

Rail Automation

Trackguard Wayside Controller

Vital Signal Control System

The Trackguard Wayside Controller (WC) is a vital microprocessor-controlled system that generates an electronic DC coded track circuit and operates intermediate signal locations and single or multiple switch interlockings.

The WC is available as a color-light or search-light system and will operate in cab signal territory. The WC is compatible with Electro Code 4, Electro Code 4 Plus, Electro Code 2, Genrakode™, and E-Code™. With the addition of a Siemens SEAR II and a WCP module, the WC unit will interface with all of the major codeline protocols including ATCS.

The WC supports coded track applications, coded line applications, and vital radio based signaling. Vital network applications are supported via Ethernet, spread-spectrum radio, or Echelon®.

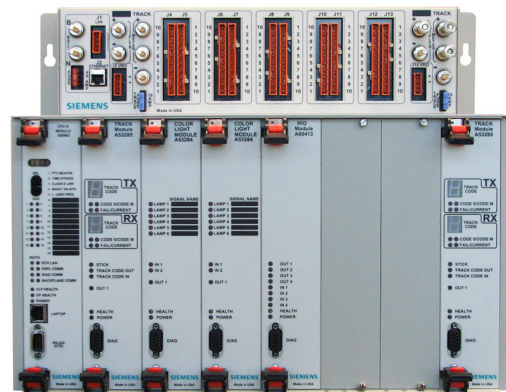
The CPU3 runs an MCF (Module Configuration File) created by the WCCT (Wayside Controller Configuration Tool). The MCF contains the vital Boolean logic for the system.

The CPU3 provides a built-in Web Browser User Interface which allows the user to view the status of the system, troubleshoot problems, configure modules, obtain configuration and version reports, and upload new software (MEFs and MCFs).

All modules are interchangeable between units and all modules are designed to be "hot-swappable".

A new configuration tool known as the WCCT has been created to allow users to create their own Boolean signaling logic. The tool allows the user to see the relay equivalent of the Boolean logic as it is being developed. The tool provides simple graphical user interfaces which allow the user to specify which modules are in the system and how they are configured, and which I/O points on the modules will be used.

It allows the user to add field configurable timers, and Boolean properties, and to specify which ones are included in the Unique Check Number (UCN).



The tool provides graphical interfaces which allow the user to:

- Define the PTC message generated by the WC
- Create vital communications channels between WC's
- Specify interface to non-vital controller system (SEAR II)

The tool also provides a logic simulation capability that allows the user to animate the relay contacts and coils as they change state.

Specifications Battery/Operating

Voltage:	9.0 - 16.5 VDC
Current (for typical intermediate):	1.6 A to 12.0 A Nominal (Actual current depends on lamp load and track load)

Configuration

WC Chassis -	6 Modules
CPU3:	1
Track/Line:	2
General I/O:	3

General I/O Modules include:
Vital Input, Vital Output, Colorlight, Searchlight, and Vital Relay I/O

Track Length
18,000 ft @ 3 ohms ballast and .06 ohm shunting sensitivity and broken rail detection

Modules

CPU3

The CPU3 runs the vital application logic (MCF), controls the I/O modules, and creates PTC messages.

- Real-time clock
- Flash backed event recorder memory
- Vital and Non-Vital Processor
- 4-digit display with 2 push-button menu system for simple configuration
- Ethernet Laptop diagnostic port
- Web Browser based diagnostics
- PTC Ethernet port
- Echelon® Support

Coded Track Module

The track module communicates the track status to the WC unit and transmits coded information onto the track. Digital displays on the front panel indicate code-in and code-out. The input and output of this module is Electro Code 4/4 Plus compatible.

- Drives up to 4.0 VDC into a track load at 10 A
- Numeric display for received and transmitted codes
- Directional stick indicator LED

Coded Line Module

The line interface module communicates coded information to the WC unit and transmits coded information from the WC unit to other locations via cable. The input and output of this module are Electro Code 4/4 Plus compatible.

Output Voltage: 2 V min to 14.5 V max
Field Adjustable

Input sensitivity: 2 V min to 14.5 V max
Field Adjustable

Input Impedance: 1.3k ohm

Vital Input (VPI) Module

The vital input module provides eight opto-isolated parallel inputs for communication to the CPU with the equivalent security of a double break circuit. The module also has two opto-isolated analog inputs.

Number of inputs: 8 opto-isolated, vital,
2 opto-isolated, analog, non-vital

Isolation: 2000 VAC

Vital Output (VRO) Module

The vital output module has six general purpose isolated outputs which can drive a steady state output or cab rates. It provides the equivalent security of a double break circuit. A single output can drive a neutral line relay, combine two outputs to drive a polar relay, or drive a code following relay or cab signal generator at one of the following rates: 75, 120, 180, 270, or 420.

Number of outputs: 6 isolated, vital

Output Voltage: 12 VDC into 500 ohms

Relay loads: 100-2000 ohms

Cab rates: 75, 120, 180, 270, 420

Isolation: 2000 VAC

Vital Input (VPI) Module

The vital input module provides eight opto-isolated parallel inputs for communication to the CPU with the equivalent security of a double break circuit. The module also has two opto-isolated analog inputs.

Number of inputs: 8 opto-isolated, vital,
2 opto-isolated, analog, non-vital

Isolation: 2000 VAC

Vital Relay Input/Output (RIO) Module

This module combines four isolated vital relay outputs and four opto-isolated vital relay inputs for use with the many signal installations where four or fewer I/Os are required. Outputs on this module can drive a neutral line relay, combine two outputs to drive a polar relay, or drive a code following relay or cab signal generator at one of the following rates: 75, 120, 180, 270, or 420.

Number of outputs: 4 isolated, vital

Output Voltage: 12 VDC into 500 ohms

Relay loads: 100-2000 ohms

Cab rates: 75, 120, 180, 270, 420

Number of inputs: 4 opto-isolated, vital

Isolation: 2000 VAC

Colorlight (Lamp Driver) Module

Requires NO current limiting resistors

Number of lamp drivers: 6 each @ 25 watts

Total module output: 100 watts

Adjustable output Voltage, regulated: 9.5-13.0 VDC

Vital inputs: 2 each opto-isolated

Vital Output: 1 each isolated

Cab rates: 75, 120, 180, 270, 420

Input voltage: 9.0-16.0 VDC 13.6 VDC Nominal

Isolation: 2000 VAC

Searchlight (Lamp Driver) Module

Requires NO current limiting resistors

Number of lamp drivers: 2 each @ 25 watts

Adjustable output

Cab Module

Code input: 1 or 2 wire

Voltage: 5 VRMS @ 5A across 1 ohm load

Chassis used: WC Distributed/Network

Cab rates: 75, 120, 180, 270, 420

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The information in this document contains general descriptions of the technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.