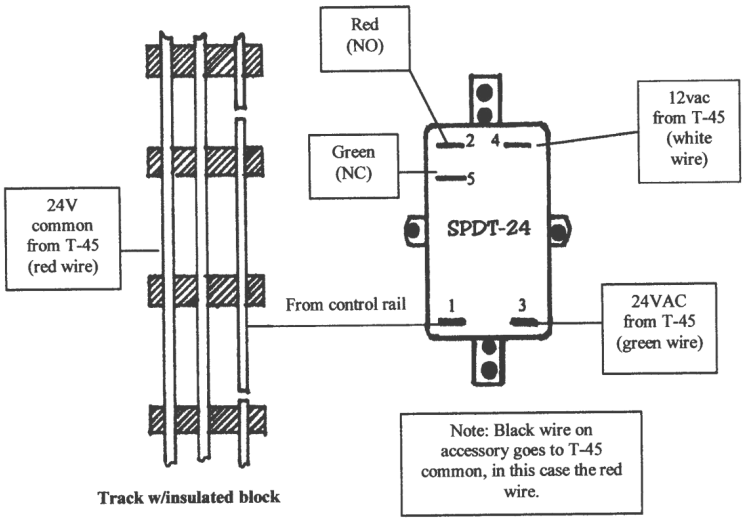
Signals/Accessories w/ NO & NC Connections



General Instructions (i.e. for Lionel® products)
Using previous diagram(s) as a reference, terminal 5 is normally closed, and terminal 2 is normally open. Terminal 4 provides power for #5 and #2. Terminal #3 brings power to the relay circuit from T-45 transformer and terminal #1 is connected to your insulated block. When a train enters your block, this "makes" the circuit activating the relay.

Wiring Examples:
Lionel 450 Signal Bridge – Requires two relays, one for each track, for prototypical operation. Connect #2 (NO) from signal bridge to #2 on relay, #1 (NC) to #5 and connect common externally to transformer (T-45). Wire terminals #1 and #3 per "General Instructions" above and don't forget to bring power to #4.

Lionel 2324 Switch Tower - #2 from tower (NO) to #2 on relay, #3 to #5, and connect common externally to transformer. Connect #1 and #3 per above.

Final Note: Whatever transformer you use for accessory, whether T-45 or primary transformer (i.e. ZW), make sure that use the common and the power from the same transformer.

Scott's Odds-n-Ends

24Vsystems

SPDT-24 Instruction Sheet

Thanks for choosing the SPDT-24 relay for use on your layout!

Applications for this relay in Model Railroading include operation of any device that has wiring requirements for NO and NC (normally open and normally closed) connections. This means that a particular accessory includes a feature that is normally turned on most of the time (NC), but another feature is ready to be turned on instead (NO). So, referencing a train layout, a dwarf signal hooked up to a pre-designated block of track would normally show a green light for "all clear" (NC). But when a passing train enters this block, the SPDT-24 relay will activate the NO red light on the dwarf signal to warn that the track is occupied. As soon as the train is clear of the block, the red light is turned off (a yellow light may cycle through) and the green light turns on again.

What is a little unique about our SPDT-24 relay is that we utilize 24VAC instead of more traditional 12VAC or even 12VDC devices. Why? Pricing; reliability and non positional mounting to name a few reasons. However, you must have a 24VAC source, like our T-45 multi-tap transformer. With this theory in mind, we can apply this relay for a number of applications.

So much for a basic overview, let's wire:

For MTH® Scale Crossing Gates:

1. Attach relay to your layout (probably under the table) with two screws (not included).
2. Connect red wire from secondary (output) to our T-45 (which is the common) to the outside rail of track, but not the same rail as the control rail.
3. The red and black wires from the crossing gates need to be connected to the power (10 – 14VAC) and common, respectively, from a transformer. Again, our T-45 can facilitate this using the 12Vac legs.
4. Identify the block that will control the relay. Run a wire from the "control rail" to spade terminal #1 on relay. (Female solderless terminals or our "quick connect w/screw"are two easy ways to wire relay.)

5. Connect power from T-45 green wire to spade terminal #3.
6. Connect NO wire (yellow) from accessory to NO terminal, identified as #2.
7. Connect NC wire (white) from accessory to NC terminal identified as #5.
8. Similarly, connect the blue wires to #4.

Note 1: Both crossing gates should be connected to terminals 2, 4 & 5, respectively.

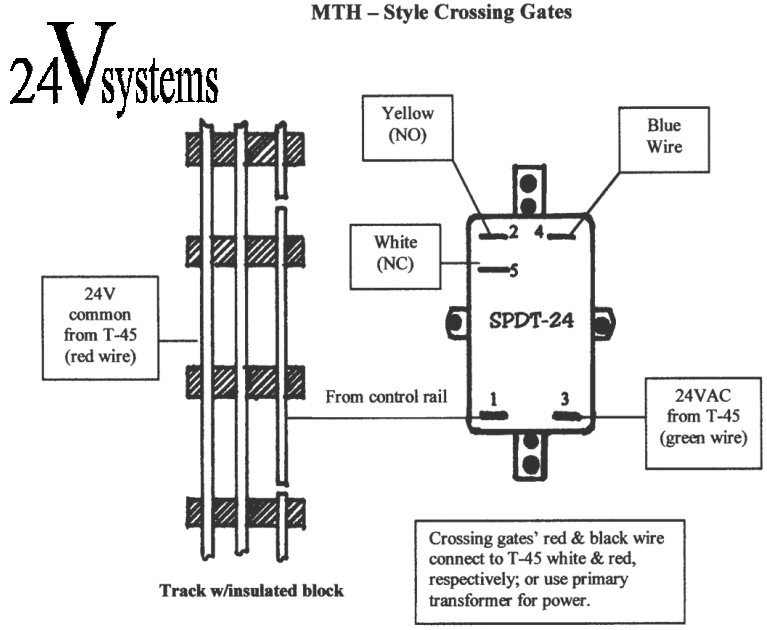
Note 2: If running a double track – or more – multiple "control rails" can activate this one relay, which would operate 1 pair of crossing gates. Simply connect to terminal #1 as necessary.

Note 3: Actual location of terminals can vary from supplier to supplier; however, terminal number will remain consistent.

Note 4: T-45 transformer can power 24VAC relays and 12VAC crossing gates at the same time. Just wire accordingly

Note 5: 24VAC is a nominal rating for the SPDT-24 relays. They will operate with a lower voltage across the coil, i.e. 18 – 20 volts ac. But since most operators alternate between conventional trains and command trains, it is probably better just to have a dedicated transformer circuit.

MTH – Style Crossing Gates



For Cantilevered Signal Bridge, 7 Light Block Signal, Scale Dwarf Signal, or operating block signal.

1. Attach relay to your layout (probably under the table) with two screws (not included).
2. Connect red wire from our T-45 (or common of similar 24VAC transformer) to outside rail of track, but not the same rail as the control rail. This will be your common.
3. Identify the block that will control the relay. Run a wire from the "control rail" to spade terminal #1 on relay. (Female solderless terminals or our "quick connect w/screw"are two easy ways to wire relay.)
4. Bring power to the relay coil by connecting green wire from T-45 to spade terminal #3.
5. On these accessories, black is common. Using our T-45, red on the secondary is our common. Connect the accessory black to the T-45 red.
6. Connect NO wire (usually red) from accessory to NO terminal, identified as #2.
7. Connect NC wire (usually green) from accessory to NC terminal identified as #5.
8. Now you need to bring power to the relay which will illuminate lights: Again, using our T-45 transformer, connect the white (12v) to terminal #4.

Note 1: Cantilevered bridge with two lights (one for each block) require two relays for prototypical operation. Same for 1 over 1 signal.

Note 2: For a block where you want a signal on either end of the block, only one relay is needed! Wire second signal to #5 (NC), #2 (NO), and black to ground.

Note 3: You can run lesser voltage to terminal 4, i.e. 8VAC, ,for your accessories

TIP: If installing several relays close together, save yourself some trouble and run common ground (terminal strip) and "jump" power from transformer from terminal #4 from the first relay to #4 on the second relay and so on.