

NV6400

The QuEST Non-vital 64 input controller (NV6400) is designed to provide a serial-to-discrete non-vital input interface for industry standard railway interlocking controllers. With 64 inputs, RS-232, RS-485, Current Loop, Ethernet, and multiple communication protocols, the NV6400 is the perfect cost-effective non-vital input solution for any railway signaling application that uses industry standard interlocking controllers. Through its Ethernet port, the NV6400 provides expansion up to 256 inputs when using a single serial interface to the interlocking controller.

A cost-effective non-vital input solution for railway signaling applications

Features:

- 10-40 VDC
- 64 non-vital inputs
- Expandable to 256 inputs
- Serial communications using industry standard protocols
- Rack mountable (19")
- Meets AREMA Class C wayside environmental specifications
- Interoperable with QLCP-NET

Specifications

Discrete Inputs	
Inputs	64
Voltage Range	0 to 40 VDC
Input Impedance	10,000 Ω
Turn On Voltage	7 \pm 0.5 VDC maximum
Turn Off Voltage	2.5 \pm 0.5 VDC minimum
Connectors	Four 16-pin keyed cage-clamp style, Phoenix 1873346 (female plug), 1777219 (male PCB shrouded header)
Connector Wire Gauge	14-22 AWG
Expandable	Yes (up to 256 in increments of 64 using additional NV6400 units)
Typical Application	Sense voltage through interposing relay contact to provide indication of relay interlocking

I/O Battery Input	
Voltage Range	10 to 40 VDC
Replaceable Fuses	6 A (B), 6 A (N)
Reverse Polarity Protection	Yes
Connector	2-pin cage-clamp style, Phoenix 1873223 (female plug)
Connector Wire Gauge	12-22 AWG

Serial Communications	
Serial Ports	RS-232 (DB9M, asynchronous DTE), RS-485 (DB9M, 2/4W configurable), and Harmon/GETS Current Loop Interface (DB9M)
Data Rate	1200 to 38,400 bps
Protocols	Ansaldo GENISYS (NV6400 as master), Ansaldo Microlok II Peer, Harmon/GETS LCP
Application	Use application logic statuses mapped to serial message bits to monitor NV6400 inputs

Network Communications	
Connector	RJ45 Ethernet
Data Rate	10/100 Mbps
Protocols	QNET (http/TCP/IP)
Application	I/O Expansion and Configuration using QLCP-NET Developer Tool

Configuration Port	
Connector	USB Type B receptacle
Data Format	57,600 bps, 8-N-1
Protocol	Raw text over virtual serial COM port
Application	Configuration

Integrated Power Supply (Controller)	
Input Voltage	10 to 16 VDC
Replaceable Fuse	5 A
Power Switch	On/Off Toggle
Reverse Polarity Protection	Yes
Terminal Block	Spring pressure connections for 14-22 AWG wires

Front Panel LEDs	
Inputs (64)	Red
Link Status	Green

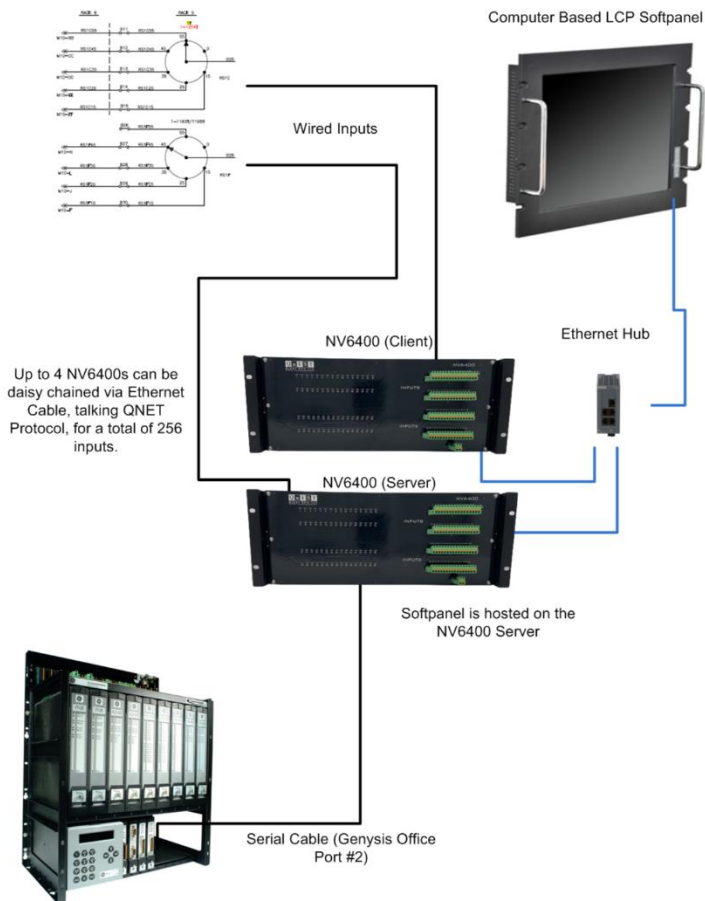
Rear PCB LEDs	
Power Supply	Green
System Health	Green
Local Link Health	Green
Network Link Health	Green
RS-232 TX/RX Activity	Orange
RS-485 TX/RX Activity	Orange
CLI TX/RX Activity	Orange

Mechanical	
Dimensions	18.94 x 7.00 x 2.91 in
Weight	5 lb 10 oz

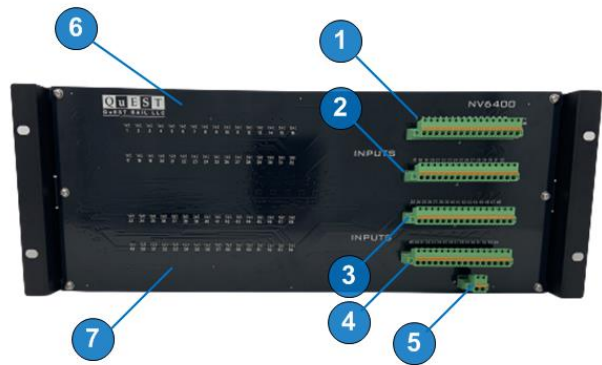
Environmental (AREMA Class C Compliant)	
Operating Temperature	-40 to 70° C
Operating Humidity	0 to 95% non-condensing
Isolation	2000 Vrms

Typical Application

The NV6400 is typically used in conjunction with a railroad interlocking controller to provide additional non-vital inputs. The NV6400 provides a serial-to-discrete input interface between the interlocking controller and interlocking as shown below. Non-vital inputs can be expanded using the NV6400 network connection. The NV6400 configured as the server can host a QuEST Graphical Control Panel for LCP interface to the Interlocking Controller.



Front Panel



1. Inputs 1 – 16 Connector
2. Inputs 17 – 32 Connector
3. Inputs 33 – 48 Connector
4. Inputs 49 – 64 Connector
5. Battery Input (N) Connector
6. Input LEDs 1 – 32
7. Input LEDs 33 – 64

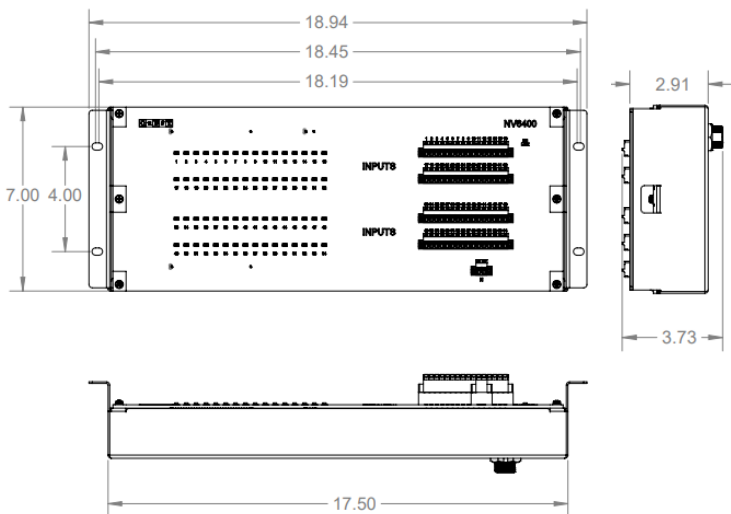
Serial Message Bit Assignments

Although the NV6400 will work with any interlocking controller that supports the specified serial interfaces and communication protocols, it was primarily designed to provide a non-vital input solution for the ElectroLogIXS. To interface to the ElectroLogIXS local control or office interfaces, control bits are mapped to NV6400 inputs as shown below. When using the GENISYS protocol, the NV6400 is the master.

An application logic status can be assigned as a control bit for each discrete input as shown below.

Control Bits 1-128		
Unused	Inputs 1-64	Unused
Bits 1-32	Bits 33-96	Bits 97-128

Physical Dimensions

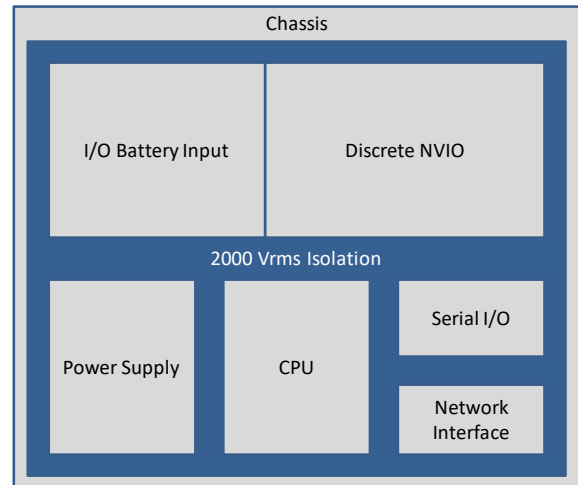


Serial Port Pinout

RS-232 Port	
Signal	Pin (DB9 M)
RXD	2
TXD	3
COM	5
RS-485 Port	
Signal	Pin (DB9 M)
RX-	2
TX-	3
TX+	4
SR	5
RX+	9
Current Loop Port	
Signal	Pin (DB9 M)
RXD+	1
RXD-	2
TXD+	4
TXD-	5

Galvanic Isolation

The NV6400 provides 2,000 Vrms isolation as shown below.



System Configuration

The NV6400 is configurable for various applications using terminal emulation software on a laptop connected to the NV6400 USB configuration port.

Alternatively, it is configurable through the Ethernet port using the QLCP-NET Developer Tool application.

Configurable Items:

- Location information
- Network settings
- Serial port settings
- Protocol settings
- Input settings
- Password
- Factory default settings
- Upload/download configuration file
- Upload/download soft panel file

Environmental

The NV6400 meets AREMA temperature, humidity, vibration, shock, EMI, and isolation specifications for Class C wayside signal equipment.

The NV6400 complies to the limits as defined for Class A digital devices, pursuant to part 15 of the FCC rules.

Compatibility with QLCP Family

The NV6400 is part of the QLCP product family. It uses the same architecture, executive software, tools, and communication protocols, including the QNET protocol used for I/O expansion.

For More Information

Email: waysideproducts@questrail.com

To Order the NV6400

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