FOCUS Fiber Optic Communications for Utility Systems

PRI/PRS Channel Module - Multi-Drop

The basic **P**rotective **R**elay **I**nterface module provides four independent, programmable, bi-directional, point-to-point transfer trip circuits with either mechanical contact (PRI) or solid-state outputs (PRS). These optically-isolated trip circuits are encoded, allowing each one to operate independently without affecting the dependability, security or response time of the remaining circuits. Guard logic with alarm output contacts provide channel security and indication.

Whereas the basic PRI/PRS channel module is limited to point-to-point applications, the Multi-Drop version permits channels to be mapped to more than one remote node. PRI/PRS Multi-Drop can be configured to send a trip command from any node in a system to all other nodes containing a PRI/PRS mapped to the sending PRI/PRS. Addressing is also used to identify the PRI/PRS modules that are part of a particular chain for added security. This "chain" mapping capability greatly reduces the number of PRI/PRS modules required for multi-terminal pilot relaying or direct transfer tripping schemes. This not only reduces the system complexity, but also the bandwidth requirements.
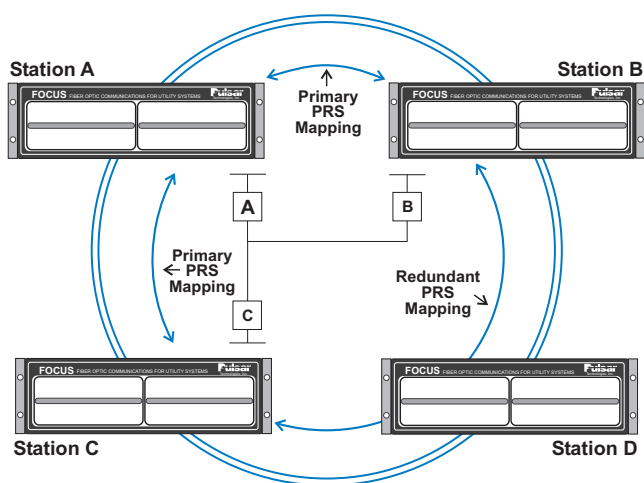

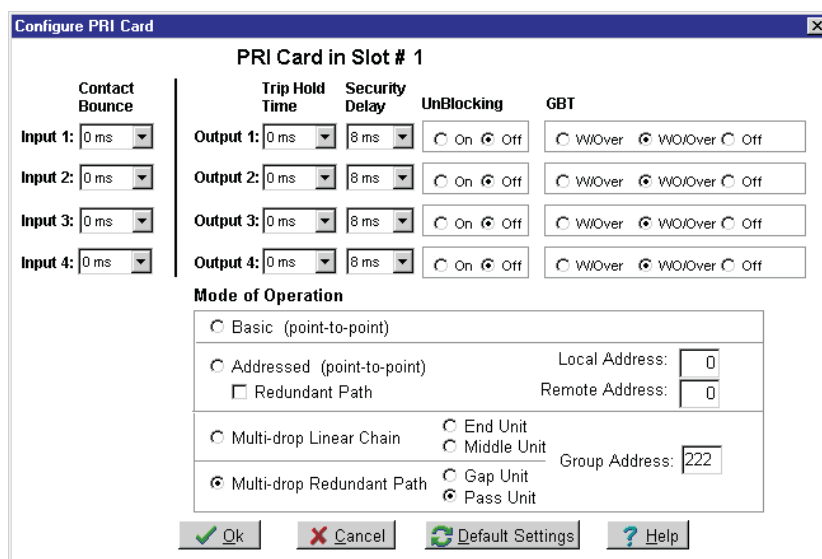Figure 1: Example four node ring including a three-terminal line protection system.

Figure 2: PRI/PRS Multi-Drop setting screen.

Application

Applications include DTT, PUTT, POTT, Directional Comparison Blocking, Unblocking protective relaying schemes and contact transfer for pulse metering (KYZ) applications.

The PRI/PRS Multi-Drop is ideally suited for three-terminal lines utilizing either a directional comparison blocking or permissive protection scheme (refer to Fig. 1). Each of the three terminals would require only one PRI/PRS Multi-Drop module in the FOCUS chassis and utilize only one DS0 timeslot. If basic PRI/PRS modules were to be used, each terminal would require two PRI/PRS modules per chassis utilizing a total of three DS0 timeslots.

Another feature of PRI/PRS Multi-Drop is the ability to take advantage of the Redundant Path option in loop systems. Since the redundant path is pre-mapped, the chain is typically restored in less than one millisecond. If basic PRI/PRS modules were applied in a loop system, Alternate Path Mode (APM) or a hot standby system are the only options available for self-healing. Note: Maintenance module Version 3 (MV3) or greater is required to use multi-drop or redundant path features.