

## Micro Pump OEM Modules **TS series**





*High Speed, Compact, and Highly Reproducible!*

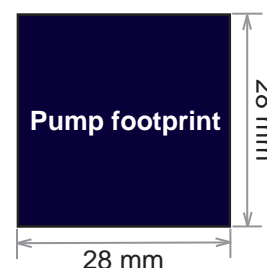
# *1 mL Stroke Volume Micro Pump OEM Modules*

*Driven with Bipolar Stepping Motor Built-In*

TS-MP110



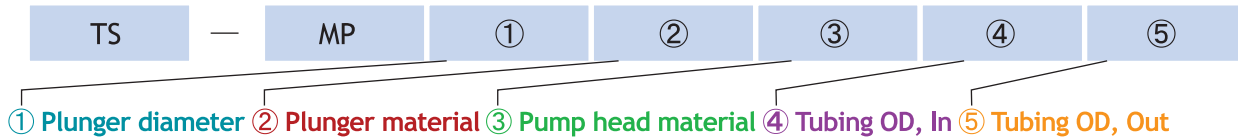
 **Unparalleled reproducibility**  **Small footprint but large stroke volume**  **Local replacement feasibility of plunger seals and benchmark sensors**  **Long service life expectancy of plunger seals exceeding well over 2,000,000 cycles**



## Specifications

Pump type	Plunger type	Plunger seal material	UHMPE
Plunger diameter (mm)	11.0	Motor	Bipolar stepping motor, DC 3.65 V/phase, DC 0.63 A/phase, 5.8 ohm +/- 10 %/phase, 5.4 mH/phase, 4,000 pps max. (self-start), 200 pulses/rotation, 2 phases
Max. stroke (mm)	11		
Max. volume (uL)	1,045.4		
Resolution (uL/pulse)	0.23		
Dead volume (uL)	108		
Pressure resistance (MPa)	0.5 (Gas pressure)		
Tubing port	Inlet & outlet ports for 2 mm OD tubing, 10-32 UNF threads	Benchmark sensor	Photo coupler, Omron EE-SX1103
Plunger material	Stainless steel SUS303 with CrN surface treatment (SP), Sapphire (SA) or Zirconia (SE)	Mounting ports	M3 x 4 pieces
		Power supply	DC 24 V 2.0 A
		Dimensions (mm)	28 (W) x 28 (H) x 130 (L)
Pump head material	Acrylic resin (AC), PEEK (PE), PES (PES), PSU (PSU) or PPS (PPS)	* The other specifications can be accomodated upon request.	

## How to select your pump models

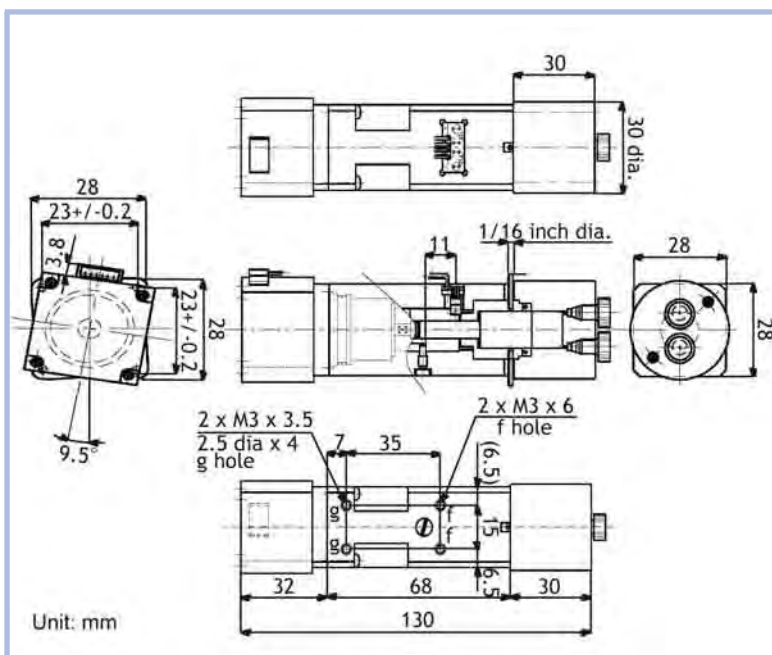


### Example

TS-MP18SPAC2020:

TS series with 1.8 mm dia. CrN treated SUS316 plunger,  
acrylic pump head and in & out ports for 2.0 mm OD tubing

## Dimensions



The specifications are subject to change without a prior notice.

## Reproducibility data

Model:	TS-MP110SPAC2020
Lot No.:	1
Measurement:	10 times
CV %:	0.025

### Conditions:

An air bubble is fed into the mixture of water and methanol in ratio of 7:3 filled in Teflon tubing of 0.6 mm ID and 10 mm length (2.826 uL), and the traverse distance is measured with an input of 80 pulses before the test starts and an additional input of 400 pulses (a plunger traverse of 1 mm) for dispensing 95.02 uL at a speed of 200 pps for intake and dispensing. The full step is used in the measurement.

