



iVPI® Non-Vital System Processor 2

Non-Vital System Processor 2 (NVSP2) Printed Circuit Board

The NVSP2 is a versatile and powerful non-vital processor board designed for use in the integrated Vital Processor Interlocking (iVPI®) system. NVSP2 provides the non-vital communication links between distributed interlocking system nodes and communication interfaces with central office systems, local control panels and Supervisory Control and Data Acquisition (SCADA) systems.

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Key Benefits

Non-Vital High Processing Capacity

- 82,500 non-vital Boolean expressions processing
- 640 discrete non-vital input signals
- 500 permanent software timers
- 120 field-settable non-vital timers

Configurable Non-Vital Communications

- Two 10/100/1000 Mbit Ethernet ports for application programming and diagnostic communications
- Configurable to use either the same or different Ethernet communication protocols
- Supports redundant network architecture to ensure continued communications
- One 10/100 Ethernet RJ45 port for diagnostics using the web interface

Non-Vital Event-Driven Processing

Processing starts when variables change, so that notifications are sent to all processes with relationships to that variable, ensuring current values are read.

General Description

The iVPI® NVSP2 printed circuit board (PCB) processes and performs non-vital functions independently from the Vital system processing performed by the VSP2 PCB – ensuring nonvital system functions have no impact on vitality and vital system functions. NVSP2 and VSP2 are linked only through an optional application data exchange channel used to communicate non-vital information. NVSP2 can be configured to support iVPI non-vital standalone applications or used in combination with Vital systems. NVSP2 processes non-vital application logic, interfaces to discrete non-vital inputs and outputs (I/O), and supports diagnostic and event-recording functionality. NVSP2 can be programmed to perform Human-Machine Interfaces (HMI) entrance-exit logic, as well as logging of Vital and non-vital variables.

Customer Benefits

Programmable Ethernet Ports

The NVSP2 board is equipped with two Ethernet ports that can be programmed for external non-vital communications using protocols common to the railroad and transit industry, including KB Signaling DT8 and MODBUS/TCP. These ports can be configured with either the same or different communication protocol(s), which are assigned and configured by Signaling Engineers using the Computer-Aided Application Programming Environment (CAAPE).

Communications Interfaces

NVSP2 interfaces directly to standard communications equipment – including fiber optic modems, multiplexers and network adapters. This board is equipped for serial and Ethernet office communications.

Configuration Flexibility

iVPI offers flexible subrack configuration alternatives for systems requiring either nonvital only or both non-vital and Vital (NV-V) applications. Up to two expansion subracks can be added to increase system capacity.

The NVSP2 board can operate non-vital standalone systems contained in a separate subrack.

Alternatively, when used in a subrack configured for both NV-V applications, the non-vital I/O bus and Vital I/O bus are separate. The NVSP2 boards share a communication link with the VSP2 board using the system bus. This system bus is located on the motherboard and, when used, on the cable facilitating communication with expansion subracks.



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Key Benefits

Real-time Recording and Non-Vital System Recovery

NVSP2 logs essential data needed by transit operators and freight carriers. For example, logged data could include the statuses of track circuits, signals, traffic direction and switch machine position.

Logged data is stored as non-volatile memory on a commonly-available Secure Digital High Capacity (SDHC) memory card. Logged data is accessible either locally or remotely via either the web interface or using the Maintenance Management System (MMS). Real-time event recording supports board re-booting from a flash drive for standard operation or from the NVSP2 board's SDHC card for corruption recovery

Real-Time Clock (RTC)

NVSP2 is equipped with a real-time clock which provides a timestamp resolution in one millisecond increments. The RTC maintains its time setting even if power is removed for a short time.

Front Panel User Interface and Board-Edge Diagnostics

NVSP2 is designed to support troubleshooting efficiency. LED status indicators display board health, confirm data transfer to I/O boards and the network, USB interface activity and cyclic non-vital processing activity. The NVSP2 board is equipped with an LED indication that confirms data reception with the VSP2 board. Pushbuttons accessible from the front panel allow maintenance personnel to reset the board and for acknowledgement purposes. The Confirm pushbutton is used to accept software updates to the board.

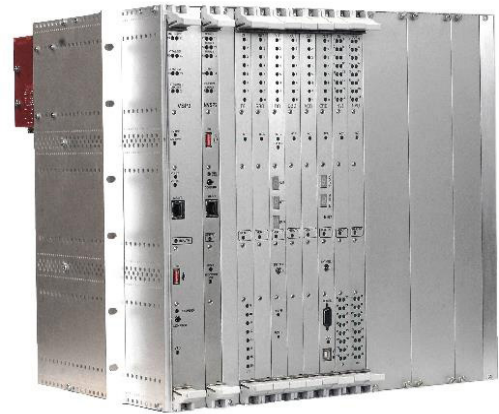
Non-Vital PCB Upgrade

The NVSP2 is a direct plug-in replacement for the iVPI® NVSP printed Circuit Board. Upgrading to NVSP2 simply requires switching to the new interface board and recompiling its application software using KB Signaling's Computer Assisted Application Programming Environment (CAAPE).

Refer to KB Signaling manual series P2521 for additional information.

Ordering Information

Board Assv, iVPI, NVSP2	31166-550-01
NVSP2 Interface Board (top)	31166-557-01
Max. number of NVSP2 boards per iVPI System	4
Sub-rack slots required for each board	1



Contact your KB Signaling Business Development Manager
Call 1-800-825-7090, or Email us at aso.techsupport-kb@alstomgroup.com for more information today.

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