

PIND Felix™

PC controlled Test System for
Particle Impact Noise Detection (PIND)



Felix™

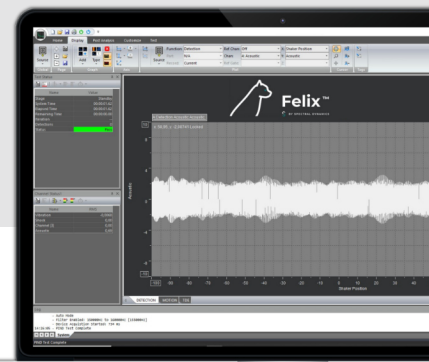
- Reliability Testing for All Types of ICs / Relays / Switches and Hybrid Electronics
- State-of-the-Art PIND testing
- Visual and audio particule detection
- Display and report of the test
- System designed and manufactured by Spectral Dynamics

UNIQUE FEATURES for CONVENIENCE and FLEXIBILITY

The PIND Felix™ easily exceeds the requirements of all military standards for PIND testing (U.S. MIL-STD-883, 750, 202,39016D).

Embedded sensors monitor and display the actual shaker motion with PC analysis to correct for any changes in test conditions.

The PIND Felix™ is fully programmable to your own specifications since everything is generated by the computer.



SYSTEM OVERVIEW



PIND sensors : Depending of the test, Spectral Dynamics can supply single crystal or multiple crystal sensors. All our PIND sensors have a complete Faraday shield around each crystal to protect the sensor from unwanted stray electrical signals.

Software : PIND Felix™ software allows for data collection of the vibration, shock, and acoustic channels. Each type of signal can be replayed for more in depth understanding of the interactions between the acoustic noise and the motion environment. The PIND Felix™ software is compatible with tools like Microsoft Office. Reports for presentation or printing are simple to do.

Shaker : The unique PIND Felix™ shaker creates accurate "Active Shocks" with adjustable shock levels by controlling the velocity of the shaker head and correcting for device differences prior to impact.

Sensibility Test Unit (STU) : A STU is supplied with the PIND Felix™ test system. This kit will routinely verify that the system is functional. The STU is not used to calibrate the sensitivity of the system, only to simulate a bad Device Under Test (DUT). MIL-STD specifies such a test needs to be carried out routinely as to verify the functionality of the system.



Felix™



**SPECTRAL
DYNAMICS**

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PIND FELIX™ SPECIFICATIONS

SPECIFICATIONS for SPECTRAL DYNAMICS MODEL FELIX™-M4 PIND TEST SYSTEM

The Felix™-M4 system is designed to test both small parts and large parts on one system. The unique 100mm diameter sensor has five (5) detection crystals and attaches onto a convective cooled low-profile Neodymium magnet shaker with a single 10/32 screw. This modular design allows for field replacement of the sensor. The system adjusts the power to the shaker to accommodate weights from 0.1 up to 360 grams. At vibration frequencies of 60 Hz the system can test DUTs that weigh over 400 grams.

System includes

2600-9702-2	Computer-based Controller and analyzer Main chassis with four input channels, one output channel computerized
2600-9701-2	DPA600 digital power amplifier 600 Watts
4501-M230	Heavy duty PIND vibration and shock shaker (34 force-pounds - 150 Newtons)
2600-9501	W10 Pro Laptop with ethernet connection
2600-FELIX	Windows 10 Software including adjustable amplitude, timing, frequency for vibration as well as adjustable amplitude for shocks.
100-5S155-4	100 mm diameter surface impact sensor / accelerometer with five crystals
100-S140BM	Sensitivity Test Unit (STU)
4501-500065-A	External STU pulser control box
2600-9455	Kit, FELIX™ accessories including:
110-SCM4-Y	BNC-microdot accelerometer cable (yellow)
110-SCM4-B	BNC-microdot acoustic sensor cable (blue)
110-SCM4	Sensitivity test unit (STU) cable (white)
W080-0211	Controller to shaker drive cable
W080-0370	Power cable for controller
1762-7042	Cable, CAT6 crossover
1762-7044	Cable, CAT6 ethernet
1923-2098	Cable, BNC-BNC jumper
LT-FELIX	Operation/maintenance manual
CH04-ACWS	4 oz bottle water soluble acoustic gel (120 ml)
4501-DOT1	22 mm double sided adhesive dots (or 50 mm adhesive dots ref. 4501-DOT2)
CALCERT	Calibration certificate

Shaker options

4501-M230	Heavy duty PIND vibration and shock shaker
4501-M230R	4501-M230 heavy duty shaker with wide pulse anvil included
4501-M230D	Heavy duty shaker with two magnets

Sensor options

100-S140C/A	Single crystal PIND sensor - 22 mm
100-S140C/AL	Single crystal PIND sensor - 50 mm
100-3S155-60	Multiple crystal PIND sensor - 60 mm Three crystals
100-5S155-4	Multiple crystal PIND sensor - 100 mm Five crystals : 1 in center with 4 mounted in a square at 50 mm

Impact sensor assembly specifications

Sensitivity (each crystal) -77.5 dB +/- 3 dB ref 1V per microbar at 155 kHz
Measured using ANSI 2.1-1988, underwater reciprocity
Cable integral four conductors fully shielded flex cable
EMI protection full Faraday shield including all cabling
Attachment fully field replaceable w/10/32 screw
Accelerometer 2.1 pc/g ±10 %, 100 Hz located inside impact sensor

Motion creation specifications

Vibration Frequency Range	25 to 250 Hz, sinusoidal
Amplitude (Amp.)	5.0 to 20.0 g peak, display on screen
Amp. Program Resolution	0.1 g
Repeatability	0.5 g pk for levels above 5g, with control
Adjust Maximum D.U.T. Test Weight without calibration changes	Maximum 400 grams over the entire range maximum 500 grams at 60 Hz
Shock creation 300-2000g Method	Active shock creation with computer control of shaker armature
Adapts Shock to D.U.T. Weight	
Amplitude	Programmable 300 to 2000 g
Repeatability	Within 50 g
Pulse Width	< 100 µsec. at 50% Amp./90-150 µsec. at 10% Amp.
Shock Delay	Adjustable timing
Max. D.U.T. Test Weight without calib. changes	Amplitude falls slightly with load Maximum capacity 400 grams with 1000 g amp. (may require programmed value to be increased)

Sensitivity Test Unit (STU)

Sensor sensitivity	77.5 dB +/- 3 dB ref 1V per microbar at 155 kHz reference ANSI 2.1-1988.
Ext. STU pulser output	250 microvolts +/- 20 %

Maximum weight specification

Shaker limitation	500 grams
Vibration limitation	400 grams w/ sensor 40-250 Hz
Shock limitation	400 grams (may require programmed value to be increased)

Electrical specifications

Power requirements	Automatically selected from 100 to 240 VAC at 50 or 60 Hz
Power Consumption	Maximum 600 Watts
Acoustic Detection Circuitry	60 dB Gain +/- 2 dB 150-160 kHz Software Band pass filter
Threshold	Dynamic adjustable

In keeping with our commitment to continuous product improvement, the information herein is subject to change.
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