

## Fault Recorder Software For Generation, Transmission and Distribution Power System Monitoring

The Fault Recorder product family is enhanced with our full suite of software applications designed to simplify the process of configuring our recorders, retrieving event information and analyzing the results. Tools like our automated event retrieval and expert analysis provide the quickest results when classifying an abnormal event. Detailed fault analysis is easily accomplished with our set of power analysis tools and flexible display options.

### Display Station and Analysis

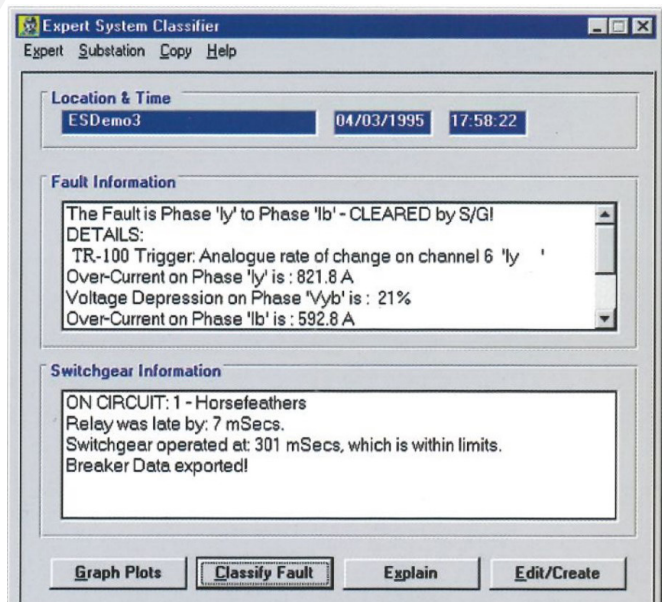
(Includes power analysis tools and harmonix)

- Configuration tool for setting up and operating all the AMETEK recorders in your network. Can be used locally or remotely (modem or Ethernet)
- Auto-Call from recorders or Auto-Poll from your PC to retrieve event information automatically
- Display of real time data from your fault recorders
- Detailed waveform analysis
- Power calculation tools perform 3-phase calculations for lines or circuits, yielding peak, RMS, per unit values, power quantities (MVA,MW,MVAR,X/R), frequency, distortion and sequence components as an average within a window or a waveform over the event
- Phasor display with magnitudes and angles shown
- Harmonic data plotted against known standards: IEEE519 or EN50160 or user selectable limits
- Harmonic analysis includes flexible display setup and automatic scrolling of harmonic data over time interval
- Merges configuration and data files transparent to user for systems utilizing more than recorder box for a system

### Expert System

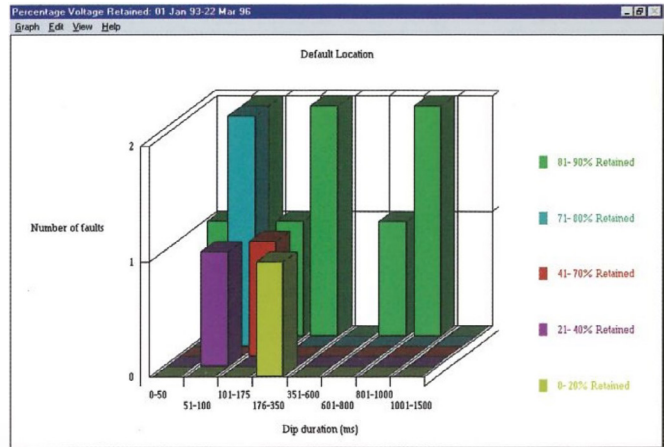
Automated analysis that highlights the fault conditions and verifies whether the protection system performed as expected. Data includes faulted circuit and phases, magnitudes and duration and what protection equipment operated.

- Automatically transfer information to voltage dips and breaker performance monitor database
- Substation modeling to identify protection setup
- Can be initiated manually or automatically through Auto-Poll/call
- Includes typical first-pass analysis, reducing the mundane analysis - eliminating information overload
- Allows proactive use of data instead of reactive
- Includes fault location results if that option is enabled



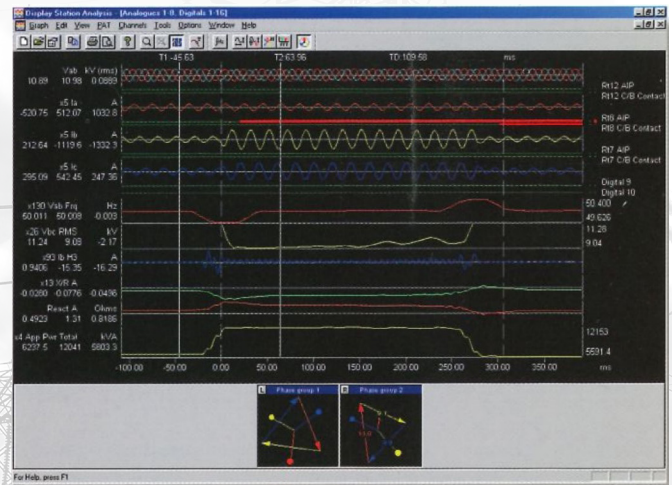
## Voltage Dip Analysis

- Analyze voltage dips over time interval to perform before/after or location-to-location comparisons
- Review impact of changes made to protection system
- Review changing dynamics of power system (seasonal fluctuations, large users, DG)
- Compare power system performance by site
- Compare results to industry standards (CBEMA, ITIC, user programmed) curves and charts
- Information automatically stored in database for historical review or further analysis



## Breaker Performance Monitor

- Track performance of circuit breaker by: number of operations, cumulative current interrupted and/or duty interrupted
- Determine optimal time to perform maintenance on breakers
- Information automatically recorded to breaker database for easy review
- Eliminates the need for dedicated on line monitors that calculate the same parameters



## Distance-To-Fault (DTF)

- Analyze fault data and calculate distance to the fault from the recorder at I-end of the line
- Accurate to 2% when untapped 2-terminal transmission lines are analyzed
- Graphical display windows clearly identify fault location
- Distance to fault information automatically added to expert system reports

Breaker Performance Monitor Database

System View Help

Switchgear Database: Operations

Location: ESDemo3 Breaker Number: L472EFR  
Feeder: Demo Cct1 Month: January

Breaker ID	Location	Feeder	Date	Time
L472EFR	ESDdemo3	Demo Cct1	04 Mar 95	17:58:22
L472EFR	ESDdemo3	Demo Cct1	19 Jan 95	14:38:02
L472EFR	ESDdemo3	Demo Cct1	18 Jan 95	04:59:20
L472EFR	ESDdemo3	Demo Cct1	17 Jan 95	21:04:39

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REV 04/2023

