

XP SERIES DISC PUMP

The Lee Company's novel family of multi award-winning disc pumps generate pressure and vacuum in a small, silent, vibration-free form factor and are available with or without integrated electronics for added simplicity. The disc pump family is differentiated into various product series. with the XP Series offering the highest performing, most power efficient design and the widest operating temperature range. Designed for highly precise, ultrasmooth, gas and liquid flow control, our ultrasonic piezoelectric micropumps deliver unrivalled pneumatic performance and enable innovation wherever precision control of small volumes is critical. Their applications span medical, scientific, and industrial sectors, including:

- Microfluidics
- Point-of-care diagnostics
- Breathomics
- Compression therapy
- Patient monitoring
- Gas detection & analysis
- Medical training simulators

Our pumps are RoHS compliant, and their long life allows for maintenance-free system design. The Lee Company is actively developing higher performance R&D pump designs; if the performance listed herein is not sufficient for your application, please contact us to discuss your requirements.

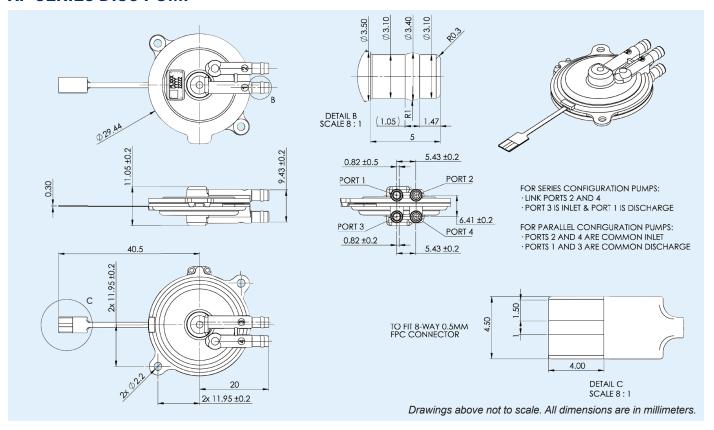
- Exceptional power efficiency
- Operating temperature range: 13°F to 104°F (-25°C to 55°C)
- True pulsation-free flow
- Silent: sound level <10 dB⁴
- Vibration-free operation
- Ultra-fast 1 millisecond response
- Lightweight: 5 g
- Compact size: 29 mm diameter
- Humidity range⁵: 0 to 95% RH
- Pumping medium⁶: air
- Control precision⁷ less than 0.1%
- Infinite turndown ratio⁸

PART NUMBER	OPERATION	PRESSURE	FLOW	VACUUM
UXPB5401000A	Intermittent ^{1,3}	> 400 mbar	> 0.75 L/min	> 300 mbar
	Continuous ^{2,3}	< 310 mbar	> 0.65 L/min	> 250 mbar
UXPB5401200A	Intermittent ^{1,3}	> 400 mbar	> 0.96 L/min	> 295 mbar
	Continuous ^{2,3}	> 310 mbar	> 0.83 L/min	> 250 mbar
UXPB5400000A	Intermittent ^{1,3}	> 250 mbar	> 1.35 L/min	> 200 mbar
	Continuous ^{2,3}	> 190 mbar	> 1.10 L/min	>140 mbar
UXPB5400200A	Intermittent ^{1,3}	> 210 mbar	> 2.00 L/min	> 180 mbar
	Continuous ^{2,3}	> 150 mbar	> 1.70 L/min	> 120 mbar

For 4^{th} letter in Part Number: B = pump only, C = pump mounted on Smart Pump Module (SPM). For more information on the SPM, please see PDS 196.

SERIES CONFIGURATION PARALLEL CONFIGURATION 1.5 3.0 UXPB5401200A UXPB5400200A UXPB5400000A UXPB5401000A -low (L/min) -low (L/min) 1.0 2.0 0.5 1.0 0.0 0.0 0 -200 400 -400 200 -300 -200 -100 0 100 200 300 Pressure (mbar) Pressure (mbar) **CONTINUOUS** -- INTERMITTENT See dimensional drawings on reverse.

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MOUNTING GUIDANCE

Mount in any orientation using compliant materials. If using mounting eyes on pump body, it is recommended to use a compliant O-ring (e.g. $1.42\ \text{ID} \times 1.78\ \text{CS}$ nitrile 70 Shore A) and nylon M2 bolt and threaded mounting stud (e.g. Wurth elektronik 9774050243r).

FILTRATION

The use of an inlet filter with a pore size of 3 μ m or less is strongly recommended to prevent the ingress of particulates that might otherwise limit the lifetime of the pump.

ELECTRICAL OPERATION

- Typical driver requires 3.7 to 5 V supply
- Pump requires AC drive waveform of 20-22 kHz at 0 to 60 V from driver
- Power: 0 to 1 W (continuous); up to 1.4 W (intermittent)
- Pump efficiency is application dependent
- Drive PCB and evaluation electronics available
- Reference circuits and firmware available to support product integration

DISC PUMP EVALUATION KIT

Our evaluation kits include everything necessary to start testing, including pumps, electronics, and a PC application for configuration and control. The plug-and-play nature of the kit allows for valuable test output in mere minutes, drastically reducing development time. The evaluation kits are suitable for laboratory testing, proof of concept and product prototyping. Contact your local Lee Sales Engineer to request

a quotation.

Visit our website for an evaluation kit user manual and video guide.



Notes

1. Intermittent operation at 1.4 W drive power (into pump). With intermittent operation, the mean power should be less than 1 W with a duty cycle period less than 20 s. Operational life may be shortened where mean pump drive power exceeds 1 W. 2. Performance at 1 W measured after 30 seconds of continuous operation. 3. Performance data presented collected under normal temperature and pressure and ambient humidity conditions. Performance under other conditions may vary. In particular, note that performance decreases with altitude and may decrease at elevated temperature. 4. Per ISO 226:2003 and related studies; 30 cm equivalent measurement distance. 5. Non-condensing; ingress of liquid-phase water will halt pump operation. 6. Liquid may be pumped indirectly in a "pressure-driven flow" / "air displacement" regime. Other gases / gaseous mixtures may be pumped. Contact The Lee Company to discuss. 7. Pressure and flow. Requires pump under closed-loop control with suitable sensor and drive electronics. 8. The disc pump's piezoelectric drive actuator has no stall speed. The pump can be controlled continuously between 0 and 100% maximum output.

The information presented herein is based on engineering data and test results of nominal preliminary units. It is believed to be accurate and reliable and is offered as an aid to guide in the selection of The Lee Company products. It is the responsibility of the customer to determine the suitability of the product for the intended use and the customer assumes all risk and liability whatsoever in connection therewith. The Lee Company does not warrant, guarantee or assume any obligation or liability in connection with this information. Product specifications may change without notice.