Reliability Creativity Service	**Product Specifications**	Ver. 4	1/4
	Gas Flow Management & Control Turbine Meter TBX (External Power Source Type)	Model	TBX [Capacity] [Connection type] D / [Flow direction] [Connection diameter (Code)]

1. Specifications

⊙ Model

TBX [Capacity] [Connection type]D / [Flow direction] [Connection diameter (Code)]

Capacity	Connection type	Power source	/	Flow direction	Connection diameter (Code)	Description
□30						30 (Screw type only)
□100						100 ((Screw type and flange type)
□150						150 (Flange type only)
	□ Not indicated					Screw type
	□ F					Flange type
		□ Not indicated				Internal Battery type
		□ D				External Battery Type
			/			
				□ L		Left inlet (Left to right)
				□ R		Right inlet (Right to left)
				□ U		Bottom inlet (Bottom to top) — Only TBX100F
				□ D		Top inlet (Top to bottom) — Only TBX100F
					□3	32A (Rc1-1/4) — Only TBX30
					□4	40A (Rc1-1/2) — Only TBX30

Connection diameter

Model	TBX30		TBX100	TBX100F	TBX150F
Connection diameter (Code)	3	4			
Connection diameter	Rc1.1/4	Rc1.1/2	Rc2	50A flange (JIS 10K)	

Flow rate range

Model	TBX30	TBX100	TBX100F	TBX150F
Flow rate range	4-30 m^3/h	10-100 m^3/h		12.5-150 m^3/h

Accuracy: ±1% F.S.

Maximum working pressure: 100kPa

Pressure loss

Model	TBX30	TBX100	TBX100F	TBX150F
Pressure loss	0.3kPa			0.34kPa

(*)With air at a gauge pressure of 2kPa

Items with "⊙" are optional.

Installation position: Horizontal and vertical

Applicable fluid: Limited to only clean and dry gases (City gas, LP gas, air, nitrogen, etc.).

Durability: 7 years (When used at room temperature with the load of the maximum flow rate of 50% maximum folw-rate)

Use environment: -10 to +60 °C, max 90%RH (No dew condensation)

Storage environment: -10 to +60 °C, max 90%RH (No dew condensation)

Display: Accumulated flow volume, instantaneous flow-rate, trip accumulated flow volume, setting values, decimal point, and pilot are displayed on the LCD. Changeover them by using "FLOW RATE switch" and "START switch".

Display \ Model	TBX30	TBX100	TBX100F	TBX150F
Integrated flow rate	8-digit display 999999.99 m^3	8-digit display 999999.99 m^3		8-digit display 9999999.9 m^3
Trip flow rate	6-digit display 9999.99 m^3	6-digit display 9999.99 m^3		6-digit display 99999.9 m^3
Instantaneous flow rate	3-digit display ∪ 99.9 m^3/h	4-digit display ∪ 999.9 m^3/h		3-digit display ∪ 999 m^3/h

Power source: 12 VDC-10%~24VDC+10% Current Consumption about 0.2W or less.
Date holding: During power interruption, hold total integrated flow rate and trip flow rate.

Pulse output

Electrical specifications

Specifications	Unit pulse output	High-density pulse output (Synchronized with the rotation of the impeller)
Method	Open drain	
Maximum rating	24VDC	
ON current	20 mA or less	10 mA or less
ON resistance	50Ω or less	100Ω or less
OFF resistance	100Ω or more	

Output unit

Model	Unit pulse output	High-density pulse output * (Vary according to instrumental errors in the flow rate measuring part)
	Standard	
TBX30	10 L/P (Pulse output width: 40 ms)	Approx. 110cm^3/P
TBX100	10 L/P (Pulse output width: 40 ms)	Approx. 250cm^3/P
TBX100F		
TBX150F	100 L/P (Pulse output width: 40 ms)	Approx. 470cm^3/P

* Duty ratio is 0.45 to 0.55 (at a constant flow rate).

Pulse output setting conditions

Model	Pulse output unit	Pulse output width	Pulse configuration allowed / not allowed
TBX30D	1L/P	40ms	○ (Allowed)
		120ms	x (Not allowed)
	10L/P	40ms	○ (Allowed)
		120ms	○ (Allowed)
	100L/P	40ms	○ (Allowed)
		120ms	○ (Allowed)
	1000L/P ($1m^3$/P)	40ms	○ (Allowed)
		120ms	○ (Allowed)
	10000L/P ($10m^3$/P)	40ms	○ (Allowed)
		120ms	○ (Allowed)

Model	Pulse output unit	Pulse output width	Pulse configuration allowed / not allowed
TBX100D TBX100FD	1L/P	40ms	x (Not allowed)
		120ms	x (Not allowed)
	10L/P	40ms	○ (Allowed)
		120ms	○ (Allowed)
	100L/P	40ms	○ (Allowed)
		120ms	○ (Allowed)
	1000L/P ($1m^3$/P)	40ms	○ (Allowed)
		120ms	○ (Allowed)
	10000L/P ($10m^3$/P)	40ms	○ (Allowed)
		120ms	○ (Allowed)

Model	Pulse output unit	Pulse output width	Pulse configuration allowed / not allowed
TBX150FD	1L/P	40ms	x (Not allowed)
		120ms	x (Not allowed)
	10L/P	40ms	○ (Allowed)
		120ms	x (Not allowed)
	100L/P	40ms	○ (Allowed)
		120ms	○ (Allowed)
	1000L/P ($1m^3$/P)	40ms	○ (Allowed)
		120ms	○ (Allowed)
	10000L/P ($10m^3$/P)	40ms	○ (Allowed)
		120ms	○ (Allowed)

Maximum extension distance: Varies according to input specifications of a remote counter

Weight

Model	TBX30D	TBX100D	TBX100FD	TBX150FD
Weight	1.0 kg	1.7 kg	7.1 kg	2.6 kg

Components

Part name	Material or component parts			
	TBX30	TBX100	TBX100F	TBX150F
Meter casing	Aluminum die casting		Gray cast iron	Aluminum die casting
vane wheel	Ethylenevinyl alcohol	Polyacetal resin		Ethylenevinyl alcohol
Magnet	Rare earth magnet			Ferrite
Bearing	Stainless steel, PTFE resin			

Accessories: Instruction manual

⊙ Output cable (Option) □ Attached □ Not attached

6-core cable

Cable length: 5 m

Wire connection: Power (12~24VDC) -Red
Power (GND) ---------Black
Unit pulse (+) ----------White
Unit pulse (-) ----------Blue
High-density pulse (+) -Yellow
High-density pulse (-) -Green

◎Relay terminal box 4 terminals (Contain round terminal 10pieces) [option] □with option □without option

2. Precautions in handling

Installation environment: Avoid areas with much electromagnetic noise, corrosive atmosphere, or high humidity liable to cause dew condensation. Since this turbine meter is designed for indoor installation, install it at a place not exposed to splash of rainwater

Piping conditions: Straight pipes having a length of 10D (i.e. 10 times the pipe diameter) or greater must be provided prior and subsequent to this turbine meter.
The specified accuracy may not be satisfied in environments where a sudden reduction in flow-rate or pulsations of flow, etc., occurs. Therefore, it is recommended to be installed at a place where a sudden reduction in flow-rate, pulsations of flow, etc., are little..

Items with "⊙" represent selection items.