FEATURES
- 24 optically isolate, non-polarized digital inputs
- Software configurable filters on inputs for electrically noisy environments
- Can detect input state change and assert interrupt
- 24 optically isolated high-side FET switches
- Four optically isolated output groups and two optically isolated input groups
- Opto-couplers rated for 2.5kV isolation
- 8 non-isolated TTL/CMOS I/O lines

FACTORY OPTIONS
- Extended temperature (-40°C to +85°C)
- RoHS compliant version
- Available in 12-chl versions (with 4 TTL I/O)
- Input-only and output-only versions for both 24- and 12-channel models

FUNCTIONAL DESCRIPTION
This product is a x1 lane PCIe isolated digital input and FET output board with Change of State (COS) detection capabilities. In addition to the isolated signals, 8 (or 4) TTL/CMOS input/output pins are available, for your application’s convenience.

The isolated inputs can be driven by either AC or DC and are not polarity sensitive. Input signals are rectified by a diode bridge and applied to the inputs of opto-isolators. A 1.8k ohm resistor in series provides current limiting. Standard 12/24 AC control transmitter outputs can be accepted as well as DC voltages. The input voltage range is 3V to 31VDC (or 40-10kHz RMS). To extend the input voltage range, you may connect external resistors in series. Inputs can be configured to generate an IRQ when the input changes from active-to-inactive, inactive-to-active, or both in groups of eight bits.

The PCIe-IDIO-24 features fully protected and isolated high side power MOSFET switch outputs which are de-energized at power-up to prevent an unintended control output signal. They are capable of switching customer supplied voltages of 5 to 34VDC, at up to 2A.

The card is 6.6 inches in length and 4.2 inches seated height. I/O wiring connections for this board are via a 78-pin D-sub connector. A molded round-wire “Y” cable is typically used to connect this card to termination panels with two 37-pin D-sub connectors.

SOFTWARE
The card is supported for use in most operating systems and includes Linux and Windows compatible software packages. This package contains sample programs and source code in Delphi and Visual C++ for Windows. Linux support includes installation files and basic samples for programming from user level via an open source kernel driver. Third party support includes a Windows standard DLL interface usable from the most popular application programs. Embedded OS support includes Windows XPe.
BLOCK DIAGRAM

SPECIFICATIONS

Isolated Digital Inputs
- Number of inputs: 24
- Type: Non-polarized, optically isolated sharing a common return per 12 channel group (not TTL/CMOS compatible)
- Voltage Range: 3 to 31V DC or 22 VACrms (40-10kHz)
- Isolation: Opto-couplers rated at 2.5kV (see manual)
- Input Resistance: 1.8k ohms in series with two diodes and a photo-coupler LED
- Response Time:
  - with filter: 4.7 mSec
  - without filter: rise time = 10 uSec, fall time = 30 uSec

Non-Isolated Digital Input/Outputs
- Number of lines: 8, programmable as all ins or all outs
- Type: TTL/CMOS compatible, pulled up to 5V via 10k ohms
- Interrupts: Change of State Detection available on all 32 input bits; software enabled in 8 bit groups; byte-wide pattern recognition

Solid State FET Outputs
- Number of outputs: 24, isolated in four, 6-channel groups
- Output Type: Smart High Side Power MOSFET, Fully Protected (short circuit, over-temp., ESD, inductive flyback)
- Voltage Range: 5-34VDC recommended (40VDC absolute maximum)
- FET Ratings:
  - On-state resistance = 60mΩ
  - 2A continuous per FET, with a 9A cumulative total per group of 6 FETs

Environmental
- Operating: 0° to 70°C, optional -40° to +85°C
- Storage: -40 to +85°C
- Humidity: 5 to 90 percent (non-condensing)

Mechanical
- Size: Standard height 4.2” (106.65 mm), half length 6.6” (167.6 mm) long
- Connector: DB78 Female
- Mating Connector: AMPLIMITE 1658674-1 or equivalent

ORDERING GUIDE

PCle-IDIO-24 24 isolated inputs 8 non-isolated inputs, 24 high-side FET outputs
PCle-IDI-24 Inputs only (24 isolated, 8 TTL/CMOS)
PCle-IDO-24 24 isolated FET outputs
PCle-IDIO-12 12-isolated inputs, 4 TTL I/O’s, 12-isolated outputs

Model Options
- T: Extended temperature (-40° to +85°C)
- RoHS: RoHS compliant version

Optional Accessories
- STB-37: Screw terminal board
- CAB78-37/2: 6’ shielded molded “Y” cable assembly
- STB-37/2 Kit: Complete screw termination solution including 6 “Y” cable assembly
- STB-37/2 Kit-CL: Includes four clips for mounting the STB-37/2 Kit to a standard DIN-Rail