iVPI – ELECTRONIC INTERLOCKING

The iVPI Electronic Interlocking is the latest solution for processor based interlocking and wayside control, iVPI® is an incremental evolution of the service proven Vital Processor Interlocking® system. First introduced in 2007, the iVPI version of the VPI family offers the newest upgrades in electronics packaging and the latest in surface mount technology.

iVPI Systems maintain the usage of the same Vital hardware designs and Vital software algorithms as the earlier generations of the VPI family. iVPI is functionally compatible with and is designed for long life cycle support and upgrades. The "i" in Alstom's iVPI stands for integrated, which represents the high degree of technological integration this solution offers. iVPI's wide range of scalability and interconnectivity provides greater flexibility to deploy signaling components, from smaller rooms, to the use of small cases to the placing of the control functions closer to the device being controlled thus minimizing cable costs. This new approach and the use of network connectivity makes it possible to provide a "best fit" solution to all types of signaling applications. Despite the smaller form factor, the system is expandable to 320 vital inputs and 320 vital outputs in one system; other solutions would require multiple systems to achieve the same number of vital inputs and outputs.

The iVPI control system consists of a:

- Failsafe Vital System Processor (VSP) with integrated Vital network communications supporting VSoE, other Vital protocols and the Maintenance Management System (MMS).
- Family of Failsafe Vital I/O to/from remote signaling devices and Vital field apparatus such as switch machines, train stops, track circuits, signal lamps and LED arrays, highway crossing equipment, cab signaling equipment, and more.
- Non-Vital System Processor (NVSP) with integrated Ethernet TCP/IP, synchronous and asynchronous communication channels capable of simultaneously supporting multiple communication protocols and MMS.
- Family of Non-vital I/O to interface with non-vital signaling apparatus such as Local Control Panels, Intrusion alarms, non-vital train inspection equipment, and more.

iVPI Vital Subsystem

- **Vital System Processor board (VSP)** – Controls all aspects of the Vital subsystem, including all vital communications protocols.
- **Direct Input board (DI)** – 16 vital inputs per board
- **Single Break Output board (SBO)** – 8 vital outputs per board.
- **Double Break Output board (DBO)** – 8 vital outputs per board.
- **Lamp Driver Output board (LDO)** – 8 vital outputs per board, including filament proving.
- **AC Output board (ACO)** – 8 vital outputs per board, available with either 3mA threshold or 65mA threshold.

- **Bus Expansion board (BEX)** – allow connection of expansion chassis.

iVPI Non-Vital Subsystem

- **Non-Vital System Processor board (NVSP)** – Controls all aspects of the Non-Vital subsystem, including all non vital communications protocols.
- **Non-Vital Input board (NVI)** - 32 non-vital outputs per board, relay (form A & form C) of solid state.
- **Non-Vital Output board (NVO)** - 32 non-vital inputs per board.

SIGNALLING

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