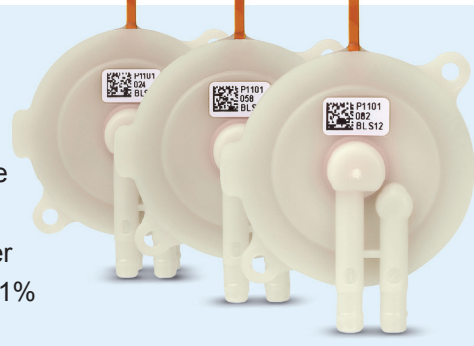


# BL SERIES DISC PUMP

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 this entry-level BL Series Disc Pump striking a balance between performance and cost. Designed for highly precise, ultra-smooth, gas and liquid<sup>7</sup> 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

- True pulsation-free flow
- Silent: sound level <10 dB<sup>3</sup>
- Vibration-free operation
- Ultra-fast millisecond response
- Lightweight: 5 g
- Compact size: 29 mm diameter
- Control precision<sup>4</sup> less than 0.1%
- Infinite turndown ratio<sup>5</sup>
- Operating temperature range: 41°F to 104°F (5°C to 40°C)
- Humidity range<sup>6</sup>: 0 to 95% RH
- Pumping medium<sup>7</sup>: air

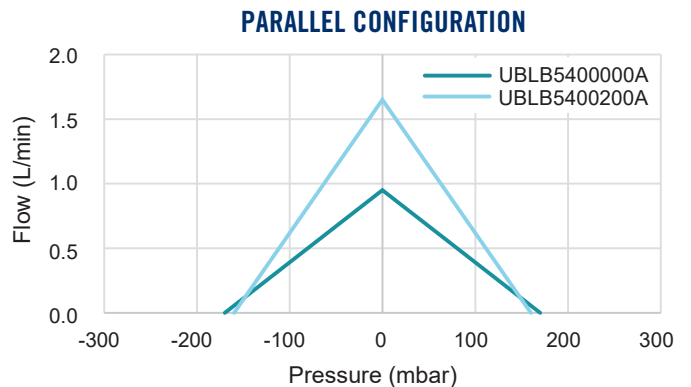
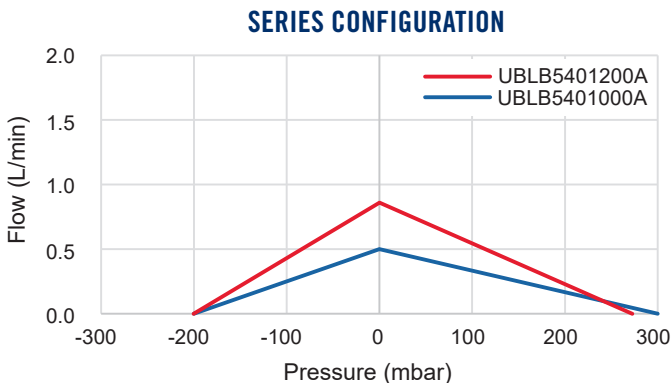


Our disc pumps are RoHS compliant and their long life allows for maintenance-free system design. The Lee Company is actively developing higher performance pump designs; if the performance

listed herein is not sufficient for your application, please contact us to discuss your requirements.

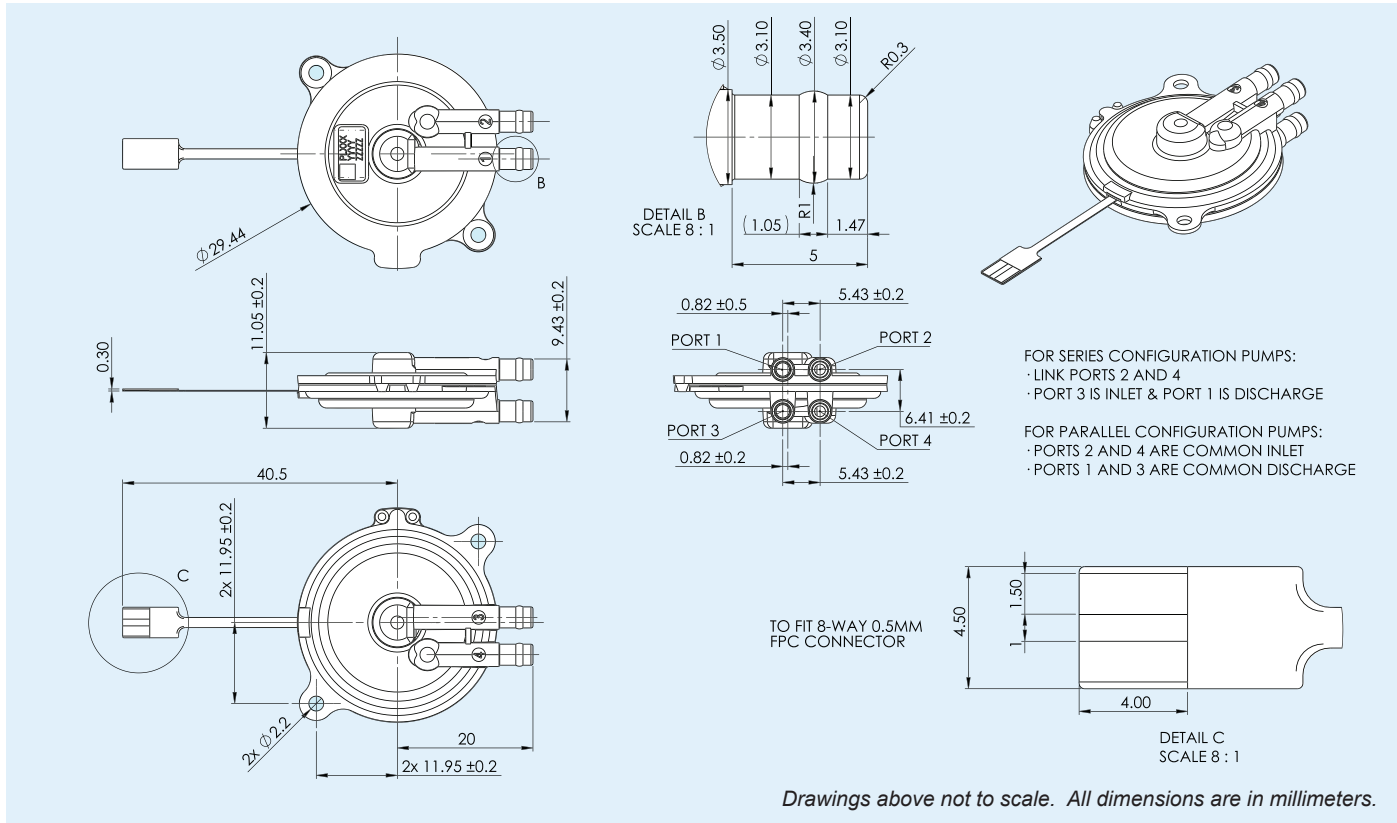
| PART NUMBER <sup>1,2</sup> | CONFIGURATION | PRESSURE   | FLOW         | VACUUM     |
|----------------------------|---------------|------------|--------------|------------|
| UBLB5401000A               | Series        | > 300 mbar | > 0.50 L/min | > 200 mbar |
| UBLB5401200A               | Series        | > 270 mbar | > 0.80 L/min | > 200 mbar |
| UBLB5400000A               | Parallel      | > 170 mbar | > 0.95 L/min | > 170 mbar |
| UBLB5400200A               | Parallel      | > 160 mbar | > 1.65 L/min | > 150 mbar |

For 4<sup>th</sup> 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.



See dimensional drawings on reverse.

# BL SERIES DISC PUMP



## 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 ID x 1.78 CS nitrile 70 Shore A) and nylon M2 bolt and threaded mounting stud (e.g. Würth elektronik 9774050243r).

## FILTRATION

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

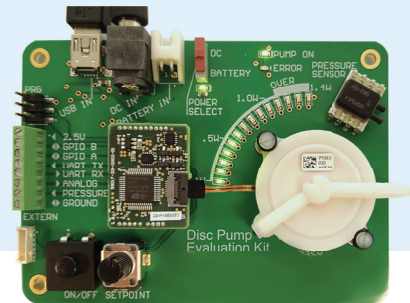
## ELECTRICAL OPERATION

- Typical driver requires 3.7 to 5 V supply
- Pump requires AC drive waveform of 20-22 kHz at 0 to 40 V from driver
- Power: 0 to 1 W (continuous)
- 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. Continuous operation at 1 W drive power (into pump).
2. 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.
3. Per ISO 226:2003 and related studies; 30 cm equivalent measurement distance.
4. Pressure and flow. Requires pump under closed-loop control with suitable sensor and drive electronics.
5. The disc pump's piezoelectric drive actuator has no stall speed. The pump can be controlled continuously between 0 and 100% maximum output.
6. Non-condensing; ingress of liquid-phase water will halt pump operation.
7. Liquid may be pumped indirectly in a "pressure-driven flow" / "air displacement" regime.

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 Lee 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.