

### **6.11 IC200UDR010**

**28-Point Micro PLC, (16) 24Vdc In, (1) 24Vdc Out, (11) Relay Out, 24Vdc PS**

### **IC200UDR228**

**28-Point Micro PLC, (16) 24 VC In, (1) 24Vdc Out, (11) Relay Out, 12/24Vdc PS**

VersaMax Micro PLCs IC200UDR010 and IC200UDR228 accept sixteen DC inputs and provide one DC output and eleven normally-open 2 Amp relay outputs. The only differences between these modules are their power supplies and the output current rating of their Q1 DC output. Micro-28 IC200UDR010 uses +24Vdc nominal input power, and provides a 450mA, 24Vdc output. Micro-28 IC200UDR228 uses +12/24Vdc nominal input power, and provides a 100mA, 24Vdc output.

#### **6.11.1 DC Power**

The DC power supply requires more current at startup voltage (approximately 4Vdc) than at rated input voltage. A minimum of 2.0 A is required to start up the DC power supply.

If configured to disable power-up diagnostics, the PLC begins logic solution 100ms after the voltage level of the power supply input reaches and maintains nominal DC power. The power source for the PLC must have enough transient current capability to support the inrush current of the power supply and to maintain an adequateVdc voltage level (see specifications for inrush requirements).

#### **6.11.2 DC Inputs**

The sixteen configurable DC inputs can be used as positive or negative logic standard inputs or up to three High-Speed Counter inputs. Inputs are compatible with a wide range of input devices, such as pushbuttons, limit switches, and electronic proximity switches.

The Micro PLC's +24Vdc supply can be used for input devices and to power the DC input circuits at about 7.5 mA per input. The combination of input circuit current and external device current must not exceed 200 mA.

#### **6.11.3 DC Output (Q1)**

The DC output circuit (Q1) can be configured to be a standard, High-Speed Counter, pulse train, or PWM output.

#### **6.11.4 Relay Outputs (Q2 – Q12)**

Eleven Form A relay outputs (SPST-single pole single throw) can control a wide range of load devices such as motor starters, solenoids, and indicators. The switching capacity of each of these circuits is 2 amps. An external source of AC or DC power must be supplied to operate field devices. Relay outputs cannot be used as Pulse Train or PWM outputs.

**6.11.5 Micro PLC IC200UDR010, IC200UDR228 Specifications**

|                                 |                                                                                                                                            |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Weight                          | 500 grams (1.10 lbs.)                                                                                                                      |
| Inputs                          | Sixteen 24Vdc positive/negative logic input circuits                                                                                       |
| Outputs                         | Eleven normally-open 2 amp relay circuits and One DC Output (Q1)                                                                           |
| High-Speed Counters             | Up to four Type A or one Type A and one Type B                                                                                             |
| +24Vdc Output Power Supply      | 200mA maximum (for input circuits and user devices)                                                                                        |
| Thermal Derating                | IC200UDR010: none. IC200UDR228: no derating to 45 degrees C. Above 45 degrees C, number of points on at the same time must not exceed 50%. |
| <b>DC Power Specifications</b>  |                                                                                                                                            |
| Range                           | IC200UDR010: 24Vdc -20%, +25%<br>IC200UDR228: 9.2 to 30Vdc                                                                                 |
| Hold-up                         | IC200UDR010: 10ms at 19.2Vdc<br>IC200UDR028: 5ms                                                                                           |
| Inrush Current                  | IC200UDR010: 1 Amp maximum at 30Vdc<br>IC200UDR228: 13 Amps at 12Vdc, 27 Amps at 24Vdc                                                     |
| Inrush Time                     | 10mS for 1 A                                                                                                                               |
| Input Current                   | IC200UDR010: 0.30 Amp typical at 24Vdc<br>IC200URD228: 1.1 Amp typical at 12Vdc; 0.55 Amp typical at 24Vdc                                 |
| Input Power Supply Rating       | 8W                                                                                                                                         |
| <b>DC Input Specifications</b>  |                                                                                                                                            |
| Number of Inputs                | 16                                                                                                                                         |
| Rated Input Voltage             | 24 volts DC                                                                                                                                |
| Input Voltage Range             | 0 to 30 volts DC                                                                                                                           |
| Input Current                   | 7.5mA typical                                                                                                                              |
| Input Resistance                | 2.8 k $\Omega$                                                                                                                             |
| Input Threshold Voltage         | ON: 15Vdc minimum, OFF: 5Vdc maximum                                                                                                       |
| Input Threshold Current         | ON: 4.5mA maximum, OFF: 1.5mA minimum                                                                                                      |
| Response Time                   | 0.5 to 20ms configurable as regular input; 100 $\mu$ s as HSC input                                                                        |
| Isolation Voltage               | 1500V RMS field side to logic side, 500V RMS between groups                                                                                |
| <b>DC Output Specifications</b> |                                                                                                                                            |
| Output logic                    | Positive Logic                                                                                                                             |
| Operating Voltage               | IC200UDR010: 24Vdc / 12Vdc / 5Vdc; IC200UDR228: 24Vdc / 12Vdc                                                                              |
| Voltage Range                   | IC200UDR010: 24Vdc, +20%, -80%; IC200UDR228: 23.5 - 24.5Vdc                                                                                |
| Output Current                  | IC200UDR010: 450mA; IC200UDR228: 100mA                                                                                                     |
| Maximum UL Pilot Duty Rating    | 0.75A at 24Vdc                                                                                                                             |
| Maximum Resistive Load Rating   | 0.75A at 24Vdc; 0.5A at 12Vdc; 0.25A at 5Vdc                                                                                               |
| Output Voltage Drop             | 0.3Vdc maximum                                                                                                                             |
| Response                        | ON: 0.1ms maximum (24Vdc, 0.2A), OFF: 0.1ms maximum (24Vdc, 0.2A)                                                                          |
| OFF state leakage               | 0.1mA maximum                                                                                                                              |
| Isolation                       | 1500Vac between field side and logic side, 500Vac between groups                                                                           |
| Fuse                            | Output should be fused externally. Otherwise, a load short can damage the module output transistor, which is not user replaceable.         |

| Relay Output Specifications                                          |                                                                                            |                                    |                               |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------|-------------------------------|
| Operating Voltage                                                    | 5 to 30Vdc or 5 to 250Vac                                                                  |                                    |                               |
| Isolation                                                            | 1500 V RMS between field side and logic side, 500 V RMS between groups                     |                                    |                               |
| Leakage Current                                                      | 15 mA at 240Vac maximum                                                                    |                                    |                               |
| Maximum UL Pilot Duty Rating                                         | 2 amps at 24Vdc and 240Vac                                                                 |                                    |                               |
| Maximum Resistive Load Rating                                        | 2 amps at 24Vdc and 240Vac                                                                 |                                    |                               |
| Minimum Load                                                         | 1 mA                                                                                       |                                    |                               |
| Maximum Inrush                                                       | 5 amps per half cycle                                                                      |                                    |                               |
| Response Time                                                        | ON: 15 ms maximum, OFF: 15 ms maximum                                                      |                                    |                               |
| Contact Life: Mechanical                                             | 20 x 10 <sup>6</sup> mechanical operations                                                 |                                    |                               |
| Contact Life: Electrical Voltage<br>240Vac, 120Vac, 24Vdc            | Current:<br>Resistive<br>2A                                                                | Current: Lamp and Solenoid<br>0.6A | Typical Operations<br>200,000 |
| High-Speed Counter Input / PWM and Pulse-Train Output Specifications |                                                                                            |                                    |                               |
| Maximum Counter Frequency                                            | 10kHz                                                                                      |                                    |                               |
| Input Voltage                                                        | ON: 15V, OFF: 5V                                                                           |                                    |                               |
| Count Pulse Width                                                    | 20% to 80% duty cycle at 10kHz                                                             |                                    |                               |
| Count Registers                                                      | 16bits                                                                                     |                                    |                               |
| Outputs                                                              |                                                                                            |                                    |                               |
| Load Voltage                                                         | Q1: IC200UDR010 = 5/12/24V; IC200UDR228 = 12/24V<br>Q2-Q4: See Relay output specifications |                                    |                               |
| Maximum Pulse/PWM Frequency                                          | (Q1 only) 5kHz                                                                             |                                    |                               |
| Types available                                                      | Up to four HSC outputs or three HSC outputs plus one PT/PWM output.                        |                                    |                               |

### 6.11.6 Wiring Diagram IC200UDR010, IC200UDR228



