PRODUCT DATA SHEET

IRD8800 Two Channel Machinery Protection Monitor

IRD8800 Two Channel Machinery Protection API670 Monitor Part Number M88001

The IRD Mechanalysis model IRD8800 high integrity multi-channel machinery protection monitor system is microprocessor based and programmable. Supplied in a standard 19" Rack, it is panel mounted for general vibration measurement and turbine supervisory instrumentation. The IRD8800 series is a family of monitors designed to meet API670 specification Edn. 4 for power, petrochemical, oil and gas and other industries requiring protection of its strategic rotating machinery.

The part number **M88001** is a two channel cased monitor based on the IRD8800 series that builds on 20 years of success with local and international installations. It's design and build quality offers the highest reliability, flexibility, ease of use as well a wide range of communication options. Derived from earlier generations of monitors, based on the proven **IRD**® architecture and with state of the art signal processing, the IRD8800 series gives outstanding Customer Value. It is a low risk solution from 'The Vibration People' of India who always listen to industry's needs.

All IRD8800 modules come with a two year warranty as standard. Since this monitor system is not reliant on customised outsourced components, obsolescence is minimised thus guaranteed support is likely for at least 20 years.

Part Number M88001 is ideal for high integrity single machine monitoring. It is a standard replacement for the obsolete model IRD5802. The single module case accepts all of the IRD8800 series of a dual channel machinery protection monitors. It is supplied in a 76mm frame, bezel panel mounting type secured from the internal locking screws. Terminals are available from the back plane.

The module is an independent monitor with its individual power supply and relays. In the unlikely event of power supply failure only the module will be affected. However, a Redundant Power Supply module is also available in OR logic mode for bump-less switching from primary supply to redundant supply.

The module is fully programmable from the front panel keypad for: range, sensitivity, units of measurement, Warning (Alarm) and Trip levels, related time delays, baud rate, parity, FS/NFS condition etc. A press of NEXT on the front keypad enables Operators to view the Alarm and Trip levels, sensor bias/gap voltage and the speed of the machine being monitored, when a tacho is connected.

The module has both Digital and Bar Graph displays, ideal for Operations. By viewing the channel data in a local panel is often more intuitive of a machine's condition than a 'busy' computer screen display from 'Blind' Monitors Standard features such as analyser outputs, Warning (Alarm), Trip indication and machine start-up condition are easily visible on the front panel. The bar graph is configured as a percentage of set Warning (Alarm) or Trip levels thus making it convenient for Operators to view signal levels in relation to alarm or trip settings. During system power-on and also in case of transducer failure (TX Fail condition), the 4-20mA DC output is held below the 4mA level for DCS system to detect an unhealthy situation and Warning (Alarm) and Trip relays are deactivated thus preventing uncalled for spurious alarms.

The IRD8800 series is supplied in a variety of widths to suite the user's needs and is not restricted to the standard 19" rack size that caters for up to 7 modules. This building block design offers considerable flexibility for the user. The following modules are available as individual or a combination as required:

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AVAILABLE IRD8800 MACHINERY PROTECTION MODULES:

The table below summarises the model types for machinery and end winding vibration and turbine supervisory instrumentation designed to meet API670 specification. The suite of modules offers a comprehensive selection of sensor inputs, measured units and ranges. Each module is programmable from the front keypad to meet the user's specific measurement units, range and high & low pass filter needs etc.

Part Number	Function	Chls	Display	Sensors	Measured Units
M88200	Absolute Vibration (Case) ('g' input – 'g' or 'v' output 'v' input – 'v' or 'D output')	2	Digital & Bargraph	ICP Accelerometer (Accl or Vel output)	g Pk, g RMS, m/s/s Pk, m/s/s RMS, mm/s Pk, mm/s RMS, i/s Pk, i/s RMS, microns Pk-Pk
M88210	Relative Vibration (Shaft)	2	Digital & Bargraph	Eddy Current Probe (ECP)	Microns Pk-Pk
M88250	Absolute Vibration (Case) 'v' input – 'v' or 'D output')	2	Digital & Bargraph	IRD544M Velocity Sensor	mm/s Pk, mm/s RMS, i/s Pk, i/s RMS, microns Pk-Pk
M88285	Absolute Vibration (Stator End Winding Monitoring)	2	Digital & Bargraph	VibroFibre™ FBG Fibre Optic	microns Pk-Pk mm/s Pk, mm/s RMS,
M88300	Axial Shift	2	Digital & Bargraph	Eddy Current Probe	+/- mm
M88400	Cam Valve	2	Digital & Bargraph	Rotary Potentiometer	%, Deg, mm
M88500	Differential Expansion *	2	Digital & Bargraph	Eddy Current Probe	+/- mm
M88600	Eccentricity	2	Digital & Bargraph	Eddy Current Probe	microns Pk-Pk
M88700	Other Parameters (Pressure, PF, Load etc.)	2	Digital & Bargraph	4 - 20mA DC	User Defined
M88800	Shell Expansion	2	Digital & Bargraph	LVDT	mm
M88900	Speed Monitor **	2	Digital & Bargraph	ECP-User Defined	RPM
M88950	Temperature	4	Digital & Bargraph	RTD (3-Wire)	Deg C or Deg F

* Single ECP per channel. For complementary mode it will be a single channel.
** Requires a tooth wheel fitted to the main drive shaft for accurate speed indication.
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SYSTEM OPTIONS: The model IRD8800 system offers a variety of customised solutions; please ask for factory quote.

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SPECIFICATION OF MODEL IRD8800 TWO SLOT MAIN RACK

Construction: Designed to meet API670 for on-line machinery protection, the Rack has a rugged construction aluminium extruded channels, plate and ABS press fitted guides to maintain module / connector alignment. Conduit entry holes are at the base to provide easy access for input signal cables. Adequate ventilation ducts are also provided. The use of epoxy-glass circuit boards with gold plated connector contacts; solid-state circuitry and virtually wire-free modular assembly enhances reliability. (Illustration shows the 4 channel option).

Channels: The 76mm Case (PN M88001) houses One Dual Channel Module.

Weight & Dimensions:

Module & Case	:	1.75 Kg
Panel Cut-Out Width	:	76mm (W) x 222mm (H) x 400mm (D)
Replaces IRD5806 PCW	:	205mm (W) x 217mm (H) x 267mm (D)

GENERAL SPECIFICATIONS OF MODEL IRD8800 SIGNAL MODULES:
Each dual channel module has it own specification sheet but the common features are summarised below:

Programmable: Measurement units, ranges, warning (alarm), trip levels, sensor sensitivity, band pass filters etc can be set from the password protected front keypad at any time. However, for Customer convenience, specified units and ranges will be factory set at time of order.

Display: The front panel has 100 segment Dual Bar Graph and two rows of 16 character Digital displays. Signals are displayed as a percentage of the Full Scale Range of the Bar Graph, as well as the Warning (Alarm) and Trip values, when selected. This user friendly feature enables Operators to view the relationship in terms of percentage (%) between the measured value and the warning or trip settings. Actual signal levels in native units are also shown on the Digital Display along with sensor bias/gap voltage and speed (with a tacho signal) by selection.

Communications to:

- DCS – The system provides industry standard isolated 4-20mA DC signal output per channel for interfacing with Distributed Control System (DCS) as well as RS485/MODBUS connectivity as standard.
- SCADA - The RS232 output is available as an option to SCADA systems.
- Multi-Channel Simultaneous Diagnostics - *Taking you Further*, BNC connectors are also available at the back plane of each module for providing buffered Time Wave Form signals to any on-line multi-channel simultaneous or scanning diagnostics system. This offers comprehensive turbine diagnostics applying the Dual Redundancy Parallel Processing (DRPP) architecture that providing greater system reliability.
- Analyser Outputs – Where applicable, three BNC connectors, one for each channel and the third for tacho/phase are located on the front panel for use with a portable dual channel FFT vibration analyser. Shaft phase measurement is available when a Tacho Module is installed. The same vibration BNC signal sockets are repeated at the rear of the rack.

Independent Warning (Alarm) Relay: The Warning (Alarm) Relay operates when an alarm occurs in any module. One change-over (SPDT) potential free contact rated at 5A resistive @ 230V AC is provided. Normally de-energized (non fail safe), field changeable to normally energize (fail safe). Reset is manual and is actuated only when the signal level goes below the pre-set alarm level.

Independent Trip Relay: The Trip Relay operates when trip occurs in any module. Two change-over (DPDT) potential free contacts rated at 5A resistive @ 230V AC are provided. Normally de-energized (non fail safe), field changeable to normally energize (fail safe). Reset is manual and is actuated only when the signal level goes below the pre-set trip level.

Common TX Fail Relay: The TX Fail Relay operates when any transducer failure (change in bias voltage) is detected; it is displayed by a flashing bar graph on the front panel of the module. One change-over (SPDT) potential free contact rated at 5A resistive @ 230V AC is provided. Normally de-energized (non fail safe), field changeable to normally energize (fail safe). Reset is automatic when fault condition returns to normal. Alarm and Trip relays are deactivated and also the 4-20mA DC output is pulled below 4mA in TX Fail condition.

Start-up Protection: Start-up control bus deactivates Alarm and Trip relays and also pulls 4-20mA DC output below 4mA indicating invalid signal to the DCS.

Power Supplies:
90 – 270V AC, 50/60Hz, single phase, 30VA per module.
The Redundant Power Supply can be either 230V AC or 110V AC or +48V DC or +110V DC or +220V DC.

Calibration: Each vibration module is calibrated to National Standards via the IRD Mechanalysis state-of-the-art full frequency digital calibration system that has international traceable certification and is always valid.

Wiring: Barrier terminal strips are provided for all external wiring. Conduit entry holes are available at the bottom of the Main Rack Frame.

Type Tests : The following primary Type Tests have been passed and will remain current:

: Dry Heat Cyclic, IS:9000 P-III
: Damp Heat Cyclic, IS:9000 P-V
: Bump IEC 68-2, Vibration IEC 68-2, Humidity IEC 68-2
: CE Mark, European Union – IEC61326 EMI/EMC and IEC61010 Safety

Environmental

Storage temp	:	18°C to 65°C
Operating temp	:	0°C to 50°C ambient
Humidity	:	95% none condensing

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.

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

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