

# Model **TBX**



Optimum control of energy for boilers and industrial furnaces

# Easy-to-use electric type



**TBX-D**  
30 · 100 · 100F · 150F

## Specifications

**12~24V**



**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**

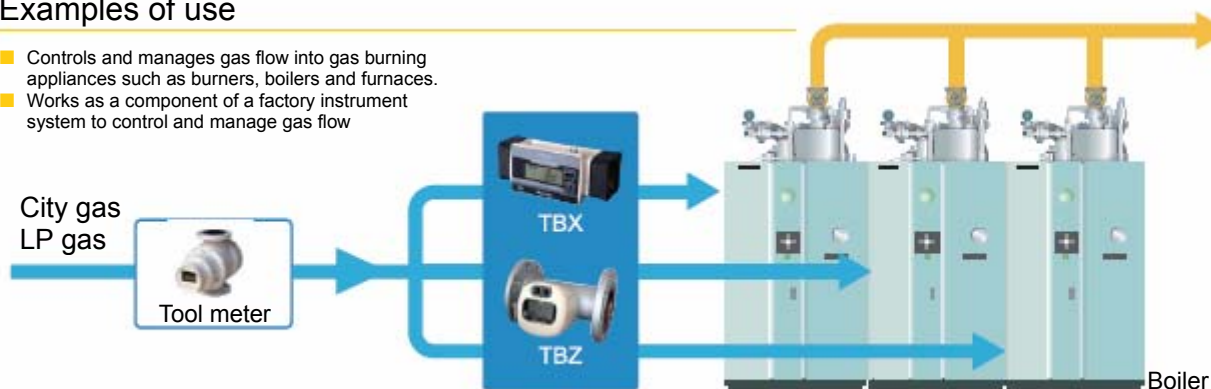


**Temperature and pressure compensation**

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



## Designation

Type	Capacity	Connector type	Power source	Flow direction	Connector diameter	Description
TBX	30					TBX
	100					30m <sup>3</sup> /h
	100					100m <sup>3</sup> /h
	150					150m <sup>3</sup> /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	60				TBZ
	150				60m <sup>3</sup> /h
	300				150m <sup>3</sup> /h
		0			300m <sup>3</sup> /h
		3.5			No compensation
		9.9			Temperature and pressure compensation, 350kPa
		3.5P			Temperature and pressure compensation, 980kPa
		9.9P			Pressure compensation only, 350kPa
					Pressure compensation only, 980kPa
			N		Temperature (0°C), 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)



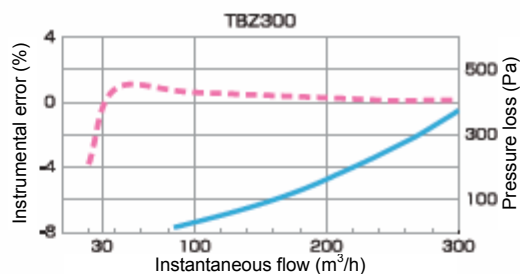
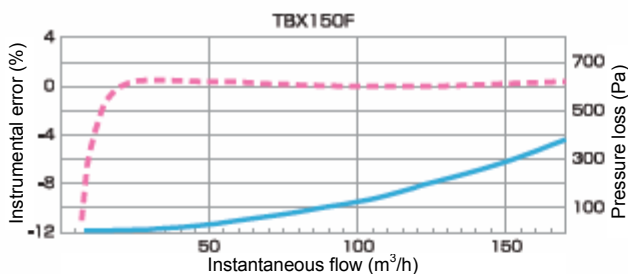
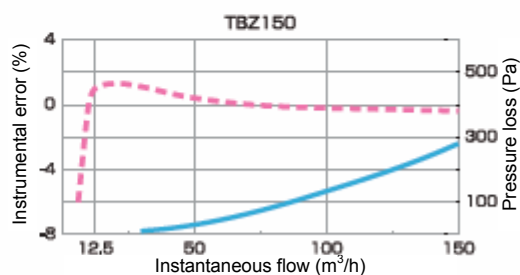
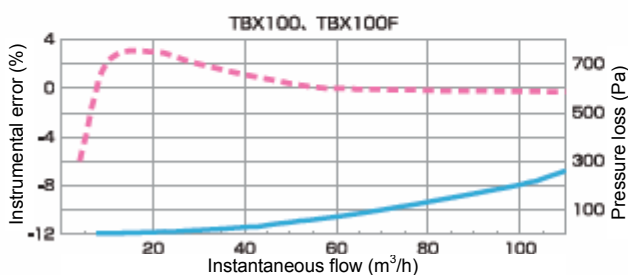
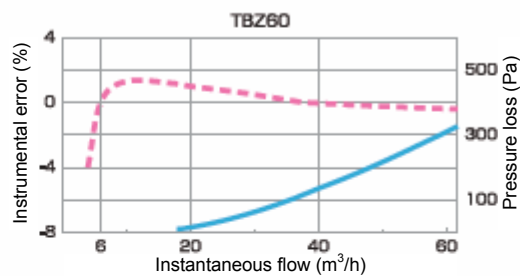
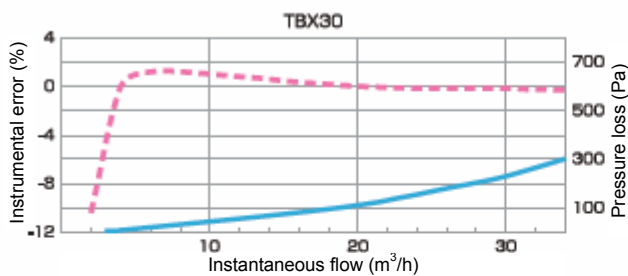
**TBX**  
30 · 100 · 100F · 150F



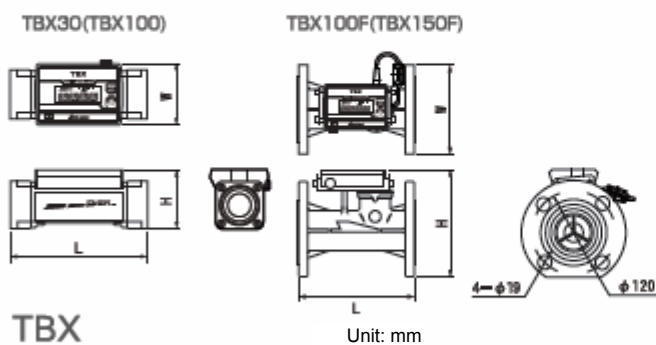
**TBZ**  
60 · 150 · 300

## TBX/TBZ general performance charts (low pressure air)

— Instrumental error — Pressure loss



## Dimensional drawing

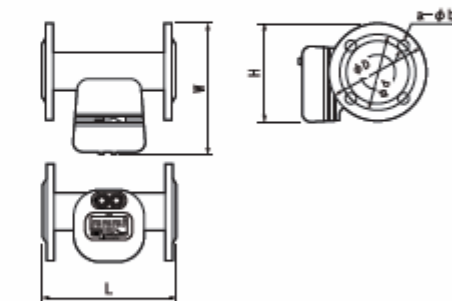


**TBX**

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

Unit: mm

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**

Type	External dimension	L	H	W	φD	φd	a-φb	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

Unit: mm

JIS 10K flange

Base type	TBX30	TBX100	TBX100F	TBX150F	TBZ60	TBZ150	TBZ300
Compensated flow (temperature and pressure compensated)	-	-	-	-	TBZ60-3.5 TBZ60-9.9	TBZ150-3.5 TBZ150-9.9	TBZ300-3.5 TBZ300-9.9
Flow capacity *1	4~30m <sup>3</sup> /h	10~100m <sup>3</sup> /h	10~100m <sup>3</sup> /h	12.5~150m <sup>3</sup> /h	980kPa 350kPa 980kPa	980kPa 350kPa 980kPa	980kPa 350kPa 980kPa
Maximum working pressure	-	100kPa	100kPa	100kPa	±2%RSmax	±3%RSmax	±2%RSmax
Flow sensor	-	±1%FS	±1%FS	±1%FS	±3%RSmax	±3%RSmax	±3%RSmax
Calculation and temperature & pressure compensation *2	-	-	-	-	-	-	-
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 10 liters	LCD (large type) 9 digits, displayable in units of 10 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, 6 digits, displayable in units of 100 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 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, 8 digits, displayable in units of 100 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	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 0.1m <sup>3</sup> /h	LCD, 4 digits, displayable in units of 0.1m <sup>3</sup> /h	LCD, 4 digits, displayable in units of 1m <sup>3</sup> /h
Non-compensated flow, instantaneous	LCD, 3 digits, displayable in units of 0.1m <sup>3</sup> /h	LCD, 4 digits, displayable in units of 0.1m <sup>3</sup> /h	LCD, 4 digits, displayable in units of 0.1m <sup>3</sup> /h	LCD, 4 digits, displayable in units of 0.1m <sup>3</sup> /h	LCD, 4 digits, displayable in units of 0.1m <sup>3</sup> /h	LCD, 4 digits, displayable in units of 0.1m <sup>3</sup> /h	LCD, 4 digits, displayable in units of 1m <sup>3</sup> /h
Temperature (for "temperature & pressure compensated" type only)	-	-	-	-	LCD, 3 digits, displayable in units of 0.1°C	LCD, 3 digits, displayable in units of 0.1°C	LCD, 3 digits, displayable in units of 0.1°C
Pressure (for "compensated flow" type only)	-	-	-	-	LCD, 3 digits, displayable in units of 1kPa	LCD, 3 digits, displayable in units of 1kPa	LCD, 3 digits, displayable in units of 1kPa
Connector diameter	Rc1/2, Rc1/4	Rc2	JIS 10K 50A Flange	JIS 10K 40A Flange	JIS 10K 50A Flange	JIS 10K 80A Flange	JIS 10K 80A Flange
Working temperature range	-10°C to +60°C	-10°C to +60°C	-10°C to +60°C	-10°C to +60°C	-10°C to +60°C	-10°C to +60°C	-10°C to +60°C
Fluid (gas) *4	City gas, LPG, nitrogen etc.	City gas, LPG, nitrogen etc.	City gas, LPG, nitrogen etc.	City gas, LPG, nitrogen etc.	City gas, LPG, nitrogen etc.	City gas, LPG, nitrogen etc.	City gas, LPG, nitrogen etc.
Posture as installed	Horizontal or vertical	Horizontal or vertical	Horizontal or vertical	Horizontal or vertical	Horizontal or vertical (indicator's posture changeable accordingly)	Horizontal or vertical (indicator's posture changeable accordingly)	Horizontal or vertical (indicator's posture changeable accordingly)
Installation place	Indoor	Indoor	Indoor	Indoor	Indoor or outdoor *5	Indoor or outdoor *5	Indoor or outdoor *5
Case	-	-	-	-	Drip proof IPX2 or equivalent (JIS C0920)	Drip proof IPX2 or equivalent (JIS C0920)	Drip proof IPX2 or equivalent (JIS C0920)
Internal battery	-	Lithium battery	Lithium battery	Lithium battery	Lithium battery	Lithium battery	Lithium battery
External power	-	12~24VDC±10% (max. 0.19W, 7mA*6)	12~24VDC±10% (max. 0.19W, 7mA*6)	12~24VDC±10% (max. 0.19W, 7mA*6)	Open collector x 2 (compensation pulse, non-compensation pulse *7)	Open collector x 2 (compensation pulse, non-compensation pulse *7)	Open collector x 2 (compensation pulse, non-compensation pulse *7)
Output	Open drain x 2 (unit pulse, high density pulse *7)	Open drain x 2 (unit pulse, high density pulse *7)	Open drain x 2 (unit pulse, high density pulse *7)	Open drain x 2 (unit pulse, high density pulse *7)	100L/P	100L/P	100L/P
Standard pulse unit width *8	-	Max load: 24VDC/20mA, pulse width: 40msec	Max load: 24VDC/20mA, pulse width: 40msec	Max load: 24VDC/20mA, pulse width: 40msec	Max load: 24VDC/20mA, pulse width: 40msec	Max load: 24VDC/20mA, pulse width: 40msec	Max load: 24VDC/20mA, pulse width: 40msec
Material	Aluminum alloy	Cast iron	Aluminum alloy	Aluminum alloy	Pipe: stainless steel, flange: steel, indicator: aluminum alloy	Pipe: stainless steel, flange: steel, indicator: aluminum alloy	Pipe: stainless steel, flange: steel, indicator: aluminum alloy
Temperature sensor	-	-	-	-	Platinum resistance temperature detector, grade JIS A	Platinum resistance temperature detector, grade JIS A	Platinum resistance temperature detector, grade JIS A
Pressure sensor	-	-	-	-	Semiconductor pressure sensor (high precision)	Semiconductor pressure sensor (high precision)	Semiconductor pressure sensor (high precision)
Mass	0.8kg	1.8kg	7.0kg	2.5kg	5.3kg	6.0kg	9.4kg

## Accessories and options

Flow meter	TBX	TBZ
External connection cable		
Accessory	TBXD-SS-B C cable, 5m	TBZD-SS-B C cable, 5m
External connection cable	TBX-SS-B cable, 2m, with junction terminal box for two clamp	TBZ-SS-B cable, 2m, with junction terminal box for two clamp
Junction terminal box		

\* 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.

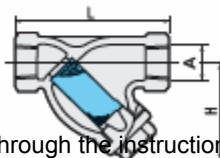
To protect the meter and keep it in good condition, install the strainer upstream of the meter.  
\* Note that the strainer is a source of pressure drop.

## Strainer (optional)

Nominal diameter	YS32	YS40	YS50	YF50	YDF40	YDF50	YDF80
Connection	500	500	500	500	980	980	980
Mass (kg)	FC200	FC200	FC200	FC200	FC0-S	FC0-S	FC0-S
Available for	32	40	50	50	40	50	80
Outer dimension: screw connection type	Rc1/2	Rc1/2	Rc2	JIS10K(RF)	JIS10K(RF)	JIS10K(RF)	JIS10K(RF)
Type	TBX30(32A)	TBX30(40A)	TBX100	TBX100F-150F	TBZ60	TBZ150	TBZ300

	A	L	H
YS32	32	145	105
YS40	40	160	110
YS50	50	180	130

	A	L	H
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.



## Sales and sales offices available for your contact:

Sapporo branch TEL(011)642-9500  
Kushiro sales office TEL(0154)23-7859  
Sendai branch TEL(022)258-1181  
Aomori sales office TEL(017)738-7531  
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The specifications shown here are as of June 2014.

This catalogue uses soybean oil ink and recycled paper.

Important information:

The technical specifications are subject to change without notice to make sure that they are updated for better performance. Please contact us.



3.2

MK-TBX-TBZ-030T