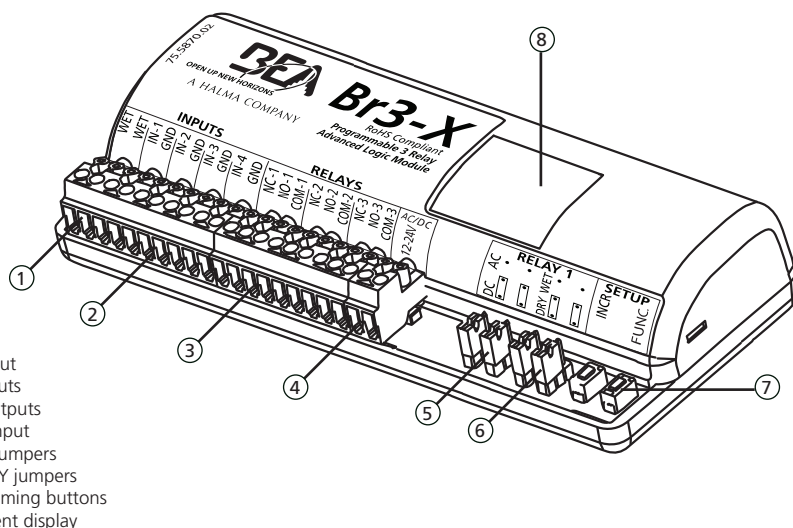


## BR3-X

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



Visit website for available  
languages of this document.



## TECHNICAL SPECIFICATIONS

### ELECTRICAL

<b>Supply Voltage</b>	12 – 24 VAC/VDC $\pm 10\%$
<b>Current Consumption</b>	30 – 130 mA (DRY output)

#### Input

Input 1, 2, 3, 4	DRY contact
WET input	5-24 VAC/VDC $\pm 10\%$

#### 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

<b>Dimensions</b>	5.2" x 2.2" x 1" (133 mm x 55 mm x 25 mm)
<b>Housing</b>	ABS - white translucent
<b>Temperature Rating</b>	-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



- ❑ 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

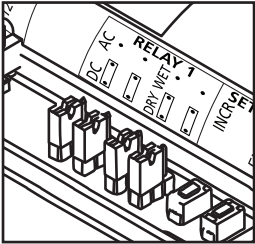
- ❑ Never change the jumper settings when the module has power connected to it or when a load is applied.
- ❑ Never allow 2 different voltage sources to be connected to the load (electric strike for example) at the same time. This can result in serious damage to equipment.
- ❑ Always move both jumpers 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 <sup>2</sup>	AC OUTPUT VOLTAGE <sup>3</sup>	DC OUTPUT VOLTAGE <sup>4</sup>
DRY	both jumpers set to DRY	N/A	N/A
WET <sup>1</sup>	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-X must be at least 1 A.
2. Default jumper settings make relay 1 DRY.
3. AC voltage only available if BR3-X is powered by AC voltage.
4. DC voltage available if BR3-X is powered by AC or DC voltage.

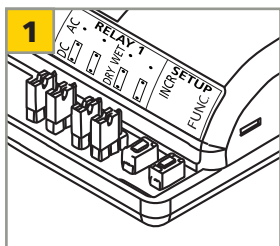


FUNCTIONS

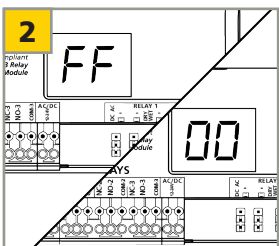
FUNC.	DESCRIPTION	LOGIC	COMMON APPLICATIONS
10	timer	<ul style="list-style-type: none"><li>activation of <b>relay 1</b> via trigger of <b>input 1</b></li><li><b>reverse logic</b> available</li></ul>	door controls with no time delay
11	ratchet / latching	<ul style="list-style-type: none"><li>ratchet/latching of <b>relay 1</b> via trigger of <b>input 1</b></li></ul>	automatic door with multiple time delay needs (push-to-open, push-to-close)
22	2-relay sequencer + inhibitor	<ul style="list-style-type: none"><li>sequence of <b>relay 1</b> and <b>relay 2</b> with inhibiting of <b>input 1</b> until <b>input 2</b>, <b>input 3</b>, or <b>WET input</b> is triggered</li><li>activation of <b>input 4</b> reinhibits <b>input 1</b></li></ul>	knowing-act door with secondary activation and electric locking
28	2-relay sequencer + door position	<ul style="list-style-type: none"><li>sequence of <b>relay 1</b> and <b>relay 2</b> via trigger of <b>input 1</b> or <b>WET input</b></li><li><b>input 2</b> allows delay to run when open but not when closed</li></ul>	automatic door with electric locking
29	deactivation timer	<ul style="list-style-type: none"><li>sequence of <b>relay 1</b> and <b>relay 2</b> via trigger of <b>input 1</b> or <b>WET input</b></li><li><b>input 2</b>, once opened after sequence, allows <b>relay 1</b> to deactivate</li><li><b>input 2</b> allows delay to run when open but not when closed</li><li><b>input 3</b> disables sequence, <b>reverse logic</b> available</li></ul>	automatic door with electric deadbolt
36	3-relay sequencer + '1-shot'	<ul style="list-style-type: none"><li>sequence of <b>relay 1</b> and <b>relay 2</b> and <b>relay 3</b> via trigger of <b>input 1</b> or <b>WET input</b></li><li><b>relay 1</b>, <b>relay 2</b>, and <b>relay 3</b> can be maintained or '1-shot'</li></ul>	pair of doors with electric locking and automatic flush-bolts in "hold open"
37	3-relay sequence with 'independent relay'	<ul style="list-style-type: none"><li>sequence of <b>relay 1</b> and <b>relay 2</b> and <b>relay 3</b> via trigger of <b>input 1</b> or <b>WET input</b></li><li><b>relay 1</b>, <b>relay 2</b>, and <b>relay 3</b> can be 'independent' or sequenced</li></ul>	automatic door with electric locking; one input unlocks and opens door, another inout only unlocks the door
50	interlock timer	<ul style="list-style-type: none"><li>interlock of <b>relay 1</b> and <b>relay 2</b> via trigger of <b>input 1</b> and <b>input 2</b>, respectively</li></ul>	timer-based air lock
55	interlock ratchet / latching	<ul style="list-style-type: none"><li>interlock ratchet of <b>relay 1</b> and <b>relay 2</b> via trigger of <b>input 1</b> and <b>input 2</b>, respectively</li></ul>	ratchet-based air lock
65	2-way 2-relay sequence	<ul style="list-style-type: none"><li>sequence of <b>relay 1</b> and <b>relay 2</b> via trigger of <b>input 1</b></li><li>sequence of <b>relay 2</b> and <b>relay 1</b> via trigger of <b>input 2</b></li><li><b>input 3</b> triggers <b>relay 1</b> individually, <b>input 4</b> triggers <b>relay 2</b> individually</li></ul>	2-way traffic vestibule with automatic doors
nL	normally locked restroom	<ul style="list-style-type: none"><li>sequence of <b>relay 1</b> (lock), <b>relay 2</b> (door), and <b>relay 3</b> (occupied indicators) for normally locked, single occupancy restrooms</li></ul>	normally locked, single occupancy restroom
nU	normally unlocked restroom	<ul style="list-style-type: none"><li>sequence of <b>relay 1</b> (lock), <b>relay 2</b> (door), and <b>relay 3</b> (occupied indicators) for normally unlocked, single occupancy restrooms</li></ul>	normally locked, single occupancy restroom
dn	3-relay sequencer + 'day / night mode'	<ul style="list-style-type: none"><li>sequence of <b>relay 1</b> and <b>relay 2</b> and <b>relay 3</b> via trigger of <b>input 1</b> or <b>WET input</b></li><li><b>input 2</b> operation dependent upon <b>input 4</b> ('day / night mode')</li></ul>	automatic door with electric locking, outside push plate needs disabled after-hours
00	disable	<ul style="list-style-type: none"><li>BR3-X disabled</li><li>00 is the default setting and has no assigned function</li></ul>	factory default

PARAMETERS

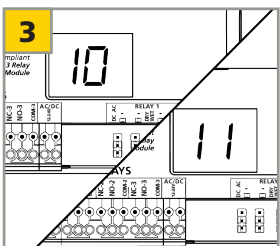
PARAMETER	DESCRIPTION	LOGIC	
h1	relay 1 hold time	00 - 60 seconds: countdown begins AFTER release of input 1 or WET input	
h2	relay 2 hold time	00 - 60 seconds: countdown begins AFTER d1 (delay between relay 1 & relay 2) expires	
h3	relay 3 hold time	00 - 60 seconds: countdown begins AFTER d2 (delay 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	



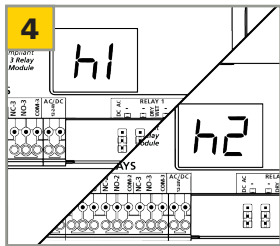
Press and hold INCR + FUNC for 3 seconds.



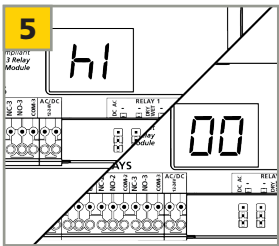
Display will toggle between FF and 00 for 5 seconds.<sup>1,2</sup>



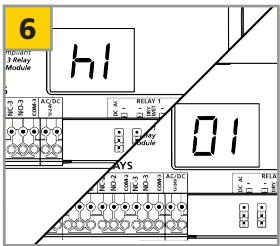
While FF / 00 is displayed, press INCR to cycle through functions.



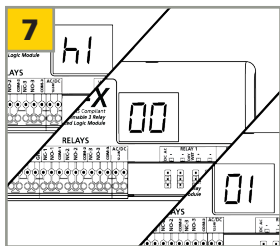
Once desired function is selected, press FUNC to cycle through parameters.



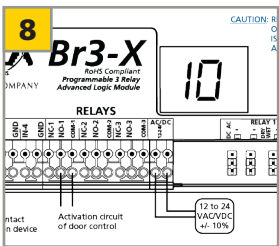
Display will toggle between parameter and its current value for 5 seconds.



Press<sup>3</sup> 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.

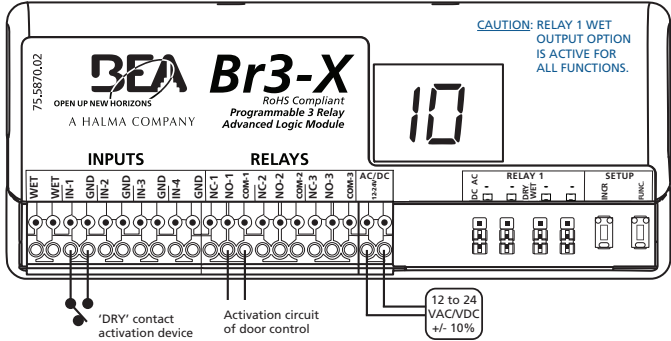


Relay hold time(s) and delay time(s) MUST be set for any relay that is to be utilized.  
Ex: For function 36, if using only relay 1, h1 must be set...if using relay 1 and relay 2, h1, h2, and d1 must be set.

PROGRAMMING PARAMETERS

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

#0 – timer

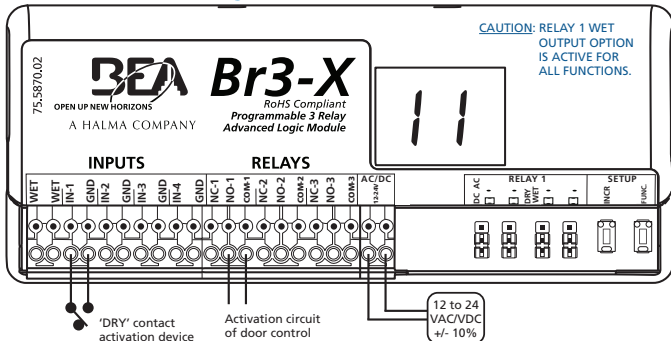


AVAILABLE PARAMETERS:

- h I - relay 1 hold time  
rL - reverse logic
1. Trigger INPUT 1.
- RELAY 1 will close and hold for time h I.

FUNCTION #0 NOTE: Reverse logic allows for a Normally Closed (NC) INPUT 1.

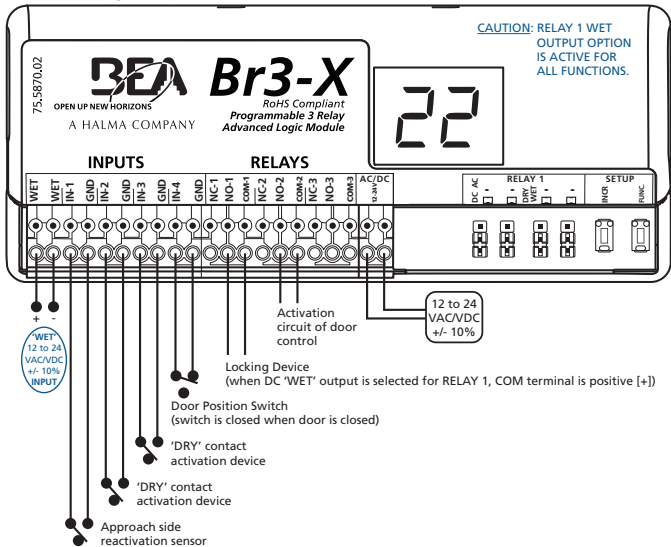
11 – ratchet / latching



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

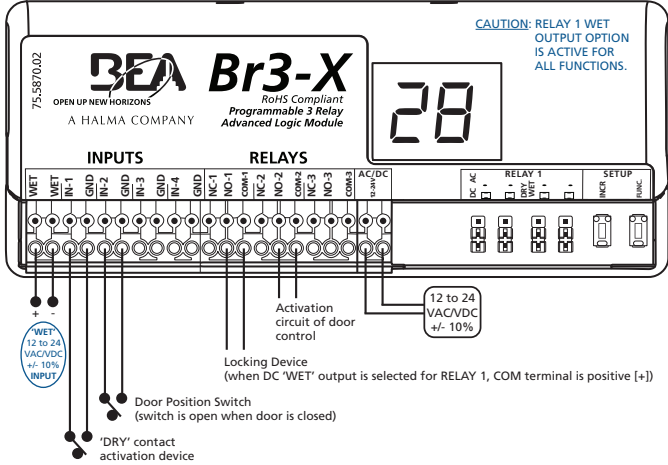


AVAILABLE PARAMETERS:

- h I - relay 1 hold time  
h2 - relay 2 hold time  
d I - delay between relays 1 & 2
- h I must be greater than d I when using an electric lock
1. Trigger INPUT 2, 3, or 'WET'.
- RELAY 1 will close and hold for time h I.
  - RELAY 2 will close after time delay d I 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:

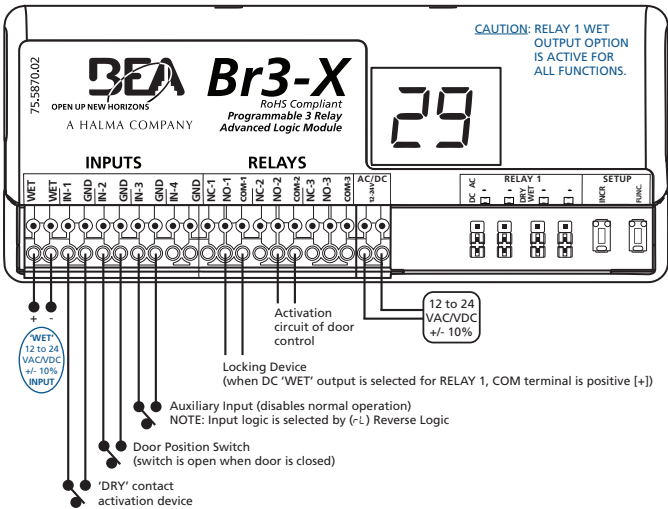
$h1$  - relay 1 hold time  
 $h2$  - relay 2 hold time  
 $d1$  - delay between relays 1 & 2

$h1$  must be greater than  $d1$  when using an electric lock

1. Trigger INPUT 1 or 'WET':
  - RELAY 1 will close and hold for time  $h1$ .
  - RELAY 2 will close after time delay  $d1$  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:

$h1$  - relay 1 hold time  
 $h2$  - relay 2 hold time  
 $d1$  - delay between relays 1 & 2  
 $rL$  - reverse logic

$h1$  must be greater than  $d1$  when using an electric lock

1. Trigger INPUT 1 or 'WET':
  - RELAY 1 will close and hold for time  $h1$ .
  - RELAY 2 will close after time delay  $d1$  and hold for time  $h2$ .

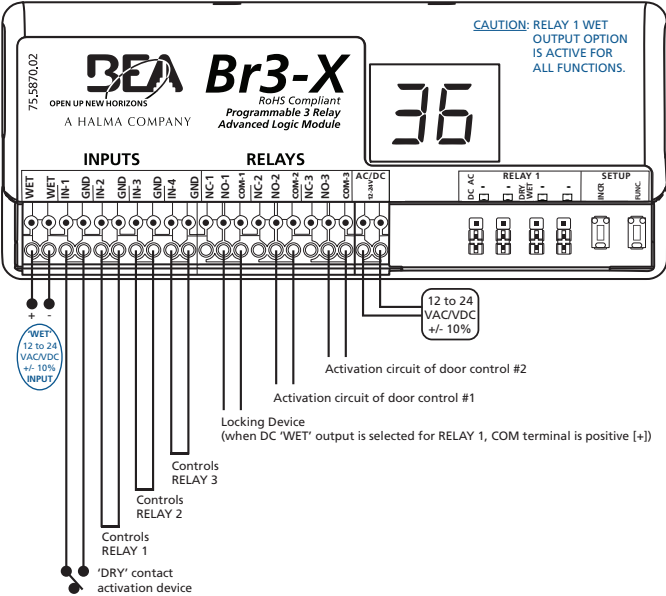
FUNCTION 29 NOTE:

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:

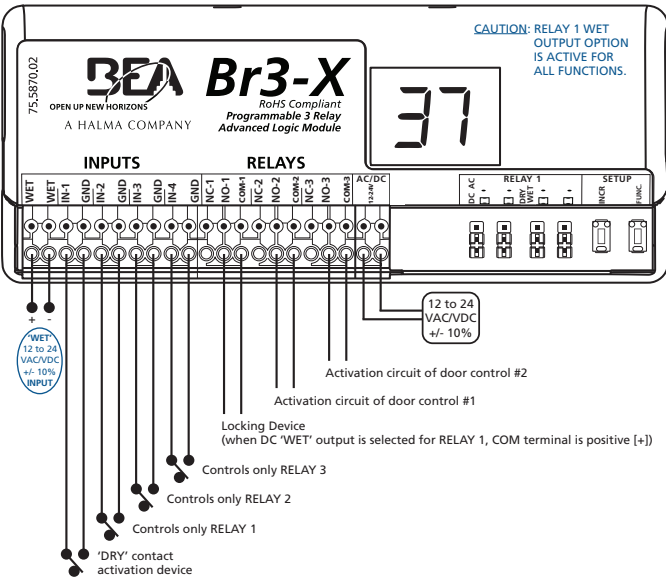
- $h_1$  - relay 1 hold time
- $h_2$  - relay 2 hold time
- $h_3$  - relay 3 hold time
- $d_1$  - delay between relays 1 & 2
- $d_2$  - delay between relays 1 & 3

$h_1$  must be greater than  $d_1$  when using an electric lock

- 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  $h_2$ .
  - RELAY 3 will close after time delay  $d_2$  and hold for time  $h_3$ .

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’



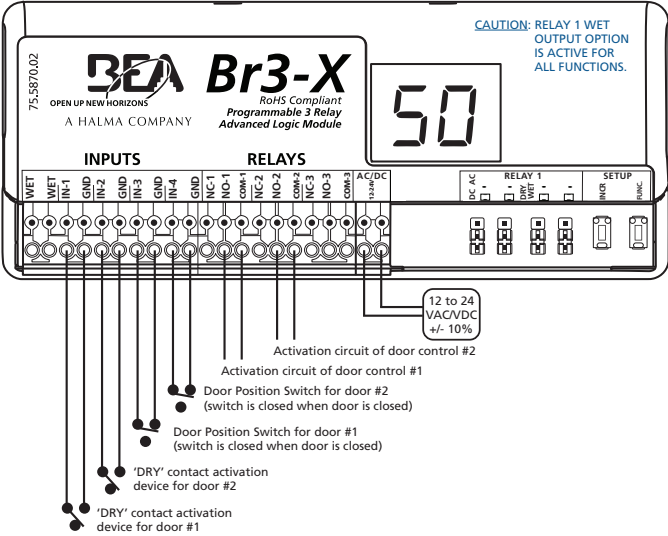
AVAILABLE PARAMETERS:

- $h_1$  - relay 1 hold time
- $h_2$  - relay 2 hold time
- $h_3$  - relay 3 hold time
- $d_1$  - delay between relays 1 & 2
- $d_2$  - delay between relays 1 & 3

$h_1$  must be greater than  $d_1$  when using an electric lock

- 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  $h_2$ .
  - RELAY 3 will close after time delay  $d_2$  and hold for time  $h_3$ .
- Trigger INPUT 2.
  - RELAY 1 will close and hold for time  $h_1$ .
- Trigger INPUT 3.
  - RELAY 2 will close and hold for time  $h_2$ .
- Trigger INPUT 4.
  - RELAY 3 will close and hold for time  $h_3$ .

50 – interlock timer



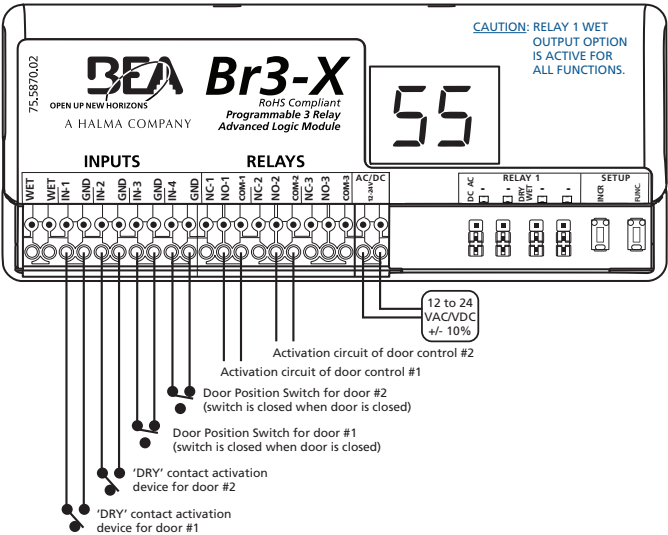
AVAILABLE PARAMETERS:

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:

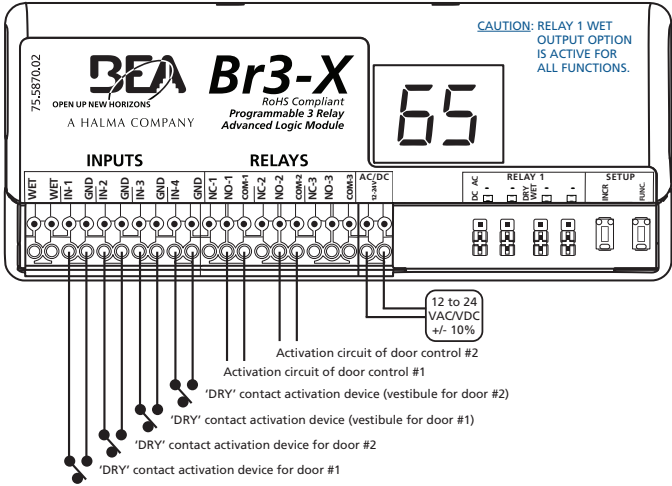
NONE

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.



55 – 2-way 2-relay sequence

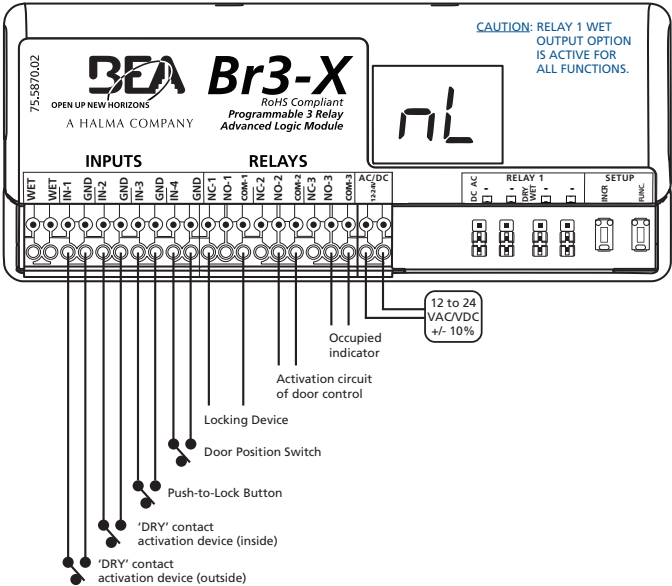


AVAILABLE PARAMETERS:

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

1. Trigger INPUT 1.
  - RELAY 1 will close and hold for time  $h1$ .
  - RELAY 2 will close after time delay  $d1$  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  $h1$ .
3. Trigger INPUT 3.
  - RELAY 1 will close and hold for time  $h1$ .
4. Trigger INPUT 4.
  - RELAY 2 will close and hold for time  $h2$ .

$nL$  – normally locked restroom



AVAILABLE PARAMETERS:

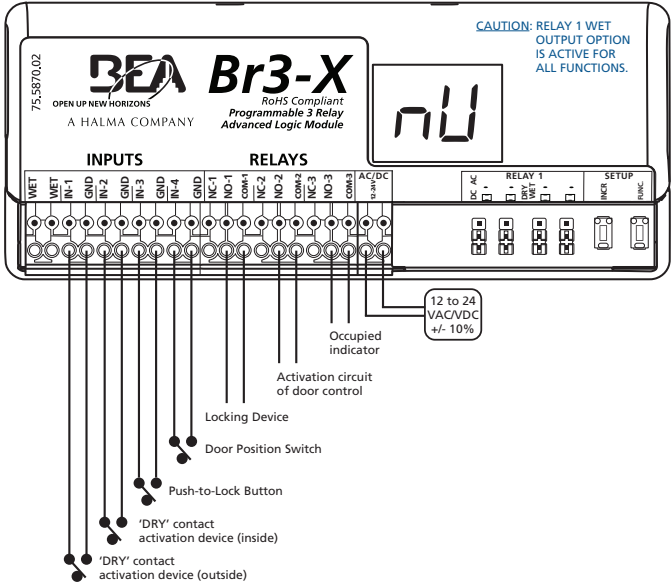
$h1$  - relay 1 hold time  
 $h2$  - relay 2 hold time  
 $d1$  - delay between relays 1 & 2

$h1$  must be greater than  $d1$

1. Trigger INPUT 1.
  - RELAY 1 will close and hold for time  $h1$ .
  - RELAY 2 will close after time delay  $d1$  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  $h1$ .
  - RELAY 2 will close after time delay  $d1$  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.

nl – normally unlocked restroom



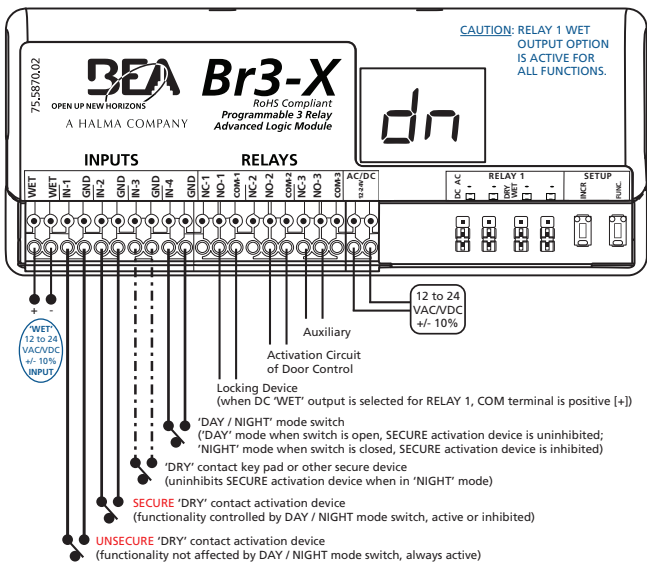
AVAILABLE PARAMETERS:

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 nl 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
r 1	relay 1 closed when wired NO or open when wired NC
r 2	relay 2 closed when wired NO or open when wired NC
r 3	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
2 1	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/DC +/-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 0 1
	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 0 1
	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
E 1, E2, E3, E4, E5	EEPROM error	Reset BR3-X and reprogram



Can't find your answer? Visit [www.beainc.com](http://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.

