

# WHITELEGG MACHINES

ELECTRIC MOTOR REPAIR DIVISION



## **Explorer Series II Motor Performance Monitor**

- The ultimate motor performance monitoring system.
- A new breakthrough in performance programs.
- On-line diagnostic tool
- Gives the user a comprehensive look at motor integrity.
- Fully remote monitoring from the Motor Control Centre (MMC)
- Highly portable and durable for use in all circumstances
- Provides root-cause analysis through the separation of mechanical and electrical issues.
- No other monitor on the market gives you the wide variety of capabilities than the Explorer II. It is programmed to supply information on voltage balance, distortion, voltage level, rotor cage condition, motor efficiency, effective service factor, over current, as well as torque ripple and load history.

**NEW**

**TEST EQUIPMENT**

ENERGY  
EFFICIENCY  
TESTER

PREDICTIVE  
MAINTENANCE

ON-LINE  
TESTING

## **Comprehensive motor analysis**

The latest technology for plant management, the Explorer II performs five major functions as part of a complete maintenance program:

1. Identifies possible power circuit problems that degrade motor health
2. Examines overall motor power conditions. 3. Monitors motor load
4. Observes motor performance. 5 Estimates energy savings

## **VFD Monitoring**

Along with any three phase induction motor the Explorer II will monitor the activities of Variable frequency Drive applications. For the first time diagnosis of motor problems can occur even under the most demanding VFD circumstances

## **Extended Parameters**

The Explorer II includes *Motor Master + software*, which transforms the instrument into a technically comprehensive P/PM tool for energy audits. Developed in conjunction with the US Department of energy via their Motor Challenge Program, the Explorer II has helped industry to increase the use of energy efficient motor-driven systems. Access to a huge database of motor types ensures that reliable information in comprehensive motor testing.

## **Advanced Data Collection**

Once testing is completed, results can be saved and stored for each individual motor. This type of documentation is critical for any predictive maintenance program. It allows the recalling of previous information for true analysis of trends. Test results are collected, stored, recalled, and managed using standard MS Access relational database file formats. Reports can be generated quickly and easily through the main print console, allowing operators visual confirmation of motor integrity information. Data can be collected and organised to suit communication in-house or with clients.

The Explorer II utilizes multiple tests to determine the **power condition, health, load and energy profile** of your motor using the following six test domains:

### **POWER CONDITION TEST DOMAIN**

**Voltage Level.** This test identifies over and under voltage conditions and compares the measured voltage levels with user defined thresholds. **Voltage Unbalance.** Examines the single phase voltages in the motor by calculating its percentage unbalance via NEMA derating and assesses the voltage unbalance level compared with the stored threshold. **Distortion.** Assesses the level of Total Harmonic Distortion of the three single phases to neutral voltages and compares this to the stored thresholds.

### **MOTOR PERFORMANCE TEST DOMAIN**

**Effective Service Factor.** This test divides the estimated percentage load into the NEMA derating factor and identifies the thermal overloading in the motor. **Overcurrent.** Inspects the single-phase current by comparing it with the nameplate data for your stator current.

### **MOTOR CONDITION TEST DOMAIN**

**Rotor Bar.** Inspects the relative amplitude of the rotor-bar sideband and assesses the rotor cage signature in relation to stored thresholds. **Operating Point.** Compares the torque, frequency and average stator current values and alerts you to any deviating values.

### **LOAD DOMAIN**

**Torque ripple.** Identifies the ripple that the load is requesting, resulting in a percent of a ripple to steady state. **Load History.** For motors that operate at constant loads, the load history test warns you if any changes occur in the operating load, comparing actual to previous measurements.

### **ENERGY ASSESSMENT DOMAIN**

**Efficiency.** Examines current operating conditions and compares them to similar motors, identifies potential money savings and aids in the decision of motor replacement. **Payback Period.** Searches within the motor master database for comparable motors and calculates the time period in which a high efficiency replacement would take to pay for itself.

### **AUXILIARY DOMAIN (OPTIONAL)**

**Haystack.** Displays the domain of vibration against frequency and investigates whether any frequency component of the vibration spectrum trespasses the preset thresholds. **Operating Conditions.** Learns the vibration signature of a motor load system and warns you of change in the operating signature.

# TECHNICAL SPECIFICATION-Explorer II

## Computer

## **Panasonic Toughbook**

Durability features:

- Designed using MIL-STD-810E. Full Magnesium case
- Moisture and dust resistance LCD, Keyboard and Touch pad
- Seal Port and Connector Covers. Rugged and dust resistant LCD
- Removable HDD is mounted on shock absorbing gel and in a stainless steel gel

Display:

- Touch screen. "Day-Brite" anti reflective LCD for bright sunlight conditions

Keyboard and input

- 87 key dedicated Windows Keyboard. Touch screen LCD.
- Enhanced Pressure sensitive touch pad with signature caption function

Interface

- Serial/Parallel/Infrared/USB. External keyboard/Mouse
- Headphones/speaker. Microphone/line in.

Power supply

- Lithium Ion Battery
- AC Adaptor: AC 100V-240V 50.60 Hz, auto switching for worldwide supply
- Pop-up on-screen battery status report

## Sensors

Voltage clip on

- One set of 3 voltage clips plus one ground connection, colour coded
- 600V Maximal rated voltage. Connector MIL-C-5015

Vibration Sensor  
(Optional)

- Sensitivity 100 mV/g (20%), Acceleration range 50g peak
- Amplitude non-linearity 1%, Frequency Response 1.6 Hz to 7k Hz (10 dB)
- Splash proof cable, Rare earth mounting magnet

## Case

Environmentally  
tough

- Watertight. Airtight. Dust Proof. Crush Proof

Dimensions

306 x 251 x 125 mm

Power requirements

Input voltage: 100VAC to 240VAC  
 Input Current: 3.0A to 1.7A  
 Input frequency: 50 Hz to 60 Hz

<b>Current Clamp On</b>	<b>10A</b>	<b>150A</b>	<b>1000A</b>
Output signal	10A/IV	150A/1.5V	1000A/2.5V
Measurement Range	0.03A to 10A	0.1A to 150A	0.1A to 1000A
Overload	12A 40 min, 20 min off	240A 40 min 20 min off	1200A 40 min 20 min off
Insulation	600V rms	600V rms	600V rms
Jaw Opening	20 mm	20 mm	57 mm
Accuracy	1% Reading	1% Reading	0.75% Reading