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Block Animator

- Infrared version

Application Note: BLMA signal bridge

Revised 4/15/09

Introduction

This application note provides several suggested schemes for using the ***Block Animator*** (version BA-1-IR) with the cantilevered signal bridge from BLMA models. The signal bridge includes four 3-light (individual green, yellow and red LEDs) signal heads on one side of the bridge. You will need two BA-1-IR ***Block Animators*** to control the four signal heads since each ***Block Animator*** controls two heads. **Please note that with this usage of the *Block Animator* you CANNOT enable approach lighting; you MUST have the APPRL switch in the OFF/OPEN position in order to have proper signal behavior. Signal head wiring is NOT shown in this application note so please refer to the appropriate section in the BA-1-IR instructions for those details!** In the schemes described here the concept of Eastbound (EB) and Westbound (WB) doesn't apply since the signals are all facing the same direction. However, we retain those labels in order to match the correct sensor inputs and signal outputs from the BA-1-IR.

Wiring diagrams in this application note show connections IN ADDITION to the standard sensor wiring described in the *Block Animator* instructions!

General Theory of Operation

To have more prototypical signal behavior you will interlock the signals with the position of the turnout(s). As such a signal head will display red since the turnout cannot be aligned for multiple routes simultaneously! When a sensor input terminal is connected to ground (GND) the ***Block Animator*** will be tricked into thinking that a train is reflecting the IR beam and will thus display red on the signal. When a sensor input terminal is no longer grounded the ***Block Animator*** will resume normal operation based on sensor activity.

Double track converging into a single track

Figure 1 shows a double track section converging into a single track. It shows how you can use the auxiliary contacts on a switch machine/motor to accomplish this. You will need one set of "SPDT" (single pole double throw) contacts.

The W1 sensor input terminal will be grounded on the ***Block Animator*** when the turnout is thrown for the main route (the terminal labeled COM makes contact with the terminal labeled N.C. (Normally Closed)). Similarly, the E1 sensor input terminal for the main route will be grounded on the ***Block Animator*** when the turnout is thrown for the diverging route (the terminal labeled COM makes contact with the terminal labeled N.O. (Normally Open)).

The distance between the turnout and sensor sets E1 and W1 is your choice. However, keep in mind the 35 second timeout described in the BA-1 instructions! You may elect to use the upper heads or the lower heads on the BLMA bridge for this application. If you have another track arrangement like this further down the track you could you use the upper heads for this nearby track and the lower heads for the farther away track. Simply replicate the wiring in Figure 1 for each location.

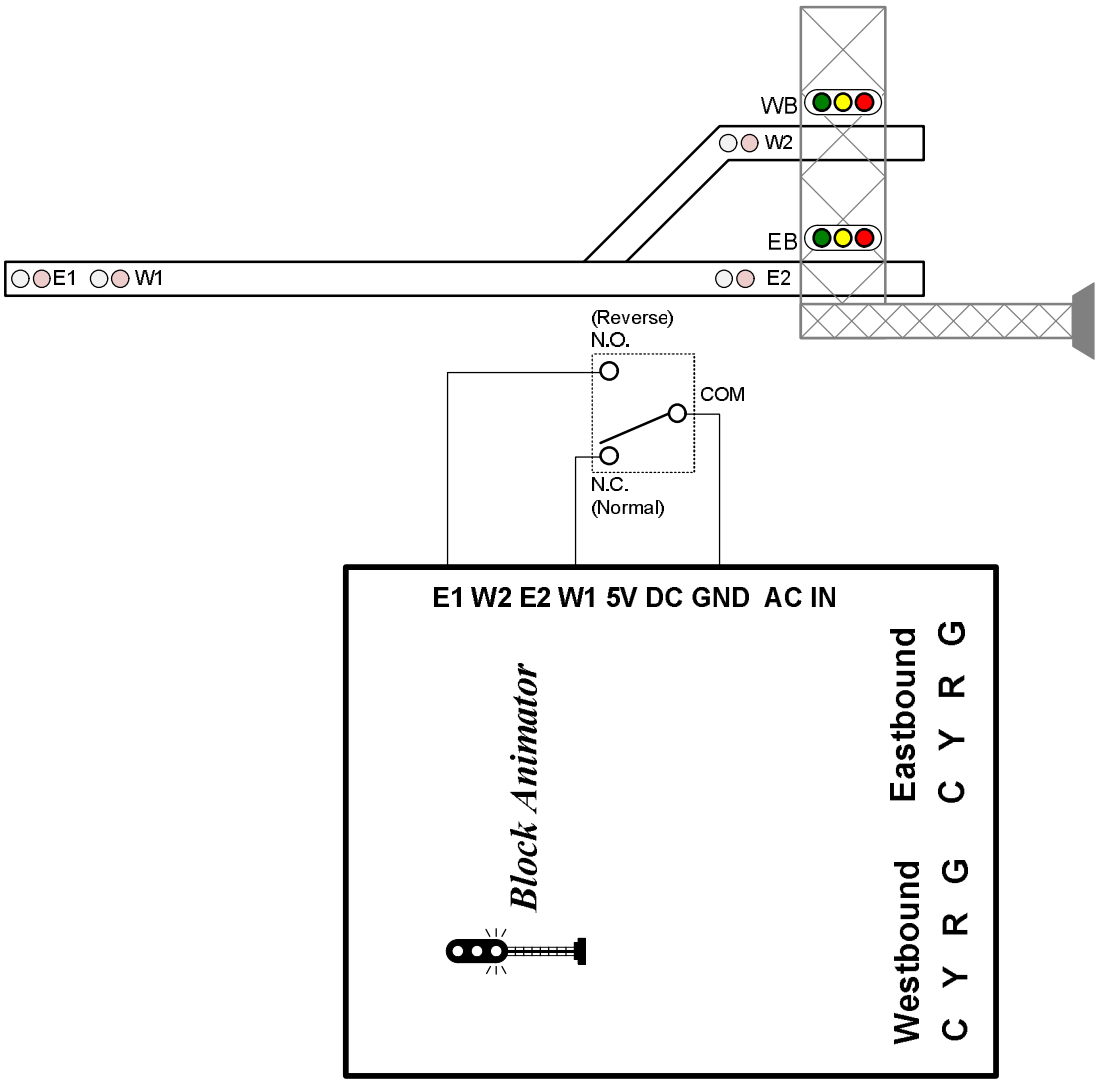

Figure 1

Single track diverging into double track

Figure 2 shows a single track diverging into double track. Once again you will interlock the signals with the position of the turnout. Figure 2 shows how you can use the auxiliary contacts on a switch machine/motor to accomplish this. You will need one set of "SPDT" (single pole double throw) contacts.

The W1 sensor input terminal will be grounded on the ***Block Animator*** when the turnout is thrown for the main route (the terminal labeled COM makes contact with the terminal labeled N.C. (Normally Closed)). Similarly, the E1 sensor input terminal for the main route will be grounded on the ***Block Animator*** when the turnout is thrown for the diverging route (the terminal labeled COM makes contact with the terminal labeled N.O. (Normally Open)).

The distance between the turnout and sensor sets E1 and W1 is your choice. However, keep in mind the 35 second timeout described in the BA-1 instructions! You may elect to use the left or right set of signal heads on the BLMA bridge. If you have another track arrangement like this nearby you could use the other set of heads and simply replicate the wiring in Figure 2 for that location.

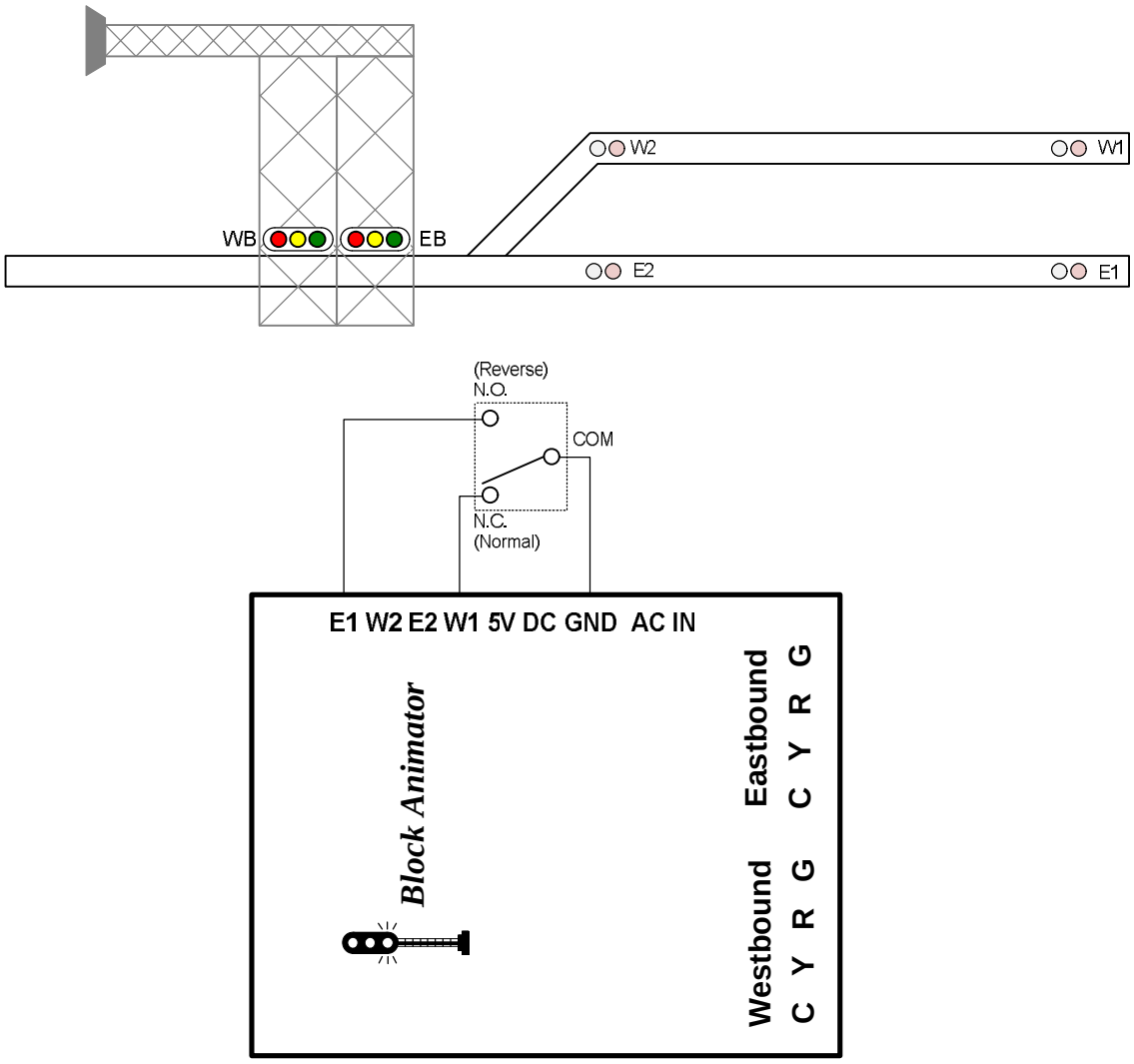

Figure 2

Double crossover

Perhaps the best location for the BLMA bridge is around a double crossover. Figure 3 below shows a double crossover with sensor placement and signal and sensor labeling. The numbers in parenthesis indicate which BA-1 (i.e. #1 or #2) is associated with that signal head or sensor set. The four turnouts that comprise the double crossover are labeled A, B, C and D. There are primarily two ways in which you're probably operating your double crossover. The first way is using a single "control mechanism" to either throw all turnouts to their straight route or all turnouts to their reversed route. The second way is to have one "control mechanism" for the pair of turnouts A and D and a separate "control mechanism" for the pair of turnouts B and C. Each of these cases will be described later.

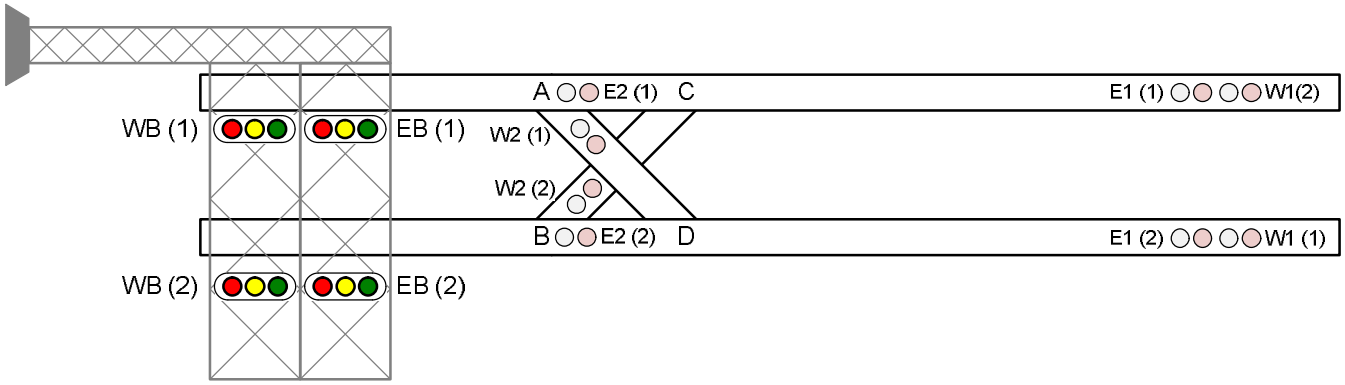

Figure 3

Double crossover (single control mechanism)

If you have a single control mechanism to throw all turnouts at once then the interlocking wiring is a little simpler. Figure 4 below shows the interlocking wiring for the first BA-1 while Figure 5 shows the photocell wiring for the second BA-1. For each diagram only the signals and sensor placements associated with that BA-1 are shown.

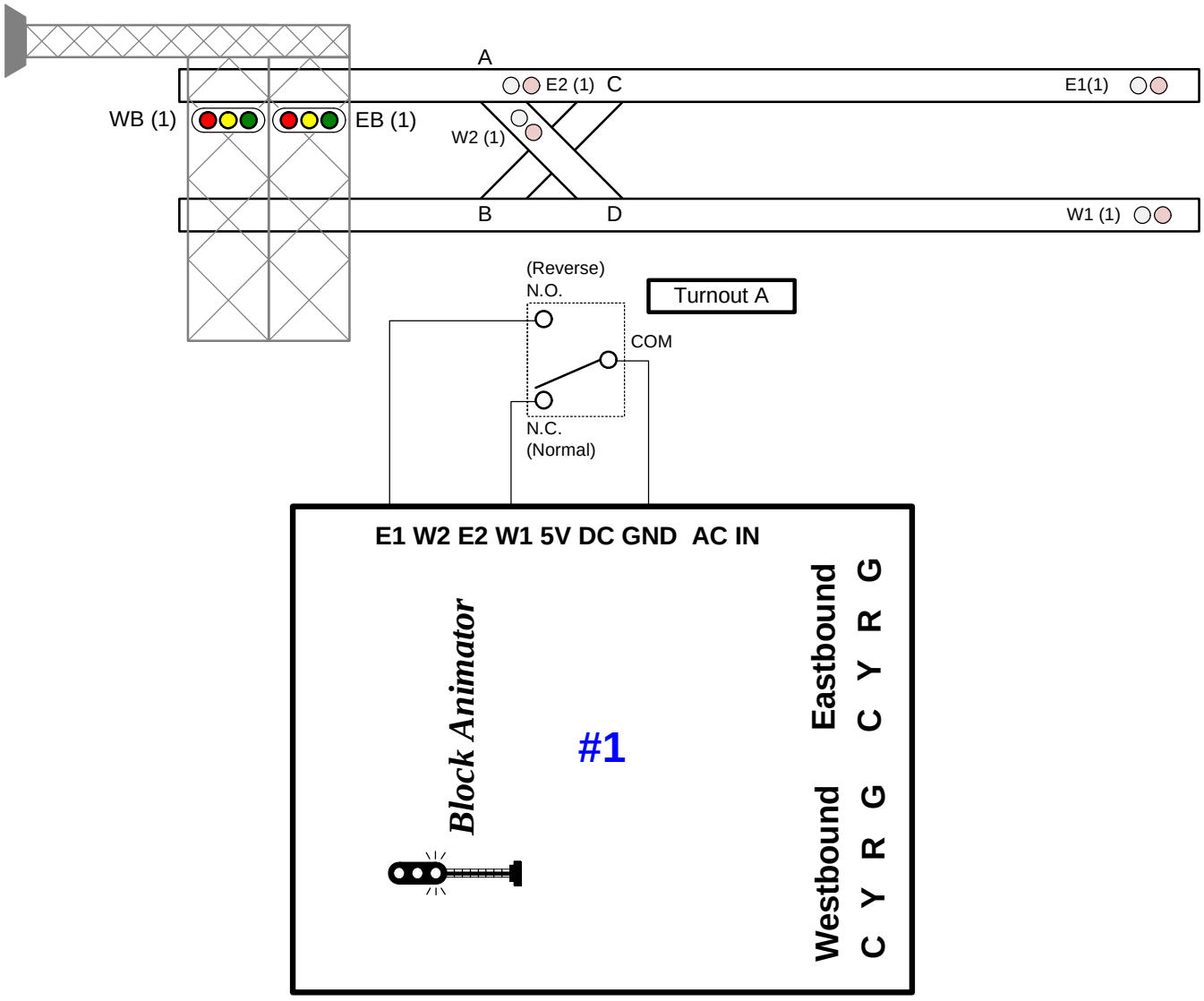

Figure 4

The W1(1) sensor input terminal will be grounded on the ***Block Animator* #1** when the crossover is thrown for the normal/straight routes (the terminal labeled COM makes contact with the terminal labeled N.C. (Normally Closed)). Similarly, the E1(1) sensor input terminal for the main route will be grounded on the ***Block Animator* #1** when the crossover is thrown for the reverse/diverging routes (the terminal labeled COM makes contact with the terminal labeled N.O. (Normally Open)).

The distance between the crossover and sensor sets E1(1) and W1(1) is your choice. However, keep in mind the 35 second timeout described in the BA-1 instructions!

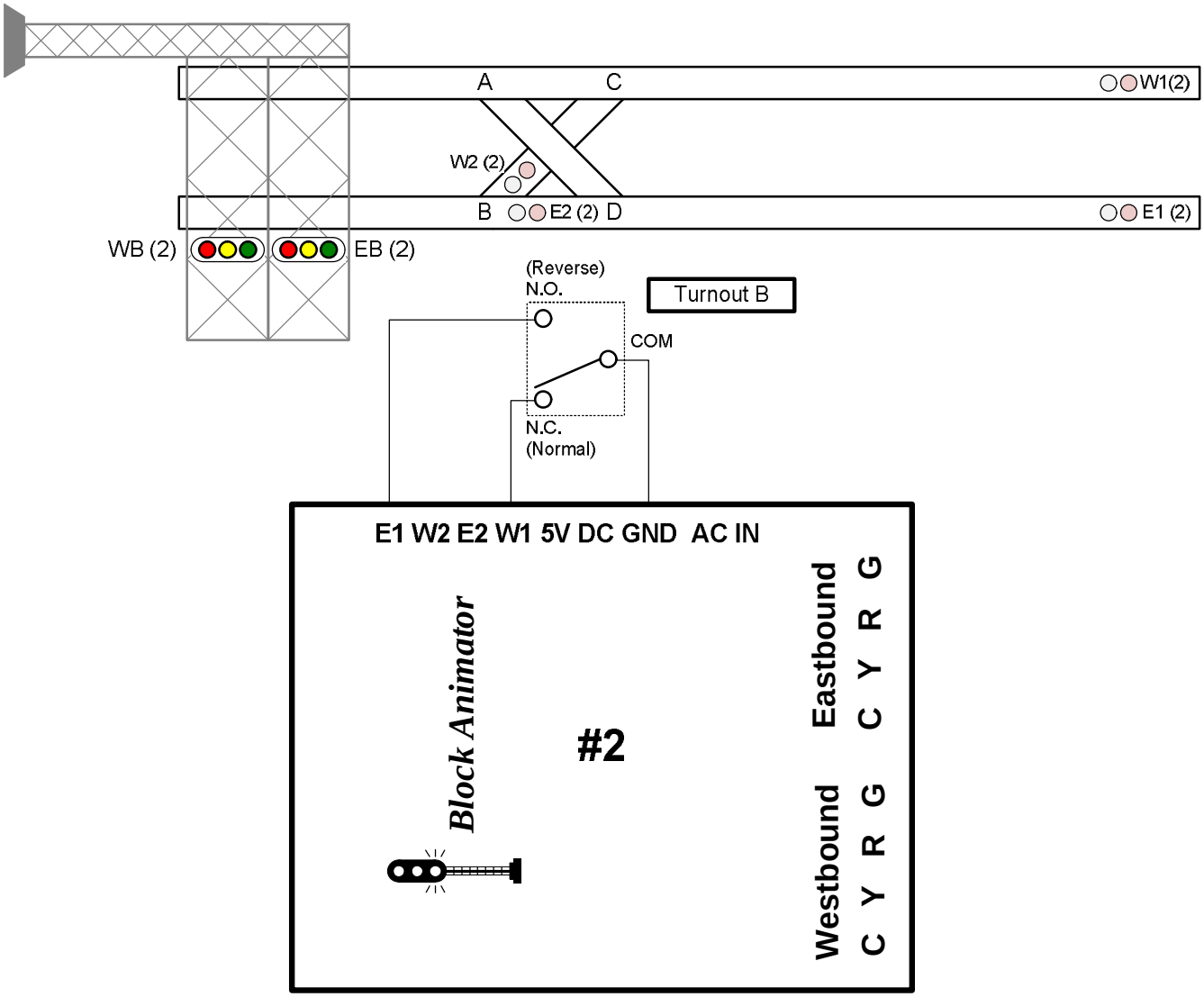

Figure 5

The W1(2) sensor input terminal will be grounded on the ***Block Animator* #2** when the crossover is thrown for the normal/straight routes (the terminal labeled COM makes contact with the terminal labeled N.C. (Normally Closed)). Similarly, the E1(2) sensor input terminal for the main route will be grounded on the ***Block Animator* #2** when the crossover is thrown for the reverse/diverging routes (the terminal labeled COM makes contact with the terminal labeled N.O. (Normally Open)).

The distance between the crossover and sensor sets E1(2) and W1(2) is your choice. However, keep in mind the 35 second timeout described in the BA-1 instructions!

Double crossover (two control mechanism)

If you have two control mechanisms to throw the turnouts (A and D together, B and C together) then the interlocking wiring gets a little more complicated. In this scenario it is possible to have turnout B straight while turnout D is reversed (or A straight and C reversed). As such it is necessary to force BOTH signal heads EB2 and WB2 to red (or EB1 and WB1 with respect to turnouts A and C) since neither route is properly aligned! Figure 6 below shows the interlocking wiring for the first BA-1 while Figure 7 shows the interlocking wiring for the second BA-1. For each diagram only the signals and sensor placements associated with that BA-1 are shown.

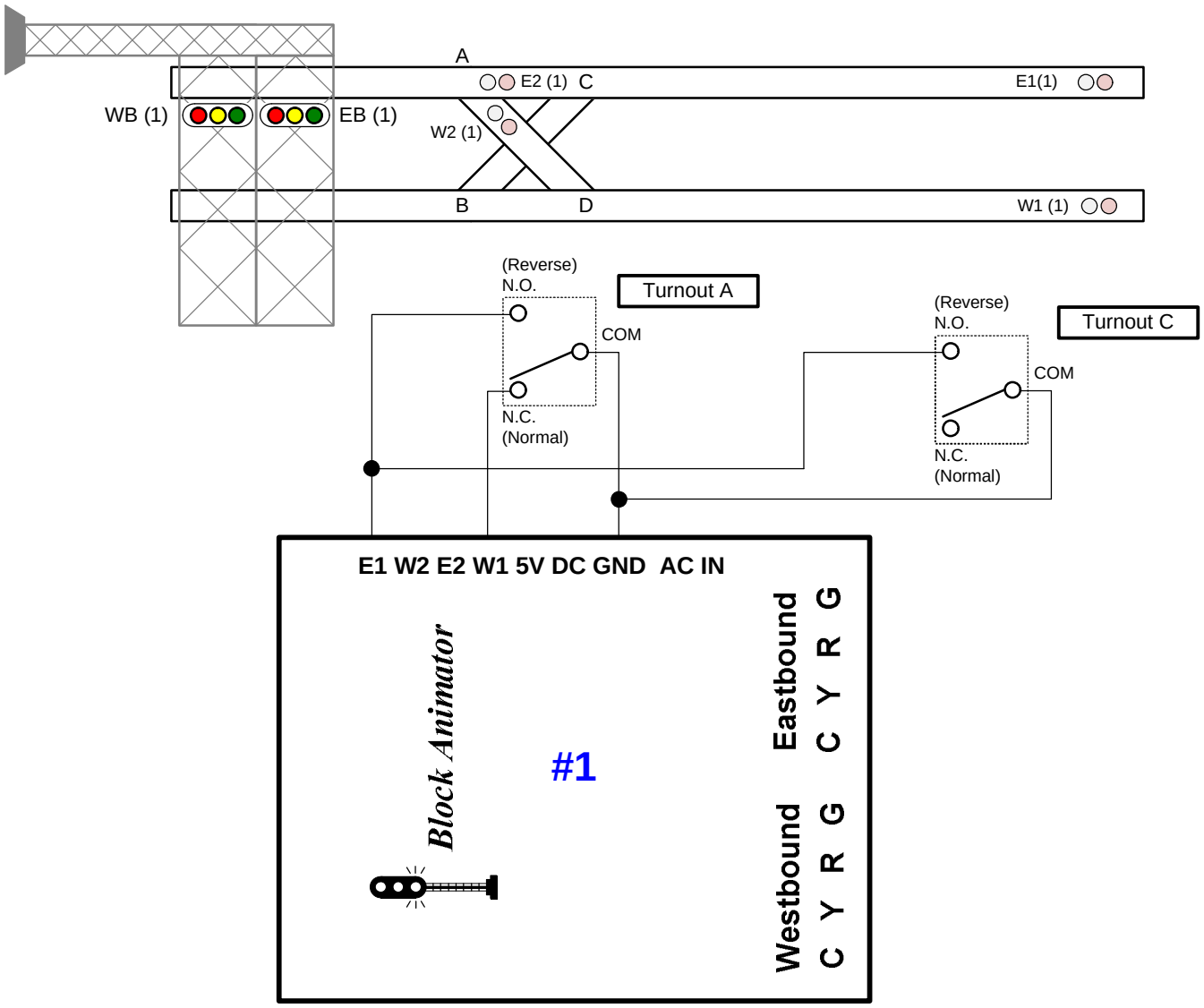

Figure 6

The W1(1) sensor input terminal will be grounded on the ***Block Animator* #1** when turnout pair A-D is thrown for the normal/straight routes (the terminal labeled COM makes contact with the terminal labeled N.C. (Normally Closed)). The E1(1) sensor input terminal for the main route will be grounded on the ***Block Animator* #1** when turnout pairs A-D **or** B-C are thrown for the reverse/diverging routes (the terminal labeled COM makes contact with the terminal labeled N.O. (Normally Open)).

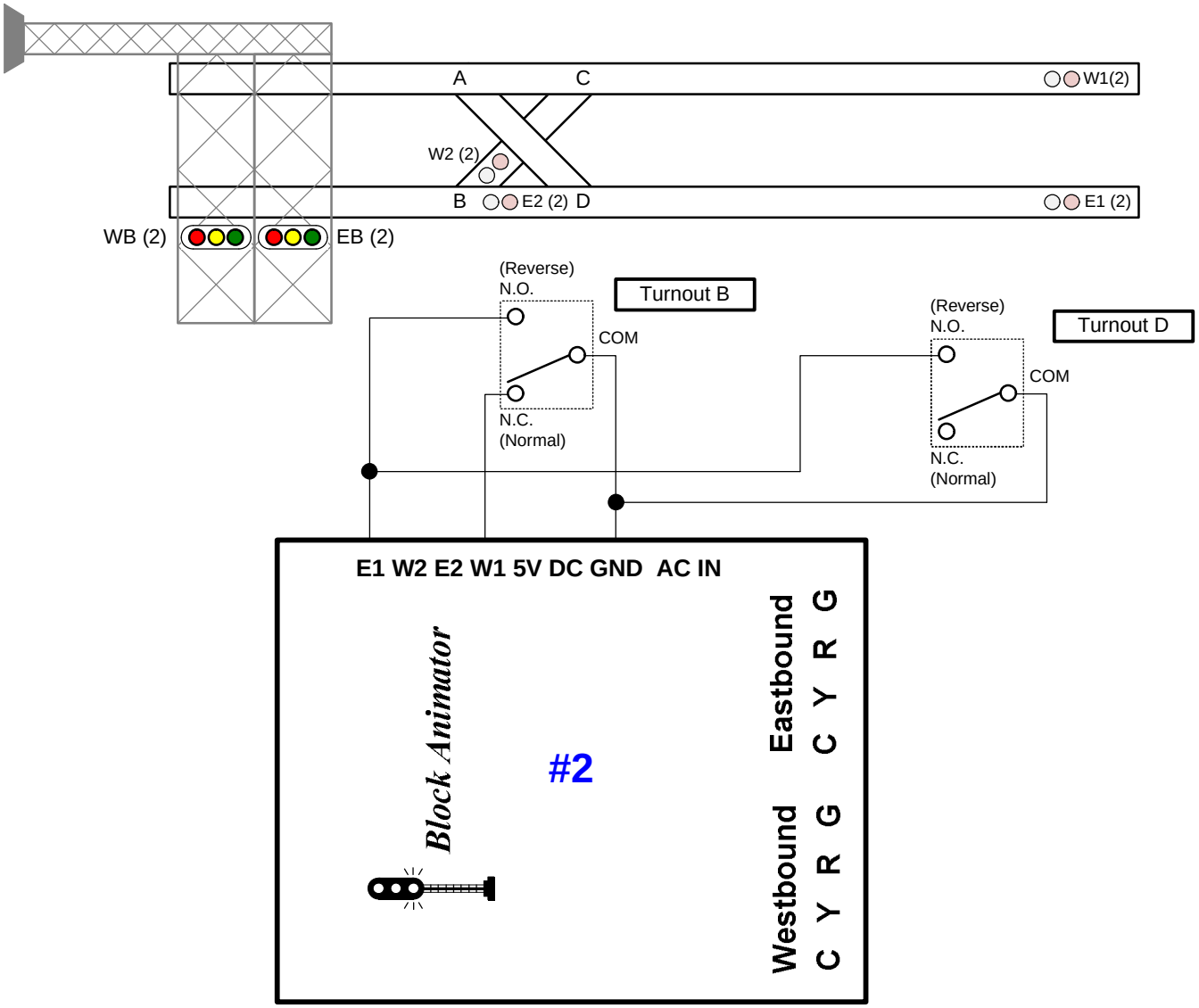

Figure 7

The W1(2) sensor input terminal will be grounded on the ***Block Animator* #1** when turnout pair B-C is thrown for the normal/straight routes (the terminal labeled COM makes contact with the terminal labeled N.C. (Normally Closed)). The E1(1) sensor input terminal for the main route will be grounded on the ***Block Animator* #1** when turnout pairs B-C **or** A-D are thrown for the reverse/diverging routes (the terminal labeled COM makes contact with the terminal labeled N.O. (Normally Open)).

Technical Support

If you need further assistance with this application please do not hesitate to contact us by phone, mail and email; our contact information can be found on the top of Page 1.