

# Total ECLIPSE ™



## Same Great Features & I/O of the ECLIPSE Including:

- ◆ Direct Fiber Winding Temperature
- ◆ Built-In Annunciator
- ◆ GIC Core Saturation Detection
- ◆ Programmable Function Buttons
- ◆ SCADA Communications via TCP/IP
- ◆ Web-Based GUI
- ◆ NERC CIP Secure

## **Introducing a New Member of the ECLIPSE Family Featuring Integral On-line Bushing Monitor + More Card Capacity + USB B + IEC61850 with GOOSE**

- ◆ No Calibration Required, Ever
- ◆ Integral Bushing Monitor
- ◆ Real-Time Loading Prediction
- ◆ Automatic E-mail Notifications
- ◆ Integrated Condition Based Assessment for OLTCs
- ◆ Analog and Digital Input Data Concentrator



**Monitor With Confidence™**

# Total ECLIPSE



## A Complete Monitoring Platform

Up to **7** Temperature Probes

Up to **16** Direct Fiber Winding Inputs

Up to **16** Relay Outputs

Up to **36** CT Inputs

Up to **32** Analog Inputs

Up to **90** Digital Inputs

### Data Concentrator

Collect data around your transformer for use in QuickMath™ equations, or simply communicate it back to SCADA

Patented **Bushing Monitoring** *Please see the Total ECLIPSE Brochure*

Patented **Dual-Algorithm OLTC Condition Monitor-**

Patented **Sensorless OLTC Position Monitor-**

Patented **Load Pickup Cooling™**

Event and Data Logging

## Monitor With Flexibility

### QuickMath™

QuickMath™ allows you to take full control of your monitoring through easily programmable logic.

- Math Functions: +, -, x, ÷,  $e^x$ ,  $\ln x$ ,  $y^x$ ,  $x^2$ ,  $\sqrt{\quad}$ ,  $1/x$ , ( )

- Perform Comparisons: =, >, <, ≥, ≤, ≠

- Program Your Own Condition-Based Assessment Criteria Including **Loss of Life**.

- Automatic OLTC Voltage Control

- **Create** Your Own Set Points

- Up to **16** User Equations

### GIC Detection & Mitigation

- ◆ Quantifiable Detection of Core Saturation
- ◆ 3 Levels of Alarm: Minor, Major, & Critical
- ◆ Large Split-Core Hall-Effect Sensor
  - Accommodates up to a 4 inch bus bar

### Built-In Annunciator

- ◆ User Programmable Names & Targets
- ◆ **Events Log** with User Selected Events

### Test Mode

- ◆ Interactively test set points using

### E-mail Notifications

- ◆ Receive e-mail notifications for user-customizable events



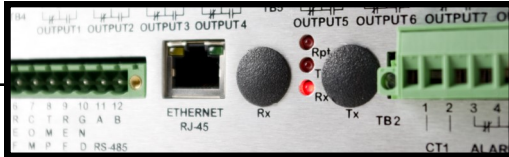
## Visualize Your Transformer's Health

### Ethernet

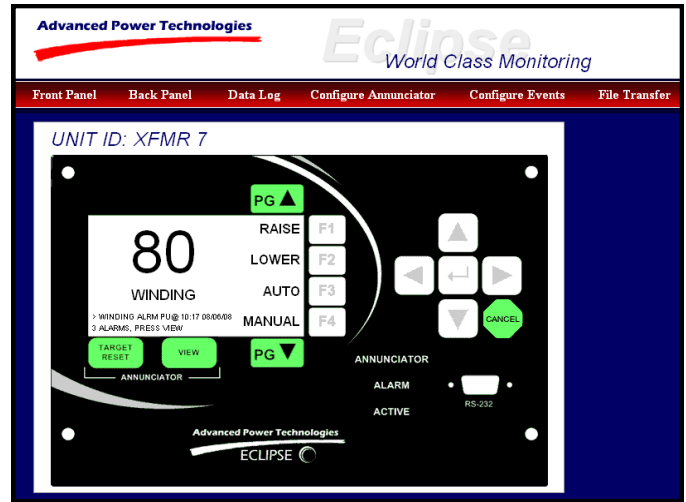
Monitor EVERYTHING related to Transformer Health, including Dissolved Gas Analysis Data, Moisture, Bushing Monitor Health and more. Use that data directly in QuickMath™ equations, communicate it back to SCADA, or simply view it through real-time remote access via a Browser-Based GUI implementing TLS

### Ethernet Simultaneously Supports

- ◆ IEC61850 w/ GOOSE Messaging
- ◆ DNP 3.0 or MODBUS TCP/IP
- ◆ Automatic E-Mail Notifications



## Web-Based GUI



Browser-Based Graphical User Interface  
For Monitoring, Annunciation, Settings,

### Additional Communication Options

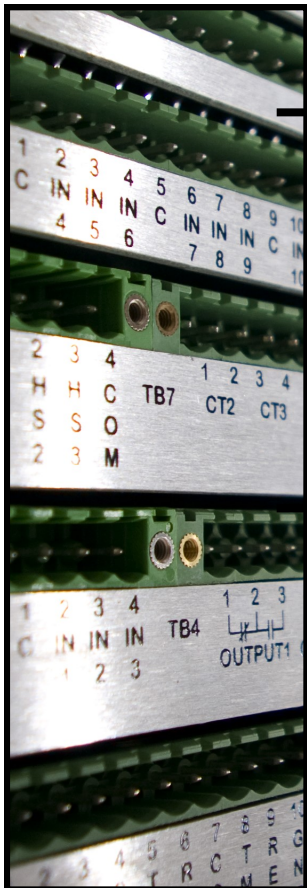
- ◆ Dedicated Fiber for DNP 3.0 or MODBUS

## Built-In Function Buttons

The 8 built-in function buttons allow replacement of switches normally found in the transformer control cabinet for manual fan or tap change-

## Comprehensive LTC

Apply:  
Dual-Algorithm OLTC Condition Monitoring™ along with OLTC Position Monitoring for comprehensive LTC Condition Monitoring. The true value of this feature is realized through reliable predictive maintenance of your OLTCs



## Direct Fiber Winding Temps

### Real-Time Winding Hotspot

- ◆ No calibration or maintenance
- ◆ High dielectric strength
- ◆ Fired Phosphor Tipped Fiber
- ◆ Rated for use at 765 kV
- ◆ Compatible with existing Phosphor tip fiber installs
- ◆ 16 fiber probe capable
- ◆ Works with legacy Phosphor Probes

*Please see the ECLIPSE DFWT*

**Advanced Power Technologies**

## Additional Specifications

**Enclosure & Dimensions:** 8.028 W x 4.882 H x 6.40 D Chromated Steel

**Front Panel Dimensions:** 8.378 W x 5.686 H

**Power Supply Input Operating Range:** 38 VDC to 290 VDC or 120 VAC +/- 10%,  
10 Watts Max

**Operating Temperature Range:** -50 °C to +85 °C, 95% Relative Humidity (non  
condensing)

**Temperature Measurement Accuracy:** Avg error over entire measurement range  $\pm 1$  °C.  
Absolute error at any temperature  $\pm 1.5$  °C for temperatures within the range of 23°C -  
160°C. Below 23 °C the error is  $\pm 3.5$  °C.

**Output Contact Rating:** 30 amps make for 250 msec, 8 amps continuous at 250VAC.

**Optically Isolated Inputs:** Operates from 38 to 290 VDC or 24 VAC to 260 VAC. External  
wetting voltage required.

**Alarm Contact Rating:** 0.4 amp continuous at 290 VDC (NEMA), 0.15 amp continuous  
at 290 VDC (Panel)

**Analog Output:** Self powered and selectable, 0 to 1 mA or 4 to 20 mA. Maximum load  
10,000 Ohms (0 to 1mA), 510 Ohms (4 to 20 mA).

**Analog Input:** 0 to 10 VDC or -5 to +5 VDC, Accuracy +/- 1%

**Auxiliary CT Inputs:** 0 to 50 Amps or 0 to 100 Amps RMS  $\pm 3.5$  % of full scale, High-  
Speed Channels can derive up to the 8th Harmonic

**Communications Interfaces:** Front Panel Mounted RS-232 DB-9 Null Modem Interface or  
USB B (USB-CDC class), Type 2, Full Speed 12 Mbps

**Ethernet:** 10/100 Base-T metallic interface with transformer isolation of 1,500 Volts AC  
RMS in accordance with IEEE/ANSI 802.3

**Current Measurement Range:** 0 to 50 A or 0 to 100 A

**Surge Withstand/Fast Transient:** Relay outputs and station battery inputs: ANSI  
C37.90.1

**EMI Withstand:** ANSI C37.90.2

**Electrostatic Discharge:** IEC 801-2

**EMC Directive (2004/108/EC):** IEC61326-1 and CISPR-11



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