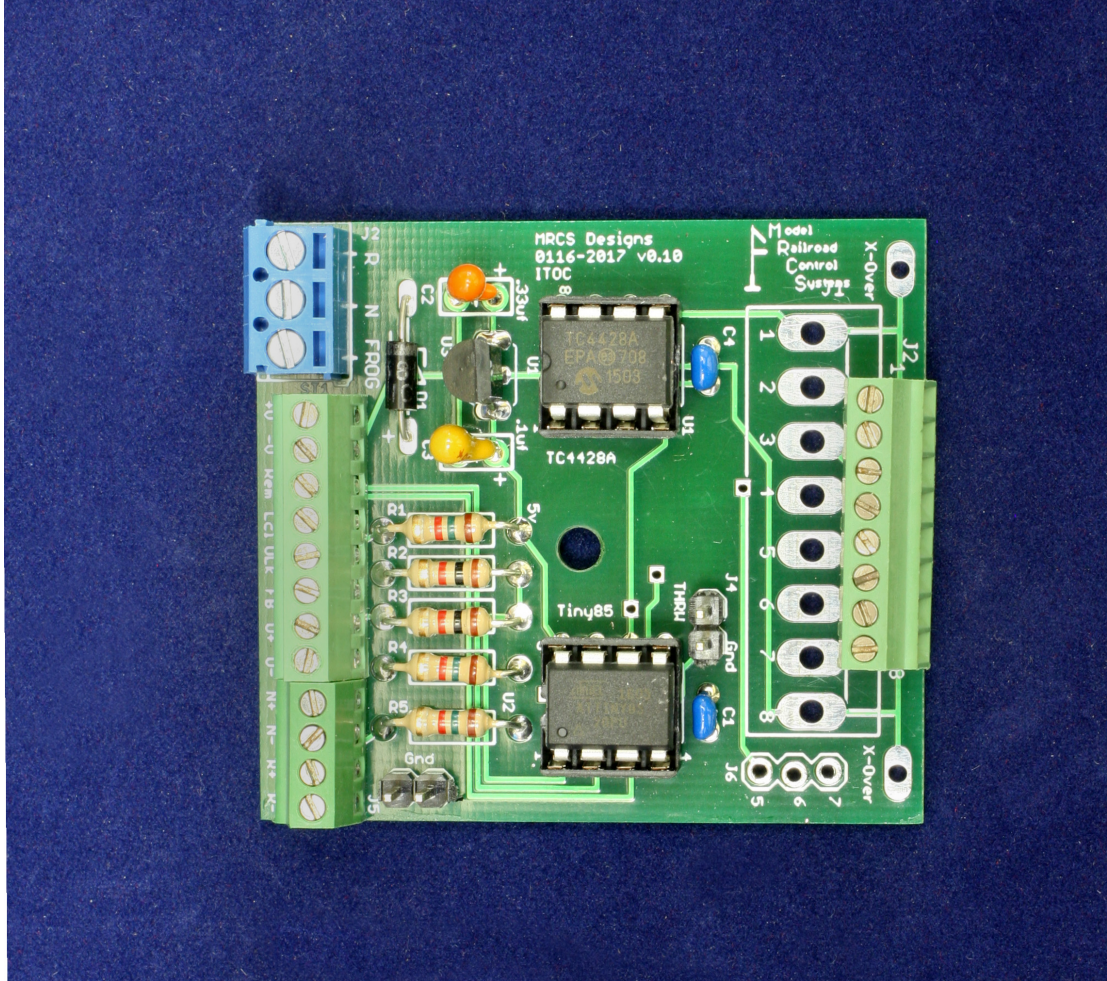
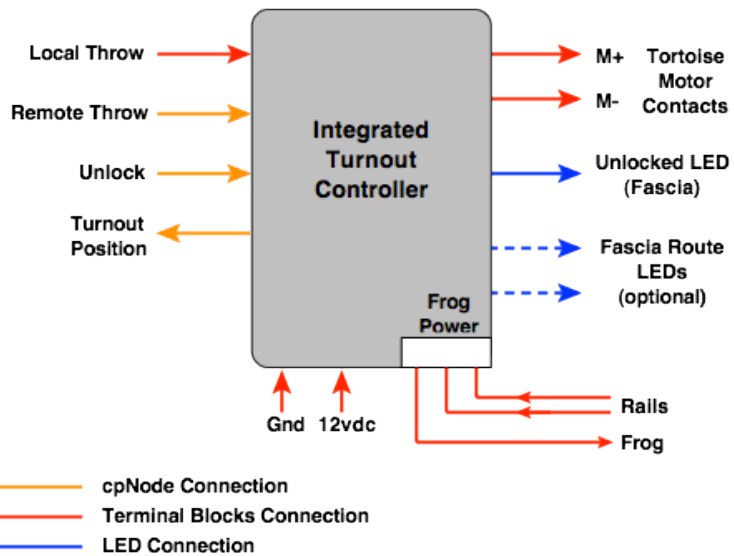


# ITC Quick Start Guide v1.0

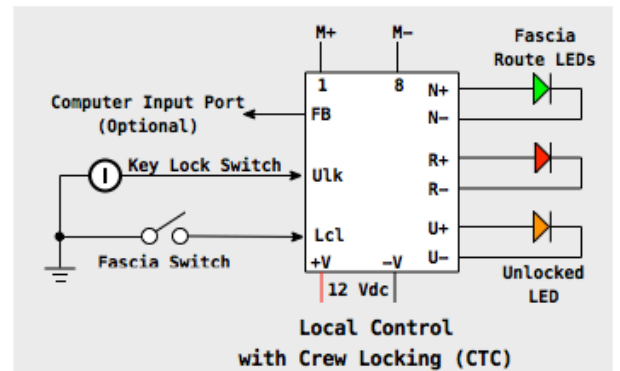
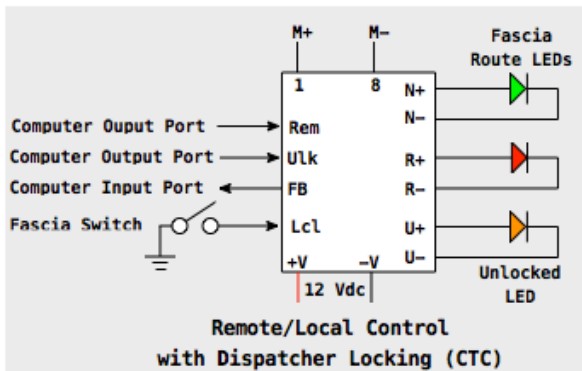
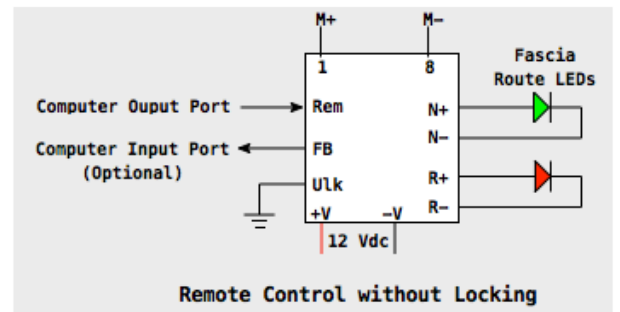
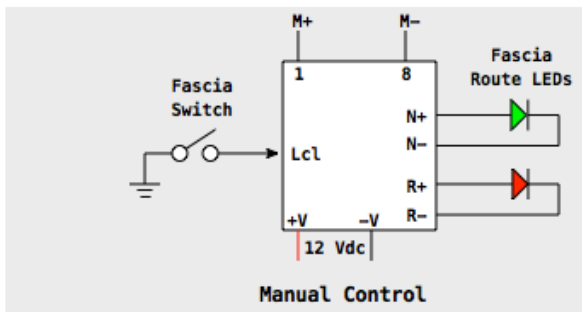
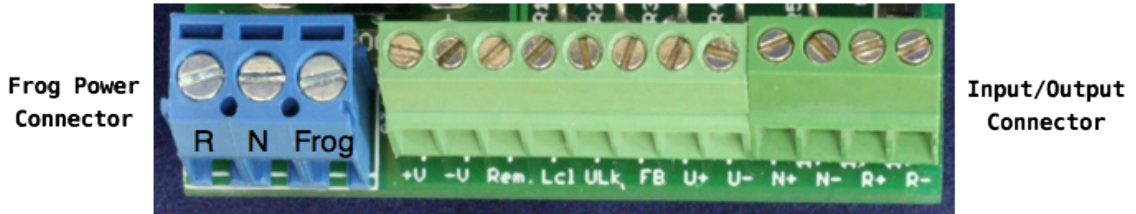


## 1. ITC Block Diagram



## 2. Control Connections

Wiring diagrams for some typical turnout connections. Port names (e.g. Rem) are those on the silkscreen. LEDs are Common Anode (current sinking). The long lead is on the LED is  $+$ .

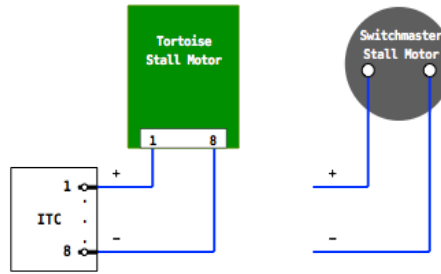


## 3. Turnout Motor Connections

Connection to a turnout motor is through the 8-position connector, J1. Pin 1 and Pin 8 are the motor voltage outputs. The ITC reverses the polarity of the output pins based on the state of the onboard throw signal. Various types of turnout motors can be interfaced to the ITC.

### 3.1. Circuitron Tortoise®/Switchmaster® Stall Motor

Direct connection to stall motor style turnout motors. Changing the motor voltage polarity changes direction of throw bar.



### 3.2. MP1/MP5

The MP1 and MP5 are end stop style turnout motors.



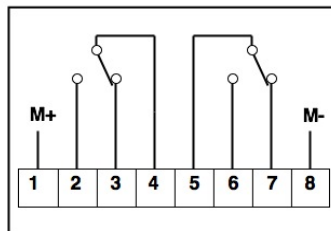
### 3.3. Tortoise / Switch Motor Connector

Direct connection to a Tortoise stall motor is done through the .156" pads. The pads can have a .156" female Molex connector or an 8-position card edge connector. A right angle Molex male connector can be easily soldered to the edge finger pads on the Tortoise stall motor.

If hardwired connections to a turnout motor is desired, a set of .100" (2.54 mm) spaced pads are provided for a screw terminal block, male header pins, or direct solder.

The Turnout Position Feedback signal can be routed through pins 5 and 6, in conjunction with the ACTPOS jumper to provide true turnout position. Cutting the trace between the ACTPOS pads will break the internal path for the feedback output and route it through the Tortoise (or other switch) contacts. See the Section 5 for information on Actual Turnout Position options.

Pins 2,3 and 4 are connected to the Frog power connector.

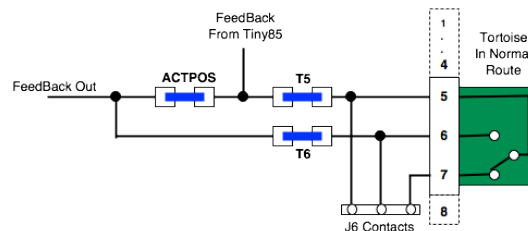


## 4. Reversing Motor Connections

If the turnout motor, on power up, does not move to the desired route, flip the ITC over when using the Molex connector or rotate the ITC 180 degrees if using the card edge connector or swap the motor wires (pin 1 and 8) on the .100" screw terminal block.

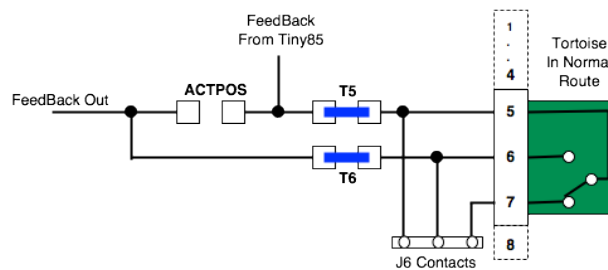
## 5. Actual Turnout Position (Feedback)

The default reporting state for the position of the turnout motor is that of the last throw command from either the Remote or Local throw switch. The status of the Feedback Out line is the signal level of pin 7 of the Tiny85. The onboard software sets this status. In this mode, it is assumed that the turnout motor has moved the points to the commanded position. This is a common assumption for model railroad operations. The option pads are located on the bottom side of the circuit board and are marked ACTPOS, T5, and T6.



If the actual position of the thrown points is desired, based upon the state of either internal switch contacts e.g. Tortoise, or external micro switches connected to the throw arm, the ACTPOS (actual position) can be used.

The Feedback signal from the Tiny85 is routed directly to the Feedback output on the screw terminal block through the ACTPOS solder pad jumper. By cutting the trace between the solder pads, the Feedback Out signal is routed through pins 5 and 6 of the motor connector. If the turnout has been commanded to Reverse, when the turnout motor switch contact closes, the Feedback Out signal is routed to the screw terminal block.



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