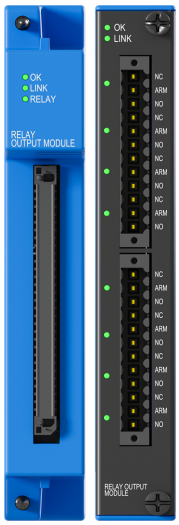
ORBIT 60 SERIES
Relay Modules
Datasheet

Cordant™

137M0699 Rev. D





Description

Relay modules may be programed to actuate based on alarm conditions defined in other modules. Use standard logic elements (True AND, Normal AND, OR and NOT) to combine various alarms and statuses (e.g. OK statuses, Bypass, Protection State, Inhibit, Attention, Protection Fault, etc.) into relay activation conditions. Orbit Studio is used to program the voting logic.

Relays can operate as a system or group protection fault relay, if programmed to do so, especially when the protection fault relay on the SIM does not provide adequate granularity of system health - typically for multiple machines in one system.

Pairs of relays within the module function as a single Double-Pole, Double-Throw relay when appropriately configured. Both relay types are available for SIL system implementation. See the *Orbit 60 Series SIL User Guide (134M0398)* for additional details and design considerations.

Electromechanical Relay (EMR)

This relay drives a load directly, or through, an interposing relay. This module takes two slots. It features **8 Epoxy Sealed, Single-Pole Double-Throw Electromechanical Relays.** This module supports an AC voltage range of 5-250 Vac for loads of 100 mA to 4 A. The module also supports DC voltages and loads of 5-30 Vdc at 4 A.

Solid State Relay (SSR)

This relay connects to an external system's discrete input for low current communication. It occupies a single slot and features **8 Solid-State Relays.** This module supports secondary voltages from 1 Vdc up to 125 Vdc and loads of 0.01 to 125 mA.

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Electromagnetic Relay (EMR)

Electromagnetic Relay (EMR)	
Power Consumption	
Typical	6 watts
Maximum	11 watts
Characteristics	
Type	Electromechanical Single-Pole, Double-Throw
Number of Relay Outputs	8
Environmental	Epoxy Sealed
Arc Suppressor	250 Vrms, installed standard
Contact Life	100,000 cycles @ 5 A, 24 Vdc or 240 Vac
Operation	Each relay is configurable for Normally De-Energized or Normally Energized
Contact Rating for Standard Systems	
Minimum Switched Current	100 mA
DC Maximum Switched Current	4 A @ 30 Vdc
DC Minimum Switched Voltage	5 Vdc
DC Maximum Switched Voltage	30 Vdc
AC Maximum Switched Voltage	250 Vrms
AC Maximum Switched Current	4 A
Maximum Switched Power	180 W or 1800 VA

Electromagnetic Relay (EMR)	
Contact Rating for Hazardous Area Systems	
Maximum Switched Current	4 A
DC Maximum Switched Voltage	30 Vdc
AC Maximum Switched Voltage	160 Vrms

Solid State Relay (SSR)

Solid State Relay (SSR)	
Power Consumption	
Typical	5 watts
Maximum	9 watts
Characteristics	
Type	Solid State Single-Pole, Double-Throw
Number of Relay Outputs	8
Environmental	Plastic Encapsulated
Arc Suppressor	150 Vdc, installed standard
Maximum Cycling Rate	1 Hz
Operation	Each relay is configurable for Normally De-Energized or Normally Energized
Switching Properties	Limited to non-inductive loads
Contact Rating for Standard Systems	
Current Range	0.0 1-125 mA
DC Maximum Switched Current	125 mA @ 125 Vdc
Voltage Range	1-125 Vdc

Solid State Relay (SSR)	
Maximum Switched Power	650 mW
Contact Rating for Hazardous Area Systems	
Current Range	0.0 1-125 mA
Voltage Range	1-50 Vdc

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. **Bridge Modules are not supported in 6U chassis.** 3U Bridged System -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.

Environmental Limits	
Module Temperature Rating Certification	-30°C to +70°C (-22°F to 158°F) 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
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.

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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 1 Certified / SIL 2 Capable

See the *Orbit 60 Series SIL User Guide (134M0398)* for details regarding SIL implementation for SIL 1 simplex and SIL 2 redundancy applications.

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

Ex 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)*.

For additional technical documentation, please log in to bntechsupport.com and access the Bently Nevada Media Library.

Electromechanical Relay Module

Ordering Option	Description
60R/RLY01-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
1	SIL 1*

Solid State Relay Module

Ordering Option	Description
60R/RLY02-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
1	SIL 1*

* Relay modules are SIL1 certified for simplex operations. See the *Orbit 60 Series SIL User Guide (134M0398)* for details and requirements related to achieving SIL2 with this module.

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