

# MHzPressure™ EP-1000

## 1 Features

- Full calibration (magnitude and phase) over the entire measurement range
- Large dynamic range (>90dB)
- Flush sensing element (~10 $\mu$ m)
- Sensor roughness (<25 $\mu$ m)
- Wide bandwidth (~1 MHz)
- Minimum detectable pressure (MDP):
  - $\leq 1$  Pa (1.5e-4 psi) at 1 kHz,
  - <0.1 Pa (1.5e-5 psi) above 10 kHz
- Maximum linear pressure:
  - $\geq 138$  kPa (20 psi) @ 2.2 kHz (modeled)
  - 8 kPa (1.16 psi) @ 2.2 kHz (verified)
- Accurate, quantified dynamic pressure measurements at frequencies up to 1 MHz
- Reciprocal calibration (magnitude and phase) over the entire measurement bandwidth
- Drop-in replacement of comparable high-speed pressure sensors



## 2 Applications

- Hypersonic flow measurements
- Laminar-to-turbulent boundary layer transition detection
- Second-mode instability experiments

## 3 Description

MHzPressure™ sensors are fully calibrated (both magnitude and phase) MHz-bandwidth sensor that enables quantifiable fluctuating pressure measurements in high-speed flows.

Based on IC2's proven piezoelectric MEMS pressure sensing technology, the small form factor offers drop-in replacement of existing instrumentation in scale wind-tunnel models.

## 4 Ordering Information

EP-1000 must pair with the following control unit:

- ASC-0401-SAL

All MHzPressure sensors come with an IC2 standard 2m cable. Custom cable lengths and sensor mounting options are also available.

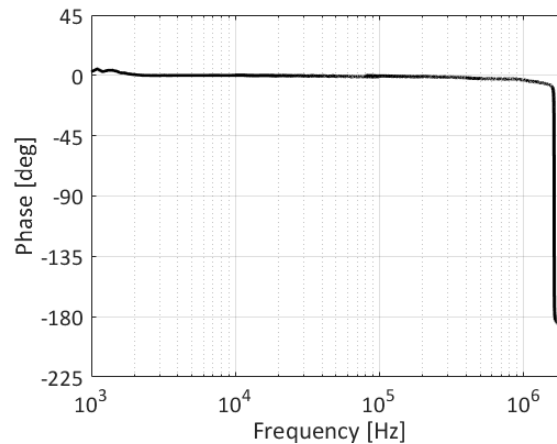
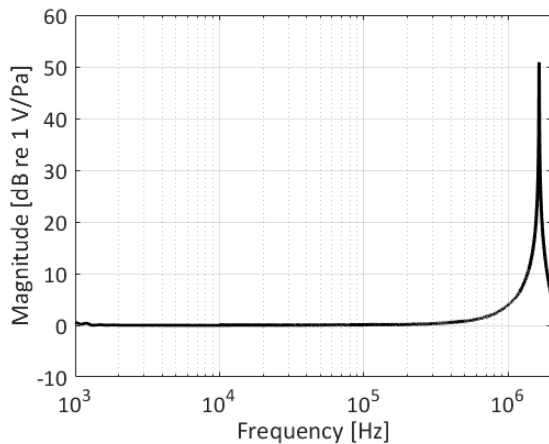
Rectangular sensor head for custom multi-sensor packages available upon request to enable tighter sensor spacing.

## 5 Certifications



## 6 Specifications

	MIN	TYP	MAX	UNIT
<b>Performance Specifications</b>				
Bandwidth @ $\leq 3$ dB	0.050		900	kHz
Bandwidth @ $\leq 4$ dB	0.050		1000	kHz
Resonant Frequency		1.6		MHz
Sensitivity		0.9		$\mu\text{V}/\text{Pa}$
Max Linear Pressure (modeled/predicted)		138 (20)		kPa (psi)
Max Linear Pressure (measured/verified)		8 (1.16)		kPa (psi)
Minimum Detectable Pressure @ 1 kHz		<1		Pa
Minimum Detectable Pressure @ $\geq 10$ kHz		<0.1		Pa
Operating Temperature Range	-40 (-40)		125 (257)	$^{\circ}\text{C}$ ( $^{\circ}\text{F}$ )



Typical relative magnitude and phase response obtained using a laser vibrometer.

## 7 Mechanical Specifications

	TYP	UNIT
Diameter	3.18 (0.125)	mm (in.)
Length	18 (0.71)	mm (in.)
Sensor Flushness	< $\pm 10$ (0.0004)	$\mu\text{m}$ (in.)
Sensor Roughness	<25 (0.001)	$\mu\text{m}$ (in.)
Cable Length	2 (6.6)	m (ft.)

## 8 Revision History

2023.0 – Initial Public Release