Basler BE1-87G

Generator Differential Protection
External wiring
Internal Connections
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(-)

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?)