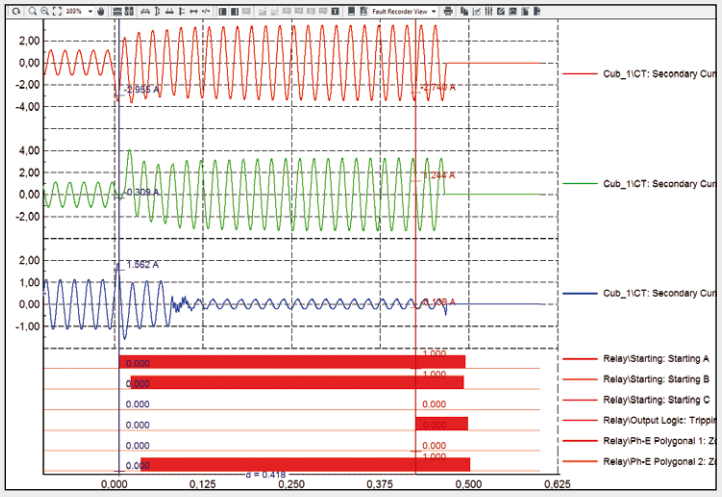
DIgSILENT

# PowerFactory Monitor PFM300 for Fault Recorder Applications

PFM300 is an integrated, multifunctional data acquisition system that covers recording, monitoring and analysis of signals in all relevant timeframes. Flexible hardware and software components allow for the configuration of portable systems, standalone installations as well multiple distributed and linked installations.

Transient fault recording facilitates the analysis of protection and circuit-breaker device operation as well as providing an overview of various aspects of grid operation. The capturing of events (e.g. those caused by short circuits, switching actions or instability phenomena), midterm transients and steady-state grid characteristics are covered by the multi-timeframe recording mechanism.




## KEY BENEFITS

### Flexible channel configuration

- Scalability for low and high number of channels, realised by extension modules and combination of multiple linked systems
- Easy adaptation of equipment to specific requirements

### Integrated Current Transducer

- No insertion losses
- No requirement for external shunts, no risk during short circuit currents

### Relay function and status supervision

- Verification of relay behaviour with different settings by using a combination of real data and simulated data from PowerFactory

### Aggregation of analog inputs with data from existing field equipment

- Integration of PMU or relay data by IEEE C37.118
- Combination of data from C37.118 and analog inputs for further calculations e.g. power etc.

### Flexible trigger conditions

- Multiple trigger definitions on each signal such as, minimum, maximum and gradients
- Adjustable setpoints of hysteresis and filters
- Automatic re-triggering with recording extension
- Synthetically-created trigger conditions based on logical combination of individual triggers
- Triggering on IEEE C37.118 inputs and logical combinations with any trigger
- Remote triggering to other PFM300 locations

### Integrated Sequence of Events (SOE) recorder

- Full database-based EventViewer
- Online and offline mode
- Multiple screen arrangement
- Individual filter options and export functions

### Centralised Master Station software

- Released as a module of DIgSILENT Standard PowerFactory
- Convenient data analysis and supervising of all field-deployed PFM300 systems via IEC 61850 or SMB over TCP/IP

# OPTIMISATION OF PROTECTION SETTINGS WITH POWERFACTORY

**Recorded CT and VT measurements can be interfaced with DIgSILENT PowerFactory (PF) to verify and optimise relay settings of special protection functions, such as power swing blocking or out-of-step tripping.**

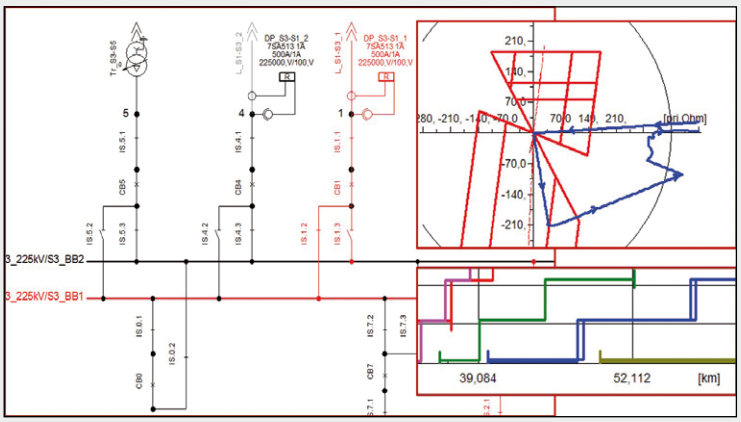
Flexible injection of measured signals (PFM) into network/ protection simulator (PF)

Comparison via time-domain simulation between measured signals (PFM) and simulated relay behaviour using detailed manufacturer-specific models (transient response check)

Investigation of relay misoperation and corrective actions

Graphical visualisation of measured and simulated impedance traces on R-X diagrams

Protection coordination diagrams to assist in optimising relay settings




# KEY FEATURES

**Up to 640 analog and 2688 digital channels in one system**

**Different recording streams, fully configurable**

- Transient stream (trigger-based, 15,151kHz)
- Fast stream (trigger-based, up to 2/cycle)
- Slow stream (continuous, up to 10Hz)

**256GB internal SSD storage (1-2 years circulating buffer)**

**Slot-based components for easy upgrade or adaption to different applications**

**IEC 61850 Ed. 2 compliant**

**Additional Applications**

- Dynamic System & Network Performance Monitor (DSM)
- Power Quality Monitor
- Grid Code Compliance
- Phasor Measurement Unit (PMU)
- Power Plant Monitor

# TECHNICAL SPECIFICATION

**A/D converter with 15,151kHz and 20-bit sampling**

**Wide range power supply 100-240 VAC 50/60Hz, 100-250 VDC (fully-redundant)**

**Time synchronisation by GPS, IRIG-B, PTP or NTP**

**Up to 5 LAN ports; up to 4 serial ports**

**Full international CB certification**

**Support of Redundant Network Interface PRP-1 and HSR according to IEC 62439-3**

**Protocol Outputs**

- IEC 60870-5-101/104
- IEEE C37.118 /2005 /2011 (PMU)

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DIgSILENT GmbH is certified to the ISO 9001:2015 standard.
More information is available at www.tuv-sud.com/ms-cert.