DYNAMIC RATINGS

BREAKER PERFORMANCE MONITOR

RESPONSIVE

ASSET HEALTH SOLUTIONS

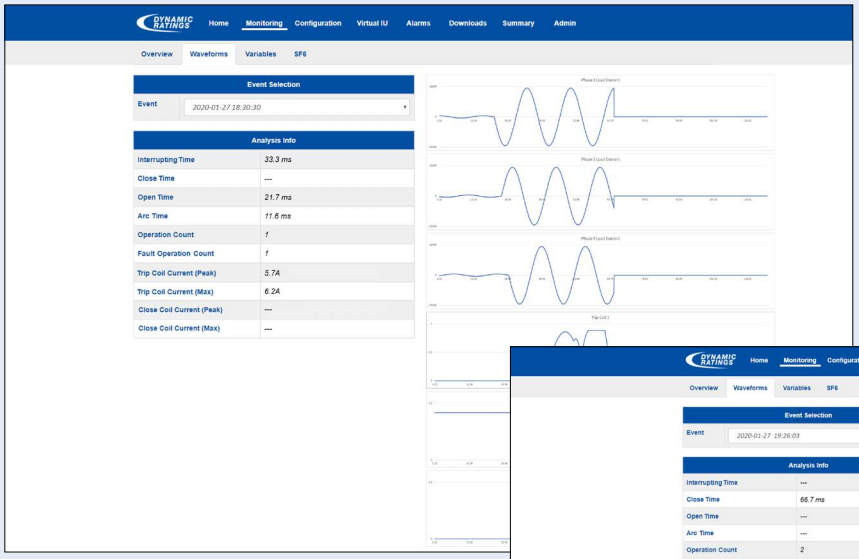
COMPREHENSIVE MONITORING USING SMART CAPTURE

TAKE CONTROL OF YOUR ASSETS

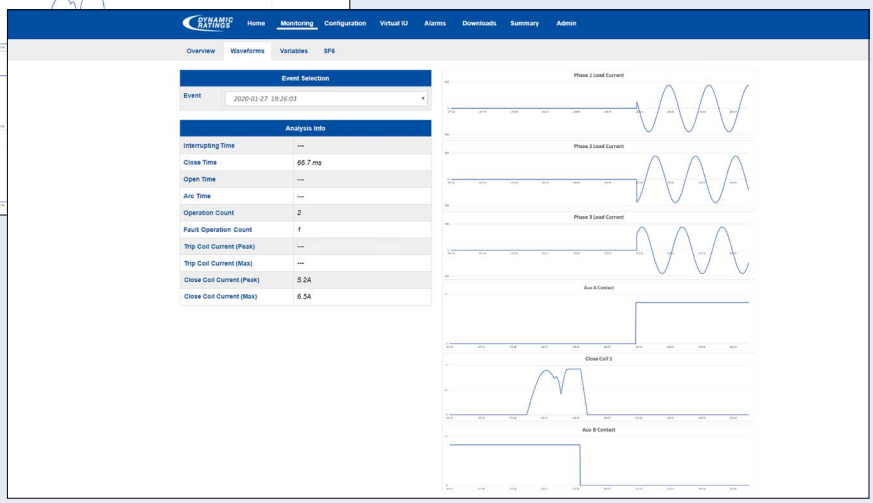
High voltage circuit breakers are critical to the safety and effective operation of the electrical system. The primary function of a circuit breaker is to perform as a conductor in the closed position and an isolator in the open position. A circuit breaker must react quickly when a fault occurs to isolate 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, and 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.



Smart Capture of
Trip Waveforms



Smart Capture of
Close Waveforms

Features & Benefits

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

Power Supply	Rated	110-250 VAC (50/60Hz), 110 - 250VDC
Temperature Range	Rated	-40 to +70°C
Communications	Protocols	DNP3, Modbus, IEC 61850
	Ports	Ethernet (Fiber & Copper), Two RS485 (Optional) Serial Fiber, RS485 & RS232
Alarm Outputs	Relay Outputs	Five Rated 10 A @ 250 VAC
Sensor Inputs	Temperature	PT100 RTD Inputs
	SF_6 Gas	Supplied Multi-Parameter Sensors
	Load Current	Supplied current transducers
	Coil Signature	Supplied current transducers
	Coil Monitoring	Supplied current transducers
	AC & DC Power Monitoring	Direct voltage inputs, max input 240 VAC, 250 VDC
	Auxiliary Switches	Direct digital inputs, max input 390 VDC / 276 VAC
Dimensions (W x H x D)	Ganged Breaker Monitor	9.77 x 4.96 x 5.62 inches (248 x 126 x 143 mm)
	IPO Breaker Monitor	14.75 x 5 x 5.62 inches (375 x 126 x 143 mm)

Ordering Guide

Contact sales@dynamicratings.com to place an order or visit www.dynamicratings.com/contact-us.

BPM- [Application] - [Expansion Cards] - [Serial Communications] - [Breaker Type]

Breaker Monitor Application

		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

Optional Expansion Cards

		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

Serial Communications Options

		Serial Communications
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

		Breaker Type
0	Not an SF6 Breaker	0
1	SF6 Breaker - Single Gas Zone	1
2	SF6 Breaker - Two Gas Zones	2
3	SF6 Breaker - Three Gas Zones	3

*Ganged breaker operating system comes with four preset expansion cards:

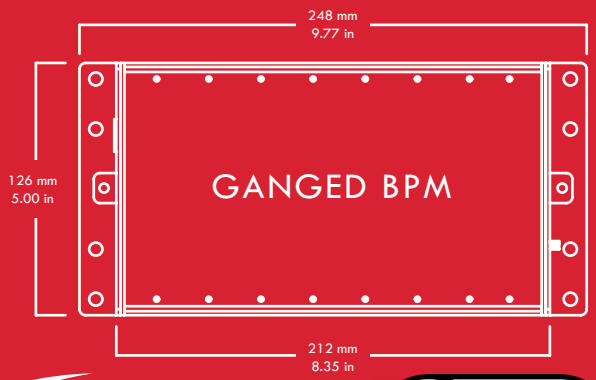
- 1 - Base A Card
- 2 - CT Input Cards
- 1 - Base B Card

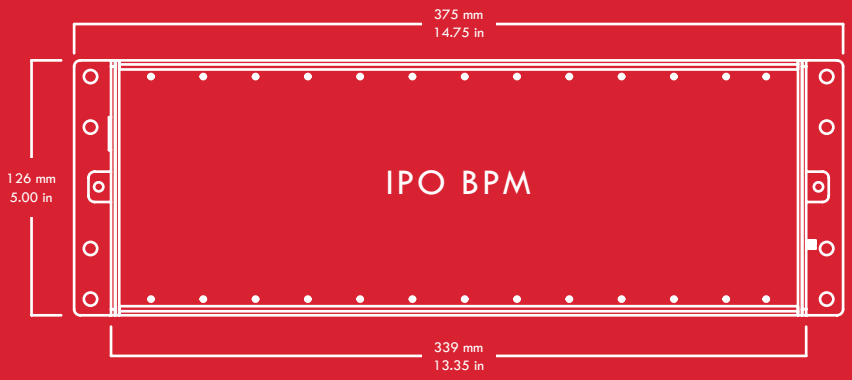
**Independent pole operating system comes with seven preset expansion cards:

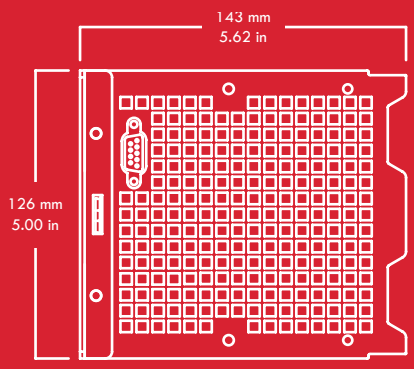
- 1 - Base A Card
- 3 - CT Input Cards
- 2 - Base B Cards
- 1 - AC Input Card

Dimensions

Enclosures and engineering services available as needed.







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bsi. ISO 9001:2015 Quality Management

bsi. ISO 14001:2015 Environmental Management

bsi. ISO 45001 Occupational Health and Safety Management

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