

Basler BE1-87G

**Generator Differential
Protection**

External wiring

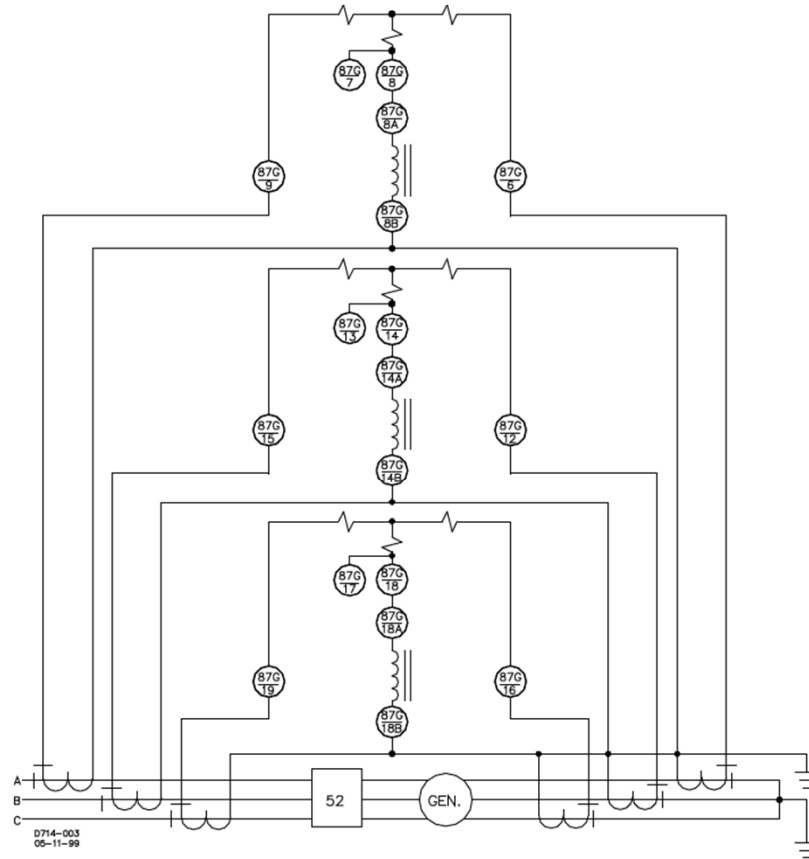


Figure 1-2. Typical Three-Phase Application Scheme

Internal Connections

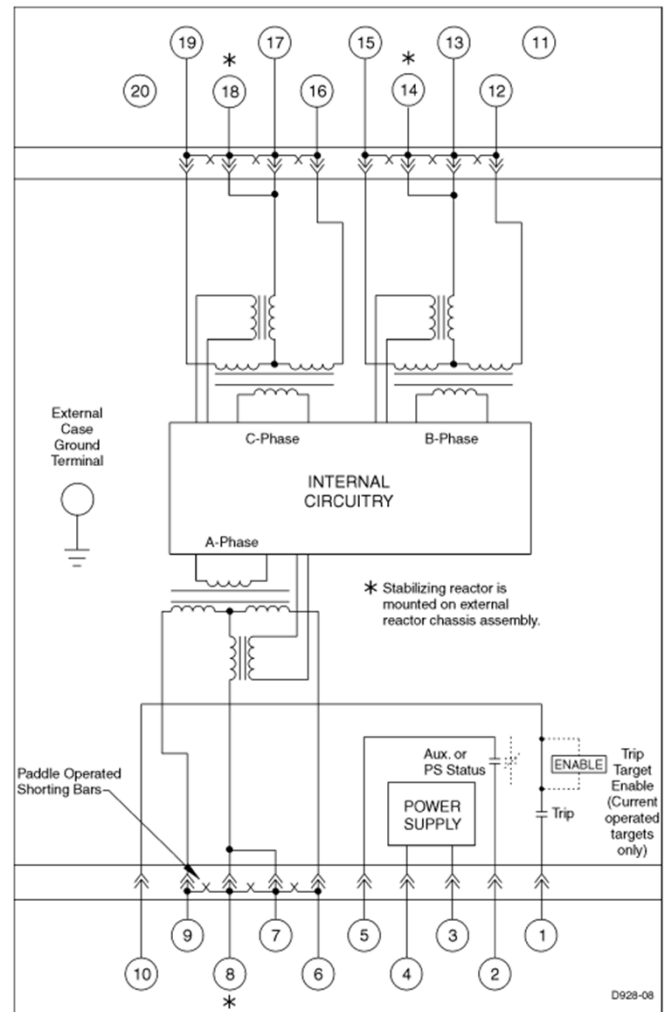


Figure 4-16. Internal Connections/Terminal Assignments, Three-Phase Relay

Test Setup

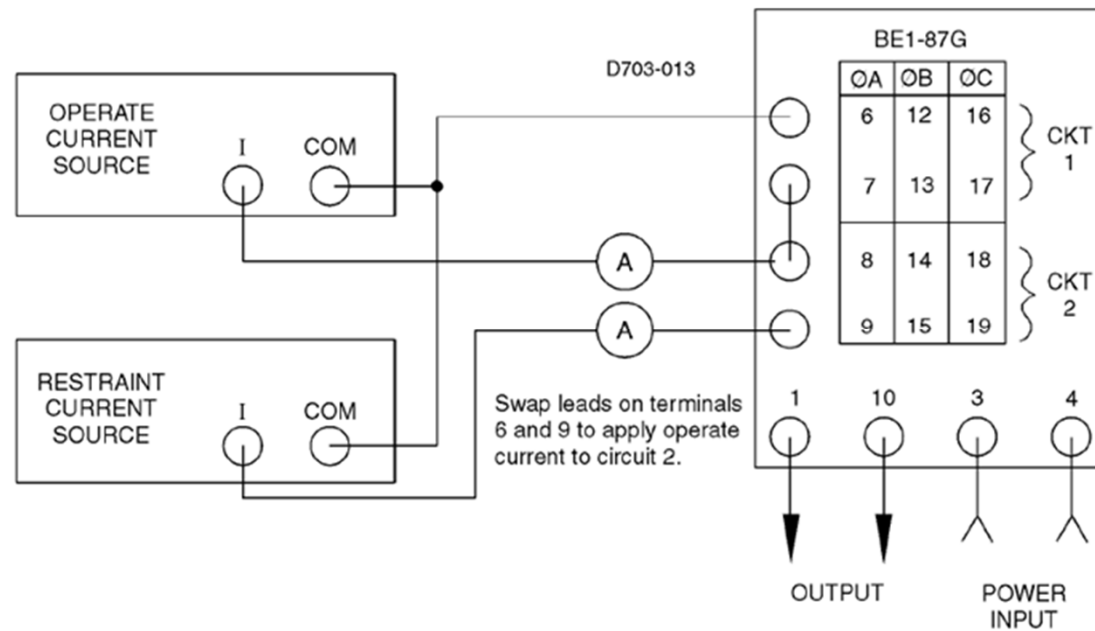


Figure 5-2. Operational Test Setup

Alternate Test Setup

6 currents + DC

Sense 1-10

I1 (At) 9-8 <0

I2 (Bt) 15-14 <240

I3 (Ct) 19-18 <120

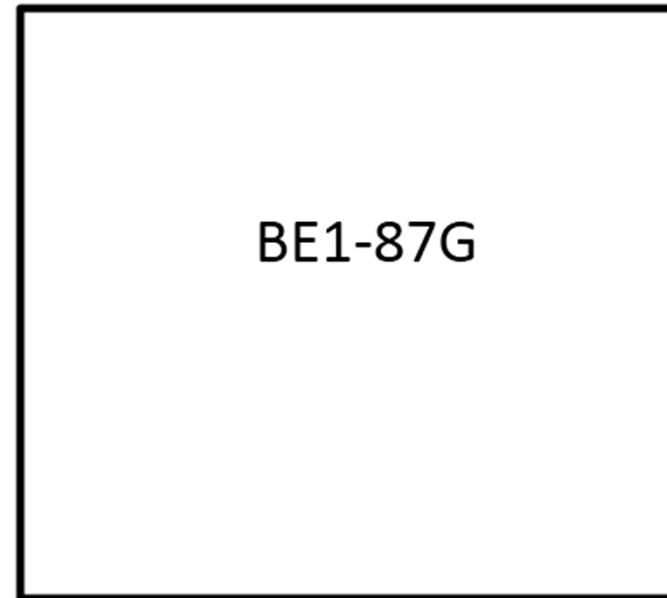
I4 (An) 6-8 <180

I5 (Bn) 12-14 <60

I6 (Cn) 16-18 <300

DC 3(+)-4(-)

11 12 13 14 15 16 17 18 19 20



1 2 3 4 5 6 7 8 9 10

This mimics field wiring and normal current flow.

Testing the Differential Characteristic Method 1

- Set selector switch to “D”
- Apply 0.1 amps to terminals 9-6
- Ramp up current to terminals 8-6
- The relay should pick up at around 0.4 amps.

Testing the Differential Characteristic

Method 2

- Set selector switch to “D”
- Apply 1.0 amps to terminals 9-8 at 180° .
- Apply 1.0 amps to terminals 6-8 at 0° and ramp up.
- The relay should pick up at around 1.4 amps – a difference of 0.4 amps.
- This emulates current flow through the generator increasing on the neutral side but not on the terminal side.

Play time

- Try changing the angles (if you can) – does the relay respond differently at 30° , 90° , 180° , etc.
- Is there a maximum torque angle?
- Ramp up, ramp down, where does the relay drop out (it should drop out above 90%).
- Start at higher current – 5 or 10 amps and ramp one up
- Does the relay respond differently if it's "fed" from one side or both?
- If it's mis-wired, what can happen? (What if field wiring is done like method 1?)