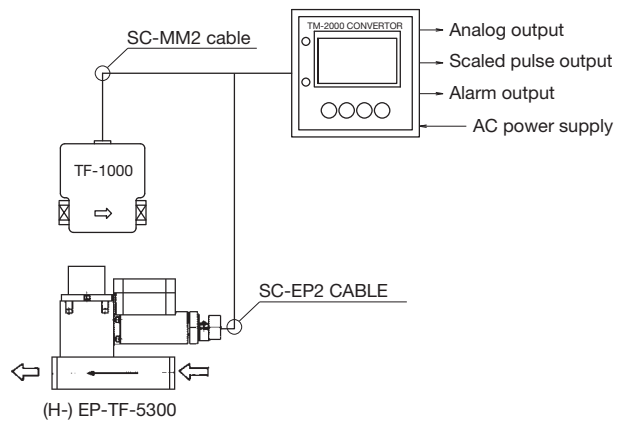
**TERMINAL**



**WIRING**

No.	Description	No.	Description
1	Non - use	11	Non - use
2	(C) Pulse	12	Reset
3	(E) Output	13	
4	(+) Analog	14	High alarm output
5	(-) Output	15	
6	(+V) DC power	16	Low alarm output
7	(COM) to meter	17	
8	(-V)	18	F. G.
9	(+) Analog	19	AC power supply
10	(-) Input	20	

**APPLICATIONS**



\* Specification is subject to change without notice.

**TOKYO KEISO CO., LTD.**

Head Office : Shiba Toho Building, 1-7-24 Shibakoen, Minato-ku, Tokyo 105-8558  
 Tel : +81-3-3431-1625 (KEY) ; Fax : +81-3-3433-4922  
 e-mail : overseas.sales@tokyokeiso.co.jp ; URL : http://www.tokyokeiso.co.jp