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KineticSystems

V387

128-channel Digital Input/Output

The V387 is a single-width, C-size, register-based, VXIbus module that contains up to 128 channels of digital input and/or output (TTL option).

The module is configurable on a 32-channel basis through four interchangeable mezzanine cards, which are available in an assortment of I/O options.



Mix and match up to 4 I/O mezzanine options on each V387

APPLICATIONS

Test cells

Industrial monitoring and control

Automatic Test Equipment (ATE)

Monitoring and driving TTL-level signals

Isolated monitoring of relay contacts, "on-off" voltage signals and switches

Driving relays, solenoids, lamps and other control devices

FEATURES

- Pluggable mezzanine cards with these I/O options (select up to 4):
  - 32-channel single-ended TTL I/O
  - 16-channel differential I/O
  - 16-channel isolated input
  - 16-channel reed-relay output
  - 16-channel form "C" relay output
  - 16-channel optical isolator output (2)
  - 6-channel solid-state AC switch output
- Trigger generation or interrupt on pattern recognition or change-of-state detection
- Programmable contact-bounce suppression on inputs
- Variety of I/O strobe or handshake options
- Supports Digi-bus™

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GENERAL DESCRIPTION

The V387 is a single-width, C-size, register-based, VXIbus module that contains up to 128 channels of digital input and/or output (TTL option). The module is configurable on a 32-channel basis through four interchangeable mezzanine cards, which are available in an assortment of I/O options.

Two non-isolated versions are available for bidirectional transfers: 32-channels, single-ended TTL; and 16-channel, differential (RS-422 signal levels). Seven isolated input voltage options (TTL, 12 V dc, 16 V dc, 24 V dc, 28 V dc, 48 V dc and 120 V ac) are also available. Input isolation is achieved by using LED/photo-transistor optical isolators. Each option has 16 circuits with identical input voltage ratings and the switching threshold is approximately one half of the rated input voltage. Each circuit draws more than 5 mA, but less than 15 mA. The logic convention is such that a contact closure (voltage present) is interpreted as a logical "1". Each input is conditioned by filtering after the optical isolator. The filter time constant is programmable from 5 µs to over 1 s in 64 steps.

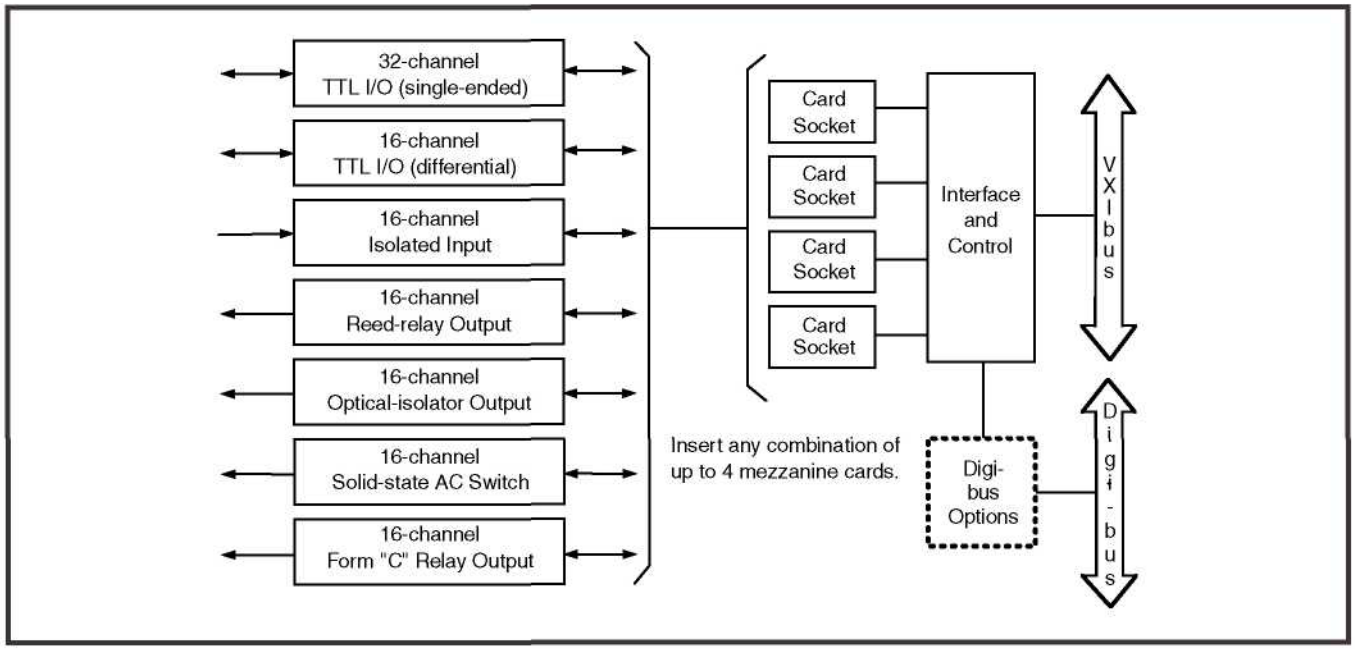
Output-only cards are available with output circuits composed of reed relays; optical isolators; isolated ac switches; or single-pole, double-throw (Form "C") contacts. Each output card is a 16-channel circuit.

Input/output data is controlled in 16-bit groups. Double buffering of I/O data allows the module to simultaneously sample or update all inputs or outputs, respectively. These actions are programmable for each card and may be initiated by selecting either a trigger line or one of four external sources. The module may be used with or without external handshake circuitry. The logical sense of the external handshake signals is programmable for each mezzanine card. The logical sense of each I/O word can also be set under program control. Pattern recognition capabilities are programmable in 16-bit increments. A pre-written data pattern and a corresponding "enable" mask are compared with the incoming data on a continuous basis. A change-of-state indicator is also updated on a continuous basis. Either function (pattern recognition or change-of-state) can be used to generate a VXIbus trigger or an interrupt. The selection of interrupt level and/or trigger line is made under program control.

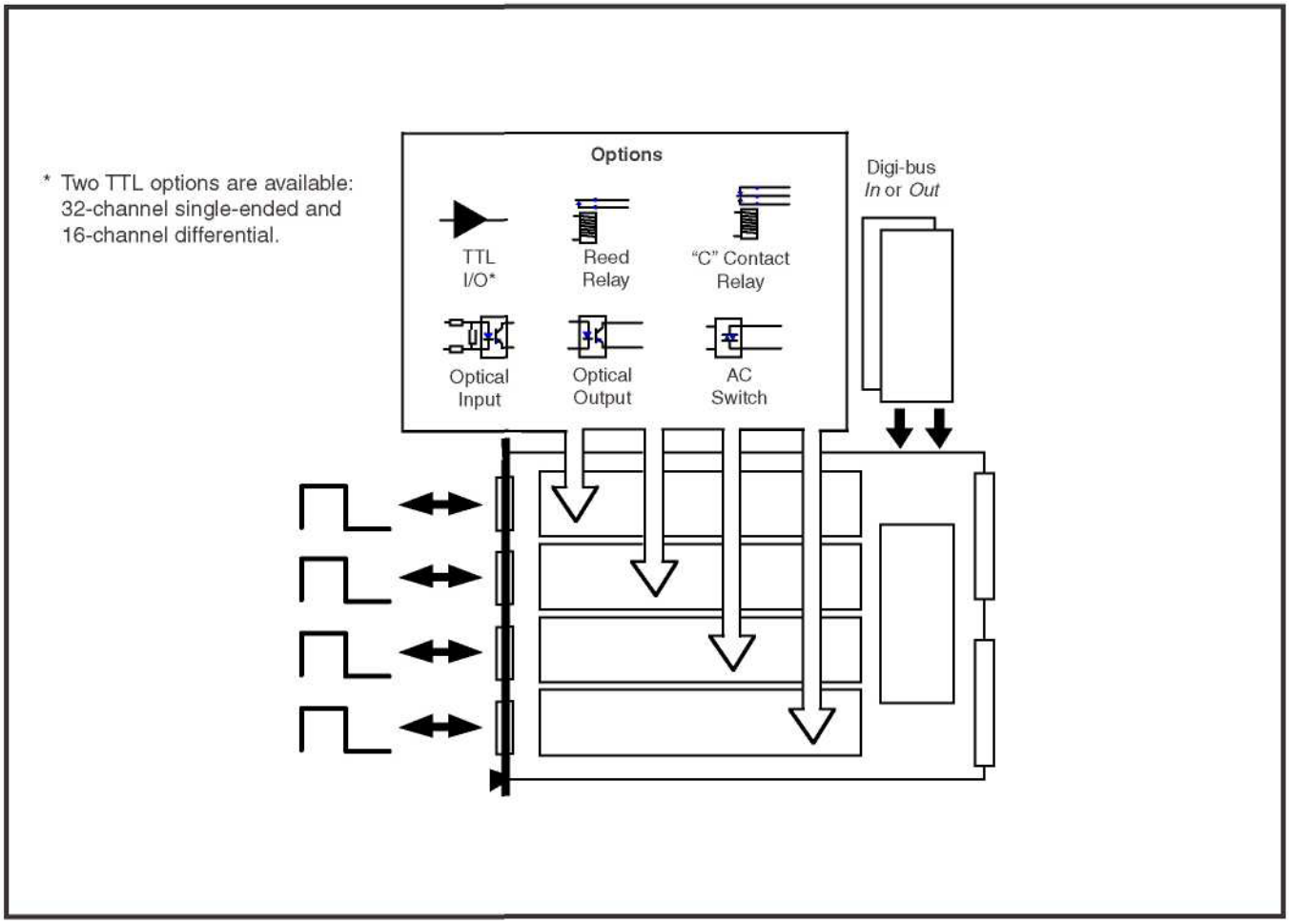
In addition to the four sockets provided for I/O cards, a socket is provided for an optional Digi-bus™ input or output interface. The Digi-bus™ Input card may be used to select data words from other modules supporting this protocol. This data may be directed to I/O locations for output control. The Digi-bus Output card is capable of moving data from input locations and controlling the flow of this data over Digi-bus.

The V387 supports both static and dynamic configuration. Access to the data is through memory locations indicated by the Offset Register within the VXIbus Configuration Register set, using A32/A16, D32/D16 data transfers.

V387 Block Diagram



V387 Mezzanine Card Options



Item	Specifications
Number of Channels	128 (maximum)
Read/Write Cycle Times	
16-bit	1 µs, typical
32-bit	2 µs, typical
Isolated Input (P300-300Ato P300-306A)	
Number of channels per card (x 4 per module)	16 isolated input signals
Voltage levels	5 V dc, 12 V dc, 16 V dc, 24 V dc, 28 V dc, 48 V dc, or 120 V ac
Input isolation	500 V
Input current	Greater than 5 mA, less than 15 mA at rated voltage input
Switching threshold -turn-on	75% of rated voltage, nominal
Switching threshold -turn-off	45% of rated voltage, nominal
Input filter time constant	Programmable from 5 µs to 1 s in 64 steps.
10 mA Optical Isolated Output (P300-341A)	
Number of channels per card (x 4 per module)	16 optical isolators
Maximum open-circuit voltage	30 V
ON current	10 mA maximum
ON voltage drop	1 V maximum
OFF current	1 µA maximum
130 mA Optical Isolated Output (P300-345A)	
Number of channels per card (x 4 per module)	16 photovoltaic relays
Maximum open-circuit voltage	200 V
ON current	130 mA maximum
ON resistance	18 Ω. maximum (50 mA load)
OFF current	1 µA maximum
Reed Relay Output (P300-342A)	
Number of channels per card (x 4 per module)	16 reed relays
Maximum open-circuit voltage	100 V dc
Maximum current	0.5 A
Maximum switched load	10VA
Life expectancy	5×10^6 operations (with proper contact protection)
Contact resistance	200 mΩ, maximum
Operate time	330 µs, maximum
Release time	150 µs, typical
Insulation resistance	100 Mil, minimum
Output polarity	Either
Contact bounce	3 ms
Form "C" Relay Output (P300-343A)	
Number of channels per card (x 4 per module)	16 form-C relays
Maximum open-circuit voltage	500 V dc/130 V ac
Maximum current	1 A, switched or carry
Maximum switched load	50 VA
Life expectancy	$5x10^9$ operations (with proper contact protection)
Contact resistance	100 mΩ, maximum; stable to within ±10% over life
Operate time	2.3 ms, typical
Release time	1.5 ms, maximum
Breakdown voltage	500 V peak
Insulation resistance	100 MΩ., minimum
AC Switch Output (P300-344A)	
Number of channels per card (x 4 per module)	16 AC switches
Zero voltage turn-on	10 V peak
Maximum open-circuit voltage	130 V RMS (200 V peak)
Maximum ON current	1 A, 47-70 Hz
Minimum ON current	0.01 A
ON voltage drop	1.6 V RMS, maximum (at rated current)
Turn-on time (60 Hertz)	8.3 ms, maximum
Turn-off time (60 Hertz)	8.4 ms, maximum

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Bidirectional I/O - Single-ended (P300-380A)	
Number of channels per card (x 4 per module)	32 single-ended TTL-level signals
I/O lines overvoltage protected and TTL pull-ups provided	
Input current	Greater than 5 mA, less than 10 mA
Input switching threshold	
"0" Level	1.5 V maximum
"1" Level	3.5 V minimum
Output voltage level	
"0" Level	0.7 V maximum
"1" Level	4.5 V minimum
Low-level output current	-24 mA, maximum
High-level output current	10 mA, maximum
Bidirectional I/O - Differential (P300-382A)	
Number of channels per card (x 4 per module)	16 differential signals conforming to the RS-422 signal levels
Driver termination	50 Ω in series with each leg
Receiver termination	100 Ω across the differential path Note: All termination resistors are in sockets and can be changed
Max input voltage (differential or common mode)	±7V
Input resistance (exclusive of termination)	6 kΩ, minimum
Differential Input sensitivity	+2 V maximum -2 V minimum
Driver output voltage:	+0.5 V maximum
"0" level	+2.5 V minimum
"1" level	-150 mA maximum
Driver short-circuit current	-30 mA minimum
Power Requirements	
+5V	4.6 A
-5.2 V	100 mA
-2 V	100 mA
Environmental and Mechanical	
Temperature range	
Operational	0°C to +50°C
Storage	-25°C to +75°C
Relative humidity	0 to 85%, non-condensing to 40°C
Cooling requirements	10CFM
Dimensions	340 mm x 233.35 mm x 30.48 mm (C-size VXIbus)
Front-panel potential	Chassis ground

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KineticSystems

RELATED PRODUCTS

Model 5819-Bxyz	Cable—50S High Density to Unterminated
Model 5819-Dxyz	Cable—50S High Density to 50S Amphenol Ribbon
Model 5819-Fxyz	Cable—50S High Density to 50P High Density (V387 to V765)
Model 5819-Gxyz	Cable—50S High Density to 50S High Density
Model V765-ZA11	Rack-mount Termination Panel

ORDERING INFORMATION

MODEL	DESCRIPTION
Model V387-ZA11	128-channel Digital Input/Output Base Module
Model P300-300A	16-channel Isolated Input Mezzanine Card, 5 V dc
Model P300-301A	16-channel Isolated Input Mezzanine Card, 12 V dc
Model P300-302A	16-channel Isolated Input Mezzanine Card, 24 V dc
Model P300-303A	16-channel Isolated Input Mezzanine Card, 48 V dc
Model P300-304A	16-channel Isolated Input Mezzanine Card, 120 V ac
Model P300-305A	16-channel Isolated Input Mezzanine Card, 16 V dc
Model P300-306A	16-channel Isolated Input Mezzanine Card, 28 V dc
Model P300-341A	16-channel, 10 mA, Isolated Output Mezzanine Card
Model P300-342A	16-channel Reed Relay Output Mezzanine Card
Model P300-343A	16-channel Form "C" Relay Output Mezzanine Card
Model P300-344A	16-channel AC Switch Mezzanine Card
Model P300-380A	32-channel Single-ended TTL Input/Output Mezzanine Card
Model P300-382A	16-channel Differential Input/Output Mezzanine Card
Model P500-387A	Digi-bus Data Source Mezzanine Card
Model P501-387A	Digi-bus Data Sink Mezzanine Card
Note: A complete V387 includes the V387-ZA11 Base Module plus up to 4 P300 Mezzanine Cards from the above list. If Digi-bus interfacing is desired, also select the P500 Card (if the V387 is to transmit information over Digi-bus) or the P501 Card (if the V387 is to receive information from Digi-bus).	

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