

IRD SPECIFICATIONS

DATA RECORDING

Sample Rate	Selectable, 488Hz – 5kHz
Trigger Threshold	Selectable, 0 – 400G
Pre- Threshold Samples	Selectable, 1 – 12 samples
Post- Threshold Samples	Selectable, 1 – 12 samples
Sampled Information	Impact amplitude, time, and three-dimensional impact orientation
Storage Capacity	Dependent on impact characteristics and sampling rate

IMPACT DETECTION CRITERIA

Sensor	Triaxial Accelerometer
Impact Amplitude	+/- 500 G (3% accuracy)
Frequency Response	5 Hz – 3 kHz
Digitation	256 Counts

POWER REQUIREMENTS

Battery	6 VDC Nickel Metal Hydride
Time between charges	*8-18 hours depending on sample rate, fully charged

*automatically reverts to low power mode when battery voltage drops below 4.6 volts

OPERATING CONDITIONS

Temperature Range	-20 °F to 120 °F (-29 °C to 49 °C)
Moisture	Immersible in non-corrosive liquids

EQUIPMENT AND PRICING

Each IRD Kit includes power adapter(s), communications interface(s), communication cable(s), HD waterproof case, and PCIRD® software for Windows®.

Handheld Interface Kit	\$ 1945.00 US Dollars
Single IRD Kit	\$ 5111.00 US Dollars
Double IRD Kit	\$ 9775.00 US Dollars

INTERNATIONAL PATENTS

United States	4,745,564
Canada	529,078
Europe	87100801.7
Japan	27,053.87
Manufactured in the United States	

OPTIONS

Handheld Interface Kit (Compaq iPAQ) with cables
USB adapter, Field Accessory Kit
U.S. or European power adapter

Colors: Orange, blue, yellow, deep red or 2-color combination

Sizes: 57, 63, 70, 76, 89 mm sphere; 59g 48x67mm egg, 80x 90x60mm flattened sphere, also custom sizes and weights

Techmark Handheld Interface Kit



Technology From The Ground Up

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IMPACT RECORDING DEVICE

SERIES 400

- *Improve the quality of your produce by eliminating bruise, shatter and damage.*
- *Only the IRD uses both impact acceleration and surface characteristics to estimate severity.*



The IMPACT RECORDING DEVICE (IRD) is a cutting edge tool for monitoring potentially damaging impacts to your fruits, vegetables and food products. From the field to the processed package and all points between, the IRD will identify potential sources of damage.

FEATURES

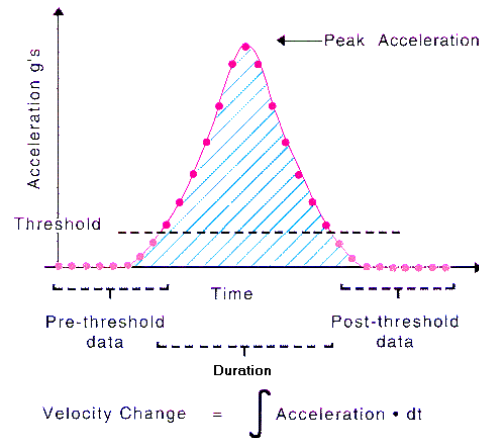
- Rugged, waterproof construction allows use in wet and dirty environments: harvesting, transporting, processing, and packaging.
- Detects impacts from any angle using a self-contained triaxial acceleration sensor.
- Impact data is collected with an on-board microprocessor.
- Real-time detection and measurement of impacts. Maximum 500G-impact capacity
- Customized design to match commodity.
- Simple downloading and interpretation of data via user-friendly Windows® software.
- User-defined sensitivity and data collection parameters.
- Handheld Interface for immediate results.

How much is bruise damage worth to your operation?

PROGRAMMING /DATA COLLECTION

The IRD is initialized using the supplied PCIRD software using a Windows® 95/98 or 2000/NT/XP/XP-Pro/ME computer. The user may select the sampling rate, impact sensitivity and the number of pre- and post-threshold samples to record before and after the detected impact.

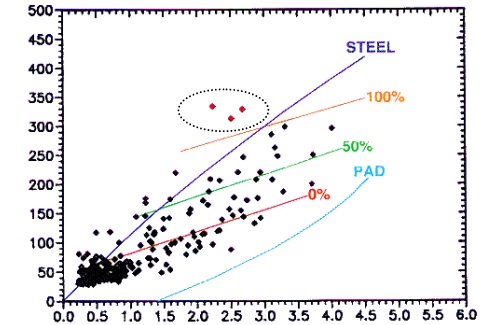
The user may then place the IRD in the system under investigation. The IRD constantly monitors the accelerations it experiences. When an impact exceeds the user-defined threshold, the pre-threshold samples and impact samples exceeding the threshold are recorded. A set of post-threshold data is also recorded to complete the observation of that individual impact.



Graph of one impact showing peak acceleration, velocity change (shaded area), and sampled data.

Following the collection of impact data, the information is downloaded from the IRD using the same Windows® software for data analysis and report generation. The software is simple to use and provides output in both graphical and tabular format. The software calculates both duration and velocity change

for each recorded impact. Impacts can be further identified with text labels if desired. The final report includes a standard graphical illustration of peak acceleration vs. velocity change for each recorded impact. The graph includes damage threshold guidelines for several commodities and has the flexibility for adding new damage thresholds to suit your individual needs.



Graph of packing line impacts and typical steel and padded surface lines. Impacts inside the circle are the most serious and can be corrected by matching impact data and real time.

ADVANTAGES

- Advanced engineering and design.
- Each IRD is custom built to your specification and individually calibrated for superior accuracy.
- Best data interpretation through use of peak acceleration vs. velocity change graph.

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