Integrated Turnout Controller
ITC v1.0

Introduction

The Integrated Turnout Controller (ITC) is an updated design of the MRCS Remote Stall Motor Controller (RSMC) introduced in 2013.

The ITC is designed to provide all control functions needed for remote, local, and locking of a turnout for various styles of turnout motors. The ITC provides LED outputs with onboard current limiting resistors for route and switch lock status.

The ITC can operate as a standalone turnout controller, with no computer needed. When connected to a computer for remote turnout control and the computer is not running, the ITC comes up in local mode. This allows for turnouts to be thrown manually using the Local input.

The ITC has the following features:

- Standalone or computer turnout motor control
- Local Throw input
- Remote Throw input
- Switch Lock input
- Turnout position feedback output
- Route LED ports, Normal/Reverse (Common Anode, Sinking)
- Open Source sketch software
- Motor power input, 9-12 Vdc
- Onboard 5v regulator for logic power
- Turnout motor driver (TC4428 MOSFET), up to 500 ma drive
- Frog power routing using external switch contacts (Tortoise, Switchmaster™, MP1/MP5)
- 8 position motor pads for a .156" Molex connector, .156" edge connector, or .100" (2.54mm)
- Separate motor pads for connection to additional crossover turnout motors

Figure 1 is the simple turnout connection to throw a stall motor. The fascia switch can be a SPST toggle connected to the power supply ground. The ITC provides connections to fascia mounted LEDs for the selected route.

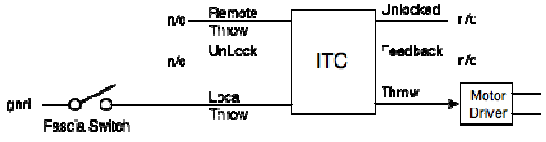

Figure 1 Simple Turnout Throw

Figure 2 shows a simple computer connection where the control software manages the turnout and can read the state of the turnout points. Feedback is the status of the last throw command.

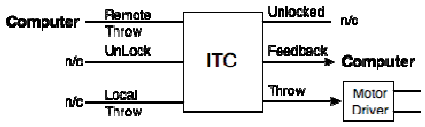

Figure 2 Simple Computer Control

Figure 3 shows a complete turnout control scheme where a remote operator (Dispatcher) has complete control over the turnout. This configuration provides 1) remote throwing of the turnout, 2) granting access to a road crew buy unlocking the turnout, and 3) monitoring which route has been selected. This configuration can be used for implementing a CTC operating scheme with a Dispatcher.

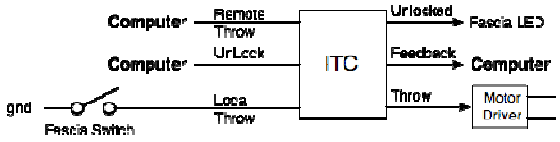

Figure 3 Full Turnout Control With Dispatcher Switch Locking

Figure 4 can be used to provide local crew control for locking/unlocking a turnout with authority issued by a Dispatcher. Operating procedures could include a key issued to the road crew, which is used to unlock the turnout at the fascia. There are excellent examples of switch locking and lock designs in Dr. Chubb's CMRI manuals.

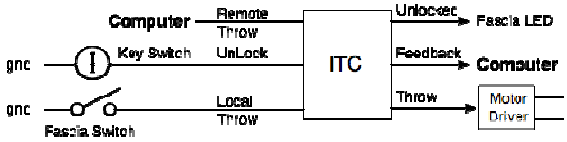

Figure 4 Computer Control With Crew Controlled Switch Locking

Figure 5 is a configuration for main track turnouts within ABS and APB territory. A 10k resistor inline would be inserted across the track section causing the signal system to display a red aspect as if the track was occupied.

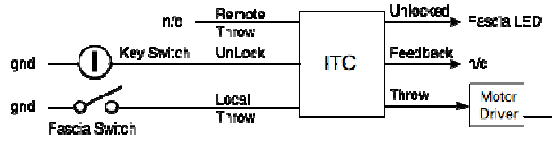

Figure 5 Bonded Siding Occupancy Shunt

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