

4–20 mA Troubleshooting Checklist

Practical field workflow for tracing a current signal from transmitter to controller.

Normal Reference Values

Current	Percent	Across 250 Ω
4 mA	0%	1 V
8 mA	25%	2 V
12 mA	50%	3 V
16 mA	75%	4 V
20 mA	100%	5 V

Troubleshooting Workflow

1. Verify the transmitter has adequate loop power.
2. Measure loop current with the meter in the correct configuration.
3. If possible, measure at the transmitter and again near the receiving device.
4. Check polarity, terminals, fuses, barriers, isolators, and wiring continuity.
5. Check loop burden and voltage drop across series devices.
6. Verify the analog input configuration and scaling.
7. Compare the PLC/HMI value with the measured field signal.

Common Symptoms

- 0 mA or near 0 mA: open loop, loss of power, wiring/polarity problem, or transmitter fault.
- Fixed low value: configuration, process input, transmitter, or loop issue.
- Correct current but wrong PLC value: input configuration, scaling, raw-count, or logic issue.
- Correct at transmitter but low at controller: wiring, series resistance, or loop-burden issue.
- Unstable current: process fluctuation, grounding/noise, power supply, wiring, or transmitter issue.

Safety / Meter Note

Follow the transmitter and site procedures before opening or disturbing a live loop. Use the meter's current-measurement method only as intended; an incorrectly connected ammeter can interrupt the loop or cause a fault.