Turbine meter, optimum for energy management

Model TBX/TBZ

Optimum control of energy for boilers and industrial furnaces

Easy-to-use electric type

TBX-D
30 · 100 · 100F · 150F

Specifications

12~24V

DC

New version operating on an external power

A new TBX-series turbine meter operates on external power of 12-24VDC. Except the configuration of operating power, the specifications are the same as those of the existing series of built-in battery operated products.

model TBX

- Two independent pulse generators
- LCD for displaying various types of information
- The original model using internal battery is still available

model TBZ

Temperature and pressure compensation

Displays the gas flow converted into a value under standard conditions, and temperature and pressure; provides a consistent energy management.

Examples of use

- Controls and manages gas flow into gas burning appliances such as burners, boilers and furnaces.
- Works as a component of a factory instrument system to control and manage gas flow

City gas
LP gas

Tool meter

TBX

TBZ

Boiler
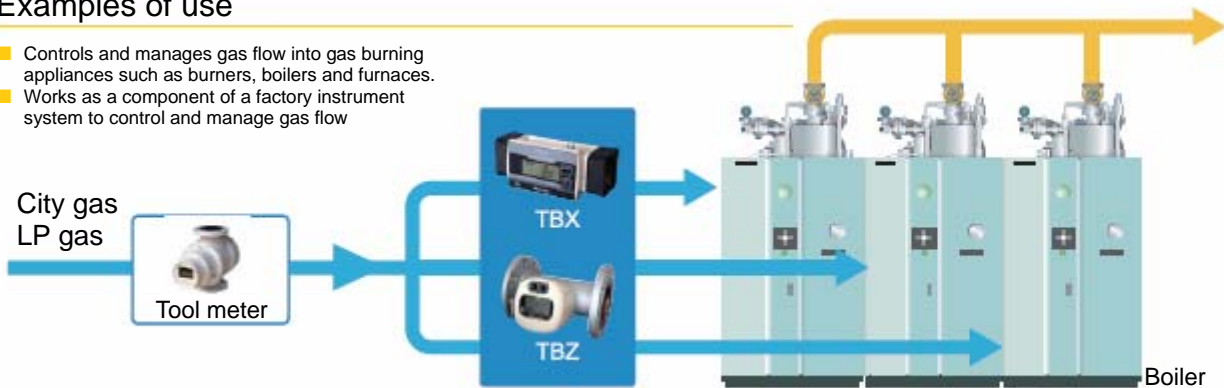
Designation

Type	Capacity	Connector type	Power source	Flow direction	Connector diameter	Description
TBX						TBX
	30					30m³/h
	100					100m³/h
	150					150m³/h
		No letter				Screw: (Rc)TBX30/100 only
		F				Flange: TBX100/150 only
			No letter			Battery
			D			External power
				L		From left (to right)
				R		From right (to left)
				U		From bottom (to top), TBX100 only
				D		From top (to bottom), TBX100 only
					3	32A (Rc1 – 1/4), TBX30 only
					4	40A (Rc1 – 1/2), TBX30 only

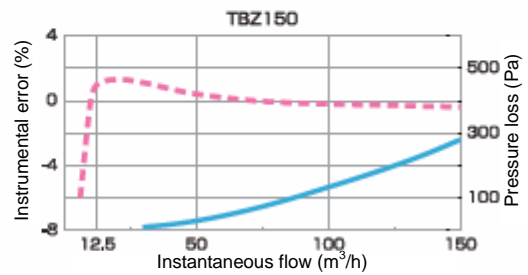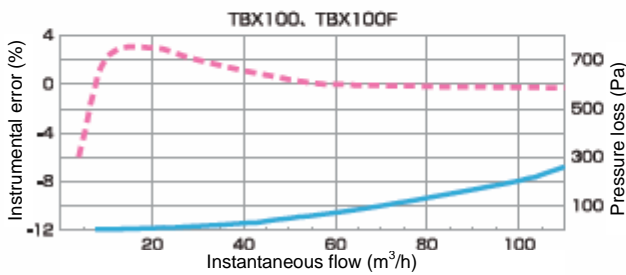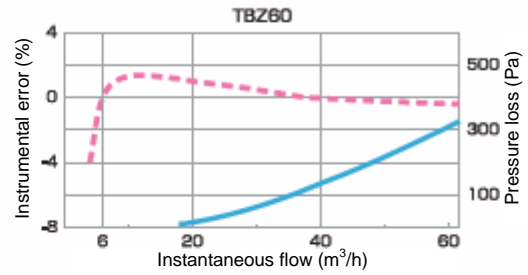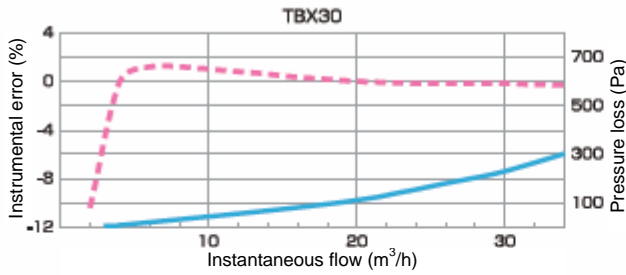| Type	Capacity	-	Compensation type	-	Compensation criteria	-	Flow direction	Description
TBZ								TBZ
	60							60m³/h
	150							150m³/h
	300							300m³/h
			0					No compensation
			3.5					Temperature and pressure compensation, 350kPa
			9.9					Temperature and pressure compensation, 980kPa
			3.5P					Pressure compensation only, 350kPa
			9.9P					Pressure compensation only, 980kPa
					N			Temperature (0℃), pressure (1 atom)
					S			Other than the above represented by letter N
					No letter			No compensation
							L	From left (to right)
							R	From right (to left)
							U	From bottom (to top)
							D	From top (to bottom)

TBX
30 · 100 · 100F · 150F

TBZ
60 · 150 · 300

TBX/TBZ general performance charts (low pressure air)

- - - Instrumental error   ——— Pressure loss

TBX30

TBZ60

TBX100、TBX100F

TBZ150

TBX150F

TBZ300

Dimensional drawing

TBX30(TBX100)   TBX100F(TBX150F)

4—φ19   φ120

a—φb

TBX

Unit: mm
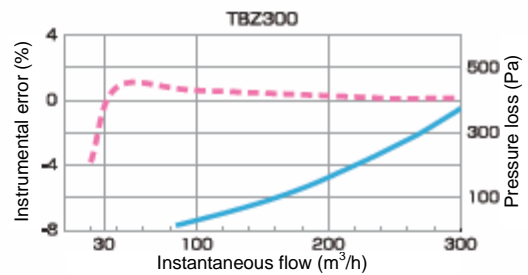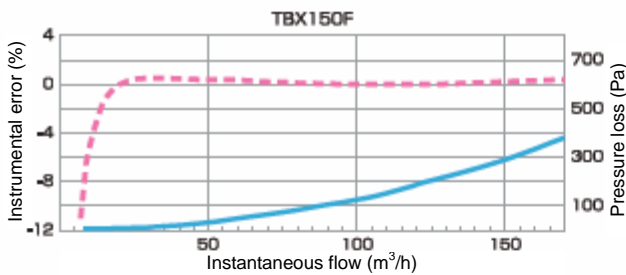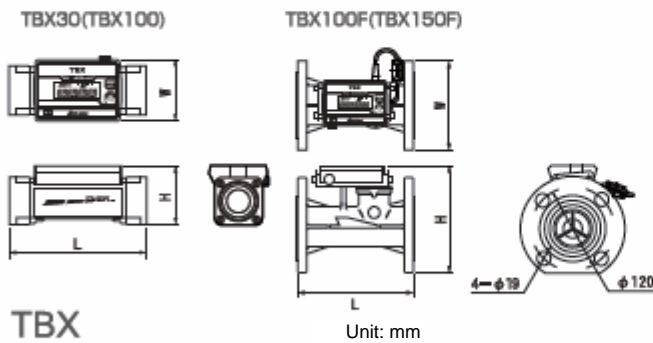
Type	External dimension	L	H	W
TBX30		170	74	73
TBX100		200	100	85
TBX100F		200	161	φ155
TBX150F		200	148	φ155

TBX100F can change the direction of the indicator depending on the flow direction. The indicator can be separated from the unit for remote indication.

TBZ

Unit: mm
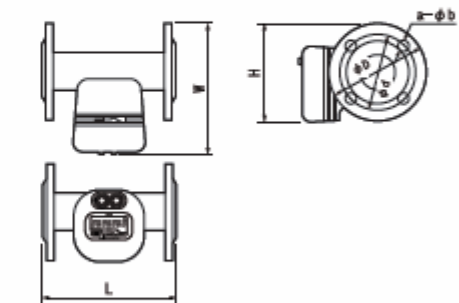
Type	External dimension	L	H	W	JIS 10K flange			
					φD	φd	aφb	Nominal diameter
TBZ60		200	150	197	140	105	4-19	40A
TBZ150		220	158	211	155	120	4-19	50A
TBZ300		250	185	246	185	150	8-19	80A

● Specifications

Base type		TBX30	TBX100	TBX100F	TBX150F	TBZ60			TBZ150			TBZ300		
Designation	Compensated flow (temperature and pressure compensated)	-	-	-	-	-	TBZ60-3.5	TBZ60-9.9	-	TBZ150-3.5	TBZ150-9.9	-	TBZ300-3.5	TBZ300-9.9
	Actual flow (no temperature or pressure compensated)	-	-	-	-	TBZ60-0	-	-	TBZ150-0	-	-	TBZ300-0	-	-
Accuracy	Flow capacity *1	4~30m³/h	10~100m³/h	10~100m³/h	12.5~150m³/h	6~60m³/h			12.5~150m³/h			30~300m³/h		
	Maximum working pressure	100kPa				980kPa	350kPa	980kPa	980kPa	350kPa	980kPa	980kPa	350kPa	980kPa
	Flow sensor	±1%FS				±1%FS and ±3%RS								
	Calculation and temperature & pressure compensation *2	-				-	±2%RSmax	±3%RSmax	-	±2%RSmax	±3%RSmax	-	±2%RSmax	±3%RSmax
Indicator	Compensated flow, accumulated (for "compensated flow" type only)	-				LCD, large type, 9 digits, displayable in units of 10 liters						LCD, large type, 9 digits, displayable in units of 100 liters		
	Trip flow *3	LCD, large type, 6 digits, displayable in units of 10 liters			LCD, 6 digits, displayable in units of 100 liters	LCD, large type, 8 digits, displayable in units of 10 liters						LCD, large type, 8 digits, displayable in units of 100 liters		
	Non-compensated flow, accumulated	LCD, large type, 8 digits, displayable in units of 10 liters			LCD, 8 digits, displayable in units of 100 liters	LCD, large type, 9 digits, displayable in units of 10 liters						LCD, large type, 9 digits, displayable in units of 100 liters		
	Compensated flow, instantaneous (for "compensated flow" type only)	-				LCD, 4 digits, displayable in units of 0.1m³/h						LCD, 4 digits, displayable in units of 1m³/h		
	Non-compensated flow, instantaneous	LCD, 3 digits, displayable in units of 0.1m³/h	LCD, 4 digits, displayable in units of 0.1m³/h		LCD, 3 digits, displayable in units of 1m³/h	LCD, 4 digits, displayable in units of 0.1m³/h						LCD, 4 digits, displayable in units of 1m³/h		
	Temperature (for "temperature & pressure compensated" type only)	-				LCD, 3 digits, displayable in units of 0.1°C								
	Pressure (for "compensated flow" type only)	-				LCD, 3 digits, displayable in units of 1kPa								
	Connector diameter	Rc1·1/2, Rc1·1/4	Rc2	JIS 10K 50A Flange		JIS 10K 40A Flange			JIS 10K 50A Flange			JIS 10K 80A Flange		
	Working temperature range	-10°C to +60°C				-10°C to +60°C								
	Fluid (gas) *4	City gas, LPG, nitrogen etc.				City gas, LPG, nitrogen etc.								
	Posture as installed	Horizontal or vertical				Horizontal or vertical (indicator's posture changeable accordingly)								
	Installation place	Indoor				Outdoor or indoor *5								
	Case	-				Drip-proof IPX2 or equivalent (JIS C0920)								
Power	Internal battery	Lithium battery				Lithium battery								
	External power	12-24VDC±10% (max. 0.19W, 7mA*6)				-								
	Output	Open drain x 2 (unit pulse, high density pulse *7)				Open collector x 2 (compensation pulse, non-compensation pulse *7)								
	Standard pulse unit width *8	TBX30-TBX100: 10L/P, TBX150: 100L/P Max load: 24VDC/20mA, pulse width: 40msec				100L/P Max load: 24VDC/20mA, pulse width: 40msec								
	Material	Aluminum alloy		Cast iron	Aluminum alloy	Pipe: stainless steel, flange: steel, indicator: aluminum alloy								
	Temperature sensor	-				Platinum resistance temperature detector, grade JIS A								
	Pressure sensor	-				Semiconductor pressure sensor (high precision)								
	Mass	0.8kg	1.8kg	7.0kg	2.5kg	5.3kg			6.0kg			9.4kg		

*1 Flow capacity refers to the actual (non-compensated) flow.
*2 -3.5 for 20kPa and -9.9 for 150kPa or above
*3 Compensated trip flow "accumulated" for "compensated flow" (temperature & pressure compensation) type; and non-compensated trip flow "accumulated" for "actual flow" (without temperature & pressure compensation) type
*4 No entry of contaminants such as oil mist (heavy carbide of C5 or above) and dust powder into the meter is permissible.
*5 For outdoor installation, no direct splash of water onto the unit is permissible.
*6 Average under the standard condition
*7 The high density pulse and non-compensation pulse are an actual flow pulse output in phase with the revolution of the impeller.
*8 TBZ: compensation pulse, TBX: unit pulse

● Accessories and options

Item		TBX		TBZ
		Internal battery	External power	
Flow meter				
Accessory	External connection cable		TBXD-SS-B C cable, 5m	
Option	External connection cable	TBX-SS-B cable, 2m, with a junction terminal box		TBZ-SS-B cable, 10m, with a junction terminal box and two clamp filters
	Junction terminal box	TBXD-SS-B		

* The external connection cables for the internal battery and external power types are different in the number of cores and therefore not compatible each other.

● Strainer (optional)

To protect the meter and keep it in good condition, install the strainer upstream of the meter.
* Note that the strainer is a source of pressure drop.

◎ Standard specifications

Type	Y S 32	Y S 40	Y S 50	Y F 50	Y D F 40	Y D F 50	Y D F 80
Maximum working pressure (kPa)	500	500	500	500	980	980	980
Material	FC200	FC200	FC200	FC200	FCD-S	FCD-S	FCD-S
Nominal diameter	32	40	50	50	40	50	80
Connection	Rc1·1/4	Rc1·1/2	Rt2	JIS10K(FF)	JIS10K(RF)		
Mass (kg)	2.3	2.9	4.5	8.2	8.5	11	15
Available for	TBX30(32A)	TBX30(40A)	TBX100	TBX100F·150F	TBZ60	TBZ150	TBZ300

◎ Outer dimension: screw connection type — Unit: mm

Type	A	L	H (approximate)
YS32	32	145	105
YS40	40	160	110
YS50	50	180	130

◎ Outer dimension: flange connection type — Unit: mm

Type	A	L	H (approximate)
YF50	50	220	130
YDF40	40	240	155
YDF50	50	250	170
YDF80	80	320	215
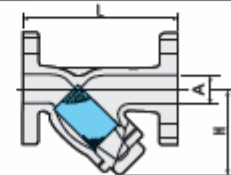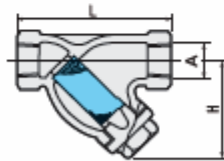
⚠ Caution

Before use, read through the instructions to ensure that the product is used safely.