



MODEL 2300 NG² | PRODUCT PROFILE



Product Overview

The Model 2300 NG² Defect Detector is the next generation of the dual microprocessor 2300 NG system designed to perform all traditional defect inspections. The re-engineered processor package produces radically increased computing power and is fully backward compatible with the over 1000 NG systems in service on Class I and other heavy-haul railroads worldwide — replace the NG Controller Module with the NG² Controller Module while retaining your existing chassis assembly. All plug connections are pin compatible.

Each Model 2300 NG² includes:

- Connections for Southern Technologies Bearing Scanners & Wheel Scanners
- 802.11 Secure Wireless Access
- VHF Voice Radio and IP Network Communications
- Integrated AEI Interface
- OLED Display & Keypad
- DTMF Prompted Rebroadcasts
- Open Contact Auxiliary Alarm Device Inputs
- Train Presence Detection — 2-Wire Audio Overlay Track Circuit
- Support for the Southern Technologies Precision Ambient Temperature Probe



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Main Assembly

The system electronics, consisting of a chassis assembly and a Controller Module, contain all the surge suppression and interconnection hardware to fill the requirements of a full-featured defect detection system.

Once alarm conditions are detected, they are clearly announced on a preselected VHF radio channel to alert train crews to the presence of dangerous conditions. Defects are identified by axle number and position in real-time. The Controller Module can provide remote data reporting over an IP network.

Updated Controller

We designed the NG² Controller Module utilizing dual-microprocessor architecture with one processor dedicated to train-scanning functions, and the other used to manage data storage and communications. The MicroC/OS real-time operating system is the core of the system software providing for management of analog and digital I/O, the OLED display & keypad, serial communications, Wi-Fi and Ethernet connectivity. The secure Wi-Fi and Ethernet serve up a web page to the browser of your portable wireless device or laptop to view and update system setup parameters, access train data and event logs, calibrate scanners, and update system software. No special apps required.

The OLED Display & Keypad provide convenient access to the most often used features, such as System Health, Radio Test and Auto Calibration for the scanners. New features to the NG² include the Network Menu, Volume Menu and the Input Menu that displays the status of the Auxiliary Inputs to aid in troubleshooting. LEDs provide the state of COP-A (Computer Operating Properly Processor A), COP-B, Wheel Sensors, PTT (Push-To-Talk) and System Warning. Located in the lower right-hand corner is the System Reset pushbutton.

The ability to upload software updates to the NG² via an IP network connection provides a convenient, reliable and cost-effective method for revising system software. The system architecture also provides for the inclusion of the Rail Logic Velocity Module for use in transmitting data to a remote host system and for generating S-9203A and S-9003B formatted reports.

Modular Design

The Model 2300 NG² system is modular by design, allowing custom configuration for specific environments. The basic system is delivered as a Hot Bearing Detector. Additional capabilities can be added by attaching input devices, such as wheel scanners, a dragging equipment detector, high/wide load detectors, and the TransCore[®] MPRR - RFID Module Assembly. The system software of the NG² already contains support for each of these options — merely adding the hardware required for the desired function and activating it in the software enables these capabilities.

The chassis assembly accommodates the Ritron DTX-160 VHF radio transceiver. Optionally, an external communication interface connector provides all the signals necessary to connect an external mobile radio transceiver equipped with similar connections.



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AEI Integration

The Model 2300 NG² system is designed to seamlessly integrate data from a TransCore® MPRR - RFID reader module. The addition of an MPRR Reader Module enables the system to include car identification information, including Owner Codes and Car Numbers, in defect alarm announcements and train reports. Also, the car identification information can be used by the system's Velocity module to generate S-9203A and S-9203B reports. In the event of a detected defect, alarm announcements delivered over the radio will include the car number with the defect. The NG² system maintains records of the last 100 trains that it has scanned. The record files can be delivered over an IP network or copied to a local PC through a serial connection and viewed in a standard ASCII text format.



MPRR Panel Assembly

Module Support

Bearing and Wheel Temperature: The Model 2300 NG² system supports input from Type II and Type III infrared scanners manufactured by Southern Technologies Corporation. Both types of scanners are compatible with the same rail mounting hardware and can support either bearing or wheel scanning interchangeably. Each delivered system includes most of the tools required for system maintenance, including alignment and calibration.



Type III - Wheel Scanner



Type III - Bearing Scanner



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General Specifications

Maximum Train Length	Successfully scanned computer simulated trains with axle counts greater 4000.
Input Voltage - DC	Controller Module and Chassis: 10 to 30 VDC. Maximum system current, including two bearing scanners and two wheel scanners, with train present and radio transmitting approximately: 11.7 amps. Idle current 900mA.
Input Voltage - AC	100 – 130 Volts @ 15 Amps, 50-60Hz
Input Voltage Protection	Circuit Breaker, Self-Restoring Fuses, Metal Oxide Varistors, Reverse Polarity Protected
Processors	Two Embedded Processor Modules, each with the following features: Motorola ColdFire® Processor, 32-bit, 250MHz clock (125MHz bus), 64MB DDR2 RAM, 32MB non-volatile Flash, 16GB Micro SD. Non-volatile time/date, system configuration, and train storage.
Serial Communications Ports	Up to six RS-232 ports available, depending on internal options, and one RS-485 port – all with standard male D-Sub 9 connectors.
User Accessible Inputs	2 Bearing Scanner, 2 Wheel Scanner, 2 Wheel Gating Transducer, 2 Wheel Advanced Transducer, 8 Opto-Isolated Digital, 1 Precision Ambient Temperature Probe, 1 Train Presence Detection - Internal 2-Wire Audio Overlay Track Circuit
Network	One 10/100 Mbps Ethernet port with a standard RJ45 connector for networking capabilities. One RJ45 connector for access to the optional internal Velocity Module.
Voice Communications	Internal VHF Radio Transceiver: Ritron DTX-160 – 8 channels, 6 watts, narrowband, 134MHz to 176MHz. Additionally equipped with a radio interface for customer specified analog or NXDN™ digital mobile radio
Dual-tone Multi-frequency Decoder	DTMF decoder recognizes all standard digits – 0 through 9, #, *, A, B, C, D. (Reception of a customer specified sequence of digits triggers a rebroadcast of the last voice announcement.)
Wi-Fi	The NG ² supports wireless standards IEEE 802.11 b/g/n with 2.4GHz RF band power amplifier. Secure data communications with 128-bit WEP, WPA-PSK (TKIP), WPA2-PSK Authentication. Wi-Fi can be enabled/disabled from the keypad.
Operating Temperature	-40°C to +70°C, Fanless Operation, Industrial Temperature Range
Size	15.5"W x 22.0"H x 4.5"D
Weight	31 lbs.
Finish	White powder coat over stainless steel.
Manufacturer	Southern Technologies Corporation, Chattanooga, Tennessee

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