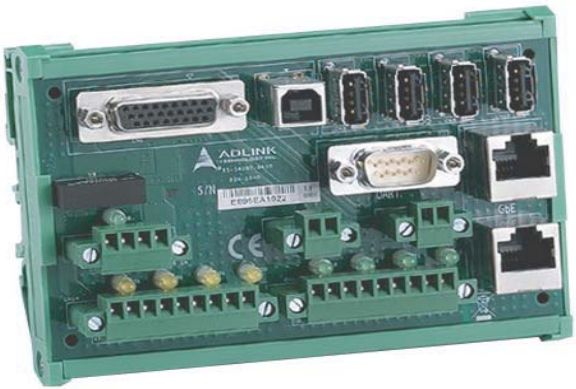
# DIN-1040

DIN Board

**User's Manual**



| | |
|---|---|
| **Manual Rev.:** | 1.0 |
| **Revision Date:** | Dec. 30, 2017 |
| **Part No:** | 50-11257-1000 |

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Leading **EDGE COMPUTING**

# Revision History

| Revision | Release Date | Description of Change(s) |
|---|---|---|
| 1.0 | Dec. 30, 2017 | Initial Release |


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# Preface

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## Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.




Additional information, aids, and tips that help users perform tasks.




Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.




Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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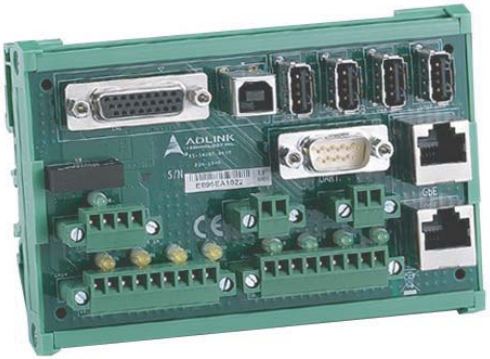
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# 1 Introduction



## 1.1 Overview

The DIN-1040 is a terminal block that simplifies power and I/O signal configuration for the ADLINK NEON-1020/40 smart camera.

## 1.2 Specifications

| **I/O Interface** | | |
|---|---|---|
| Digital Output<br>Exposure Output | 4 channel isolated multi-function open collector output<br>Digital or exposure output function as configured by software<br>Operating voltage range up to 24VDC<br>Open collector sink currents max. 300 mA<br>Overcurrent protection per channel | |
| Digital Input | 4-channel isolated digital input<br>Operating voltage range up to 24 VDC | |
| Trigger Input | One trigger input<br>Operating voltage range up to 24 VDC | |
| PWM LED Out | Output voltage | 24 VDC, +/- 10% (output power shares system power source) |
| | Output current | 500 mA |
| Ethernet | Two RJ-45 connectors, GbE signal bypass only | |

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| I/O Interface | |
|---|---|
| RS-232 | D-SUB9 male connector, TXD and RXD signal only |
| USB | 4 channel USB 1.1 full speed |
| DC Output | Isolation 5VDC, +/- 15%, max. 100mA |
| DC Input | 24V DC, +/- 10%, max. 30 VDC |
| DC Input Power Protection | Over-current: (fuse 3A )<br>Power reverse |
| **Mechanical/Environmental** | |
| Dimensions | 121.92mm x 71.7mm |
| Operating Temperature | 0°C to 50°C |
| Humidity | Approx. 95% @ 40°C (non-condensing) |
| Safety | CE, FCC Class A |

## 1.3 I/O Connectors and Indicators

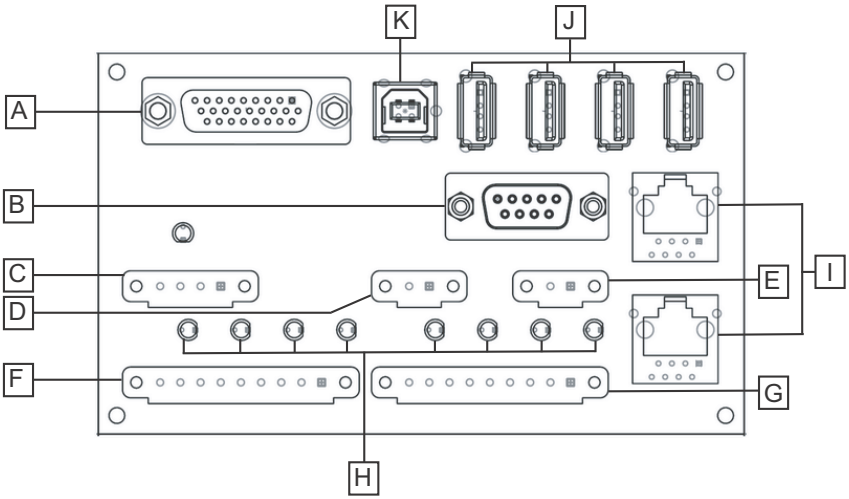



**Figure 1-1: I/O Panel**

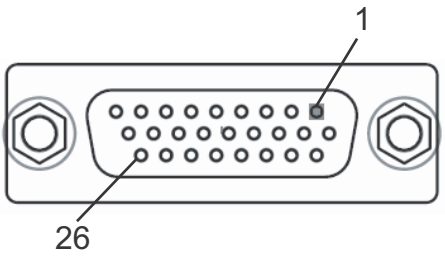
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| | | | |
|---|---|---|---|
| **A** | Digital I/O and power | **F** | Isolated Digital Output |
| **B** | RS-232 | **G** | Isolated Digital Input |
| **C** | Power | **H** | DI/O status LED |
| **D** | PWM LED Output | **I** | LAN Port |
| **E** | Hardware Trigger Input | **J** | USB Port (Type A) x4 |
| | | **K** | USB Port (Type B) |

**Table 1-1: I/O Connector Legend**

### 1.3.1 Digital I/O and Power

The D-SUB26 (female) connector transmits and receives both RS-232 and digital I/O, trigger, and PWM LED OUT signals, and power.




| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | RS232 RXD | 14 | GND |
| 2 | DO3 /Strobe out 3 | 15 | GND |
| 3 | DO1 /Strobe out 1 | 16 | GND |
| 4 | Hardware Trigger input (-) | 17 | GND |
| 5 | Hardware Trigger input (+) | 18 | GND |
| 6 | PWM LED out (+) | 19 | RS232 TXD |
| 7 | PWM LED out (-) | 20 | DO2 /Strobe out 2 |

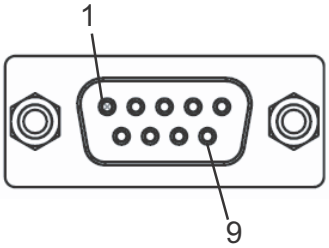
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| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 8 | System PWR | 21 | DO0 /Strobe out 0 |
| 9 | System PWR | 22 | DI3 |
| 10 | GND | 23 | DI0 |
| 11 | GND | 24 | DI2 |
| 12 | GND | 25 | DI1 |
| 13 | GND | 26 | GND |

**Table 1-2: Digital I/O and Power Pin Assignments**

### 1.3.2 RS-232

A D-SUB9 (male) connector




| Pin | Signal |
|---|---|
| 1 | N/C |
| 2 | RXD |
| 3 | TXD |
| 4 | N/C |
| 5 | GND |
| 6 | N/C |
| 7 | N/C |
| 8 | N/C |
| 9 | N/C |

**Table 1-3: System UART Pin Assignments**

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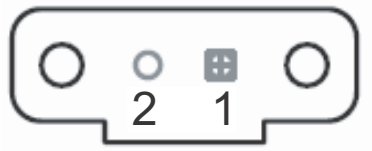
### 1.3.3 Main Power




| Pin | Signal |
|---|---|
| 1 | Power in (+) |
| 2 | GND |
| 3 | Isolated 5V power out |
| 4 | Isolated GND |

**Table 1-4: Power Pin Assignments**

### 1.3.4 PWM LED Control Out

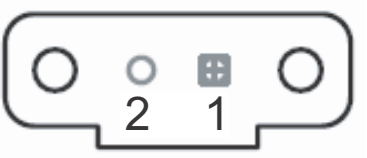



| Pin | Signal |
|---|---|
| 1 | PWN output (+) |
| 2 | PWN output (-) |

**Table 1-5: PWM LED Pin Assignments**

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### 1.3.5 Hardware Trigger Input




| Pin | Signal |
|---|---|
| 1 | Trigger input (+) |
| 2 | Trigger input (-) |

**Table 1-6: Hardware Trigger Input Pin Assignments**

### 1.3.6 Hardware Trigger Input

One hardware trigger input is provided.

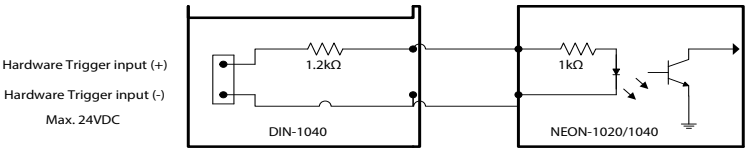



**Figure 1-2: Hardware Trigger Input Circuit**

| | Min. | Max. |
|---|---|---|
| Number of Channels | 1 digital input | |
| Normal Input High Threshold | +2V | +24V |
| Normal Input Low Threshold | 0V | +0.8V |
| Max. Input Voltage | +24V | |

**Table 1-7: Trigger Input Electrical Specification**

### 1.3.7 General Purpose Isolated Digital Input

Four isolated digital input channels are provided

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| Pin | Signal |
|---|---|
| 1 | DI0 (+) |
| 2 | DI0 (-) |
| 3 | DI1 (+) |
| 4 | DI1 (-) |
| 5 | DI2 (+) |
| 6 | DI2 (-) |
| 7 | DI3 (+) |
| 8 | DI3 (-) |
| 9 | Isolated GND |

**Table 1-8: Isolated Digital Input Pin Assignments**

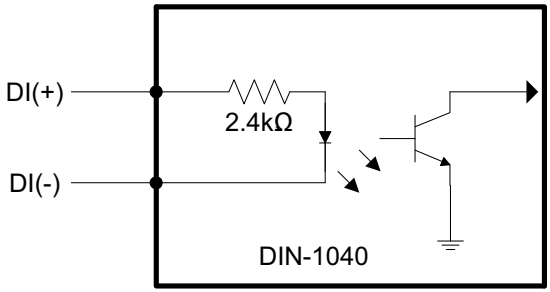



**Figure 1-3: Isolated Digital Input Circuit**

| | Min. | Max. |
|---|---|---|
| Number of Channels | 4 digital inputs | |
| Input Resistance | 2.4KΩ | |
| Normal Input High Threshold | +2.4V | +24V |
| Normal Input Low Threshold | 0V | +1.8V |

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| | Min. | Max. |
|---|---|---|
| Max. Input Voltage | +24V | |

**Table 1-9: Isolated Digital Input Electrical Specification**

### 1.3.8 General Purpose Isolated Digital Output

Four isolated digital output channels are provided, such that, in the common ground connection of digital output, as shown, when a 1 (logic high) is written by FPGA to a DO channel, sink current passes through the transistors and the DO channel goes low, and when a 0 (logic low) is written by FPGA to a DO channel, no current passes through the transistors and the DO channel goes high.




| Pin | Signal |
|---|---|
| 1 | D00 (+) |
| 2 | Isolated GND |
| 3 | DO1 (+) |
| 4 | Isolated GND |
| 5 | DO2 (+) |
| 6 | Isolated GND |
| 7 | DO3 (+) |
| 8 | Isolated GND |
| 9 | VFB<br>(DO flyback diode power source) |

**Table 1-10: Isolated Digital Output Pin Assignments**

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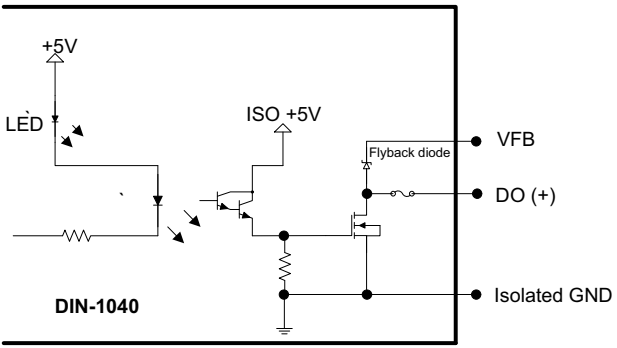



**Figure 1-4: Isolated Digital Output Circuit**

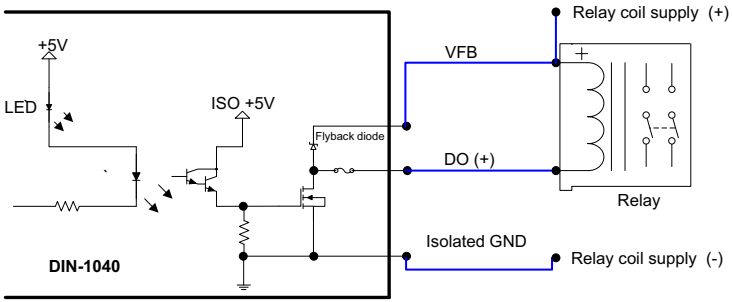



**Figure 1-5: Connection Relay Application Circuit**

| | |
|---|---|
| **Number of Channels** | 4 digital outputs |
| **Output Type** | Sink current for each channel<br>Max 300mA/Channel |
| **Output Working Voltage** | Max 24V |
| **Overcurrent Protection** | Max 750mA per channel @25°C |
| **Output Inactive Leakage Current** | Max 0.1μA@DO=24V |

**Table 1-11: Isolated Digital Output Electrical Specification**

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### 1.3.9 LED Status Indicators

| LED | Color | Status Indicator |
|---|---|---|
| PWR | Green | DC power on: ON<br>DC power off: OFF |
| DI0 | Green | DI high: ON<br>DI low: OFF |
| DI1 | Green | DI high: ON<br>DI low: OFF |
| DI2 | Green | DI high: ON<br>DI low: OFF |
| DI3 | Green | DI high: ON<br>DI low: OFF |
| DO0 | Yellow | DO active: ON<br>DO inactive: OFF |
| DO1 | Yellow | DO active: ON<br>DO inactive: OFF |
| DO2 | Yellow | DO active: ON<br>DO inactive: OFF |
| DO3 | Yellow | DO active: ON<br>DO inactive: OFF |

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## 1.4 Accessory Connection

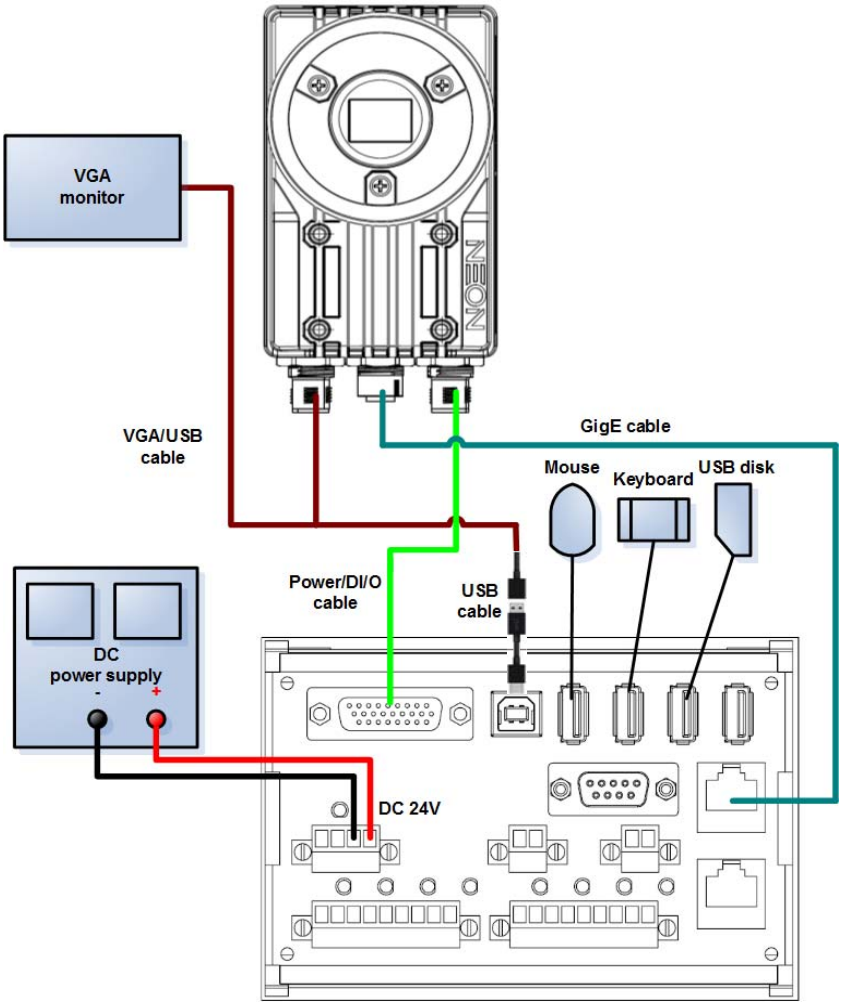



**Figure 1-6: DIN-1040 Accessory Connection**

| P/N | Accessory |
|---|---|
| 30-01203-0010 | VGA & USB cable |
| 30-01246-0000 | Gig E cable |
| 30-01201-0000 | Power & DI/O cable |

**Table 1-12: DIN-1040 Accessories**

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# Important Safety Instructions

For user safety, please read and follow all instructions, Warnings, Cautions, and Notes marked in this manual and on the associated device before handling/operating the device, to avoid injury or damage.

*S'il vous plaît prêter attention stricte à tous les avertissements et mises en garde figurant sur l'appareil , pour éviter des blessures ou des dommages.*

- Read these safety instructions carefully
- Keep the User's Manual for future reference
- Read the Specifications section of this manual for detailed information on the recommended operating environment
- The device can be operated at an ambient temperature of 50ºC
- When installing/mounting or uninstalling/removing device; or when removal of a chassis cover is required for user servicing (See "Introduction" on page 1.):
  - Turn off power and unplug any power cords/cables
  - Reinstall all chassis covers before restoring power
- To avoid electrical shock and/or damage to device:
  - Keep device away from water or liquid sources
  - Keep device away from high heat or humidity
  - Keep device properly ventilated (do not block or cover ventilation openings)
  - Always use recommended voltage and power source settings
  - Always install and operate device near an easily accessible electrical outlet
  - Secure the power cord (do not place any object on/over the power cord)
  - Only install/attach and operate device on stable surfaces and/or recommended mountings
- If the device will not be used for long periods of time, turn off and unplug from its power source

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- Never attempt to repair the device, which should only be serviced by qualified technical personnel using suitable tools
- A Lithium-type battery may be provided for uninterrupted backup or emergency power.

---




Risk of explosion if battery is replaced with one of an incorrect type; please dispose of used batteries appropriately.
*Risque d'explosion si la pile est remplacée par une autre de type incorrect. Veuillez jeter les piles usagées de façon appropriée.*

---

- The device must be serviced by authorized technicians when:
  - The power cord or plug is damaged
  - Liquid has entered the device interior
  - The device has been exposed to high humidity and/or moisture
  - The device is not functioning or does not function according to the User's Manual
  - The device has been dropped and/or damaged and/or shows obvious signs of breakage
- Disconnect the power supply cord before loosening the thumbscrews and always fasten the thumbscrews with a screwdriver before starting the system up
- It is recommended that the device be installed only in a server room or computer room where access is:
  - Restricted to qualified service personnel or users familiar with restrictions applied to the location, reasons therefor, and any precautions required
  - Only afforded by the use of a tool or lock and key, or other means of security, and controlled by the authority responsible for the location

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| | |
|---|---|
|  | **BURN HAZARD**<br>Touching this surface could result in bodily injury. To reduce risk, allow the surface to cool before touching.<br>***RISQUE DE BRÛLURES***<br>*Ne touchez pas cette surface, cela pourrait entraîner des blessures.*<br>*Pour éviter tout danger, laissez la surface refroidir avant de la toucher.* |

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