



## PROFILE P3

Circuit Breaker Analyser



**CAMLIN**  
POWER

**PROFILE P3** provides a unique insight into the true condition of circuit breakers at all voltages. Capturing the vital ‘first trip’ shows how the breaker would perform in a real-life fault situation.



PROFILE P3 in use

Problem

- A slow tripping circuit breaker can cause major disruptions on power networks resulting in:
- Widespread loss of supply
  - Damage to plant
  - Potential safety issues
  - CI / CML financial penalties

Conventional testing requires a circuit breaker to be isolated. However this **first trip** operation can often temporarily clear any slow tripping problem.

Therefore capturing the ‘**first trip**’ operation is essential to effective circuit breaker condition monitoring.

Solution

- The **PROFILE P3** offers a cost effective solution by enabling:
- Fast and simple online test
  - Capture vital **first trip** operation
  - Combined relay and circuit breaker test
  - Onsite analysis of breaker defects
  - Efficiently target critical resources

**PROFILE P3** is a powerful diagnostic tool for analysing:

- Main contact operating time
- Auxiliary contact operating time
- ‘Health’ of Close & Trip coils
- Condition of DC battery circuit
- Auxiliary contact condition
- The Total Trip Time

Key Features

Powerful Onsite Analysis

The **PROFILE P3** can display and overlay up to 4 records in graphical form. This enables quick onsite analysis of potential defects by comparing a first trip or close profile to subsequent circuit breaker operations.

Combined Protection Relay and Circuit Breaker Online Test

An enhanced version of the software enables both the protection relay and circuit breaker trip times to be captured.

Knowing the Total Trip Time is important when considering protection discrimination and arc flash hazard compliance.

Multi-shot Mode

With this function the **PROFILE P3** is able to re-arm and capture multiple circuit breaker operations.

This can be used for monitoring a circuit breaker during faults or SCADA initiated operations. Also it can be used to capture a sequence of trip/close operations during one test setup.

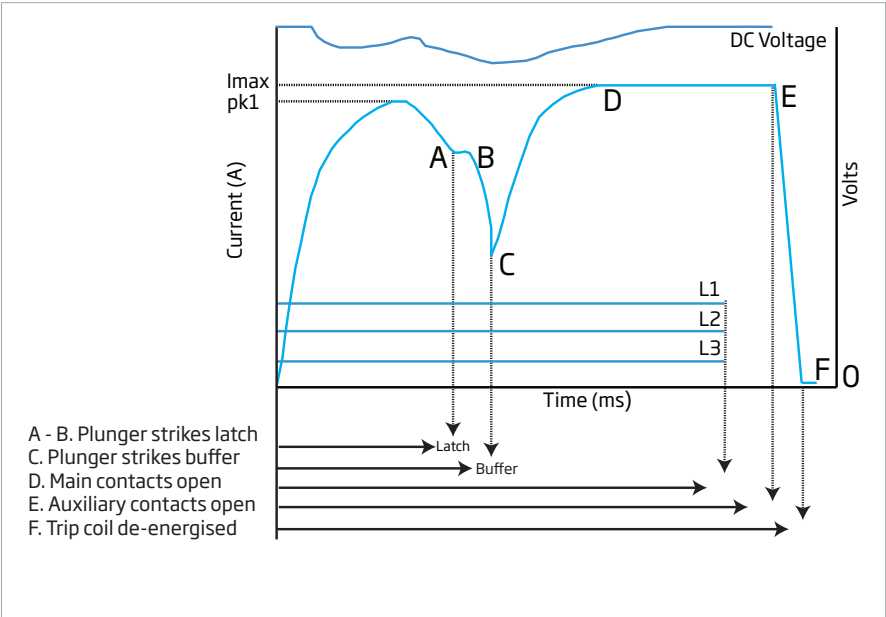
Automated Comparison Function

This provides a clear pass/fail (green/red) indication by determining if the key parameters – Buffer, Acon, Mcon are outside user set tolerances between the first, second and third trip operations.

Circuit Breaker Database on **PROFILE P3**

All the required circuit breaker asset details can be saved on the PROFILE P3 via a USB memory stick. This speeds up entry of test details and also improves accuracy.

Standard Trip Coil Profile



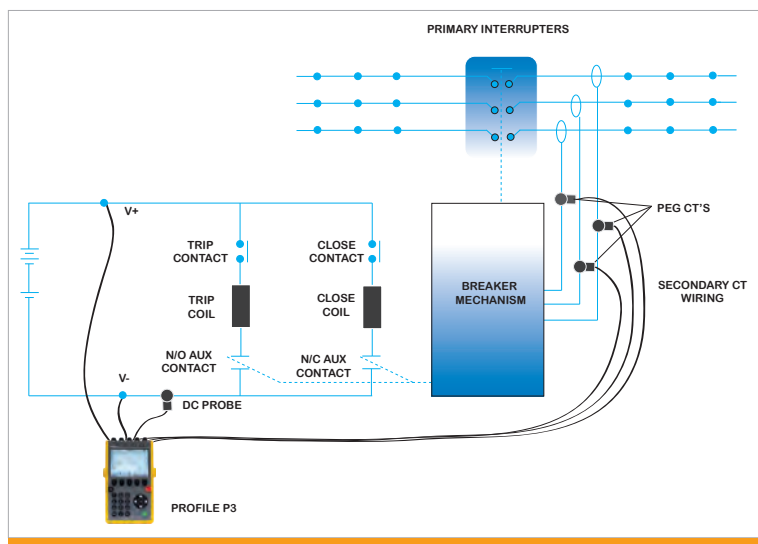


Figure 1: The PROFILE P3 connected for an online 3 phase

## Online Test

Figure 1 shows how the **PROFILE P3** is connected for a 3-phase test on a 'live' circuit breaker

- The DC current flowing through the tripcoil is measured by a Hall- Effect CT and provides analysis of both the trip coil and main mechanism operationl
- The voltage probe measurement provides a clear indication of the condition of the DC battery and associated wiring
- Peg CT's indicate when the current flowing in the main circuit has been interrupted, which gives main contact time

## OPTIONAL ACCESSORIES

### Offline Test

Figure 2 shows how the **PROFILE P3** is connected for a 3 phase Offline Test when the circuit breaker has been isolated.

The addition of an Interface Unit enables DC current to be injected through the circuit breaker.

This enables the main contact and 'pole-spread' times to be accurately measured.

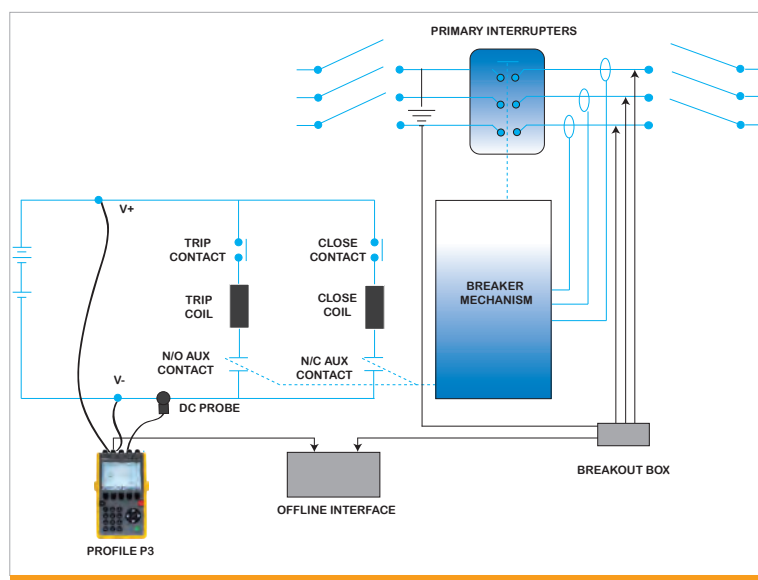


Figure 2: The PROFILE P3 connected for an offline test

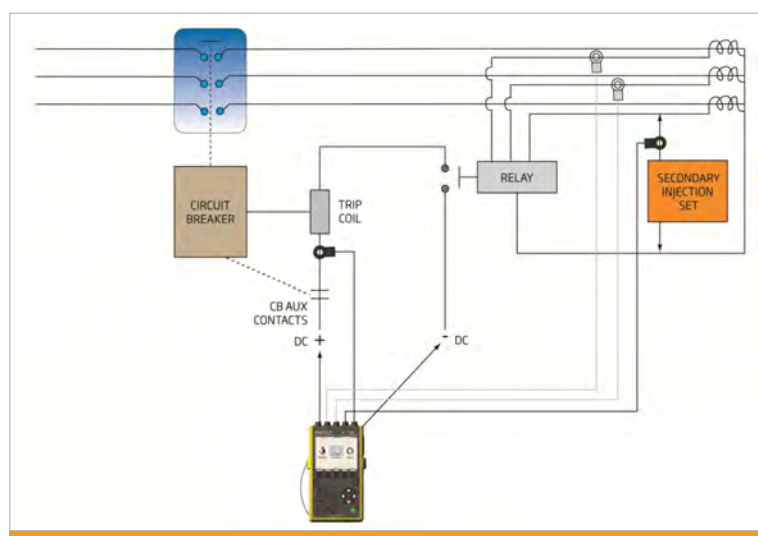


Figure 3: PROFILE P3 connected to measure Total Trip Time

## Combined Protection Relay and Circuit Breaker Online Test

Figure 3 shows how the **PROFILE P3** is connected for a combined protection relay and circuit breaker test. Current is injected into the protection secondary circuit of a 'live' circuit breaker which initiates a relay trip operation.

The **PROFILE P3** is then triggered and captures both the relay trip time and normal circuit breaker parameters of Buffer, Acon, Mcon and DC voltage.

This provides the Total Trip Time for the circuit breaker and corresponding protection relay.



## REPLAY PRO

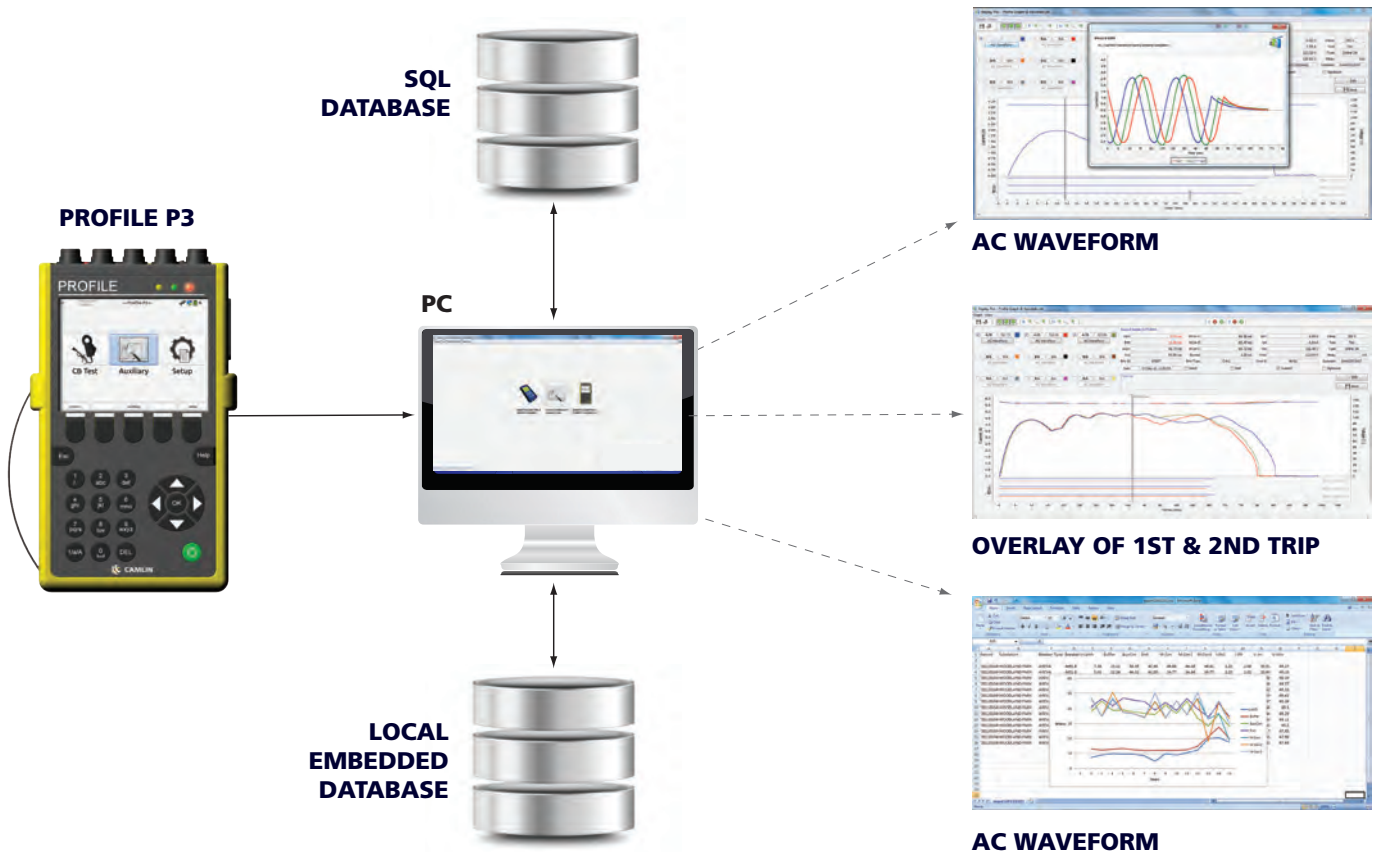
The REPLAY PRO software is an integral part of the **PROFILE P3** system which enables efficient profile record storage, retrieval and analysis.

It provides the critical link between the **PROFILE P3** and those within the organisation who need to access the Profile data in order to effectively manage their assets.

The REPLAY PRO software can be downloaded from the **CAMLIN POWER** website to any PC where the data can be accessed locally or made available to multiple users on a central server.

### Key Features Include:

- Efficient storage of **PROFILE P3** records
- Multiple search criteria for record retrieval
- Display and overlay (up to 9) Profile records for analysis
- Automated analysis function to determine if key parameters are outside preset tolerances
- Export records in CSV format for trending in graph format
- Export of data to create graphs in other spreadsheet programmes
- View AC data during trip and close operations



SPECIFICATION	RANGE	ACCURACY	RESOLUTION
DC Current Measurement:	0.2-100 A	±5%	±100mA
DC Voltage Measurement:	±330 V	±5%	±50mV
AC Current Pickup Threshold (MCon timing):	10 mA	1mA	
Timing parameters:		±0.2 ms	±0.1 ms
Handset Power Supply:	10-15 V DC, 24W		
Inline Power Supply:	85-265 V AC		
	50 / 60 Hz		
Profile Battery Supply:	8x AA (Rechargeable (NiMH) or standard alkaline)		
	6 hours under normal usage		
Screen:	5.7" Color Display, 640 x 480 (VGA))		
Operating temperature:	-20°C à +50°C (-4°F à +122°F)		
Handset record storage:	≥ 1000 records		

PROFILE P3
 with accessories

- DC Probe (Hall Effect CT)
- 3 Peg CTs
- DC Voltage probes
- DC power supply
- USB memory stick & lead
- Peli™ case

Offline Interface Unit

- Interface unit (provides 24V DC signal across circuit breakers)
- AC power lead
- Four 5 metre colour coded leads
- **PROFILE P3** handset connection cables
- Breakout box
- Carry case with strap





[camlinpower.com](http://camlinpower.com)

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