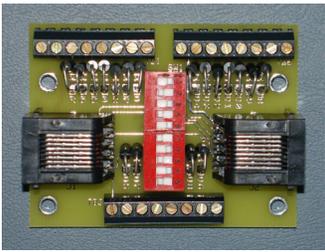


# Occupancy Bus Utility Board Instructions

The Scale Nature Company Occupancy Bus Utility Board (OBUB) is designed for use in the Signal System for Modular Layouts, as described in RailModel Journal, February 2005 issue (back issues available, <http://www.railmodeljournal.com/>).

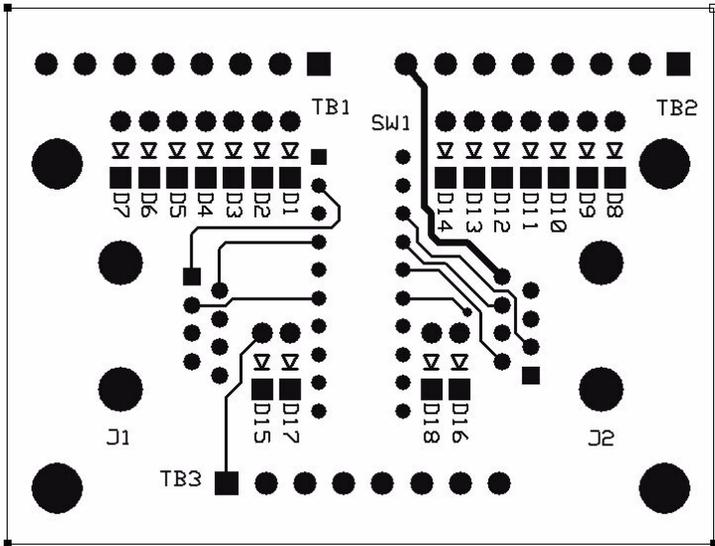
The OBUB simplifies wiring tasks for both "cross-over" and "cascade" type modules. It provides RJ45 jacks for directly connecting the Occupancy Bus cables, and screw-terminals for connecting detectors, turnout position, and signal drivers. Diodes are incorporated to ensure isolation of Occupancy Bus and signal driver wires.

The Selectable Cascade feature uses slide switches to convert the OBUB between the "cross-over" function and the "cascade" function. This utility allows dynamic configuration of signal blocks on a modular layout. For example, combine two "too short" signal blocks into one long block, or split one "too long" block into two shorter blocks. See Figure 2.

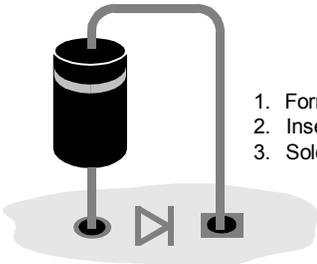


## ASSEMBLY INSTRUCTIONS

All components are installed on the side of the board shown below. Solder the component leads to the opposite side of the board. Each component location is labeled with a reference designator. Use the table below to match component types to reference designators and board locations.

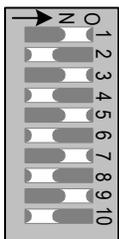


Reference Designator	Component Type	Instructions
D1 - D18	1N4001 diodes	see Figure 1
J1 and J2	RJ45 jacks	carefully align 8 leads in holes, snap plastic lugs into board, solder all 8 leads
SW1	DIP switch, 10 position	orient switch number 1 toward TB1 & TB2
TB1 - TB3	screw terminals	face terminal openings outward

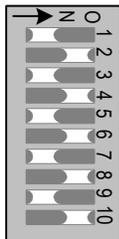


**Figure 1**

1. Form banded-end diode lead into a "U".
2. Insert in board oriented as shown.
3. Solder and clip leads.



Cascade mode:  
turn on odd-numbered switches,  
turn off even-numbered switches



**Figure 2**  
slide switch  
configuration

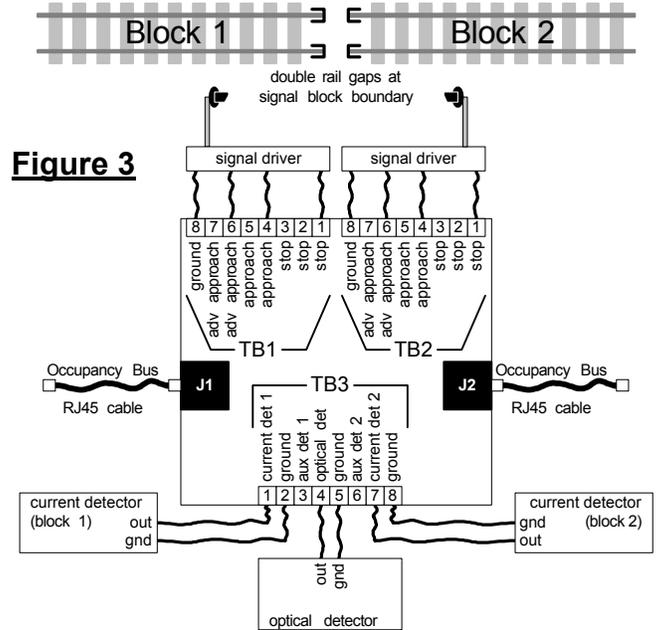
Cross-over mode:  
turn on even-numbered switches,  
turn off odd-numbered switches

## INSTALLATION INSTRUCTIONS

The OBUB has four large corner holes for mounting in a module using screws and standoffs (not included).

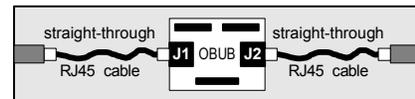
Figure 3 shows connecting the OBUB to detectors, signal drivers and Occupancy Bus cables. TB1 and TB2 provide 3 "stop" aspect outputs and 2 each "approach" and "advanced approach" aspect outputs to simplify connecting multiple signals. Note the "stop" outputs may also be used for approach lighting - for example in Figure 3 below, TB1's "stop" is the approach light control for the signal protecting Block 2.

TB1 and TB3 pins 1 - 3 are associated with J1, whereas TB2 and TB3 pins 6 - 8 are associated with J2. Take note of the signal orientations and where their drivers connect to the OBUB: a signal connected to TB1 protects the signal block whose cable is plugged into J1, and therefore it faces outward from that signal block. A signal connected to TB2 protects the signal block whose cable is plugged into J2, and therefore faces outward from that signal block. Also take note of the detectors and where they connect to TB3: pins 1 - 3 are for current and auxiliary detectors (e.g. turnout position) associated with the signal block whose cable is plugged into J1; pins 6 - 8 are for current and auxiliary detectors associated with the signal block whose cable is plugged into J2.

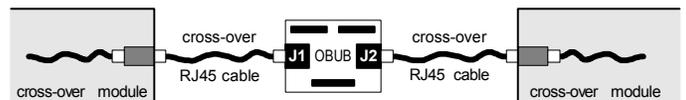


**Figure 3**

## APPLICATIONS



OBUB mounted in module near center.  
Straight-through RJ45 couplers used at both module ends.



OBUB used as "portable" cascade between cross-over modules, for splitting one long block into two shorter blocks.