

MPMS100A-1/MPMS100A-2 MICRO PRESSURE MEASUREMENT SYSTEM



MPMS100A Control Unit

- The **MPMS100A-1** features one fiber-optic port.
- The **MPMS100A-2** features two ports, which allow for extended operations.

BIOPAC's NEW **Micro Pressure Measurement System** from **samba sensors** is the complete solution for demanding pressure measurements using advanced optoelectronic technology—and is the premier choice for a variety of pressure measurements where accurate data, high speed, and small size are key features.

- Click to review [Micro Pressure Measurement Technology](#) (PDF) or download a [MPMS100A System product summary](#) (PDF).
- TSD170 series Samba Preclin sensors are very small and well suited for application areas such as: cardiovascular blood pressure, LVP from within the heart of a small animal. [Click here](#) to request a video of this procedure on a mouse, Institute for Experimental Medical Research), intracranial pressure, intervertebral disc pressure, pediatric intensive care respiratory monitoring, muscle pressure, and pressure in the bladder or in the urinary tract.

Intelligent electronics in conjunction with fiber optics produce accurate data at high speed, making instantaneous pressure change analysis possible.

The electromagnetic immunity inherent in the SAMBA technology makes pressure measurement trouble-free, even in environments with high electromagnetic field strength, such as in MRI applications.

The system consists of a **control unit** and a **micro pressure transducer** (see TSD170 series; separate purchase).



The compact, portable, battery-operated control unit is based on advanced optoelectronic technology from Samba Sensors. All settings can be made on the front panel. Analog output and serial RS232 make connection with a BIOPAC MP unit easy. Measurement data can be monitored in real time and stored for further data analysis.

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- The **MPMS100A-2** features two ports, which allow for extended operations.

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MPMS100A Control Unit

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Control Unit Specifications

Fiber optic ports:	1 (MPMS100A-1), or 2 (MPMS100A-2)
Resolution:	0.018 mbar (0.18 mmH ₂ O; TSD170 series transducer)
Numerical resolution:	15 bit
Measurement Modes:	Absolute/Relative (plus /Diff. for MPMS100A-2)
Measurement Frequency (update rate):	
Analog Output	40-40,000 Hz
Digital (USB)	1-625 Hz
Pressure Measurement Bandwidth:	DC (Measurement Freq)*0.44 Hz g
<i>Example:</i>	
At an analog output update rate of 5000 Hz, the pressure measurement bandwidth is	$(5000)*(0.44) = 2.2$ kHz
Outputs:	USB 2.0, Analog out
Analog output:	0–5 V
Battery operation:	up to ~5 hours (2 channels at 40 kHz)
Operating temperature	15–35°C (59–95°F):
Display:	8.1 cm (3.2 inch), monochrome
Dimensions:	210 x 110 x 45 mm (8.3 x 4.3 x 1.8 inch)
Weight:	850 g (1.9 lbs)

Note The BIOPAC MPMS100A Micro Pressure Measurement System utilizes technology from Samba Sensors (Gothenburg, Sweden).

Discontinued Product: MPMS100A-1 and MPMS100A-2 were discontinued in 2013.

TSD170 SERIES MICRO PRESSURE TRANSDUCERS



TSD170 Series Micro Pressure Transducer

- TSD173** MRI-compatible and radiotranslucent.
 - TSD173A** -50 to 350 mbar, 10 m/5 cm
 - TSD173B** -50 to 350 mbar, 10 m/15 cm
- TSD174** Radio-opaque, designed for use in x-ray machines.
 - TSD174A** -50 to 350 mbar, 4 m/5 cm
 - TSD174B** -50 to 350 mbar, 4 m/15 cm
- TSD175** MRI-compatible and radiotranslucent cables are shorter and may not suit every application.
 - TSD175A** -50 to 350 mbar, 4 m/5 cm
 - TSD175B** -50 to 350 mbar, 4 m/15 cm

The Micro Pressure Transducers fit the MPMS100A-1/MPMS100A-2 Micro Pressure Measurement System. Each optical transducer is very stable, has a low temperature coefficient, and is easy to use. These transducers are biocompatible, have intrinsic electrical isolation, and can be made radio opaque. The micro dimensions of the transducer tip ensure a well-defined measurement location and minimal influence on the measurement environment.

Each transducer consists of a silicon sensor element, 0.42 mm in diameter, bonded to an optical fiber 0.25 mm to 0.40 mm diameter. Each transducer is delivered calibrated to minimize the need for customer calibration. This simplifies the use of the system and reduces the risk of human errors.

The sensors can withstand truly excessive over-pressure. The R&D department hasn't been able to design a study where over-pressure (gas/fluid) would break the sensor. When reaching these extreme high pressure levels it becomes difficult to setup and handle; for example, the highest measurable upper limit is 17 bar which equals 17,000 cm water (=558 feet of water).



Control Unit with TSD170 series transducer

- The system consists of a **Control Unit** (see MPMS100A-1/MPMS100A-2; separate purchase) and a **Micro Pressure Transducer**.

TRANSDUCER SPECIFICATIONS *Other pressure ranges available upon request.*

Sensor ø:	0.42 mm
Fiber ø:	0.25 to 0.40 mm
Calibration:	Factory calibrated
Measurement Media:	Gases and fluids
Minimum Bend Radius:	10 mm
Long-term Stability:	< 0.5% of range
Storage Temperature:	-40 to + 80° C
Standard Length:	4 m (for MRI 10 m)

Accuracy;

-50 to 250 mbar:	±0.5 mbar plus ± 2% of reading
250 to 350 mbar:	± 4% of reading
5 bar:	± 10 mbar plus ± 2% of reading
10 bar:	± 15 mbar plus ± 2% of reading
17 bar:	± 20 mbar plus ± 2% of reading

Temperature Coefficient;

-50 to 250 mbar:	< 0.2 mbar/° C (20-45°C)
250 to 350 mbar:	< 0.2 mbar/° C (20-45°C)
5 bar:	< 3.5 mbar/° C (20-45°C)
10 bar:	< 7 mbar/° C (20-45°C)
17 bar:	< 14 mbar/° C (20-45°C)

Discontinued Product: TSD170 Series were discontinued in 2013.