

Your Company Name / Logo	COLD LOOP CHECK SOP (CONTINUITY AND INSULATION)	Doc no: SOP COM 002	Rev: 0
Department: Instrumentation	Standard operating procedure	Date:	Page: see footer

1. Purpose

To find wiring faults before energising instrument loops.

2. Scope

Instrument signal and power cables from field devices through junction boxes to marshalling cabinets.

3. References

- Loop drawings and termination schedules
- Cable schedule
- Insulation tester manual

4. Responsibilities

- Instrument technician: carries out the work and records results.
- Instrument engineer or supervisor: reviews and approves the records.
- Operations: grants the permit, isolates the process and returns the equipment to service.

5. Safety precautions

- Work only under a valid permit to work and follow the site isolation (lockout tagout) procedure.
- Wear the PPE required for the area: safety helmet, glasses, gloves and safety shoes as a minimum.
- In hazardous areas use certified or intrinsically safe test equipment, or obtain a gas free certificate and hot work permit.
- Inform the control room before starting, and before returning the instrument to service.
- Insulation testers produce high voltage: make sure no one touches the circuit, and discharge cables after each test.
- Disconnect transmitters, I/O cards, barriers and surge protectors before testing; the test voltage can damage electronics.
- Do not use an insulation tester on IS circuits in a hazardous area without a gas free certificate.

6. Tools and equipment

- Insulation resistance tester (500 V DC for instrument cables)
- Multimeter or continuity tester
- Radios
- Termination schedules

7. Prerequisites

- Cables installed, glanded and terminated; ferrules fitted.
- Electronic devices at both ends disconnected.

8. Procedure

8.1 Continuity and polarity

- 8.1.1 Short the pair at the field end.
- 8.1.2 Measure continuity at the marshalling end and confirm the loop resistance is reasonable for the length.
- 8.1.3 Remove the short and confirm open circuit; check polarity follows the drawings.

8.2 Insulation resistance

- 8.2.1 Test core to core, each core to screen and each core to earth at 500 V DC for one minute.
- 8.2.2 Record the readings; discharge the cable after each test.

8.3 Screen and earthing

- 8.3.1 Confirm the screen is continuous through the junction box and earthed at one end only (normally the control room).
- 8.3.2 Confirm the screen is isolated from earth at the field end.

8.4 Completion

- 8.4.1 Reconnect devices, record results and raise punch items for failures.

9. Acceptance criteria

- Continuity and polarity as per drawings.
- Insulation resistance at or above the project requirement (commonly $\geq 100 \text{ M}\Omega$ for new instrument cables).
- Screen earthed at one point only.

10. Records

- Loop check sheet (pre checks) (free template: instrumentationblog.in/downloads/templates/loop-check-sheet/)
- Cable schedule (free template: instrumentationblog.in/downloads/templates/cable-schedule-template/)

11. Approval

	Prepared by	Reviewed by	Approved by
Name			
Signature			
Date			

This procedure is a generic template. Adapt it to your site permit system, the manufacturer instructions and your quality system before use.