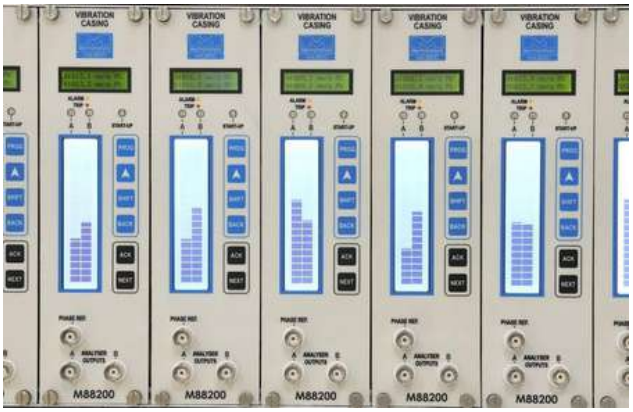
IRD Mechanalysis® Limited

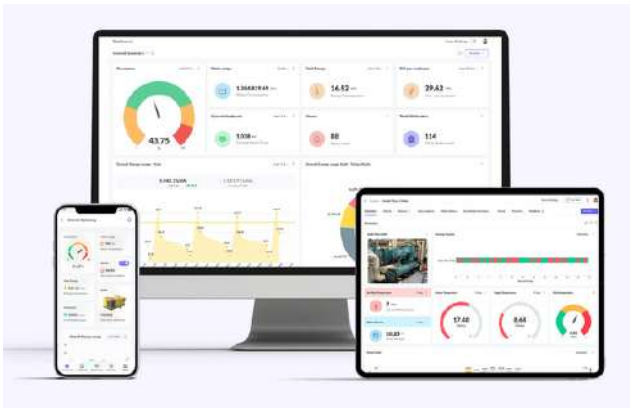
The Vibration People®

IRD Mechanalysis

Online Systems

Vibration | Temperature | Speed | Air Gap | Turbine Supervisory Instrumentation





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IRD Mechanalysis® Limited

The Vibration People®

Introduction

IRD Mechanalysis Limited is a provider of Condition Monitoring Solutions to the World **since 1962**. Also known as 'IRD' and 'The Vibration People' - IRD provides Portables Instruments, Online Systems and Associated Services for Condition Monitoring. Our Instruments help in carrying out **Preventive and Predictive Maintenance** and help turn Maintenance into a Profit Center. Our offerings can be summarised into:

- **Portable Instruments** - Vibration Meters and Analyzers
- **Online Systems** - Vibration Sensors, Transmitters, Machinery Protection Systems and Cloud Based Monitoring Systems
- **Associated Services** - Training, Consulting, Commissioning, Repairs and Calibration

IRD makes Online Systems for Vibration, Temperature, Speed, Air Gap, Turbine Supervisory Parameters and more. These systems are meant for **Round-the-Clock monitoring and protection** of critical assets like Turbines, Generators, Pumps, Motors, Blowers, Compressors and more.

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Online Systems for Vibration Measurement

IRD591 and IRD5420

IRD591 and IRD5420 are Loop Powered Vibration Sensors. They provide 4-20 mA output proportional to a fixed scale of Vibration - most common being Vibration Velocity 0-25 mm/s RMS. These sensors are easy to install, maintain and scale and easily connect to DCS/PLC/SCADA as well as Cloud Based Monitoring Systems. Top Exit as well as Side Exit options are available with different connector and cable options - ranging from standard 2 Pin Mil connector to Integral SS Braided cable of length as per requirement.

IRD7400 LPT

IRD7400 is a Single Channel Din Rail mountable Loop Powered Transmitter (LPT). In addition to providing 4-20 mA output proportional to a fixed scale of Vibration - it also provides 0-1 V DC output that can be connected to an External Display. It also provides Buffered Raw Signal output on its BNC at front. This can be used to connect to a Vibration Analyzer or Data Acquisition Unit (DAQ) for Vibration Analysis. 4-20 mA output can be connected to PLC/DCS/SCADA/Cloud

IRD7200 MST

IRD7200 Machinery Signal Transmitter (MST) is a 2 Channel Din Rail Mountable Vibration Transmitter. In addition to 4-20 mA output proportional to a fixed scale of Vibration - it also provides 0-5 V DC output and Buffered Time Waveform output per channel. The 0-5 V DC output can be connected to an external display, while the Buffered Time Waveform output on BNC can be connected to Vibration Analyzer or DAQ for Vibration Analysis. 4-20 mA output can be connected to DCS/PLC/SCADA/Cloud

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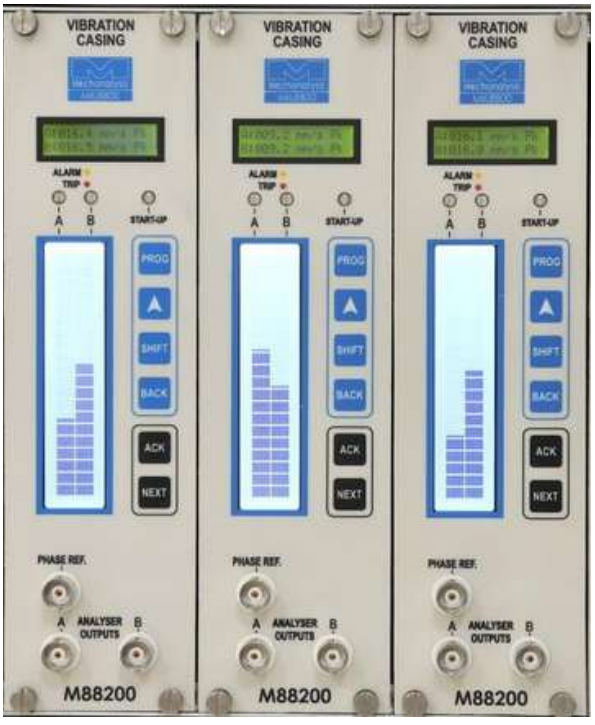
Online Systems for Vibration Measurement

IRD7100 MPT

IRD7100 Machinery Protection Transmitter (MPT) is a wall mountable Vibration Transmitter. It can be made in IP65 rated Al Die Cast or Polycarbonate or Explosion Proof Enclosure. It provides Instantaneous value indication on its In-built display. It comes in Single, Dual, Triple and Four Channel Variants. It provides 4-20 mA, 0-5 V DC and Buffered Time Waveform output per channel. It also has 2 sets of Relay Contacts per Channel for Alarm as well as Trip - with the setpoint being configurable. It also has an OK Relay contact per channel that indicates healthiness of connected Vibration Sensor and Cable. It can be factory configured for Casing Vibration, Shaft Vibration and more measurements. It is best suited for Machinery Monitoring and Protection along with the convenience of Display near machine



IRD8800 MPS API670

IRD8800 Machinery Protection System (MPS) is API670 Compliant. It is a Rack Based Monitoring Systems that is meant for Centralised Vibration Monitoring. It is equipped with an Alphanumeric as well as Bargraph Display that provides Live vibration. The display along with Keypad also provides access to Module Settings that are password protected. Things such as Sensor Sensitivity, Units, Full Scale, Setpoints and more can be configured easily using the Keypad and Display. IRD8800 Modules are Hot Swappable and accept Redundant Power Supplies. Casing Vibration and Shaft Vibration Modules are Dual Channel and provide MODBUS Output, 4-20 mA output, 2 sets relay contacts, 2 sets buffered output (front and rear) per channel. IRD8800 is also equipped with Start-Up Protection, Trip Bypass, Transducer Failure detection and more

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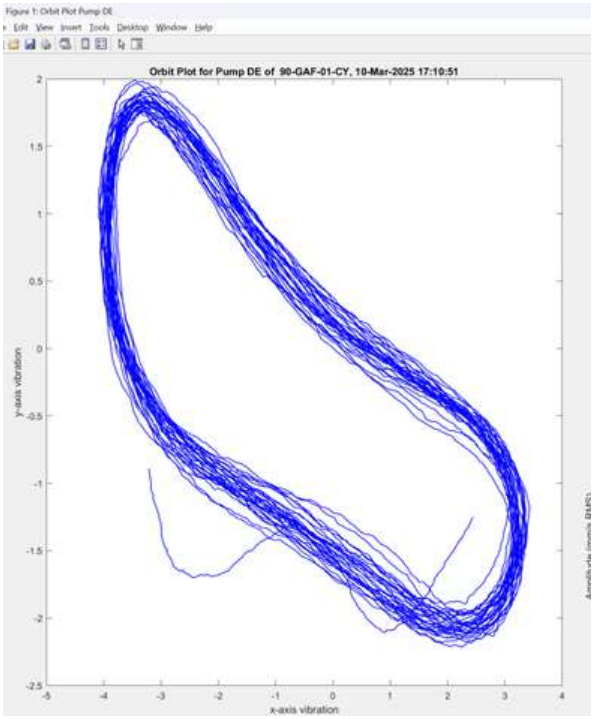
Online Systems for Vibration Measurement

Cloud Based Monitoring

We provide Solutions for Cloud Based Vibration Monitoring - wherein the 4-20 mA output or MODBUS Output of our Vibration Sensors or Transmitters or Protection Systems are connected to Gateways that transmit data to the Cloud over MQTT using 2G/4G/Ethernet/Wifi. We utilise Zoho IOT for our Cloud Platform. Zoho IOT is enabled with Powerful tools that help Users create Widgets, Charts and Dashboards to their liking. Users can easily setup email and SMS alerts for certain triggers like High Vibration. They can also set up automated reports summarising the health of their machines along with Alarm report on a Daily, Weekly or Monthly basis. We have Gateways that can connect to all our Online Systems - be it IRD591, IRD5420, IRD7400, IRD7200, IRD7100 or IRD8800. Existing installations that were not Cloud based can also be upgraded & retrofitted to Cloud



OLIVER™

OLIVER™ stands for Online Investigation of Vibration in Equipment and Rotary Machines. It is our Homegrown software that can connect to any of our Online System - be it IRD591, IRD5420, IRD7400, IRD7200, IRD7100 or IRD8800 and provide Useful Insights to Users such as - Live Values, Trends, Plots - like Orbit, Waterfall, Cascade, Spectrum, Waveform, Bode and more. OLIVER™ is sold in 3 variants - being Basic, Advanced and Extreme. The Basic variant will not use Data Acquisition system. It will use 4-20 mA or MODBUS output from Online System to provide Live Values, Trends, Time to Alarm and Basic Charts and Reports. The Advanced and Extreme variants use Data Acquisition Systems to generate Vibration Analysis Plots like Orbit, Spectrum, Waveform and more. The Extreme variant provides Automated Diagnostics

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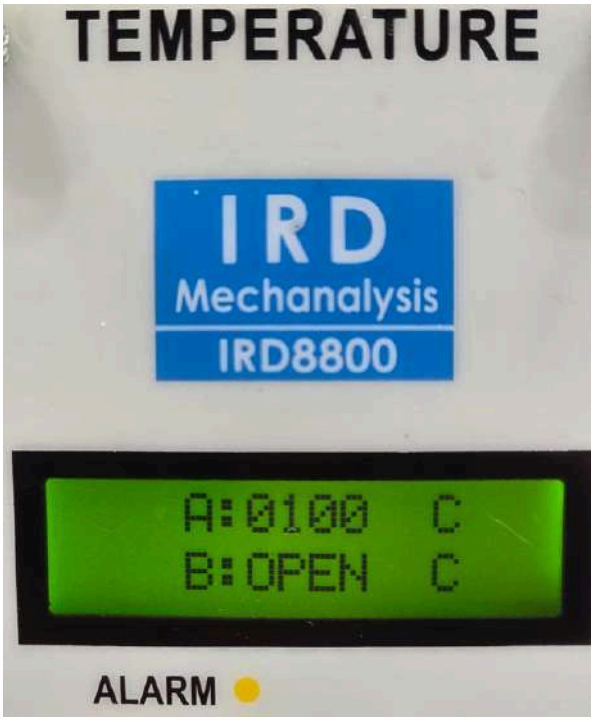
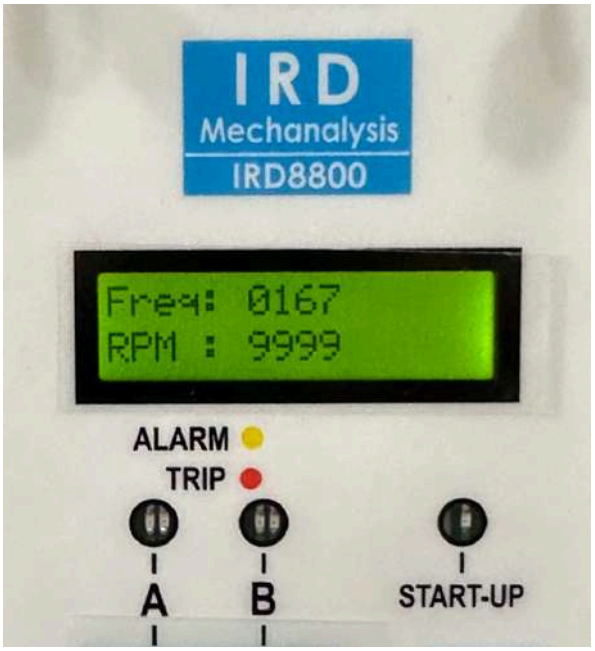
Online Systems for Temperature Measurement



Our Online Systems IRD7100 MPT as well as IRD8800 MPS API670 also come for Temperature Measurement. The sensor used is either a PT100 RTD or a Dual Output Vibration cum Temperature Sensor (like IRD515). Contact Surface Temperature can be measured in both Degrees Celsius as well as Degrees Fahrenheit. 4-20 mA output, MODBUS Output, Relay Contacts and more are available to Monitoring and Protection. The Data can also be integrated to our Cloud Based Systems as well as OLIVER™

Measured Temperature can also be corroborated in the Software with Vibration and other Parameters to give a Holistic picture of the Condition of the Monitored Machine. This enables better insights and decision making - thereby increasing the effectiveness of Predictive Maintenance and Condition Monitoring

Online Systems for Speed Measurement



Our Online Systems IRD7100 MPT as well as IRD8800 MPS API670 also come for Speed Measurement. We utilise either Laser Based Tachometers or Eddy Current Based Non-Contact Sensors for Speed Measurement. Laser Based Tachometers require a Reflective Tape or Reflective Patch on rotating shaft for Speed detection. Eddy Current Based Non-Contact Sensors need a Notch or a Toothed Wheel on the Rotating Shaft for Speed measurement.

The Systems provide Industry Standard 4-20 mA, MODBUS and other Outputs along with Relay Contacts for Protection. We also provide Systems and Solutions for Overspeed Detection as well as Reverse Rotation Monitoring. Speed measurement along with Vibration helps provide a better insight into performance of the Machine

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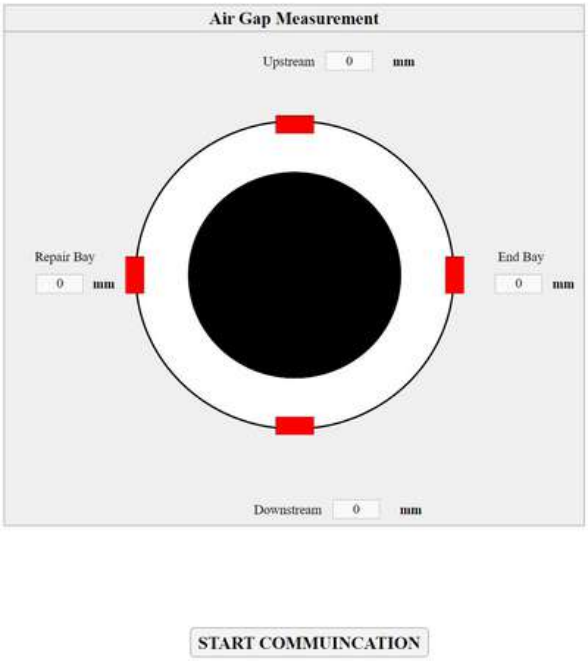
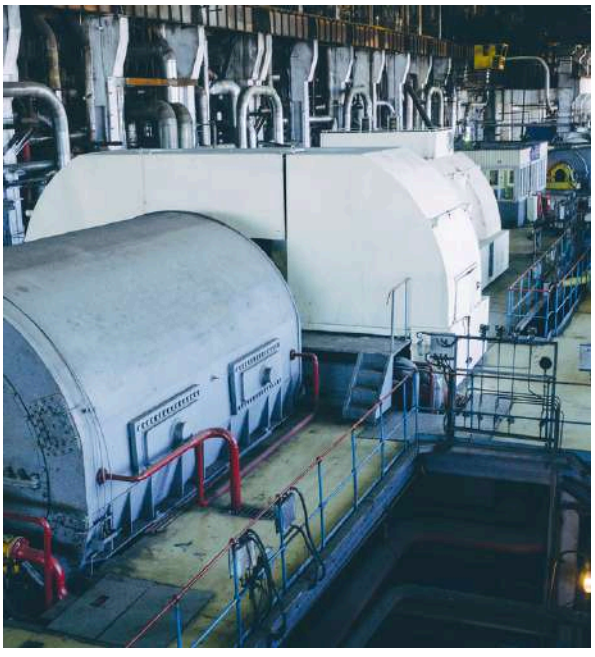
Online Systems for Air Gap Measurement



Our Online Systems IRD7100 MPT as well as IRD8800 MPS API670 also come for Air Gap Measurement. Air Gap is also sometimes referred to as Axial Gap or Axial Thrust measurement - on the basis of Orientation of the Sensor. Our systems utilise Non-Contact Eddy Current based sensors to measure the Gap value using the DC Gap Output of the Sensor. We can set Forward as well as Reverse Alarms and Trips for Protection. These measurements are extremely precise as sometimes the gap may be as small as 1 mm.

Air Gap or Axial Gap measurement is popular in Turbine Generators - be it Hydro or Steam. We also offer Axial Gap measurement in our suite of Turbine Supervisory Instrumentation. Axial Gap monitoring is an extra layer of protection when used along with Vibration

Turbine Supervisory Instrumentation



Our Online Systems IRD7100 MPT as well as IRD8800 MPS API670 also come for Turbine Supervisory Instrumentation (TSI). Parameters such as Vibration, Temperature, Speed, Differential Expansion, Casing Expansion, Cam Valve Position, Axial Gap, Eccentricity and more are monitored on a Continuous basis to protect Turbines and Generators that are critical and could be producing any amount of power from 5 MW, 210 MW, 500 MW, 660 MW, 800 MW or more.

Due to the criticality of these systems - we conduct extensive Pre-dispatch inspection including 100 Hours Burn-in, Factory Acceptance Test (FAT) and SAT (Site Acceptance Test) as per the Approved Quality Assurance Plan (QAP)

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Comprehensive Online Systems

Sensors and Mounting

To complement our Online Systems - we provide a large variety of Sensors - ranging from Top Exit, Side Exit, Single axis, Biaxial, Triaxial, Integral cable, mV/g output, mV/mm/sec output, mV/um output and more. We also provide different varieties of accessories for mounting of the sensors - like pads, blocks, studs, magnets, extensions, brackets and more. We help choose the right sensor and mounting methodology based on the site or project requirements - thereby ensuring a neat and proper installation

Cables and Junction Boxes

We provide Cables to match the Sensors and their Connectors. Cables can be Armoured or Unarmoured with a large variety - ranging from Teflon, FRLS, LHLS, Silicon and more. Protection to the cable can be provided via Armour or Conduits of SS, GI or PVC. We also provide Junction Boxes for termination that are engineered with desired Input and Output Cable Glands and terminations - to help ensure proper Ingress Protection while in use. We provide these for Hazardous Installations as well

Panels and Cabinets

We provide Free Standing as well as Wall Mounted Cabinets to house our Online Systems. The Sizing and Colour of the Cabinets are as per Site and Project requirements. We provide the cabinets completely wired internally - so that only external input, output and power connections need to be made at site. We also provide Cabinets and Panels for Hazardous Areas rated for Zones 0, 1 or 2 or Zones 20, 21 or 22. These Cabinets help in securing access to our Online Systems as well as help ensure longevity

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Some Projects executed in Recent Past

Project	Purchaser	End User
Vibration Monitoring System for NTPC Simhadri	Yokogawa	NTPC
Vibration Monitoring System for IDCT THDC Khurja 2 x 660 MW	Paharpur Cooling Towers	THDC
Generator End Winding Vibration Monitoring System for 5 x 800 MW Yadadri	BHEL Haridwar	TGGENCO
Vibration Monitoring System for AFC Fans at Mathura Refinery	IOCL	IOCL
Vibration Monitoring System for NUPPL FGD 3 x 660 MW	L&T Power	NUPPL
Vibration Transmitters for Pellet Plant at Nagarnar	L&T Construction	NMDC
Vibration Monitoring System for NTTPS Stage V 800 MW	BGR Energy	APGENCO

Some Frequent Customers

सेल SAIL

एनटीपीसी NTPC

JSW Steel

इंडियनऑयल IndianOil

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Associated Services

Training

We provide Training in the field of Vibration Analysis, Condition Monitoring, In-Situ Dynamic Balancing and Reliability Centered Maintenance (RCM). The training can be provided at Client Site or at our Office premises or at a Hotel - according to the type of training scheduled. We provide Certification in according to ISO 18436 starting from Level 1 or CAT I to Level 4 or CAT 4. Our Trainers carry experience ranging from 10 years to 50+ years in the Industry

Consulting

If you have a Vibration Problem and need our help - then we have a team of experts and engineers who can carry out measurements and perform analysis to help find out root cause of the high Vibration and suggest corrective actions. We can also provide this service as an annual maintenance contract wherein the frequency of visits could be Daily, weekly, monthly or quarterly. We can also perform In-Situ Dynamic Balancing, Thermography and Laser Alignment if needed post Vibration Analysis

Commissioning

We have a team of trained engineers and technicians that can help supervise erection of our Online Systems and commission it thereafter. These engineers and technicians can also perform Site Acceptance Test (SAT) as per approved Quality Assurance Plan (QAP) and can also perform On-site Calibration and Healthiness checks if needed. Commissioning service can be availed from us on a per day, per visit or lump sum basis. We recommend getting our Online Systems commissioned by us for best results

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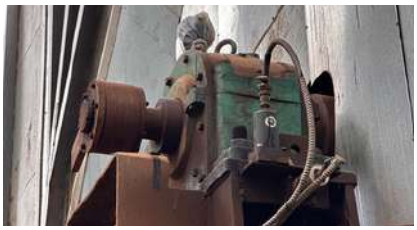
Associated Services

Repairs and Calibration

We provide Repair and Calibration Service for the Instruments and Systems manufactured by us. We can also help verify the Calibration of Third Party Vibration Monitoring Systems using our Portable Shakers. Our Equipment used for Testing carries Calibration Traceability to National and Internal Standards and is Calibrated once every year from a NABL accredited lab. We suggest Annual Calibration for our supplied Instruments and can also perform the Calibration on-site if needed. Calibration ensures confidence in measurement. We also have a Help Center on our website which contains articles on how to operate and maintain your IRD Instrument properly - in order to ensure many years of Usage

Project Gallery



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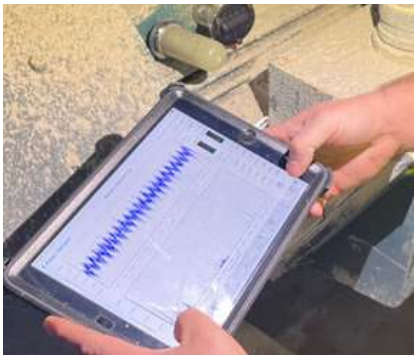
Condition Monitoring Solutions

Help turn Maintenance into a Profit Center

Portable Instruments - Vibration Meters & Analyzers



Online Systems - Sensors, Transmitters & Protection

Associated Services - Training, Consulting, Calibration

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