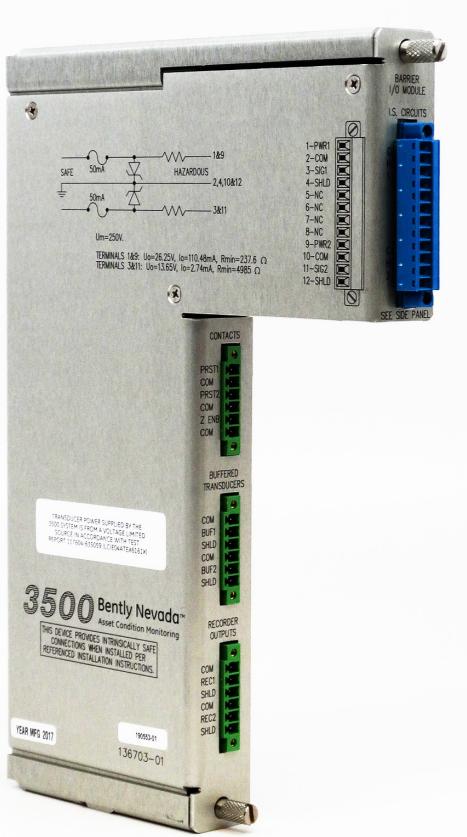


3500/04 Internal Barriers

Datasheet

Cordant™

141495 Rev. R



Description

Bently Nevada™ 3500 Internal Barriers are intrinsically safe interfaces that provide explosion protection for transducer systems connected directly to the 3500 Machinery Protection System.

The internal barriers are fully compatible with the 3500 System and provide a convenient and cost-effective solution for installing all types of transducer systems within a hazardous area.



Unlike external barriers, 3500 Internal Barriers are an integral part of the 3500 System and will not degrade the system's performance.

We offer Bently Nevada transducer systems with comprehensive approvals for hazardous area installations. The transducer systems are matched to those of the 3500 Internal Barriers. [See Compatible Monitors and Transducers on page 8.](#)

Each component complies both individually and as part of a system with the safety requirements of North American and international standards. Hence, you don't have to reference individual certificates to verify the compatibility between components.

Standard and internal barrier monitors can reside within the same 3500 rack. You can upgrade standard monitors by replacing existing I/O modules with those that contain internal barriers.



Baker Hughes 

Specifications

Physical Information

Internal Barrier I/O Module

Dimensions (Height x Width x Depth)	241.3 mm x 24.4 mm x 163.1 mm (9.50 in. x 0.96 in. x 6.42 in.)
Weight	0.46 kg (1.01 lb)

Internal Barrier Earthing Module

Dimensions (Height x Width x Depth)	241 mm x 24.4 mm x 103.1 mm (9.50 in. x 0.96 in. x 4.06 in.)
Weight	0.201 kg (0.443 lb.)

Proximity and Acceleration

The following information also applies to aeroderivative and dynamic pressure.

Bandwidth	30 kHz
Amplitude Accuracy	3% @ 10 kHz, -15/+10% @ 30 kHz
Phase Accuracy	-11° @ 10 kHz
Channel Parameters	$U_m = 250 \text{ V}$ $U_o = 27.45 \text{ V}$ $I_o = 113.24 \text{ mA}$ $C_o = 0.086 \mu\text{F}$ $L_o = 2.77 \text{ mH}$ $P_o = 726.96 \text{ mW}$

Circuit Parameters

Power (PWR)	$U_o = 26.25 \text{ V}$ $R_{min} = 237.6 \Omega$ $I_o = 110.48 \text{ mA}$
Signal (SIG)	$U_o = 13.65 \text{ V}$ $R_{min} = 4985 \Omega$ $I_o = 2.74 \text{ mA}$

Velomitor Sensor

Amplitude Accuracy	±1%
Circuit Parameters	$U_o = 26.25 \text{ V}$ $R_{min} = 297 \Omega$ $I_o = 88.39 \text{ mA}$
Channel Parameters	$U_m = 250 \text{ V}$ $U_o = 26.25 \text{ V}$ $I_o = 88.39 \text{ mA}$ $C_o = 0.097 \mu\text{F}$ $L_o = 4.55 \text{ mH}$ $P_o = 580.02 \text{ mW}$

Temperature

Temperature Accuracy	±1 °C @ +25 °C, ±15 °C over operating temperature
Phase Accuracy	-11° @ 10 kHz
Channel Parameters	$U_m = 250 \text{ V}$ $U_o = 7.71 \text{ V}$ $I_o = 89.17 \text{ mA}$ $C_o = 9.3 \mu\text{F}$ $L_o = 4.55 \text{ mH}$ $P_o = 132.41 \text{ mW}$

Circuit Parameters

Channel B	$U_o = 5.36 \text{ V}$ $R_{min} = 133.25 \Omega$ $I_o = 40.23 \text{ mA}$
Channel C	$U_o = 6.51 \text{ V}$ $R_{min} = 133.25 \Omega$ $I_o = 48.86 \text{ mA}$

Process Variable

Channel Parameters	$U_m = 250 \text{ V}$ $U_o = 27.98 \text{ V}$ $I_o = 279.34 \text{ mA}$ $C_o = 0.083 \mu\text{F}$ $L_o = 0.455 \text{ mH}$ $P_o = 842.89 \text{ mW}$
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Circuit Parameters

Power (PWR)	$U_o = 26.78 \text{ V}$ $R_{min} = 297 \Omega$ $I_o = 90.17 \text{ mA}$
Signal (SIG)	$U_o = 9.56 \text{ V}$ $R_{min} = 50.58 \Omega$ $I_o = 189.01 \text{ mA}$

Ordering Information



For the detailed listing of country and product-specific approvals, refer to the [Approvals Quick Reference Guide \(108M1756\)](#).

For additional technical documentation, please log in to [bntechsupport.com](#) and access the Bently Nevada Media Library.

3500/04-AA-BB

A: I/O Module type: Earthing module

01	Earthing I/O Module
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B: Agency Approval

00	None
01	North America Hazloc
02	Multi (CSA, ATEX, IECEx)

When ordering internal barriers, specify the appropriate I/O module type for each monitor module.



Install an IS Earthing Module in each rack containing internal barriers.

Refer to each monitor module's datasheet for specifications and ordering information.

Spares

136719-01	Earthing I/O Module
138257-01	Earthing Module Front Panel
135473-01	3500/25 I/O Module with Internal Barriers and Internal Terminations
135489-01	3500/42, /70, /72 I/O Module with Internal Barriers (4 prox/accel channels) and Internal Terminations

135489-02	3500/42, /70 I/O Module with Internal Barriers (2 prox/accel + 2 Velomotor channels) and Internal Terminations
135489-03	3500/42, /70 I/O Module with Internal Barriers (4 Velomotor channels) and Internal Terminations
135489-04	3500/40 I/O Module with Internal Barriers and Internal Terminations
136703-01	3500/50 I/O Module with Internal Barriers and Internal Terminations
136711-01	3500/60 I/O Module with Internal Barriers and Internal Terminations
136711-02	3500/61 I/O Module with Internal Barriers and Internal Terminations
137110-01	3500/62 I/O Module with Internal Barriers and Internal Terminations

Compatible Monitors and Transducers

Compatible Monitors	3500/25 Keyphasor Monitor
	3500/40M Proximitor Monitor
	3500/42M Proximitor/Seismic Monitor
	3500/44M Aeroderivative (only with mods)
	3500/50 Tachometer Monitor
	3500/60 Temperature Monitor
	3500/61 Temperature Monitor with Recorders
	3500/62 Process Variable Monitor
	3500/64 Dynamic Pressure Monitor (only with mods)
	3500/70M Recip Impulse/Velocity Monitor 3500/72M Recip Rod Position Monitor

Temperature	3-wire Thermocouples: Type J Type K Type E Type T
Process Variable	3-wire RTDs: 10 Ω 3-wire Copper 100 Ω 3-wire Platinum 120 Ω 3-wire Nickel

The Internal Barrier system does not support the following transducer systems:

- 11 mm, 14 mm, 16 mm, 25 mm, 35 mm, or 50 mm Proximitor Sensors
- Velocity Seismoprobe Sensors (/42)
- Velocity-to-Displacement Converter (/40)
- Magnetic pick-up (/50)
- 4-wire RTDs and Thermocouples (/60, /61)
- 1-5 Vdc Process Variables (/62)
- 0-10 Vdc Process Variables (/62)

Compatible Transducer Systems

Proximity	3300 XL Proximitor Sensor 3300 5 mm Proximitor Sensor 3300 XL 8 mm Proximitor Sensor 3300 RAM Proximitor Sensor 7200 5 & 8 mm Proximitor Sensor
	23733-03 Standard Acceleration Transducer
	330400 Standard Integral Acceleration Transducer
	330425 Standard Integral Acceleration Transducer
	49578-01 Standard Acceleration Transducer Modified 86517 Interface Module
Velocity	Velomitor Sensor High Temperature Velomitor Sensor



Internal barriers are compatible with **approved** Bently Nevada transducer systems. For all other transducer systems, please consult your local Bently Nevada sales professional.