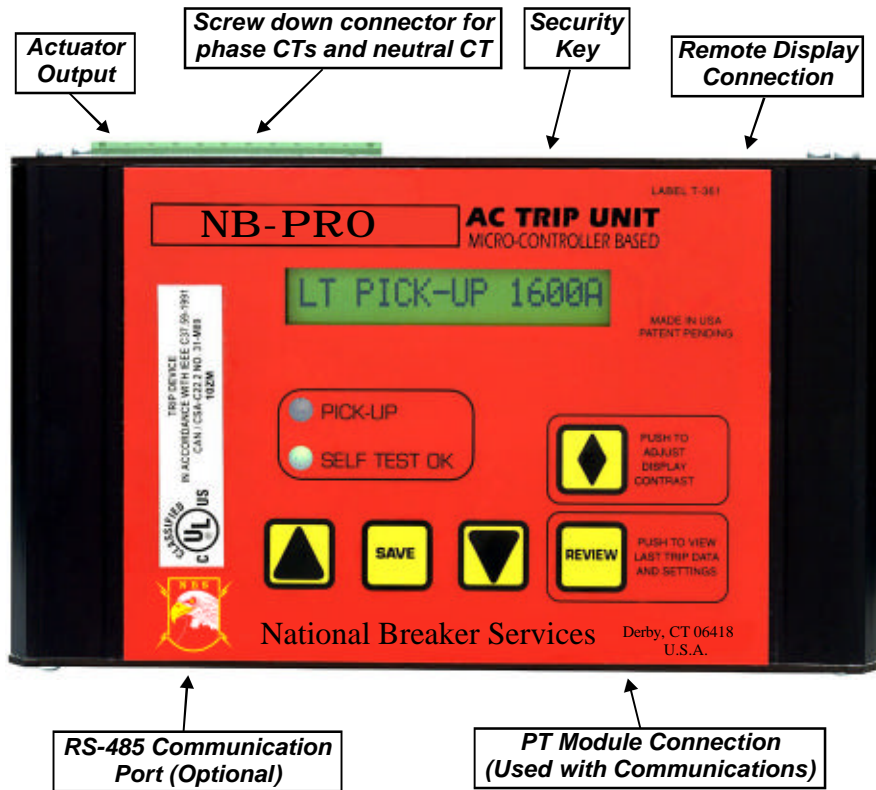


# NB-PRO

**AC TRIP UNIT**  
MICRO-CONTROLLER BASED



State of the art technology for low voltage circuit breaker retrofitting.



## Data Sheet

### Standard trip unit functions

- Long-Time
- Short-Time
- Instantaneous
- Ground Fault
- Phase Unbalanced

All functions are selectable ON/OFF, with the exception of the Long-Time function, during programming.

### True RMS

The NB-PRO is true RMS sensing on all functions, including *Instantaneous*.

### Programming

Settings are programmed using the ▲, ▼ and **SAVE** buttons on the front of the trip unit. All settings and last trip data are stored in non-volatile EEPROM memory.

Security is provided by a **Security Key**, which must be plugged in to the top of the trip unit before any trip settings can be changed.

### 16-character LCD

The large backlit display provides continuous 3-phase current metering when the relay is in service. Last Trip Data and trip settings can be reviewed at any time by pressing the MENU key.

The ◆ button on the front trip unit is provided to adjust the LCD's contrast.

### Last Trip Data

The trip unit retains the data from the most recent trip in EEPROM memory. This information includes the type of trip and the individual phase currents at the time of trip. This information can be reviewed at any time by pressing the **REVIEW** button.

Continually pressing the **REVIEW** button will display a trip counter, which indicates the number of times the trip unit has operated on each function. The present trip unit settings will also be displayed.

Last trip data and the trip counter can be cleared at any time.

### PICK-UP Indication

The red LED on the front of the trip unit illuminates when current reaches or exceeds the pick-up value.

### SELF-TEST OK Feature

The green LED indicates that the trip unit is operating properly. This feature:

- Continuously monitors the trip unit.
- Verifies that the actuator is connected.
- Monitors software routines.
- Monitors micro-controller and A/D Converters.



# NBS

## National Breaker Services

298 Hawkins St.  
Derby, CT 06418  
U.S.A.

### Complete Retrofit Kits

The NB-PRO can be supplied as part of a complete retrofit kit. Kits include all necessary brackets, mounting hardware, wiring, actuator or trip relay, installation documentation and instruction manuals.



*NB-PRO retrofit kit for G.E. AK-2-25*

Most kits are available from stock for the following breaker types, in virtually all frame sizes:

#### General Electric

AK AKR AKRT AE AL

#### Westinghouse

DA DB DK DS DSL

#### I-T-E

K KA KB KC KD  
KE LG LX LK

#### Siemens / Allis-Chalmers

LA-Blue/Gold LA-25 LA-50 LA-75  
G RL RLX

#### Federal Pacific / Federal Pioneer

FP FPS FM DMB H2/H3

#### Sylvania

SSPB

#### Roller Smith

RS BD HD

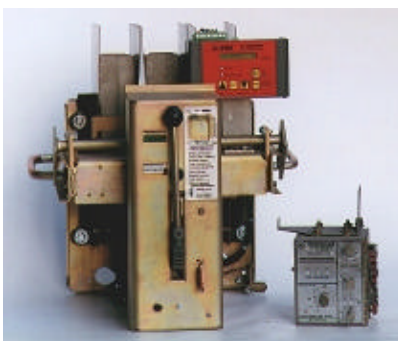
#### Square D

PB

### NB-PRO Direct Replacement

The NB-PRO trip unit is designed to use existing 1/2 or 1 amp CTs and operate the magnetically latched actuators provided with many older style electronic trip units.

Reusing the existing CTs and actuator can reduce material costs by as much as 50% or more. Replacing just the trip unit can also cut installation time to a fraction of the time required for a complete retrofit.



*Direct Replacement of a Static-Trip II On an Allis Chalmers LA-600 breaker.*

### Trip Unit Acceptance Testing

In addition to being UL CLASSIFIED and short circuit tested, the NB-PRO has been independently tested to, and passed the following:

- **ANSI/IEEE C37.90.1** - Oscillatory Wave Surge Test.
- **ANSI/IEEE C37.90.1** - Fast Transient Test.
- **ANSI/IEEE C37.90.2** - RFI Test.
- **Capacitive Discharge Test** - 1.5 kA 80 & 180  $\mu$ s pulses applied to primary CT inputs superimposed on load current
- **Electrostatic Discharge Test** - 8 kV and 15 kV direct air discharge applied to trip unit.
- **Insulation Test** - 2.2 kVAC, 60Hz applied for 60 seconds.
- **Environmental Test** - Secondary Injection test trip unit at 20, 23 and 65 C. Minimum exposure of eight hours at each temperature.

### RS-485 Communications Port

The optional communications port uses the industry standard MODBUS protocol. Multiple trip units can be daisy-chained together using a single twisted pair wire.

Additional components supplied with a communications ready NB-PRO+ retrofit kit include: PT Module and cable, Communications Cable, cell wiring accessories, mounting brackets and hardware. Information monitored includes:

- Currents, 3-Phase
- Voltages, 3-Phase
- KW, 3-Phase
- KVA, 3-Phase
- Power Factor, 3-Phase
- Breaker Position
- Last Trip Data
- Trip Counter
- Alarm Conditions
- Trip Unit Settings

The NB-PRO also features remote programmability, which allows trip settings to be programmed remotely from a PC. Two addressable form-C contacts are also supplied with the PT Module.

### Warranty

2 Year limited warranty.

### National Breaker Services

Toll Free: 800-806-5552

Phone: 203-734-7898

Fax: 203-734-1982

[Sales@nationalbreakerservices.com](mailto:Sales@nationalbreakerservices.com)

