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01 Plan the two-channel measurement

Establish the machinery protection boundary

Before disconnecting a thrust channel, place the affected protection function in the site-approved maintenance state. Identify both probes, the collar or shaft they observe, the two monitor channels and the downstream alarm contacts. A change to one probe can affect a two-channel voting decision even if the other probe is untouched.

Preparation sequence

01	Identify the normal and counter-thrust directions from the machine arrangement.
02	Record both static gap signals at a known shaft condition.
03	Trace each proximity signal to its assigned input and recorder channel.
04	Identify the relay contacts used by the machine protection circuit.

Configuration to retain

Item	Installed selection
Selected display scale	25-0-25 mils
Input sensitivity	200 mV/mil (8 V/mm)
Relay construction	Hermetically sealed
Safety barriers	None
Channel assignment	Two independent proximity signal inputs
Output destination	Identify the actual current or voltage receiving circuit

Probe adjustment precedes alarm acceptance

An unsuitable probe gap can prevent an alarm even when the monitor setpoint is correct. Establish the permissible collar travel and keep the transducer response usable throughout that travel. Do not treat an apparently centered display as proof that the sensing system covers both mechanical limits.

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02 Install and connect the monitor

Installation constraints

Connection point	Requirement
Rack location	Use an appropriate monitor slot; exclude slots 1 and 2
Input loading	10 kΩ
Buffered access	One front coaxial and one rear terminal point per channel
Buffered output impedance	100 Ω; short-circuit protected
Transducer power	-24 V DC or -18 V DC selected at the power supply
Operating ambient	0 to +65 °C, noncondensing environment

Keep signal identities intact

Maintain the identity of the two field inputs through the terminal assembly, monitor indication, recorder wiring and alarm test. A pair of swapped inputs can still give plausible readings while associating the wrong physical location with a displayed channel. Confirm the route by applying a controlled signal change to one channel at a time.

Installation inspections

Rack engagement
Inspect the connector and seating arrangement before energization.

Field terminations
Check conductor identification and secure terminations without bridging adjacent circuits.

Barrier boundary
Retain the selected barrier arrangement and its corresponding field circuit.

Environmental condition
Prevent condensation and keep the monitor within its operating temperature limits.

Internal-barrier selection

The internal-barrier variant cannot use the Quad Relay option. Do not infer a change to alarm voting or an additional approval solely from the presence of barriers. Retain the applicable barrier and relay arrangement during replacement.

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03 Set direction and check the measured travel

Position-response sequence

01	Connect the intended proximity system and establish a known shaft condition.
02	Compare each DC gap signal with its local position indication.
03	Apply a controlled position change or the approved equivalent signal test.
04	Verify which direction is shown as normal thrust on each channel.
05	Check the response toward both normal and counter-thrust limits.

Checks at each stable condition

Observation	Purpose
Raw signal	Compare the front or rear buffered transducer signal with the applied condition.
Local conversion	Confirm the selected scale and 200 mV/mil sensitivity.
Direction	Verify movement toward and away from the probe against the configured normal direction.
Channel separation	Change one input at a time to confirm the associated indication.
Recorder response	Observe the corresponding external output without confusing it with raw gap voltage.

Use comparable conditions

Stabilize the mechanical position before comparing readings. The monitor signal-conditioning accuracy is specified at +25 °C; environmental differences and the external transducer characteristic affect a system comparison. Preserve the test conditions alongside the readings so that a later check can be interpreted meaningfully.

Do not use resolution as an accuracy claim

The LCD and setpoint adjustment have a finite resolution. A small difference between an applied value and a displayed segment is not automatically a calibration fault. Evaluate the appropriate conditioning, recorder and display characteristics separately.

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04 Test recorder circuits and alarm logic

External recorder acceptance

Circuit	Acceptance check
4–20 mA mode	Check the complete load remains within 0–600 Ω.
Voltage modes	Use at least 10 kΩ receiving impedance.
Mode identity	Distinguish 1–5 V DC from 0 to -10 V DC before connection.
Channel identity	Test each output against its own input.
Fault separation	Investigate recorder shorts independently; monitor operation is not affected.

Alarm-path test

01	Confirm normal and counter-thrust Alert and Danger settings.
02	Cross the relevant setpoint using the approved test condition.
03	Check the selected delay and the actual relay-contact response.
04	Test the intended AND or OR decision with each channel separately and together.
05	Verify the configured latching and reset behavior before release.

Two-probe voting test

For AND voting, a single channel crossing its setpoint must not be mistaken for the completed two-channel trip condition. Test both the one-channel and simultaneous two-channel cases. The physical probes should observe the same collar or shaft so the two signals represent the same thrust movement.

Relay configuration

Normally energized or de-energized operation changes the contact interpretation during testing. Preserve that selection, the relay hardware and the downstream wiring together. A continuity check on an isolated contact does not prove the complete protection path.

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05 Diagnose abnormal states and release

State-led troubleshooting

Observed condition	Investigation
OK indicator off	Investigate a NOT OK or bypass condition before interpreting position alarms.
OK flashing at 5 Hz	Check stored error information and resolve the associated fault.
First Out flashing	Distinguish the initiating Alert or Danger indication from later alarm states.
BYPASS indication	Identify Danger Bypass or Rack/Channel Bypass before restoring protection.
Unexpected recorder value	Check mode, load, polarity and channel assignment.
Inconsistent direction	Recheck the normal-thrust selection against controlled physical movement.

Release evidence

Measurement
Both channels respond correctly over the intended position span.

Alarm function
Normal/counter thresholds, delay, voting and contacts behave as intended.

Signal interface
Recorder readings and buffered signals are identified correctly.

Operating state
Required bypasses are removed and the intended reset/latch configuration is restored.

Keep a useful final record

Retain final gap readings, the test position, input sensitivity, display scale, recorder mode and alarm configuration. Record the actual observed behavior rather than only a generic pass mark. This makes a later change in shaft position distinguishable from a change in the measurement setup.

Related proximity-system options

Bently Nevada 330103-00-14-10-01-00

Bently Nevada 330103-00-09-10-02-00