

IP470 TTL Level Digital I/O

IP470 Industrial I/O Pack (IP) modules provide 48 general-purpose, bidirectional I/O points to economically monitor and control a large quantity of digital devices.

Each channel has interrupt capability for detecting low-to-high or high-to-low transitions. Change-of-state interrupts are supported using paired channels. Debounce eliminates interrupts from noise and switching transients for error-free edge detection.

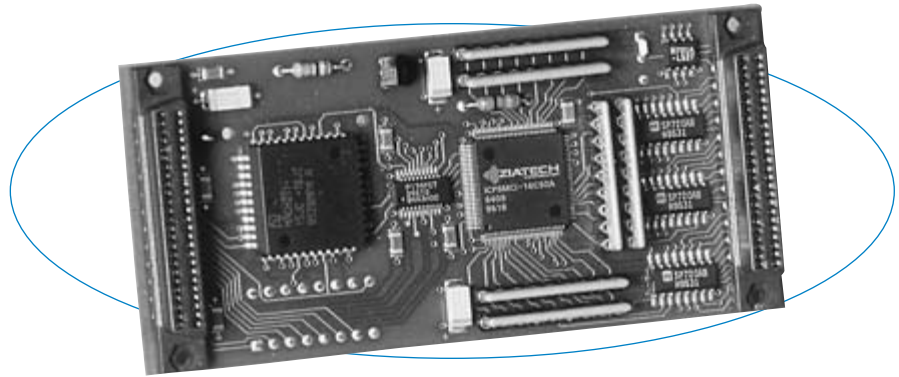
IP470 outputs are full-featured. They have socketed pull-ups and provide closed-loop readback status monitoring. TTL level thresholds and 15mA sink capability allow a direct interface to standard relay racks. And for safety, outputs go to a failsafe state upon power-up/reset without any instantaneous toggling to prevent false alarms.

Features

- 48 bidirectional input/output channels
- TTL-compatible inputs
- CMOS-compatible open-drain outputs
- Interrupt support for each channel
- Input hysteresis/debounce
- Electronic overvoltage protection on individual channels
- Open drain outputs with socketed pull-ups
- Output readback registers

Benefits

- Output readback capability eliminates the need for additional input channels to verify the output channel state.
- Pinouts are compatible with industry-standard isolated I/O racks.
- Output channels do not “glitch” after a power-up/reset to eliminate false alarms.



With four IP470 modules on a 6U VMEbus carrier card, you can monitor and control 192 devices from a single card slot.

Specifications

Digital Inputs

Input channel configuration: 48 buffered inputs.
Input voltage range: 0 to 5V DC.
Input signal threshold: 1.5V typical.
Input response time: 50nS.

Digital Outputs

Output channel configuration: 48 open-drain CMOS outputs.
Output voltage range: 0 to 5V DC.
Output “ON” current range: 0 to 15mA DC.
Output pull-ups: 4.7K ohms pull-ups installed in board sockets. With pull-ups removed, integrated 47K ohms nominal pull-ups are present.
Turn on time: 10nS.
Turn off time: 10nS.

IP Compliance (ANSI/VITA 4)

Meets IP specifications per ANSI/VITA 4-1995.
IP data transfer cycle types supported:
Input/output (IOSel*), ID read (IDSel*), Interrupt select (INTSel*).
Access times (8MHz clock): 0 wait states (250ns cycle).
Updates: Requires six 8-bit read/writes to update all 48 channels.

Environmental

Operating temperature: 0 to 70°C (IP470) or -40 to 85°C (IP470E model).
Storage temperature: -55 to 125°C (all models).
Relative humidity: 5 to 95% non-condensing.
MTBF: 1,103,365 hrs at 25°C, MIL-HDBK-217F, Notice 2.
Power:
+5V (±5%): 160mA maximum.
±12V (±5%) from P1: 0mA maximum (not used).

Ordering Information

Industry Pack Modules

IP470
48-channel digital I/O module.

IP470E
Same as IP470 plus extended temperature range.
For Industry Pack Carrier Cards, see Page 5.

Software (see Page 81)

IPSW-API-VXW
VxWorks® software support package

IPSW-API-QNX
QNX® software support package

IPSW-ATX-PCI
ActiveX®/OLE Controls 2.0 software package

IPSW-LINUX
Linux™ support (website download only)

For accessories information, see Page 87.