

# DVC21 (40 Digital Input Module)

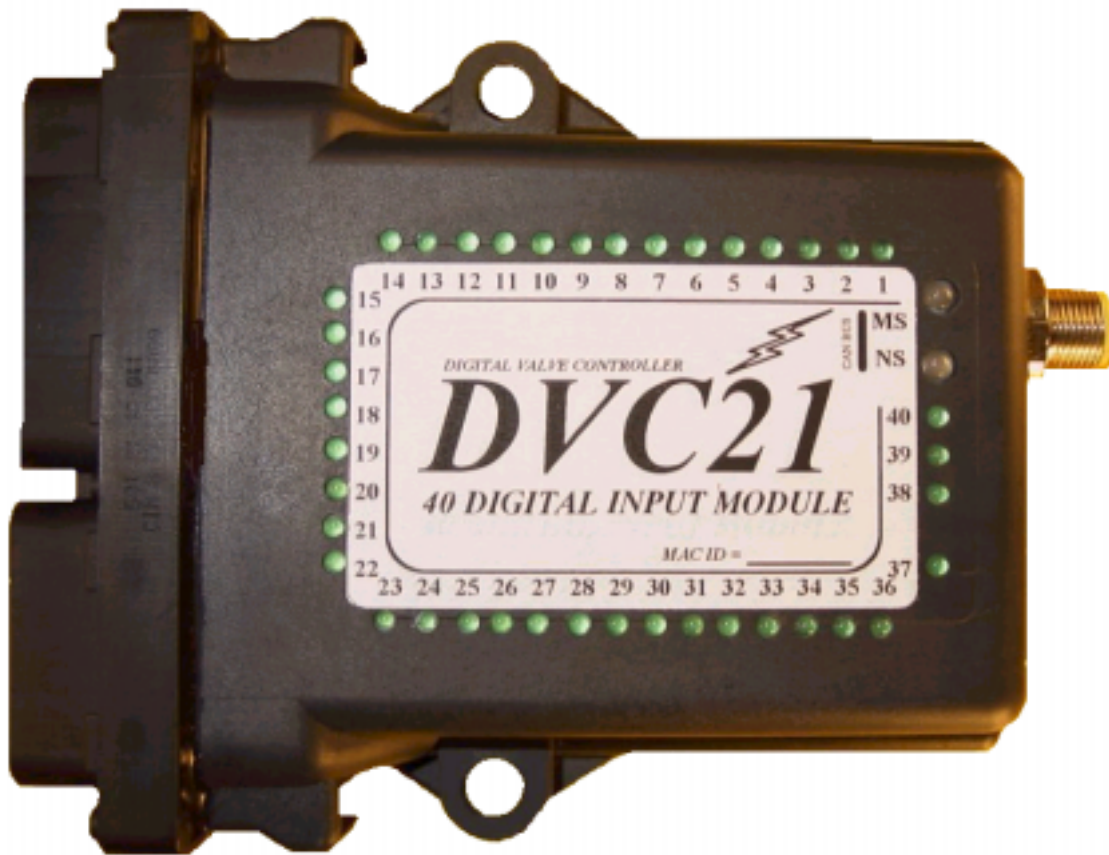
Rev. P2.0

## DESCRIPTION

The DVC21 Slave Module is a 40 digital input expansion module that is designed to operate in conjunction with a DVC10 Master Module. The DVC21 module is designed with 20 sinking inputs and 20 sourcing inputs. All inputs have programmable features including debounce times, active high/low, and toggle/no-toggle. The DVC21 communicates to the Master Module through the CAN Bus (high-speed serial communication bus) and utilizes the RS232 port for setting the MAC ID (node) number and for device monitoring. The controller is packaged in a small rugged enclosure and encapsulated to withstand extreme harsh environments.

Three connectors (P5, P6, and P7) are provided for electrical connections. P5 (30 pin) and P6 (18 pin) are the main input and power connectors which protrude out the side of the enclosure. P7 is a standard Device-Net Compatible (CAN Bus 2.0B) 5 pin connector.

The status of each input is displayed by a green LED located on the top of the module. If the input is active then the corresponding LED will light. A Module Status (R/G LED) and a Network Status (R/G LED) LED are located on the top of the module (see INDICATORS section below for further details).



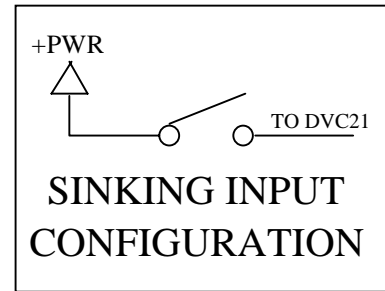
## FEATURES

- **Sinking and sourcing inputs**
- **Programmable debounce times for momentary activations.**
- **Controller Area Network (CAN 2.0B) provides high-speed serial communications with up to 16 other CAN compatible devices.**
- **Rugged encapsulated enclosure withstands harsh environments commonly found in mobile applications.**
- **User friendly display shows Input and communication status at a glance.**
- **RS-232 communication used for troubleshooting and node assignment.**
- **Rugged power supply operates over the full range 8.5Vdc to 32Vdc with reverse polarity and transient protection up to 1.5K Watts Peak Pulse Power Dissipation**

## DIGITAL INPUTS – QTY (40)

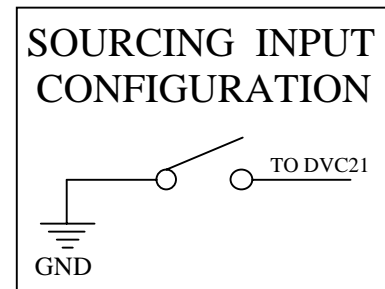
### INPUTS 1 – 20 (SINKING)

1. These inputs are sinking (need +5Vdc to +32Vdc to cause the input to switch from low to high).
2. Indicators – The corresponding green LED will illuminate when the input is activated (programmable active high or low).



### INPUTS 21 – 40 (SOURCING)

1. These inputs are sourcing (a connection to GND will switch the input from high to low).
2. Indicators – The corresponding green LED will illuminate when the input is activated (programmable active high or low).



## **PROGRAMMABLE FEATURES**

- A. Inputs
  - 1. Debounce times - 0 to 2.5 seconds.
  - 2. Active High or Active Low.
  - 3. Toggle (latching) or No Toggle (non-latching) mode.
- B. Module
  - 1. The DVC21 is a Slave Module and is controlled by the DVC10 Master Module.
  - 2. Programmable by using a DVC10 and DVC Programming Tool.

## **INPUT PROTECTION**

- A. Protected against shorts to ground and voltages up to +32Vdc.

## **COMMUNICATIONS**

- A. The DVC21 has two communication ports:
  - 1. Can Bus 2.0B – This port is used to communicate to the DVC10 Master Module.
  - 2. RS-232 serial port is used for:
    - a. Setting MAC ID and Baud Rate.
    - b. Monitoring the functions of the DVC21.

## **POWER SUPPLY**

- A. The DVC21 Power Input has the following features:
  - 1. Voltage Input Range - 8.0Vdc to 32Vdc
  - 2. Reverse polarity protection and transient protection up to 1.5K Watts Peak Pulse Power Dissipation.
  - 3. Use P5-B2 for the + POWER INPUT (typically +12Vdc or +24Vdc).
  - 4. Use P5-A1, P5-A2, P5-A3, or P5-B1 for the PWR COM (typically tied to chassis).

## **INDICATORS**

- A. Digital Input Status (Qty 40) (Green) – Turns on when the corresponding input is activated. Inputs can be programmed as active high or low.
- B. Module Status (MS) (Qty 1) (R/G) –
  - 1. Off – There is no power applied to the Module.
  - 2. On green – The module is operating in a normal condition.
  - 3. Flashing green – Device in standby state. May need commissioning.
  - 4. Flashing red – Recoverable Fault.
  - 5. On red – Module has an unrecoverable fault.
  - 6. Flashing Red/Green – Device is in self-test.
- C. Network Status (NS) (Qty 1) (R/G) –
  - 1. Off - Device in not on-line.
  - 2. Flashing green – Device in on-line but has not established connection to other nodes.
  - 3. On green – Device in on-line and has established connection to other nodes.
  - 4. Flashing red – One or more connections are in a timed-out state.
  - 5. On red – The device has detected an error that has rendered it incapable of communicating on the network.

**PACKAGING**

- A. Physical Size - 6.2L" x 4.75W" x 1.65H" encapsulated module.
- B. Each module has two mounting holes 4.0" a part. Each mounting hole has an I.D. of 0.325".
- C. Weight – 1 lb. 6 oz.

**CONNECTORS**

- A. The DVC21 uses the Metri-Pack 150 series (or compatible) sealed electronic header designed for severe under-hood environments.
  - 1. 30-pin Header (P5) – Used for sensor signal inputs.
  - 2. 18-pin Header (P6) – Used for the power supply and output connections.
- B. 5-pin CAN Bus (DeviceNet compliant) connector (P7).
  - 1. Pins are gold plated brass machined from solid stock.
  - 2. Protection rating – Nema 1,3,4,6P, and IEC IP 68.

**MATING CONNECTORS**

- A. Mating for 30-pin Header (P5) and 18-pin Header (P6)
  - 1. Connector, 30-pin Female (P5) Delphi Packard P/N – 12034398
  - 2. Connector, 18-pin Female (P6) Delphi Packard P/N – 12040921
  - 3. Terminals, Female Delphi Packard P/N – 12103881
  - 4. Plugs Delphi Packard P/N – 12034413
  - 5. DVC Series 48-pin Connector Kit HCT P/N - 999-10077

**Includes the following:**

  - 1 - Connector, 30-pin (P5) Delphi Packard
  - 1 - Connector, 18-pin (P6) Delphi Packard
  - 60 - Terminals, Delphi Packard
  - 25 – Plugs, Delphi Packard
- B. Mating for CAN Bus connector (P7)
  - 1. 5-pin Female Mini-style DeviceNet compliant connector.
- C. Mating to the RS-232 Port – The RS-232 port is accessed through the 18-pin connector at (P6). A DVC Serial Port Adapter is available to connect to the 18-pin Female mating connector. A DVC RS-232 Cable can be used to interface from the DVC Serial Port Adapter to a PC. Drawings for these two cables are supplied for user assembly; otherwise they are available from HCT.
  - \* Note – The DVC Slave Serial Port Adapter comes with a plug. The plug is used to keep the cable weather-tight when not connected to peripherals.
  - 1. DVC Slave Serial Port Adapter HCT P/N - 999-10082
  - 2. DVC RS-232 Cable Assembly HCT P/N - 999-10075

**ENVIRONMENTAL**

- Operating Temperature - -40 Celsius to 70 Celsius
- Storage Temperature - -40 Celsius to 85 Celsius

**POLLED IO DATA**

Vendor ID.....62  
 Product Code.....21  
 Product Type.....x65  
 Produced IO Data.....5  
 Consumed IO Data.....0

	<b>Produced IO Data</b>	<b>Produced IO Data</b>	<b>Produced IO Data</b>
<b>Word</b>	<b>Byte 0</b>	<b>Byte 1</b>	<b>Byte 2</b>
<b>Byte Offset</b>	0	2	4
<b>Name</b>	Digital Inputs	Digital Inputs	Digital Inputs
<b>Bit 0</b>	DI1	DI17	DI33
<b>Bit 1</b>	DI2	DI18	DI34
<b>Bit 2</b>	DI3	DI19	DI35
<b>Bit 3</b>	DI4	DI20	DI36
<b>Bit 4</b>	DI5	DI21	DI37
<b>Bit 5</b>	DI6	DI22	DI38
<b>Bit 6</b>	DI7	DI23	DI39
<b>Bit 7</b>	DI8	DI24	DI40
<b>Bit 8</b>	DI9	DI25	-
<b>Bit 9</b>	DI10	DI26	-
<b>Bit 10</b>	DI11	DI27	-
<b>Bit 11</b>	DI12	DI28	-
<b>Bit 12</b>	DI13	DI29	-
<b>Bit 13</b>	DI14	DI30	-
<b>Bit 14</b>	DI15	DI31	-
<b>Bit 15</b>	DI16	DI32	-