The Emergency Trip System (ETS) is used for monitoring trip conditions by Trip Push Buttons (TPB) at multiple locations along a section of line. The trip condition and the fact that personnel are present on that section of line are relayed to the nearest ePAQ 9100 data concentrator for local display (via touch screen HMI) as well as relaying this information to the central SCADA master station.

Each DIO-9110 I/O units monitors values such as TPB coil voltage, current trip status and the general health of the ETS system. Bright blue LEDs always show the location of the ETS unit along that section.

Additionally, the status of the “work crew present” switch and its associated flashing amber indicator is monitored. The flashing amber LEDs shows drivers and other maintenance personnel the presence of workers in the area.
Emergency Trip System (ETS)

ETS Enclosures

- Co-located with DIO-9110 units
- Contains Trip Push Button (TPB)
- Trip condition and crew present button are monitored and reported
- Amber LED (flashing to show work crew presence)
- Blue LED (solid to show ETS location)
- Failure of amber and blue LED monitored and reported
- Failure of Trip Push Button coil voltage monitored and reported

Redundant RS-485 lines to two ePAQ-9100 Data Concentrators

ETS Boxes

- DNP3 Protocol
- Hardwired

Local HMI

DNP3 Protocol

Communications from the DIO-9110s to the ePAQ-9100 data concentrator is via redundant RS-485 serial communications lines utilizing the industry standard DNP3 protocol.

personnel that workers are present on that section of track.

Each ePAQ-9100 is provided with a local, touch screen, HMI to report feeder trip conditions, the ongoing status of the ETS, and the status of all amber and blue LED indicators. If a ETS system failure is detected, the ePAQ data concentrator shows where the failure occurred to facilitate quick diagnosis and repair.

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