DYNAMIC RATINGS

BREAKER PERFORMANCE MONITOR

RESPONSIVE

ASSET HEALTH SOLUTIONS

PQE POWER SYSTEM SDN BHD

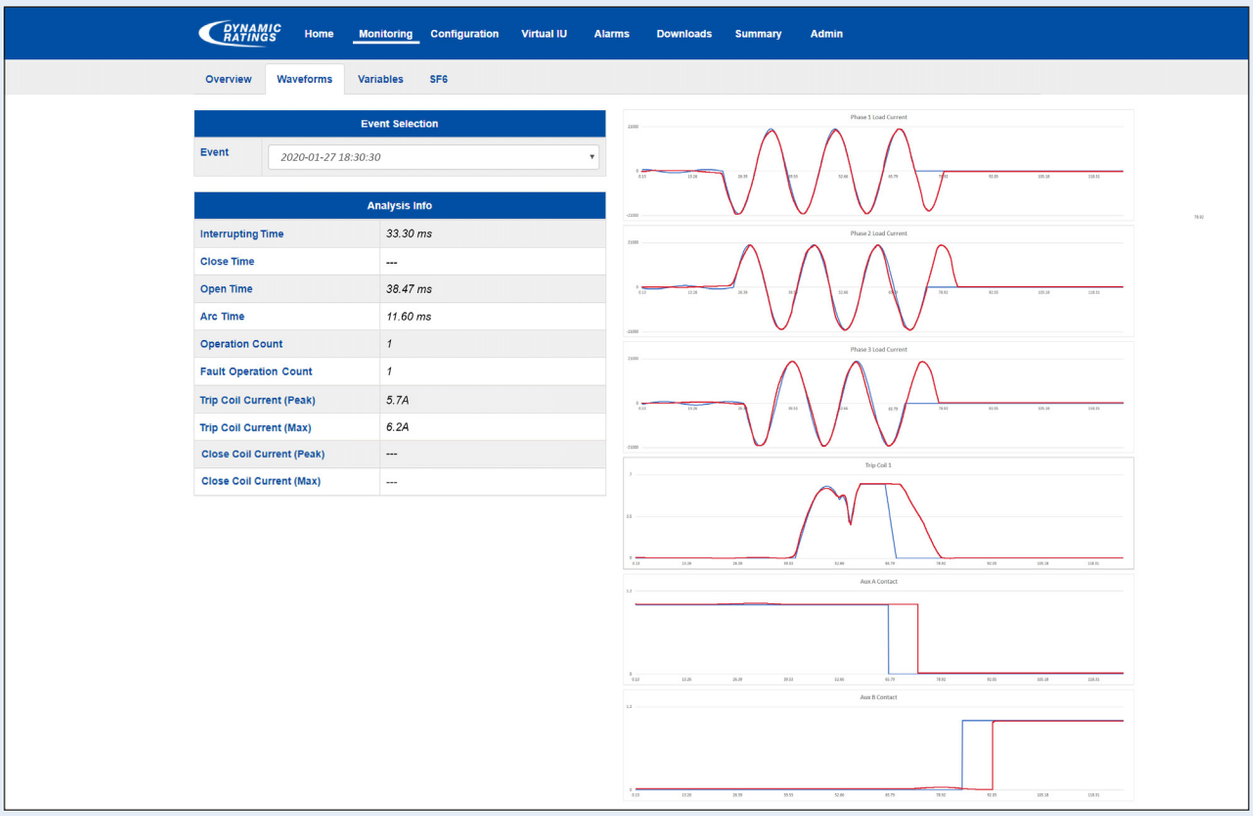
COMPREHENSIVE MONITORING USING SMART CAPTURE

TAKE CONTROL OF YOUR ASSETS

High voltage circuit breakers are critical to the safety and effective operation of the electrical system. A circuit breaker must react quickly when a fault occurs to isolate fault currents from the rest of the system. A circuit breaker that fails to open on command or is slow to react exposes the rest of the system to excessive fault currents, resulting in premature aging and potentially dangerous and costly failures of transformers and related equipment.

While much attention is given to the monitoring of transformer condition, circuit breakers are by far the largest contributor to the occurrence of substation events. Circuit breaker mis-operation is often identified as the root cause of transformer and other equipment failure. Without an electronic monitoring system in place, utilities are forced to rely on cyclic maintenance and off-line testing to determine breaker condition. Due to aging infrastructure, decreasing operating budgets and a decline in craft specialists, the ability to properly maintain breaker performance through the sole use of time-based inspections is becoming increasingly less effective, reducing both the reliability and safety of the bulk electric system.

Dynamic Ratings Breaker Performance Monitor (BPM) is the most comprehensive breaker monitoring solution available. With the inclusion of high-speed waveform capture, the BPM combines the most effective off-line and online testing methods into a highly customizable online monitoring package, resulting in a monitor capable of performing the advanced analytics required to detect operating deficiencies well in advance of breaker failure. The waveform overlay feature will graphically show performance variances of each breaker operation compared to first trip baseline making diagnosis of circuit breakers problems easy to rectify before system failures occur.



Waveform Capture Analytics

FEATURES & BENEFITS

Product Features

Smart Capture	Complete diagnosis of the breakers' mechanical and electrical systems with every operation. Smart Capture uses a waveform analysis for automated graphical comparison of breaker operations, providing a detailed analysis of first trip open and close times, identification of latch and bearing performance, lubrication issues, auxiliary contact condition and fault current values.
Gas monitoring for SF6 and dry air	Multi-parameter sensors monitor density, temperature and humidity in insulating gasses. Alarms alert asset owners of leakage rates, trending of time till lock out and mass gas loss.
Trip coil integrity monitoring	Monitoring of trip coil integrity provides the ability to detect changes in the trip circuit resistance, indicative to the condition of the trip coil and related components.
Interrupter condition	Precise cumulative I^2T calculations allow internal inspections to be scheduled on an as needed basis. Reducing both the cost and manpower associated with time based cyclic maintenance schedule.
Cabinet heater monitoring and environmental conditions monitoring	Current and voltage monitoring of heaters to detect failures which can often occur between maintenance cycles, leading to condensation in control cabinets which causes corrosion of control wiring, short circuits, and premature aging of electrical components.
Charging motor starts, currents and runtimes	Provides data concerning the condition of the stored energy system.
Environmental	Provides temperature for ambient, control cabinets and SF6 gas
Modular construction	Configure your monitor with only those modules required for your application
Multiple communication options	DNP, Modbus or IEC 61850 using Ethernet (Fiber & Copper) (Optional) Serial Fiber, RS485 & RS232 ports

Product Specifications

Parameter	**Specification**
Power Supply:	110 - 240 VAC (50 – 60 Hz), 110 - 250 VDC
Temperature Range:	-40°C to 70°C (-40°F to 158°F)
Communications:	DNP3, Modbus, IEC 61850

How To Order

BPM - ☐ - ☐ - ☐☐ - ☐ - ☐ - ☐

Breaker Monitor Application

G Ganged operating system with four preset expansion cards	G
I Independent pole operating (IPO) system with nine expansion cards: seven preset and two optional	I

Breaker Performance Monitor Frame

4 Four Slot Breaker Performance Monitor	4
9 Nine Slot Breaker Performance Monitor	9

Optional Expansion Cards

N None: Select this option with the ganged operating system	N	N
A Base A: Two form A relay outputs, one form B, two form C, and two DC analog inputs/outputs	A	A
B Base B: Three RTD inputs and four CT inputs	B	B
C Digital Input: Thirteen digital inputs	C	C
D Digital Output: Five form C relay outputs	D	D
J CT Input: Six CT inputs and two digital inputs	J	J
H AC Input: Three CT inputs, three VT inputs, and two digital inputs	H	H

Serial Communications Options

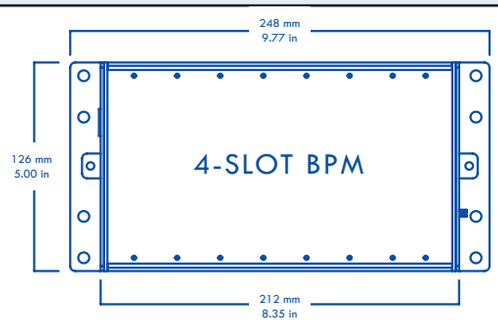
0 Two RS-485 ports	0
1 Two RS-485 ports and fiber optic serial	1
2 Two RS-485 ports and RS-232	2
4 Three RS-485 ports	4

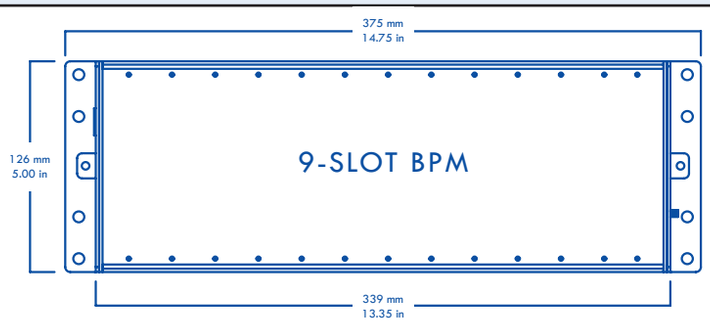
Breaker Type

0 Not an SF6 Breaker	0
1 SF6 Breaker - Single Gas System	1
2 SF6 Breaker - Two Gas System	2
3 SF6 Breaker - Three Gas System	3

Trip Coil Integrity Monitoring

1 One Trip Coil Integrity Monitoring	1
2 Two Trip Coil Integrity Monitoring	2
3 Three Trip Coil Integrity Monitoring	3





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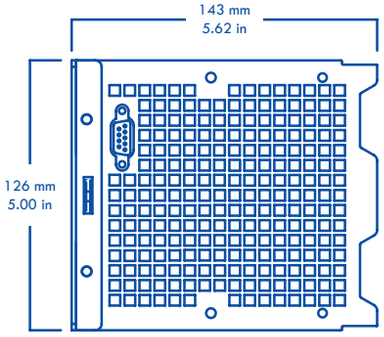

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