

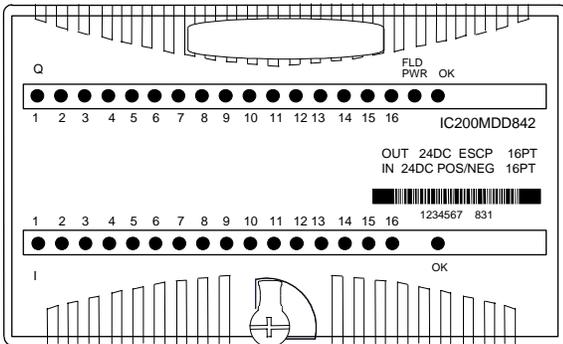
VersaMax 16 24VDC Inputs with ESCP, 16 24VDC Outputs Module

October 2008

GFK-2534

Product Description

Discrete input/output module IC200MDD842 provides one group of 16 discrete outputs w/ESCP and two groups of 8 discrete inputs. The outputs are positive or sourcing type outputs. Each point has electronic over-current protection and short circuit protection, and generates a fault if either condition exists. They switch the loads to the positive side of the DC supply and thus supply current to the loads. Inputs in each group can be either positive logic inputs that receive current from input devices and return the current on the common, or negative-logic inputs that receive current from the common and return current to the input device. Input devices are connected between the input terminals and common terminals.



Note: Negative-logic functionality requires module version IC200MDD842B or higher.

An external DC power supply must be provided to switch power to the loads. Intelligent processing for this module is performed by the CPU or NIU. The module provides 16 bits of discrete input data and receives 16 bits of discrete output data.

LED Indicators

Individual green LEDs indicate the on/off state of the output points and input points. Operation of the output LEDs is dependent on field power, but independent of load conditions. Individual amber LEDs indicate overload conditions on each output point. The green FLD PWR LED is on when field power is applied to the module. The green OK LED is on when backplane power is present to the module.

Configuration Parameters

The module's basic input on/off response time is 0.5ms. For some applications, it may be preferable to add additional filtering to compensate for conditions such as noise spikes or switch bounce. Input filter times of 0ms, 1.0ms, or 7.0ms are selectable via software configuration, for total response times of 0.5ms, 1.5ms, and 7.5ms respectively. The default is 1.0ms filter time (total response time is 1.5ms).

Diagnostics

The module reports the presence of any overloaded points to the system on a per-module basis. Amber LEDs indicate the overload conditions on a per-point basis. Once the overload condition is removed, normal operation is resumed.

Preinstallation Check

Carefully inspect all shipping containers for damage. If any equipment is damaged, notify the delivery service immediately. Save the damaged shipping container for inspection by the delivery service. After unpacking the equipment, record all serial numbers. Save the shipping containers and packing material in case it is necessary to transport or ship any part of the system.

Module Characteristics

| | |
|---|--|
| Points | 1 group of 16 outputs 2 groups of 8 inputs |
| Module ID | 80088080 |
| Isolation: | |
| User input to logic (optical) and to frame ground | 250VAC continuous; 1500VAC for 1 minute |
| Group to group | 250VAC continuous; 1500VAC for 1 minute |
| Point to point | None |
| LED indicators | One green LED per point shows individual point on/off state. One amber LED per point shows individual point overloads for outputs. FLD PWR LED indicates field power is present OK LED indicates backplane power is present |
| Backplane current consumption | 5V output: 100mA maximum |
| External power supply | +18 to +30VDC, +24VDC nominal |
| Thermal derating | See diagram |
| Configuration parameters | Input response time |

Input Characteristics

| | |
|-------------------------------------|---------------------------------|
| Input voltage | 0 to +30VDC, +24VDC nominal |
| On state voltage | +15 to +30VDC |
| Off state voltage | 0 to +5VDC |
| On state current | 2.0 to 5.5mA |
| Off state current | 0 to 0.5mA |
| On response time | 0.5ms maximum |
| Off response time | |
| Additional configurable filter time | 0 ms, 1.0ms (default), or 7.0ms |
| Input impedance | 10kOhms maximum |

Output Characteristics

| | |
|-------------------------------------|---|
| Output voltage | +18 to +30VDC, +24VDC nominal |
| Output voltage drop | 0.5V maximum |
| Steady-state overcurrent trip point | 1.6A typical, 0.7A to 2.5A maximum range |
| Load current | 0.5 Amp at 30VDC maximum (resistive) 2.0 Amps maximum for 100ms inrush |
| Output leakage current | 0.5mA at 30VDC maximum |
| On response time | 0.5ms maximum |
| Off response time | 0.5ms maximum |
| Protection (each output) | Short circuit protection, overcurrent protection, free-wheeling diodes |

External Power Supply Requirements

The external power supply used to power the loads must provide sufficient field power for the module during short circuit events. When a load is shorted, an inadequate external power supply may allow field power to drop below the specified operating range, causing mis-operation of the module. The external power supply must be capable of providing short circuit energy without degradation of output voltage levels. The amount of energy required depends on the number of simultaneously-short-circuited points that might occur. Refer to power supply short circuit operation specifications when selecting the power supply to be used with the loads.

Local energy storage (either batteries or capacitors) can be used to compensate for insufficient power supply characteristics. Additional best practices including minimizing wiring resistance from the external power supply to the module must be observed.

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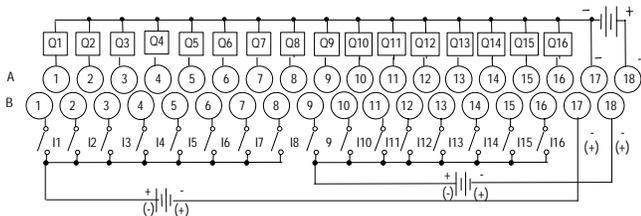
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Field Wiring Terminals

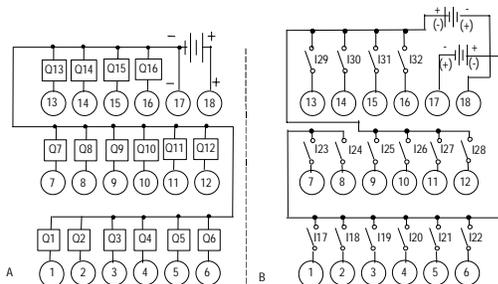
| Terminal | Connection | Terminal | Connection |
|----------|------------|----------|--------------------|
| A1 | Output 1 | B1 | Input 1 |
| A2 | Output 2 | B2 | Input 2 |
| A3 | Output 3 | B3 | Input 3 |
| A4 | Output 4 | B4 | Input 4 |
| A5 | Output 5 | B5 | Input 5 |
| A6 | Output 6 | B6 | Input 6 |
| A7 | Output 7 | B7 | Input 7 |
| A8 | Output 8 | B8 | Input 8 |
| A9 | Output 9 | B9 | Input 9 |
| A10 | Output 10 | B10 | Input 10 |
| A11 | Output 11 | B11 | Input 11 |
| A12 | Output 12 | B12 | Input 12 |
| A13 | Output 13 | B13 | Input 13 |
| A14 | Output 14 | B14 | Input 14 |
| A15 | Output 15 | B15 | Input 15 |
| A16 | Output 16 | B16 | Input 16 |
| A17 | DC - | B17 | Inputs 1-8 Common |
| A18 | DC + | B18 | Inputs 9-16 Common |

The 16 outputs form one group with a DC+ and a DC- terminal. The 16 inputs form two groups of 8. Each group has a common return. Each group may be wired for positive or negative logic inputs. Negative-logic functionality requires module version IC200MDD842B or higher. When wiring outputs to inductive loads, use of external suppression circuits is recommended.

Wiring Connections for Carriers with Two Rows of Terminals



Wiring Connections for Carriers with Three Rows of Terminals



Installation in Hazardous Locations

- EQUIPMENT LABELED WITH REFERENCE TO CLASS I, GROUPS A, B, C & D, DIV. 2 HAZARDOUS LOCATIONS IS SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C, D OR NON-HAZARDOUS LOCATIONS ONLY
- WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2;
- WARNING - EXPLOSION HAZARD - WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES; AND
- WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS.

Operating Note

If hot insertion of a module is done improperly, the operation of other modules on the same backplane may be disrupted. See *Installing a Module on a Carrier* in the *VersaMax Modules Manual*, GFK-1504.

Product Revision History

| Rev | Date | Description |
|--------------|---------------|--|
| IC200MDD842F | October 2008 | Updated Power Supply OK signal circuitry. |
| IC200MDD842E | April 2005 | Improvement to latching mechanism |
| IC200MDD842D | April 2004 | Changed to V0 plastic for module housing. |
| IC200MDD842C | January 2004 | ATEX approval for Group 2 Category 3 applications. |
| IC200MDD842B | November 1999 | Operation with positive or negative logic inputs. |
| IC200MDD842A | December 1998 | Initial product release. |

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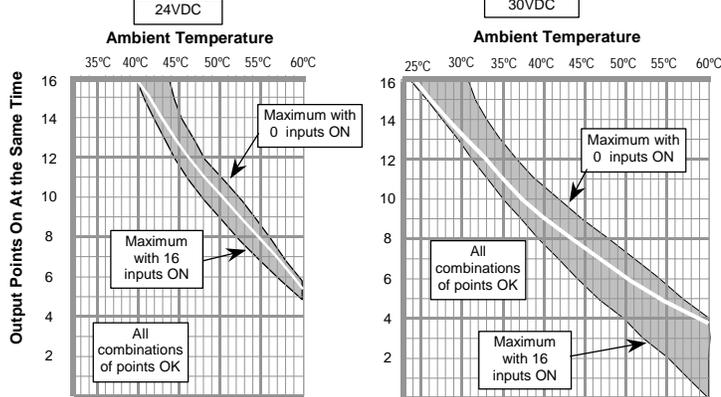
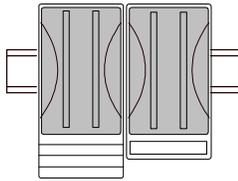
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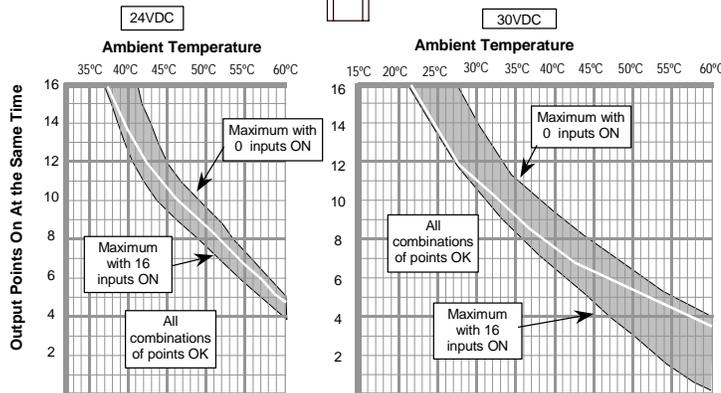
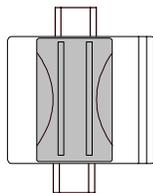
Thermal Derating

The number of points that can be on at the same time depends on the ambient temperature, the external voltage, and the orientation of the module and DIN rail. The charts that follow show thermal deratings for this module at 24V and 30V. The shaded bands are temperature ranges that represent allowable combinations of input points for the indicated number of outputs points. All combinations of points are permissible at lower temperatures. The narrow white line within each range shows maximum temperature when the number of output points equals the number of input points that are on at the same time.

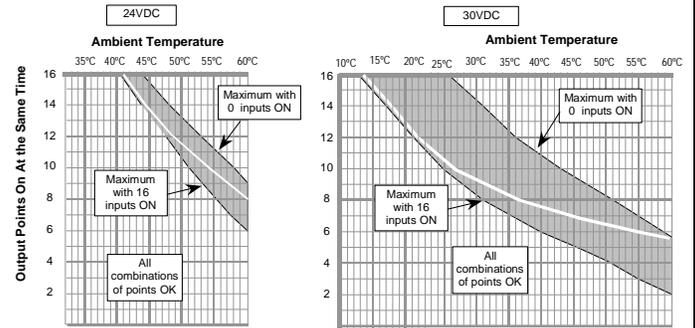
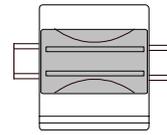
Vertical Modules on Horizontal DIN Rail



Vertical Modules on Vertical DIN Rail



Horizontal Modules on Horizontal DIN Rail



Horizontal Modules on Vertical DIN Rail

