SUBMERSIBLE PUMP LIFT STATION / SLUDGE LEVEL TRANSMITTER

Model BC001 Birdcage®

MODEL BC001 BIRDCAGE®

FEATURES:

- 3-inch diameter sensing diaphragm resists clogging
- Protective baffle plate reduces risk of sensor damage
- Corrosion-resistant, all stainless steel construction
- Stock quantities available to ship in 1 to 3 days
- Surge protection from lightning strikes and voltage spikes
- Ranges from 0-5 thru 0-500 PSI (0-10 thru 0 to 1153 meters FTWC)
- Lifetime Surge Warranty Replacement Program when partnered with the BCP3000 Surge Protector (sold separately)

APPLICATIONS:

- Submersible pump lift station level monitoring
- Wet wells
- Process sumps
- Water tanks and reservoirs
- Process sludge
- Water and wastewater level monitoring

PRODUCT OVERVIEW:

The BC001 Birdcage® Series from Blue Ribbon Corporation is a highly accurate level transmitter designed specifically for sludge level monitoring and pump lift stations. Its all stainless steel design incorporates a 3-inch diameter clog-resistant sensing diaphragm and corrosion resistant protective baffle plate. These features, combined with over 25 years of proven field service, make the Birdcage® the industry standard in water and wastewater level measurement.

FIELD OPTIONS:

- 4-20 mA or 0-5 Vdc Output
- FM/CSA Hazardous approvals
- Temperature Output
- External Lightning Surge Protection Package

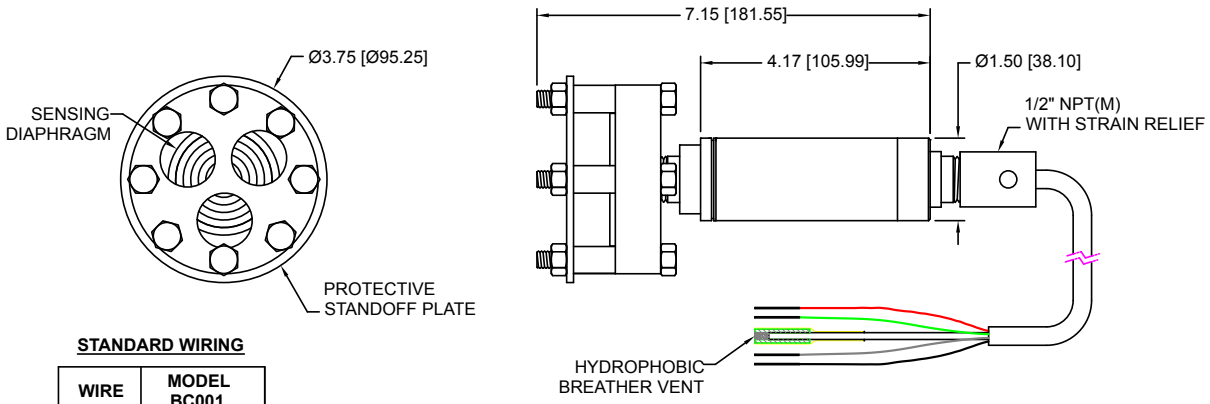
BR5SL-TX-001
REV-A

Order from: **C A Briggs Company**; 622 Mary Street; Suite 101 - Warminster, PA 18974
Phone: 267-673-8117 - Fax: 267-673-8118; E-Mail: Sales@cabriggs.com - www.cabriggs.com

SUBMERSIBLE PUMP LIFT STATION / SLUDGE LEVEL TRANSMITTER

DIMENSIONAL DRAWING

All dimensions are in inches (mm)



STANDARD WIRING

WIRE	MODEL BC001
1/RED	+EXC/SIG
2/GRN	N/C
3/WHT	N/C
4/BLK	-EXC/SIG
5/BLU	N/C
6/BRN	N/C
SHIELD	OPEN

REFERENCE SPECIFICATIONS

ELECTRICAL

- **Supply Voltage:** 9 to 36 Vdc
- **Output Signal:** 4-20 mA
- **Circuit Protection:** RFI and EMI surge protection
- **Load Impedance:** 1,350 Ω max. at 36 Vdc and 750 Ω at 24 Vdc
- **Input Current:** 8 mA, nominal
- **Insulation Resistance:** >10 MΩ at 50 Vdc and +70 °F
- **Connection:** 1/2" NPT (M) conduit with 40 feet of 3-conductor, 18 AWG Hytrel jacketed cable (optional Tefzel jacketing)

MATERIALS OF CONSTRUCTION

316 stainless steel

THERMAL SPECIFICATIONS

- **Compensated:** 0 °F to + 140 °F (-18 °C to +60 °C)
- **Operating Ambient:** -40 °F to +150 °F (-40 °C to +66 °C)
- **Effect on Zero Span** ±2% FSO/100 °F

STATIC ACCURACY (RSS) (HYSTERESIS, NON-LINEARITY & REPEATABILITY @ +70 °F)

- **Standard:** ±0.5%
- **Optional:** ±0.2%
- **Zero Balance and FSO:** ±1.0% FSO at +70 °F

MECHANICAL

- **Process connection:** Oil filled diaphragm
- **Proof Pressure:** 2X FSO or 22,500 PSI (1,551 BAR), whichever is less
- **Burst Pressure:** 5X FSO or 22,500 PSI (1,551 BAR), whichever is less
- **External Pressure:** 500 PSI max. (35 BAR)
- **Weight:** 5.5 lb (2.5 kg)

PRESSURE RANGES

0-5 thru 0-500 PSI (0-10 FTWC thru 0-1153 FTWC)
0-3 thru 0-335 meters WC

All specifications are for reference purposes only. In the interests of continuous product improvement, all specifications are subject to change without notice. Please contact Blue Ribbon Corporation for assistance with your application.

SET POINT PUMP CONTROLLER

MODEL BD100

Model BD100
Set Point Pump Controller

OVERVIEW:

The Model BD100 Bulldog from Blue Ribbon Corporation is a set point pump controller designed exclusively for use with the Blue Ribbon Birdcage® level sensor providing basic pump control functions.

The BD100 controller is an easy and inexpensive solution for monitoring and controlling pump station water levels. With six programmable level set points for pump control, including on/off set points for two pumps and settings for two alarms, and a preprogrammed set of default parameters to simplify the user interface and set-up.

FEATURES:

- Control ON-OFF for two pumps
- Front-panel programming
- Analog output for runtimes
- Secure menu for all other preset values
- 24 VDC power
- Accepts 4-20 mA or 1-5 VDC
- Non-volatile memory, no batteries
- Alternation of pumps set as default
- Set points continuously displayed, along with current level readings.

BR5SL-PC-001
REV-A

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Phone: 267-673-8117 - Fax: 267-673-8118; E-Mail: Sales@cabriggs.com - www.cabriggs.com

SET POINT PUMP CONTROLLER

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

Set point Range	Low and High points are selected independently
Display	Two 4 digit, 7 segment, 14.2mm (0.56") high LED's
Control Action	Selectable for Reverse (pump up) or Direct (pump down): Selectable for alternation or not
Control Output Ratings	Relays: 2 each SPDT, 10A at 240 VAC resistive,1/2 hp at 120 VAC,1/3 hp at 240 VAC Alarm Relays: 2 each SPST 3A at 240 VAC resistive, 1.5A at 240 VAC inductive, pilot Duty Rating: 240 VA 2A at 120 VAC or 1A at 240 VAC
Additional Outputs	Two switched voltage outputs mirror action of relays, for recording motor start cycles and run times
Accuracy	±0.25% of reading ±1 least significant digit
Resolution	1 count or 0.1 counts (sensor dependent)
Isolation	Relays and SSR outputs, 1500 VAC from all inputs and outputs; 24 VDC loop power, 500 VAC to all inputs and outputs
Power Consumption	5 VA maximum
Electrical supply	100 to 240 VAC nominal, +10% to 15%, 50 to 400 Hz single phase; 132 to 240 VDC +10% to 20%
Loop Powered Supply	Isolated +24 VDC supplies power to the Birdcage or Pressure Sensor
Temperature Range	Operating Range:- 10 °C to 55 °C (-14 °F to 130 °f) Storage Range: -40 °C to +80 °C (-40 °F to +175 °F)
Agency Approvals	UL508, CE
Humidity Range	0 to 90% up to 40 °C for non-condensingw
Memory Backup	Non-volatile memory, no batteries
Panel Cutout	92mm X 92mm (3.625" X 3.625")
Depth Behind Mounting Services	103mm (4.0")
Weight	454 g (16 oz)
Front Panel Rating	IP66 (Type NEMA 4X)

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DUAL SET POINT PUMP CONTROLLER

MODEL BD200

Model BD200
Dual Set Point Pump Controller

FEATURES:

The Bulldog Model BD200 versatile, simple, and inexpensive, making it the ideal instrument for controlling dual pump lifting stations. Setpoints for ON/OFF and HI/LO alarms are easily set on the front panel. These same buttons also Enable/ Disable pump alternation. A selectable time delay of up to 60 seconds on power-up for pump two prevents both pumps from starting at the same time and a large current draw. Alarms for pump seal failure and motor windings overheating are indicated by lights on the front panel. The dial can also display a runtime clock for each pump. An isolated 4-20 mA retransmission is standard. The front face is rated NEMA-4X for outdoor panel mounting. The BD-200 is also available with RS- 232 or RS-485 protocol for connectivity with SCADA systems.

SPECIFICATIONS:

- Selectable pump alternation when used with two pumps to minimize pump wear. With alternation "On", a seal failure or over temperature condition will force the non-failed pump to lead status and stop alternation
- Alarm light for seal failure when used with a submersible pump that includes a moisture sensor
- Alarm light for overheating when used with a pump that includes a thermostat. Pump is removed from service & can be brought back online manually or automatically when pump has cooled down
- Runtime displayed by a front panel button.
- 24 VDC power for level transmitter
- 4-20 mA or voltage signal output
- Non-volatile memory, no batteries
- Test System function simulates process input to test program, or to ensure pumps are operating
- User-selectable security lock-out of programming and/or setpoints

BR5SL-PC-002
REV-A

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SET POINT PUMP CONTROLLER

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

Input	4 (or 0) to 20 mADC or 2 (or 0) to 10 VDC selectable
Input Impedance	Current = 10 Ω, Voltage = 100K Ω
Output Ratings	Control Relays: SPDT, 10A @ 240 VAC resistive, ¼ hp @ 120 VAC, ⅓ hp @ 240 VAC Alarm Relays: SPST, 3A @ 240 VAC resistive, 1/10 hp @ 120 VAC
Control Type	On/Off, reverse (pump out) or direct (pump in) acting
Accuracy	±0.25% of span ±1 least significant digit
Display	Two 4 digit, 7 segment, 14.2mm (0.56″) high LED's
Resolution	1 count
Power Consumption	7.5 VA maximum
Electrical Supply	100 to 240 VAC nominal, +10% to 15%, 50 to 400 Hz single phase; 132 to 240 VDC +10% to 15%
Loop Powered Supply	Isolated +24 VDC @ 50 mA, regulated
Temperature Range	Operating Range: -10 °C to 55 °C (-14 °F to 130 °F) Storage Range: -40 °C to +80 °C (-40 °F to +175 °F)
Humidity Range	0 to 90% up to 40 °C for non- condensing
Seal Failure (Moisture Sensor)	Power: 2.5 VDC Search Current: 3 micro amps Resolution: 10K to 500K ohms in 10K ohm steps
Agency Approvals	UL508, CE
Memory Backup	Non-volatile memory, no batteries
Panel Cutout	92mm X 92mm (3.622" X 3.622")
Weight	454 g (16 oz)
Front Panel Rating	IP66 (Type NEMA 4X)
Options	RS-232 or RS-485 with Modbus protocol; Ethernet using TCP/IP
Accessories	Weatherproof Enclosures, NEMA 4X

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PUMP CONTROLLER

MODEL BD300

Models BD300
Pump Controller

OVERVIEW:

The Model BD300 Pump Controller is designed exclusively for use with the Blue Ribbon Birdcage® submersible level transmitter to provide multiple pump alternation for pumping stations and water municipalities. Featuring four programmable relay switches, a large 6 digit LED dual display, AC or DC power input, and digital communication options, the BD300 is suited for the most demanding environments.

FEATURES:

- 0-20 mA, 4-20 mA, 0-5 V, 1-5 V, and ± 10V Inputs
- Large Dual-Line 6-Digit Display, 0.60" & 0.46"
- NEMA 4X, IP65 Front
- Universal 85-265 VAC, or12/24 VDC Input Power Models
- Programmable Display & Function Keys
- 32-Point, Square Root, or Exponential Linearization
- Multi-Pump Alternation Control
- USB, RS-232, RS-485 Serial Communication Options
- Modbus® RTU Communication Protocol Standard
- Free BULLDOG Pro Software for Operation, Monitoring, and Programming
- Standard1/8 DIN (45mm x 92mm)

FIELD OPTIONS:

- 4 Relays + Isolated 4-20 mA Output
- External 4-Relay & Digital I/O Expansion Modules
- Sunlight Readable Display Models

BR5SL-PC-003
REV-A

Order from: C A Briggs Company; 622 Mary Street; Suite 101 - Warminster, PA 18974
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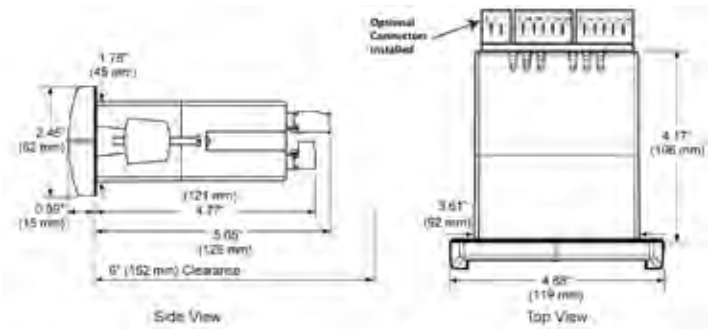
DIMENSIONAL DRAWING

All dimensions are in inches (mm)

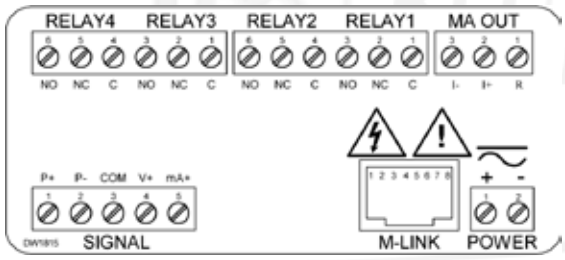


Notes:
1. Panel cutout required: 1.772" x 3.622" (45 mm x 92 mm)
2. Panel thickness: 0.040 - 0.250" (1.0 mm - 6.4 mm)
3. Mounting brackets lock in place for easy mounting
4. Clearance: Allow 6" (152 mm) behind the panel

NEMA 4X FIELD ENCLOSURES:

Thermoplastic NEMA 4X enclosures are constructed for indoor or outdoor use.

CONNECTION DIAGRAM:



BD281

ACCESSORIES:

MODEL	DESCRIPTION
BDDRMK	DIN RAIL MOUNTING KIT FOR TWO EXPANSION MODULES
BDXM	4-RELAY EXPANSION MODULE
BDIO	4 DIGITAL INPUTS & 4 DIGITAL OUTPUTS MODULE
BDCCC	METER COPY CABLE
BDUSBSA	USB SERIAL ADAPTER
BD281	1/8 DIN ENCLOSURE

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DUAL INPUT PUMP CONTROLLER

Models BD306
Pump Controller

MODEL BD306

OVERVIEW:

The Model BD306 Dual Input Pump Controller from Blue Ribbon Corporation offers high-reliability monitoring and control when used with the Birdcage® submersible level transmitter. Unit features dual input process control with Math Functions, Programmable Display & Function Keys, RS-242, RS-485 and Modbus® RTU Serial Communication Protocol, making it suitable for use in a variety of industrial applications.

FEATURES:

- Dual Input Process Controller with Math Functions
- 0-20 mA, 4-20 mA, 0-5 V, 1-5 V, and ±10V Inputs
- Large Dual-Line 6-Digit Display, 0.60" & 0.46"
- NEMA 4X, IP65 Front
- Universal 85-265 VAC, or12/24 VDC Input Power
- Programmable Display & Function Keys
- 32-Point, Square Root, or Exponential Linearization
- Multi-Pump Alternation Control
- USB, RS-232, RS-485 and Modbus® RTU Serial Communication Protocol
- Free BULLDOG Pro Software for Operation, Monitoring, and Programming
- Standard1/8 DIN (45mm x 92mm)

FIELD OPTIONS:

- 4 Relays + Isolated 4-20 mA Output
- External 4-Relay & Digital I/O Expansion Modules
- Sunlight Readable Display Models

BR5SL-PC-004
REV-A

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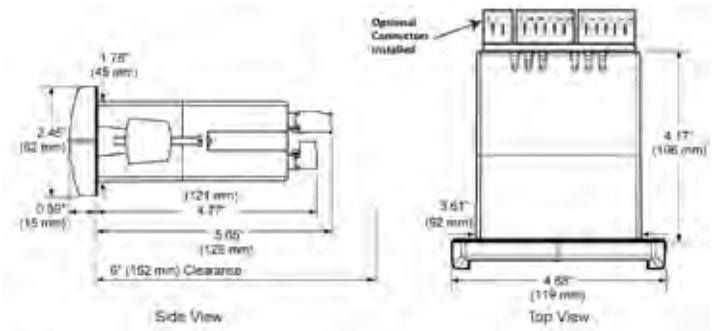
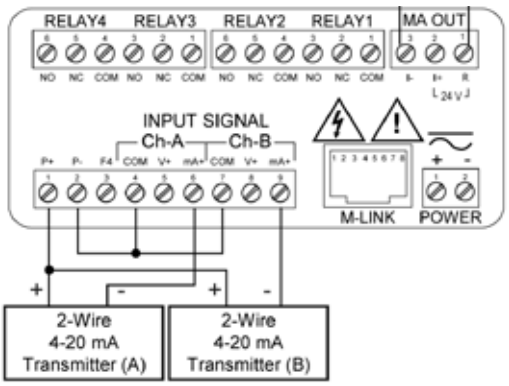
DIMENSIONAL DRAWING

All dimensions are in inches (mm)



Notes:
1. Panel cutout required: 1.772" x 3.622" (45 mm x 92 mm)
2. Panel thickness: 0.040 - 0.250" (1.0 mm - 6.4 mm)
3. Mounting brackets lock in place for easy mounting
4. Clearance: Allow 6" (152 mm) behind the panel

CONNECTION DIAGRAM:



NEMA 4X FIELD ENCLOSURES:

Thermoplastic NEMA 4X enclosures are constructed for indoor or outdoor use.

BD281

ACCESSORIES:

MODEL	DESCRIPTION
BDDRMK	DIN RAIL MOUNTING KIT FOR TWO EXPANSION MODULES
BDXM	4-RELAY EXPANSION MODULE
BDIO	4 DIGITAL INPUTS & 4 DIGITAL OUTPUTS MODULE
BDCCC	METER COPY CABLE
BDUSBSA	USB SERIAL ADAPTER
BD281	1/8 DIN ENCLOSURE

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MODEL BB4000 QUAD PUMP CONTROLLER

Model BB4000
Quad Pump Controller

MODEL BB4000

OVERVIEW:

With the accuracy of pressure-sensing level transmitters and the simplicity of float inputs, the Blue Ribbon Corporation Model BB4000 is the ideal controller for your application. This quad pump controller is easily configured for either analog sensors or float discrete inputs.

FEATURES:

- Field configured for floats or analog sensor inputs, including 20 VDC loop power
- Optional 4 analog sensor inputs or 18 discrete (float switches)
- Alternates pumps and performs lag pump delays
- Provides high and low alarms with full front panel
- Adjustable parameter values
- Optional VFD speed control output
- Pump up (fill) or pump down (empty) control
- 6 Amp pump relay outputs and alarm outputs
- Visual indication up to 255 feet
- Full front panel setup for all control options and menu items
- 120 VAC input power. Line rate and transient protection
- Isolated and transient protected (4-20 mA) analog level input
- RS-232 serial port
- Modbus Protocol
- RTU or ASCII mode
- First ON - First OFF, or First ON - Last OFF alternation
- Alternator logic skips disabled pumps, remembers lead pump position during outage
- Timed (1 minute) level simulation
- Security code protected parameter setup
- Status of discrete inputs may be viewed from front of controller
- Phoenix-style connectors
- Adjustable lag pumps delay
- High and Low level alarm relays and alarm indication
- Wet well level analog input zero and span adjustments

BR5SL-PC-005
REV-A

MODEL BB4000 QUAD PUMP CONTROLLER

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

Input Power	120 VAC (±10%, 13 VA max), metal oxide varistor transient protection
EMI Line Filter	Pie type
Agency Approvals	UL508, CAN/CSA
Ambient Operating Temperature	Without analog outputs: -20 °C to +65 °C (-4 °F to +149 °F) With analog outputs: -20 °C to + 50 °C (-4 °F to +122 °F)
Level Display	3-digit, 7-segment LED, 0-25 foot range (selectable decimal point position)
Indicators	LED
Color	White with Blue silk screening
Relays	6A at 250 VAC. 6A at 30 VDC
Loop Powered Supply	Isolated +24 VDC at 50 mA, regulated
Level Analog Input	Isolated 4-20 mA, 250 Ω load, transient protected
Discrete Inputs	Optically isolated and transient protected. Each input draws 7 mA at 24 VDC
Power for Discrete Inputs	Unregulated 24 VDC. Transient protected.
Power for Analog Inputs	Regulated 20 VDC ±1V. Transient protected.
Analog Outputs	Isolated 4-20 mA. Maximum load resistance: 600 Ω. Each output may be configured as a speed reference for any of the pumps, or set to follow well level input.
Auxiliary Analog Inputs	4 isolated 4-20 mA. 250 Ω load, transient protected.
Variable Frequency	• VFD speed reference: the controller must be ordered with an analog output Drive Control for speed control of each pump that will be on a VFD. • Three setup parameters are provided to establish a linear wet level v/s pump speed curve. • Pump speed clamp logic: will not allow VFD speed reference to drop below the "VFD Minimum Speed" setup parameter value. • Pump start speed boost logic: if enabled, will temporarily ramp pump speed to 100% to give the check valve a chance to open. • Call pump last logic: the controller will call pumps in the Bypass Mode last (external circuitry must be connected to discrete inputs on the controller, to signal when a pump is in the Bypass Mode).

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BIRDCAGE® SERIES SURGE PROTECTOR

MODEL BCP3000

Model BCP3000
Birdcage® Series Surge Protector

FEATURES:

- Lifetime warranty against lightning and voltage surges for BC001 Birdcage®
- 17mm DIN rail mount chassis (BCP3006)
- Replaceable surge module (BCP3005)
- On-board failure lights go from green to red
- For 4-20mA or 0-5Vdc systems
- High current gas discharge tubes (GDT)
- Fast response Surge-Arresting Diodes (SAD)

TECHNICAL SPECIFICATIONS:

- Power: 24 VDC
- IEC Category/EN Type: C1/C2/C3/D1
- Highest Continuous Voltage (Uc): DC/AC: 28V/20V
- Lightning Test Current (Limp) Per Path: 2.5 kA
- Nominal Current In: 450 MA
- Nominal Discharge Surge Current (8/20) μs: 10 ka
- Total Surge Current (8/20) μs: 20 kA
- Response Time: < 1 ms
- Resistance per Path: 2.2 Ω
- Insulation Test Voltage: 500 VDC
- Auxiliary Voltage Un: 8 VDC.38 VDC
- Auxiliary Power: < 0.8 w
- Temperature Range: -40° to +85°C
- Protection: IP20
- Test Standard: IEC61643 / DIN EN 61643-21
- Remote Indication Contact: N/C Contact
- Max. Operating Voltage: 250 VAC
- Dimensions (H x W x D): 99 x 17.5 x 90 mm
- Max. Operating Current: 0.2A (250 VAC) / 0.2a (220 VDC)

BR5SL-TXa-025
REV-A

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