



KEY FEATURES

- Highest channel density for PDM acquisition and measurement
- Acoustically silent remote pod supports anechoic test
- 16 phase-aligned channels on 8 data lines for simultaneous testing of MEMS microphone arrays
- Accurate DUT-delay measurement via delay-calibrated module
- 0.0 to 3.6 V Vdd supply
- 0.8 to 3.3 V logic levels
- Selectable clock direction

PDM 16: MEMS array testing with confidence

Acoustic test is challenging, so trying to measure the acoustic performance of a MEMS mic array can be especially daunting with the added requirement of validating phase alignment. The PDM 16 module, designed for the APx Series modular audio analyzers, provides the ability to incorporate all of the APx analyzer capability with your MEMS testing. This module provides 16 acquisition channels and can provide simultaneous analysis of all 16 channels on a single screen.

Testing bare mics or mic arrays

PDM 16 can act as the clock master or slave, thereby supporting the test of bare mics (PDM 16 acting as clock master) or test of mics in a system (PDM 16 acting as clock slave).

Support for anechoic chamber test setups

The module's remote interface pod (used in all PDM 16 configurations) and extension cable preserve PDM signal integrity, ensuring measurement system performance even when the DUT, along with the acoustically-silent pod, is in an anechoic chamber up to 10 meters from the analyzer. PDM 16 extension cables are available in 2-, 5-, or 10-meter lengths.

Margin testing using programmable Vdd supply

A variable Vdd supply in the PDM 16 allows for mic performance characterization over a broad range of supply levels. The supply is adjustable from 0 to 3.6V (50 ma current limit), either by manual control or under programmatic control.

PDM 16 Compatibility with Modular APx Analyzers

The PDM 16 module is designed to operate within any of the modular APx analyzers, including the APx525, APx526, APx582, APx585, APx586, and APx555.

PDM 16 is compatible with APx modular analyzers manufactured August 2012 or later. Note: only one PDM 16 module can be installed in an analyzer, and software version 5.0.3 (or later) is required. DUT connection is via a 40 pin IDC 2.54mm (0.1") cable header on remote pod (not included).

Configuration Options

APX-PDM16-2M

APx PDM 16 channel input module with 2-meter cable and remote pod.

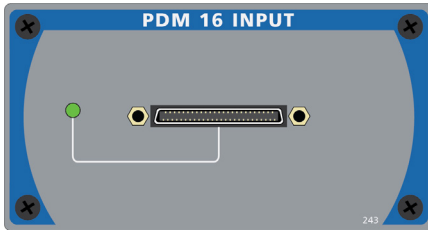
APX-PDM16-5M

APx PDM 16 channel input module with 5-meter cable and remote pod.



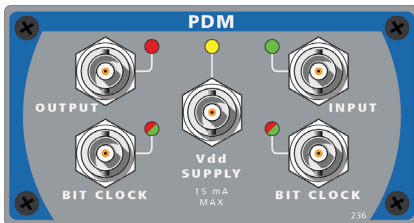
An integrated Solution

The APx PDM 16 option has all the functionality needed for comprehensive MEMS microphone output measurements and is integrated into a fully-featured APx audio analyzer, enabling quick connection and sophisticated testing.



For situations where both input and output PDM capability is needed, the PDM module can be used in conjunction with the PDM 16 to provide two channels of PDM output and up to 16 channels of PDM input.

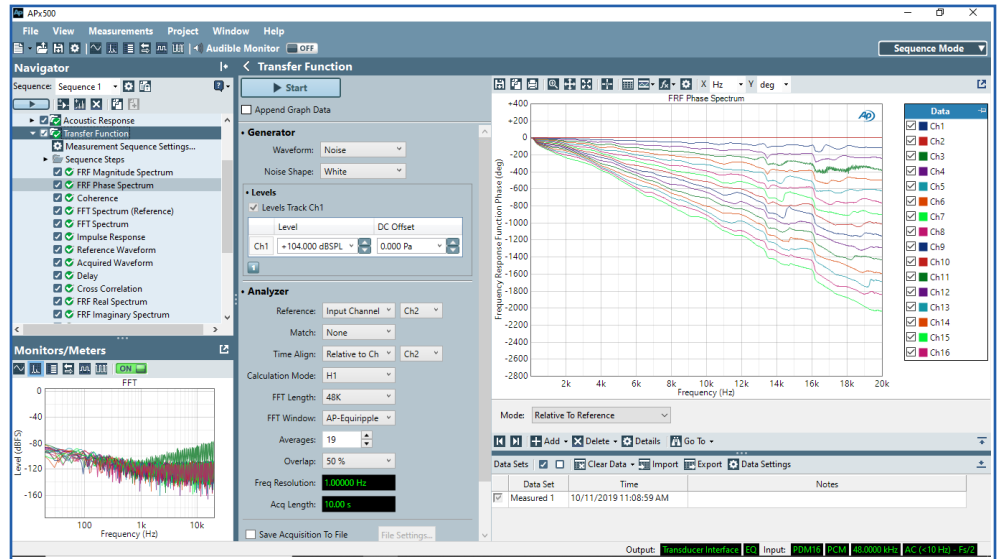
The PDM provides features that are especially useful during the development phase of a new product, including jitter tests and jitter impairments for tolerance testing, as well as power supply rejection test. The combination of the PDM and the PDM 16 makes a very comprehensive solution for PDM test.



Note that the input on the original PDM module cannot be used simultaneously with the input on the PDM 16 module, but the PDM module input can be used when the PDM 16 module is not active.

Interchannel time alignment

Designing systems which contain MEMS mic arrays often requires careful control of the system-level timing relationship between the microphones. Proving this can be challenging if the test system you use can only acquire a few of the channels at a time, or if the test system doesn't specify its own alignment performance between channels. With the PDM 16 module, all 16 channels are sample aligned.



PDM 16 Phase Spectrum Measurement in APx500 Software



APx525 with PDM 16 module attached to remote interface pod

KEY SPECIFICATIONS

AUDIO PERFORMANCE

- SNR**
< 129 dB (20 kHz BW, unwt'd)
- THD+N**
< -130 dB (20 kHz BW, unwt'd)
- Dynamic Range**
< 137 dB (AES 17, CCIR-RMS)
- Flatness**
±0.002 dB (20 Hz to 20 kHz, 32x decimation)
±0.001 dB (20 Hz to 20 kHz, 64x, 128x, 256x, 512x decimation)
- Decimation Ratios**
5 selectable ratios:
32x, 64x, 128x, 256x, 512x
- Interchannel Phase Alignment**
All channels sampled synchronously from common clock, phase relationships between channels fully maintained

INTERFACE

- Sample Rate Range**
4 kHz to 216 kHz
- Bit Clock Range**
128 kHz to 24.576 MHz
- Oversampling Rate**
32, 64, 128, 256
- Edge Modes**
Rising edge, odd channels
Falling Edge, even channels
- Vdd Output**
0.0-3.6 V, 50 mA max
- Interface Logic Levels**
0.8-3.3 V
- Connectors**
Connection to DUT is via a 40 pin IDC 2.54mm (0.1") cable header on the Remote Pod



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