# ICM-HDIO-04P

## High Denisty I/O Expander - 8 In DC Isolated

Electronic Solutions for the 21st Century

ICM-HDIO-04P

## PRODUCT DESCRIPTION:

The **ICM-HDIO-04P** is designed for direct connection with any of the Divelbiss *Bear Bones*, *High Density Bear Bones*, *Boss Bear*, *Boss32*, *Universal Control Panel (UCP)* and *Universal Machine Controller (UMC)* product families.

## PRODUCT FEATURES:

- Quickly Connects using ICM-HDCA Series Cables
- Optically Isolated I/O points
- Reverse polarity protection
- Small size and light weight
- Mounts on industry standard DIN rail type NS31 or NS35
- Addressable via programming jumpers
- Detatachable Input blocks
- Polarized and locking data and power bus connections
- LED monitoring of Input status
- Engineered to meet NEMA part ICS 3-304

Data Sheet

Proudly Made in the USA

## Table of Contents



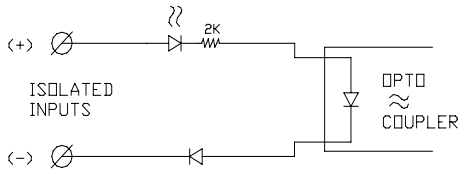
**----WARNING----**

The ICM-HDIO-04P, as with other solid state control devices, must not be used in applications which would be hazardous to personnel in the event of failure of the controller. Precautions must be taken to provide mechanical and/or electrical safeguards external to the controller. This device is **NOT APPROVED** for domestic or human medical use.

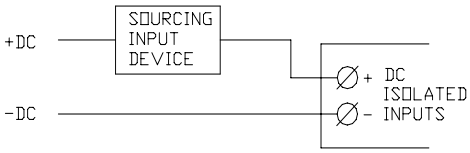
## INPUT SPECIFICATIONS:

| | |
|---|---|
| **# Channels:** | 8 |
| **Input Voltage:** | 10-32 VDC |
| **Turn on Level:** | 8VDC @ 2.3mADC Minimum |
| **Turn off Level:** | 2.5VDC @ 0.05mADC Maximum |
| **Turn on Time:** | |
| with debounce: | 30mSec Nominal @ 24VDC |
| without debounce: | 2µSec Nominal @ 24VDC |
| **Turn off Time:** | |
| with debounce: | 30mSec Nominal @ 24VDC |
| without debounce: | 30µSec Nominal @ 24VDC |
| **Isolation (Input to Logic Level):** | 3.6KV Minimum for 1 Second |
| **Isolation (Interchannel):** | 3.6KV Minimum for 1 Second |
| **Static Input Resistance:** | 2KOhm Nominal |
| **Input Types:** | Sink or Source |
| **Optical Isolation:** | Yes |
| **LED Status Indicators:** | Yes |

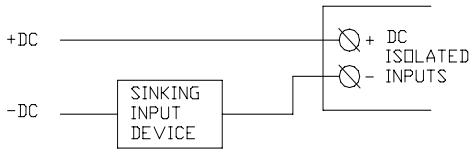
## TYPICAL INPUT CIRCUIT DIAGRAMS




**Typical ICM-HDIO-04P Input Circuit**




**Sinking Input Circuit**




**Sourcing Input Circuit**

Data Sheet

## Addressing I/O Points

The I/O is addressed into "pages". Each "page" represents 16 inputs and 16 outputs. The HDIO-04P addresses a "half page". It may be addressed to any half of any page 0 through 7. Limitations apply when connected to a *Bear Bones*, *Baby Bear Bones* or *High Density Bear Bones* CPU. When connected to these CPUs, the HDIO may **NOT** be addressed on "Page 1". "Page" selection is done via programming shunts "Address Selector(s) 1,2,4,8". See page selection to the right for more details. ***Note: Some models may only use selectors 1,2,4. Page 6 cannot be addressed when using HDIO with PIC-AB-01.***

| Card Page Address | Card Paging Shunts (Address Selector) 8 4 2 1 | U/L Selector Lower / Upper | DIN/ DOUT 8 I/O Cards | DIN/ DOUT 16 I/O Cards | Card Page Address | Card Paging Shunts (Address Selector) 8 4 2 1 | U/L Selector Lower / Upper | DIN/ DOUT 8 I/O Cards | DIN/ DOUT 16 I/O Cards |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | 0-7<br>8-15 | 0-15 | 8 | | | 128-135<br>136-143 | 128-143 |
| 1 | | | 16-23<br>24-31 | 16-31 | 9 | | | 144-151<br>152-159 | 144-159 |
| 2 | | | 32-39<br>40-47 | 32-47 | 10 | | | 160-167<br>168-175 | 160-175 |
| 3 | | | 48-55<br>56-63 | 48-63 | 11 | | | 176-183<br>184-191 | 176-191 |
| 4 | | | 64-71<br>72-79 | 64-79 | 12 | | | 192-199<br>200-207 | 192-207 |
| 5 | | | 80-87<br>88-95 | 80-95 | 13 | | | 208-215<br>216-223 | 208-223 |
| 6 | | | 96-103<br>104-111 | 96-111 | 14 | | | 224-231<br>232-239 | 224-239 |
| 7 | | | 112-119<br>120-127 | 112-127 | 15 | | | 240-247<br>248-255 | 240-255 |

## Power Consumption

| | |
|---|---|
| **Power Input Standby:** | +5VDC @ 2mA Maximum |
| **Power Input Origin:** | Controller/Aux Powersupply via Cable 3 |
| **I/O Point Power Consumption:** | |
| Activated Inputs: | 1.7mA each input point (additional) |

## DATA CONNECTIONS

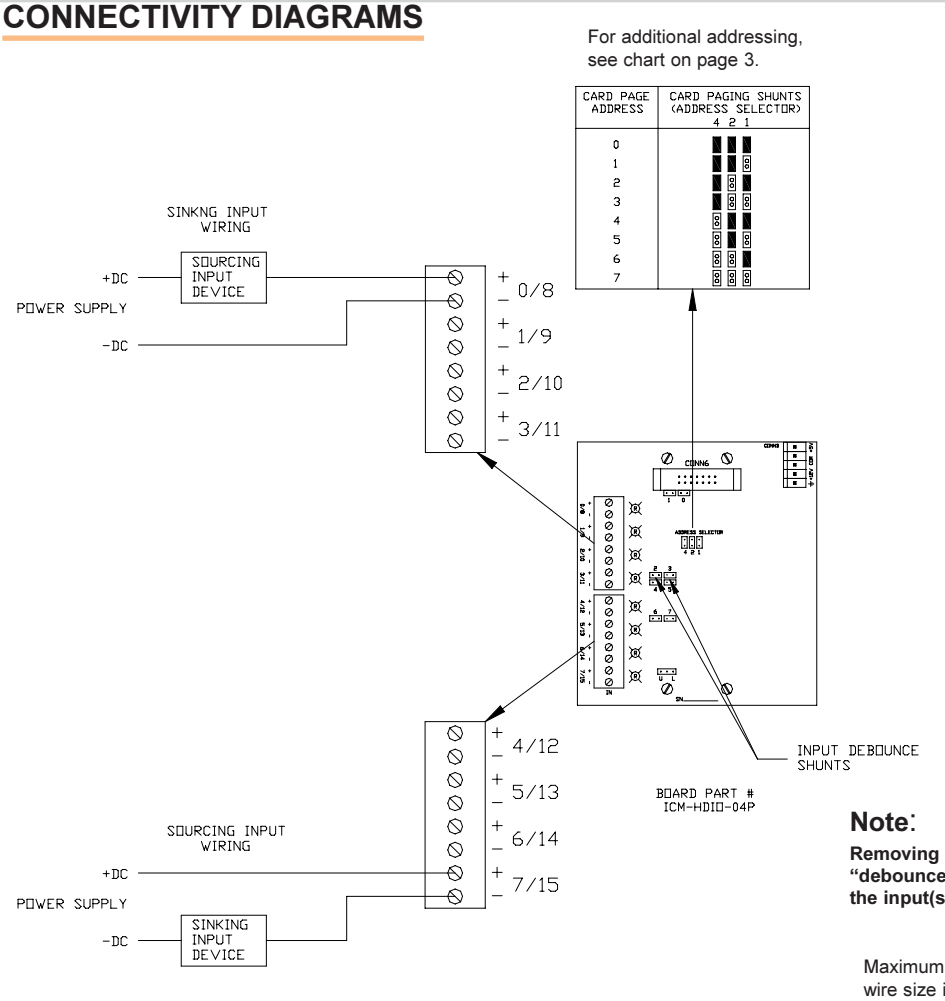
The data is received from the controller via a ribbon cable connected to Conn6. The controller provides all the addressing, data and selection signals necessary for complete operation.

## MOUNTING & DIMENSIONS

| | |
|---|---|
| **Mounting Type:** | Industry Standard DIN Rail NS 31 or NS 35 |
| **Dimensions:** | |
| Width: | 4.0 Inches |
| Length: | 4.4 Inches |
| Depth: | 1.7 Inches (including din rail mounting feet) |

Data Sheet

## CONNECTIVITY DIAGRAMS




**Note:**

**Removing the numbered "debounce" shunts shown, disables the input(s) debounce circuitry.**

Maximum recommended wire size is 14 AWG.

## CABLING

The ICM-HDIO-04P connects to any of the Divelbiss controllers using standard cable sets. See below for proper cable. Custom Cabling is also available.

**Connect to Boss32, UCP, UMC and HDCPU.**

| | |
|---|---|
| ICM-HDCA-01 | Connects 1 Expander (9") |
| ICM-HDCA-02 | Connects 2 Expander (18") |
| ICM-HDCA-03 | Connects 3 Expander (27") |
| ICM-HDCA-04 | Connects 4 Expander (36") |
| ICM-HDCA-05 | Connects 5 Expander (45") |
| ICM-HDCA-06 | Connects 6 Expander (54") |

**Connect to Boss Bear, Bear Bones, and Baby Bear Bones.**

| | |
|---|---|
| ICM-HDCA-11 | Connects 1 Expander (9") |
| ICM-HDCA-12 | Connects 2 Expander (18") |
| ICM-HDCA-13 | Connects 3 Expander (27") |
| ICM-HDCA-14 | Connects 4 Expander (36") |
| ICM-HDCA-15 | Connects 5 Expander (45") |
| ICM-HDCA-16 | Connects 6 Expander (54") |

Data Sheet