Vortex and Ultrasonic Flowmeter Fault Finding Guide

Vendor neutral fault finding guide for field technicians

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Before you start

- Permit, isolation and control room informed.
- Put the loop in manual or inhibit trips as authorised.
- Use certified test equipment in hazardous areas.
- Record as found readings before changing anything.

Quick checks

- Configuration matches certificate (K factor, ID)?
- Flow above minimum for the meter?
- Ultrasonic: signal strength and quality OK?
- Straight run as required?

Symptoms, causes and fixes

Symptom	Likely causes	Checks and fixes
Vortex reads zero at low flow	Below minimum velocity or Reynolds number, cutoff high	Check sizing; consider smaller meter; review cutoff
Vortex reads with no flow	Pipe vibration counted as vortices	Adjust filter or trigger level; improve supports
Vortex reads low	Wrong K factor or ID, two phase flow, short straight run	Check configuration; check process; straight run
Ultrasonic no signal	Air, solids, poor coupling, wrong spacing	Recouple sensors; check spacing and pipe data
Ultrasonic reads wrong	Wrong pipe OD, wall, material or liner	Measure wall thickness; correct pipe data
Ultrasonic unstable	Short straight run, partly full pipe	Move sensors; check fill; use two paths

NAMUR NE107 status

Status	Meaning	Action
F Failure	Output invalid	Repair or replace; check loop goes to safe state
C Function check	Simulation, calibration or maintenance active	Finish the work, return to normal mode
S Out of specification	Operating outside limits or uncertain	Check process conditions and sensor
M Maintenance required	Still valid but degrading	Plan maintenance before failure