PRECISION ACOUSTICS
A Coda Octopus Company

High power Immersion transducers



Precision Acoustics Ltd is pleased to offer a wide range of transducers. In addition to custom designs we also have a carefully selected offering of transducers which can be ordered for **rapid delivery**. This document introduces our standard range of **high power** planar transducer options and provides a summary of their capabilities. For transducers with alternative specifications (including focused devices) please contact Precision Acoustics Ltd to discuss your requirements.

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PLANAR HIGH POWER TRANSDUCERS

Active diameter (mm)	Frequency (MHz)							Case size
	0.5	1	2	3	5	10	15	
15			✓	✓	✓	✓	✓	S
19		✓	✓	✓	✓	✓		M
23		✓	✓	✓	✓			L
43	✓	✓						XL
58	✓	✓						H

*See below for housing dimensions.

✓ Available sizes

DESIGN OBJECTIVES:

- Designed for **maximum output** and efficiency at a single frequency.
- Suitable for **pulsed or continuous** use*

*Subject to adherence to drive recommendations provided on the test certificate.

KEY FEATURES:

- Suitable for **immersion** use
- 316 **Stainless steel housing**
- Integral coaxial cable (1.5 m length) with **BNC** connector
- PZT **Piezoceramic** active element
    - Low damping – high power, low bandwidth
    - Impedance matched for use with **50 Ohm** systems.
- Can be used in a **pulse-echo** mode
- **>100 W** acoustic output (depending on transducer model and use case)

CUSTOMISATION:

For any of the options below, and more, please speak to one of our team directly to discuss your requirements.

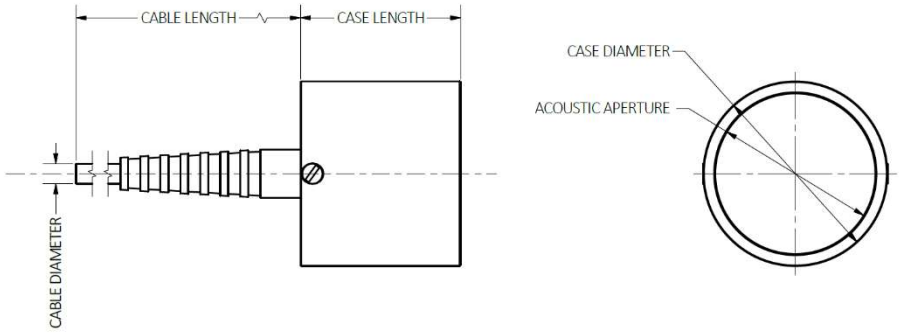
- **Integrated thermocouple** for temperature monitoring
- Auto shut-off **thermal safety** capability (compatible with E&I amplifiers only)
- **MR Compatibility**
- **Multi-element** devices

ORDER CODE

'TX' _ **'Frequency'** (in MHZ) _ **'Active Diameter'** (in mm)_**'HP'**

To order one of these planar transducers, please use an order code consisting of a 'TX' prefix followed by the frequency (in MHz) and the active diameter (in mm). For example, a 1 MHz transducer with 23 mm active diameter can be ordered with code: **TX_1_23_HP**

HOUSING DIMENSIONS



Case Size:	H	XL	L	M	S
Case diameter (mm)	67	51	31	26	22
Acoustic aperture (mm)	58	43	23	19	15
Case length (mm)	53	53	53	53	53



DRIVE AMPLITUDE GUIDELINES

The following graphs are intended as a guide to assist in the selection of an appropriate drive regime for your transducer.

These graphs are indicative only. Extreme care should be taken not to overdrive the transducer as thermal overload leading to destruction of the transducer can occur rapidly at high drive levels.

Please use the unique test data provided with each transducer to determine the safe operating limits for your transducer.

Note: Precision Acoustics tests all transducers for up to 30 seconds of continuous operation in an immersion setup with 60 seconds between 'on' periods to generate unique test data. We provide a maximum drive voltage recommendation at a single frequency based on this regime. If your drive regime is different please speak to us for advice on your application, or about our extended characterization services so we can provide test data which matches your drive regime precisely.

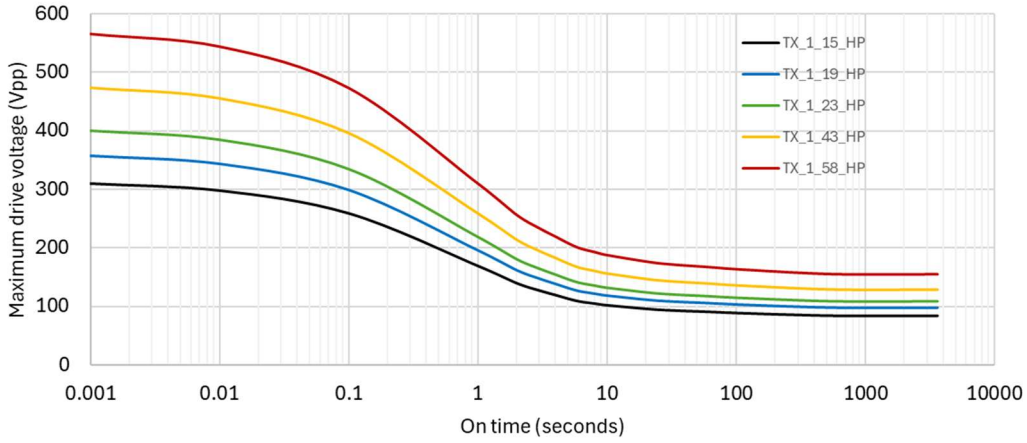


Figure 1. Maximum drive voltage guide, for an immersion setup with water at 20 C and a continuously operating transducer. Assuming a perfect 50 Ohm transducer and drive system.

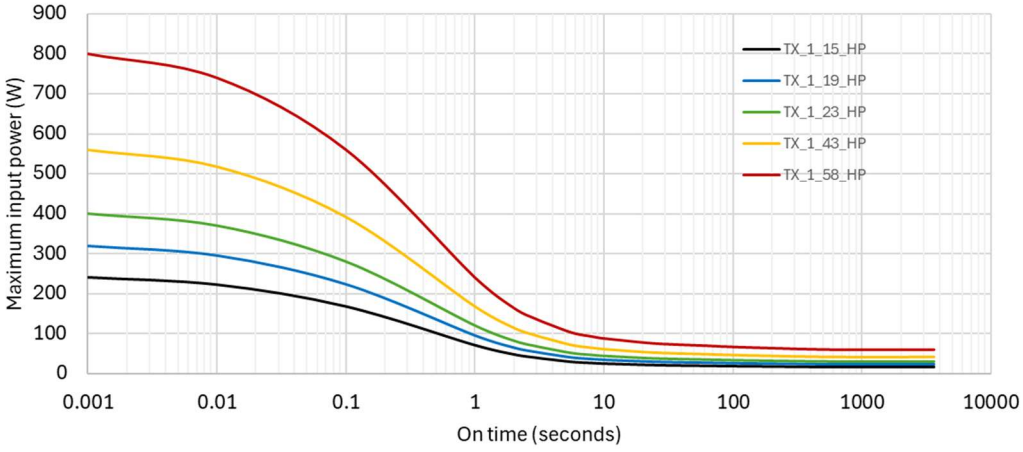


Figure 2. Maximum power input guide, for an immersion setup with water at 20 C and a continuously operating transducer. Assuming a perfect 50 Ohm transducer and drive system.

EXAMPLE DATA FOR PIEZOCERAMIC TRANSDUCERS

- Typical bandwidth: **>20%** (-6dB)[1]
- - 6 dB Centre frequency: **+/-10%** of nominal.
- All transducers supplied with test data to include:
    - X & Y Transverse beam profiles.
    - Temporal/impulse response.
    - Frequency response.
    - Acoustic power output vs. drive voltage
    - Acoustic power output vs. frequency

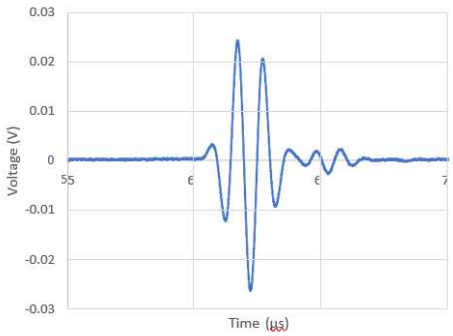


Figure 1. Response to single cycle Sine wave input. 1MHz, 23mm diameter planartransducer

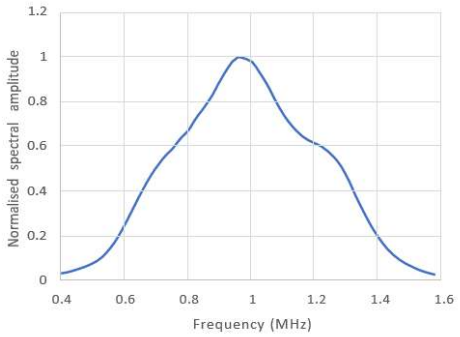


Figure 2. Frequency [profile for 1MHz, 23mm diameter planar transducer.

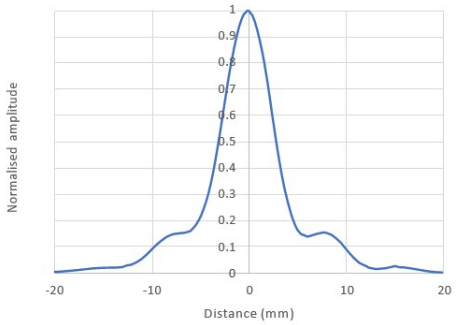


Figure 3. Transverse 'X' beam profile of 1MHz, 23mm diameter planar transducer.

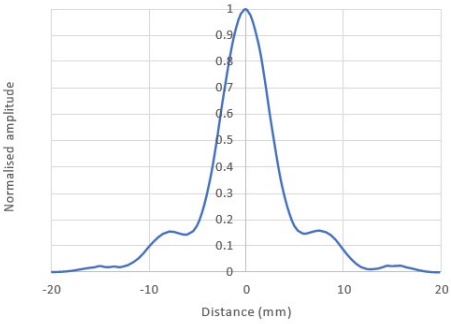


Figure 4. Transverse 'Y' beam profile of 1MHz, 23mm diameter planar transducer.

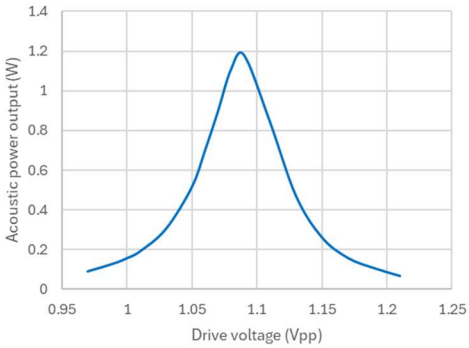


Figure 5. Acoustic power output vs. frequency for a 1 MHz 58 mm transducer

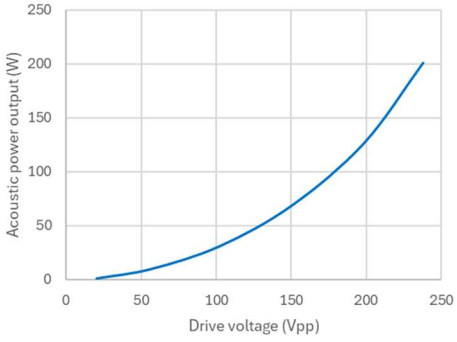


Figure 3. Acoustic power output vs. drive voltage for a 1 MHz 58 mm diameter transducer

[1] Bandwidth and pulse shape will vary depending on choice of frequency and housing size.

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