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# OPTO-108 8-Channel Digital Input Board

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## Operating Instructions



**Auric Solutions Limited**  
4 Maple Close, Emsworth  
Hampshire PO10 7RJ, UK  
Tel. +44 (0) 1243 389712  
info@auricsolutions.com  
[www.auricsolutions.com](http://www.auricsolutions.com)

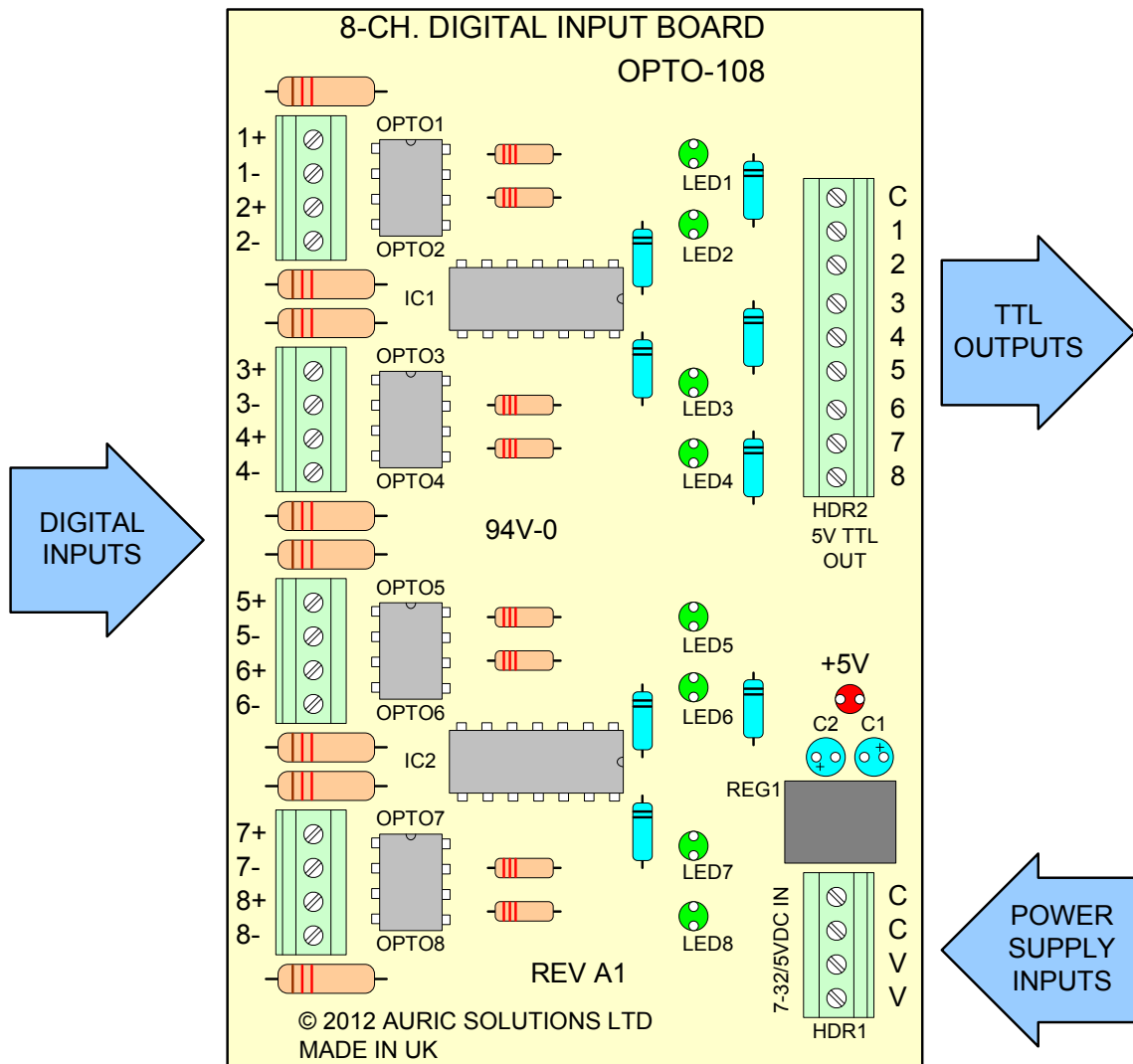
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# Features

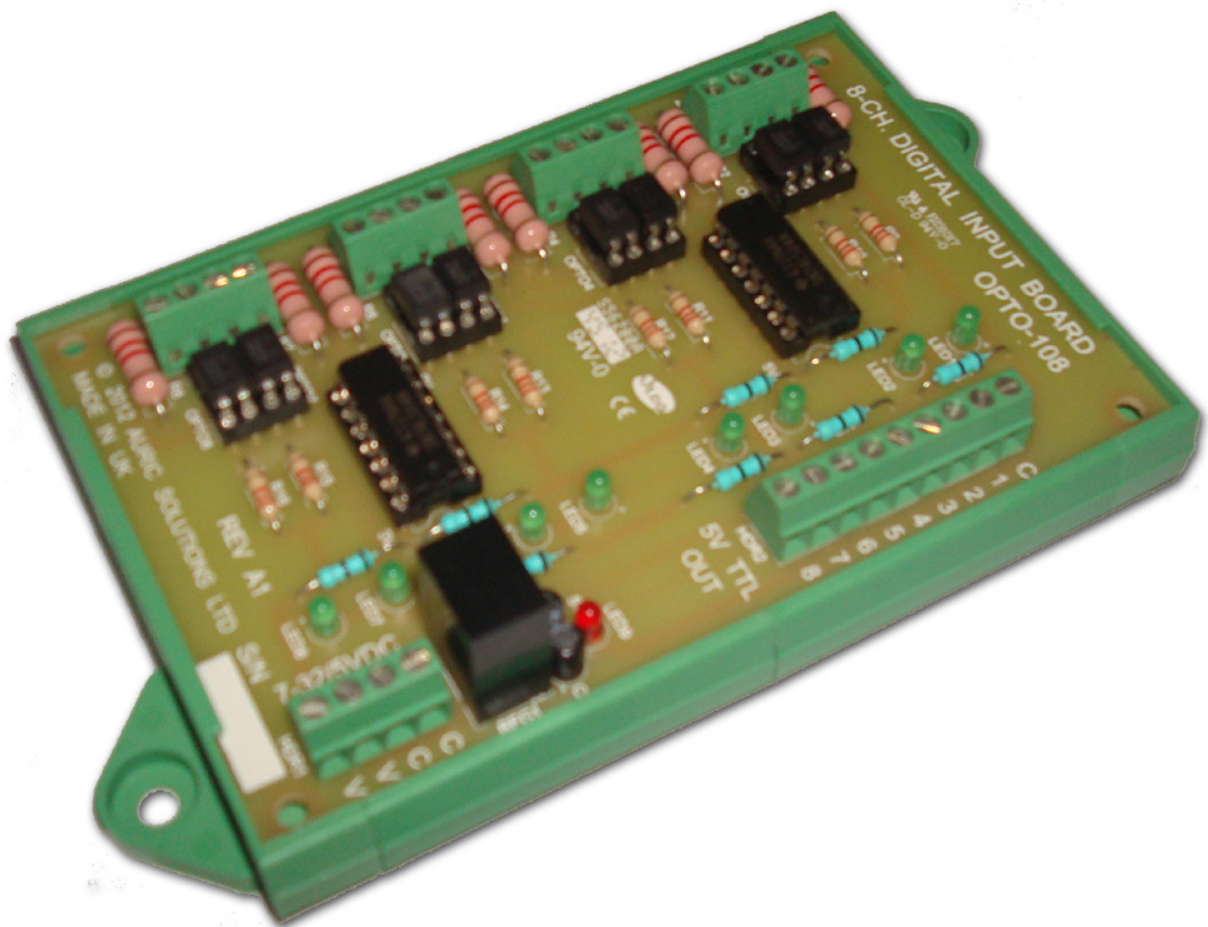
- The OPTO-108 provides 8 channels of +3-50 VDC digital inputs.
- Output signals are 5V TTL compatible, and are non-inverting.
- The OPTO-108 requires an external DC power supply with a voltage range of 7 to 32 VDC, or optionally a fixed 5V supply (the onboard regulator is replaced by a link).
- LEDs are provided for clear indication of power and input signal state.
- All field wiring connections are by means of screw terminals for stranded wires up to maximum size of 1 mm<sup>2</sup>.
- The OPTO-108 may be mounted directly to a panel using appropriate length insulating standoffs.
- Alternatively, the OPTO-108 may be mounted on a panel or DIN rail using the optional universal mounting base.



Component layout on the OPTO-108 digital input board.

## Universal Mounting

- The OPTO-108 may be mounted on a panel or DIN rail using the optional universal mounting base, as shown below.
- The universal mounting base has a screw mount at each end, which may simply be removed if not required.
- The underside of the base has slots to mount two DIN rail feet. These may simply be removed if not required.



# Connections

## Power Supply

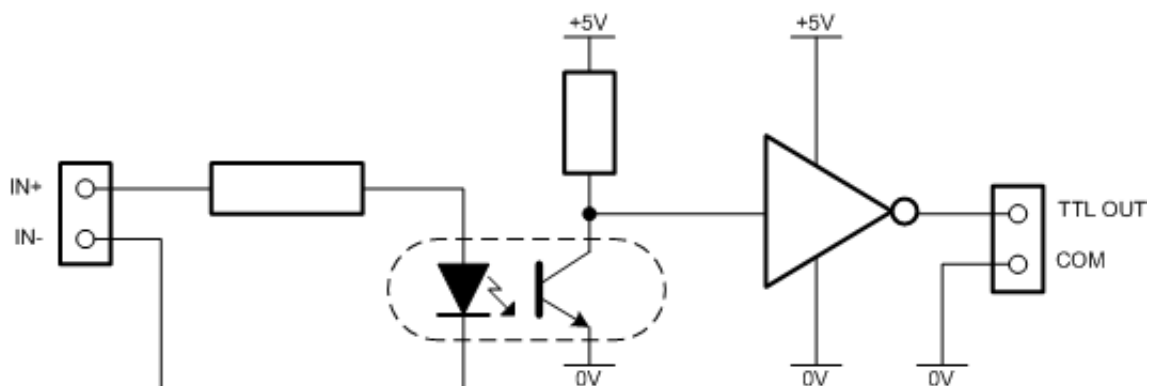
- The external DC power supply *must* be connected to HDR1.
- The standard board has a +7 to +32VDC supply voltage range.
- The 5V supply version requires only +5VDC (the regulator is not fitted in this case).
- The positive supply input connects to either of the V terminals.
- The 0V supply input connects to either of the C terminals.
- The spare V and C terminals are intended to loop the power to/from other equipment.

## TTL Outputs

- Output signals *must* be connected to HDR2.
- The C terminal is the signal common, or logic 0V reference.
- Each of the other terminals numbered 1 to 8 provides the output for a TTL signal matching the state of the corresponding digital input.
- A 3 to 50 VDC voltage on a digital input will produce a 5V TTL logic high on the output.

## Digital Inputs

- Each input channel has a differential pair of terminals (+ and - polarity).
- A 1200 $\Omega$  2W resistor on each positive input limits the current through the optocoupler to 1.6mA for a 3V input, and 41mA for a 50V input.
- Permitted differential input voltage range is from +3 to +50 VDC.
- The channel LED will illuminate when the input is above 3 VDC.



Electrical circuit diagram for a single input channel.

## Safety Guidelines

- The OPTO-108 has an optical isolation barrier between digital inputs and the output circuitry to protect the low-voltage system and power supply from potentially hazardous voltages.
- The OPTO-108 is intended for indoor use only and *must* be mounted inside a suitable UL-rated enclosure.
- Make sure that all field wiring and connections meet applicable electrical codes of practice for safety and ease of identification.
- Mount the OPTO-108 in an area and position that prevents accidental or unauthorised access to wiring that carries hazardous voltages.

## Specifications

### *Electrical*

- Number of channels ..... 8
- Minimum input voltage ..... 3 VDC (@ 1.6 mA)
- Maximum input voltage ..... 50 VDC (@ 41 mA)
- Input signal connectivity ..... Differential
- Input optical isolation ..... 5,000 Vrms
- Maximum frequency ..... 10 kHz
- Output logic compatibility ..... 5V TTL
- Supply voltage ..... 7 to 32 VDC (or 5 VDC)
- Supply power requirement ..... 0.75 W max.
- Supply current at 5V ..... 150 mA
- Supply current at 7V ..... 105 mA
- Supply current at 32V ..... 25 mA

### *Mechanical*

- Weight ..... 58 g
- Weight (with universal mounting) ..... 132 g
- PCB dimensions ..... 110 x 72 mm
- Overall dimensions (with universal mounting) ..... 139 (L) x 77 (W) x 44 (H)

## **Environmental**

- Storage temperature..... -40 to 85 °C
- Operating temperature..... -40 to 70 °C
- Humidity ..... 85% RH max.

## **Safety**

This product is designed to meet the requirements of the following standards of safety of electrical equipment for measurement, control, and laboratory use:

- EN601010-1:2001 Safety requirements for electrical equipment for measurement, control, and laboratory use — Part 1: General requirements

## **Electromagnetic Compatibility**

This product is designed to meet the requirements of the following standards of EMC of electrical equipment for measurement, control, and laboratory use:

- EN61326-1:2006 Electrical equipment for measurement, control and laboratory use — EMC requirements Part 1: General requirements

## **CE Compliance**

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- The Low Voltage Directive 2006/95/EC
- The EMC Directive 2004/108/EC

## **Support**

For technical support, contact Auric Solutions Ltd using one of the following methods:

- Web..... [www.auricsolutions.com](http://www.auricsolutions.com)
- Email..... [support@auricsolutions.com](mailto:support@auricsolutions.com)
- Telephone (UK)..... +44 1243 389712