



Electronic Solutions for the 21st Century

ICM-HDIO-09P

High Denisty I/O Expander - 8 In DC Commoned



ICM-HDIO-09P

PRODUCT DESCRIPTION:

The ICM-HDIO-09P is designed for direct connection with any of the Divebiss *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 Inputs
- Reverse polarity protection
- Small size and light weight
- Mounts on industry standard DIN rail type NS31 or NS35
- Addressable via programming jumpers
- Detachable Input / Output blocks
- Polarized and locking data and power bus connections
- LED monitoring of I/O status
- Engineered to meet NEMA part ICS 3-304
- DC Commoned Inputs

Data Sheet



Proudly Made
in the USA

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----WARNING----

The ICM-HDIO-09P, 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.

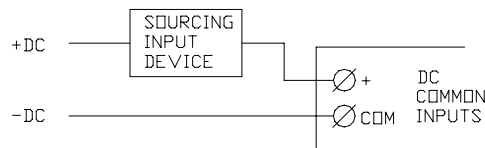
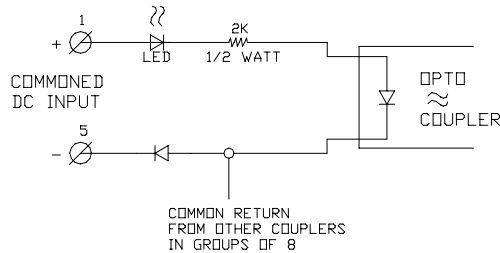


INPUT SPECIFICATIONS:

| | |
|--|----------------------------|
| # 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): | 3KV Minimum for 1 Second |
| Static Input Resistance: | 2KOhm Nominal |
| Input Types: | Sink |
| Optical Isolation: | Yes |
| LED Status Indicators: | Yes |

TYPICAL INPUT CIRCUIT DIAGRAMS

Typical ICM-HDIO-09P Input Circuit



Sinking Input Circuit



Addressing I/O Points

The I/O is addressed into “pages”. Each “page” represents 16 inputs and 16 outputs. The HDIO-09P addresses a “half page”. It may be addressed to 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 address when HDIO is used with PIC-AB-01.*

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

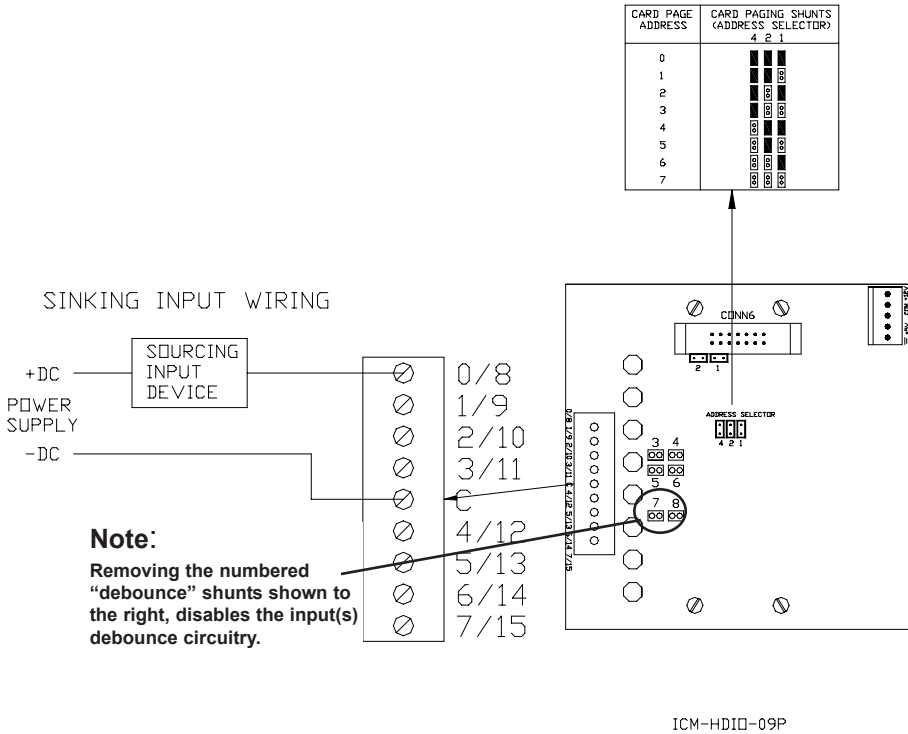
MOUNTING & DIMENSIONS

| | |
|-----------------------|---|
| Mounting Type: | Industry Standard DIN Rail NS 31 or NS 35 |
| Dimensions: | |
| Width: | 4.25 Inches |
| Length: | 4.225 Inches |
| Depth: | 1.7 Inches (including din rail mounting feet) |



CONNECTIVITY DIAGRAMS

For additional Addressing, See Chart on Page 4.



Maximum Recommended wire size is 14 AWG.

CABLING

The ICM-HDIO-09P connects to any of the Divebiss 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") |