

IRD811 Vibration Spike Energy Detector



The IRD Mechanalysis model IRD811 plays a dual role in machinery maintenance: - It is used for periodic vibration checks for unbalance, misalignment, looseness, etc. With an industry standard high frequency detection circuit, it pinpoints incipient bearing and gear deterioration. Professional vibration analysts prefer the IRD811 as the analog meter indicates more than a just a digital value, vibration hunting, rubs, cavitation etc. can be observed. Used with the optional Fish Tail, absolute shaft measurements are possible.

Its solid-state circuitry provides wide dynamic range and long battery life. From precision bearing inspection to plant-wide maintenance, the IRD811 has the sensitivity for measuring fractions of a micrometer to 3000 micrometers with 8 easy to read overlapping ranges.

The IRD811 also includes the widely acclaimed IRD Spike Energy™ (gSE™) circuit. The broadband measurement of gSE units has proved to have the advantage of simplicity and earlier warning of bearing and gear defects.

By detecting and measuring “bursts” of Spike Energy at ultrasonic frequencies, bearing defects such as micro spalls, cracks and lack of lubrication can be quickly identified.



BILL OF MATERIALS	Qty	Part Number
IRD811 Vibration Spike Energy Detector with Std Accessories:		M81101
Sensor Accelerometer, model IRD511, Standard, 2-10KHz, 100mV/g, Top Exit, Mil 2 Pin, 1/4"-28UNF Female Mounting Thread with National Traceable Cal. Cert.	1	M5111005001000
Cable Assembly for IRD511 Sensor, 1.5m length, rubber insulated,	2	M60021
Magnetic Portable Base, IRD500 Series Accelerometers	1	M24828
Stinger, Al 225mm long for Sensor	1	M24827
Battery Set, 3 Nos. of 9V, 100MAH Dry Cells for model IRD811	1	M30643
Carrying Case	1	M25345
Manual Operating	1	M21072

Optional Accessories	Part Number
Inductive Velocity Sensor model IRD544	M45260
Cable Assembly for IRD544 Sensor, 8m length, rubber & shielded	M21045
Magnetic Portable Base, IRD544 Inductive Velocity Sensors	M24823
Magnetic Deflecting Shroud for IRD544 Sensor	M24825
Cable Assembly for IRD511 Accel, 8m length, rubber & shielded	M21044
Scope/Analyser AC output Cable PVC 2m Mil to BNC connector	M60170-02
Manual Training - IRD MVT1	M51001
Shaft Fish Tail Stick - Absolute Vibration IRD500 Series Sensors	M24824

Frequency – with Accelerometer

Displacement (350 CPM):	- 350 to 60,000 CPM	(5.8 Hz to 1,000Hz)
Displacement (1400 CPM):	- 1400 to 60,000 CPM	(23.3 Hz to 1,000 Hz)
Velocity:	- 350 to 600,000 CPM	(5.8 Hz to 10,000 Hz)
Acceleration:	- 350 to 600,000 CPM	(5.8 Hz to 10,000 Hz)
Bearing/Gear	- Up to ultrasonic frequencies	
RMS	- V _{RMS} – vibration severity evaluation as per ISO 10816-3	

Measurement Ranges

- Acceleration Range: - 0 to 100 g Pk in 8 overlapping ranges
 Bearing/Gear Check Range: - 0 to 100 gSE™ in 8 overlapping ranges
 Spike Energy: - Special circuit designed to detect gSE™
 Displacement Range: - 0 to 3,000 microns Pk to Pk in 8 overlapping ranges
 Velocity Range: - 0 to 3,000 mm/sec Pk in 8 overlapping ranges

Frequency – with IRD544 velocity sensor

- Displacement (350 CPM): - 600 to 60,000 CPM (10 Hz to 1,000 Hz)
 Displacement (1400 CPM): - 1400 to 60,000 CPM (23.3 Hz to 1,000 Hz)
 Velocity: - 600 to 60,000 CPM (10 Hz to 1,000 Hz)

Input / Output

- Inputs: - Accelerometer/ IRD544 Velocity Sensor
 Outputs: - Analog amplitude meter, microns, mm/sec, g, gSE™
 - Time Waveform (TWF) signal for Scope/Tape Recorder/Analyser

Power Requirements

- Internal Batteries: - Battery Set, 3 Nos. of 9V, 100mAH Dry Cells
 Battery Test: - Battery condition indicated on meter front

Environmental

- Operating temp: - -1°C to 65°C
 Storage temp: - -20°C to 65°C

Packaging

- Enclosure: - Aluminium with dust and splash proof seal
 Battery compartment: - Easy access for quick change of batteries
 Carrying case: - Good quality rugged leather case for space provided for instrument and standard accessories

Weight & Dimensions

- Instrument: - 1.05 Kg
 Dimensions: - 210mm (L) × 116mm (W) × 78mm (H)
 Weight: - 2.50 Kg (inc. meter, standard accessories in the carrying case)

Optional Extras: IRD544 inductive velocity sensor and shaft stick for absolute vibration measurements, details above



The **Vibration People** of **IRD Mechanalysis** can be contacted at the following branches or your local distributor:

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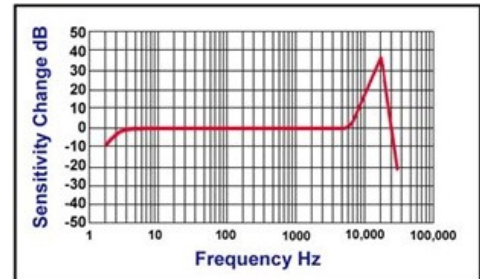
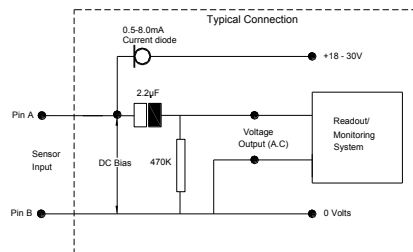
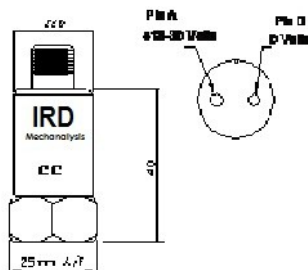
IRD511 Accelerometer Standard, Top Connector



The IRD Mechanalysis model IRD511 is a standard accelerometer for measuring vibration on industrial rotating machinery. It has a top exit Mil 2 pin Connector. This sensor is primarily used with portable meters. A magnetic mount is available as optional accessory for routine vibration measurements. The IRD511 is supplied with all IRD Vibration Meters as standard.

Applications: Applies to most Process Plants using Compressors, Blowers, Conveyors, Cooling Tower Fans, ID, FD, PA Fans, CW Pumps, Gear Boxes, Motors, Paper Machinery, Turbines etc.

BILL OF MATERIALS	Qty	Part Number	Optional Accessories	Qty	Part No.
Accelerometer IRD511	1	M5111005001000	Magnetic Portable Mount		M24828
Sensor Mounting Adaptor Stud, M6	1	M60154	Cable 15.2m with Mil connector		M60048
Calibration Certificate	1	CCIRD511	Sensor Pad SS for Accel. Stud QuickFit to M8 Male		M60118



Technical Performance

Mounted Base Resonance	22 kHz (nominal)
Sensitivity	100 mV/g $\pm$ 10% Nominal 80 Hz at 22°C
Frequency Response	2 Hz to 10 kHz $\pm$ 5%
	0.8 Hz to 15 kHz $\pm$ 3 dB
Isolation	Base Isolated
Measurement Range	$\pm$ 80g
Transverse Sensitivity	Less than 5%

Electrical

Electrical Noise	0.1 mg max
Current Range	0.5 mA to 8 mA
Bias Voltage	10 – 12 Volts DC
Settling Time	2 seconds
Output Impedance	200 Ohms max
Case Isolation	$>10^8$ Ohms at 500 Volts

Environmental

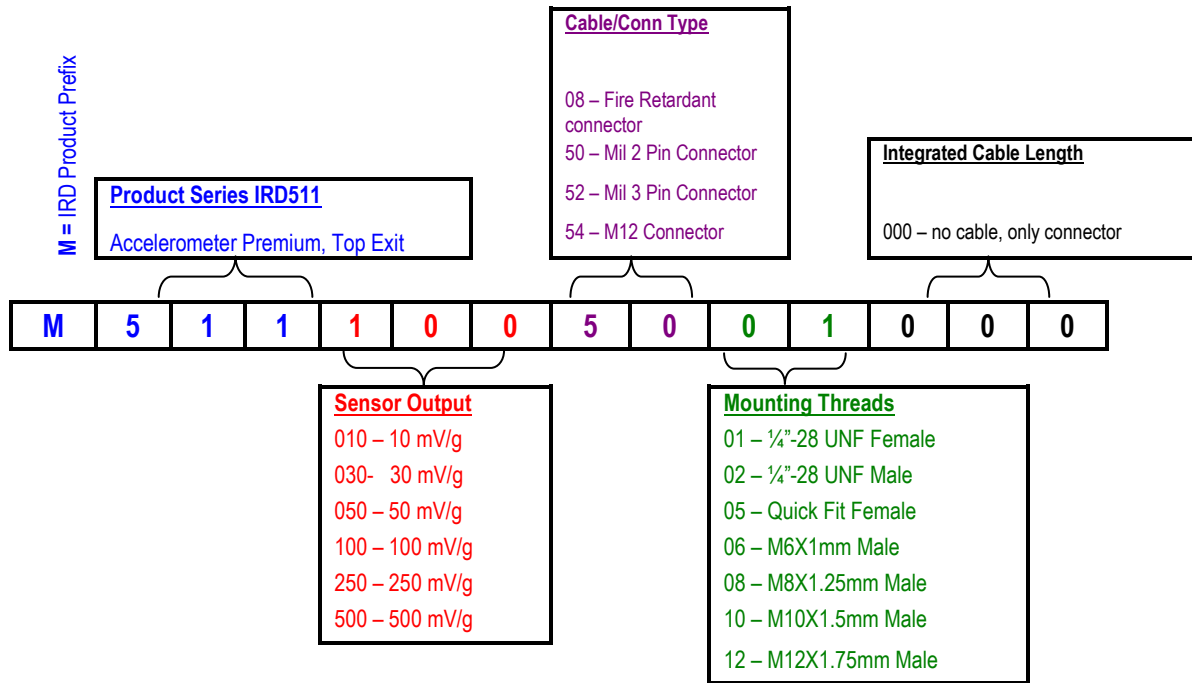
Operating Temperature Range	-55 to 140°C
Sealing	IP67
Maximum Shock	5000 g
Emissions	EN61000-6-4:2001
Immunity	EN61000-6-2:1999

Mechanical

Case Material	Stainless Steel
Sensing Element /Construction	PZT / Compression
Mounting Torque	8 Nm
Weight	110 gms (nom)
Maximum Cable length	1000 meters
Connector	2-pin Mil-C-5015
Mounting	1/4" – 28 UNF Female
Options	Connector Assemblies & Mountings



IRD Part Number Selector



Note on Sensor Output

- Most machinery applications are suitably covered by a sensor with a sensitivity of 100mV/g. However, you may wish specify different sensitivities because of the unique dynamic range of the particular machine to be monitored.
- A high sensitivity sensor, 500mV/g or 1V/g would be used for those machines operating at low speeds (say below 600 rpm) with high mass structures where vibration levels signals will inherently be of a low amplitude .
- For high dynamic ranges such as a high speed gearbox, you would use a low sensor sensitivity for example as low as 10mV/g, 50mVg etc.
- To ensure sensors are matched to specialised applications we recommend a detailed vibration analysis is undertaken first
- IRD Mechanalysis Consultancy Services can assist you in the best sensor solution.

IRD Mechanalysis® Ltd continues to be an industry leading provider of Condition Management Solutions. With a heritage of over 60 years experience in machinery vibration and associated technologies, IRD designs, manufactures and supports proven instrumentation suitable for harsh industrial environments.

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condition management solutions

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