Bently Nevada 330980-70-05

01 NSv measurement chain

The exact configuration

330980-70-05 is the 7.0 m panel-mount version of the 3300 XL NSv Proximitor Sensor. The final 05 option selects multiple approvals; installation suitability still depends on the actual unit markings and the site protection scheme. The sensor conditions the response of a proximity probe. It is not a complete machine-protection channel by itself.

A three-part electrical system

Probe and integral lead + any extension cable + Proximitor Sensor form the calibrated transducer system. The probe-side cable lengths total 7.0 m for this sensor. A 1.0 m lead with a 6.0 m extension or a 0.5 m lead with a 6.5 m extension illustrates the length rule; all other component options must also be suitable.

Small-target measurement role

The NSv system serves installations where restricted counterbore, side-view or rear-view clearance limits standard 5 mm or 8 mm systems. Its intended machine applications include centrifugal air, refrigeration and process-gas compressors with fluid-film bearings. The response belongs to the complete probe/target arrangement, not solely to the electronics.

Interfaces and signal destination

A coaxial input accepts one compatible NSv or 3300 RAM probe/cable path. SpringLoc terminals provide tool-free field-wire connections. The conditioned voltage travels to a separate monitor for processing. Probe-side calibrated cable length and monitor-side field-wire length are different quantities and must not be added together.

330980-70-05 / Technical capability

02 Electrical and measurement domains

Supply and loading

Without barriers: -17.5 to -26 Vdc, at 12 mA maximum consumption. With barriers: -23 to -26 Vdc. Operation at a voltage more positive than -23.5 Vdc can reduce the linear range. Output resistance is 50 ohms. Supply sensitivity is less than 2 mV output change for each 1 V supply change.

Displacement response

Nominal scale factor is 7.87 V/mm (200 mV/mil). The system linear span is 1.5 mm, extending approximately from a 0.25 mm to 1.75 mm probe gap and from -1 to -13 Vdc. A 1.0 mm gap is recommended. These are measurement-path values, not sensor housing dimensions.

Accuracy has defined conditions

Reference conditions are 0 to +45 C, -24 Vdc supply, a 10 kohm load, altitude no more than 2000 m, and a Bently Nevada AISI 4140 steel target at least 31 mm in diameter at a 1.0 mm gap. For this condition, incremental scale factor is +12.5%/-20% including interchangeability; straight-line deviation is less than +/-0.06 mm.

Bandwidth and environment

Typical frequency response is 0 to 10 kHz at +0/-3 dB. Longer field wiring affects high-frequency rolloff. The Proximitor Sensor operates from -52 to +100 C and stores from -52 to +105 C. Do not apply the higher probe/extension-cable temperature rating to the electronics. Protected connections are necessary for condensing environments.

330980-70-05 / Integration and applications

03 Choose the measurement task

Radial vibration and position

On fluid-film-bearing machines, the non-contact probe senses shaft motion relative to its mounting. A paired radial installation requires suitable target geometry and probe separation. Small shafts can change scale factor or create cross-talk. NSv small-target capability does not remove the need to evaluate both the mounting arrangement and the shaft material.

Axial thrust position

The system can measure a shaft-end or other flat axial target. The available linear travel must accommodate the selected running gap and anticipated axial movement. Target size and material influence the response. The receiving channel must use the appropriate sensitivity and measurement mode; the Proximitor Sensor does not independently decide thrust alarm limits.

Speed and zero speed

A suitable target feature can produce the signal used for tachometer and zero-speed measurements. The monitor or speed-processing instrument interprets the waveform. Confirm that target geometry, sensor gap and receiving-channel requirements fit the task. An acceptable static gap reading alone does not prove the speed channel will respond correctly across operating speed.

Phase reference and installed-base upgrades

Keyphasor phase-reference use requires an appropriate target feature and downstream processing. Existing 3300 RAM probes, extension cables and monitoring systems may be retained in a suitable NSv conversion. A 3000-series or 7000-series 190-system conversion requires replacement of probe, extension cable and sensor with the NSv set. These are different upgrade paths.

330980-70-05 / Engineering decisions

04 Selection questions and limits

Is 7 m the allowed monitor distance?

No. The 7.0 m designation is the probe-side calibrated electrical length. Monitor-side field wiring may extend to 305 m within the specified wiring and frequency-response conditions. Increasing the field wire does not compensate for a wrong probe or extension-cable length. Evaluate these two cable paths independently when planning a retrofit.

Can a standard 8 mm sensor be substituted?

Do not infer substitution from a shared nominal 200 mV/mil sensitivity. NSv targets restricted installation spaces and has its own 1.5 mm linear span and component requirements. Compare the complete probe/cable/sensor chain and target geometry. A matching nominal scale factor alone does not establish interchangeability.

Does option 05 authorize every location?

No. Multiple approvals is the selected ordering option, not a blanket statement about every hazardous-area installation. Review the offered unit identification, applicable certification and complete barrier/monitor arrangement. Panel mounting is the 70 configuration; a DIN-mount version has a different ordering choice. Do not substitute a different assembly solely because it fits electrically.

What changes with another target material?

Factory calibration defaults to AISI 4140 steel; calibration for other targets is available by request. Standard accuracy and interchangeability values do not apply to a system calibrated for another target material. A project using a different alloy requires the appropriate calibration basis before a numerical displacement result is accepted.

330980-70-05 / System selection record

05 Related NSv cable references

What a technically complete enquiry includes

Identify the full 330980-70-05 marking and serial/revision details visible on the offered unit. Identify the probe, integral lead, extension cable, target material and receiving monitor. Confirm that the total calibrated length is 7.0 m and that panel mounting is required. A photograph of the electronics alone cannot establish the complete installed transducer configuration.

Read these companion documents by purpose

This Apter Power brief supports product selection and explains the technical scope. The separate manufacturer datasheet excerpt retains original specifications and ordering information. The separate Apter Power installation guide organizes field checks. Neither this brief nor the field guide replaces the applicable manufacturer instructions or the approved plant installation design.

Technical basis

Bently Nevada, 3300 XL NSv Proximity Transducer System, Datasheet 147385 Rev. R. Nominal system data and limits in this brief are tied to that NSv family and the 330980-70-05 ordering configuration. Offered-unit condition, included mounting hardware and final supply scope are confirmed separately in the quotation.

Related product navigation

The cable references below are separate product pages. They are not automatic replacements or a preapproved bill of materials. Check cable length, armor/protection and approval choices against the actual probe chain before selection.

Bently Nevada 330930-065-05-05

Bently Nevada 330930-065-02-05

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Product enquiries