V-MUX® Electrical System

THE V-MUX SYSTEM

V-MUX is a complete electrical control system. The power distribution units (nodes) reduce wire harness bundles and electrical control hardware. Our software introduces advanced control features not available in conventional wiring systems. V-MUX works in many applications providing you with a generous amount of flexibility and control over your electrical system. The combination of hardware and software make up the V-MUX system.

WHAT WILL V-MUX DO FOR ME?
• Provide short and open circuit detection
• Eliminate electromechanical relays
• On-board service information
• On-board diagnostics
• Reduce splices by 80-90%
• Increase reliability and minimize downtime
• Simplify troubleshooting and repairs

THE V-MUX ADVANTAGE
• Peer to peer system – each node holds its own program
• Each node enables load shedding and sequencing
• Dimming controls
• The OEM can configure all of the displays/screens
• Reverse polarity protection
• Easy to use, Windows® based programs
• Training and support provided
• Modules operate from -40° to +85° C.
• EMC testing to 100V/meter
• Exceed most SAE, NFPA, NMEA and RVIA standards for electronics
• 100% solid-state technology

WHAT IF I WANT TO MAKE UPGRADES OR CHANGES?
The System Designer™ software allows the OEM to configure the vehicle, any changes are made at the OEM level. The OEM can email or remote download the update to the vehicle.

WHY MULTIPLEX?
• 1948 average car wiring: 10 lbs, 150 ft, 35 connectors, 75 terminals, 55 wires.
• 1994 average car wiring: 165 lbs, 5280 ft, 300 connectors, 2000 terminals, 1500 wires.
• 1998 Automobile manufacturer reduced connectors 25%, splices 92%, size 15%, weight 65% via multiplexing.
• 1999 V-MUX system reduced connectors 25%, splices 75%, relay interlock junctions 80 to 90%, "one input cuts out 5 park brake relay points".

V-MUX VS. OTHERS
MASTER SLAVE (Other Systems)
• Master holds all the configurations for slaves
• Master tells slaves what outputs to turn on
• Master goes down – other can't do much Peer-to-Peer
• Nodes all hold their own configurations, if one node goes down the rest are ok

A MULTIPLEX OVERVIEW
Multiplexing allows your electrical system to be divided into zones with:
• Reduced electrical connections
• Reduced crimps
• Reduced vehicle weight
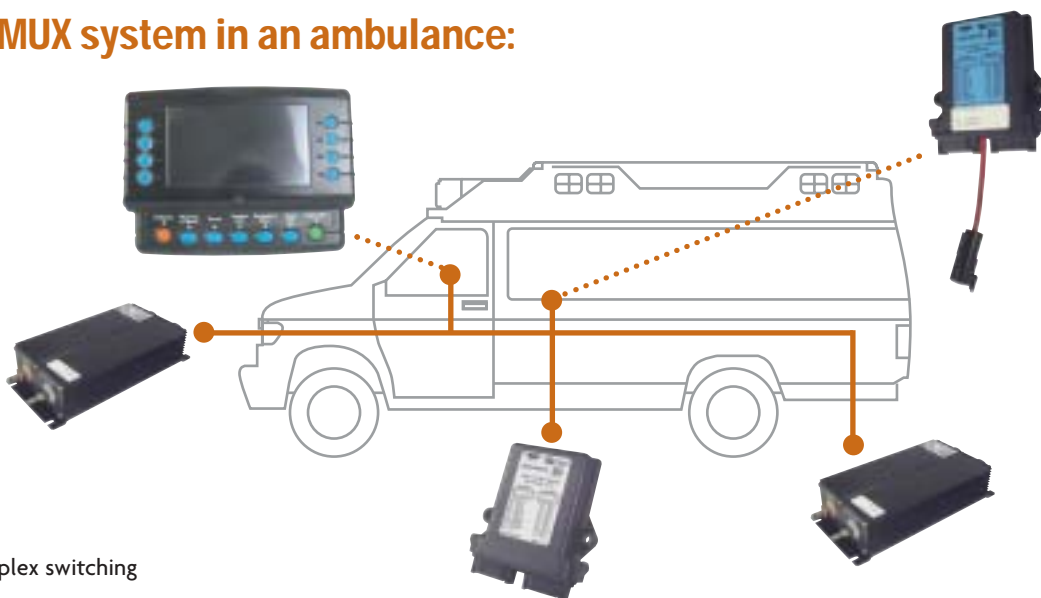• Simplified harness
• On-board diagnostics

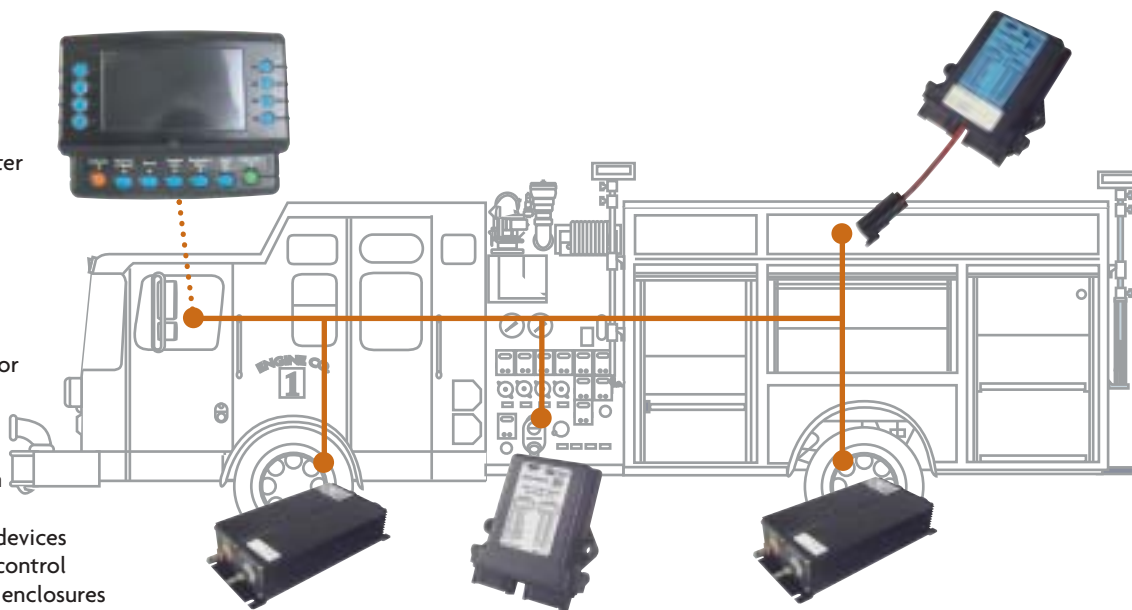## Example of a V-MUX system in an ambulance:

V-MUX Integrates:
- System voltage meter
- Upper ammeter
- Lower ammeter
- Emergency flasher
- Headlamp flasher
- Load management
- Load sequencer
- O2 monitor
- Temperature monitor
- HVAC control
- Vent fan control
- Suction control
- Circuit breakers
- Traditional switches
- Door "open" system
- Separate circuits for complex switching

Example of a V-MUX system in a fire truck:

V-MUX Integrates:
- System voltage meter
- Ammeter
- Emergency flasher
- Headlamp flasher
- Load management
- Load sequencer
- Back-up monitor
- Temperature monitor
- HVAC control
- Relays
- Circuit breakers
- Door "open" system
- Interlock modules
- Engine monitoring devices
- Separate interlock control
- Special waterproof enclosures

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Example of a V-MUX system in school bus:

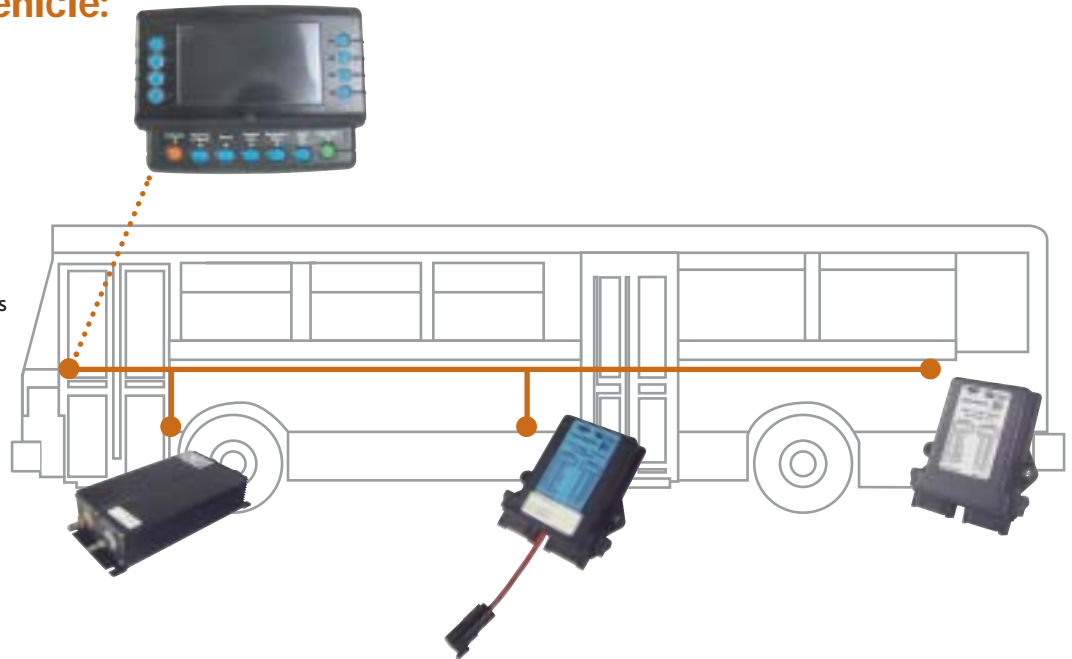**V-MUX Incorporates:**
- Operators console
  - Switches
  - Messages
  - Lamp or electrical faults
  - Vehicle safety
  - System status
  - Automatic safety interlocks
  - Interior/exterior lighting
  - Integrate child check-out procedure system
  - On-board diagnostics
- Simplified troubleshooting
- Electrical control of:
  - Warning lamps
  - Stop arm
  - Crossing gate
  - Daytime running lights
  - Heat/fan speed

Error N1PA, N2PN

Example of a V-MUX system in a transit bus or recreational vehicle:

V-MUX Incorporates:
- Engine monitoring
- Drive train reporting
- Sub-system integration
  - Kneeling function
  - Door control
  - Auto leveling
  - Internal/external lighting
  - Automatic safety interlocks
  - Automatic HVAC control
  - Auto throttle
  - Interval wiper control
- Operator's console
  - Switches
  - Messages
  - Vehicle/route activity
  - General/analog info.
  - System status
  - On-board diagnostics

6000 SERIES, INPUT/OUTPUT NODE

The "Hercules" node is capable of carrying up to 120 amps of load at high temperatures. This module has been the work horse of thousands of V-MUX systems in the field over the past several years. All of the Inputs and Outputs on this unit are configurable by the OEM.

- Sealed Deutsch enclosure and connectors
- Corrosion proof
- Compact size
- A & B communication ports
- LED status indicators
- Field re-programmable
- 16 Digital inputs
- 3 Analog inputs
- 24 Positive outputs
- 2 Ground outputs
- Control our (OU10-0715-00) VF display

ORDER NOS.	DESCRIPTION
6000-0000-03	V-MUX HERCULES NODE

6010 SERIES, INPUT / OUTPUT MINI NODE

The 6010 "mini" Node has four independently programmable switch inputs, one analog input and 12 seven and one-half amp output channels. In addition, it will report the voltage levels for voltmeter functionality.

- Sealed Deutsch enclosure and connectors
- Corrosion proof
- Compact size
- A & B communication ports
- LED status indicators
- Field re-programmable
- 4 Input channels
- 12 output channels
- Control our (OU10-0715-00) VF display

ORDER NOS.	DESCRIPTION
6010-0000-00	V-MUX MINI NODE

6020 SERIES, INPUT NODE

The Input Node has 16 independently programmable switch inputs. Each input can be used for door interlocks, dash switches and switch-type sensors. This Input Node can interface with the VFD Display (OU10-0615-00)

- Sealed Deutsch enclosure and connectors
- Corrosion proof
- Compact size
- A & B communication ports
- LED status indicators
- Field re-programmable
- 16 Input channels
- Control our (OU10-0715-00) VF display

ORDER NOS.	DESCRIPTION
6020-0000-00	V-MUX INPUT MODULE, 16 INPUT

V-MUX® Electrical System

6111 & 6131 SERIES, FIELD SERVICE TOOLS

Includes Remote Diagnostics

The V-MUX® Diagnostics kit will aide you in troubleshooting your vehicle, downloading changes or programming a replacement node. The software will run on Windows 2000, XP and soon to be released Windows Vista. Software updates can be obtained on our website 24 hours a day 365 days a year. For assistance with remote diagnostics download the manual from the web site. WWW.V-MUX.COM

Kit includes:
• Carrying case
• One on one cable for 4x12 and 16x0
• One on one cable for Hercules
• Deustch wire removal tool, 14-16 gauge wire (blue)
• Deutsch wire removal tool, 18-20 gauge wire (red)
• Cable, RS232 9 pin serial pc to trans.
• Cable, RS485 trans. to V-MUX
• Cable, troubleshoot Hercules outputs, (red)
• Cable, troubleshoot mini node outputs (black)
• Downloader manual, PDF
• Diagnostics manual, PDF

ORDER NOS.	DESCRIPTION
6111-0000-00	V-MUX TRANSCEIVER, USB
6131-0000-00	V-MUX KIT, DIAGNOSTICS - USB W/DOWNLOADER

6400 SERIES, GATEWAY MODULE

DON'T CUT INTO THAT MULTIPLEXED CHASSIS!
Use our gateway to interface with that multiplexed chassis. The Gateway can report data from engines, transmissions or other devices that are using the CAN protocol.

LED status indicators
• Interface with proprietary electrical systems
• Read and report data from engines or other devices
• Compatible with J1939, RVCAN and other protocols
• Field re-programmable
• Peer-to-peer network
• Sealed Deutsch enclosure

ORDER NOS.	DESCRIPTION
6400-0000-00	V-MUX GATEWAY MODULE

6500 SERIES, BACKUP CAMERA KITS

The Vista III can be programmed to automatically switch to the camera image when in the backup mode. The camera can also be used to monitor interior or exterior activity. Flush mount side-view is also available.

ORDER NOS.	DESCRIPTION
6500-0000-00	V-MUX CAMERA, REAR VIEW W/BRACKET, WHITE
6501-0000-00	V-MUX CAMERA, LEFT, WHITE
6502-0000-00	V-MUX CAMERA, RIGHT, WHITE
6503-0000-00	V-MUX CAMERA, LEFT, CHROME
6504-0000-00	V-MUX CAMERA, RIGHT, CHROME
6505-0000-00	V-MUX CAMERA, LEFT, PRIMER
6506-0000-00	V-MUX CAMERA, RIGHT, PRIMER

WELDON
A DIVISION OF AKRON BRASS

6310 SERIES, PODS (Programmable On Demand Switches

Like the blue touch panels, PODS provides you with flexible legends! PODS are all self contained switch modules, requiring no I/O from another module. Program the controller and plug each individual unit into it. The light blue color of the rubber membrane, combined with the blue backlighting creates a Blue Touch look.

Example:

ORDER NOS.	DESCRIPTION
6310-0000-12	V-MUX PROGRAMMABLE SWITCH CONTROLLER, 12V - PODS
6310-0000-24	V-MUX PROGRAMMABLE SWITCH CONTROLLER, 24V – PODS
OQ20-1736-00	V-MUX LEGEND SHEET, 88 PER SHEET
6311-0300-00	3-KEY SMART SWITCH MODULE
6311-0400-00	4-KEY SMART SWITCH MODULE
OL40-2020-00	SMART SWITCH CABLE

6300 SERIES, BLUE TOUCH SWITCH PANELS

WTI has solved the age old problem of legends on switches! With the Blue Touch panels, the OEM can print their own legends by simply running our die-cut nylon sheet through their laser printer. The light blue color
of the rubber membrane, combined with the blue backlighting creates the Blue Touch look.

ORDER NOS.	DESCRIPTION
6300-0400-00	V-MUX PANEL, FOUR POSITION
6300-0800-00	V-MUX PANEL, EIGHT POSITION
OQ20-1736-00	V-MUX LEGEND SHEET, 88 PER SHEET

6231 SERIES, VISTA III

This full color display offers many features and has a wide temperature operating range. Control all of your lighting and HVAC with just four wires; power, ground and communications. The display colors change to inform you of a status, you can literally tell if a device is on or off from more then ten feet away.

- Virtual switches
- Display inside and outside temperature
- Automatic climate control
- 100% Configurable (OEM Level)
- Filed re-programmable
- Peer to peer network
- On-board diagnostics
- On-board service information large font sizes
- Colors change to indicate button status
- Video Ready for:
  - Backup camera
  - Thermal cameras
  - DVD
  - GPS

Backup

GPS

Gauges

ORDER NOS.	DESCRIPTION
6231-0000-00	V-MUX VISTA III INTERFACE MODULE/DISPLAY

0R80 SERIES, CURRENT SHUNT MODULE

Our encapsulated module is used to convert the signal from a current sensor into the V-MUX system. Data can be displayed, reported or used for automatic functions.

ORDER NOS.	DESCRIPTION
0R80-0615-00	V-MUX SHUNT INTERFACE MODULE

0R13 SERIES, TEMPERATURE SENSOR

This sensor is used to report interior or exterior temperature. This data can be displayed, reported or used for A/C, heat, ice warning or other automatic functions.

ORDER NOS.	DESCRIPTION
0R13-0614-00	V-MUX TEMPERATURE SENSOR