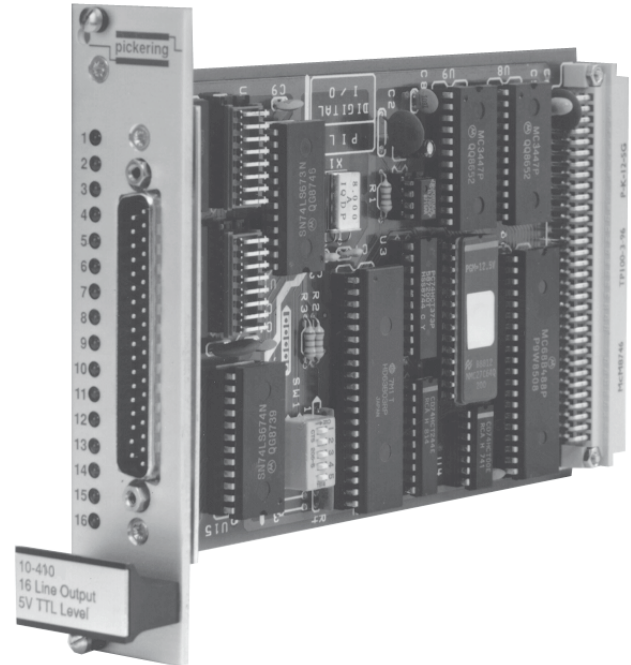


# 10-410A/411A

## Digital Input/Output Module

DIGITAL I/O MODULE  
10-410A/411A

- Model 10-410A: 16 Output Bits plus 16 Inputs Bits
- Model 10-411A: 32 Inputs Bits
- Programmable By Bit, Byte or Word (16 Bits)
- TTL Output Option Suitable for Driving External Logic
- Open-Collector Outputs Option Suitable for Driving External Relay Coils
- Optically Isolated Version for High Voltage or Noisy Environments
- Front Panel Status LEDs



The 10-410A/411A range of Digital I/O Modules are suitable for operating external devices, such as heavy duty relays (power, RF and high voltage types), solenoids, lamps etc., or for interfacing with external logic, e.g. a programmable instrument with a BCD interface. Writing and reading can be done at bit, byte or word level to simplify programming effort. Applications include generating control signals, stimulus and sensing status from digital devices.

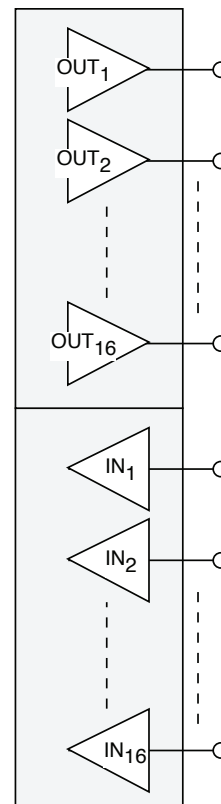
Two choices of output drive are available: TTL for interacting with external logic and Open Collector Transistor for operating external devices with voltages to 50V DC and currents to 500mA. There is also a version with optical Isolation for high voltage or electrically noisy environments.

Model 10-410A-003 is intended for driving the 20-310/320 high voltage modules, these modules are optically isolated when mounted in a separate case.

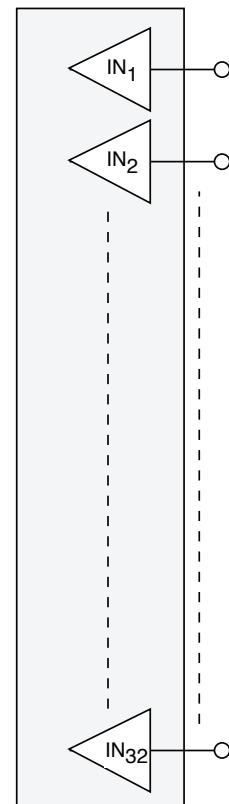
Model 10-411A-001 has 32 bits of digital input only, but is otherwise equivalent to the 10-410-001.

### Digital Input/Output Model Types:

- |                    |  |
|--------------------|--|
| <b>10-410A-001</b> | 16-Bit TTL. Output with 16 Bit TTL Input.                      |
| <b>10-410A-002</b> | 16-Bit Open Collector Transistor Output with 16 Bit TTL Input. |
| <b>10-410A-003</b> | 16-Bit High Voltage Driver Module.                             |
| <b>10-410A-004</b> | 16-Bit Opto-Isolated Driver Module.                            |
| <b>10-411A-001</b> | 32-Bit TTL Input only Module.                                  |



16-Bit Digital I/O  
Model 10-410A



32-Bit Digital I/P  
Model 10-411A

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## Programming

The Digital I/O module is simple to program either by single bit or by word (8 or 16 bits).

|                     |  |
|---------------------|--|
| <b>ARESET a</b>     | Clear all outputs on module a  |
| <b>CLOSE a,b</b>    | Set bit number b on module a   |
| <b>DELAY t</b>      | Force a minimum delay of t milliseconds between two instructions   |
| <b>OPEN a,b</b>     | Clear bit number b on module a   |
| <b>READ? a [,b]</b> | Read word (8 or 16 bits) on module a.<br>If the bit number b is supplied then a 1 or 0 value for that bit only is returned |
| <b>RESET</b>        | Clear all bits/switches on all modules   |
| <b>VIEW? a [,b]</b> | View status of module a, can be viewed at any time either as a word or by bit b as a logical value (1 or 0)                |
| <b>WRITE a,w</b>    | Send word w to module a  |

## Width and Dimensions

All models conform to the 3U height (128mm) Eurocard standard and are housed in a 160mm deep screened plug-in card. Panel width for all versions is 1.2 Inches.

## Connectors

Connections for all modules are made via one front panel mounted 37-way D-type plug.

## Operating/Storage Conditions

### Operating Conditions

|                        |                          |
|------------------------|--------------------------|
| Operating Temperature: | 0°C to 55°C              |
| Humidity:              | Up to 95% non-condensing |
| Altitude:              | 5000m                    |

### Storage and Transport Conditions

|                      |                          |
|----------------------|--------------------------|
| Storage Temperature: | -20°C to +75°C           |
| Humidity:            | Up to 95% non-condensing |
| Altitude:            | 15000m                   |

## Input and Output Driver Specifications

| TTL Compatible Output Driver (Model 10-410A-001) |                                |
|--|--------------------------------|
| Driver I.C.:                                     | 74LS673                        |
| Maximum drive:                                   | 15 TTL inputs                  |
| Max Voltage:                                     | 7V                             |
| Max Current Drive:                               | Sink: 8mA max<br>Source: 0.4mA |
| Operate/Release Time:                            | <1ms (after internal bus DAV)  |

| Open Collector Transistor Driver (Model 10-410A-002) |                               |
|--|-------------------------------|
| Driver I.C.:   | ULS2803A                      |
| Maximum Standoff Volts:                              | 50V                           |
| Max Power per O/P:                                   | 1.0W                          |
| Max Power per Byte:                                  | 1.6W                          |
| Max Current Drive:                                   | 500mA                         |
| Operate/Release Time:                                | <1ms (after internal bus DAV) |

| Digital TTL Compatible Input                      |         |
|---|---------|
| Driver I.C.:                                      | 74LS674 |
| Maximum Standoff Voltage:                         | 7V      |
| Nominal True voltage:                             | >2.0V   |
| Nominal False voltage:                            | <0.8V   |
| Data is strobed when the READ? operation executes |         |

Note: Care must be taken when interfacing the 10-410A/411A module with external circuits which may produce high voltage spikes or RF interference. Additional noise protection may be required, please contact Pickering if you wish to discuss your requirement.

## Product Order Codes

| Digital Input/Output Module                |                    |
|--|--------------------|
| TTL 16-Bit i/p + TTL 16-Bit o/p            | <b>10-410A-001</b> |
| TTL 16-Bit i/p + Open collector 16-Bit o/p | <b>10-410A-002</b> |
| 16-Bit High voltage remote driver          | <b>10-410A-003</b> |
| 16-Bit Opto-Isolated Input/Output Module   | <b>10-410A-004</b> |
| TTL 32-bit Digital Input Module            | <b>10-411A-001</b> |

## Mating Connectors & Cabling

Please refer to the Pickering Interfaces "Interconnection Solutions" catalog for a full list of connector/cabling options, including drawings, photos and specifications. This is available in either print or as a download.

Alternatively our web site has dynamically linked connector/cabling options, including pricing, for all Pickering modules.

## Latest Details

Please refer to our Web Site for Latest Product Details.  
[www.pickeringtest.com](http://www.pickeringtest.com)