



# SLUGGISH BREAKER®

## PATENTED METHOD FOR DOCUMENTING THE CONDITION OF THE BREAKER MECHANISM

The patented Sluggish Breaker® detection feature captures the breaker mechanism time when a trip occurs that was initiated by the trip unit. If the breaker mechanism time is in excess of the Sluggish Breaker® mechanism time setting, an alarm message will appear, and if programmed, the alarm relay will operate.

When the trip unit sends a trip pulse to the breaker actuator, the Sluggish Breaker® timer starts. *The trip unit determines the breaker mechanism time by one of two methods:*

### Limit Switch:

For many breakers, a limit switch is provided that operates when the mechanism is fully open. The trip unit will record the breaker mechanism time based on the change in state of the mechanism limit switch that is wired to the trip unit. This allows the mechanism time to be recorded even if current was not flowing at the time of the trip. The Sluggish Breaker® timer stops when the limit switch contact changes state.

For breakers where limit switches are not yet included in the retrofit kit design, the AC-PRO-II® can use the “Zero Current” method to determine breaker mechanism time.

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**Warning**
***Service Breaker***

Breaker is
Sluggish or Stuck
    
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View Clear Next

- Patented Sluggish Breaker® detection is included as part of the firmware of the newer trip units from URC
- Measures the breakers mechanism time on every trip operation including the critical first operation
- Provides before and after values for the breaker service test report
- For AC-PRO-II®, the Sluggish Breaker® threshold is user programmable from 20-80 milliseconds
- For AC-PRO-MP®, the Sluggish Breaker® threshold is fixed at 33 milliseconds

### Compatible URC Products with the Sluggish Breaker® detection

#### AC-PRO-II®



The AC-PRO-II® is a state of the art, micro-controller based trip unit for use on 3-phase, 600 volt class, AC circuit breakers on 50 Hz or 60 Hz systems.

#### AC-PRO-MP & AC-PRO-MP-II®



The AC-PRO-MP® and AC-PRO-MP-II® are plug-in, direct replacement trip units for Merlin Gerin & Schneider Electric Masterpact MP, IEC, or UL rated breakers.

#### SAFE-T-TRIP®



The hand-held SAFE-T-TRIP® device provides a means for an operator to safely trip a breaker without having to stand directly in front of the breaker.

REV 7.24.18



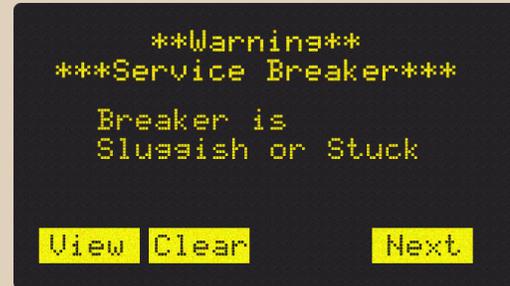
## Voltage, Power, and Energy Data

Whenever voltage and power data is necessary, a Voltage Divider Module (VDM) can be attached to the back of the AC-PRO-II® trip unit. The following VDM data is available on the display and through RS485 Modbus RTU communications.

- Voltages
- KW
- KVA
- KWhr & KVAhr
- Power Factor

## Sluggish Breaker® Detection

The patented Sluggish Breaker® detection captures the mechanism time of every trip including the “first trip” and determines if a breaker mechanism is in need of service. Capturing the mechanism time of the first operation is crucial since later operations are faster because the breaker mechanism was exercised. If a mechanism’s operating time is excessive, the AC-PRO-II® will alarm, indicating maintenance is required.



## QUICK-TRIP®

The AC-PRO-II® is a manually controlled QUICK-TRIP® arc flash reduction system. When turned on it can reduce trip times, and when turned off allows selective coordination between circuit breakers.

A QT2-Switch or QT-Display-II™ is required to control the QUICK-TRIP® operation.

## SAFE-T-TRIP®

The hand-held SAFE-T-TRIP® device allows an operator to safely trip a breaker without standing directly in front of the switchgear. When needed, the SAFE-T-TRIP® plugs into the USB port on the front of the AC-PRO-II® or QT-Display-II™.

SAFE-T-TRIP® helps capture the “first trip” for Sluggish Breaker® detection by tripping the breaker prior to removing the breaker from the cubicle.



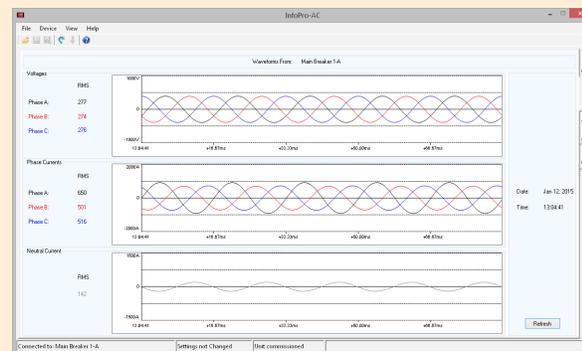
## InfoPro-AC Software

The InfoPro-AC is a graphical user interface application available free of charge for easy interface between a computer and the AC-PRO-II®.

The computer connects to the USB connector on the front of the AC-PRO-II.

InfoPro-AC includes the following features:

- AC-PRO-II® Settings (Upload & Download)
- Waveforms on demand
- Current, voltage, & power readings on demand
- Data on the last 8 trips including the waveforms
- Save Trip data, settings, and waveforms for later use



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