

Turbo Molecular Pump **UTM-FH/FW Series**

The UTM-FH and UTM-FW is compound turbo molecular using 5 axis magnetic levitation and digital controlled, and realized advantages such as high performance and reliability and energy savings.

The UTM-FH series, which has improved compression ratio for hydrogen, is high back pressure and high compression type and for light to middle processes. The UTM-FW series is wide range and high flow type and for high load process and middle to hard processes.



UTM-1400FW

Features

- Abundant variations from 350L/s to world's largest 6300L/s (digital magnetic controlled bearing type).
- Maintainable stable pumping performance against change of back pressure (FH series).
- Optional internal heating system to control rotor temperature and reduce adhesion of side reaction by-products (FW series).
- Excellent anti-corrosion surface treatment (excluding 3303FH and 6300FH). Optional special surface treatments (e.g. Nickel plating + cation electrodeposition, special deposited film, aluminum anodization) are available as necessary.
- Mountable in all direction.
- Variable speed system makes it possible to change the pumping speed in the range from 25% through 100%.
- There is no limitation to combine any power supply and pump main unit to change cable length because of using coupling free system and tuning free system.
- Self power generation by regenerative energy is used for backup power supply at power outage by using battery free system. Troublesome battery replacement is not necessary.
- Built-in monitoring/self-diagnostic and communication functions enable to configure centralized monitoring system.
- Safety design with fracture energy absorption construction can reduce damage on vacuum system when trouble happened with the pumps.
- High durability and high reliability have been realized by experiments such as air rushing-in testing, various touching down testing, forced destruction testing for rotor and foreign material drop testing (Si wafer fall).

Applications

[UTM-FH series]

- Main evacuation of light to middle processes such as evaporator, sputtering system, dry etching, etc. where there are not any side reaction by-products
- Pumping system of analytical instrument, R&D system, laboratory equipment, etc.
- Pumping system for those equipment and system for light gas such as H₂ and He
- Multiple turbo molecular pumps with centralized back pump configuration

[UTM-FW series]

- Main evacuation of middle to hard processes such as dry etching, CVD system, etc.
- High flow gas evacuation for dry etching, CVD system, sputtering system, etc.
- Main evacuation of analytical instrument, R&D system, laboratory equipment, etc.

Specifications

Model		UTM-350FH		UTM-480FH		UTM-800FH		UTM-1001FH		UTM-3303FH	UTM-6300FH	
Flange size	Inlet	VG100	ICF152	VG150	ICF203	VG150	ICF203	VG200	ICF253	VG350	VG500	
	Outlet	NW25				NW40				NW40		
Pumping speed *1 *2	L/sec	N ₂	350	330	480	480	810	740	1000	3300	6300	
		H ₂	320	310	340	340	530	520	570	2400	5000	
Ultimate pressure *1 *3	Pa	10 ⁻⁸										
	Torr	10 ⁻¹⁰										
	mbar	10 ⁻¹⁰										
Max. compression rate *1 *3	N ₂	> 10 ¹⁰				> 10 ⁹				> 10 ¹¹	> 10 ¹⁰	
	H ₂	1×10 ⁴				3×10 ⁴				9×10 ⁴	4×10 ⁴	
Max. pressure at inlet of N ₂ (at Max. flow) *1 *4	Water cooled [Air cooled]	Pa	43.0 [8.0]				18.0 [7.0×10 ⁻¹]				9.0 [-]	6.4×10 ⁻¹ [-]
		Torr	3.2×10 ⁻¹ [6.0×10 ⁻²]				1.3×10 ⁻¹ [5.2×10 ⁻³]				6.7×10 ⁻² [-]	4.8×10 ⁻³ [-]
		mbar	4.3×10 ⁻¹ [8.0×10 ⁻²]				1.8×10 ⁻¹ [7.0×10 ⁻³]				9.0×10 ⁻² [-]	6.4×10 ⁻³ [-]
Max. pressure at outlet of N ₂ (at Max. flow) *1 *4	Water cooled [Air cooled]	Pa	410 [240]				180 [50]				210 [-]	160 [-]
		Torr	3.1 [1.8]				1.4 [3.8×10 ⁻¹]				1.5 [-]	1.2 [-]
		mbar	4.1 [2.4]				1.8 [5.0×10 ⁻¹]				2.1 [-]	1.6 [-]
Max. flow rate of N ₂ *4	Water cooled	SCCM	850 [480]				1100 [260]				1800 [-]	1400 [-]
Max. flow rate of Ar *4	[Air cooled]	SCCM	370 [160]				480 [110]				1100 [-]	1400 [-]
Rotational speed		rpm	45000				36000				22200	16800
Acceleration time		min	Approx. 4				Approx. 6				Approx.12	Approx.30
Deceleration time		min	Approx. 4				Approx. 10				Approx.16	Approx.40
Bearing type	5 axis magnetic levitation and digital control											
Rotor blade surface treatment	Ni plating										Non treatment	
Baking temperature	°C (F)	≤ 120 (≤ 248)										
Cooling	Water cooled/Air cooled										Water cooled	
Cooling water port	Rc3/8											
Flow rate of cooling water	L/min	≥ 3										
Pressure drop of cooling water between inlet and outlet	MPa	≥ 0.05										
	psi	≥ 7.25										
Gas purge port	NW10											
Flow rate of gas purge	SCCM	10				25				Non		
Weight	kg	Approx. 17				Approx. 28				Approx. 86	Approx. 205	
Recommended backing vacuum pump *5	m ³ /h	17				48				90		
	L/min	290				800				1500		
	CFM	10				28				52.9		
Noise level	dBA	64				65				55	63	
Power consumption	kVA	0.6				0.9				1.6		
Input voltage (frequency)	ACV [Hz]	200 to 240 [50/60]										
Phase (Motor drive system)	Single (VVVF)											
Output frequency	Hz	750				600				370	280	
Ambient temperature	°C (F)	0 to 40 (32 to 104)										
Weight	kg	Approx. 10										
Conformity standard	CE											

Note: The values in the table are representative of actual measurement values and are not guaranteed.

*1 These are values measured according to the JVIS005, or calculated values based on these measured values.

*2 Without the protecting metal net.

*3 A digit number is expressed.

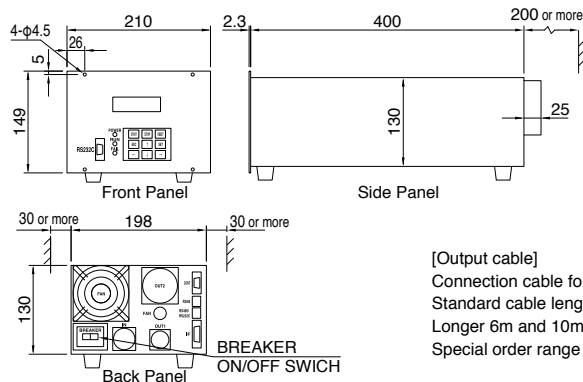
*4 These are values measured under the condition of standard surface treatment, and measured with standard backing pump.

When continuous long term operation near the maximum inlet port pressure will be maintained, please consult the manufacturer (JVIS005 standard item).

*5 Select a suitable, larger capacity pump depending on the gas flow rate.

• Digital Power Supply (Type D3)

Unit: mm



[Output cable]

Connection cable for connecting the turbo molecular pump to the power supply.

Standard cable length is 3m (9.8ft).

Longer 6m and 10m (32.8ft) cables are also available and other lengths available upon request.

Special order range is 1 to 10m. (3.3 to 32.8ft)