./

GENESIS – BCM Simulink- External Lightning



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| --- | --- | --- | --- | --- | --- |
| **Ver. Rel. No.** | **Release Date** | **Prepared. By** | **Reviewed By** | **To be Approved** | **Remarks/Revision Details** |
| 1. | 21/12/2020 | Toti Shoba Rani |  |  |  |
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**Activity-5**

**BCM-External lightning**

**Requirements**

Low Level Requirements:

* Head Lights and Indicators of the car should be turn off when the power is enabled.
* For Head Lights there are three modes:

1) High Beam

2) Low Beam

3) Medium\Default

For all these modes the power should be Turn ON based on the Head Light Mode, one of the mode is selected

* For Indicator Power should be Enabled, when indicator mode to select whether Left, Right Indicator or Medium.
* When the car is turned off, head lights and indicators are turned off.

**Research**

Visibility on the road is crucial, and sometimes your headlights just won't cut it. Get everything you need for your car's external lighting at AutoZone. From headlight enclosures to light bars, from LED fog lights to side marker LEDs, we carry any car lights you need to see the road clearly.

Few things are more important than visibility on the road. This applies to more than just your car's headlights. In bad weather it can mean fog lights. Off-road it could mean an LED light bar. It could even mean making sure that there's enough license plate light to make sure your plate is easy to read. Visibility is crucial to the safety of drivers everywhere, but different lights are needed depending on where you drive. No matter where your drive takes you, AutoZone has the lights you need to get there.

If you've ever driven outside of the city, you know just how dark it can get on the highway. And it only gets darker on rural roads or off-road. Your lights should be on whenever it's dark outside, but sometimes you car's stock lighting just isn't good enough. Brighten up your ride today with top-notch exterior lighting products from AutoZone. We have the right parts for your vehicle to shine brightly in any situation.

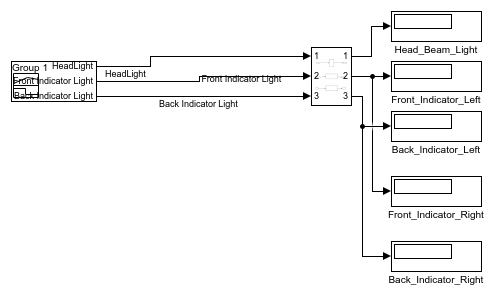
[**https://www.researchgate.net/publication/267706513\_Development\_of\_Vehicle\_Lighting\_System\_Using\_LED\_Application**](https://www.researchgate.net/publication/267706513_Development_of_Vehicle_Lighting_System_Using_LED_Application)

**Test plan:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SL.NO** | **TEST**  **ID** | **DESCRIPTION** | **Expected input** | **Expected**  **output** | **Actual ouput** |
| **1.** | TC1 | we can select the Headlight mode whether it should be in the High Beam, Low Beam  High Beam  Low Beam  Medium Beam | 5(High Beam)  4(Low Beam)  6(Medium /Default) | 5  4  6 |  |
| **2.** | TC2 | We can select the Front Indicator whether it should be Right or Left Indicator. In this again three modes are there High Beam  Low Beam  Medium Beam | 5(High Beam)  4(Low Beam)  6(Medium /Default) | 5  4  6 |  |
| **3.** | TC3 | We can select the Back Indicator whether it should be Right or Left Indicator. In this again three modes are there High Beam  Low Beam  Medium Beam | 5(High Beam)  4(Low Beam)  6(Medium /Default) | 5  4  6 |  |

# MIL

# ExternalLight



### training

18-Dec-2020 14:12:42

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## Model - ExternalLight

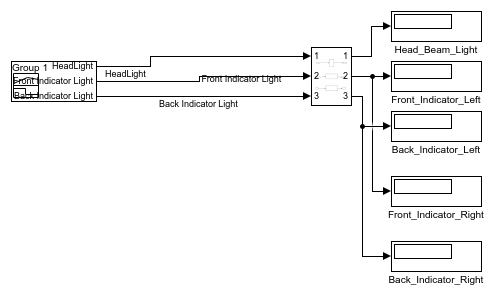
**Full Model Hierarchy**

1. [ExternalLight](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fc882572a57930adb0280001c98964f)
   1. [Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dbaf9d52f76b9830b99767ff4f6fac32)
      1. [headBeam](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8eb1517e48eb0f43ec0892a0b8b5c31c)
         1. [Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_89a0ca84b513d773503f4fdd96584d92)
         2. [Subsystem1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_00c4d73fdc7e881dc1764889b4e475d7)
      2. [Back\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_4c47bcf64377639ad513d98cdabe62ac)
         1. [Back\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d0e0392ef62bdd247204f6cec6faf0f8)
            1. [Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_fe2c0853f74164f454af4a4aa2779a89)
            2. [Subsystem1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_73ff5d62842d3b2834d674ffe8e36612)
      3. [Front\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8571400ba4d9372ab4cd335275478178)
         1. [Front\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d79ace9fa268e0299572b2f6e8ce4cdb)
            1. [Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d71fbcb0d573662aa0996961005bc69f)
            2. [Subsystem1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_9ba6dc3bb64555478442e067636e99f6)

| **Simulation Parameter** | **Value** |
| --- | --- |
| Solver | VariableStepAuto |
| RelTol | 1e-3 |
| Refine | 1 |
| MaxOrder | 5 |
| ZeroCross | on |

[[more info]](file:///C:\Users\training\Downloads\ExternalLight.html#appendix-sl)

## System - ExternalLight



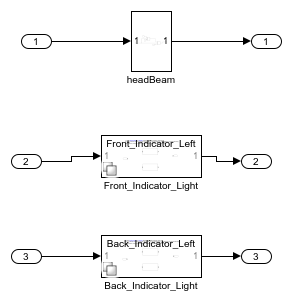
**Table 1. Constant Block Properties**

| **Name** | **Value** | **Out Data Type Str** | **Lock Scale** | **Sample Time** | **Frame Period** |
| --- | --- | --- | --- | --- | --- |
| Back\_Indicator\_Light | 2 | Inherit: Inherit from 'Constant value' | off | inf | inf |
| Constant | 1 | Inherit: Inherit from 'Constant value' | off | inf | inf |
| Front\_Indicator\_Light | 3 | Inherit: Inherit from 'Constant value' | off | inf | inf |

**Table 2. Display Block Properties**

| **Name** | **Format** | **Decimation** | **Floating** |
| --- | --- | --- | --- |
| Back\_Indicator\_Left | short | 1 | off |
| Back\_Indicator\_Right | short | 1 | off |
| Front\_Indicator\_Left | short | 1 | off |
| Front\_Indicator\_Right | short | 1 | off |
| Head\_Beam\_Light | short | 1 | off |

## System - [ExternalLight](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fc882572a57930adb0280001c98964f)/Subsystem



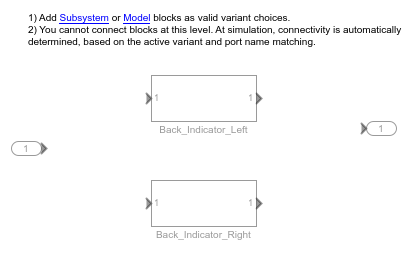
**Table 3. Inport Block Properties**

| **Name** | **Port** | **Defined In Blk** |
| --- | --- | --- |
| In1 | 1 | [Constant](file:///C:\Users\training\Downloads\ExternalLight.html#mw_9f0ceb16ff832e80b384988df573d660) |
| In2 | 2 | [Front\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fe1a5c0121f9672f79b8a672493fe6d) |
| In3 | 3 | [Back\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_eac2efc077dcc6224ee0019126c016ca) |

**Table 4. Outport Block Properties**

| **Name** | **Port** | **Storage Class** | **Icon Display** | **Lock Scale** | **Unit** | **Var Size Sig** | **Signal Type** | **Ensure Outport Is Virtual** | **Source Of Initial Output Value** | **Output When Disabled** | **Must Resolve To Signal Object** | **Output When Un Connected** | **Output When Unconnected Value** | **Vector Params As 1DFor Out When Unconnected** | **Used By Blk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Out1 | 1 | Auto | Port number | off | inherit | Inherit | auto | off | Dialog | held | off | off | 0 | on | [Head\_Beam\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_1074924e0f79ebf42d7c257696965193) |
| Out2 | 2 | Auto | Port number | off | inherit | Inherit | auto | off | Dialog | held | off | off | 0 | on | [Front\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8a50a7da71443a267480d333379d854d), [Front\_Indicator\_Left](file:///C:\\Users\\training\\Downloads\\ExternalLight.html" \l "mw_fde5cc876cab9382a3a3e51aabf211ed) |
| Out3 | 3 | Auto | Port number | off | inherit | Inherit | auto | off | Dialog | held | off | off | 0 | on | [Back\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_99308157ab4b12303aee23bb65dee9cb), [Back\_Indicator\_Left](file:///C:\\Users\\training\\Downloads\\ExternalLight.html" \l "mw_b29051d9545d3358d545efb4536dbb5d) |

## System - [ExternalLight](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fc882572a57930adb0280001c98964f)/[Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dbaf9d52f76b9830b99767ff4f6fac32)/Back\_Indicator\_Light



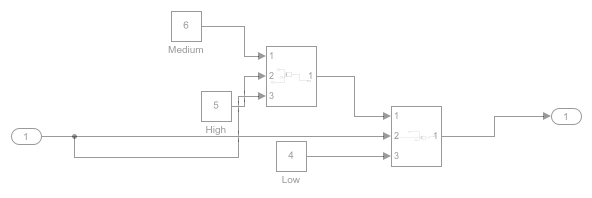
**Table 5. Inport Block Properties**

| **Name** | **Port** | **Defined In Blk** |
| --- | --- | --- |
| In1 | 1 | Unconnected |

**Table 6. Outport Block Properties**

| **Name** | **Port** | **Storage Class** | **Icon Display** | **Lock Scale** | **Unit** | **Var Size Sig** | **Signal Type** | **Ensure Outport Is Virtual** | **Source Of Initial Output Value** | **Output When Disabled** | **Must Resolve To Signal Object** | **Output When Un Connected** | **Output When Unconnected Value** | **Vector Params As 1DFor Out When Unconnected** | **Used By Blk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Out1 | 1 | Auto | Port number | off | inherit | Inherit | auto | off | Dialog | held | off | off | 0 | on | Unconnected |

## System - [ExternalLight](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fc882572a57930adb0280001c98964f)/[Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dbaf9d52f76b9830b99767ff4f6fac32)/[Back\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_4c47bcf64377639ad513d98cdabe62ac)/Back\_Indicator\_Right



**Table 7. Constant Block Properties**

| **Name** | **Value** | **Out Data Type Str** | **Lock Scale** | **Sample Time** | **Frame Period** |
| --- | --- | --- | --- | --- | --- |
| High | 5 | Inherit: Inherit from 'Constant value' | off | inf | inf |
| Low | 4 | Inherit: Inherit from 'Constant value' | off | inf | inf |
| Medium | 6 | Inherit: Inherit from 'Constant value' | off | inf | inf |

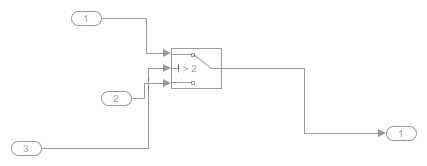
**Table 8. Inport Block Properties**

| **Name** | **Port** | **Defined In Blk** |
| --- | --- | --- |
| In1 | 1 | [Back\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_eac2efc077dcc6224ee0019126c016ca) |

**Table 9. Outport Block Properties**

| **Name** | **Port** | **Storage Class** | **Icon Display** | **Lock Scale** | **Unit** | **Var Size Sig** | **Signal Type** | **Ensure Outport Is Virtual** | **Source Of Initial Output Value** | **Output When Disabled** | **Must Resolve To Signal Object** | **Output When Un Connected** | **Output When Unconnected Value** | **Vector Params As 1DFor Out When Unconnected** | **Used By Blk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Out1 | 1 | Auto | Port number | Off | inherit | Inherit | auto | off | Dialog | held | off | off | 0 | on | [Back\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_99308157ab4b12303aee23bb65dee9cb), [Back\_Indicator\_Left](file:///C:\\Users\\training\\Downloads\\ExternalLight.html" \l "mw_b29051d9545d3358d545efb4536dbb5d) |

## System - [ExternalLight](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fc882572a57930adb0280001c98964f)/[Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dbaf9d52f76b9830b99767ff4f6fac32)/[Back\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_4c47bcf64377639ad513d98cdabe62ac)/[Back\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d0e0392ef62bdd247204f6cec6faf0f8)/Subsystem



**Table 10. Inport Block Properties**

| **Name** | **Port** | **Defined In Blk** |
| --- | --- | --- |
| In1 | 1 | [Medium](file:///C:\Users\training\Downloads\ExternalLight.html#mw_bc3bffb35d490756d436e7cf0f06cc22) |
| In2 | 2 | [High](file:///C:\Users\training\Downloads\ExternalLight.html#mw_09956d0be52d0088adff2ef43920d977) |
| In3 | 3 | [Back\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_eac2efc077dcc6224ee0019126c016ca) |

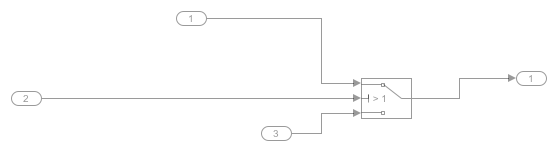
**Table 11. Outport Block Properties**

| **Name** | **Port** | **Storage Class** | **Icon Display** | **Lock Scale** | **Unit** | **Var Size Sig** | **Signal Type** | **Ensure Outport Is Virtual** | **Source Of Initial Output Value** | **Output When Disabled** | **Must Resolve To Signal Object** | **Output When Un Connected** | **Output When Unconnected Value** | **Vector Params As 1DFor Out When Unconnected** | **Used By Blk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Out1 | 1 | Auto | Port number | off | inherit | Inherit | auto | off | Dialog | held | off | off | 0 | on | [Switch1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_9f3857d244b824e10a4556ff4b062114) |

**Table 12. Switch Block Properties**

| **Name** | **Criteria** | **Threshold** | **Input Same DT** | **Out Data Type Str** | **Lock Scale** | **Rnd Meth** | **Saturate On Integer Overflow** | **Zero Cross** | **Allow Diff Input Sizes** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Switch | u2 > Threshold | 2 | off | ­­­­­­­Inherit: Inherit via internal rule | off | Floor | off | on | off |

## System - [ExternalLight](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fc882572a57930adb0280001c98964f)/[Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dbaf9d52f76b9830b99767ff4f6fac32)/[Back\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_4c47bcf64377639ad513d98cdabe62ac)/[Back\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d0e0392ef62bdd247204f6cec6faf0f8)/Subsystem1



**Table 13. Inport Block Properties**

| **Name** | **Port** | **Defined In Blk** |
| --- | --- | --- |
| In1 | 1 | [Switch](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d508be097c3dc4e5040f79bf9e0441de) |
| In2 | 2 | [Back\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_eac2efc077dcc6224ee0019126c016ca) |
| In3 | 3 | [Low](file:///C:\Users\training\Downloads\ExternalLight.html#mw_3f56ffafb5b19d1e5cf8acccd2b1597a) |

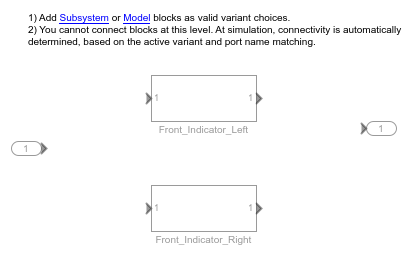
**Table 14. Outport Block Properties**

| **Name** | **Port** | **Storage Class** | **Icon Display** | **Lock Scale** | **Unit** | **Var Size Sig** | **Signal Type** | **Ensure Outport Is Virtual** | **Source Of Initial Output Value** | **Output When Disabled** | **Must Resolve To Signal Object** | **Output When Un Connected** | **Output When Unconnected Value** | **Vector Params As 1DFor Out When Unconnected** | **Used By Blk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Out1 | 1 | Auto | Port number | ooff | inherit | Inherit | auto | off | Dialog | held | off | off | 0 | on | [Back\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_99308157ab4b12303aee23bb65dee9cb), [Back\_Indicator\_Left](file:///C:\\Users\\training\\Downloads\\ExternalLight.html" \l "mw_b29051d9545d3358d545efb4536dbb5d) |

**Table 15. Switch Block Properties**

| **Name** | **Criteria** | **Threshold** | **Input Same DT** | **Out Data Type Str** | **Lock Scale** | **Rnd Meth** | **Saturate On Integer Overflow** | **Zero Cross** | **Allow Diff Input Sizes** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Switch1 | u2 > Threshold | 1 | off | Inherit: Inherit via internal rule | off | Flor | off | on | off |

## System - [ExternalLight](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fc882572a57930adb0280001c98964f)/[Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dbaf9d52f76b9830b99767ff4f6fac32)/Front\_Indicator\_Light



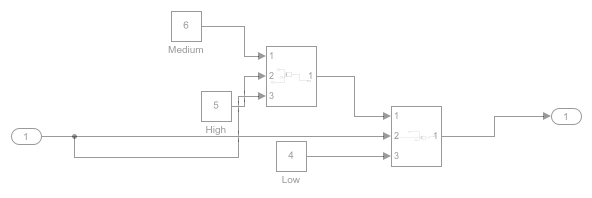
**Table 16. Inport Block Properties**

| **Name** | **Port** | **Defined In Blk** |
| --- | --- | --- |
| In1 | 1 | Unconnected |

**Table 17. Outport Block Properties**

| **Name** | **port** | **Storage Class** | **Icon Display** | **Lock Scale** | **Unit** | **Var Size Sig** | **Signal Type** | **Ensure Outport Is Virtual** | **Source Of Initial Output Value** | **Output When Disabled** | **Must Resolve To Signal Object** | **Output When Un Connected** | **Output When Unconnected Value** | **Vector Params As 1DFor Out When Unconnected** | **Used By Blk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Out1 | 1 | Auto | Port number | off | inherit | Inherit | auto | off | Dialog | held | off | off | 0 | on | Unconnected |

## System - [ExternalLight](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fc882572a57930adb0280001c98964f)/[Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dbaf9d52f76b9830b99767ff4f6fac32)/[Front\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8571400ba4d9372ab4cd335275478178)/Front\_Indicator\_Right



**Table 18. Constant Block Properties**

| **Name** | **Value** | **Out Data Type Str** | **Lock Scale** | **Sample Time** | **Frame Period** |
| --- | --- | --- | --- | --- | --- |
| High | 5 | Inherit: Inherit from 'Constant value' | off | inf | inf |
| Low | 4 | Inherit: Inherit from 'Constant value' | off | inf | inf |
| Medium | 6 | Inherit: Inherit from 'Constant value' | off | inf | inf |

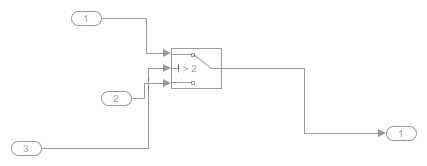
**Table 19. Inport Block Properties**

| **Name** | **Port** | **Defined In Blk** |
| --- | --- | --- |
| In1 | 1 | [Front\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fe1a5c0121f9672f79b8a672493fe6d) |

**Table 20. Outport Block Properties**

| **Name** | **Port** | **Storage Class** | **Icon Display** | **LLock Scale** | **Uunit** | **Var Size Sig** | **Signal Type** | **Ensure Outport Is Virtual** | **Source Of Initial Output Value** | **Output When Disabled** | **Must Resolve To Signal Object** | **Output When Un Connected** | **Output When Unconnected Value** | **Vector Params As 1DFor Out When Unconnected** | **Used By Blk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| OOut1 | 1 | Auto | Port number | Off | inherit | inherit | auto | off | Dialog | held | off | off | 0 | on | [Front\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8a50a7da71443a267480d333379d854d), [Front\_Indicator\_Left](file:///C:\\Users\\training\\Downloads\\ExternalLight.html" \l "mw_fde5cc876cab9382a3a3e51aabf211ed) |

## System - [ExternalLight](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fc882572a57930adb0280001c98964f)/[Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dbaf9d52f76b9830b99767ff4f6fac32)/[Front\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8571400ba4d9372ab4cd335275478178)/[Front\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d79ace9fa268e0299572b2f6e8ce4cdb)/Subsystem



**Table 21. Inport Block Properties**

| **Name** | **Port** | **Defined In Blk** |
| --- | --- | --- |
| In1 | 1 | [Medium](file:///C:\Users\training\Downloads\ExternalLight.html#mw_b5fedbd568ff7bc8be6b8b00a3f2d532) |
| In2 | 2 | [High](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d21280a9d66c27bbc3bba8ab7ed00e6f) |
| In3 | 3 | [Front\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fe1a5c0121f9672f79b8a672493fe6d) |

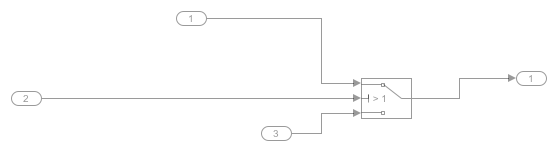
**Table 22. Outport Block Properties**

| **Name** | **Port** | **Storage Class** | **Icon Display** | **Lock Scale** | **Unit** | **Var Size Sig** | **Signal Type** | **Ensure Outport Is Virtual** | **Source Of Initial Output Value** | **Output When Disabled** | **Must Resolve To Signal Object** | **Output When Un Connected** | **Output When Unconnected Value** | **Vector Params As 1DFor Out When Unconnected** | **Used By Blk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Out1 | 1 | Auto | Port number | off | inherit | Inherit | auto | off | Dialog | held | off | off | 0 | on | [Switch1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_688fea2674d6127f605630939cadc0f5) |

**Table 23. Switch Block Properties**

| **Name** | **Criteria** | **Threshold** | **Input Same DT** | **Out Data Type Str** | **Lock Scale** | **Rnd Meth** | **Saturate On Integer Overflow** | **Zero Cross** | **Allow Diff Input Sizes** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Switch | u2 > Threshold | 2 | off | Inherit: Inherit via internal rule | off | Floor | off | on | off |

## System - [ExternalLight](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fc882572a57930adb0280001c98964f)/[Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dbaf9d52f76b9830b99767ff4f6fac32)/[Front\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8571400ba4d9372ab4cd335275478178)/[Front\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d79ace9fa268e0299572b2f6e8ce4cdb)/Subsystem1



**Table 24. Inport Block Properties**

| **Name** | **Port** | **Defined In Blk** |
| --- | --- | --- |
| In1 | 1 | [Switch](file:///C:\Users\training\Downloads\ExternalLight.html#mw_1dc32e3f8b0cfb6556688a47ac30e361) |
| In2 | 2 | [Front\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fe1a5c0121f9672f79b8a672493fe6d) |
| In3 | 3 | [Low](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d8f7ac06ad44b7de7eae3bb0eb94191f) |

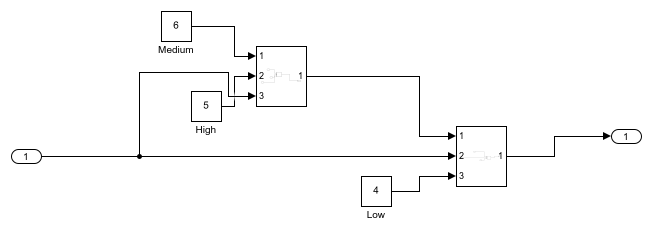
**Table 25. Outport Block Properties**

| **Name** | **Pport** | **Sstorage Class** | **IIcon Display** | **Lock Scale** | **Unit** | **VVar Size Sig** | **Signal Type** | **Ensure Outport Is Virtual** | **Source Of Initial Output Value** | **Output When Disabled** | **Must Resolve To Signal Object** | **Output When Un Connected** | **Output When Unconnected Value** | **Vector Params As 1DFor Out When Unconnected** | **Used By Blk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Out1 | 11 | Auto | Pport number | off | iinherit | Iinherit | auto | off | Dialog | held | off | off | 0 | on | [Front\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8a50a7da71443a267480d333379d854d), [Front\_Indicator\_Left](file:///C:\\Users\\training\\Downloads\\ExternalLight.html" \l "mw_fde5cc876cab9382a3a3e51aabf211ed) |

**Table 26. Switch Block Properties**

| **Name** | **Criteria** | **Threshold** | **Input Same DT** | **Out Data Type Str** | **Lock Scale** | **Rnd Meth** | **Saturate On Integer Overflow** | **Zero Cross** | **Allow Diff Input Sizes** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Switch1 | u2 > Threshold | 1 | off | Inherit: Inherit via internal rule | off | Floor | off | on | off |

## System - [ExternalLight](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fc882572a57930adb0280001c98964f)/[Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dbaf9d52f76b9830b99767ff4f6fac32)/headBeam



**Table 27. Constant Block Properties**

| **Name** | **Value** | **Out Data Type Str** | **Lock Scale** | **Sample Time** | **Frame Period** |
| --- | --- | --- | --- | --- | --- |
| High | 5 | Inherit: Inherit from 'Constant value' | off | inf | inf |
| Low | 4 | Inherit: Inherit from 'Constant value' | off | inf | inf |
| Medium | 6 | Inherit: Inherit from 'Constant value' | off | inf | inf |

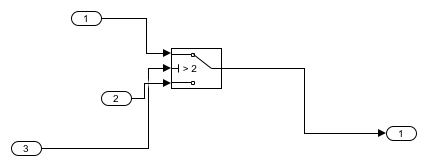
**Table 28. Inport Block Properties**

| **Name** | **Port** | **Defined In Blk** |
| --- | --- | --- |
| In1 | 1 | [Constant](file:///C:\Users\training\Downloads\ExternalLight.html#mw_9f0ceb16ff832e80b384988df573d660) |

**Table 29. Outport Block Properties**

| **Name** | **Port** | **Storage Class** | **Icon Display** | **Lock Scale** | **Uunit** | **Vvar Size Sig** | **Signal Type** | **Ensure Outport Is Virtual** | **Source Of Initial Output Value** | **Output When Disabled** | **Must Resolve To Signal Object** | **Output When Un Connected** | **Output When Unconnected Value** | **Vector Params As 1DFor Out When Unconnected** | **Used By Blk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Out1 | 1 | Auto | Port number | off | iinherit | Iinherit | auto | off | Dialog | held | off | off | 0 | on | [Head\_Beam\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_1074924e0f79ebf42d7c257696965193) |

## System - [ExternalLight](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fc882572a57930adb0280001c98964f)/[Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dbaf9d52f76b9830b99767ff4f6fac32)/[headBeam](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8eb1517e48eb0f43ec0892a0b8b5c31c)/Subsystem



**Table 30. Inport Block Properties**

| **Name** | **Port** | **Defined In Blk** |
| --- | --- | --- |
| In1 | 1 | [Medium](file:///C:\Users\training\Downloads\ExternalLight.html#mw_755baeafe2143514616d7bc1ede6aad8) |
| In2 | 2 | [High](file:///C:\Users\training\Downloads\ExternalLight.html#mw_1da92f091471fbdf0b744c4471c2d6bd) |
| In3 | 3 | [Constant](file:///C:\Users\training\Downloads\ExternalLight.html#mw_9f0ceb16ff832e80b384988df573d660) |

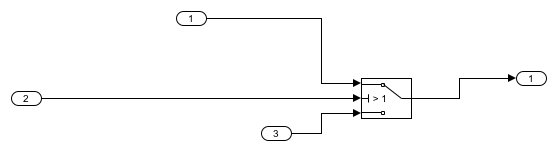
**Table 31. Outport Block Properties**

| **Name** | **Port** | **Storage Class** | **Icon Display** | **Lock Scale** | **Unit** | **Var Size Sig** | **Signal Type** | **Ensure Outport Is Virtual** | **Source Of Initial Output Value** | **Output When Disabled** | **Must Resolve To Signal Object** | **Output When Un Connected** | **Output When Unconnected Value** | **Vector Params As 1DFor Out When Unconnected** | **Used By Blk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Out1 | 1 | Auto | Port number | off | inherit | Inherit | auto | off | Dialog | held | off | off | 0 | on | [Switch1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_1a7bc02603b698c63fb53129ed718667) |

**Table 32. Switch Block Properties**

| **Name** | **Criteria** | **Threshold** | **Input Same DT** | **Out Data Type Str** | **Lock Scale** | **Rnd Meth** | **Saturate On Integer Overflow** | **Zero Cross** | **Allow Diff Input Sizes** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Switch | u2 > Threshold | 2 | off | Inherit: Inherit via internal rule | off | Floor | off | on | off |

## System - [ExternalLight](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fc882572a57930adb0280001c98964f)/[Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dbaf9d52f76b9830b99767ff4f6fac32)/[headBeam](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8eb1517e48eb0f43ec0892a0b8b5c31c)/Subsystem1



**Table 33. Inport Block Properties**

| **Name** | **Port** | **Defined In Blk** |
| --- | --- | --- |
| In1 | 1 | [Switch](file:///C:\Users\training\Downloads\ExternalLight.html#mw_3e8953ced08600c44f8e4d1ea9b3753d) |
| In2 | 2 | [Constant](file:///C:\Users\training\Downloads\ExternalLight.html#mw_9f0ceb16ff832e80b384988df573d660) |
| In3 | 3 | [Low](file:///C:\Users\training\Downloads\ExternalLight.html#mw_b03fc32aa38de694a002c00fd7c0b59a) |

**Table 34. Outport Block Properties**

| **Name** | **port** | **Storage Class** | **Icon Display** | **Lock Scale** | **Unit** | **var Size Sig** | **Signal Type** | **Ensure Outport Is Virtual** | **Source Of Initial Output Value** | **Output When Disabled** | **Must Resolve To Signal Object** | **Output When Un Connected** | **Output When Unconnected Value** | **Vector Params As 1DFor Out When Unconnected** | **Used By Blk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Out1 | 1 | Auto | Port number | Off | inherit | Inherit | auto | off | Dialog | held | off | off | 0 | on | [Head\_Beam\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_1074924e0f79ebf42d7c257696965193) |

**Table 35. Switch Block Properties**

| **Name** | **Criteria** | **Threshold** | **Input Same DT** | **Out Data Type Str** | **Lock Scale** | **Rnd Meth** | **Saturate On Integer Overflow** | **Zero Cross** | **Allow Diff Input Sizes** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Switch1 | u2 > Threshold | 1 | off | Inherit: Inherit via internal rule | off | Floor | off | on | off |

## Appendix

**Table 36. Block Type Count**

| **Block Type** | **Ccount** | **Block Names** |
| --- | --- | --- |
| Inport | 26 | [In1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_e84a9923ac1aa666bff096078d9904ec), [In1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8e31563a2535d9a223420b0ca208de5d), [In2](file:///C:\Users\training\Downloads\ExternalLight.html#mw_7aee04e2c7423e9f9d93cd89496fd34f), [In3](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d52bdd8e2085faf5b562c8b1ef331294), [In1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_80ec55acb0ac7a56ee6d21d571df76a4), [In2](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8aa2557adb47331d784f470d8f57e86b), [In3](file:///C:\Users\training\Downloads\ExternalLight.html#mw_3061ec5aa50d6339fa6f6225df2d2195), [In1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_509144cfb9e440ba706544222a779c04), [In1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8b0f82a91dd15bf7168b0db0f4437e9b), [In1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_45750f62df97111a9d7bb4bdd7760f7b), [In2](file:///C:\Users\training\Downloads\ExternalLight.html#mw_b88f0651b89fb244a59d0995febc9ddc), [In3](file:///C:\Users\training\Downloads\ExternalLight.html#mw_7ef1e21b5ad596700a2a4ce3888fc309), [In1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_62b93e7e8b3093f35630497776d7b156), [In2](file:///C:\Users\training\Downloads\ExternalLight.html#mw_cfb542bc3c30202805c852b61825418a), [In3](file:///C:\Users\training\Downloads\ExternalLight.html#mw_648085aa4ce9e8cf5237df6abf256c3f), [In1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_32918b853066e4cd6f52dcb4b23c4e07), [In1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_f969bc14142a9df18d2b191f86707b69), [In2](file:///C:\Users\training\Downloads\ExternalLight.html#mw_7e5f2b84bac8a7df3d9d64fd98cdbfbc), [In3](file:///C:\Users\training\Downloads\ExternalLight.html#mw_357e7090f650aa260c6691663399fb24), [In1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dad5087e04ea34ee1070645c9b3cd194), [In1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_768d2da1f77fc88cf9febde75dc83a19), [In2](file:///C:\Users\training\Downloads\ExternalLight.html#mw_087f7319a1d1a96868adfadcef31b58a), [In3](file:///C:\Users\training\Downloads\ExternalLight.html#mw_f2ee8994a46f9f1e40b8baf180fe4999), [In1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_e71abaaef9d930b8737683f16eb19a7d), [In2](file:///C:\Users\training\Downloads\ExternalLight.html#mw_71de8aa5c8d97c7f6f33439ead64d702), [In3](file:///C:\Users\training\Downloads\ExternalLight.html#mw_53da0bbe98e0728341d279a134dcd303) |
| Outport | 14 | [Out1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d6d4e665e14e464c45d0de043c461e9c), [Out1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_7229144de2739cc4e3eae64219ec842b), [Out1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_c5f2d55e2a660842bca05b056fc30e09), [Out1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_f88208c49c5b4f72a7a3e184f5bc3696), [Out1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_259b287c5df41b49c91dcb058b215c97), [Out1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_533f2be6055d78b2d001a82658f20bfb), [Out1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_a69473689e0a583a67e8841327239580), [Out1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d35010b3445251aaf7315b86c90873d8), [Out1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_1e15f4118102f5f0e3d7ed3a6a4ded79), [Out2](file:///C:\Users\training\Downloads\ExternalLight.html#mw_0ed397645cfe1e56d03a6a8bbd779b8b), [Out3](file:///C:\Users\training\Downloads\ExternalLight.html#mw_0602778ead3f0f8c3c4dff4df80cfbeb), [Out1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_fda52bd1c8dbea6c315dce33e0bf9595), [Out1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_b4217e3a75307493d6fadda2cd436ebf), [Out1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_bb7a52c248c1e2f1c6b381a12e37dbd8) |
| SubSystem | 12 | [Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_dbaf9d52f76b9830b99767ff4f6fac32), [Back\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_4c47bcf64377639ad513d98cdabe62ac), [Back\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d0e0392ef62bdd247204f6cec6faf0f8), [Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_fe2c0853f74164f454af4a4aa2779a89), [Subsystem1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_73ff5d62842d3b2834d674ffe8e36612), [Front\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8571400ba4d9372ab4cd335275478178), [Front\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d79ace9fa268e0299572b2f6e8ce4cdb), [Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d71fbcb0d573662aa0996961005bc69f), [Subsystem1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_9ba6dc3bb64555478442e067636e99f6), [headBeam](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8eb1517e48eb0f43ec0892a0b8b5c31c), [Subsystem](file:///C:\Users\training\Downloads\ExternalLight.html#mw_89a0ca84b513d773503f4fdd96584d92), [Subsystem1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_00c4d73fdc7e881dc1764889b4e475d7) |
| Constant | 12 | [Back\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_eac2efc077dcc6224ee0019126c016ca), [Constant](file:///C:\Users\training\Downloads\ExternalLight.html#mw_9f0ceb16ff832e80b384988df573d660), [Front\_Indicator\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_5fe1a5c0121f9672f79b8a672493fe6d), [High](file:///C:\Users\training\Downloads\ExternalLight.html#mw_09956d0be52d0088adff2ef43920d977), [Low](file:///C:\Users\training\Downloads\ExternalLight.html#mw_3f56ffafb5b19d1e5cf8acccd2b1597a), [Medium](file:///C:\Users\training\Downloads\ExternalLight.html#mw_bc3bffb35d490756d436e7cf0f06cc22), [High](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d21280a9d66c27bbc3bba8ab7ed00e6f), [Low](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d8f7ac06ad44b7de7eae3bb0eb94191f), [Medium](file:///C:\Users\training\Downloads\ExternalLight.html#mw_b5fedbd568ff7bc8be6b8b00a3f2d532), [High](file:///C:\Users\training\Downloads\ExternalLight.html#mw_1da92f091471fbdf0b744c4471c2d6bd), [Low](file:///C:\Users\training\Downloads\ExternalLight.html#mw_b03fc32aa38de694a002c00fd7c0b59a), [Medium](file:///C:\Users\training\Downloads\ExternalLight.html#mw_755baeafe2143514616d7bc1ede6aad8) |
| Switch | 6 | [Switch](file:///C:\Users\training\Downloads\ExternalLight.html#mw_d508be097c3dc4e5040f79bf9e0441de), [Switch1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_9f3857d244b824e10a4556ff4b062114), [Switch](file:///C:\Users\training\Downloads\ExternalLight.html#mw_1dc32e3f8b0cfb6556688a47ac30e361), [Switch1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_688fea2674d6127f605630939cadc0f5), [Switch](file:///C:\Users\training\Downloads\ExternalLight.html#mw_3e8953ced08600c44f8e4d1ea9b3753d), [Switch1](file:///C:\Users\training\Downloads\ExternalLight.html#mw_1a7bc02603b698c63fb53129ed718667) |
| Display | 5 | [Back\_Indicator\_Left](file:///C:\Users\training\Downloads\ExternalLight.html#mw_b29051d9545d3358d545efb4536dbb5d), [Back\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_99308157ab4b12303aee23bb65dee9cb), [Front\_Indicator\_Left](file:///C:\Users\training\Downloads\ExternalLight.html#mw_fde5cc876cab9382a3a3e51aabf211ed), [Front\_Indicator\_Right](file:///C:\Users\training\Downloads\ExternalLight.html#mw_8a50a7da71443a267480d333379d854d), [Head\_Beam\_Light](file:///C:\Users\training\Downloads\ExternalLight.html#mw_1074924e0f79ebf42d7c257696965193) |