

SV3300 Series Proximity Sensor System



Overview

The proximity sensor system uses the principle of eddy current to measure the relative position of the target axis. Able to continuously monitor the shaft vibration, shaft displacement and key phase of rotating machinery. The SV3300 series proximity sensor system consists of the following parts:



SV3300 Probe

SV3300 Extension Cable

SV3300 Driver/Transmitter with HART



The voltage signal output by the driver or the current signal output by the transmitter is proportional to the distance between the top of the probe and the surface of the conductor under test, it can measure both axial displacement and radial vibration, as well as key phase and speed. It is mainly used for vibration and displacement measurement of oil film bearing machinery, and key phase and speed measurement. The transmitter with HART protocol can provide 4-20mA current proportional to the relative distance, and the BNC interface can provide dynamic buffered signals and gap voltage measurement.



The SV3300 series approaching sensor system fully complies with the API670 standard. The probe, extension cable, and driver / transmitter with HART protocol have good interchangeability. According to different measurement ranges, the probe can be used with different top diameter specifications ($\Phi 5\text{mm}$, $\Phi 8\text{mm}$, $\Phi 11\text{mm}$), and driver / transmitter with HART protocol is mounted on a 35mm-DIN rail.

Safety certificate: SIL2

Explosion-proof grade: NEPSI/IECEX/ATEX, Ex ia IIC T4

EMC: EN61000-6-2/EN61000-6-4/IEC61000-4-2~6

SV3300 series proximity sensor system selection principle:

1. Select the probe specifications ($\Phi 5\text{mm}$, $\Phi 8\text{mm}$, $\Phi 11\text{mm}$) by referring to the linear range of the sensor according to the measurement range, and then determine the probe type (front installation, reverse installation) and housing size according to the space and structure of the field mechanical installation, and then select the probe length (0.5m, 1m, 5m, 9m).

2. Determine the system length (5m or 9m) according to the distance from the installation position of the field probe on the rotating machine to the front end / transmitter box with HART protocol, and then select the extension cable length that matches the probe length (1m, 0.5m) (4m, 4.5m, 8m, 8.5m).

3. Determine the driver / transmitter model with HART protocol based on system length and measurement parameters and measurement range.

4. The combined probe and extension cable length (5m or 9m) is defined as the system length.

SV3300 Series Proximity Sensor System

Technical specification

Probe

Tip Material: Ryton (PPS)

Shell Material: AISI 304SS(SST)

Specifications: 3D axial FEP insulated coaxial cable

Impedance:75Ω

Distributed Capacitance:21.3pF/ft

Probe Length: 0.5m、 1m、 5m or 9m

Temperature Range: -40°C ~+80°C

Top Diameter: 5mm、 8mm、 11mm

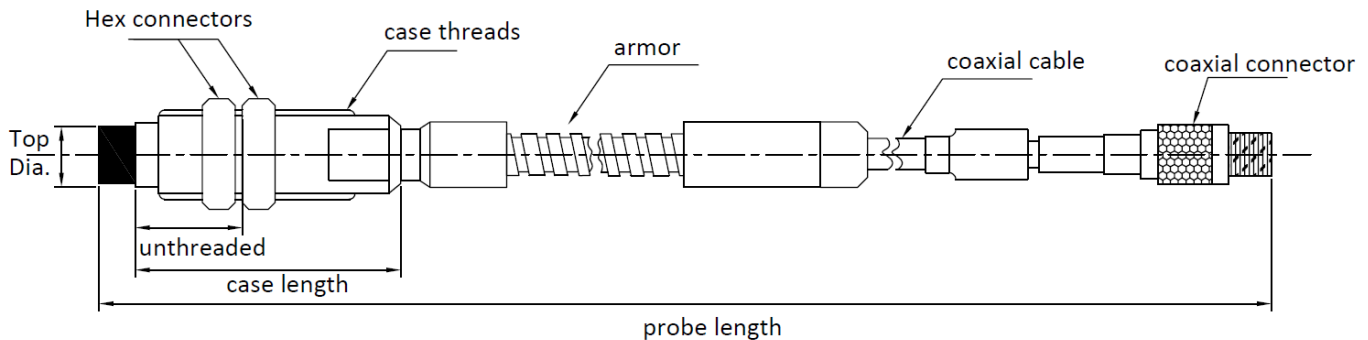
Armor Protective Sleeve: Optional flexible armor protective sleeve with FEP jacket

Installation: front and back

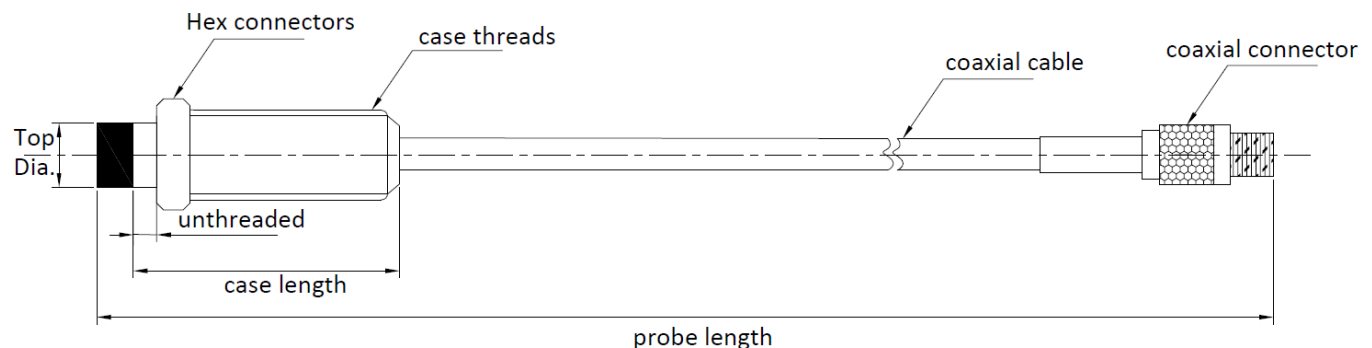
Lock nut: used for sealing and locking to prevent the probe from loosening caused by mechanical vibration

Gap Setpoint: 1.25mm(50mils); $V_{gap}=9.8V\sim 10V$

Standard Target Material: The user can provide the actual shaft material according to the special calibration, and the measurement accuracy is higher.



Standard probe diagram



Reverse probe diagram

SV3300 Series Proximity Sensor System

Extension Cable

Impedance: 75Ω

Specifications: 3D axial FEP insulated coaxial cable

Distributed capacity: 21.3pF/ft

Cable seal: All cable seals are withdrawn

Temperature Range: -40°C ~+80°C

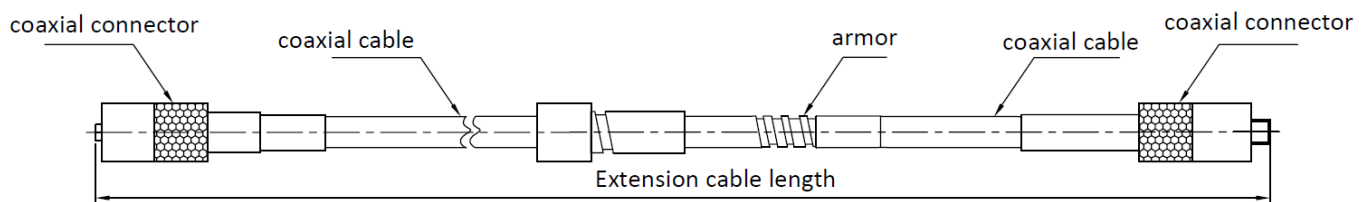
Joint material: Brass gold-plated hexagonal joint

Armor protective sleeve: Optional flexible armor protective sleeve with FEP jacket

Minimum Bend Radius: 25.4mm

Relative Humidity: 100% condensing but not submersible and with connectors properly protected

Cable Length: 4m、4.5m、8m、8.5m



Extension cable diagram

Driver

Material: PBT plastic material

Power: -18 VDC ~ -26 VDC

Sensitivity:

-7.87 V/mm (-200mV/mil), ± 5% (5&8mm probe)

-3.94 V/mm (-100mV/mil), ± 5% (11mm probe)

Non-linearity: maximum 0.015mm (0.6mils) (5&8mm probe) departure from straight line over 2.5 mm range, (11mm probe) departure from straight line over 4.5 mm range

Linear Range: 5mm and 8mm probes are 2mm (80mil) linear range starting from about 0.25mm from the surface of the test object, from 0.25mm to 2.5mm

11mm probe is 4mm (160mil) linear range starts from about 0.25mm from the surface of the measured object, from 0.25mm to 4.5mm

Frequency Response: 0-10KHz, ±5%

Temperature Range: -40°C ~+80°C

Isolation: 500Vrm circuit to ground

Interchange Error: when the probe, extension cable and / or front end are randomly replaced, the maximum error in the sensitive area is ± 5%

Housing: Polymer with internal RFI/EMI spray shielding potted for long life

It can be used in combination with any series of approach probes and extension cables from any manufacturer.

SV3300 Series Proximity Sensor System

Transmitter with HART

Material: PBT plastic material

Power (Vs): 18 VDC ~ 28 VDC, Non-polarized connections

Frequency Response:

5Hz-1kHz, -3dB pk-pk vibration

0Hz-15Hz, -3dB Displacement

Linear Range: 0.5-2.5mm (5&8mm probe)

0.5-4.5mm (11mm probe)

Temperature Range: -40°C ~+80°C

BNC Output:

7.87V/mm (200 mV/mil), (5&8mm probe)

3.94V/mm (100 mV/mil), (11mm probe)

VibroTech driver and integrated eddy current transmitter can directly replace similar products of METRIX/BENTLY and other brands, and can be used with probes and extension cables of any manufacturer. PPC-8011 calibrator can be used for on-site calibration through software.

The driver can modify the sensitivity through the ProxiTool software.

The user of the integrated transmitter can modify the parameters of the transmitter through the HART handheld communicator or ProxiCal software:

Transmitter type		Lower range limit	Upper range limit	Damping value
Displacement Transmitter AVT	5&8 mm	0.25~2.5mm Any value	2.5~0.25mm Any value	0-60s
	11mm	0.25~4.5mm Any value	4.5~0.25mm Any value	0-60s
Vibration transmitter RVT		0	Arbitrarily switch the specified range provided in the sample	0-60s
Speed transmitter SVT		0	Rotating speed: 120~100000rpm	Number of keyways: 1~99 keyway

SV3300 Series Proximity Sensor System

Order guide

Standard SV3300 Probe SV330AAA-BB-CC-DD-02

AAA: Model No. BB: Unthreaded Length CC: Shell Length DD: Probe Length

Tip Dia.	Shell Threads	Armor	AAA Model No.	BB Unthreaded Length	CC Shell Length	DD Probe Length			
5mm	1/4"-28	No	171	Standard 00=0.0in Increments 05=0.5in Maximum = Shell Length -1.0in	Std: 30=3.0in Min: 10=1.0in Delta: 05=0.5in Max: 95=9.5in	05=0.5m±.05m 10=1.0m±.10m 50=5.0m±.50m 90=9.0m±.90m			
	1/4"-28	Yes	172						
8mm	3/8"-24	No	101						
	3/8"-24	Yes	102						
11mm	1/2"-20	No	191						
	1/2"-20	Yes	192						
5mm	M8X1	No	173				Standard 00=0.0mm Increments 01=10mm Maximum = Shell Length -20mm	Std: 07=70mm Min: 03=30mm Delta: 01=10mm Max: 25=250mm	
	M8X1	Yes	174						
8mm	M10X1	No	103						
	M10X1	Yes	104						
11mm	M14X1.5	No	193						
	M14X1.5	Yes	194						

Note: If the user chooses SIL2 safety certification, add -SIL after the model

Reverse SV3300 Probe SV330AAA-BB-CC-DD-02

AAA: Model No. BB: Unthreaded Length CC: Shell Length DD: Probe Length

Shell Threads	Tip Dia.	Armor	AAA Model No.	BB Unthreaded Length	CC Shell Length	DD Probe Length
3/8"-24	8mm	No	105	02=0.2in	12=1.2in	05=0.5m±.05m 10=1.0m±.10m
	11mm	No	195			
M10X1	8mm	No	106	05=5mm	30=30mm	
	11mm	No	196			

Note: If the user chooses SIL2 safety certification, add -SIL after the model

SV3300 Extension Cable SV330AAA-BBB-CC

AAA: Model No. BBB: Shell Length CC: Armor

Tip Dia.	AAA Model No.	BBB Shell Length	CC Armor
5&8mm	130	040=4.0m	00=No 01=Yes
		045=4.5m	
11mm	830	080=8.0m	
		085=8.5m	

Note: If the user chooses SIL2 safety certification, add -SIL after the model

SV3300 Series Proximity Sensor System

SV3300 Driver SV330AAA-BB-CC

AAA: Model No. BB: System length CC: Mounting

Tip Dia.	AAA Model No.	BB System length	CC Mounting
5&8mm	180	50=5m System	01=35mm-DIN
11mm	880	90=9m System	

For the proximity probes and extension cables of other manufacturers, please contact VibroTech. Note: If the user chooses SIL2 safety certification, add -SIL after the model

SV3300 Vibration Transmitter RVT33ABC-DD-EE

A: System length B: Tip Dia. C: 4-20mA Output DD: Shaft material EE: Probe type

A System length	B Tip Dia.	C 4-20mA Output	DD Shaft material	EE Probe type
F=5m	0=5&8mm	0=75um,pk-pk	00 = standard 4140 steel	V0 = Default Vibrotech SV3300 B3= Bently 3300XL B3N= Bently 3300NSV B7= Bently 7200 M1=Metrix 10000 M2= Metrix 2030 M8= Metrix 8030
N=9m		1=100um,pk-pk 2=125um,pk-pk 3=250um,pk-pk 4=500um,pk-pk 5=200um,pk-pk 6=400um,pk-pk	01=17-4PH with tungsten carbide 02=17-4PH without tungsten carbide 03=316L without tungsten carbide 04=304SS without tungsten carbide 05=20Cr13 with tungsten carbide 06=20Cr13 without tungsten carbide 07=42-CrM with tungsten carbide 08=42-CrM without tungsten carbide 09=31803 without tungsten carbide 10=31803 with tungsten carbide 11=30Cr13 with tungsten carbide 12=20Cr13 without tungsten carbide XX= Others (customers need to provide target materials)	

Note: If the user chooses SIL2 safety certification, add -SIL after the model

SV3300 Displacement Transmitter AVT33ABC-DD-EE

A: System length B: Tip Dia. C: 4-20mA Output DD: Shaft material EE: Probe type

A System length	B Tip Dia.	C 4-20mA	DD Shaft material	EE Probe type
F=5m	0=5&8mm	0=0.5-2mm, ±0.75mm	00 = standard 4140 steel	V0 = Default Vibrotech SV3300 B3= Bently 3300XL B3N= Bently 3300NSV B7= Bently 7200 M1=Metrix 10000 M2= Metrix 2030 M8= Metrix 8030
N=9m		1=0.5-2.5mm, ±1mm	01=17-4PH with tungsten carbide 02=17-4PH without tungsten carbide 03=316L without tungsten carbide 04=304SS without tungsten carbide 05=20Cr13 with tungsten carbide 06=20Cr13 without tungsten carbide 07=42-CrM with tungsten carbide 08=42-CrM without tungsten carbide 09=31803 without tungsten carbide 10=31803 with tungsten carbide 11=30Cr13 with tungsten carbide 12=20Cr13 without tungsten carbide XX= Others (customers need to provide target materials)	
	1=11mm	1=0.5-4mm, ±1.75mm 2=0.5-4.5mm, ±2mm		

Note: If the user chooses SIL2 safety certification, add -SIL after the model

SV3300 Series Proximity Sensor System

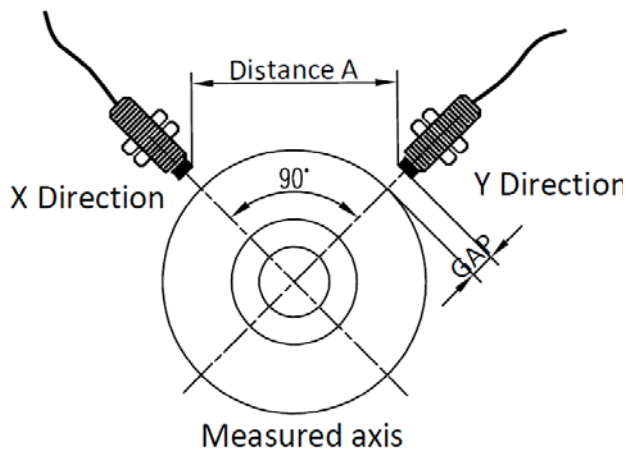
SV3300 Key Phase/Speed Transmitter SVT33AB-CC-DDDDDD-EE-FF

A: System length B: Tip Dia. CC: keyway DDDDDD:4-20mA Output EE: Shaft material FF: Probe type

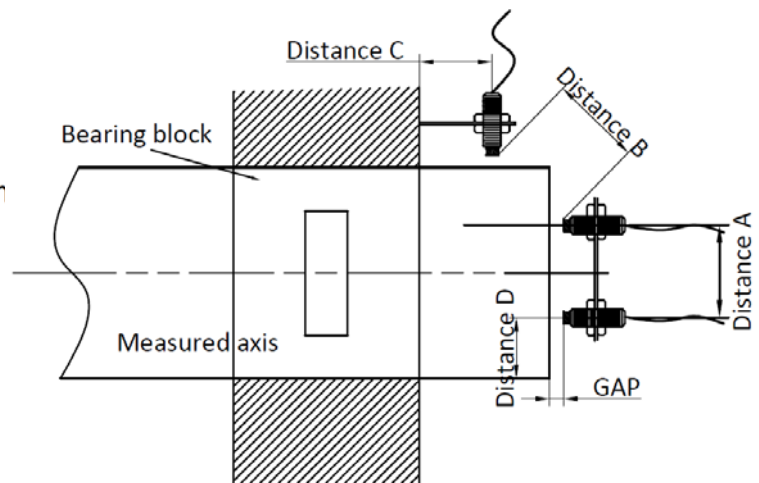
A System length	B Tip Dia.	CC keyway	DDDDDD 4-20mA Output	EE Shaft material	FF Probe type
F=5m	0=5&8mm	01=1 keyway (min)	000120= 120rpm(min)	00 = standard 4140 steel 01=17-4PH with tungsten carbide 02=17-4PH without tungsten carbide 03=316L without tungsten carbide 04=304SS without tungsten carbide 05=20Cr13 with tungsten carbide 06=20Cr13 without tungsten carbide 07=42-CrM with tungsten carbide 08=42-CrM without tungsten carbide 09=31803 without tungsten carbide 10=31803 with tungsten carbide 11=30Cr13 with tungsten carbide 12=20Cr13 without tungsten carbide XX= Others (customers need to provide target materials)	V0 = Default Vibrotech SV3300 B3= Bently 3300XL B3N= Bently 3300NSV B7= Bently 7200 M1=Metrix 10000 M2= Metrix 2030 M8= Metrix 8030
N=9m		99=99keyways(max)	100000= 100000rpm(max)		

Note: If the user chooses SIL2 safety certification, add -SIL after the model

Probe Installation Diagram



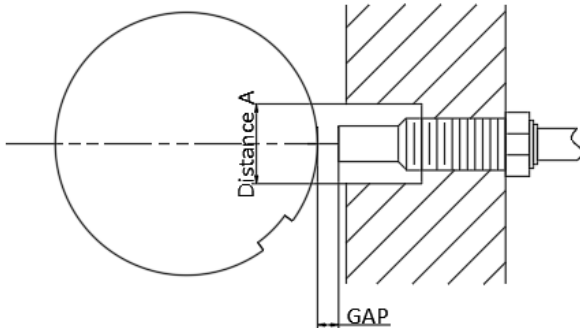
Radial vibration installation
 Suitable for 5 & 8mm probes
 Distance A ≥ 25mm
 GAP ≈ 1.25mm



Radial vibration, axial displacement installation
 Distance C & D > 1.5 times of probe diameter
 The diameter of the measured shaft ≥ 3 times the diameter of the probe
 11mm probe distance A & B ≥ 38mm
 5 & 8mm probe distance A & B ≥ 25mm

SV3300 Series Proximity Sensor System

Probe Installation Diagram



Speed/key phase installation

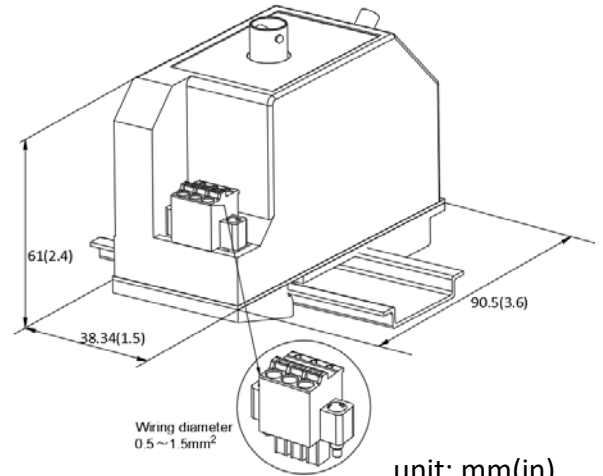
Distance A \geq 2 times of probe diameter

Key slot opening depth 0.5mm, width 8mm, length 16mm

11mm probe GAP \approx 2.25mm

5 & 8mm probe GAP \approx 1.25mm

Driver/Transmitter Dimension



unit: mm(in)

Wiring Diagram

