

Redundant Speed Supply

By focusing on the unique needs of each customer, Central Railway Manufacturing has worked with leaders in the freight transportation industry to turn their fleet maintenance objectives into a reality.

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Central Railway Manufacturing's equipment portfolio includes the RSS, an LDARS Ethernet-enabled axle probe multiplexing device capable of supporting both passive and active probes. The RSS can bridge any locomotive axle type to PTC and other cab signal safety system axle tachometer applications, and can also support any custom application that might require discrete axle tachometer pulses or LDARS EMP messaging with axle count information. While integrating two isolated power supplies for active probes, the RSS is also designed as a bolt-in replacement for legacy QUIP® devices where axle inputs can be frequency scaled for wide ranges of applications.

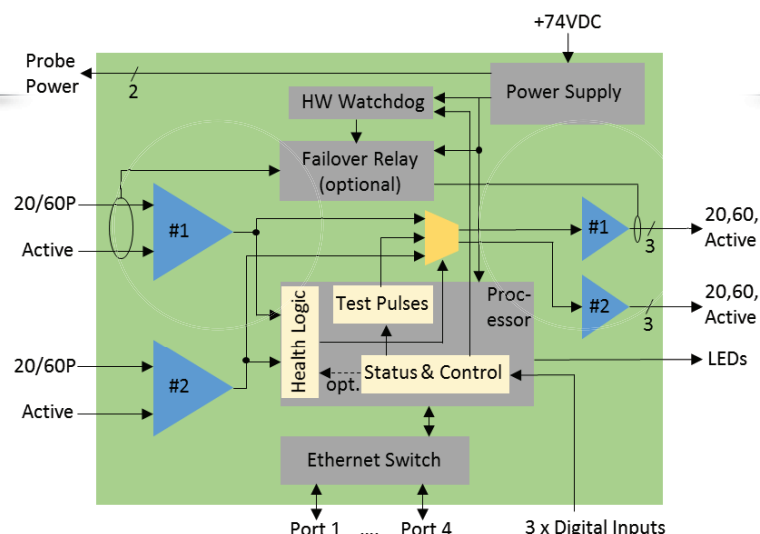


Insight into RSS technology...

The RSS is designed to solve locomotive axle tachometer distribution and frequency scaling issues while easily integrating into modern PTC on-board networks with its customer-accessible 4-port rail-hardened Ethernet switch. RSS features include:

- 2 independent 20/60 passive probe inputs
- 2 independent active probe inputs
- 6 configurable probe outputs
- 2 active probe power supply outputs
- 4 10/100Mbps Ethernet Switch Ports
- 3 customer-configurable 74V isolated digital inputs

As an LDARS appliance, the RSS supports full visibility of axle probe health monitoring by ITCSM or customer-defined messaging, enabling bad-probe detection. Upon isolation of a bad probe, the RSS can be configured to seamlessly switch over to an alternate probe, enabling true redundant operation while the RSS can broadcast bad probe status to the customer network supporting almost any customer-defined maintenance portal or database. As an additional safety feature, the RSS also optionally integrates pass-through relays that allow the RSS to bridge select inputs to select outputs, allowing a "failover" mode if power is lost to the unit.



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LOCOMOTIVE ONBOARD PRODUCTS

RSS Applications – Reducing False Enforcements

Within the data flows of modern locomotives, speed can be derived simultaneously from the combination of traditional locomotive axle probes and wheel size, as well as from GPS-derived speed or speed from PTC-derived wheel size. Similarly, other types of locomotive safety systems require more than one independent axle tachometer connection to work together to establish speed. While these systems have evolved to work together to improve overall safety, even minor differences in reported telemetries can cause problems in the cab and on the road.

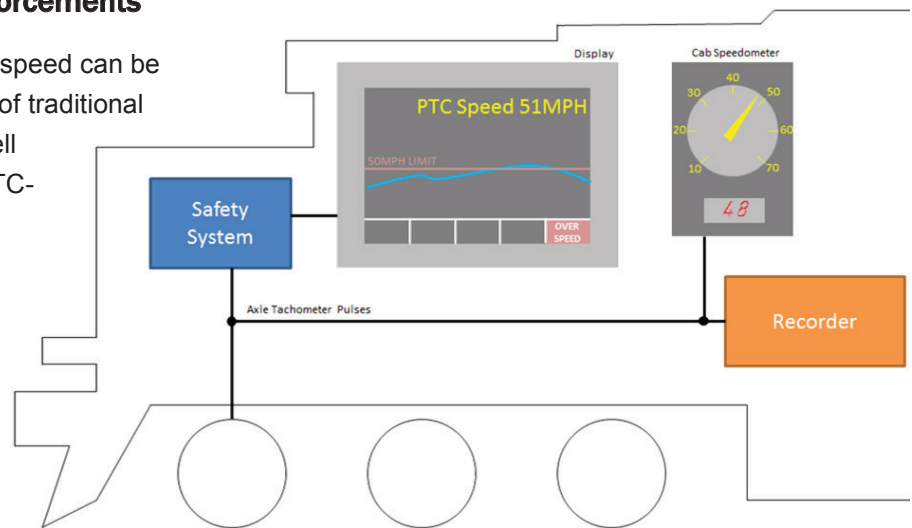


Figure 1: Enforcement with PTC-corrected-speed and uncorrected axle tach

Focusing on Improving Operations...

The RSS can adapt to a wide range of axle tachometer applications to:

- Reduce safety system enforcements caused by wheel slip or other types of transient traction events
- Normalize safety system speed signals with locomotive speedometers and recorders by using PTC-calculated wheel size corrections real-time.
- Scale existing or new axle tachometer equipment pulse-per-rotation (PPR) ratios to the ratios required by other equipment.
 - The RSS can downscale a new 120PPR optical probe output to the 20PPR or 60PPR requirements of existing speedometer heads and other safety systems.
 - The RSS can upscale existing 20PPR passive axle probe outputs to the bipolar 60PPR inputs required by on-board safety systems
- Provide network-based messages to customer-defined endpoints that include:
 - Bad probe detection, including redundant probe switchover notifications
 - Active probe fault detection, including power supply short circuit detection

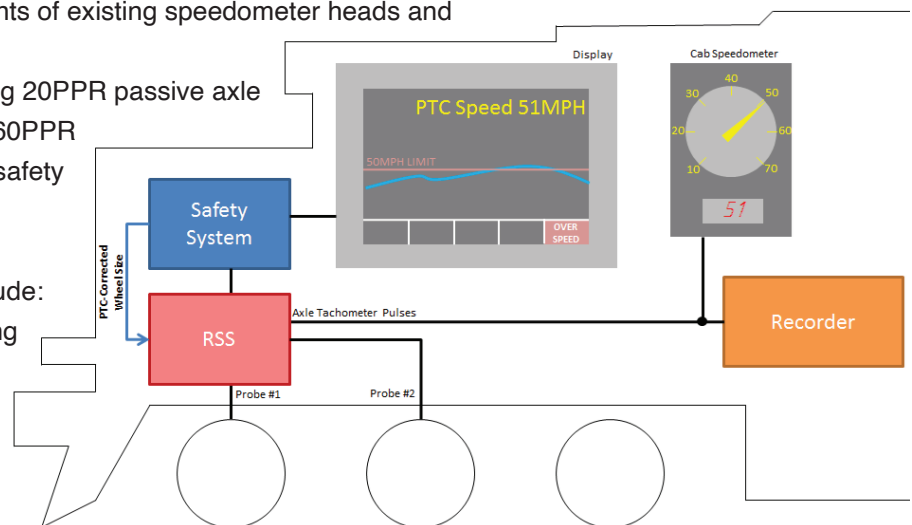


Figure 2: Enforcement with PTC-corrected-speed and RSS with failover