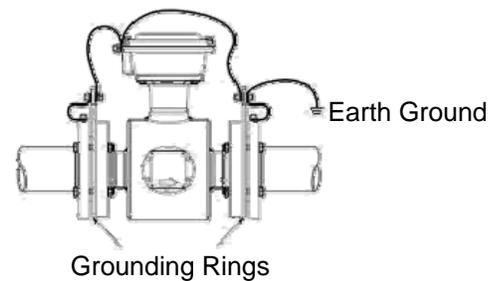


Ground and Wiring Fault Detection

The Ground/Wiring Fault Detection diagnostic provides a means of verifying installations are done correctly. If the installation is not wired or grounded properly, this diagnostic will activate and deliver a PlantWeb alert. This diagnostic can also detect if the grounding is lost over-time due to corrosion or another root cause.

The Importance of Proper Grounding

Improper grounding and wiring is the number one cause of magnetic flowmeter issues. This is primarily an issue that occurs in new installations where the magnetic flowmeter is not properly referenced to the process. This allows electrical noise to be picked up by the electrodes and consequently affects the signal to noise ratio and the stability of the transmitter output.



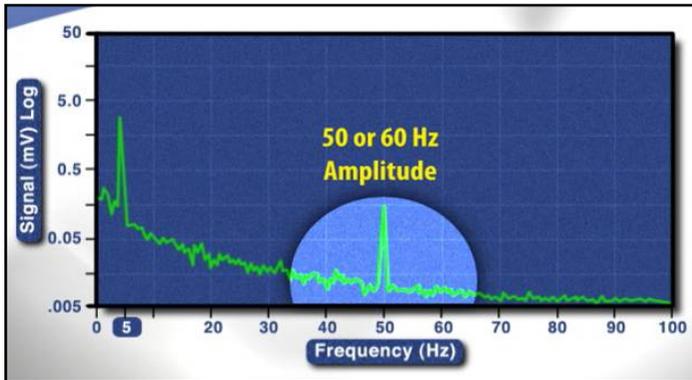
Ground Option	Conductivity Requirement	Process Piping Material			Relative Price	Notes
		Conductive (Metal Pipe)	Non-conductive (Plastic, etc)	Conductive Lined		
Grounding Straps	5 uS	✓	NA	NA	No Charge	Provided with every E-series Mag Tube
Grounding Electrode	100 uS	✓	✓	✓	Low	Least Expensive option, provides convenient grounding for non-conductive and lined pipe applications
Ground Rings	5 uS	✓	✓	✓	High	Provides best ground for non-conductive and lined pipe applications
Lining Protectors	5 uS	✓	✓	✓	Highest	Most expensive, protects leading edge from wear in tough slurry applications

With proper grounding, the transmitter has a reference to any stray electrical signals from motors, generators, or other electrical equipment that are present in the process and can filter them out.

Ground and Wiring Fault Detection Functionality

The transmitter continuously monitors signal amplitudes over a wide range of frequencies. For the Ground/Wiring Fault diagnostic, the transmitter specifically looks at the signal amplitude at frequencies of 50 Hz and 60 Hz which are the common AC cycle frequencies found throughout the world. If the amplitude of the signal at either of these frequencies exceeds 5 mV, that is an indication that there is a ground or wiring issue and that stray electrical signals are getting into

the transmitter. The diagnostic alert will activate indicating that the ground and wiring of the installation should be carefully reviewed.



Enabling the Ground and Wiring Diagnostic

The Ground/Wiring Fault diagnostic can be turned on or off using AMS Suite: Intelligent Device Manager, a 375 Field Communicator, or the Local Operator Interface (LOI) as required by the application. If the advanced diagnostics suite 1 (DA1 Option) was ordered, then the Ground/Wiring Fault diagnostic will be turned on. If DA1 was not ordered or licensed, this diagnostic is not available.

Understanding the Ground and Wiring Fault Diagnostic Parameters

The Ground/Wiring Fault diagnostic has one read-only parameter. It does not have any configurable parameters.

Line Noise

This is the current amplitude of the Line Noise. This is a read-only value. This number is a measure of the signal strength at 50/60 Hz. If the Line Noise value exceeds 5 mV, then the Ground/Wiring Fault diagnostic alert will activate.

Troubleshooting the Ground and Wiring Fault Diagnostic

The transmitter detected high levels of 50/60 Hz noise caused by improper wiring or poor process grounding.

1. Verify that the transmitter is earth grounded.
2. Connect ground rings, grounding electrode, lining protector, or grounding straps.
Proper grounding diagrams can be found in the installation manual.
3. Verify flowtube sensor is full.
4. Verify wiring between flowtube sensor and transmitter is prepared properly. Shielding should be stripped back less than 1 in. (25 mm).
5. Use separate shielded twisted pairs for wiring between flowtube sensor and transmitter.
6. Properly connect the wiring between the flowtube sensor and the transmitter.
Corresponding terminal block numbers in the flowtube sensor and transmitter must be connected.

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