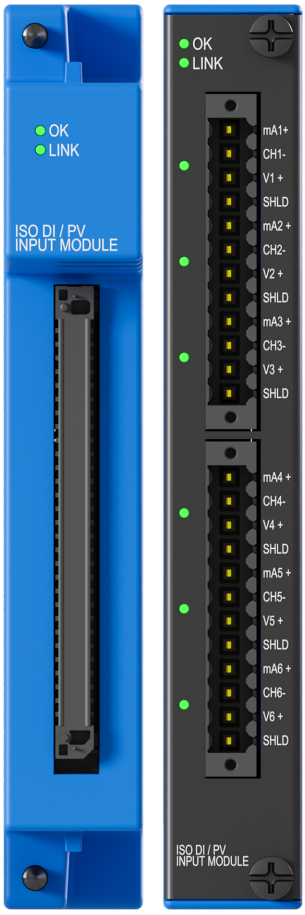
ORBIT 60 SERIES
Process Variable and Discrete Input Module
Datasheet

Cordant™

145M9027 Rev. C



Description

The Bently Nevada™ Orbit 60 Series Isolated Process Variable and Discrete (PVD) Input module processes machine-critical parameters such as pressure, flow, temperature, and levels that merit continuous monitoring. The module conditions and digitizes the signals so the result can be compared with user-programmable alarm setpoints. The user can program the PVD module using the Orbit Configuration software to perform current, voltage or discrete input measurements. This module provides discrete inputs for essential operational commands, such as Trip Multiply for machine start-up and Alarm Inhibit.

The monitor accepts +4 to +20 mA current inputs or any proportional voltage inputs between -10 Vdc and +10 Vdc, in addition to monitoring “dry” or “wet” contacts from a sensor, switch, or relay.

Primary purposes of the PVD Module:

- Continuously process input from monitored parameters to be compared against configured alarm setpoints to drive alarms for machinery protection.
- Allow provision of essential machine information, such as Trip Multiply for machine startup and Alarm Inhibit for both operations and maintenance personnel.

These modules occupy a single slot. The module OK LEDs indicate proper functioning, and the LINK LEDs indicate good system communication. Six Channel Status LEDs on the utility side of the module indicate a connected sensor in OK condition.

C US

Baker Hughes

Isolated Process Variable / Discrete Input (PVD)

Isolated PV / Discrete Input (PVD)	
Power Consumption	
Typical	4.5 W
Maximum	6.5 W
Characteristics	
Channels	6
Isolation	500 V Channel to System and 250 V Channel to Channel isolation
Process Variable 4-20 mA Input	
Process Variable Input (Current)	4 to 20 mA
Error	±1% of Fullscale
Voltage Compliance	3 V
Fault Input Tolerance	±24 V
Powered off module input resistance	>10 MΩ
Powered on nominal Input resistance	100 Ω + 0.3V [1]
Process Variable -10V to +10V Input	
Process Variable Input (Voltage)	-10 to 10 Vdc 0 to 10 Vdc 2 to 10 Vdc 0 to 5 Vdc 1 to 5 Vdc -10 to 0 Vdc
Error	±1% of Fullscale

Isolated PV / Discrete Input (PVD)	
±10V Nominal Input Impedance	249 kΩ
Fault Input Tolerance	±40 V

[1] The voltage drop across the input when configured for a current input is 100 Ω x Input Current + 0.3 V.

Discrete Input	
Discrete Input	Dry Contact, Internally Wetted Wetted Contact, 0 to 10 Vdc
Internal Wetting Voltage	11.5 V to 12.7 V
Fault Input Tolerance	± 40 V

PVD Output	
Module OK LED	Indicates when the module is functioning properly
System Communication LED	Indicates when the module is communicating to the rest of the system
Channel Status LED (Rear Utility Side)	1 per input channel indicates when the connected sensor is in an OK condition

Environmental Limits	
Chassis Operating Temperature Range (indoor use only)	3U Chassis: -30°C to +70°C (-22°F to 158°F) 6U Chassis: -30°C to +65°C (-22°F to 149°F) Temperatures over 50°C (122°F) require forced air convection with a minimum airspeed of 0.5 m/s.
Module Temperature Rating Certification	-30°C to +70°C (-22°F to 158°F) When using a Bridge module in a 3U chassis, temperatures over 55°C (131°F) require forced air convection with a minimum airspeed of 0.5 m/s. You must still meet the Chassis Operating Temperature Range defined above.
Storage Temperature Range	-40°C to +85°C (-40°F to 185°F)
Relative Humidity	0% to 95% rH non-condensing operating and storage
Vibration	Without Isolators: 0 g to 0.35 g @ 57-500 Hz With Isolators: 0 g to 5 g @ 57-500 Hz
Shock	2" Incline Drop

Environmental Limits	
Altitude	< 2000 m (6,562 ft) Higher altitudes are possible but are site specific applications. Contact Bently Nevada support if you require higher altitudes.
Pollution Degree	Pollution Degree 2
Installation Category	Category II

Verify that temperature ratings on the wiring cables match the operating temperature range.

CAUTION

LOCATION TEMPERATURE AND HUMIDITY

While the system has been tested and capable of achieving the design life when operating in environments up to 70°C, whenever operating any electronics system in elevated humidity or temperatures exceeding 40°C, adding environmental controls maximizes the operational life of the system.

Compliance and Certifications

FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

EMC

European Community Directive:

EMC Directive 2014/30/EU

Standards:

EN 61000-6-2; Immunity for Industrial Environments
EN 61000-6-4; Emissions for Industrial Environments

Electrical Safety

European Community Directive:

LV Directive 2014/35/EU

Standards:

EN 61010-1;
EN 61010-2-201;

RoHS

European Community Directive:

RoHS Directive 2011/65/EU

Cyber Security

Designed to meet IEC 62443-4-2

*Maritime

ABS Rules for Condition of Classification, Part 1

- Steel Vessels Rules
- Offshore Units and Structures

*Recorder Output module, Bridge module, and 6U systems approvals pending

Functional Safety

SIL 2

See the SIL User Guide (134M0398) for details regarding SIL implementation.

Hazardous Area Approvals

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.

cNRTLus

Class I, Zone 2: AEx/Ex ec nC IIC T4 Gc;
Class I, Zone 2: AEx/Ex nA nC IIC T4 Gc;
Class I, Division 2, Groups A, B, C, D T4;
Class I, Division 2, Groups A, B, C, D T4 (N.I.);

T4 @ Ta= -30˚C to +70˚C (-22˚F to +158˚F)

ATEX/IECEx

II 3 G
Ex ec nC IIC T4 Gc
Ex nA nC IIC T4 Gc

T4 @ Ta= -30˚C to +70˚C (-22˚F to +158˚F)

Ordering Information

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

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Isolated Process Variable / Discrete Input Module (PVD)

Ordering Option	Description
60R/INP09-AAA-B	
AAA – Hazardous Area Certifications	
00	No Hazardous Area
01	CSA/NRTL/C (Class I, Div 2)
02	Multi (CSA, ATEX, IECEx)
XXX	Country Specific Approvals
B – SIL Level	
0	No SIL
2	SIL 2

Accessories

Part Number	Description
60X/BTC01	Buffered Transducer Breakout Kit
60X/ETA01	External Termination Adapter - Universal
60X/ETB01	External Termination Block – Universal (New Installations)

Non-Keyphasor Cables

Transducer XDCR signal to External Termination Block Cable 129525 - AAAA - BB

A: I/O Cable Length	
0005	5 feet (1.5 meters)
0007	7 feet (2.1 meters)
0010	10 feet (3.0 meters)
0025	25 feet (7.6 meters)
0050	50 feet (15.2 meters)
0100	100 feet (30.5 meters)
B: Assembly Instructions	
01	Not Assembled
02	Assembled

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