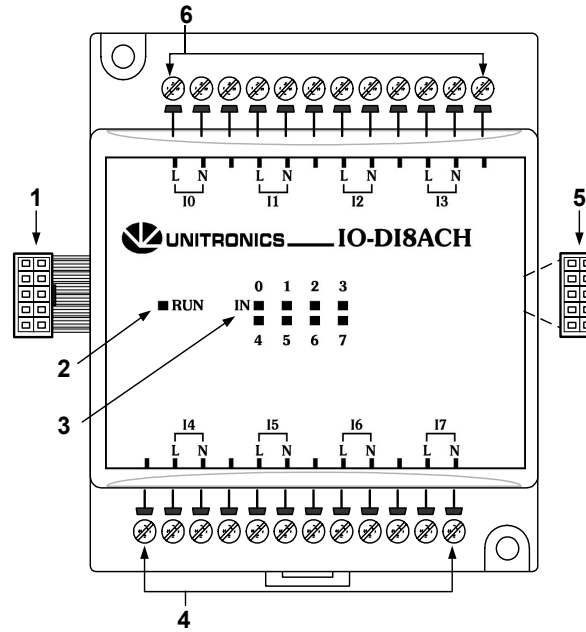
IO-DI8ACH I/O Expansion Module Eight 110/220VAC Inputs

The IO-DI8ACH is an I/O expansion module that can be used in conjunction with specific Unitronics OPLC controllers.

Each module offers 8 AC digital inputs.

The interface between a module and the OPLC is provided by an adapter.

These modules may either be snap-mounted on a DIN rail, or screw-mounted onto a mounting plate.



Component identification	
1	Module-to-module connector
2	Communication status indicator
3	Input status indicators
4	Input connection points: I4-I7
5	Module-to-module connector port
6	Input connection points: I0-I3

- Before using this product, it is the responsibility of the user to read and understand this document and any accompanying documentation.
- All examples and diagrams shown herein are intended to aid understanding, and do not guarantee operation. Unitronics accepts no responsibility for actual use of this product based on these examples.
- Please dispose of this product in accordance with local and national standards and regulations.
- Only qualified service personnel should open this device or carry out repairs.

User safety and equipment protection guidelines

This document is intended to aid trained and competent personnel in the installation of this equipment as defined by the European directives for machinery, low voltage, and EMC. Only a technician or engineer trained in the local and national electrical standards should perform tasks associated with the device's electrical wiring.

Symbols are used to highlight information relating to the user's personal safety and equipment protection throughout this document. When these symbols appear, the associated information must be read carefully and understood fully.

Symbol	Meaning	Description
	Danger	The identified danger causes physical and property damage.
	Warning	The identified danger can cause physical and property damage.
Caution	Caution	Use caution.



- Failure to comply with appropriate safety guidelines can result in severe personal injury or property damage. Always exercise proper caution when working with electrical equipment.

- Check the user program before running it.
- Do not attempt to use this device with parameters that exceed permissible levels.
- Install an external circuit breaker and take appropriate safety measures against short-circuiting in external wiring.
- To avoid damaging the system, do not connect / disconnect the device when the power is on.

Environmental Considerations

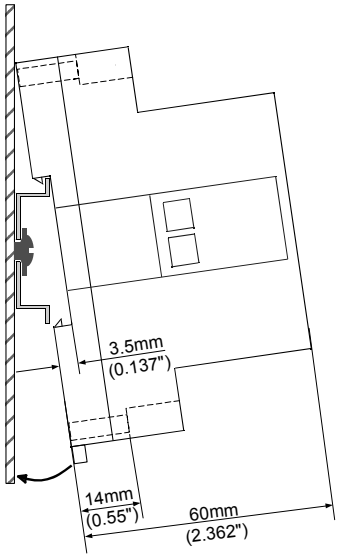
- Do not install in areas with: excessive or conductive dust, corrosive or flammable gas, moisture or rain, excessive heat, regular impact shocks or excessive vibration.

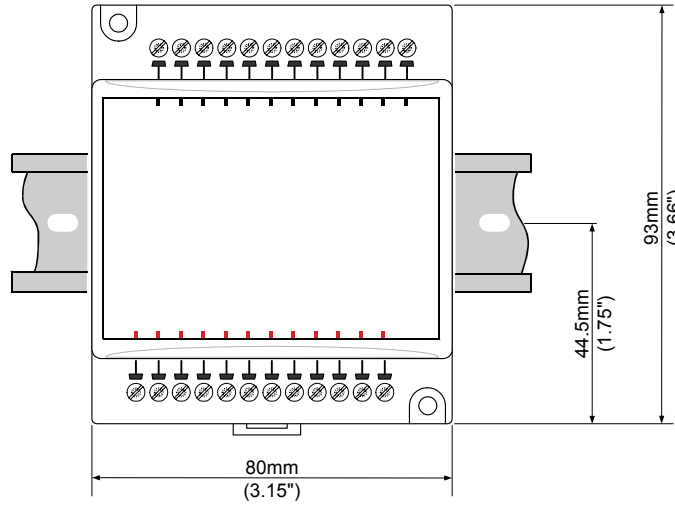
- Leave a minimum of 10mm space for ventilation between the top and bottom edges of the device and the enclosure walls.
- Do not place in water or let water leak onto the unit.
- Do not allow debris to fall inside the unit during installation.

Mounting the Module

DIN-rail mounting

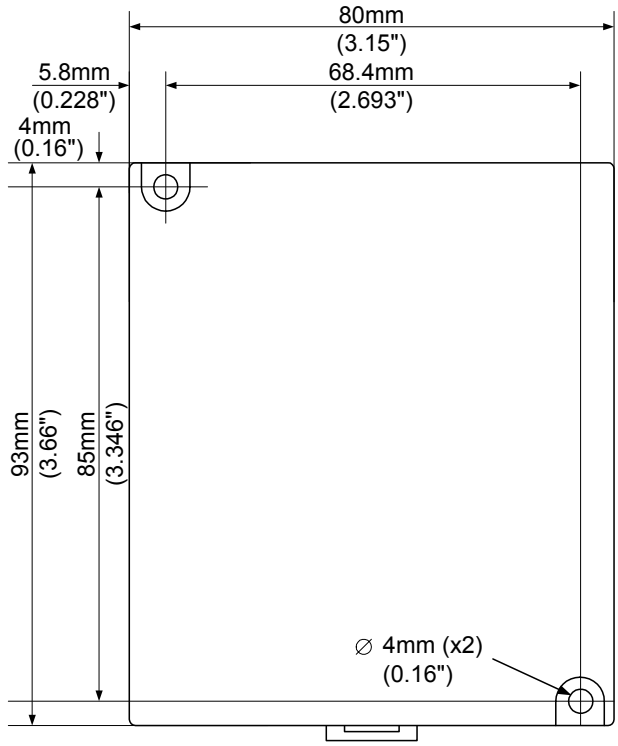
Snap the device onto the DIN rail as shown below; the module will be squarely situated on the DIN rail.





Screw-Mounting

The figure below is not drawn to scale. It may be used as a guide for screw-mounting the module.
Mounting screw type: either M3 or NC6-32.



Connecting Expansion Modules

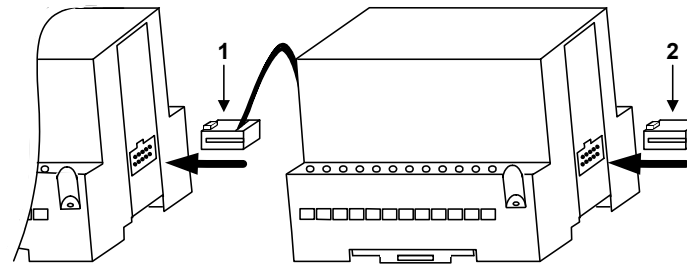
An adapter provides the interface between the OPLC and an expansion module. To connect the I/O module to the adapter or to another module:

1. Push the module-to-module connector into the port located on the right side of the device.

Note that there is a protective cap provided with the adapter. This cap covers the port of the **final** I/O module in the system.

- To avoid damaging the system, do not connect or disconnect the device when the power is on.

Component identification	
1	Module-to-module connector
2	Protective cap



Wiring

- Do not touch live wires.

- Unused pins should not be connected. Ignoring this directive may damage the device.
- Double-check all wiring before turning on the power supply.

Wiring Procedures

Use crimp terminals for wiring; use 26-12 AWG wire (0.13 mm ^{2}–3.31 mm^2) for all wiring purposes.

1. Strip the wire to a length of 7±0.5mm (0.250–0.300 inches).
2. Unscrew the terminal to its widest position before inserting a wire.
3. Insert the wire completely into the terminal to ensure that a proper connection can be made.
4. Tighten enough to keep the wire from pulling free.

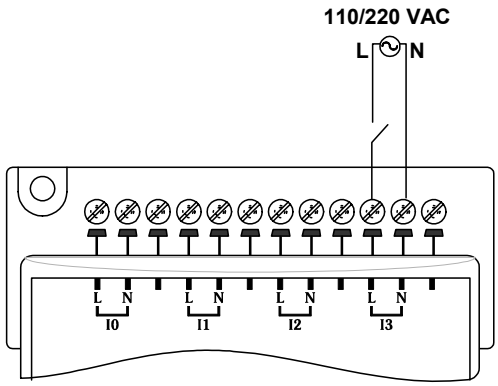
- To avoid damaging the wire, do not exceed a maximum torque of 0.5 N·m (5 kgf·cm).
- Do not use tin, solder, or any other substance on stripped wire that might cause the wire strand to break.
- Install at maximum distance from high-voltage cables and power equipment.

I/O Wiring—General

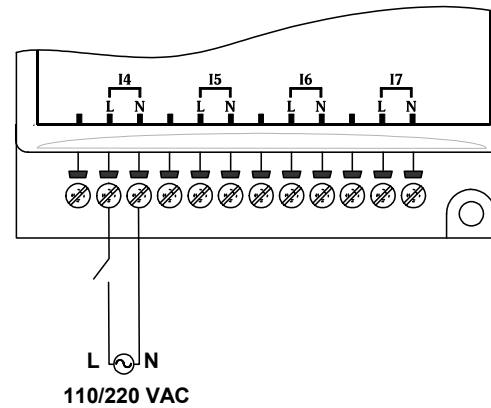
- Input or output cables should not be run through the same multi-core cable or share the same wire.
- Allow for voltage drop and noise interference with input lines used over an extended distance. Use wire that is properly sized for the load.

Digital Inputs

Input wiring
(top group of inputs)



Input wiring
(bottom group of inputs)



IO-DI8ACH Technical Specifications

Max. current consumption	45mA maximum from the adapter's 5VDC	
Typical power consumption	0.2W @ 5VDC	
Status indicator		
(RUN)	Green LED: —Lit when a communication link is established between module and OPLC. —Blinks when the communication link fails.	
Inputs		
Number of inputs	8	
Input type	AC	
Galvanic isolation		
Channel to bus	Yes	
Channel to power supply	Yes	
Channel to channel	Yes	
Status indicators (IN)	Green LEDs —Lit when the corresponding input is active. See Note 1	
Input voltage range	80 to 250VAC (50, 60 Hz)	
Nominal Input voltage	110VAC	220VAC
ON voltage (min)	80VAC	160VAC
OFF voltage (max)	30VAC	50VAC
Input current	8mA	12mA
Response time (typical)	Rise: 30mSec	
	Fall: 40mSec	
Environmental	IP20 / NEMA1	
Operating temperature	0° to 50°C (32° to 122°F)	
Storage temperature	-20° to 60° C (-4° to 140°F)	
Relative Humidity (RH)	5% to 95% (non-condensing)	
Dimensions (WxHxD)	80mm x 93mm x 60mm (3.15" x 3.66" x 2.362")	
Weight	161g (5.7oz.)	
Mounting	Either onto a 35mm DIN-rail or screw- mounted.	

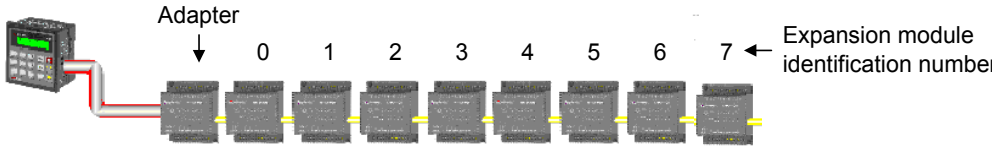
Notes:

1. The inputs' LEDs light up only when communication link is established between module and OPLC.

Addressing I/Os on Expansion Modules

Inputs and outputs located on I/O expansion modules that are connected to an OPLC are assigned addresses that comprise a letter and a number. The letter indicates whether the I/O is an input (I) or an output (O). The number indicates the I/O's location in the system. This number relates to both the position of the expansion module in the system, and to the position of the I/O on that module.

Expansion modules are numbered from 0-7[1] as shown in the figure below.



The formula below is used to assign addresses for I/O modules used in conjunction with the OPLC.

X is the number representing a specific module's location (0-7). Y is the number of the input or output on that specific module (0-15).

The number that represents the I/O's location is equal to:

$$32 + x \bullet 16 + y$$

Examples

- Input #3, located on expansion module #2 in the system, will be addressed as I 67,
  67 = 32 + 2 • 16 + 3
- Output #4, located on expansion module #3 in the system, will be addressed as O 84,
  84 = 32 + 3 • 16 + 4.

[1] The maximum number of I/Os varies according to the types of I/O modules linked to the PLC.

About Unitronics

Unitronics has been producing PLCs, automation software and accessory devices since 1989.

Unitronics' OPLC controllers combine full-function PLCs and HMI operating panels into single, compact units. These HMI + PLC devices are programmed in a single, user-friendly environment. Our clients save I/O points, wiring, space, and programming time; elements that translate directly into cost-efficiency.

Unitronics supports a global network of distributors and sales representatives, as well as a U.S. subsidiary.

For more information regarding Unitronics products, contact your distributor, Unitronics headquarters via email: export@unitronics.com, or visit the Unitronics website at http://www.unitronics.com/.



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