

Turbine Flowmeters

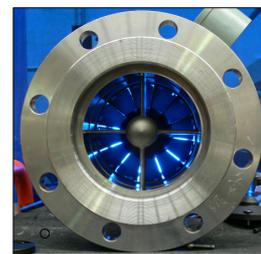
TURBOPULSE – small & large capacity meters

TM Turbopulse mini & the larger TP Turbopulse turbine series measure flows of low viscosity liquids from 3 to 4,000,000 litres/hr in a range of sizes from 1/4" to 16" (6mm~400mm).

The TM mini series have a tangential rotor with integral flow conditioning ports whilst the TP series have an axial rotor and flow guides, the TP series needs to be installed in straight sections of pipe either horizontal or vertical so that the flow is conditioned.

The TP series have Exd & Intrinsically Safe (I.S.) approvals.

Both meter series are robust & compact & take little space in the piping system. Applications include fuels, alcohols, solvents, insecticides, milk, chemicals, water & light hydraulic oils.



Features

- High accuracy & repeatability.
- Low cost of ownership, wide flow range.
- Rugged & compact design.
- Certified Exd & I.S. hazardous area versions.
- Quadrature pulse output option.
- Integral or remote pre-amplifiers & flow instruments.
- $\pm 0.15\%$ custody transfer models available.



Standard options

Flanged process connections, Explosionproof, integral and remote preamplifier, LCD totaliser batch totaliser, flow rate totalisers, scaled pulse, 4~20mA & flow alarm outputs, electronic batch controllers and pulse processing modules.

General Specification

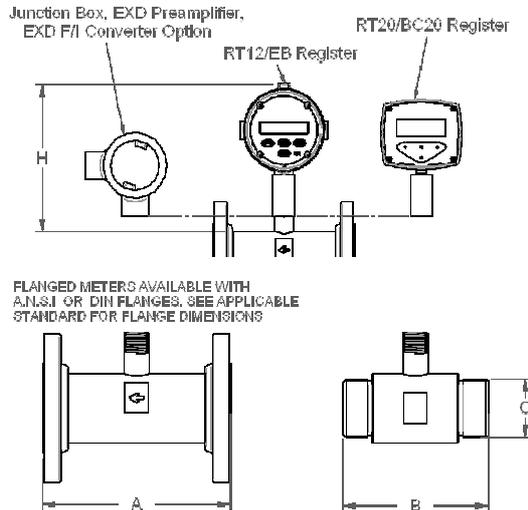
Model prefix:	TM-Turbopulse mini	TP-Turbopulse
Nominal sizes	6mm (1/4" BSPF)	12~400mm (1/2"~16")
Accuracy @ 1cp	$\pm 1\sim 2\%$ FSD or $\pm 0.75\%$ o.r.	$\pm 0.5\%$ o.r. (10:1 turndown)
Repeatability	$\pm 0.15\%$ repeatability	
Temperature range	5~125°C (40~250°F)	-40~+200°C (-40~+392°F)
Maximum pressure		
316 stainless steel	10 bar (147psi)	250 bar (3680 psi) 10cst max.
high pressure SS	N/A	400 bar (5580 psi), 68cst max.
PVDF	10 bar (147 psi)	N/A
Protection class	IP66/67 (NEMA4X), optional Exd IIB T6 or I.S.	
Electrical (see also optional outputs)		
standard output	Hall effect sensor	Coil



Flow Ranges

size	model	litres/hr (GPH)	Jet Ø	size	model	m3/hr (GPM)
1/4"	TM001	0.05~0.5 (0.01~0.13)	1mm	1"	TP025	1.6~16 (7~70)
1/4"	TM002	0.12~1.5 (0.03~0.4)	2mm	1 1/2"	TP040	3.4~34 (15~150)
1/4"	TM003	0.2~4.5 (0.04~1.12)	3mm	2"	TP050	6.8~68 (30~300)
1/4"	TM004	0.25~6.5 (0.05~1.7)	4mm	3"	TP080	13~135 (60~600)
1/4"	TM005	0.3~10 (0.08~2.64)	no jet	4"	TP100	27~270 (120~1200)
1/4"	TM006	0.5~15 (0.13~4)	6mm	6"	TP150	55~550 (240~2400)
Turbopulse		litres/hr (GPM)		8"	TP200	110~1100 (480~4800)
1/2"	TP010	100~1100 (0.44~4.4)	N/A	10"	TP250	190~1900 (840~8400)
3/4"	TP012	220~2200 (0.97~9.7)		12"	TP300	270~2700 (1200~12000)
3/4"	TP015	400~4000 (1.77~17.7)		16"	TP400	400~4000 (1800~18000)
3/4"	TP020	800~8000 (3.5~352)				

Dimensions



Flanged meters	
Model No.	A
TP010	127mm (5.0")
TP012	127mm (5.0")
TP015	127mm (5.0")
TP020	140mm (5.5")
TP025	152mm (6.0")
TP040	178mm (7.0")
TP050	197mm (7.8")
TP080	254mm (10.0")
TP100	356mm (14.0")
TP150	368mm (14.5")
TP200	457mm (18.0")
TP250	457mm (18.0")
TP300	457mm (18.0")
TP400	610mm (24.0")

Threaded meters		
Model No.	B	C
TP010	64mm (2.5")	1/2" BSP or NPT
TP012	64mm (2.5")	3/4" BSP or NPT
TP015	64mm (2.5")	3/4" BSP or NPT
TP020	83mm (3.3")	3/4" BSP or NPT
TP025	89mm (3.5")	1" BSP or NPT
TP040	115mm (4.5")	1 1/2" BSP or NPT
TP050	133mm (5.2")	2" BSP or NPT

Option fitted	H
RT12 Register	210mm (8.3")
RT20 Register	185mm (7.3")
EX Junction Box	150mm (6.0")

Model Coding

	Pulse output (nominal) :		P/litre	P/USG
TP010	1/2"	(DN15)	4000	15140
TP012	3/4"	(DN20)	1700	6435
TP015	3/4"	(DN20)	1100	4160
TP020	3/4"	(DN20)	400	1500
TP025	1"	(DN25)	180	680
TP040	1 1/2"	(DN40)	60	230
TP050	2"	(DN50)	24	90
TP080	3"	(DN80)	15	57
TP100	4"	(DN100)	6.6	25
TP150	6"	(DN150)	2.3	8.7
TP200	8"	(DN200)	1.01	3.8
TP250	10"	(DN250)	0.55	2.1
TP300	12"	(DN300)	0.38	1.4
TP400	16"	(DN400)	0.16	0.6

Body Material

S	316 stainless steel - 250 bar (3500 psi) max.
H	high pressure SS, 400 bar (5800psi) - 68cst max.

Process Connections

1	BSPP male threaded
2	NPT male threaded
3	* Tri-damp ferrules (316SS)
4	ANSI-150 RF flanges
5	ANSI-300 RF flanges
6	PN10 DIN flanges
7	PN16 DIN flanges
8	PN25 DIN flanges
9	Customer nominated connections

* tri-clamp ferrules are 1/2" larger than the meter size

Process Connection Material

T	threaded stainless steel
C	carbon steel flanges (TP080+)
S	316 stainless steel process connectors

No. of Pick-offs

1	one
2	two x 90 degree electrically offset (TP100+)

Pick-off Style

1	MS (military style) connector
2	FL (flying leads)

Pick-off Type

1	standard coil (120°C [250°F] max.)
2	hermetically sealed or high temp coil
3	ATEX approved intrinsically safe coil
4	preamplified (MS connector only)

Linearity

1	+/-0.5% (standard)
2	+/-0.15% (custody transfer TP100+)

Integral Options

ATEX approved	JB	Junction box
ATEX approved	PA	Exd preamplifier
ATEX approved	FI	Exd F/I converter
No output - display only	F1	FRT-00 Flow Rate Totaliser
4-20mA output proportional to flow rate & scaled pulse output	F2	FRT-AP Flow Rate Totaliser
Alarm and/or scaled pulse output	F3	FRT-ALP Flow Rate Totaliser
2 stage batch control	F4	FRT-BC Flow Rate Totaliser
Scaled pulse, alarms & 4-20mA	R2	RT12 rate totaliser
IECEX & ATEX approved	R3	I.S. intrinsically safe RT12
Scaled pulse + backlighting	R4	RT20 flow rate totaliser
DC powered 2 stage batch controller	E0	EB10 dc batch controller
	SB	Specific build requirement

Model No. Example

TP025 S 1 T 1 2 1 1 R2