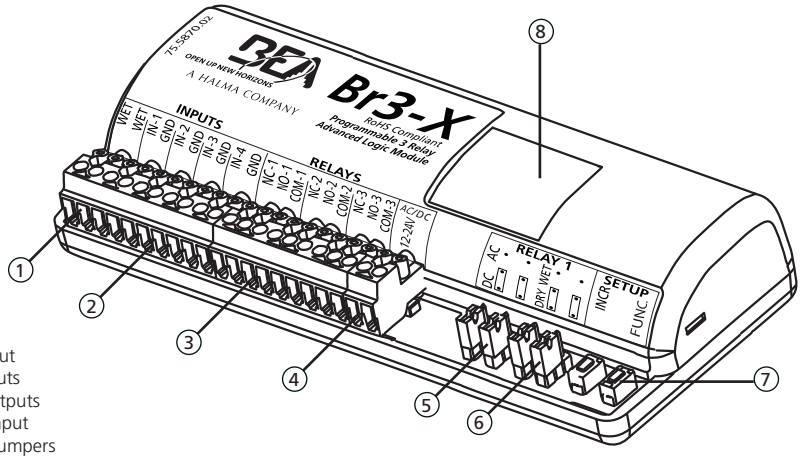
BR3-X

Programmable, 3-Relay, Advanced Logic Module & Restroom Controller

Visit website for available languages of this document.



1. WET input
2. DRY inputs
3. Relay outputs
4. Power input
5. AC/DC jumpers
6. WET/DRY jumpers
7. Programming buttons
8. 7-segment display

TECHNICAL SPECIFICATIONS

ELECTRICAL

Supply Voltage	12 – 24 VAC/VDC ±10%
Current Consumption	30 – 130 mA (DRY output)
Input	
Input 1, 2, 3, 4	DRY contact
WET input	5-24 VAC/VDC ±10%
Contact Rating	
Relay 1 (DRY)	3 A @ 24 VAC or 30 VDC
Relay 1 (WET)	1 A
Relay 2	3 A @ 24 VAC or 30 VDC
Relay 3	1 A @ 24 VAC or 30 VDC

PHYSICAL

Dimensions	5.2" x 2.2" x 1" (133 mm x 55 mm x 25 mm)
Housing	ABS - white translucent
Temperature Rating	-15 – 150 °F (-26 – 65 °C) *

If powered by AC voltage and using WET output to convert to DC voltage and current draw of device is greater than 0.9 A, the upper temperature range is 130 °F (54 °C)

Specifications are subject to change without prior notice.
All values measured in specific conditions.

PRECAUTIONS

CAUTION

- ❑ Shut off all power going to header before attempting any wiring procedures.
- ❑ Maintain a clean & safe environment when working in public areas.
- ❑ Constantly be aware of pedestrian traffic around the door area.
- ❑ Always stop pedestrian traffic through the doorway when performing tests that may result in unexpected reactions by the door.
- ❑ ESD (electrostatic discharge): Circuit boards are vulnerable to damage by electrostatic discharge. Before handling any board ensure you dissipate your body's ESD charge by touching a grounded surface.
- ❑ Always check placement of all wiring before powering up to ensure that moving door parts will not catch any wires and cause damage to equipment.
- ❑ Ensure compliance with all applicable safety standards (i.e. ANSI A156.10) upon completion of installation.
- ❑ DO NOT attempt any internal repair of the components. All repairs and/or component replacements must be performed by BEA, Inc. Unauthorized disassembly or repair:
  1. May jeopardize personal safety and may expose one to the risk of electrical shock.
  2. May adversely affect the safe and reliable performance of the product resulting in a voided warranty.

JUMPERS

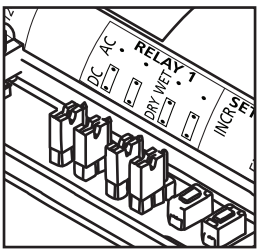
PRECAUTIONS TO OBSERVE WHEN USING A 'WET' OUTPUT

- ❑ Never change the jumper settings when the module has power connected to it or when a load is applied.
- ❑ Never allow 2 different voltage sources to be connected to the load (electric strike for example) at the same time. This can result in serious damage to equipment.
- ❑ Always move both jumpers when changing a jumper set.
- ❑ If an EL device is being powered by a separate power source, DO NOT select the 'WET' output option on the BR3-X. If 'WET' is selected, the next activation of the module will send a voltage to the load and if there is already a voltage being applied from another source, the BR3-X and possibly the load will be permanently damaged.
- ❑ When using the 'WET' output option on the BR3-X, set all desired switch positions ('WET' – 'DRY' and AC – DC) before the module is powered and before any loads are applied.
- ❑ When DC 'WET' output is selected, COM terminal is positive(+) and the ground(-) is switched between NO and NC.
- ❑ Ensure there is no other voltage connected to the load. Whatever the Input voltage is at the BR3-X, the output will correspond. The following can also be observed:
  1. If voltage Input at the BR3-X is AC, then output selection can be AC or DC.
  2. If voltage Input at the BR3-X is DC, then output selection can only be DC.
  3. The maximum load applied to Relay 1 should never exceed 1A. If more than one device is to be connected, add the consumption values together for a total value. If current is excessive, damage to equipment can result.
  4. On the BR3-X, the 'WET' output is only available at Relay 1.
- ❑ When supplying BR3-X with AC input voltage and selecting Relay 1 output for 'WET' and DC OUTPUT VOLTAGE, note that the resulting DC output will be the rectified AC input voltage and therefore, about 40% higher than the AC input voltage (rms).

***CAUTION:* Relay 1 'WET' OPTION IS ACTIVE FOR ALL FUNCTIONS!**

RELAY 1 OUTPUT	DRY/WET JUMPER[2]	AC OUTPUT VOLTAGE[3]	DC OUTPUT VOLTAGE[4]
DRY	both jumpers set to DRY	N/A	N/A
WET[1]	both jumpers set to WET	both jumpers set to AC	both jumpers set to DC

NOTES:
1. "WET output" allows the BR3-X to supply a voltage output of up to 1 A on relay 1 for powering maglocks or electric strikes directly from the BR3-X. Rating of power supply which powers the BR3-Xmust be at least 1 A.
2. Default jumper settings make relay 1 DRY.
3. AC voltage only available if BR3-Xis powered by AC voltage.
4. DC voltage available if BR3-Xis powered by AC or DC voltage.

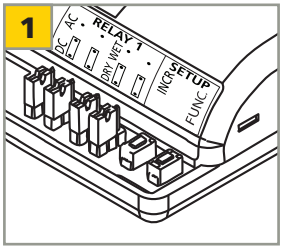


FUNCTIONS

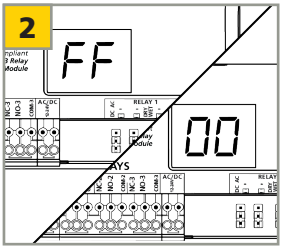
FUNC.	DESCRIPTION	LOGIC	COMMON APPLICATIONS
10	timer	• activation of **relay 1** via trigger of **input 1** • **reverse logic** available	door controls with no time delay
11	ratchet / latching	• ratchet/latching of **relay 1** via trigger of **input 1**	automatic door with multiple time delay needs (push-to-open, push-to-close)
22	2-relay sequencer + inhibitor	• sequence of **relay 1** and **relay 2** with inhibiting of **input 1** until **input 2**, **input 3**, or **WET input** is triggered • activation of **input 4** reinhibits **input 1**	knowing-act door with secondary activation and electric locking
28	2-relay sequencer + door position	• sequence of **relay 1** and **relay 2** via trigger of **input 1** or **WET input** • **input 2** allows delay to run when open but not when closed	automatic door with electric locking
29	deactivation timer	• sequence of **relay 1** and **relay 2** via trigger of **input 1** or **WET input** • **input 2**, once opened after sequence, allows **relay 1** to deactivate • **input 2** allows delay to run when open but not when closed • **input 3** disables sequence, **reverse logic** available	automatic door with electric deadbolt
36	3-relay sequencer + '1-shot'	• sequence of **relay 1** and **relay 2** and **relay 3** via trigger of **input 1** or **WET input** • **relay 1**, **relay 2**, and **relay 3** can be maintained or '1-shot'	pair of doors with electric locking and automatic flush-bolts in "hold open"
37	3-relay sequence with 'independent relay'	• sequence of **relay 1** and **relay 2** and **relay 3** via trigger of **input 1** or **WET input** • **relay 1**, **relay 2**, and **relay 3** can be 'independent' or sequenced	automatic door with electric locking; one input unlocks and opens door, another inout only unlocks the door
50	interlock timer	• interlock of **relay 1** and **relay 2** via trigger of **input 1** and **input 2**, respectively	timer-based air lock
55	interlock ratchet / latching	• interlock ratchet of **relay 1** and **relay 2** via trigger of **input 1** and **input 2**, respectively	ratchet-based air lock
65	2-way 2-relay sequence	• sequence of **relay 1** and **relay 2** via trigger of **input 1** • sequence of **relay 2** and **relay 1** via trigger of **input 2** • **input 3** triggers **relay 1** individually, **input 4** triggers **relay 2** individually	2-way traffic vestibule with automatic doors
nL	normally locked restroom	• sequence of **relay 1** (lock), **relay 2** (door), and **relay 3** (occupied indicators) for normally locked, single occupancy restrooms	normally locked, single occupancy restroom
nU	normally unlocked restroom	• sequence of **relay 1** (lock), **relay 2** (door), and **relay 3** (occupied indicators) for normally unlocked, single occupancy restrooms	normally locked, single occupancy restroom
dn	3-relay sequencer + 'day / night mode'	• sequence of **relay 1** and **relay 2** and **relay 3** via trigger of **input 1** or **WET input** • **input 2** operation dependent upon **input 4** ('day / night mode')	automatic door with electric locking, outside push plate needs disabled after-hours
00	disable	• BR3-X disabled • 00 is the default setting and has no assigned function	factory default

PARAMETERS

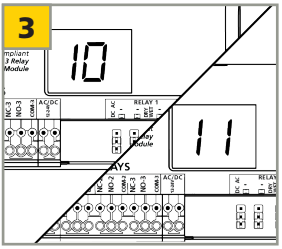
PARAMETER	DESCRIPTION	LOGIC	
h1	relay 1 hold time	00 - 60 seconds: countdown begins AFTER release of input 1 or WET input	
h2	relay 2 hold time	00 - 60 seconds: countdown begins AFTER d1 (delay between relay 1 & relay 2) expires	
h3	relay 3 hold time	00 - 60 seconds: countdown begins AFTER d2 (delay between relay 1 & relay 3) expires	
d1	delay between relay 1 & relay 2	00 - 60, _1 (1/4), _2 (1/2), _3 (3/4) seconds: delay begins AT activation of input 1 or WET input	
d2	delay between relay 1 & relay 3	00 - 60, _1 (1/4), _2 (1/2), _3 (3/4) seconds: delay begins AT activation of input 1 or WET input	
rL	reverse logic	00 = normal logic input 1 trigger must be NO and close its contact to trigger	01 = reverse logic input 1 trigger must be NC and open its contact to trigger
nP	no parameters	no parameters available for selected function	



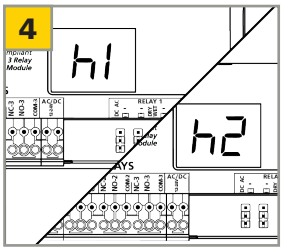
Press and hold INCR + FUNC for 3 seconds.



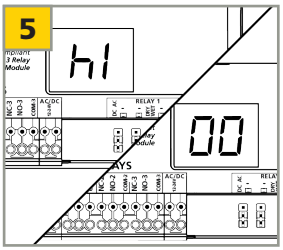
Display will toggle between FF and 00 for 5 seconds.[1,2]



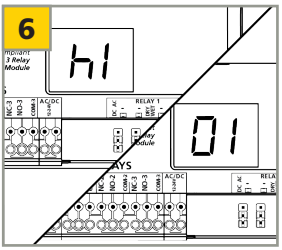
While FF / 00 is displayed, press INCR to cycle through functions.



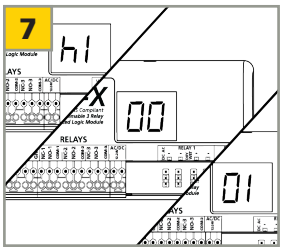
Once desired function is selected, press FUNC to cycle through parameters.



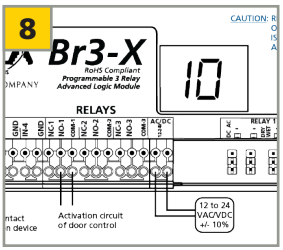
Display will toggle between parameter and its current value for 5 seconds.



Press[3] INCR to cycle through parameter's values.



Repeat steps 4-7 until all function parameters are set.



Wait 5 seconds for BR3-X to save and display function.

NOTES:

1. Function 00 disables the BR3-X.
2. "nP" means no parameters are applicable for the selected function.
3. Pressing and holding INCR will rapid cycle.

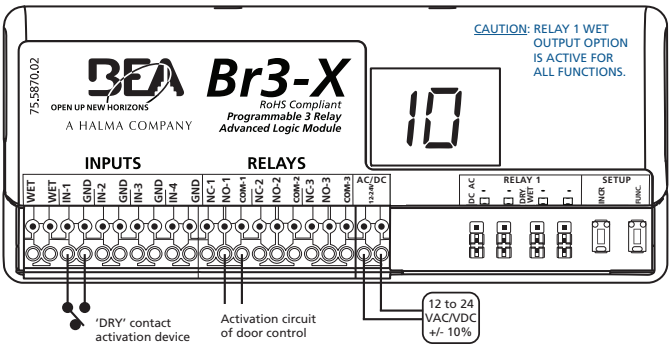
Relay hold time(s) and delay time(s) MUST be set for any relay that is to be utilized.

Ex: For function 36, if using only relay 1, h1 must be set...if using relay 1 and relay 2, h1, h2, and d1 must be set.

PROGRAMMING PARAMETERS

Each BR3-X function is wired differently. Please review and follow the appropriate wiring diagram shown for each function.

10 – timer



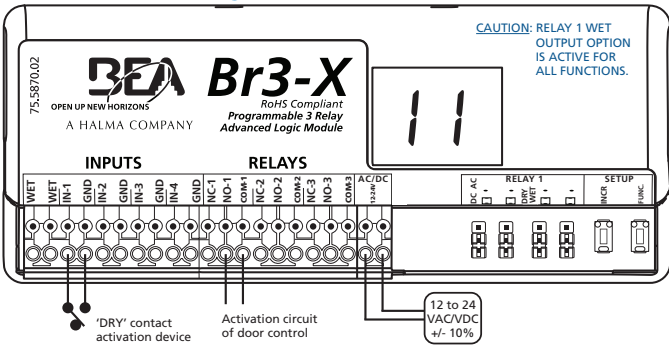
AVAILABLE PARAMETERS:

h 1 - relay 1 hold time
rL - reverse logic

1. Trigger INPUT 1.
   - RELAY 1 will close and hold for time h 1.

FUNCTION 10 NOTE: Reverse logic allows for a Normally Closed (NC) INPUT 1.

11 – ratchet / latching

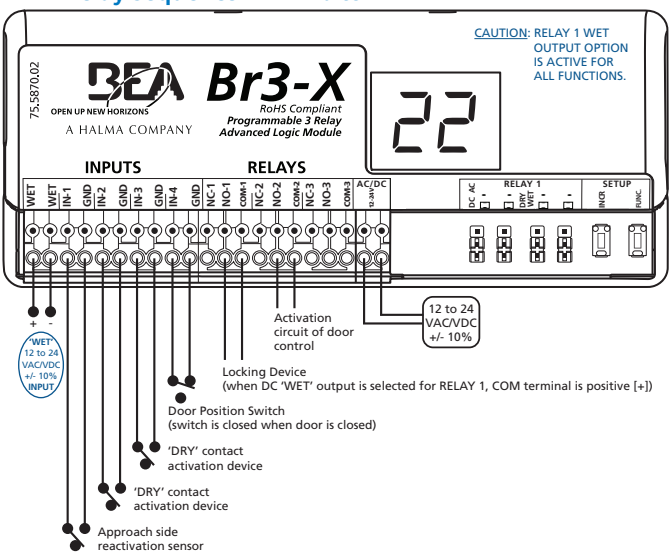


AVAILABLE PARAMETERS:

NONE

1. Trigger INPUT 1.
   - RELAY 1 will close and hold indefinitely.
2. Trigger INPUT 1.
   - RELAY 1 will open.

22 – 2-relay sequencer + inhibitor



AVAILABLE PARAMETERS:

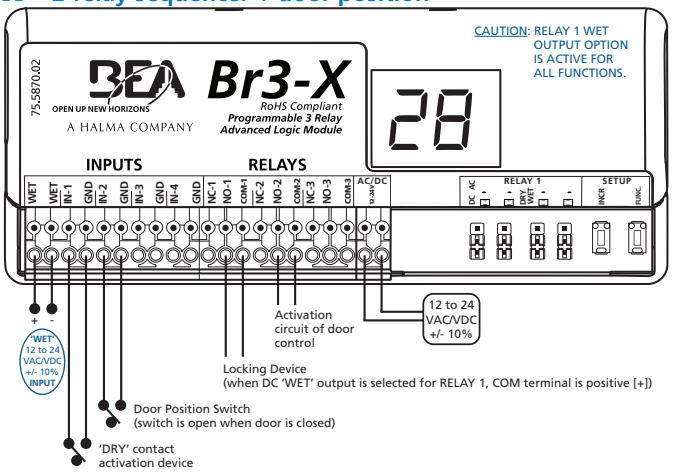
h 1 - relay 1 hold time
h2 - relay 2 hold time
d 1 - delay between relays 1 & 2

h 1 must be greater than d 1 when using an electric lock

1. Trigger INPUT 2, 3, or 'WET'.
   - RELAY 1 will close and hold for time h 1.
   - RELAY 2 will close after time delay d 1 and hold for time h2.

FUNCTION 22 NOTE: Ensure INPUT 1 does not initiate the sequence and that INPUT 4 is closed when the door is closed.

28 – 2-relay sequencer + door position



AVAILABLE PARAMETERS:

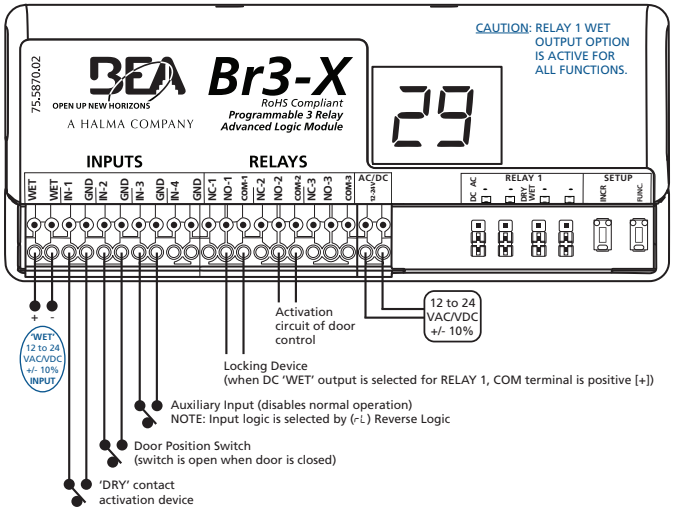
h 1 - relay 1 hold time
h2 - relay 2 hold time
d 1 - delay between relays 1 & 2

h 1 must be greater than d 1 when using an electric lock

1. Trigger INPUT 1 or 'WET'.
   - RELAY 1 will close and hold for time h 1.
   - RELAY 2 will close after time delay d 1 and hold for time h2.

FUNCTION 28 NOTE: INPUT 2 allows the delay to run when the contact is open but triggers RELAY 2 immediately when the contact is closed.

29 – deactivation timer



AVAILABLE PARAMETERS:

h 1 - relay 1 hold time
h2 - relay 2 hold time
d 1 - delay between relays 1 & 2
rL - reverse logic

h 1 must be greater than d 1 when using an electric lock

1. Trigger INPUT 1 or 'WET'.
   - RELAY 1 will close and hold for time h 1.
   - RELAY 2 will close after time delay d 1 and hold for time h2.

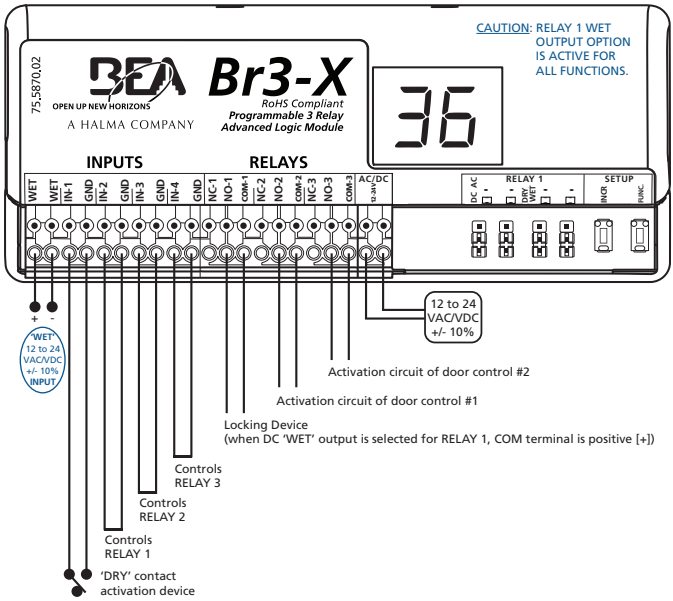
FUNCTION 29 NOTE:

INPUT 2 deactivates RELAY 1 once INPUT 2 is opened (and after the sequence has run).

INPUT 2 allows the delay to run when the contact is open, but triggers RELAY 2 immediately when the contact is closed.

INPUT 3 disables the sequence.

36 – 3-relay sequencer + '1-shot'



AVAILABLE PARAMETERS:

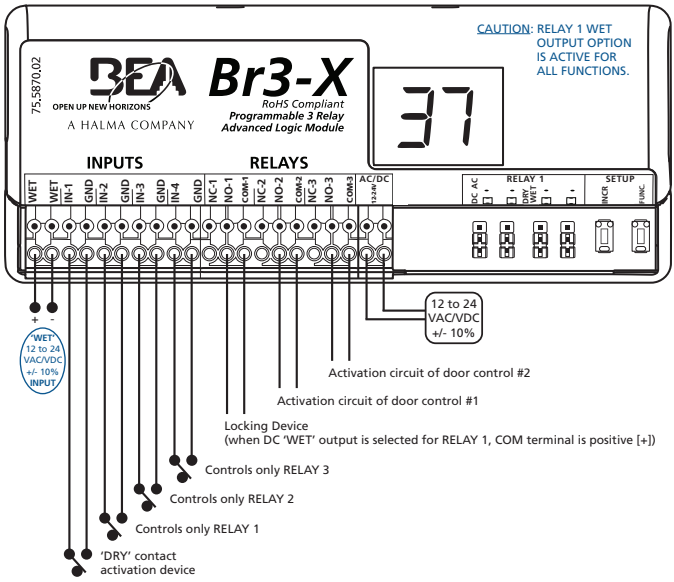
h 1 - relay 1 hold time
h2 - relay 2 hold time
h3 - relay 3 hold time
d 1 - delay between relays 1 & 2
d2 - delay between relays 1 & 3

h 1 must be greater than d 1 when using an electric lock

1. Trigger INPUT 1 or 'WET'.
   - RELAY 1 will close and hold for time h 1.
   - RELAY 2 will close after time delay d 1 and hold for time h2.
   - RELAY 3 will close after time delay d2 and hold for time h3.

FUNCTION 36 NOTE: If INPUT 1 or 'WET' is maintained, jumping INPUT 2, 3, and/or 4 will allow RELAY 1, 2, and/or 3 (respectively) to close, run the hold time and then open. If no jumpers are set, RELAYS 1, 2, and/or 3 will close, hold and not time out (open, i.e. 1-shot) until INPUT 1 or 'WET' is released.

37 – 3-relay sequence with 'independent relay'



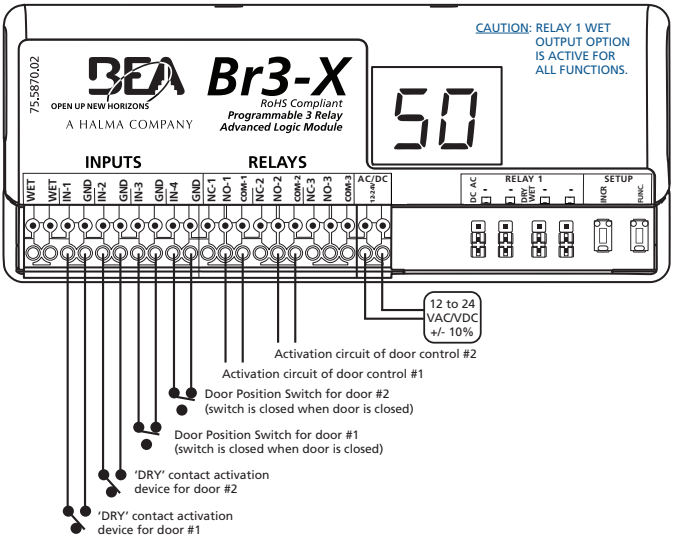
AVAILABLE PARAMETERS:

h 1 - relay 1 hold time
h2 - relay 2 hold time
h3 - relay 3 hold time
d 1 - delay between relays 1 & 2
d2 - delay between relays 1 & 3

h 1 must be greater than d 1 when using an electric lock

1. Trigger INPUT 1 or 'WET'.
   - RELAY 1 will close and hold for time h 1.
   - RELAY 2 will close after time delay d 1 and hold for time h2.
   - RELAY 3 will close after time delay d2 and hold for time h3.
2. Trigger INPUT 2.
   - RELAY 1 will close and hold for time h 1.
3. Trigger INPUT 3.
   - RELAY 2 will close and hold for time h2.
4. Trigger INPUT 4.
   - RELAY 3 will close and hold for time h3.

50 – interlock timer



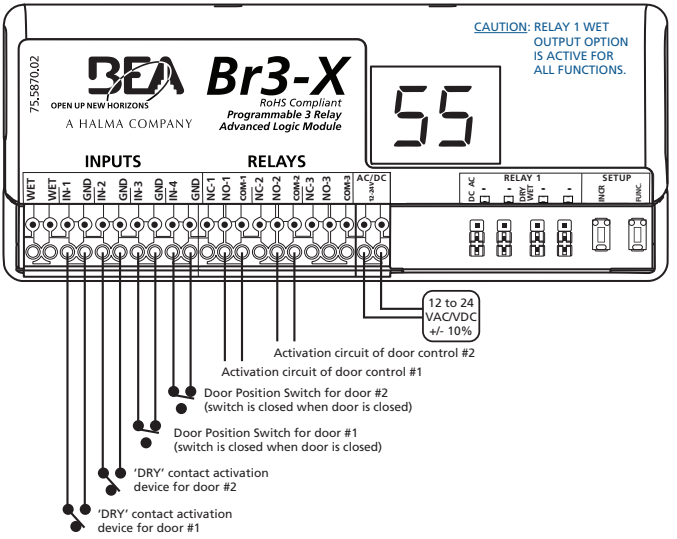
AVAILABLE PARAMETERS:

h1 - relay 1 hold time
h2 - relay 2 hold time

1. Trigger INPUT 1.
   - RELAY 1 will close and hold for time h1.
2. Trigger INPUT 2.
   - RELAY 2 will close and hold for time h2.

FUNCTION 50 NOTE: If INPUT 1 is triggered, INPUT 2 and RELAY 2 will be inhibited until INPUT 3 (door position switch) is closed. Conversely, if INPUT 2 is triggered, INPUT 1 and RELAY 1 will be inhibited until INPUT 4 (door position switch) is closed.

55 – interlock ratchet / latching



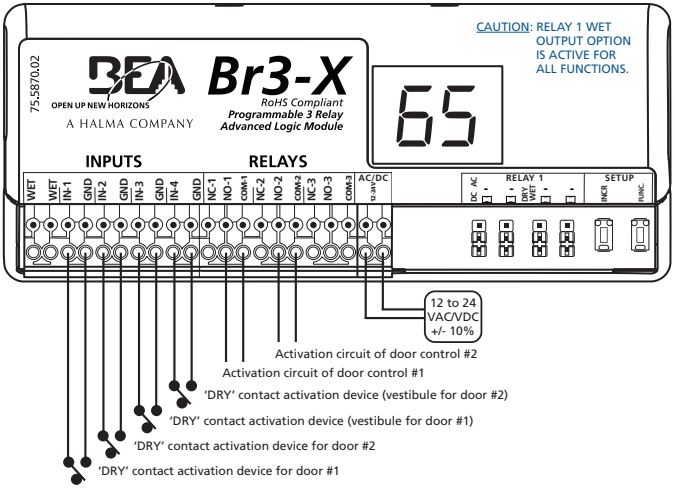
AVAILABLE PARAMETERS:

NONE

1. Trigger INPUT 1.
   - RELAY 1 will close and hold until indefinitely.
2. Trigger INPUT 1.
   - RELAY 1 will open.
3. Trigger INPUT 2.
   - RELAY 2 will close and hold indefinitely.
4. Trigger INPUT 2.
   - RELAY 2 open.

FUNCTION 55 NOTE: If INPUT 1 is triggered, INPUT 2 and RELAY 2 will be inhibited until INPUT 3 (door position switch) is closed. Conversely, if INPUT 2 is triggered, INPUT 1 and RELAY 1 will be inhibited until INPUT 4 (door position switch) is closed.

65 – 2-way 2-relay sequence

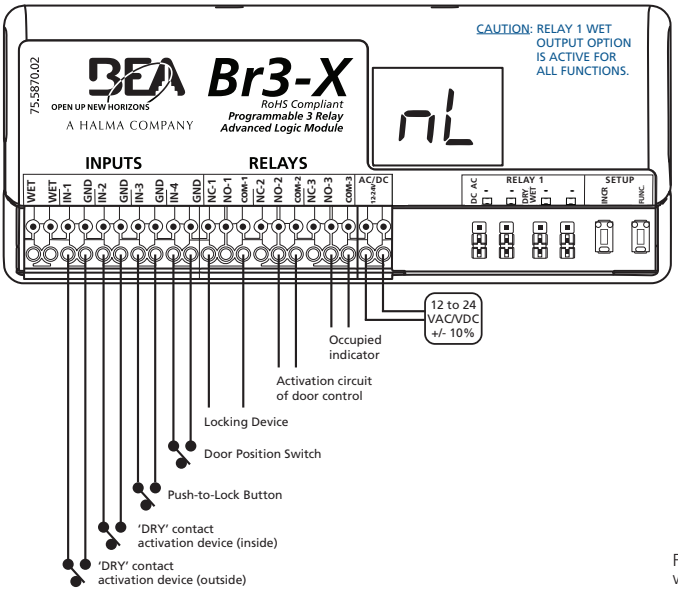


AVAILABLE PARAMETERS:

h 1 - relay 1 hold time
h2 - relay 2 hold time
d 1 - delay between relays 1 & 2
d2 - delay between relays 2 & 1

1. Trigger INPUT 1.
   - RELAY 1 will close and hold for time h 1.
   - RELAY 2 will close after time delay d 1 and hold for time h2.
2. Trigger INPUT 2.
   - RELAY 2 will close and hold for time h2.
   - RELAY 1 will close after time delay d2 and hold for time h 1.
3. Trigger INPUT 3.
   - RELAY 1 will close and hold for time h 1.
4. Trigger INPUT 4.
   - RELAY 2 will close and hold for time h2.

nL – normally locked restroom



AVAILABLE PARAMETERS:

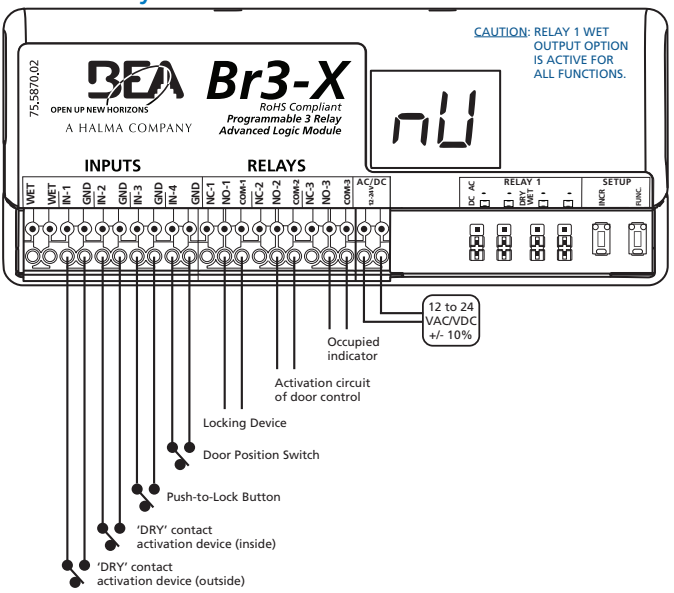
h 1 - relay 1 hold time
h2 - relay 2 hold time
d 1 - delay between relays 1 & 2

h 1 must be greater than d 1

1. Trigger INPUT 1.
   - RELAY 1 will close and hold for time h 1.
   - RELAY 2 will close after time delay d 1 and hold for time h2.
2. Trigger INPUT 3.
   - RELAY 3 will close and INPUT 1 will be inhibited.
3. Trigger INPUT 2.
   - RELAY 1 will close and hold for time h 1.
   - RELAY 2 will close after time delay d 1 and hold for time h2.
   - RELAY 3 will open.

FUNCTION nL NOTE: INPUT 3 will not function unless INPUT 4 is closed. INPUT 4 should be closed when door is closed.

nU – normally unlocked restroom



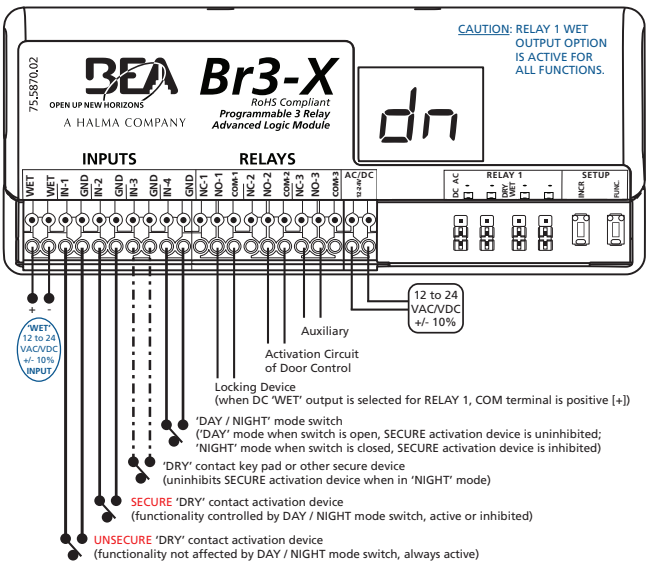
AVAILABLE PARAMETERS:

h2 - relay 2 hold time
d1 - delay between relays 1 & 2

1. Trigger INPUT 1.
   - RELAY 2 will close and hold for time h2.
2. Trigger INPUT 3.
   - RELAY 1 and 3 will close and INPUT 1 will be inhibited.
3. Trigger INPUT 2.
   - RELAY 1 will open.
   - RELAY 2 will close after time delay d1 and hold for time h2.
   - RELAY 3 will open.

FUNCTION nU NOTE: INPUT 3 will not function unless INPUT 4 is closed. INPUT 4 should be closed when door is closed.

dn – 3-relay sequence with 'day / night mode'



AVAILABLE PARAMETERS:

h1 - relay 1 hold time
h2 - relay 2 hold time
h3 - relay 3 hold time
d1 - delay between relays 1 & 2
d2 - delay between relays 1 & 3

1. Trigger INPUT 1, INPUT 2, or 'WET'.
   - RELAY 1 will close and hold for time h1.
   - RELAY 2 will close after time delay d1 and hold for time h2.
   - RELAY 3 will close after time delay d2 and hold for time h3.
2. Trigger INPUT 3.
   - RELAY 1 will close and hold for time h1.
   - INPUT 2 will be uninhibited for 5 seconds.

FUNCTION dn NOTE: INPUT 2 will only function if INPUT 4 is open.

TEST

Upon completion of jumper settings, wiring, and programming, test the BR3-X to ensure all function parameters are working correctly and as intended for the specific application.

RELAY STATUS

STATUS	DESCRIPTION
r1	relay 1 closed when wired NO or open when wired NC
r2	relay 2 closed when wired NO or open when wired NC
r3	relay 3 closed when wired NO or open when wired NC
r=	relay 1 and relay 2 closed when wired NO or open when wired NC
r=	relay 1 and relay 3 closed when wired NO or open when wired NC
r≡	relay 1, relay 2, and relay 3 closed when wired NO or open when wired NC

FUNCTION CROSS REFERENCE

BR3 FUNCTION	BR3-X FUNCTION
21	22
25	28, 29, 36, or 37
35	36 or 37
75	28, 29, 36, or 37

TROUBLESHOOTING

BR3-X will not react to any inputs	Incorrect power	Verify power supply of 12 to 24 VAC/VDC +/-10% is wired to correct terminals
	Not programmed	Ensure a function is programmed, BR3-X does not show 00, and all 'H' values are set to at least 01
	Incorrect wiring	Verify wiring is applied exactly as described for specific function programmed
	Defective BR3-X	Replace BR3-X
BR3-X has no output	Incorrect output devices	Ensure proper devices are connected to outputs for the specific function programmed
	Not programmed	Ensure a function is programmed, BR3-X does not show 00, and all 'H' values are set to at least 01
	Incorrect wiring	Verify wiring is applied exactly as described for specific function programmed
	Incorrect jumper settings	Ensure all jumpers are configured correctly for specific application
	Defective BR3-X	Replace BR3-X
BR3-X output is constant/maintained	One or more of IN-1 through IN-4 have shorted	Resolve respective short
E1, E2, E3, E4, E5	EEPROM error	Reset BR3-X and reprogram

Can't find your answer? Visit www.beainc.com or scan QR code for Frequently Asked Questions!

BEA, INC. INSTALLATION/SERVICE COMPLIANCE EXPECTATIONS

BEA, Inc., the sensor manufacturer, cannot be held responsible for incorrect installations or incorrect adjustments of the sensor/device; therefore, BEA, Inc. does not guarantee any use of the sensor/device outside of its intended purpose.

BEA, Inc. strongly recommends that installation and service technicians be AAADM-certified for pedestrian doors, IDA-certified for doors/gates, and factory-trained for the type of door/gate system.

Installers and service personnel are responsible for executing a risk assessment following each installation/service performed, ensuring that the sensor/device system performance is compliant with local, national, and international regulations, codes, and standards.

Once installation or service work is complete, a safety inspection of the door/gate shall be performed per the door/gate manufacturer's recommendations and/or per AAADM/ANSI/DASMA guidelines (where applicable) for best industry practices. Safety inspections must be performed during each service call – examples of these safety inspections can be found on an AAADM safety information label (e.g. ANSI/DASMA 102, ANSI/DASMA 107, UL294, UL325, and International Building Code).

Verify that all appropriate industry signage, warning labels, and placards are in place.

AAADM ANSI Member DASMA Door & Access Systems Manufacturers Association International IDA International Door Association *Enhancing the Value and Professionalism of Door & Access Systems Dealers*

BEA

www.gateopenersafety.com | 1(800)-878-7829 | sales@gateopenersafety.com