



# BLUE RIBBON CORP.

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## INTRINSICALLY SAFE DUPLEXER MODEL BB2000F

• U.L. APPROVED •

The **BB2000F** Intrinsically Safe Duplexer is a low-cost, intrinsically safe duplex pump controller for water and wastewater lift station applications using floats.

### STANDARD FEATURES:

- Intrinsically safe float switch inputs
- 120 VAC input power; Transient protected
- 10 Amp pump call relay outputs
- 10 Amp high level alarm relay
- Duplex alternation
- Lead select toggle switch
- HOA toggle switches
- Level indication
- Float out of sequence indication
- Pump called to run indication
- System test push button
- Lag pump delay
- Phoenix-style connectors



The control panel circuitry of the model BB2000F is greatly simplified by replacing four intrinsically safe relays, the alternator, the lag pump delay timer, two HOA switches, the push-to-test switch, and the lead/lag/auto select switch.

Pressing the push-to-test push button (which closes the OFF and the Lead floats input), allows the operator to test the automatic pump call functions of the unit, and the related pump control circuitry.

The float switch out-of-sequence logic detects most common problems associated with float switches not opening or closing as they should. This logic also compensates for most float switch failure conditions and allows for continued pump operation.

The BB2000F also provides a delay for the lead pump immediately following a power interruption, and has been designed with transient protection, making the controller rugged, cost effective, and highly functional.

This associated apparatus provides intrinsically-safe circuits for use in Class I, Groups A, B, C, D; Class II, Groups E, F, G; and Class III, Hazardous Locations.



LISTED

Blue Ribbon reserves the right to make product improvements and amendments to the product specifications stated throughout this brochure without prior notification. Please contact the factory on all critical dimensions and specifications for verification.

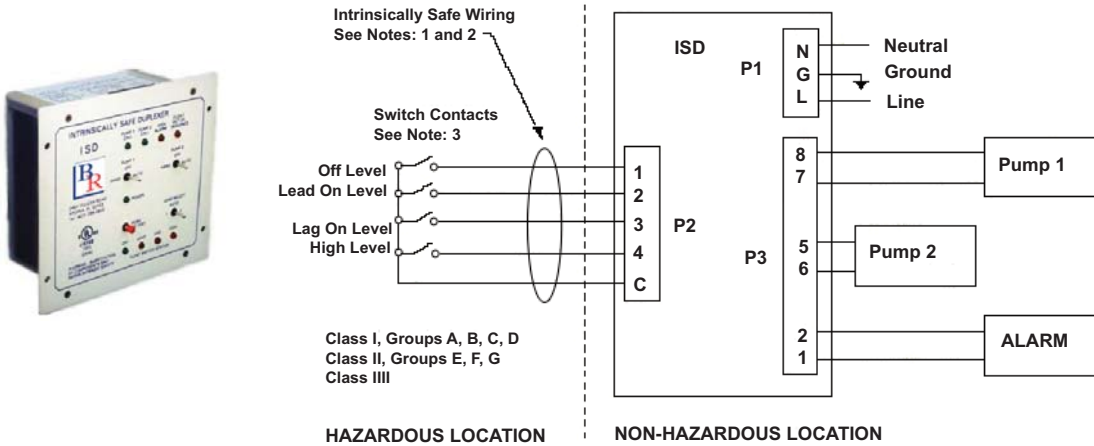
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Standard Specifications listed below. Consult factory for further options, which may change the overall dimensions.



## Specifications:

### Input Power:

- 120 VAC  $\pm 10\%$ , 7.7 VA max.

### Input Power Transient Protection:

- Metal Oxide Varistor

### Agency Approvals:

- UL 913, CAN/CSA

### Ambient Operating Temperature:

- $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$  to  $+140^{\circ}\text{F}$ )

### Indicators:

- LED

### Color:

- White with Blue silk screening

### Relays:

- 10A at 120VAC

### Enclosure Material:

- Aluminum

### Dimensions:

- Panel Mount Version:  
5.8" high x 6.1" wide x 2.9" deep
- Surface Mount Version:  
5.8" high x 5.6" wide x 2.9" deep
- Din Rail Mount Version:  
5.8" high x 4.7" wide x 3.2" deep

## Notes:

1. All intrinsically safe wiring shall be separated from non-intrinsically safe wiring. Refer to Article 504 of the National Electric Code (ANSI/NFPA 70) for installation of intrinsically safe wiring.
2. Maximum distance between unit and switch contacts is 1000 feet.
3. Switch contact shall be any non-energy storing or generating switch type device containing no capacitance or inductance.
4. The ISD must not be connected to devices that use or generate greater than 120 Vms.
5. Cable capacitance plus intrinsically safe equipment capacitance ( $C_i$ ) must be less than marked capacitance ( $C_a$ ) and cable inductance plus intrinsically safe equipment inductance ( $L_i$ ) must be less than the marked inductance ( $L_a$ ) shown any barrier. **See note 7**
6. If the electrical parameters of the cable are unknown, the following values must be used:  
Capacitance 60 pf/ft-Inductance 0.20 uH/ft.
7. Simple apparatus or listed intrinsically safe equipment with entity parameters as follows:
 

I.S Equipment	Barrier
$V_{max}$	$>V_{oc}$
$I_{max}$	$>I_{sc}$
$C_i + C_c$	$<C_a$
$L_i + L_c$	$<L_a$

### Ordering Information: Model Number: ISD - X

P = Panel Mount Version  
 S = Surface Mount Version  
 D = Din Rail Mount Version

### 8. Entity Parameters:

$V_{oc} = 28.8\text{V}$     $I_{sc} = 0.647\text{mA}$     $C_a = 0.076\mu\text{F}$     $L_a = 100\text{mH}$

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