VM™ Air Gap

Capacitive Measuring Chains

General Specifications

Sensors

Operation

• Measurement Type	Non-Contact Proximity, Capacitive Technology

Connection

• Integral Cable	Coaxial or Triaxial
• Connector	
Coaxial Integral Cable	Male, Gold-Plated SMA
Triaxial Integral Cable	Male, Gold-Plated SMA and Grounding Terminal

Environmental

• Temperature Range	0 to 125°C *[32 to 257°F]*
• Magnetic Field Immunity	Up to 2 Tesla (50 or 60 Hz)
• Dust and Oil Contamination	Films Have No Effect
• Humidity	Up to 95%, Non-Condensing

Physical Characteristics

• Sensor Material	Non-Conductive and Semi-Conductive Material
• Integral Cable Material	FEP Jacket / Teflon® Insulation

Extension Cables

Connection

• Cable Type	Triaxial
• Absolute Minimum Length	
Type H (20 m) Cable	Nominal Minus 1 m *[39.4 in]*
All Other Cables	Nominal Minus 0.5 m *[19.7 in]*
• Connector	
Sensor Side	Female, Gold-Plated SMA and Grounding Terminal
Conditioner Side	Male, Gold-Plated SMA and Grounding Terminal
• Minimum Bending Radius	10 cm *[4 in]*

Environmental

• Temperature Range	
Type S Cable	0 to 75°C *[32 to 167°F]*
Type H Cable	0 to 125°C *[32 to 257°F]*

Physical Characteristics

• Cable Material	
Type S Cable	PVC Jacket / PE Insulation
Type H Cable	FEP Jacket / FEP Insulation

Teflon® is a registered trademark of DuPont Performance Elastomers L.L.C.

LIN™-300 Conditioner

Power Requirements

- Voltage — 24 Vdc ±15%
- Consumption — 100 mA max.
- Protection — Auto-Reset Fuse
- Warm-Up Time — 30 Minutes

Connection

- Power / Output — 5-Pin M12 Male
- Sensor Input — Female, Gold-Plated SMA and Grounding Terminal

Environmental

- Temperature Range
  - Operating — 0 to 55°C *[32 to 131°F]*
  - Storage (Measuring Chain) — -25 to 70°C *[-13 to 158°F]*

Physical Characteristics

- Body — Nickel-Plated Aluminum
- Mounting — 4 Slots for #6 (M3.5) Screws
- Max. Torque on SMA — 1.1 Nm *[10 in-lb]*
- Status Indicator — Bicolor LED

Measuring Chains Technical Specifications

VM3.12 Air Gap Measuring Chains

Sensor	VM3.12		
Nominal Measuring Range	2 to 20 mm *[79 to 787 mils]*	2 to 20 mm *[79 to 787 mils]*	5 to 35 mm *[197 to 1378 mils]*
Sensor Integral Coaxial Cable Length	0.5 m *[19.7 in]*		
Extension Cable (Type S) Nominal Length	10 m *[33 ft]*	---	10 m *[33 ft]*
Extension Cable (Type H) Nominal Length	---	15 m *[49 ft]*	---
Conditioner Model	LIN-331-10S-2/20	LIN-331-15H-2/20	LIN-331-10S-5/35
Output	4 to 20mA		
Bandwidth	DC to 1.2 kHz (-3 dB)		
Sensitivity	0.889 mA/mm *[22.6 µA/mil]*	0.889 mA/mm *[22.6 µA/mil]*	0.533 mA/mm *[13.5 µA/mil]*
Accuracy (full scale)	See Figure 1	See Figure 2	See Figure 3
Repeatability (% of reading)	± 0.3 %	± 0.3 %	± 0.3 %
Temperature Drift (at mid-range)	< 500 ppm/°C	< 800 ppm/°C	< 800 ppm/°C
Load at Output	500 Ω max.		

VM3.2 Air Gap Measuring Chain

Sensor	VM3.2
Nominal Measuring Range	1 to 10 mm *[39 to 394 mils]*
Sensor Built-In Integral Cable Length	0.23 m *[9 in]*
Extension Cable (Type S) Nominal Length	10 m *[33 ft]*
Conditioner Model	LIN-332-10S-1/10
Output	4 to 20mA
Bandwidth	DC to 1.2 kHz (-3 dB)
Sensitivity	1.78 mA/mm *[45 µA/mil]*
Accuracy (full scale)	See Figure 4
Repeatability (% of reading)	± 0.3 %
Temperature Drift (at mid-range)	< 500 ppm/°C
Load at Output	500 Ω max.

VM5.1 Air Gap Measuring Chains *(5 to 50mm)*

Sensor	VM5.1	
Nominal Measuring Range	5 to 50 mm *[197 to 1969 mils]*	5 to 50 mm *[197 to 1969 mils]*
Sensor Integral Triaxial Cable Length	0.5 m *[19.7in]*	
Extension Cable (Type S) Nominal Length	10 m *[33 ft]*	---
Extension Cable (Type H) Nominal Length	---	10 m *[33 ft]*
Conditioner Model	LIN-351-10S-5/50	LIN-351-10H-5/50
Output	4 to 20mA	
Bandwidth	DC to 1.2 kHz (-3 dB)	
Sensitivity	0.356 mA/mm *[9 µA/mil]*	0.356 mA/mm *[9 µA/mil]*
Accuracy (full scale)	See Figure 5	See Figure 6
Repeatability (% of reading)	± 0.3 %	± 0.3 %
Temperature Drift (at mid-range)	< 500 ppm/°C	< 500 ppm/°C
Load at Output	500 Ω max.	

VM5.1 Air Gap Measuring Chains *(5 to 35 mm)*

Sensor	VM5.1	
Nominal Measuring Range	5 to 35 mm *[197 to 1378 mils]*	5 to 35 mm *[197 to 1378 mils]*
Sensor Integral Triaxial Cable Length	0.5 m *[19.7 in]*	
Extension Cable (Type S) Nominal Length	---	---
Extension Cable (Type H) Nominal Length	15 m *[49 ft]*	20 m *[66 ft]*
Conditioner Model	LIN-351-15H-5/35	LIN-351-20H-5/35
Output	4 to 20mA	
Bandwidth	DC to 1.2 kHz (-3 dB)	
Sensitivity	0.533 mA/mm *[13.5 µA/mil]*	0.533 mA/mm *[13.5 µA/mil]*
Accuracy (full scale)	See Figure 7	See Figure 8
Repeatability (% of reading)	± 0.3 %	± 0.3 %
Temperature Drift (at mid-range)	< 800 ppm/°C	< 1500 ppm/°C
Load at Output	500 Ω max.	

VM6.1 Air Gap Measuring Chain

Sensor	VM6.1
Nominal Measuring Range	3 to 30 mm *[118 to 1181 mils]*
Sensor Integral Triaxial Cable Length	0.5 m *[19.7 in]*
Extension Cable (Type S) Nominal Length	10 m *[33 ft]*
Conditioner Model	LIN-361-10S-3/30
Output	4 to 20mA
Bandwidth	DC to 1.2 kHz (-3 dB)
Sensitivity	0.593 mA/mm *[15 µA/mil]*
Accuracy (full scale)	See Figure 9
Repeatability (% of reading)	± 0.3 %
Temperature Drift (at mid-range)	< 800 ppm/°C
Load at Output	500 Ω max.

Figure 1

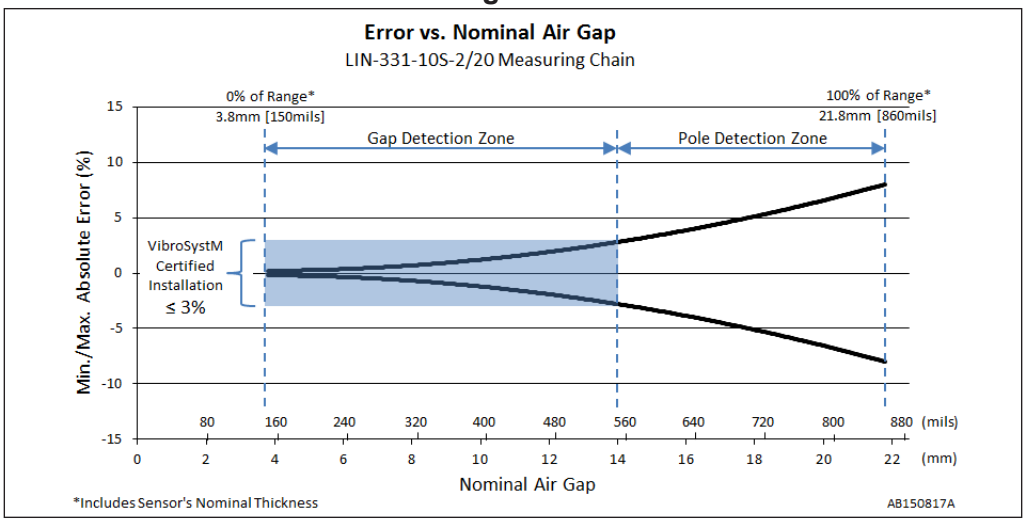


Figure 2

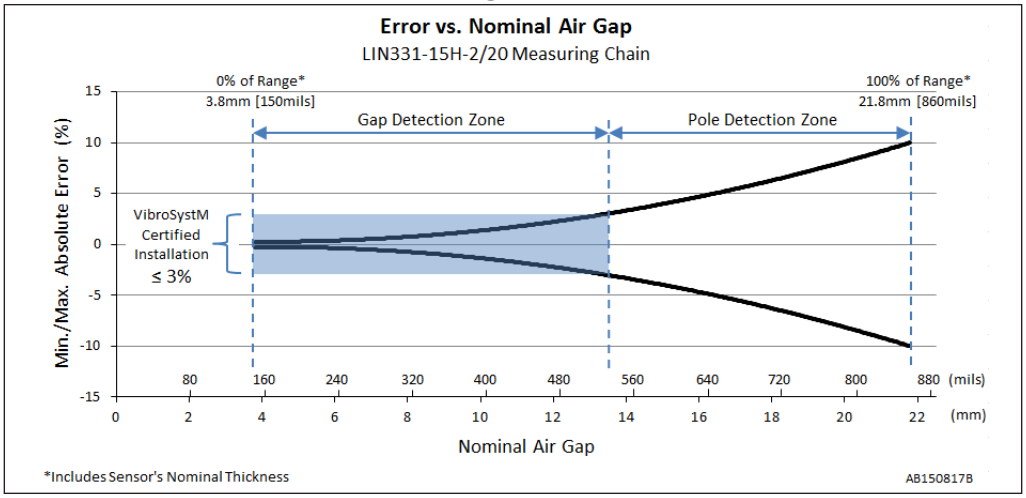


Figure 3

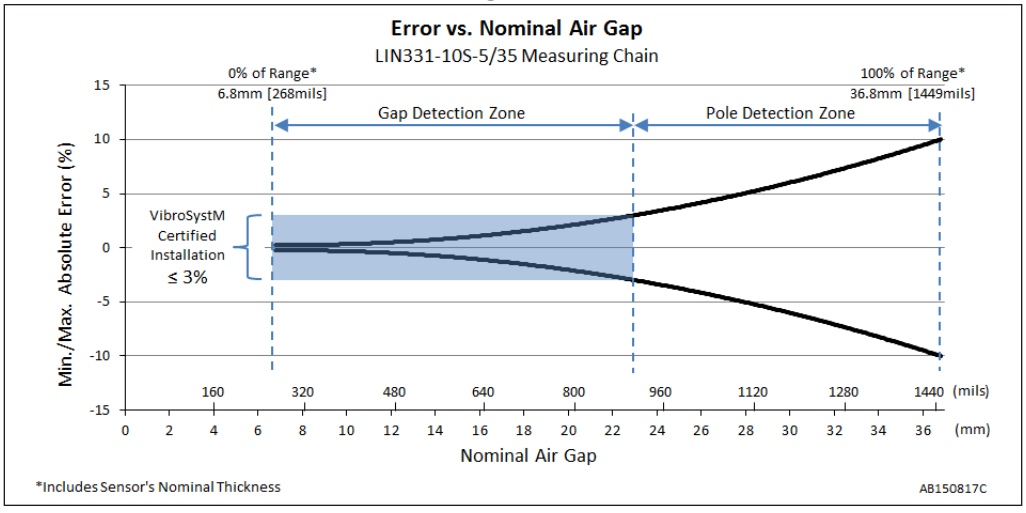


Figure 4

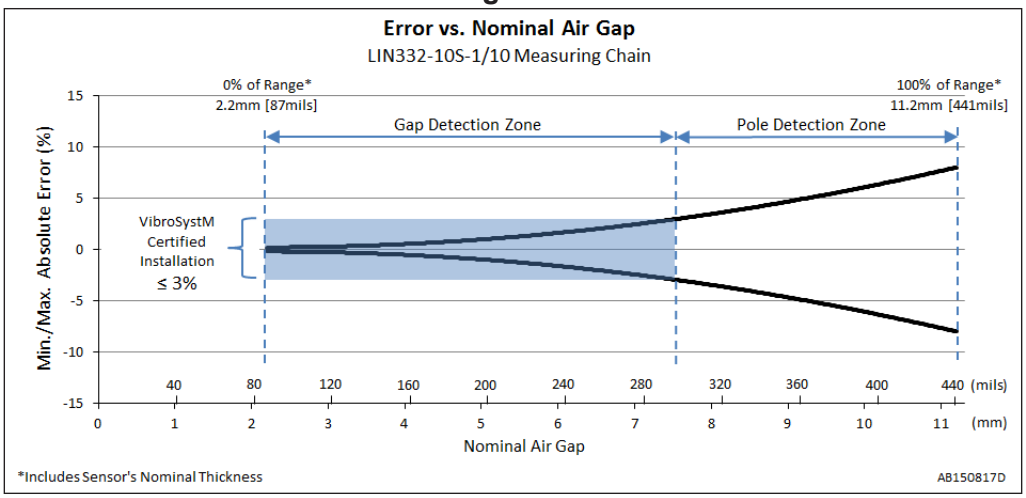


Figure 5

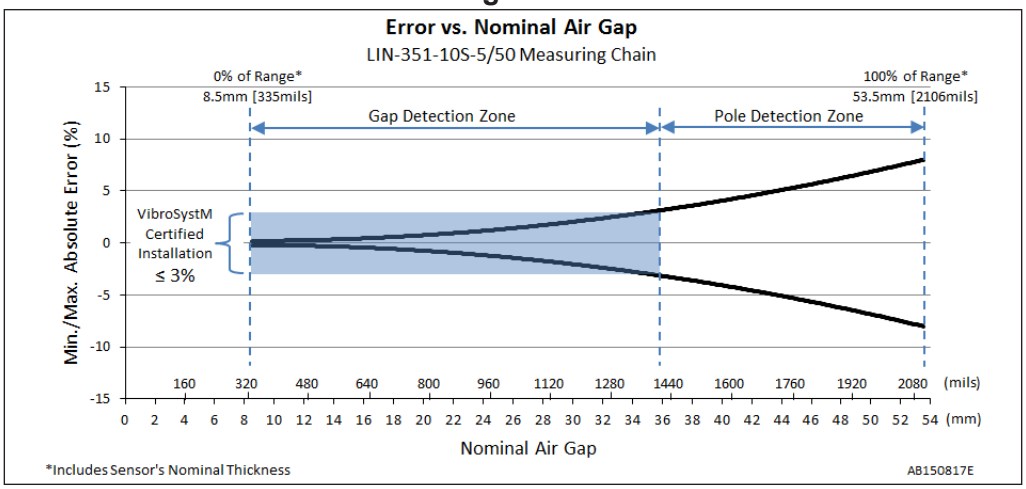


Figure 6

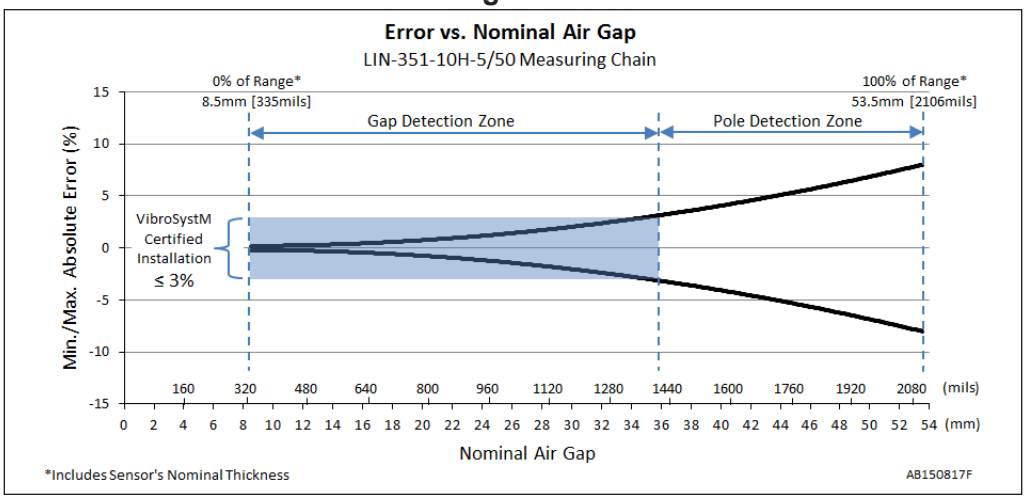


Figure 7

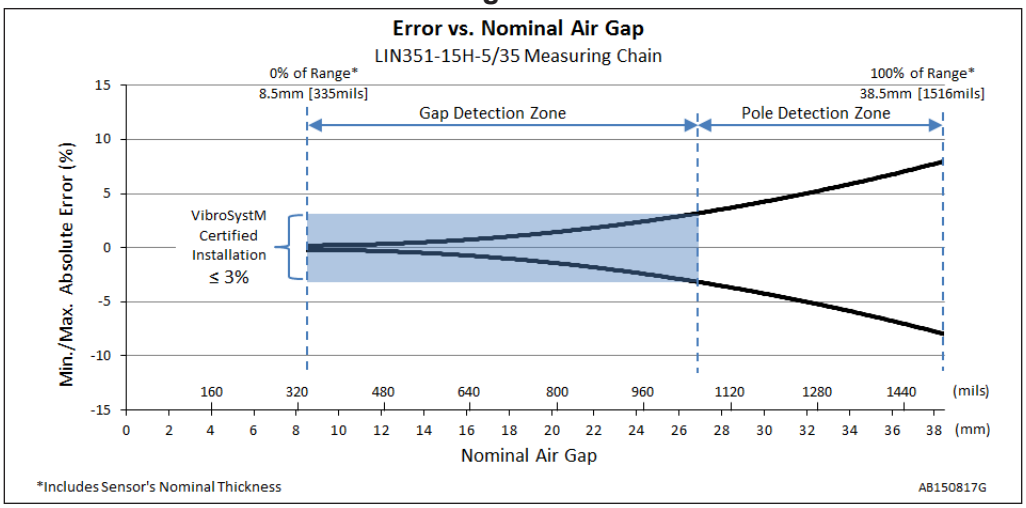


Figure 8

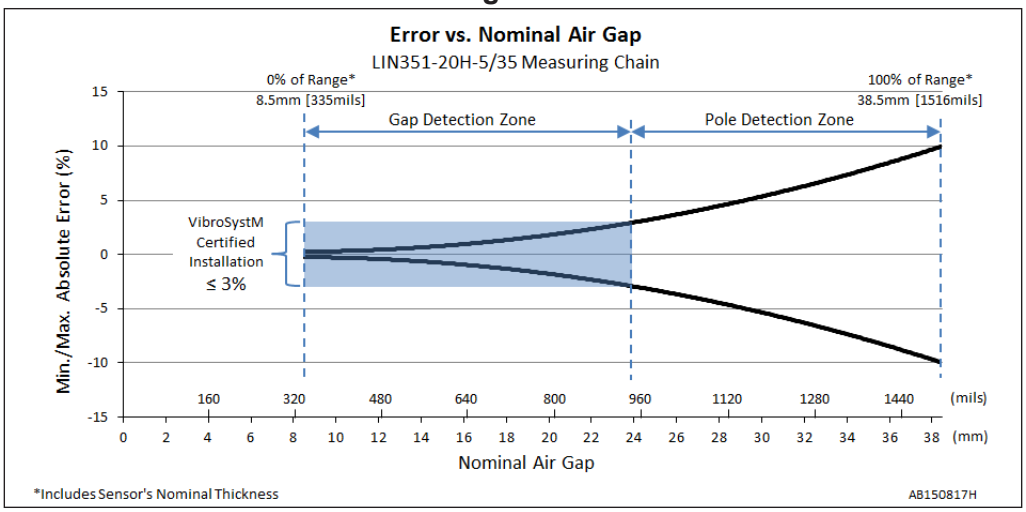
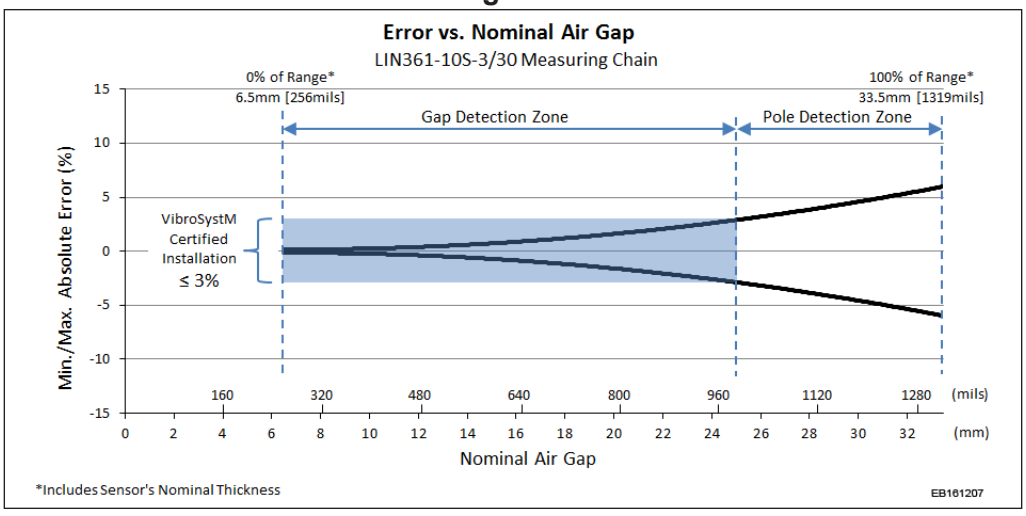
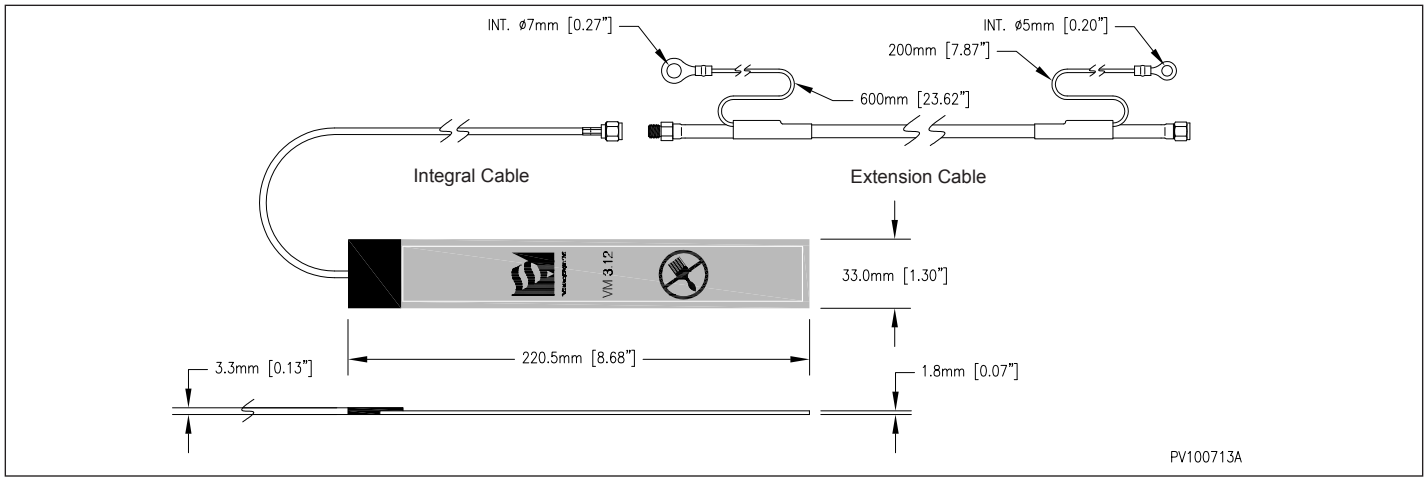


Figure 9

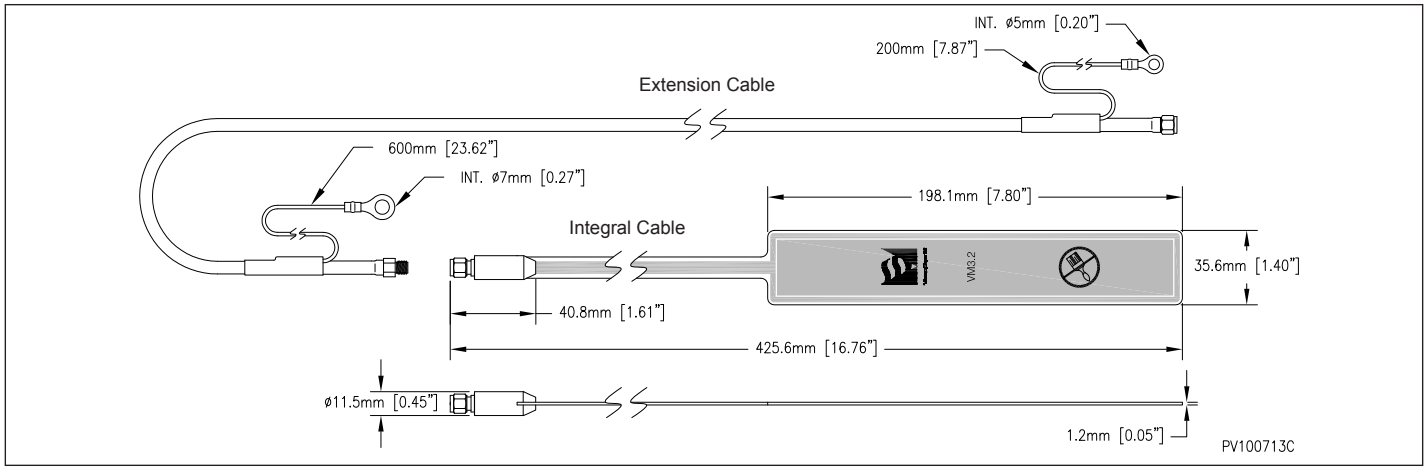


DIMENSIONS

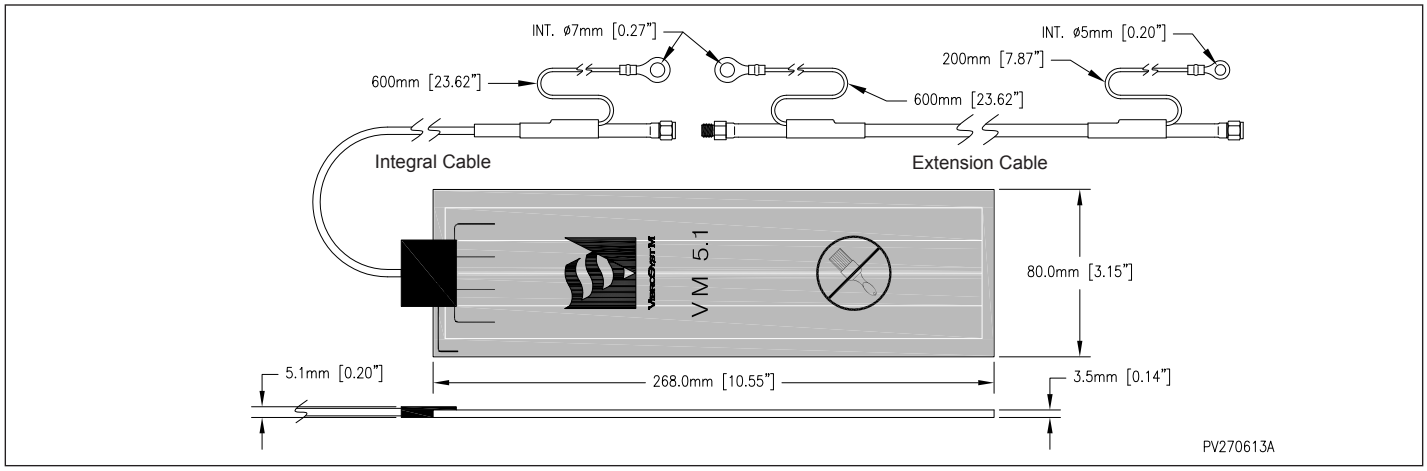
VM3.12 Sensor



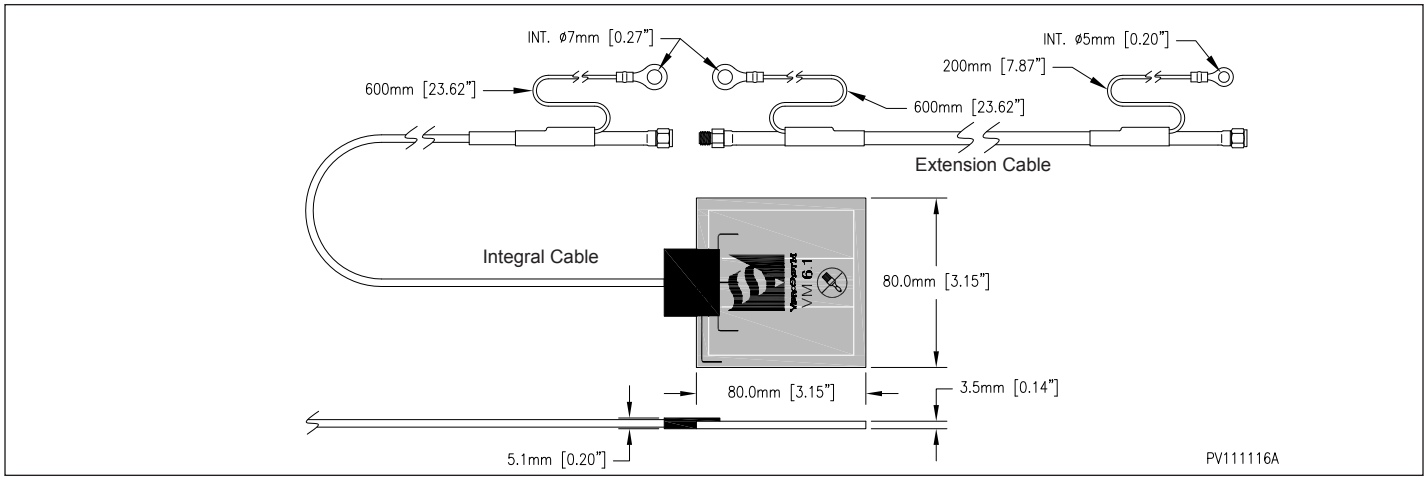
VM3.2 Sensor



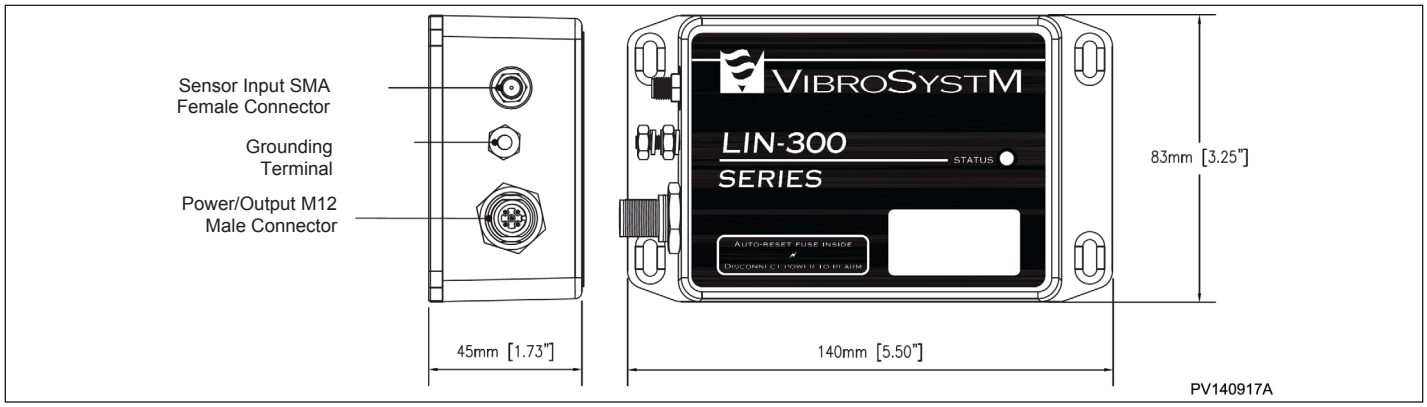
VM5.1 Sensor



VM6.1 Sensor



LIN-300 Conditioner



Product Identification

Product Number	Description
LIN-331-10S-2/20 Measuring Chain	
VSM-L331-2/20-10	LIN-331-10 conditioner (2-20 mm)
VSM-CBL-331-2/20-10	Cable / Triaxial - SMA/SMA / (10 m/32.8 ft)
VSM-VM31-2/20	VM 3.12 air gap sensor (2-20 mm)
LIN-331-15H-2/20 Measuring Chain	
VSM-L331-2/20/15H	LIN-331-15H conditioner (2-20 mm)
VSM-CBL-331-2/20-15H	Cable / Triaxial - SMA/SMA / (15 m/49.2 ft)
VSM-VM31-2/20	VM 3.12 air gap sensor (2-20 mm)
LIN-331-10S-5/35 Measuring Chain	
VSM-L331-5/35-10	LIN-331-10S conditioner (5-35 mm)
VSM-CBL-331-5/35-10	Cable / Triaxial - SMA/SMA / (10 m/32.8 ft)
VSM-VM31-5/35	VM 3.12 air gap sensor (5-35 mm)
LIN-332-10S-1/10 Measuring Chain	
VSM-L332-1/10-10	LIN-332-10S conditioner (1-10 mm)
VSM-CBL-332-1/10-10	Cable / Triaxial - SMA/SMA / (10 m/32.8 ft)
VSM-VM32-1/10-10	VM 3.2 air gap sensor (1-10 mm)
LIN-351-10S-5/50 Measuring Chain	
VSM-L351-5/50-10	LIN-351-10S conditioner (5-50 mm)
VSM-CBL-351-5/50-10	Cable / Triaxial - SMA/SMA / (10 m/32.8 ft)
VSM-VM51	VM 5.1 air gap sensor (5-35/5-50 mm)
LIN-351-10H-5/50 Measuring Chain	
VSM-L351-5/50-10H	LIN-351-10H conditioner (5-50 mm)
VSM-CBL-351-5/50-10H	Cable / Triaxial - SMA/SMA / (10 m/32.8 ft)
VSM-VM51	VM 5.1 air gap sensor (5-35/5-50 mm)
LIN-351-15H-5/35 Measuring Chain	
VSM-L351-5/35-15H	LIN-351-15H conditioner (5-35 mm)
VSM-CBL-351-5/35-15H	Cable / Triaxial - SMA/SMA / (15 m/49.2 ft)
VSM-VM51	VM 5.1 air gap sensor (5-35/5-50 mm)
LIN-351-20H-5/35 Measuring Chain	
VSM-L351-5/35-20H	LIN-351-20H conditioner (5-35 mm)
VSM-CBL-351-5/35-20H	Cable / Triaxial - SMA/SMA / (20 m/65.6 ft)
VSM-VM51	VM 5.1 air gap sensor (5-35/5-50 mm)
LIN-361-10S-3/30 Measuring Chain	
VSM-L361-3/30-10	LIN-361-10S conditioner (3-30 mm)
VSM-CBL-361-3/30-10	Cable / Triaxial - SMA/SMA / (10 m/32.8 ft)
VSM-VM61	VM 6.1 air gap sensor - 0.5m/1.6 ft Integral cable - (3-30 mm)

Publication: 2017-09-26