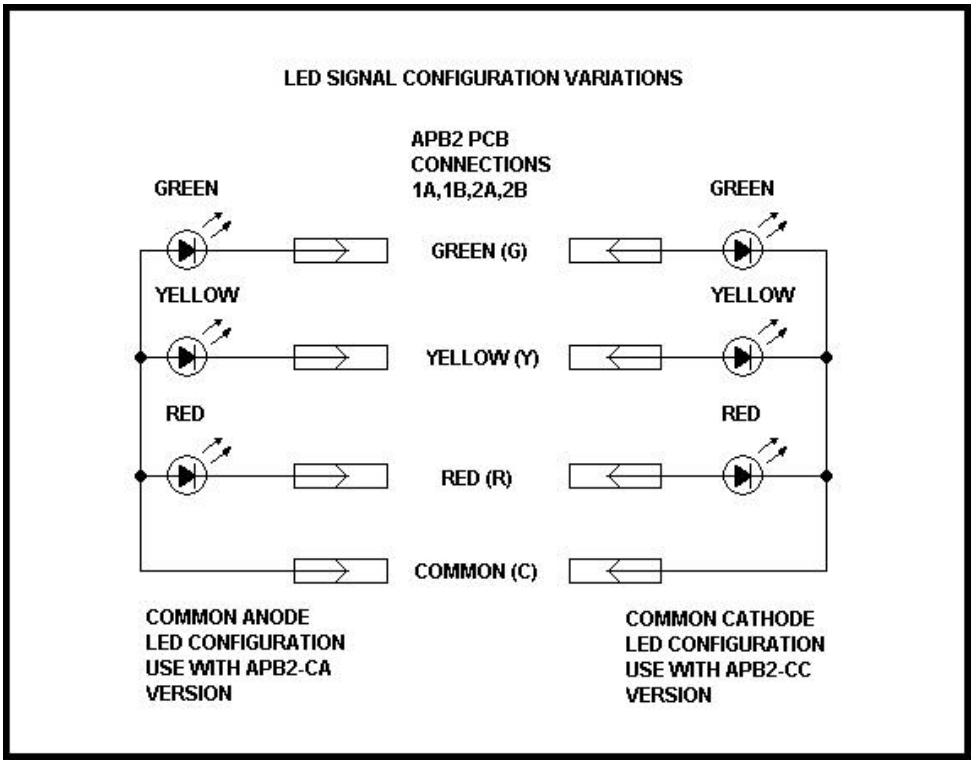
APB2 – ABSOLUTE PERMISSIVE SIGNALING SYSTEM

The APB2 system was designed for use in DC throttle equipped layouts. This system will not give reliable indications when used with DCC equipped layouts. The APB2 very closely emulates the ABSOLUTE PERMISSIVE signal rules that were used in North America until recently. You will find that this circuit will help manage traffic on your model railroad system and will help you avoid conflicts when the signal indications are obeyed.

VARIATIONS

Check your APB2 printed circuit board for compatibility for use with the type of LED type signals you wish to use. The APB2-CC version must be used with “COMMON CATHODE” LED signals. The APB2-CA must be used with “COMMON ANODE” LED signals. In most cases connecting non-compatible signals will not damage the LEDs, but the LEDs will not illuminate. The APB2 provides 12VDC illumination voltage and has on-board 1Kohm current limiting resistors for each set of signal connections. External current limiting resistors are not required.

Refer to the following diagram for connection of signals to the printed circuit board. Signal connections are made at the rows marked “1A”, “1B”, “2A’, and “2B”. Up to 2 pairs of signals may be connected to the APB2 board. Each set of signals may be terminated with a 0.100” pitch SIL connector as long as 0.100” SIL mating connectors are installed on the APB2 printed circuit assembly.



INSTALLATION

- Note that the printed circuit is mirrored. Beside the BLUE LEDs you will see arrows that show the correct direction of travel the LED will indicate when the block is occupied.

- Connect 12VDC power to either side of the printed circuit board to the connections marked “12V” and “GND”. This is the power that the circuit will use and is also the power that will be supplied to your signals.
- Note the removable jumpers labelled “T,D,A” and “B,D,T”. Remove these jumpers and store these in a safe place. When you are finished with the initial installation of your APB2 system you will reconnect these jumpers in the desired places to enable “TUMBLE RED” and “DOUBLE APPROACH YELLOW” rules. The jumpers “A” and “B” are not currently assigned and are reserved for future microcontroller program development.
- Next, break the connection to the feed wire for the block the APB2 circuit will monitor. Strip about ¼” of insulation from each of the wires and connect these to “TR1” and “TR2”.
- Turn on power to the circuit and run a locomotive through the block. Both RED LEDs should light. One BLUE LED should light to indicate the direction of travel. If the actual direction of travel conflicts with the BLUE LED switch the connections at “TR1” and “TR2”.
- When no activity is detected both GREEN LEDs should be lit.
- When you are satisfied that the direction of travel of the locomotive corresponds with the on-board LEDs connect the trackside signals. “C” is the common connection, “G” goes to green, “Y” goes to yellow (or amber), “R” goes to red. Up to two sets of identical signals can be directly connected in each direction. “1A” and “2A” connect to the direction facing left, “1B” and “2B” connect to the direction facing right.
- Signals can be wired and soldered directly to the printed circuit board, or alternately, 0.100” pitch connectors can be installed on both the printed circuit and signal connections.
- Once you have the first block installed, proceed to the next block adjacent to the first. When that block has been successfully installed connect the blocks with the 10 conductor ribbon cable jumper supplied. Repeat the instructions to install more blocks.
- If you have an “end to end” layout, no return jumper cable is required. If you have a layout that is basically a continuous loop you will have to install a return jumper cable from the first APB2 in the system to the last APB2. This will allow signalling to follow throughout the layout without interruption. That jumper is available in 2’, 4’ 8’ and 16’ lengths as well as custom cut lengths. Please use the contact information on the last page of this instruction set to inquire/order about this cable.
- Once you have connected the system and are certain that all your signals are connected properly you should run a locomotive through your blocks to confirm that all signal indications are functioning correctly.
- Now you can set up the tumble and double approach functions by connecting the shunts you removed and stored earlier to the appropriate function select pins. When you are done, power the system down for a few seconds and then re-start the system. Run locomotives through the system and insert/remove shunts to give you the indications you desire.

FOR SERVICE OR INFORMATION

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Visit the World Wide Web site at
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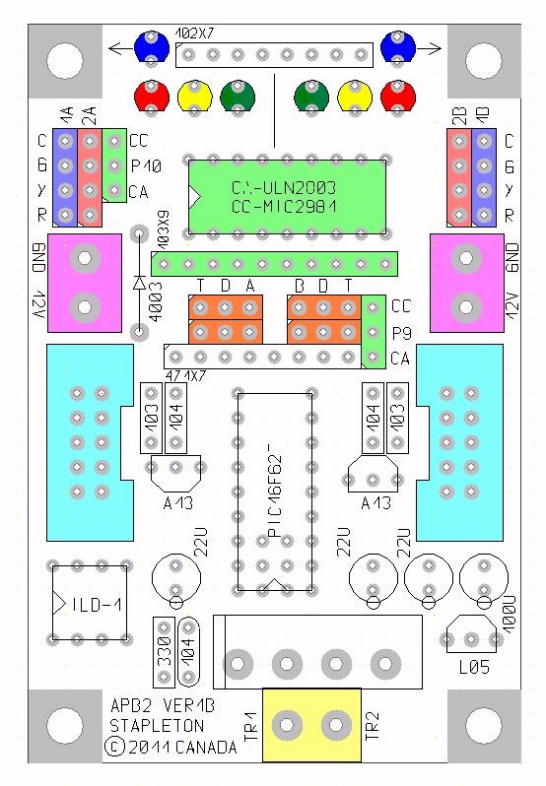

WARRANTY

Your model APB2 is warranted to be free of electrical/electronic defects for a period of 1 year from the date of purchase. If it should fail to operate within this period return the item to the point of purchase for no charge repair of replacement. The following conditions will void the warranty and units submitted for service will not be covered under this warranty;

1 – Units that have been modified without factory recommendation.

2 – Units which have been determined to have been damaged due to mishandling, physical abuse or electrical abuse including, but not limited to, incorrect power or load connections.

3 – Units subjected to damage by Acts of God including, but not limited to, transient voltages, electrical spikes and/or lightning damage, fire, flood and/or natural disaster.

4 – Units returned for repair without dated proof of purchase.

Returns for repair or replacement found to meet any of the above conditions will be repaired at a charge to the customer pending prior customer approval for such repair. All freight charges incurred to transport the item are the sole responsibility of the end user.

The end user agrees Ken Stapleton or any representative of Ken Stapleton will not be held liable for any damage or injury or loss incurred as a result of the usage of this product and shall save harmless Ken Stapleton or any representative of Ken Stapleton from any such claim of liability. This warranty is expressed in lieu of any other warranties expressed or implied.