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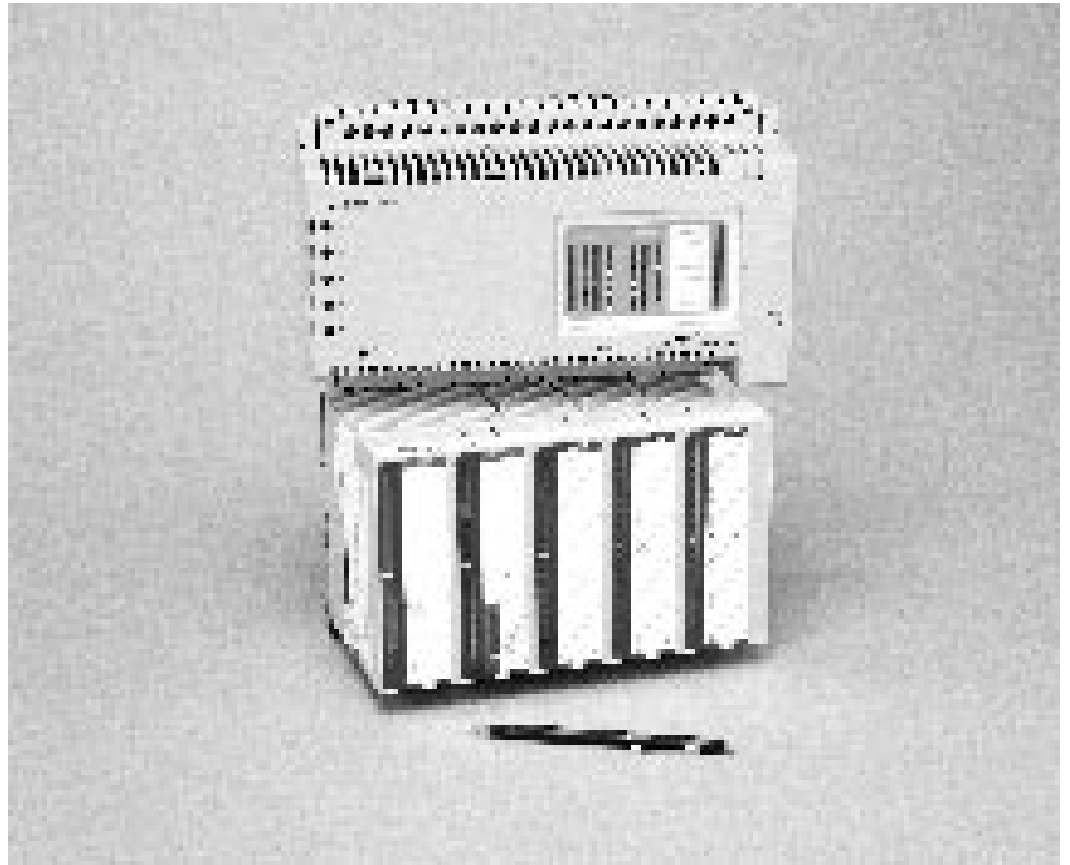
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2 Modicon Micro and 984/A120 Compact Programmable Logic Controllers



Modicon Micro and 984/A120 Compact

The fixed I/O Modicon Micro, equipped with the Modicon 984 Family functionality, and the widely accepted, modular Modicon 984/A120 Compact are ideal for OEMs who need cost-effective control but want the superior technology, performance, and quality afforded by Modicon products.

The Micro and 984/A120 Compact are also the answer for users who need low-end controller compatibility to the larger systems in their plant or want a better alternative to unwanted OEM-supplied micro PLCs.

These controllers are the right solution for users and OEMs alike who want simple high-performance networking connectivity to either Human-Machine interfaces or computers in a CIM environment.

984 compatibility for easy application transport

Programs that are written for the Modicon Micro and 984/A120 Compact can be used in all 984 Family controllers, so retro-fitting, upward integration, and intergration to larger controllers is no longer a complicated and arduous task. Creating program libraries of proven control sequences increases engineering's productivity.

Same software across entire family

Because they are compatible with the Modicon 984 Family, the Modicon Micro and 984/A120 Compact do not necessitate program software and programming style changes in return for an automation solution in a small footprint.

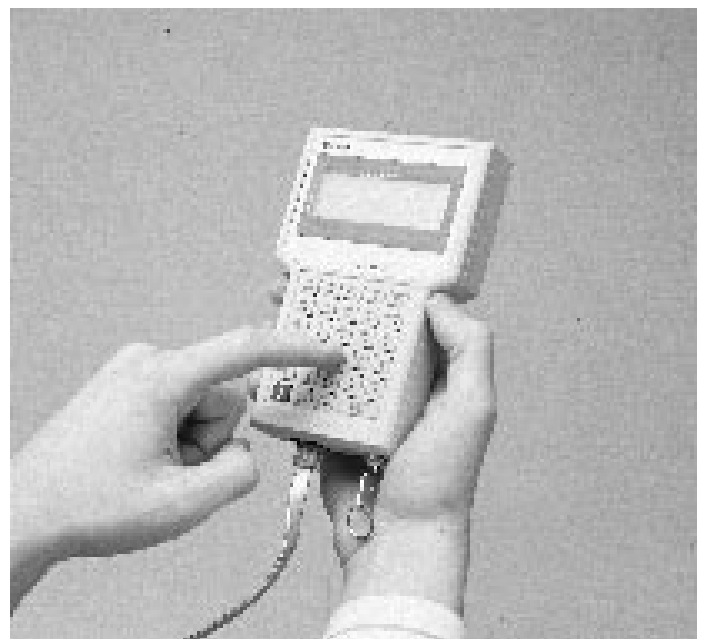
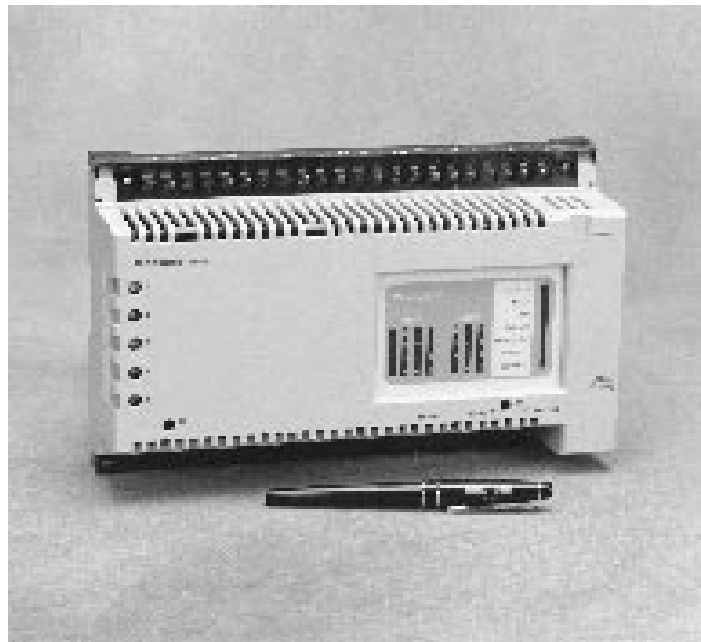
Built-in Modbus, the de facto industry standard

All Modicon Micros and 984/A120 Compacts feature built-in Modbus communications interfaces. Standard on all 984 Family controllers, the Modbus network provides a cost-effective master-slave protocol for data transfer and programming. Modbus enables you to link Modicon programmable controllers with computer terminals or Modicon programming panels for supervisory control, data aquisition, and programming capabilities. You can link up to 247 nodes, communicating at data rates of up to 19,200 baud using media such as twisted pair cable, common carrier phone lines, or microwave transmission.

Modicon Micro

With the simplicity of a self-contained system package, the compatibility of 984 Family functionality, and the performance of lightning quick throughput, the Modicon Micro offers the intelligent solution for your small machine control needs. In fact, the Modicon Micro brings together the best features of fixed I/O micro PLCs and larger modular PLCs.

- **All-in-one package**
Power supply, CPU, memory, I/O and communications are contained in a single housing measuring 10 inches long by 6.25 inches high, by an amazing 3 inches deep that can be DIN rail or panel mounted.
- **High speed throughput**
High speed inputs, interrupt processing, and immediate updating of outputs can realize a throughput of less than 2 milliseconds. One of these inputs can be configured as a 5 kHz high speed counter.
- **Plug-and-play communications**
On-board serial communication ports for simple connection to computers, HMI, modems, printers, barcode readers, and instrumentation via ASCII or Modbus.
- **Choice of system expansion**
Expanding your system capacity can be achieved in two ways: by simply linking up to 4 Micros, configured as "children", to one Micro "parent" over a single cable, high speed I/O Expansion Link, or by utilizing A120 Series I/O, to grow your system modularly in smaller increments with greater I/O options.
- **Built-in non-volatile memory**
Programs stored in battery or capacitor-backed RAM can be backed up in safe and secure, built-in Flash-PROM.
- **Hand Held Programmer**
Specifically designed as a low cost programming tool for the Modicon Micro, the HHP (VPU 192) can configure, program and monitor your application. For more information see VPU 192 Hand Held Programmer in Section 6 of this catalog.



Modicon Micro Technical Specifications

Environmental

| | |
|-----------------------|--|
| Operating Temperature | 0...60°C |
| Storage Temperature | -40...+85°C |
| Relative Humidity | 0 - 95% noncondensing |
| Altitude | 15,000 ft. (4500 m) |
| Shock | 30 g for 11 ms, 3 pulses/axis for up to 18 pulses |
| Vibration | 10...62 Hz @ .075 mm displacement |
| Amplitude | 62...500 Hz @ 1 g |
| Duration | 23 min @ 2 sweeps/axis on 3 mutually orthogonal axes at a rate of 1 octave/min |

Dimensions

| | |
|--------|-------------------|
| Height | 6.25 in (159 mm) |
| Width | 10 in (254 mm) |
| Depth | 3 in (76 mm) |
| Weight | 3.2 lbs (1.45 kg) |

Agency Approvals

UL, CSA, FM, CE

Modicon Micro Controllers

| Model (110-) | Memory (Words) | | | Inputs/Outputs Maximum | | Ports | | | Expansion | |
|--|----------------|------------------|-----------|------------------------|-------------------|---------------------|--------------------|---------------------------|---------------------------|---|
| | Logic | Registers | Scan Time | A120 Discrete I/O | Total Bits In/Out | Modbus /ASCII Ports | I/O Expansion Link | A120 Series I/O Expansion | Total 120 Racks | Total Micros on Expansion Link |
| CPU 311 00 CPU 311 01 CPU 311 02 CPU 311 03 CPU 411 00 CPU 411 01 CPU 411 02 CPU 411 03 | 1K | 400 | 4.25 ms/K | None | 512/512 | 1 | 1 port | No | None | 5 |
| CPU 512 00 CPU 512 01 CPU 512 02 CPU 512 03 CPU 612 00 CPU 612 03 CPU 612 04 | 2K 8K | 1820 1920 | 2.5 ms/K | 256 any mix | 512/512 | 2 2* | 1 port | Up to 15 modules | 3 subracks added to Micro | 5 in addition to A120 I/O expandability of the Parent CPU |

* Comm port 2 supports XMIT Block, Modbus Master

Four Levels of Functionality with the Modicon Micro

1. In the first level is the CPU 311 with the following feature set:

- 1 k words user logic
- 400 words data
- 16 discrete inputs
- 4.25 - 5 ms per K logic scan
- Modbus/ASCII port
- 12 discrete outputs
- Basic 984 instruction set
- 4 models
- High speed I/O Expansion port

| Model | Power Supply | Discrete Inputs (16) | Discrete Outputs (12) |
|----------------|--|--------------------------|-----------------------|
| 110 CPU 311 00 | 115/230 Vac (24 Vdc output for all DC inputs) | 24 Vdc Sink or Source | Relay |
| 110 CPU 311 01 | 115 Vac | 115 Vac | 8 Triac/4 Relay |
| 110 CPU 311 02 | 230 Vac | 230 Vac | 8 Triac/4 Relay |
| 110 CPU 311 03 | 24 Vdc | 24 Vdc Sink or Source | 24 Vdc Source |

2. In the second level is the CPU 411 with the following feature set:

- All features found on the CPU 311
- Time of day clock
- 2-3 ms throughput with interrupt processing (depending on interrupt program)
- 2 high speed DC inputs
- 4 models

| Model | Power Supply | Discrete Inputs (16) | Discrete Outputs (12) |
|----------------|--|--------------------------|-----------------------|
| 110 CPU 411 00 | 115/230 Vac (24 Vdc output for all DC inputs) | 24 Vdc Sink or Source | Relay |
| 110 CPU 411 01 | 115 Vac (24 Vdc output for all DC inputs) | 115 Vac | 8 Triac/4 Relay |
| 110 CPU 411 02 | 230 Vac (24 Vdc output for all DC inputs) | 230 Vac | 8 Triac/4 Relay |
| 110 CPU 411 03 | 24 Vdc | 24 Vdc Sink or Source | 24 Vdc Source |

3. In the third level is the CPU 512 with the following feature set:

- 2 K words user logic
- 1920 words data
- 16 discrete inputs
- 12 discrete outputs
- 2.5 ms per K logic scan
- 120 Series I/O bus connector
- 3 high speed DC inputs (2 on AC versions)
- Enhanced 984 instruction set (including PID II and floating point math)
- 2 Modbus/ASCII ports
- 1-15 ms throughput with interrupt processing (depending on size of interrupt program)
- Time of day clock
- 4 Models
- High speed I/O Expansion port

| Model | Power Supply | Discrete Inputs (16) | Discrete Outputs (12) |
|----------------|--|--------------------------|-----------------------|
| 110 CPU 512 00 | 24 Vdc | 24 Vdc Sink or Source | Relay |
| 110 CPU 512 01 | 115 Vac (24 Vdc output for all DC inputs) | 115 Vac | 8 Triac/4 Relay |
| 110 CPU 512 02 | 230 Vac (24 Vdc output for all DC inputs) | 230 Vac | 8 Triac/4 Relay |
| 110 CPU 512 03 | 24 Vdc | 24 Vdc Sink or Source | 24 Vdc Source |

4. In the fourth level is the CPU 612 with the following feature set:

- All features found on the CPU 512
- 4 analog inputs - 2 analog outputs
- 2 models

| Model | Power Supply | Discrete Inputs (16) | Discrete Outputs (12) | Analog Inputs (4) | Analog Outputs (2) |
|----------------|--------------|--------------------------|-----------------------|--------------------------------|-------------------------|
| 110 CPU 612 00 | 24 Vdc | 24 Vdc Sink or Source | Relay | ± 10V 16 bit 4-20 mA 14 bit | 0-10V, 4-20mA 12 bit |
| 110 CPU 612 03 | 24 Vdc | 24 Vdc Sink or Source | 24 Vdc Source | ± 10V 16 bit 4-20 mA 14 bit | 0-10V, 4-20mA 12 bit |

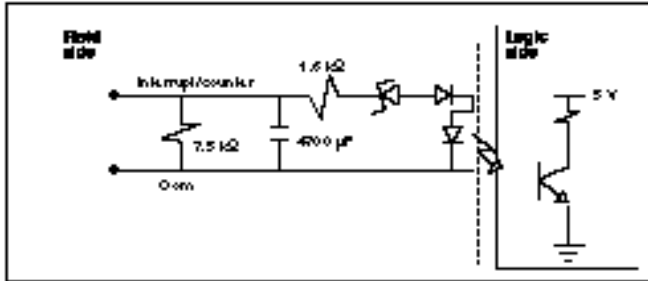
User-selectable High-speed Counter/Interrupt Inputs

Electrical Characteristics

| | |
|--------------------------|-------------------------|
| ON Level | 15 ... 30 Vdc |
| OFF Level | 0 ... 5 Vdc |
| Minimum ON State Current | 6 mA @ 24 Vdc |
| Maximum OFF Current | 0.7 mA @ 5 V |
| Maximum Input Voltage | 30 Vdc |
| Input Impedance | 1.95kΩ when on @ 24 Vdc |

Circuit Characteristics

Simplified Schematic



| | |
|----------------------------------|---|
| Isolation Method | Optocoupler |
| Channel-to-Bus | 500 Vdc |
| Group-to-Group | 500 Vdc |
| Addressing | 1 register in |
| Maximum Cable Length | 50 m |
| Response Time | |
| OFF to ON | 10...20 μs |
| ON to OFF | 10...20 μs |
| Required Cable Type: | Shielded twisted pair, for noise immunity |
| Wire size | 20 AWG |
| Up-counter Positive Edge Trigger | |
| Maximum Counter Rate | 5 kHz |
| Pulse Duration | > 100 μs |
| Interrupt Voltage Level | To assure reliable system operation, interrupt voltage must be brought from OFF to ON and maintained ON for 350 μs minimum. Any pulse duration < 20 μs is filtered. |

24 Vdc Input

Electrical Characteristics for Source (True High) Inputs

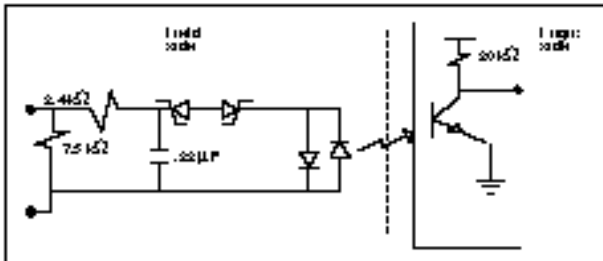
| | |
|--------------------------|---------------------------------------|
| ON Level | 15...30 Vdc, source impedance <1.5 kΩ |
| OFF Level | 0...5 Vdc |
| Minimum ON State Current | 3.4 mA @ 15 Vdc |
| OFF Current | 0.6 mA @ 5 Vdc |
| Maximum Input Voltage | 30 Vdc |
| Input Impedance | 3.0 kΩ when on @ 24 Vdc |

Electrical Characteristics for Sink (True Low) Inputs

| | |
|--------------------------|---|
| ON Level | Source G to (Source Voltage - 15 V) |
| OFF Level | Source Voltage to (Source Voltage - 5V) |
| Minimum ON State Current | 3.4 mA @ 24 Vdc |
| OFF Current | 0.7mA @ 24 Vdc |
| Maximum Input Voltage | 30 Vdc |
| Input Impedance | 1.8 kΩ |

Circuit Characteristics

Simplified Schematic



| | |
|---------------------|--------------------|
| Isolation Method | Optocoupler |
| Channel-to-Bus | 1780 Vac, 2500 Vdc |
| Group-to-Group | 1780 Vac, 2500 Vdc |
| Response time | |
| ON to OFF | 2 ms |
| OFF to ON | 2 ms |
| Maximum Wire Length | 100 m |
| Wire Size | 14 AWG |

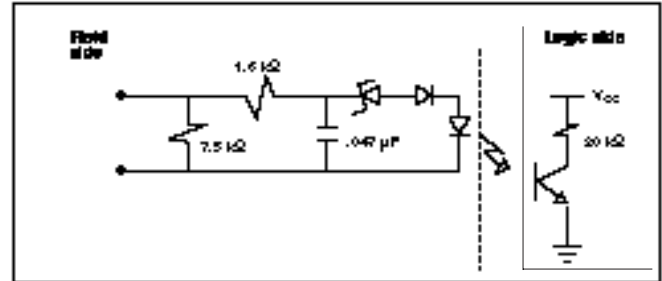
Dedicated High-speed Interrupt Inputs

Electrical Characteristics

| | |
|--------------------------|--------------------------|
| ON Level | 15 ... 30 Vdc |
| OFF Level | 0 ... 5 Vdc |
| Minimum ON State Current | 6 mA @ 15 Vdc |
| Maximum OFF Current | 0.3 mA @ 5 Vdc |
| Maximum Input Voltage | 30 Vdc |
| Input Impedance | 1.95 kΩ when on @ 24 Vdc |

Circuit Characteristics

Simplified Schematic



| | |
|-------------------------|---|
| Isolation Method | Optocoupler |
| Channel-to-Bus | 500 Vdc |
| Maximum Cable Length | 50 m |
| Required Cable Type | Shielded twisted pair, for noise immunity |
| Wire Size | 20 AWG |
| Interrupt Voltage Level | To assure reliable system operation, interrupt voltage must be brought from OFF to ON and maintained ON for 350 μs minimum-any pulse duration < 50 us is filtered |

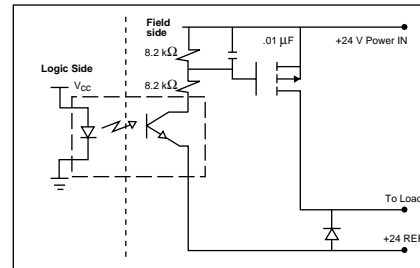
24 Vdc (FET) Outputs

Electrical Characteristics

| | |
|--------------------------------|--|
| Working Voltage Range | 20...30 Vdc |
| Continuous | 32 V for 10 s |
| Maximum | 56 V for 1.5 ms |
| ON Current | 0.5 A / channel |
| | 2 A / group |
| | 6 A total |
| Surge Current | 5 A for .5 ms @ 6 pulses/min. |
| Minimum Load Current | 10 mA |
| Maximum OFF Leakage Current | 1 mA @ 30 V |
| ON State Voltage Drop | 0.4 V @ .5 A |
| Maximum Switching Rate | 4 Hz inductive |
| Recommended External Fuse Size | User-installed 1.5 A fuse in the field wiring between the output terminal screw and the load. |
| Total Current /Group | 2 A @ 60°C |
| | Caution: Internal overload protection is not provided for these outputs. External fusing is required. |

Circuit Characteristics

Simplified Schematic



| | |
|---------------------|--------------------|
| Isolation: | |
| Channel-to-Bus | 1780 Vac, 2500 Vdc |
| Group-to-Group | 500 Vac |
| Response times | |
| ON to OFF | 1 ms |
| OFF to ON | 1 ms |
| Maximum Wire Length | 100 m |
| Wire Size | 14 AWG |

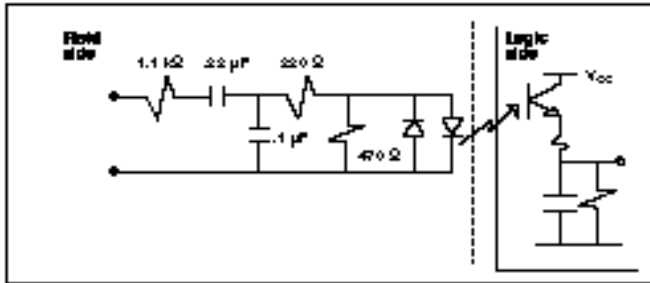
115 Vac Inputs

Electrical Characteristics

| | |
|------------------------------|--|
| ON Level | 79...132 Vac with source impedance of 6.2 kΩ @ 60 Hz |
| OFF Level | 0...20 Vac |
| Min. ON State Voltage | 79 Vac with source impedance <62 kΩ @ 60 Hz |
| Max. Input Voltage | 132 V |
| Max. OFF State Input Current | 1.7 mA @ 20 V |
| Max. ON State Input Current | 6.5 mA @ 79 V |
| Input Impedance | 12 kΩ @ 60 Hz |

Circuit Characteristics

Simplified Schematic



| | |
|------------------|---|
| Isolation Method | Optocoupler |
| Channel-to-Bus | 1780 Vac, 2 kV DC |
| Group-to-Group | 1780 Vac, 2 kV DC |
| Addressing | 16 discrete bits in 1 register in 100 m |
| Max. Wire Length | 100 m |
| Wire Size | 20 AWG |
| Response Time | |
| ON to OFF | 25...30 ms |
| OFF to ON | 25...30 ms |

Relay Outputs

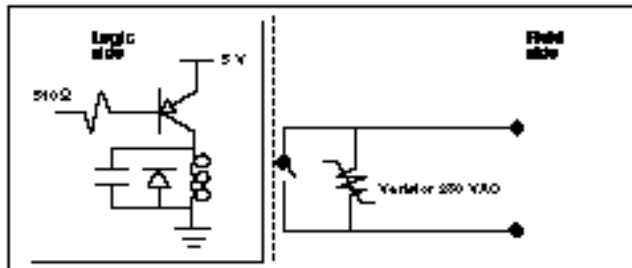
Electrical Characteristics

| | |
|-----------------------------|--|
| Working Voltage Range | 24...250 Vac, 24...30 Vdc |
| Max. Load Current | 2 A/channel |
| Surge Current | 20 A for 1 cycle |
| VA Rating | 500 VA |
| Min. Load Current | 20 mA |
| Max. Switching Rate | 5 Hz |
| Required External Fuse Size | User-installed 3 A fuse in the field wiring between the output terminal screw and the load |

Caution: Internal overload protection is not provided for these outputs. External fusing is required.

Circuit Characteristics

Simplified Schematic



| | | |
|-------------------|----------------|--------------------|
| Isolation: | Channel-to-Bus | 1780 Vac, 2500 Vdc |
| | Group-to-Group | 1780 Vac, 2500 Vdc |
| Operating Cycles: | Mechanical | 20,000,000 |
| | Electrical | 100,000 |
| Response Times: | ON to OFF | 10 ms |
| | OFF to ON | 10 ms |
| Max. Wire Length: | | 100 m |
| Wire Size: | One Wire | 14 AWG |
| | Two Wires | 20 AWG |

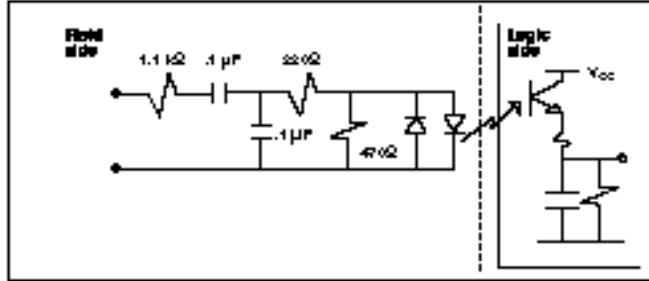
230 Vac Inputs

Electrical Characteristics

| | |
|--------------------|---|
| ON Level | 164...253 Vac with source impedance of 6.2 kΩ |
| OFF Level | 0...40 Vac |
| ON State Current | 10 mA @ 230 Vac, 60 Hz |
| OFF Current | 1.7 mA maximum |
| Max. Input Voltage | 253 V |
| Input Impedance | 22 kΩ @ 50 Hz |

Circuit Characteristics

Simplified Schematic



| | |
|------------------|--------------------|
| Isolation Method | Optocoupler |
| Channel-to-Bus | 1780 Vac, 2500 Vdc |
| Group-to-Group | 1780 Vac, 2500 Vdc |
| Max. Wire Length | 100 m |
| Wire Size | 14 AWG |
| Response Time | |
| ON to OFF | 25...30 ms |
| OFF to ON | 25...30 ms |

Triac Outputs

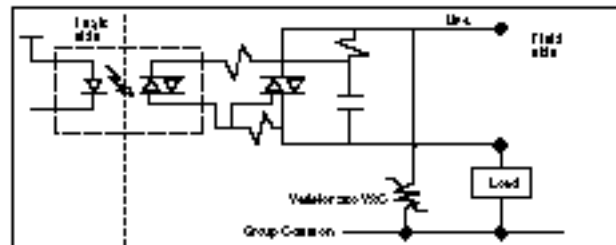
Electrical Characteristics

| | |
|--------------------------------|--|
| Working Voltage | |
| Continuous Range | 24...250 Vac |
| Maximum | 500 Vac for 1 cycle |
| Frequency of Operation | 47...63 Hz |
| Max. Load Current | 0.5 A/channel |
| Surge Current | 5 A for 1 cycle |
| Min. Load Current | 50 mA |
| Max. OFF State Leakage Current | 1.5 mA |
| ON State Voltage Drop | 1.5 V |
| Max. Switching Rate | 20 Hz |
| Max. Rate of Applied DV/DT | 30 V/ms |
| Required External Fuse Size: | User-installed 0.7 A fuse in the field wiring between the output terminal screw and the load |

Caution: Internal overload protection is not provided for these outputs. External fusing is required.

Circuit Characteristics

Simplified Schematic



| | | |
|-------------------|----------------|--------------------|
| Isolation: | Method | Optocoupler |
| | Channel-to-Bus | 1780 Vac, 2500 Vdc |
| | Group-to-Group | 1780 Vac, 2500 Vdc |
| Response times: | ON to OFF | 8 ms |
| | OFF to ON | 8 ms |
| Max. wire length: | | 100 m |
| Wire size: | One wire | 14 AWG |
| | Two wires | 20 AWG |

**Analog Inputs
Technical Specifications and Wiring Diagrams**

Input Points

| | |
|--------|---|
| Number | 4 |
| Types | Current inputs, 20 mA full scale Voltage inputs, 10 V full scale |

Group Isolation

| | |
|--------------------|---------|
| Input-to-Bus | 500 Vdc |
| Channel-to-Channel | 25 Vdc |

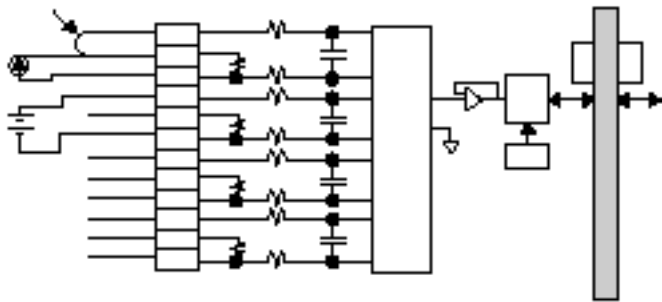
Range

| | |
|---------------------------|------------------------------------|
| Current | 4...20 mA |
| Voltage | ±10 V |
| Input Impedance | |
| Current Mode | 250 Ω |
| Voltage Mode | 10 mΩ |
| Max. Differential Voltage | 50 V |
| Over-current Protection | 25 mA maximum (in current mode) |

Conversion

| | |
|----------------------------|--|
| Type of Conversion | Sigma Delta |
| Resolution | 16 bits for ±10 V inputs 15 bits for 0...10 V inputs 13-14 bits for 1...5 V inputs (4...20 mA inputs) |
| Accuracy (% of Full Scale) | 1% over temperature for voltage inputs (does not include 250Ω error) |
| Update Time | 51 ms/channel |
| Differential Nonlinearity | Monotonic conversion |

**Circuit Characteristics
Simplified Schematic**



**Analog Outputs
Technical Specifications and Wiring Diagrams**

Output points

| | |
|--------|------------------------------------|
| Number | 2 |
| Types | Current outputs Voltage outputs |

Group isolation

| | |
|---------------|---------|
| Bus-to-Output | 500 Vdc |
|---------------|---------|

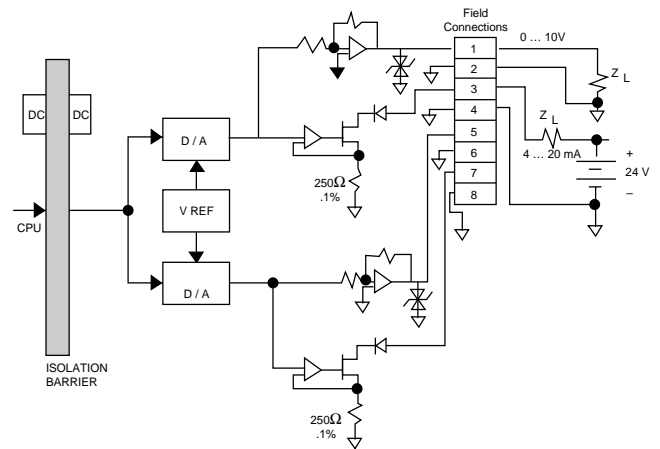
Range

| | |
|---------------------|---------------------------|
| Current | 4...20 mA |
| Loop Supply Voltage | |
| Max. | 30 V |
| Min. | 12 V |
| Voltage | 0...10 V |
| Output Loads | 10 mA max. 0.1 μF max. |

Conversion

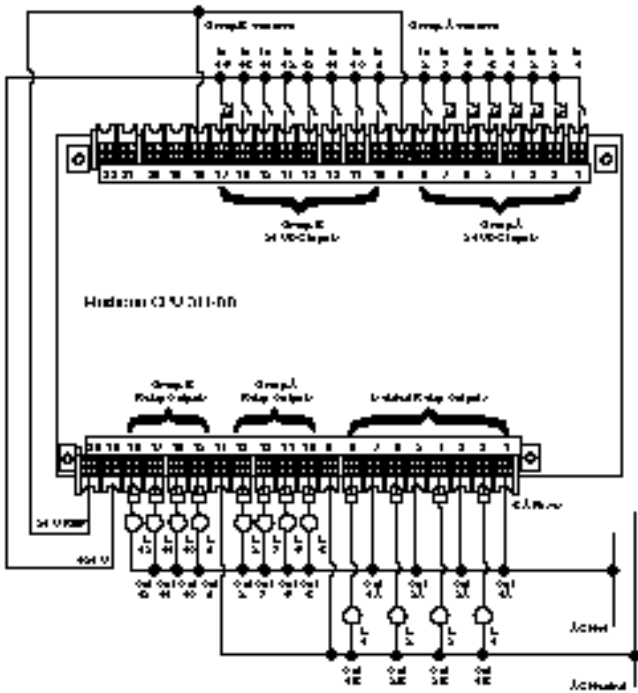
| | |
|---------------------------|--|
| Resolution | 12 bits |
| Accuracy | 1% over temperature for voltage outputs |
| Linearity @ 25°C | ±.05% |
| Differential Nonlinearity | Monotonic |
| Output Errors Between | 0...60°C |
| Linearity | ±.05% |
| Differential Nonlinearity | Monotonic |
| Update Time | 10 ms/channel |

**Circuit Characteristics
Simplified Schematic**



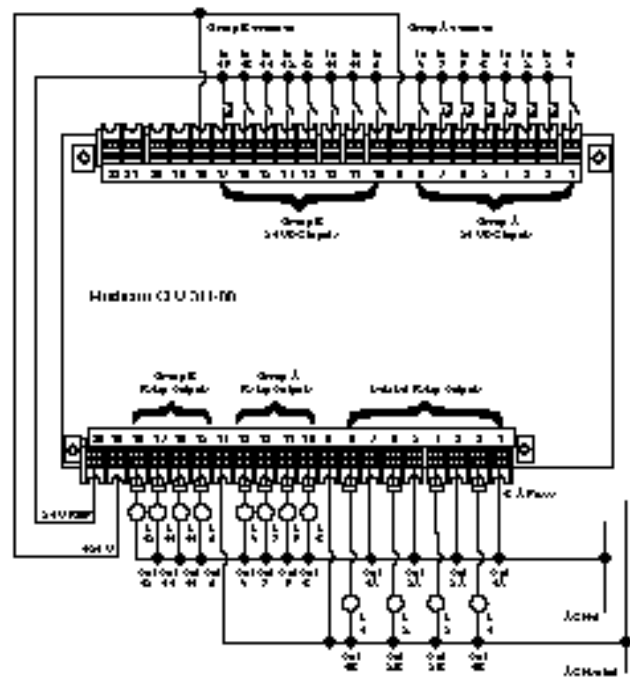
CPU 311-00 Wiring Diagram with Source-configured Inputs (under 115/230 Vac Power)

| Fixed I/O Termination | | |
|-----------------------|------------------------|--|
| I/O Type | Location of I/O Module | Location of Output |
| 24 VDC Input | 48 | 2 groups of 2 |
| Relay output | 48 | 2 groups of 4 (to electrically isolated) |



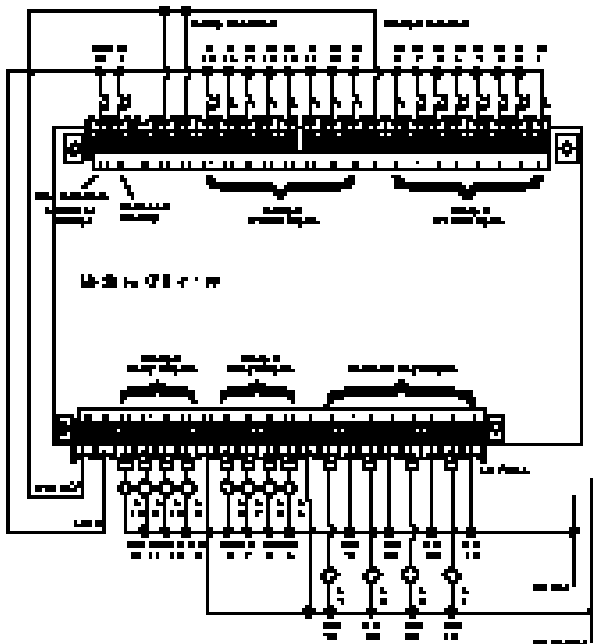
CPU 311-00 Wiring Diagram with Sink-configured Inputs (under 115/230 Vac Power)

| Fixed I/O Termination | | |
|-----------------------|------------------------|--|
| I/O Type | Location of I/O Module | Location of Output |
| 24 VDC Input | 48 | 2 groups of 2 |
| Relay output | 48 | 2 groups of 4 (to electrically isolated) |



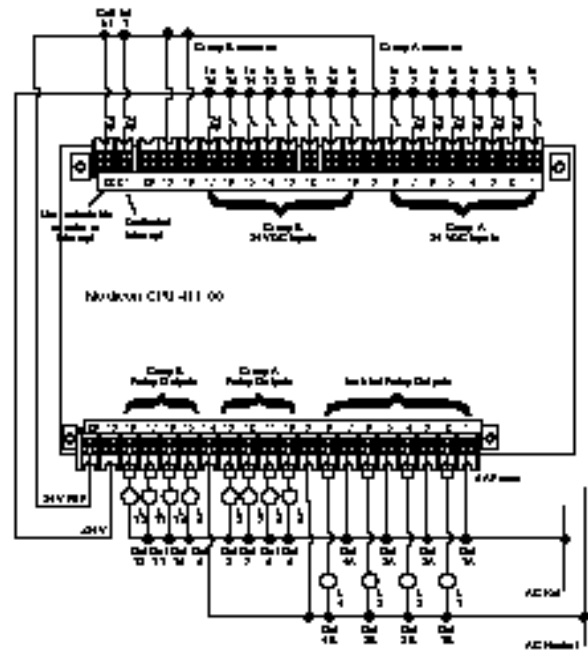
CPU 411-00 Wiring Diagram with Source-configured Inputs (under 115/230 Vac Power)

| Fixed I/O Termination | | |
|-----------------------------------|------------------------|--|
| I/O Type | Location of I/O Module | Location of Output |
| 24 VDC Input | 48 | 2 groups of 2 |
| 24 VDC Input (with 24 VDC common) | 1 | 1 group of 2 |
| 24 VDC Input (with 24 VDC common) | 1 | 1 group of 2 |
| Relay output | 48 | 2 groups of 4 (to electrically isolated) |



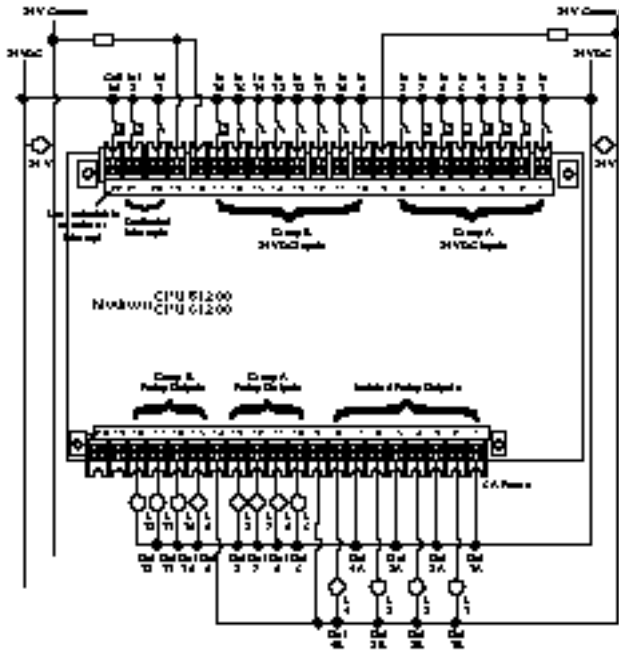
CPU 411-00 Wiring Diagram with Sink-configured Inputs (under 115/230 Vac Power)

| Fixed I/O Termination | | |
|-----------------------------------|------------------------|--|
| I/O Type | Location of I/O Module | Location of Output |
| 24 VDC Input | 48 | 2 groups of 2 |
| 24 VDC Input (with 24 VDC common) | 1 | 1 group of 2 |
| 24 VDC Input (with 24 VDC common) | 1 | 1 group of 2 |
| Relay output | 48 | 2 groups of 4 (to electrically isolated) |



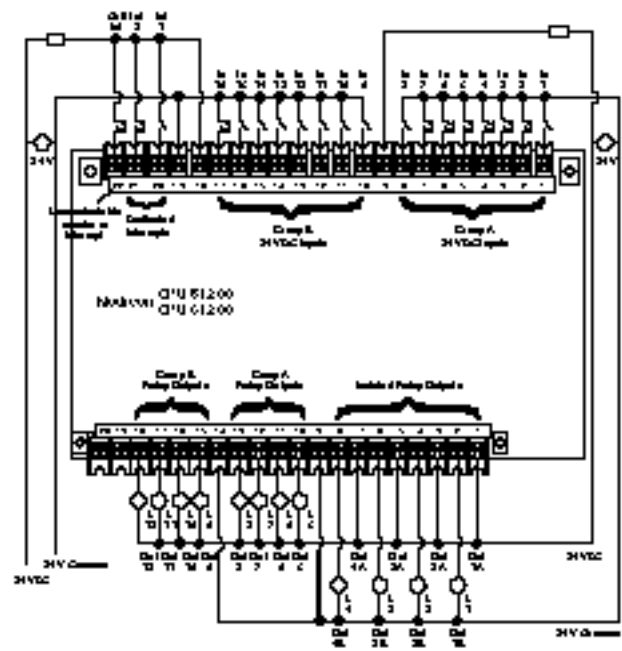
CPU 512-00/CPU 612-00 Field Wiring with Source-configured Inputs (under 24 Vdc power)

| Field I/O Configuration | Number of I/O Points | Number of Channels |
|--|----------------------|--|
| 24 VDC Input | 16 | 2 groups of 8 |
| 24 VDC source unswitchable common failure opt. | 1 | 1 group of 2 |
| 24 VDC feedback of high speed failure opt. | 1 | |
| Power and pulse | 10 | 2 groups of 4, 2 individually isolated |



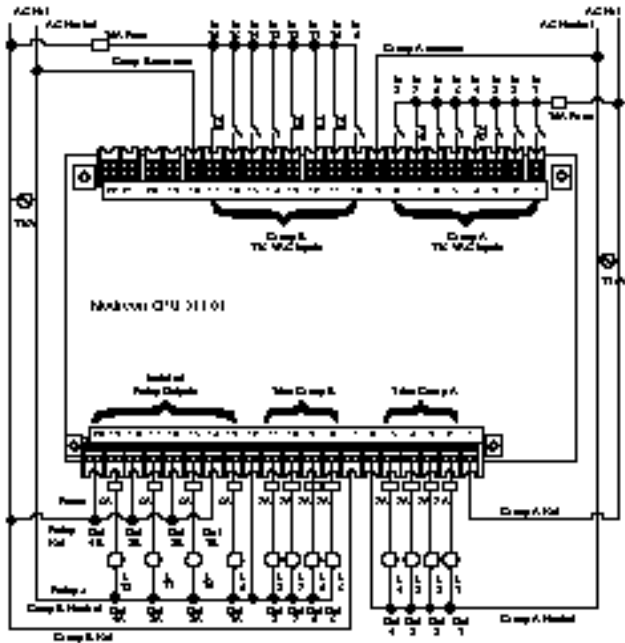
CPU 512-00/CPU 612-00/CPU 612-04 Field Wiring with Sink-configured Inputs (under 24 Vdc power)

| Field I/O Configuration | Number of I/O Points | Number of Channels |
|--|----------------------|--|
| 24 VDC Input | 16 | 2 groups of 8 |
| 24 VDC source unswitchable common failure opt. | 1 | 1 group of 2 |
| 24 VDC feedback of high speed failure opt. | 1 | |
| Power and pulse | 10 | 2 groups of 4, 2 individually isolated |



CPU 311-01 Field Wiring with Source-configured Inputs (under 115 Vac power)

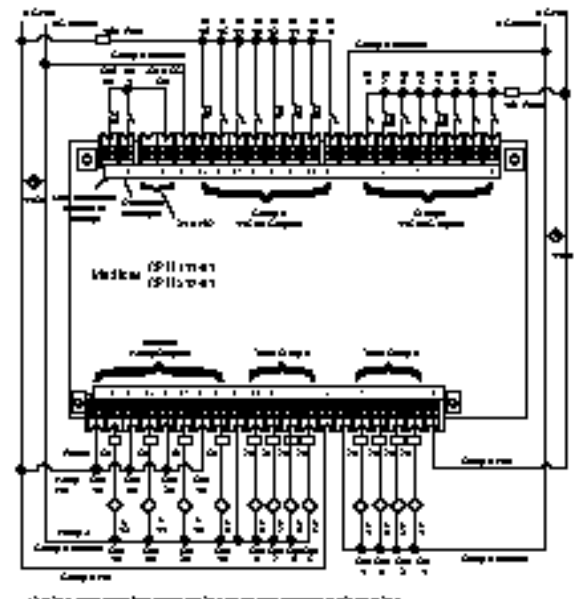
| Field I/O Configuration | Number of I/O Points | Number of Channels |
|-------------------------|----------------------|---------------------------|
| 115 VAC Input | 16 | 2 groups of 8 |
| Motor stop | 2 | 2 groups of 1 |
| Power and pulse | 4 | not individually isolated |



Note: Field Motor stop and common stop for input 1 and 2 are not available.

CPU 411-01/CPU 512-01 Field Wiring

| Field I/O Configuration | Number of I/O Points | Number of Channels |
|--|----------------------|--|
| 24 VDC Input | 16 | 4 groups of 4 |
| 24 VDC source unswitchable common failure opt. | 1 | 1 group of 2 |
| 24 VDC feedback of high speed failure opt. | 1 | |
| Power and pulse | 10 | 2 groups of 4, 2 individually isolated |

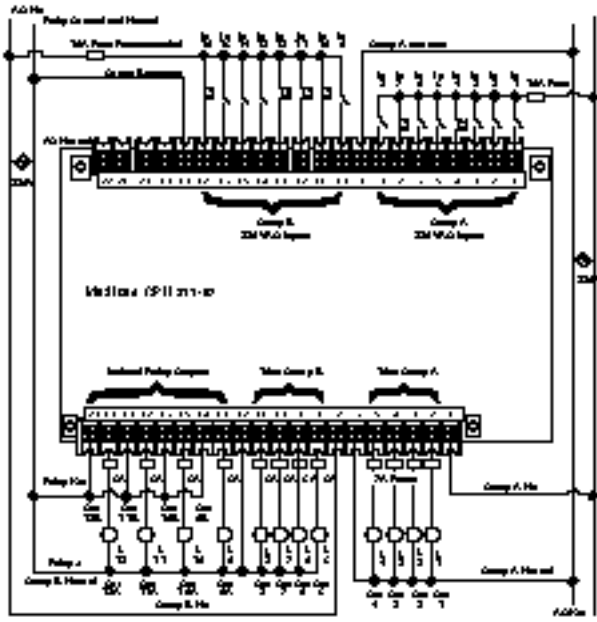


* In 24V source supply from power source to a 24VDC source, the power source must be 24VDC.

* Power source from power source to a 24VDC source, the power source must be 24VDC.

CPU 311-02 Wiring Diagram
(under 230 Vac power)

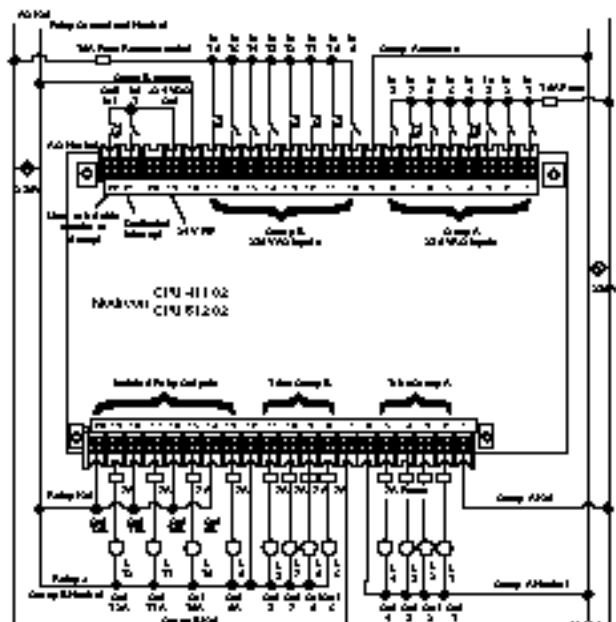
| Field I/O Module | Number of Points | Number of Outputs |
|---|------------------|------------------------|
| 24 VDC inputs | 24 | 2 groups of 2 |
| 24 VDC source-sinkable outputs (relay type) | 1 | 1 group of 2 |
| 24 VDC shielded high-speed relay outputs | 1 | |
| 24 VDC outputs | 2 | 2 groups of 4 |
| Relay outputs | 4 | Individually inside of |



1 - 1 - Power lines are connected and for input and output protection.

CPU 411-02/CPU 512-02 Wiring Diagram
(under 230 Vac power)

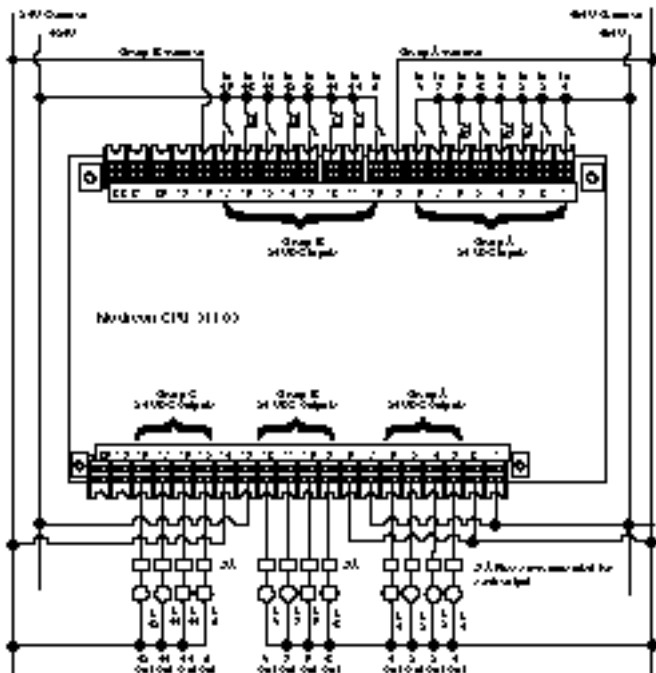
| Field I/O Module | Number of Points | Number of Outputs |
|---|------------------|------------------------|
| 24 VDC inputs | 24 | 2 groups of 2 |
| 24 VDC source-sinkable outputs (relay type) | 1 | 1 group of 2 |
| 24 VDC shielded high-speed relay outputs | 1 | |
| 24 VDC outputs | 2 | 2 groups of 4 |
| Relay outputs | 4 | Individually inside of |



1 - 1 - Power lines are connected.

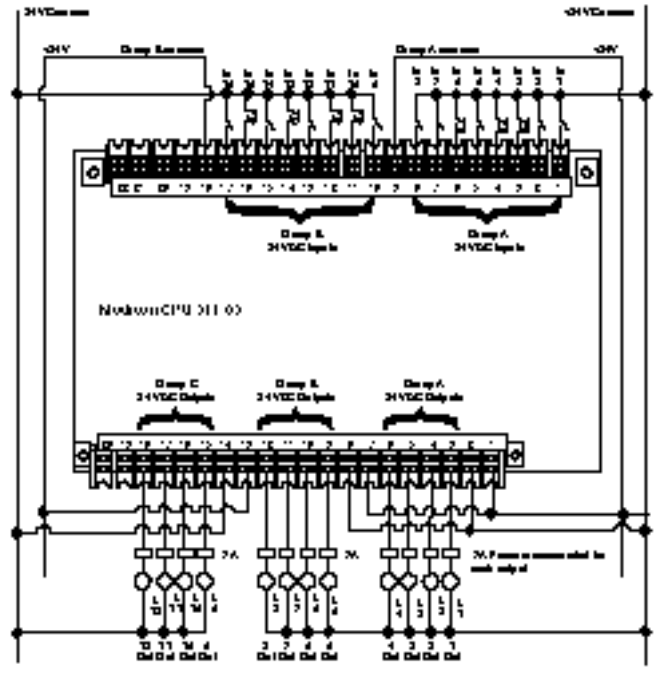
CPU 311-03 Wiring Diagram with Source-configured Inputs
(under 24 Vdc power)

| Field I/O Module | Number of Points | Number of Outputs |
|------------------|------------------|-------------------|
| 24 VDC inputs | 24 | 2 groups of 4 |
| 24 VDC outputs | 4 | 2 groups of 4 |



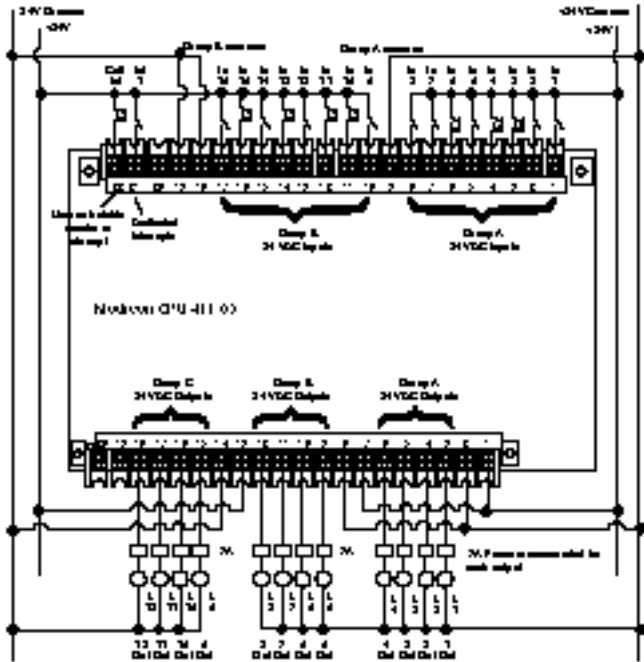
CPU 311-03 Wiring Diagram with Sink-configured Inputs
(under 24 Vdc power)

| Field I/O Module | Number of Points | Number of Outputs |
|------------------|------------------|-------------------|
| 24 VDC inputs | 24 | 2 groups of 2 |
| 24 VDC outputs | 12 | 2 groups of 4 |



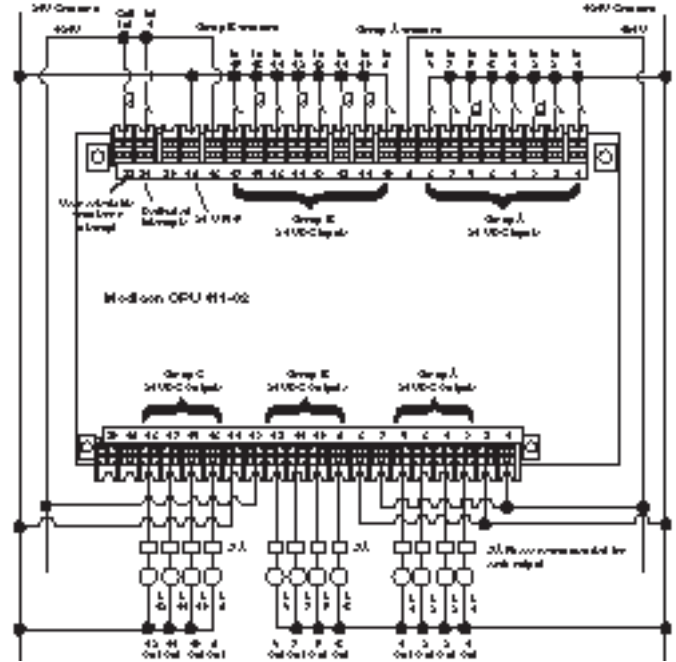
CPU 411-03 Wiring Diagram with Source-configured Inputs (under 24 Vdc Power)

| IO Type | Number of I/O Points | Number of Outputs |
|--|----------------------|-------------------|
| 24 VDC Input | 36 | 3 groups of 3 |
| 24 VDC source-configured output (active low) | 1 | 1 group of 3 |
| 24 VDC drain-led high impedance input | 1 | |
| 24 VDC output | 12 | 3 groups of 4 |



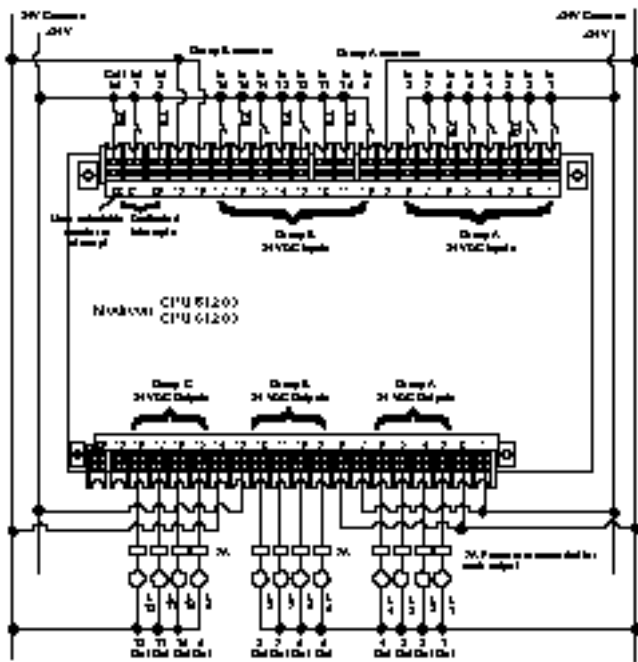
CPU 411-03 Wiring Diagram with Sink-configured Inputs (under 24 Vdc Power)

| IO Type | Number of IO Points | Number of Outputs |
|--|---------------------|-------------------|
| 24 VDC Input | 48 | 3 groups of 4 |
| 24 VDC source-configured output (active low) | 4 | 4 groups of 3 |
| 24 VDC drain-led high impedance input | 4 | |
| 24 VDC output | 12 | 3 groups of 4 |



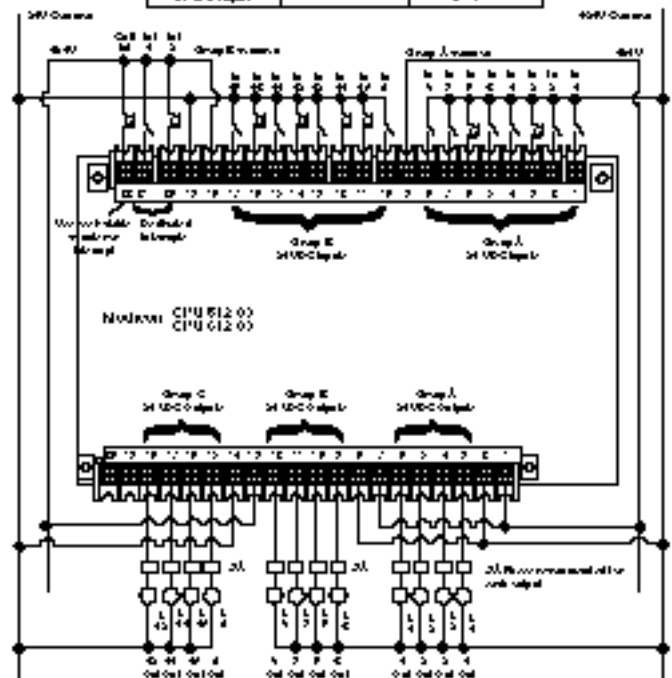
CPU 512-03/CPU 612-03 Wiring Diagram with Source-configured Inputs (under 24 Vdc Power)

| IO Type | Number of I/O Points | Number of Outputs |
|--|----------------------|-------------------|
| 24 VDC Input | 36 | 3 groups of 3 |
| 24 VDC source-configured output (active low) | 1 | 1 group of 3 |
| 24 VDC drain-led high impedance input | 1 | |
| 24 VDC output | 12 | 3 groups of 4 |



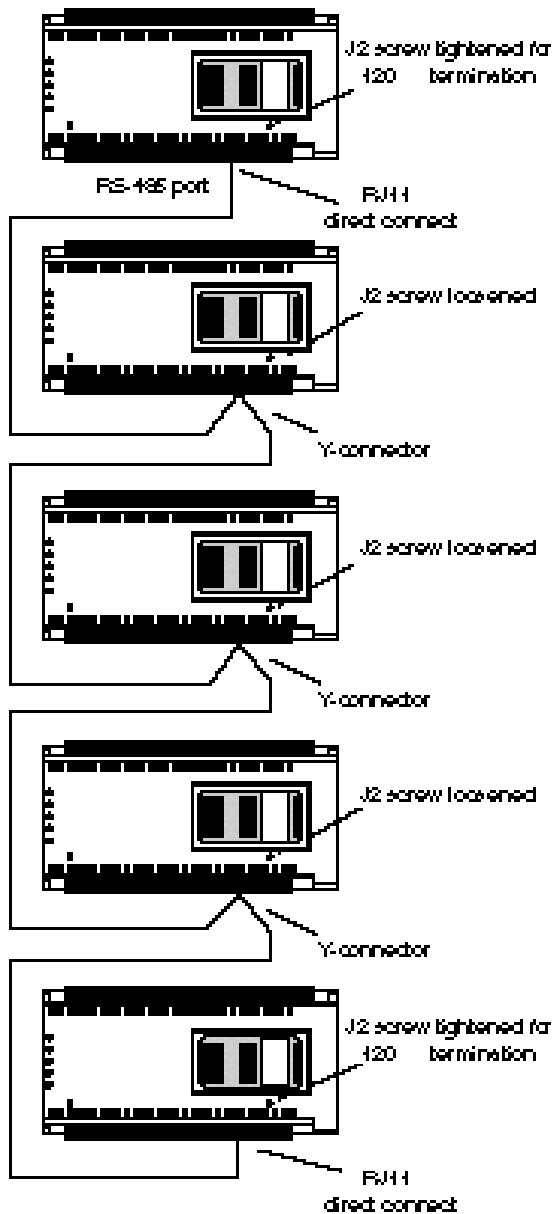
CPU 512-03/CPU 612-03 Wiring Diagram with Sink-configured Inputs (under 24 Vdc Power)

| IO Type | Number of IO Points | Number of Outputs |
|--|---------------------|-------------------|
| 24 VDC Input | 48 | 3 groups of 4 |
| 24 VDC source-configured output (active low) | 4 | 4 groups of 3 |
| 24 VDC drain-led high impedance input | 4 | |
| 24 VDC output | 12 | 3 groups of 4 |



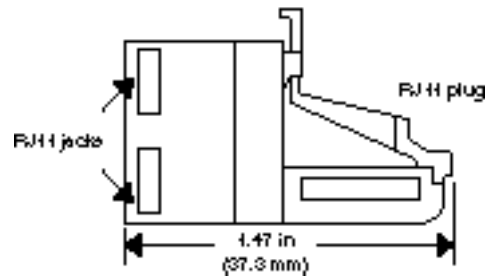
Modicon Micro I/O Expansion Link

I/O Expansion Link



Up to five Modicon Micros can be interconnected by the high speed I/O Expansion Link. The link contains one Micro configured as a "parent" PLC and one to four Micros configured as "child" PLCs. The parent and last child on the link are terminated by an internal resistor while the middle children are daisy-chained using a Y-connector. The link uses standard, yet highly secure and noise resistant, foil-shielded, flat telephone cables with male RJ11 connectors on each end.

The 110 XCA 10100 Y-connector



I/O Expansion Link Characteristics

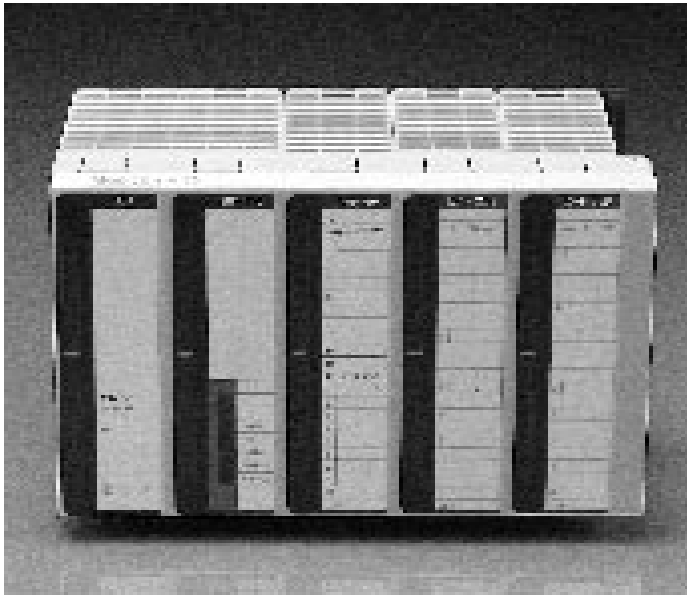
| | |
|-----------------------------|--------------------------------|
| Number of PLCs | 2-5 |
| Physical Comm Port | RS-485 |
| Cable Type | Six position line long body |
| Connector Type on the Cable | RJ11 male on both ends |
| Network Data Rate | 125 kbyte (+) |
| Length of Network | 500 m maximum 61 cm minimum |

Additional information can be found in 890 USE 145 00 Modicon Micro PLC H/W Users guide or 890 USE 146 00 Modicon Micro Controllers Ladder Logic Users guide

I/O Expansion Link Cables

| Length | Part Number |
|----------------|----------------|
| 61 cm (24 In.) | 110 XCA 171 01 |
| 3 M (10 ft.) | 110 XCA 171 02 |
| 6 m (20 ft.) | 110 XCA 171 03 |

984/A120 Compact



A modular PLC for OEMs and End Users alike

The 984/A120 Compact PLCs offer the performance of the larger 984 slot and chassis-mount PLCs in a micro size package. The Modicon 984/A120 Compact provides powerful, versatile, and highly compatible solutions in the micro to small application ranges.

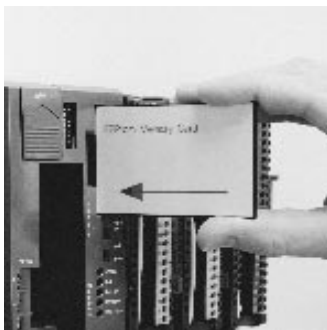
The Modicon 984/A120 Compact has the versatility of a fully modular construction, unequalled high speed peer-to-peer networking, and the power of 984 Family ladder logic functionality along with optional C language programming for custom OEM solutions that easily integrate into overall plant automation hierarchies. The 984/A120 Compact enables you to solve difficult control problems better and more efficiently than any other small, modular PLC available.

The performance of a large PLC

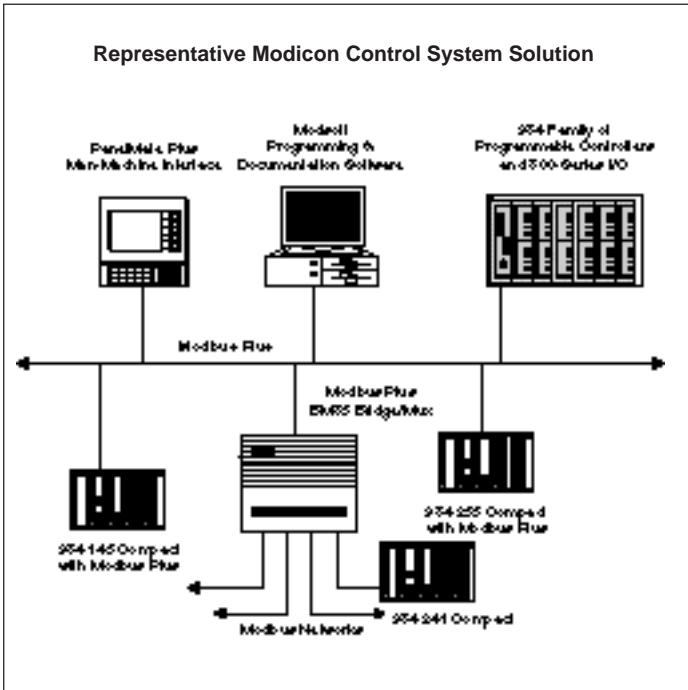
The Modicon 984/A120 Compact Family puts the power and performance of the larger 984 PLCs into a small, modular package. Although compact in size, they pack in many features of traditional medium and large class controllers:

- Up to 16k words of user logic
- Up to 24k words of data storage
- EEPROM memory option for non-volatile program storage
- Over 70 software instructions
- Standard Modbus communication interface
- Modbus Plus peer-to-peer communication interface

The 984/A120 Compact is available in nine models, supporting 1.5k to 16k words of program memory. All memory sizes are supported by battery-backed RAM. An EEPROM card is available for non-volatile memory backup or program portability. This card is removable from the front of the CPU. It is useful for non-volatile memory backup, program archiving, or for easy program exchange between PLCs.



Modicon 984/A120 Compact PLCs combine 984 Family performance with special features to meet the requirements of micro to small control applications.

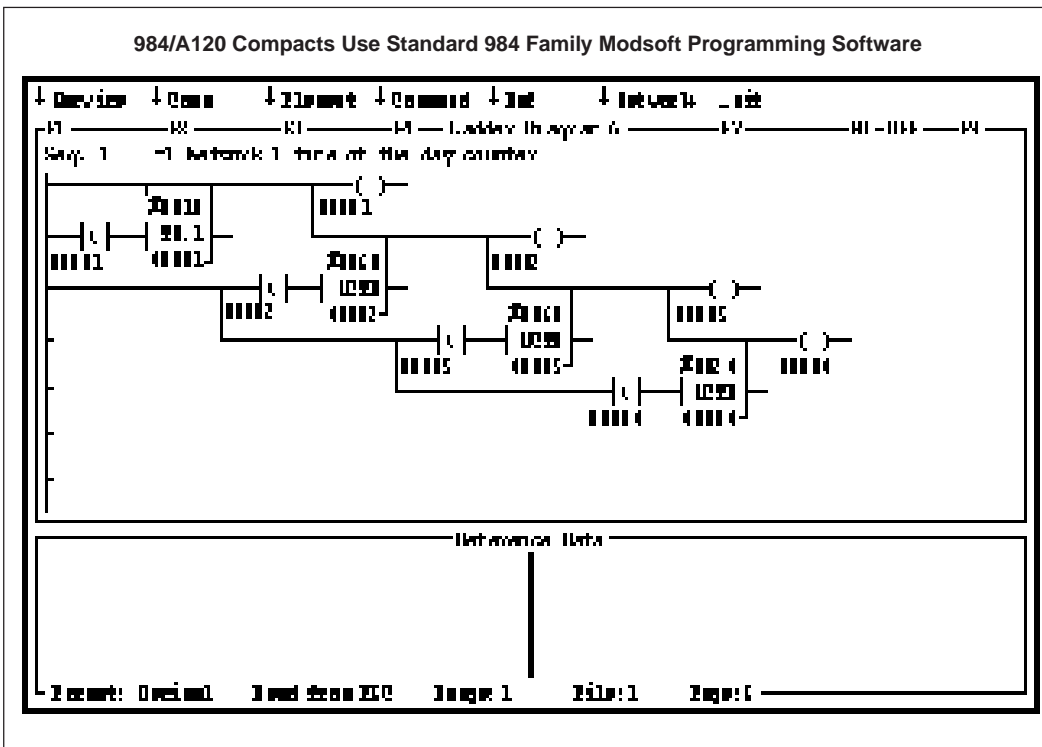


Like all Modicon 984 PLCs, the 984/A120 Compact user programs are compatible with all other 984 and Quantum controllers. The 984/A120 Compact Family shares the identical base instruction set as all 984s, permitting easy program integration to any other 984. Also, the 984/A120 Compact offers enhanced functions, including floating point math, trigonometric functions, PID, and subroutines. Over 70 instructions are available in this micro-sized controller.

The 984/A120 Compact also provides built-in networking capability. Every 984/A120 Compact includes a built-in Modbus interface, providing a cost-effective method for networking controllers and connecting to programming panels, operator interfaces, and host computers. The CPU-131, CPU-141, CPU-241 and CPU-251 each have a second Modbus port enabling added connectivity to MMI and/or modem communications while maintaining access for a programmer or second communications device. The CPU-145, 245, and 255 provide 1 standard Modbus port and 1 built-in Modbus Plus interface to provide direct access to a high performance peer-to-peer communication network for control interlocking and high-speed data acquisition applications.

The following manuals are recommended for use with Compact controllers and A120 I/O:

- | | |
|----------------|--|
| 890 USE 108 00 | 984/A120 Compact Programmable Controllers User Guide |
| 890 USE 109 00 | A120 Series I/O Modules User Guide |
| GM-A120-LDR | Modicon Compact Ladder Logic Manual |



984/A120 Technical Specifications

Power Requirements

| | |
|-----------------------------|-----------------------------|
| Integral Power Supply | |
| Input | 20 - 30 Vdc @ 1A Full Load |
| Output | 5 Vdc @ 2.5A to the I/O Bus |
| P120 AC Power Supply Module | |
| Input | 95 - 270 Vac, 47/63 Hz |
| Output | 24 Vdc @ 1A |
| P120 DC Power Supply Module | |
| Input | 102...150 Vdc |
| Output | 24 Vdc @ 1.5A |

Environmental

| | |
|------------------------|---|
| Temperature, Operating | 0 - 60°C |
| Humidity, Operating | 0 - 95% non-condensing |
| Temperature, Storage | - 40 - +85°C, IEC 68-2-14 |
| Humidity, Storage | 0 - 95% non-condensing |
| Altitude | 15,000 feet (4500 m) |
| Shock | 30 G's, 11 msec, 3 pulses/axis |
| Vibration | 10 - 57 Hz: 0.075 mm DA 57 - 150 Hz: 1 g |

Dimensions

| | |
|------------------|-----------------------|
| Height | 5.6 in (142 mm) |
| Width | 8.4 in (213 mm) |
| Depth | 5 in (127 mm) |
| Weight | 1.0-1.2 lb (455-540g) |
| Agency Approvals | UL, CSA, FM, CE |

Specially designed for space efficiency

Although the 984/A120 Compact offers the performance of a larger PLC, it is specifically designed for the micro-to-small application. Small in size, its packaging includes the CPU, built-in power supply, and up to 256 I/O in less than 1.5 square feet of panel space. With a depth of less than 5.5 inches, it will fit comfortably in an 8 inch deep panel enclosure.

The primary subrack houses the controller with built-in 24 Vdc power supply and an additional three slots for I/O modules. If required, an optional 120 Vac power converter can occupy one slot. Three additional expansion subracks can be connected, providing up to 18 slots for I/O modules. Subracks can be mounted side-by-side, with no additional hardware. Or they can be mounted in two tiers by using a single bus extension cable. DIN rail mounting makes for a fast, secure installation.

A full complement of discrete I/O modules is available in densities of 4, 8, or 16 points. Analog I/O, high speed counter/ position detection modules, and single axis servo motion control modules are also available.

984/A120 Compact Controllers

| Controller Model | Memory (Words) | | | | Scan Time | Ports | | | Input / Output Maximum | | | |
|------------------------|----------------|-----------|---------------|------|-----------|-------------|--------------|------------|------------------------|--------------|-------------|---------------|
| | Logic* | Registers | Extended (6X) | | | Modbus Port | Modbus+ Port | I/O Series | Discrete I/O | Total Bits** | Total Drops | # Local Racks |
| | | | Total | Scan | | | | | | | | |
| PC-A984/A120 (CPU 120) | 1.5k | 1920 | — | 3.5k | 5 ms/k | 1 | — | A120 | 256 any mix | 512/512 | 1 | 4 |
| PC-A984-130 (CPU 130) | 4k | 1920 | — | 6k | 5 ms/k | 1 | — | A120 | 256 any mix | 512/512 | 1 | 4 |
| PC-A984-131 (CPU 131) | 4k | 1920 | — | 6k | 5 ms/k | 2 | — | A120 | 256 any mix | 512/512 | 1 | 4 |
| PC-A984-141 (CPU 141) | 8k | 1920 | — | 10k | 5 ms/k | 2 | — | A120 | 256 any mix | 512/512 | 1 | 4 |
| PC-A984-145 (CPU 145) | 8k | 1920 | — | 10k | 5 ms/k | 1 | 1 | A120 | 256 any mix | 512/512 | 1 | 4 |
| PC-E984-241 (CPU 141) | 8k | 1920 | — | 10k | 2.5 ms/k | 2*** | — | A120 | 256 any mix | 512/512 | 1 | 4 |
| PC-E984-245 (CPU 145) | 8k | 1920 | — | 10k | 2.5 ms/k | 1*** | 1 | A120 | 256 any mix | 512/512 | 1 | 4 |
| PC-E984-251 (CPU 251) | 16k | 1920 | 24k | 42k | 2.5 ms/k | 2*** | — | A120 | 256 any mix | 512/512 | 1 | 4 |
| PC-E984-255 (CPU 255) | 16k | 1920 | 24k | 42k | 2.5 ms/k | 1*** | 1 | A120 | 256 any mix | 512/512 | 1 | 4 |

* Includes memory configuration and I/O Traffic Cop. (888 words minimum – 1k words maximum)

** Includes analog in/out at 16 bits each plus discrete in/out at one bit each.

*** Comm port 1 supports XMIT Block, temporary Modbus Master

A120 Series I/O Technical Specifications

(Reference 890 USE 109 00, Modicon A120 Series I/O Module User Guide for Complete Module Specifications)

| Model | Voltage Range (Max Current/Point) | Number Input Points | Number Output Points | Points per Common | I/O Power Required mA @ 5V Internal | Required Addressing I/O Bits |
|--------------------------|---|---------------------------|----------------------------|-------------------------|---|------------------------------------|
| Discrete Input | | | | | | |
| AS-BDEO-216 | 24 Vdc non-isolated, True High | 16 | 0 | 8 | <15 | 16/0 |
| AS-BDEP-208 | 230 Vac | 8 | 0 | 8 | <30 | 8/0 |
| AS-BDEP-210 ¹ | 115 Vac | 8 | 0 | 8 | <35 | 8/0 |
| AS-BDEP-211 ² | 115 Vac individual isolation | 8 | 0 | 1 | <35 | 8/0 |
| AS-BDEP-214 ² | 12-60 Vdc | 16 | 0 | 8 | <22 | 16/0 |
| AS-BDEP-215 ² | 5 V TTL, True Low | 16 | 0 | 8 | <25 | 16/0 |
| AS-BDEP-216 | 24 Vdc, True High | 16 | 0 | 8 | <15 | 16/0 |
| AS-BDEP-217 ² | 24 Vdc, True Low | 16 | 0 | 8 | <25 | 16/0 |
| AS-BDEP-218 ¹ | 115 Vac | 16 | 0 | 8 | <50 | 16/0 |
| AS-BDEP-220 | 24 Vdc fast response, True High | 16 | 0 | 8 | <25 | 16/0 |
| AS-BDEP-257 | 66-154 Vdc | 16 | 0 | 8 | <25 | 16/0 |
| AS-BDEP-296 | 60 Vdc | 16 | 0 | 8 | <25 | 16/0 |
| AS-BDEP-297 | 48 Vdc | 16 | 0 | 8 | <25 | 16/0 |
| Discrete Output | | | | | | |
| AS-BDAO-216 ¹ | 24 Vdc (0.5A) non-isolated | 0 | 16 | 16 | <30, up to 4.25 A @ 24 V ext. | 0/16 |
| AS-BDAP-204 | Relay NO (2A) | 0 | 4 | 1 | <25, 150 @ 24 V ext. | 0/8 |
| AS-BDAP-208 | Relay NO (2A) | 0 | 8 | 1 | <60, 150 @ 24 V ext. | 0/8 |
| AS-BDAP-210 ¹ | 24-230 Vac (1A) | 0 | 8 | 4 | <70 | 0/8 |
| AS-BDAP216N | 24 Vdc (0.5A), True High | 0 | 16 | 8 | <50 | 0/16 |
| AS-BDAP-217 ² | 5-24 Vdc (0.3A), True Low | 0 | 16 | 8 | <60 | 0/16 |
| AS-BDAP-218 ¹ | 24-230 Vac (0.5A) | 0 | 16 | 8 | <175 | 0/16 |
| Combo Discrete | | | | | | |
| AS-BDAP-212 | 24 Vdc in/relay out | 8 | 4 | 8/1 | <25, 150 @ 24 V ext. | 8/8 |
| AS-BDAP-220 | 24 Vdc in/24 Vdc 2A, output | 8 | 8 | 8/8 | <60 | 8/8 |
| AS-BDAP-252 | 24 Vdc in/relay out, Extended Temperature | 8 | 4 | 8/1 | <15, <150 @ 24 V ext. | 8/8 |
| AS-BDAP-253 | 66-154 Vdc in/relay out, Ext. Temperature | 8 | 4 | 8/1 | <15, <70 @ 24 V ext. | 8/8 |
| AS-BDAP-292 | 60 Vdc in/relay out | 8 | 4 | 8/1 | <25, <150 @ 24 V ext. | 8/8 |
| Analog Input | | | | | | |
| AS-BADU-204 | ±500 mV, Pt100, 11 bit + Sign | 4 | 0 | 4 | <50 | 64/0 |
| AS-BADU-205 | ±10 V, ±20 mA, 12 bit + Sign | 4 | 0 | 4 | <50 | 64/0 |
| AS-BADU-206 ¹ | ±1V, ±10V, ±20 mA 11 bit + Sign 0...1V, 0...10V, 0.2...1V, 2...10V, 4...20 mA, 0...20 mA 12 bit | 4 | 0 | 4 | <100 mA, <100 mA @ 24V ext. | 80/16 |
| AS-BADU-211 ² | Thermocouple Type J,K,E,R,S,B,T RTD 3 or 2/4 wire 100Ω 385 or 392, ±50,500,2000,5000,10000 mVdc 4...20 mA 12 bit, ±20 mA (16 bit & IEEE754) | 8 | 0 | 1 | <80 mA, <167 mA @ 24V ext. | 48/48 |
| AS-BADU-212 ² | Thermocouple Type J,K,E,R,S,B,T RTD 3 or 2/4 wire 100Ω 385 or 392, ±50,500,2000,5000,10000 mVdc 4...20 mA 12 bit, ±20 mA (16 bit & IEEE754) | 8 | 0 | 1 | ≤600 mA | 48/48 |
| AS-BADU-214 ² | 600 mA max. backplane current 0...0.5V, 0...1V, 0...5V, 0...10V, 0.1...0.5V, 0.2...1V, 1...5V, 2...10V, ±0.5V, ±1V, ±5V, ±10V, 0...5 mA, 0...10 mA, 0...20 mA, 1...5 mA, 2...10 mA, 4...20 mA, ±5 mA, ±10 mA, ±20 mA, RTD - Pt100, 200, 500, 1000, Ni500, 1000 0...1000Ω, 0...2000Ω, 0...5000Ω, 0...10000Ω, 0...20000Ω, 15 bit | 8 | 0 | 8 | <100, <150 mA @ 24 V ext. | 48/32 |

¹ Module requires PC-(A or E)984-xxx controller for operation

² Module requires loadable driver from software diskette, Part # SW-IODR-001

A120 Series I/O Technical Specifications

(Reference 890 USE 109 00, Modicon A120 Series I/O Module User Guide for Complete Module Specifications)

| Model | Voltage Range (Max Current/Point) | Number Input Points | Number Output Points | Number per Common | I/O Power Required mA @ 5V Internal | Required Addressing I/O Bits |
|---|--|---------------------------|----------------------------|-------------------------|--|------------------------------------|
| Analog Output | | | | | | |
| AS-BDAU-202 | ±10 V, ±20 mA, 11 bit Plus Sign | 0 | 2 | 1 | <60, <150 @ 24 V ext. | 0/32 |
| AS-BDAU-204 ² | ±1V, 5V, 10V 0...1V, 0...5V, 0...10V 12 bit 4...20mA, 0...20mA 12 bit | 0 | 4 | 2 | <1mA, 200mA @ 24 Vdc | 16/96 |
| AS-BDAU-208 ¹ | ±10 V, 11 bit Plus Sign | 0 | 8 | 8 | ≤30, ≤120 @ 24 V ext. | 0/128 |
| Intelligent | | | | | | |
| AS-BMOT-201 ² | Single axis Motion, Incremental Encoder in/ ±10 Velocity/Current Command out | 5 | 1 | 5/1 | <300 mA, 200 mA @ 24 Vdc | 96/96 |
| AS-BMOT-202 ² | Single Axis Motion, Resolver and Incremental Encoder in/DNP out | 5 | 1 | 5/1 | <600 mA, 200 mA @ 24 Vdc | 96/96 |
| AS-BVIC-200 ² | Variable Reluctance Coil Input (0.025 to 36 Vac) 0...10 kHz | 4 | 0 | 0 | <25 mA, <70 mA @ 24V ext. | 48/48 |
| AS-BVIC-205 ² | High Speed Input (5 Vdc) 0...25 kHz | 4 | 0 | 0 | <1 mA, <90 mA @ 24V ext. | 48/48 |
| AS-BVIC-212 ² | High Speed Input (12 Vdc) 0...25 kHz | 4 | 0 | 0 | <1 mA, <90 mA @ 24V ext. | 48/48 |
| AS-BVIC-224 ² | High Speed Input (24 Vdc) 0...25 kHz | 4 | 0 | 0 | <1 mA, <90 mA @ 24V ext. | 48/48 |
| AS-BZAE-201 | High speed counter, 50 kHz @ 24 V, 500kHz @ 5V, Relay NO,2A, output | 1 | 2 | 1/1 | <100, <30 @ 24 V ext. Sensor PS @ 5 V & 24 V ext. | 48/48 |
| AS-BZAE-204 ¹ | High speed counter, one 1-10 kHz, three 1 kHz, 5/24 V, Four outputs 24 V, 0.5 A | 4 | 4 | 4 | <100,1A @ 24V ext. | 96/16 |
| Driver Software | | | | | | |
| SW-IODR-001 | Module Driver Software - Required only where noted. | | | | | |
| Power Converters | | | | | | |
| AS-P120-000 | 105...240 Vac In, 24 Vdc @ 1.0 A Out | | | | | |
| AS-P120-125 | 105...150 Vdc In, 24 Vdc @ 1.5 A Out | | | | | |
| Cables | | | | | | |
| AS-WBXT-201 | Tiered Configuration Bus Extension Cable | | | | | |
| Special | | | | | | |
| AS-BNUL-200 | Module for prewiring up to 16 pt spare slot | N/A | N/A | N/A | 0 | 0/00 |
| AS-BNUL-202 | 16 pt. <50 V (6A) wiring connection mux | N/A | N/A | N/A | 0 | 0/00 |
| AS-BSIM-203 | Analog simulator (reqs Analog in and out) | N/A | N/A | N/A | 0, <50 mA @ 24V ext. | 0/00 |
| AS-BSIM-216 | Discrete simulator reqs 24 Vdc Discrete Input | N/A | N/A | N/A | 0, <25 mA @ 24V ext. | 0/00 |
| AS-OSIM-011 | Eight Toggle Switch Input Simulator for Use With 24 Vdc Inputs | — | — | — | — | — |
| AS-OTBP-000 | Terminal Block Pulling Tool | | | | | |
| EEPROM Memory Options (NOT Required for PLC Operation) | | | | | | |
| AS-MEEP-000 | 32K Byte Memory Card | | | | | |
| AS-MEEP-001 | 8K Byte Memory Card | | | | | |
| Manuals | | | | | | |
| 890 USE 108 00 | 984/A120 Compact Programmable Controller User Guide | | | | | |
| 890 USE 109 00 | Modicon A120 Series I/O Modules User Guide | | | | | |
| GM-A120-LDR | Modicon Compact Ladder Logic Manual | | | | | |

¹ Module requires PC-(A or E)984-xxx controller for operation

² Module requires loadable driver from software diskette, Part # SW-IODR-001

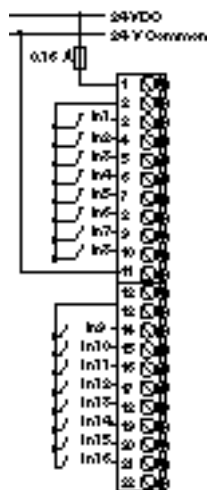
Discrete Input Modules

Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

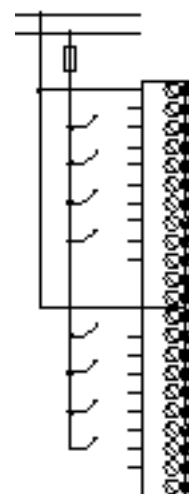
| Specification | BDEO-216 |
|-------------------|-----------------------|
| Description | 24 Vdc Input |
| Number of Points | 2 groups, 8 per group |
| Operating Voltage | 24 Vdc, +25%/15% |
| Isolation | None |
| Number of Groups | 1 |
| Points per Group | 16 |
| ON Conditions | +12 Vdc...+30 Vdc |
| OFF Conditions | -2 Vdc...+5 Vdc |
| ON Current | 7 mA @ 24 Vdc |
| Response Time | 4 ms typical |
| Power Required | |
| Internal | <15 mA @ 5V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, CE |

BDEO-216
Wiring Diagram



| Specification | BDEP-208 |
|-------------------|---------------------------|
| Description | 230 Vac Input |
| Number of Points | 8 |
| Operating Voltage | 230 Vac ±15%, 47-63 Hz |
| Isolation | Optocoupler on each input |
| Number of Groups | 1 |
| Points per Group | 8 |
| ON Conditions | 195 Vac...265 Vac |
| OFF Conditions | 0 Vac...90 Vac |
| ON Current | 1 mA/Input Min. |
| OFF Current | 0.5 mA/Input Max. |
| Response Time | |
| OFF to ON | 25 ms |
| ON to OFF | 50 ms |
| Power Required | |
| Internal | <30 mA @ 5V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, CE |

BDEP-208
Wiring Diagram



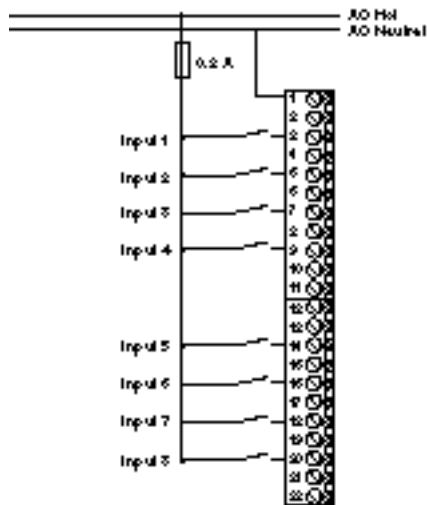
Discrete Input Modules

Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BDEP-210 |
|-------------------|-----------------------------|
| Description | 115 Vac Input |
| Number of Points | 8 |
| Operating Voltage | 115 Vac \pm 15%, 47-65 Hz |
| Isolation | 1.8 kV Field-to-Bus |
| Number of Groups | 1 |
| Points per Group | 8 |
| ON Conditions | 80 Vac...132 Vac |
| OFF Conditions | 0 Vac...35 Vac |
| ON Current | 6 mA/Input Min. |
| OFF Current | 3 mA/Input Max. |
| Response Time | |
| OFF to ON | 10 ms |
| ON to OFF | 40 ms |
| Power Required | |
| Internal | <35 mA @ 5V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .55 lbs (.25 kg) |
| Agency Approvals | UL, CSA, CE |

BDEP-210
Wiring Diagram

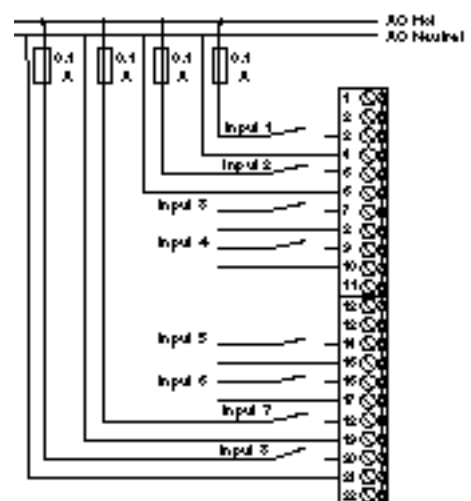


Note:

Module Requires PC-(A or E)984-xxx or Micro 512/612 controller for operation.

| Specification | BDEP-211 |
|-------------------|-------------------------------|
| Description | 115 Vac Isolated Input |
| Number of Points | 8 |
| Operating Voltage | 115 Vac \pm 15%, 47...65 Hz |
| Isolation | Optocoupler on each point |
| Number of Groups | 8 |
| Points per Group | 1 |
| ON Conditions | 80 Vac...132 Vac |
| OFF Conditions | 0 Vac...35 Vac |
| ON Current | 15.5 mA @ 115 Vac |
| OFF Current | 3 mA Max. |
| Response Time | |
| OFF to ON | 10 ms |
| ON to OFF | 40 ms |
| Power Required | |
| Internal | <35 mA @ 5V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, CE |

BDEP-211
Wiring Diagram



Note:

A software loadable driver (SW-IODR-001) is required for proper operation.

Discrete Input Modules

Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BDEP-214 |
|-------------------|---------------------------|
| Description | +12...+60 Vdc Input |
| Number of Points | 16 |
| Operating Voltage | -6...+75 |
| Isolation | Optocoupler on each input |
| Number of Groups | 2 |
| Points per Group | 8 |
| ON Conditions | +11...+30 Vdc @ 24 Vdc |
| OFF Conditions | -3...+5 Vdc @ 24 Vdc |
| ON Current | +6...+7.1 mA @ 24 Vdc |
| OFF Current | +1.7...+2.9 mA @ 24 Vdc |
| Response Time | 4 ms typical |
| Power Required | |
| Internal | <22 mA @ 5V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .57 lbs (.26 kg) |
| Agency Approvals | UL, CSA, CE |

BDEP-214
Wiring Diagram

Note:

A software loadable driver (SW-IODR-001) is required for proper operation.

| Specification | BDEP-215 |
|-------------------|---------------------------|
| Description | 5 V TTL True Low |
| Number of Points | 16 |
| Operating Voltage | 5 Vdc |
| Isolation | Optocoupler on each input |
| Number of Groups | 2 |
| Points per Group | 8 |
| True Conditions | -1 Vdc...+2 Vdc |
| False Conditions | +4 Vdc...+5 Vdc |
| True Current | 3.5 mA @ 0 Vdc |
| Response Time | 1 ms typical |
| Power Required | |
| Internal | <25 mA @ 5V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, CE |

BDEP-215
Wiring Diagram

Note:

This module is a TRUE LOW input. i.e. when the input is pulled low, the data to the CPU is read as a 1.

A Software Loadable Driver (SW-IODR-001) is required for proper operation.

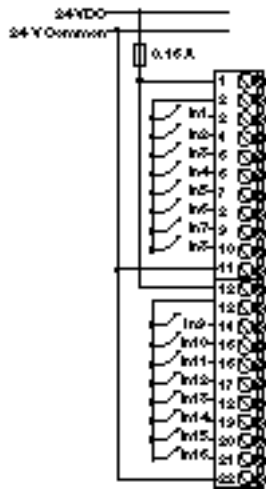
Discrete Input Modules

Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

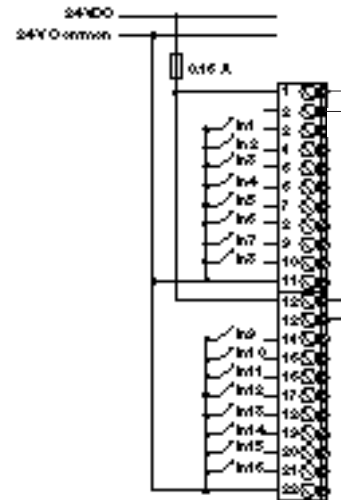
| Specification | BDEP-216 |
|-------------------|---------------------------|
| Description | 24 Vdc Input |
| Number of Points | 16 |
| Operating Voltage | 24 Vdc +25%/-15% |
| Isolation | Optocoupler on each input |
| Number of Groups | 2 |
| Points per Group | 8 |
| ON Conditions | +12 Vdc...+30 Vdc |
| OFF Conditions | -2 Vdc...+5 Vdc |
| Wetting Current | 7mA @ 24 Vdc |
| Response Time | 4 ms typical |
| Power Required | |
| Internal | <15 mA @ 5V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, FM, CE |

BDEP-216
Wiring Diagram



| Specification | BDEP-217 |
|-------------------|--------------------------------|
| Description | 24 Vdc True Low input |
| Number of Points | 16 |
| Operating Voltage | 24 Vdc ±15% |
| Isolation | Optocoupler on each input |
| Number of Groups | 2 |
| Points per Group | 8 |
| False Conditions | ≥ External source minus 6 Vdc |
| True Conditions | ≤ External source minus 12 Vdc |
| True Current | 7 mA @ 0 Vdc |
| Response Time | 4 ms typical |
| Power Required | |
| Internal | <25 mA @ 5V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, CE |

BDEP-217
Wiring Diagram



Note:

A Software Loadable Driver (SW-IODR-001) is required for proper operation.

This module is a TRUE LOW input. (i.e. when the input is pulled low, the data to the CPU is read as a 1.)

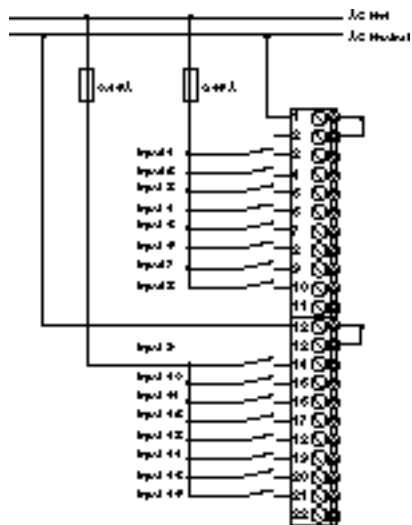
Discrete Input Modules

Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BDEP-218 |
|-------------------|---------------------------------|
| Description | 115 Vac Input |
| Number of Points | 16 |
| Operating Voltage | 115 Vac $\pm 15\%$, 47-63 Hz |
| Isolation | Optocoupler, 1.8Kv Field-to-Bus |
| Number of Groups | 2 |
| Points per Group | 8 |
| ON Conditions | 80 Vac...132 Vac |
| OFF Conditions | 0 Vac...35 Vac |
| ON Current | 15.5 mA @ 115 Vac |
| OFF Current | 3 mA Max. |
| Response Time | |
| OFF to ON | 10 ms |
| ON to OFF | 40 ms |
| Power Required | |
| Internal | <50 mA @ 5V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .66 lbs (.3 kg) |
| Agency Approvals | UL, CSA, CE |

**BDEP-218
Wiring Diagram**

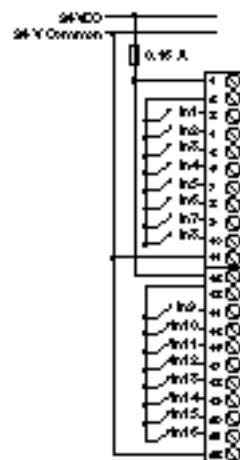


Note:

Module requires PC-(A or E)984-XXX or Micro 512/612 controller for operation.

| Specification | BDEP-220 |
|-------------------|---------------------------|
| Description | 24 Vdc High Speed Input |
| Number of Points | 16 |
| Operating Voltage | 24 Vdc, +25%/-15% |
| Isolation | Optocoupler on each input |
| Number of Groups | 2 |
| Points per Group | 8 |
| ON Conditions | +12 Vdc...+30 Vdc |
| OFF Conditions | -2 Vdc...+5 Vdc |
| ON Current | 7 mA @ 24 Vdc |
| Response Time | 0.5 ms typical |
| Power Required | |
| Internal | <25 mA @ 5V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, CE |

**BDEP-220
Wiring Diagram**



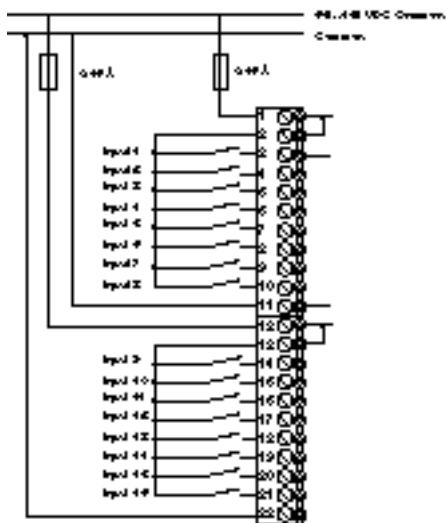
Discrete Input Modules

Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BDEP-257 |
|-------------------|---------------------------|
| Description | 110 Vdc \pm 40% Input |
| Number of Points | 16 |
| Operating Voltage | 66...154 Vdc |
| Isolation | Optocoupler on each input |
| Number of Groups | 2 |
| Points per Group | 8 |
| ON Conditions | +55...+170 Vdc |
| OFF Conditions | -2...+10 Vdc |
| ON Current | 2.2 mA @ 140 Vdc |
| Response Time | 4 ms typical |
| Power Required | |
| Internal | <25 mA @ 5V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, CE |

BDEP-257
Wiring Diagram

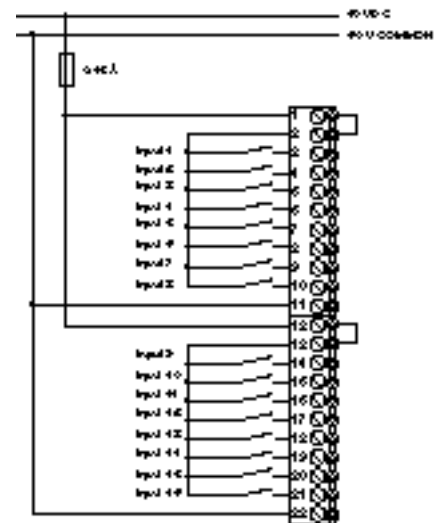


Note:

This module is I/O mapped as a DEP-216.

| Specification | BDEP-296 |
|-------------------|---------------------------|
| Description | 60 Vdc Input |
| Number of Points | 16 |
| Operating Voltage | 60 Vdc \pm 15% |
| Isolation | Optocoupler on each input |
| Number of Groups | 2 |
| Points per Group | 8 |
| ON Conditions | +30 Vdc...+70 Vdc |
| OFF Conditions | -4 Vdc...+13 Vdc |
| ON Current | 7 mA @ 60 Vdc |
| Response Time | 4 ms typical |
| Power Required | |
| Internal | <25 mA @ 5V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, CE |

BDEP-296
Wiring Diagram



Note:

This module is I/O mapped as a DEP-216.

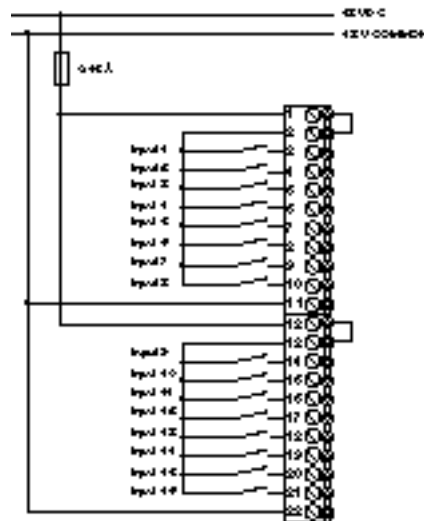
Discrete Input Modules

Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BDEP-297 |
|-------------------|---------------------------|
| Description | 48 Vdc Input |
| Number of Points | 16 |
| Operating Voltage | 48 Vdc \pm 15% |
| Isolation | Optocoupler on each input |
| Number of Groups | 2 |
| Points per Group | 8 |
| ON Conditions | +29 Vdc...+56 Vdc |
| OFF Conditions | -3 Vdc...+10 Vdc |
| ON Current | 7 mA @ 48 Vdc |
| Response Time | 4 ms typical |
| Power Required | |
| Internal | <25 mA @ 5V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, CE |

**BDEP-297
Wiring Diagram**



Note:

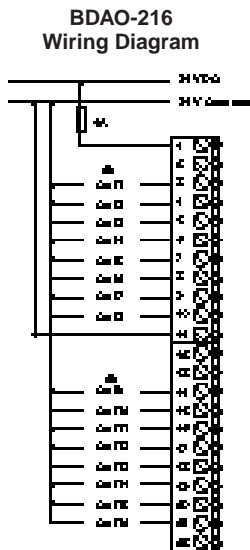
This module is I/O mapped as a DEP-216.

Discrete Output Modules

Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BDAO-216 |
|--------------------|-----------------------------|
| Description | 24 Vdc (Source) Output |
| Number of Points | 16 |
| Operating Voltage | 24 Vdc, +25%/-15% |
| Isolation | None |
| Number of Groups | 1 |
| Points per Group | 16 |
| ON Current (Cont.) | |
| Max. per Point | .5 A |
| Max. per Group | 4 A |
| Max. per Module | 4 A |
| ON Conditions | Source minus 3V |
| OFF Conditions | 0 Vdc ... 2 Vdc |
| Leakage Current | < 1 mA |
| Response Time | <1 ms typical |
| Power Required | |
| Internal | <30 mA @ 5 V |
| External | 20...30 Vdc, 4.25A @ 30 Vdc |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .55 lbs (.25 kg) |
| Agency Approvals | UL, CSA, FM, CE |

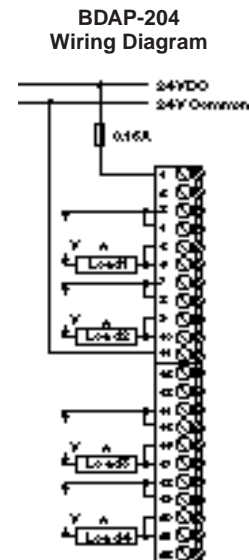


Note:

Module requires PC-(A or E) 984-xxx or Micro 512/612 controller for operation.

* Clamping diode recommended across each load

| Specification | BDAP-204 |
|--------------------|----------------------------|
| Description | Relay (NO) Output |
| Number of Points | 4 |
| Operating Voltage | 24 - 154 Vdc, 24 - 250 Vac |
| Isolation | Relay contact |
| | Individually isolated |
| Number of Groups | 4 |
| Points per Group | 1 |
| ON Current (Cont.) | |
| Max. per Point | 2 A |
| Wetting Current | 5 mA for closed contacts |
| Leakage Current | 1 mA |
| Response Time | 10 ms typical |
| Power Required | |
| Internal | 25 mA @ 5 V |
| External | 150 mA @ 24 Vdc |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .52 lbs (.24 kg) |
| Agency Approvals | UL, CSA, CE |



* Clamping diode or snubber circuit recommended

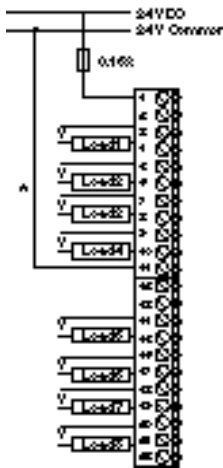
Discrete Output Modules

Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BDAP-208 |
|-----------------------|----------------------------|
| Description | Relay (NO) output |
| Number of Points | 8 |
| Operating Voltage | 24 - 154 Vdc, 24 - 250 Vac |
| Isolation | Relay contact |
| Individually isolated | |
| Number of Groups | 8 |
| Points per Group | 1 |
| ON Current (Cont.) | |
| Max. per point | 2A |
| Wetting Current | 5 mA for closed contacts |
| Leakage Current | 1 mA |
| Response Time | 10 ms typical |
| Power Required | |
| Internal | 60 mA @ 5 V |
| External | 150 mA @ 24 Vdc |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .52 lbs (.24 kg) |
| Agency Approvals | UL, CSA, CE |

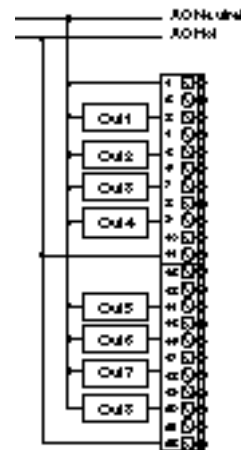
BDAP-208
Wiring Diagram



* Clamping diode or snubber circuit recommended

| Specification | BDAP-210 |
|-----------------------|-----------------------|
| Description | AC output |
| Number of Points | 8 |
| Operating Voltage | 24-230 Vac* |
| Isolation | Optocoupler, 1.5K Vac |
| Field-to-Bus | |
| Number of Groups | 2 |
| Points per Group | 4 |
| ON Current (Cont.) | |
| Max. per Point | 1.5 A |
| Max. per Group | 4.0 A |
| Max. per Module | 8.0 A |
| ON State Voltage Drop | 1.5 Vac RMS Max. |
| Leakage Current | 3.75 mA |
| Response Time | 8.34 ms Max. |
| Power Required | |
| Internal | <70 mA @ 5 V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | 1 lbs (.45 kg) |
| Agency Approvals | UL, CSA*, CE |

BDAP-210
Wiring Diagram



Notes:

Fusing on each output is recommended

Module requires PC-(A or E)984-xxx
or Micro 512/612 controller for operation.

* Valid IEC 1131, UL, CSA Range 24-230 Vac
Valid VDE 0160 24-115 Vac

Discrete Output Modules

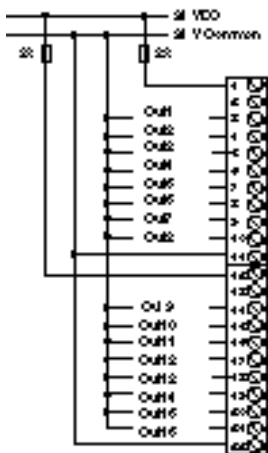
Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

Specification

| Specification | BDAP216N |
|--------------------|---|
| Description | 24 Vdc (Source) with Short circuit protection |
| Number of Points | 16 |
| Operating Voltage | 24 Vdc |
| Isolation | Optocoupler on each output |
| Number of Groups | 2 |
| Points per Group | 8 |
| ON Current (Cont.) | |
| Max. per Point | .5 A |
| Max. per Group | 2 A |
| Max. per Module | 4 A |
| ON Conditions | +21 Vdc...+24 Vdc |
| OFF Conditions | 0 Vdc...+2 Vdc, <1 mA |
| Response Time | <1 ms typical |
| Power Required | |
| Internal | <50 mA @ 5 V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, CE |

BDAP-216
Wiring Diagram

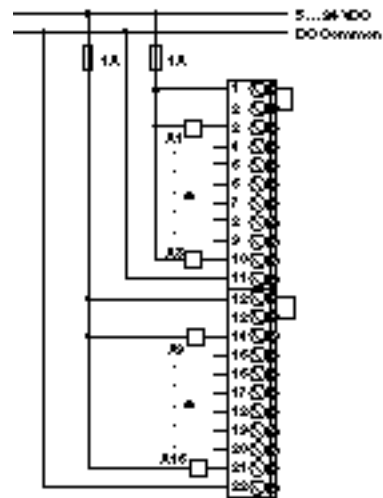


* Clamping diode or snubber circuit recommended

Specification

| Specification | BDAP-217 |
|--------------------|-------------------------------|
| Description | +5...+24 Vdc (Sinking) output |
| Number of Points | 16 |
| Operating Voltage | +5...+24 Vdc |
| Isolation | Optocoupler on each output |
| Number of Groups | 2 |
| Points per Group | 8 |
| ON Current (Cont.) | |
| Max. per Point | .3 A |
| Max. per Group | .8 A |
| Max. per Module | 1.6 A |
| ON Conditions | ≤0.7 V |
| OFF Conditions | External source |
| Response Time | 1 ms typical |
| Power Required | |
| Internal | <60 mA @ 5 V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, CE |

BDAP-217
Wiring Diagram



Notes:

A software loadable driver (SW-IODR-001) is required for proper operation

* Clamping diode or snubber circuit recommended

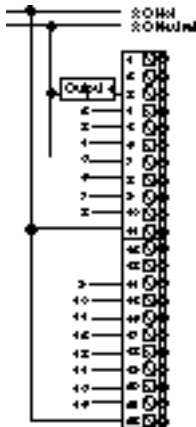
Discrete Output Modules

Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BDAP-218 |
|-----------------------|-------------------------------------|
| Description | 24...230 Vac Triac |
| Number of Points | 16 |
| Operating Voltage | *24-240 Vac, 47...63 Hz |
| Isolation | Optocoupler, 1.7 Kv Field-to-Bus |
| Number of Groups | 2 |
| Points per Group | 8 |
| ON Current (Cont.) | |
| Minimum/Point | 20 mA |
| Max. per Point | .5 A |
| ON State Voltage Drop | 1.5 Vac RMS Max. |
| Leakage Current | 3.75 mA Max. |
| Response Time | <8.34 ms typical |
| Power Required | |
| Internal | 175 mA @ 5 V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | 2 lbs (900 kg) |
| Agency Approvals | UL, CSA, CE |

BDAP-218
Wiring Diagram



Note:

Fusing on each output is recommended

Module requires PC-(A or E)984-xxx
or Micro 512/612 controller for operation.

* Valid IEC 1131, UL, CSA Range 24-230 Vac
Valid VDE 0160 24-115 Vac

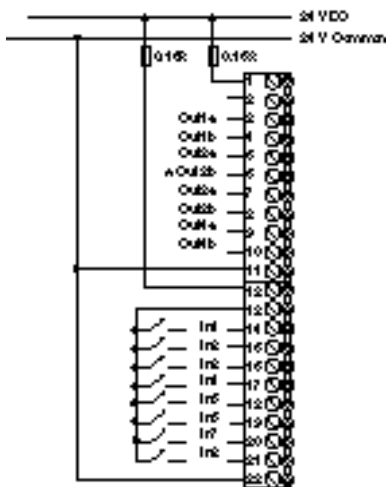
Combination Discrete Input/Output Modules

Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BDAP-212 | |
|--------------------|---------------------------------|------------------------------|
| Description | Combination 24 Vdc In/Relay Out | |
| Number of Points | 8 in | 4 out |
| Operating Voltage | 24 Vdc +25%/-15% | 24 - 110 Vdc 24 - 250 Vac |
| Isolation | Optocoupler | Relay contact |
| Number of Groups | 1 | 4 |
| Points per Group | 8 | 1 |
| ON Current (Cont.) | | |
| Max. per Point | | 2 A |
| ON Conditions | +12 Vdc...+30 Vdc | |
| OFF Conditions | -2 Vdc...+5 Vdc | |
| Wetting Current | 7 mA @ 24 Vdc | 5 mA |
| Leakage Current | 1 mA | |
| Response Time | 4 ms typical | 10 ms typical |
| Power Required | | |
| Internal | <25 mA @ 5 Vdc | -- |
| External | -- | 150 mA @ 24 Vdc |
| Dimensions | | |
| Space Required | 1 slot | |
| Weight | .4 lbs (.19kg) | |
| Agency Approvals | UL, CSA, CE | |

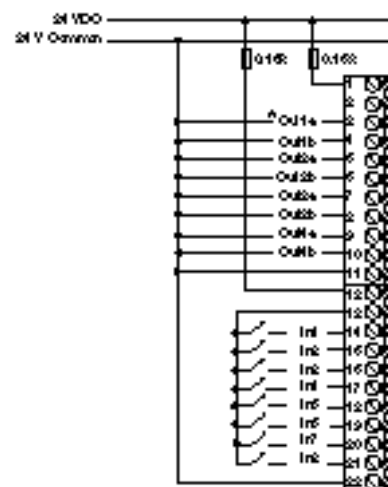
BDAP-212
Wiring Diagram



* Clamping diode or snubber circuit recommended on outputs

| Specification | BDAP-220 | |
|--------------------|--------------------------------------|---------------------------|
| Description | 24 Vdc Input, 24 Vdc Output (Source) | |
| Number of Points | 8 in | 8 out |
| Operating Voltage | 24 Vdc, +25%/-15% | 24 Vdc |
| Isolation | Optocoupler | Optocoupler |
| Number of Groups | 1 | 1 |
| Points per Group | 8 | 8 |
| ON Current (Cont.) | | |
| Max. per Point | | 2 A |
| Max. per Group | | 8 A |
| Max. per Module | | 8 A |
| ON Conditions | +12 Vdc...+30 Vdc | External Supply -0.4 |
| OFF Conditions | -2 Vdc...+5 Vdc | 0 Vdc... 2 Vdc, < 1 mA |
| ON Current | 7 mA @ 24 Vdc | 5 mA Min. |
| Response Time | 4 ms typical | <1 ms typical |
| Power Required | | |
| Internal | <60 mA @ 5 Vdc | |
| Dimensions | | |
| Space Required | 1 slot | |
| Weight | .5 lbs (.22 kg) | |
| Agency Approvals | UL, CSA, FM, CE | |

BDAP-220
Wiring Diagram



* Clamping diode recommended

Combination Discrete Input/Output Modules

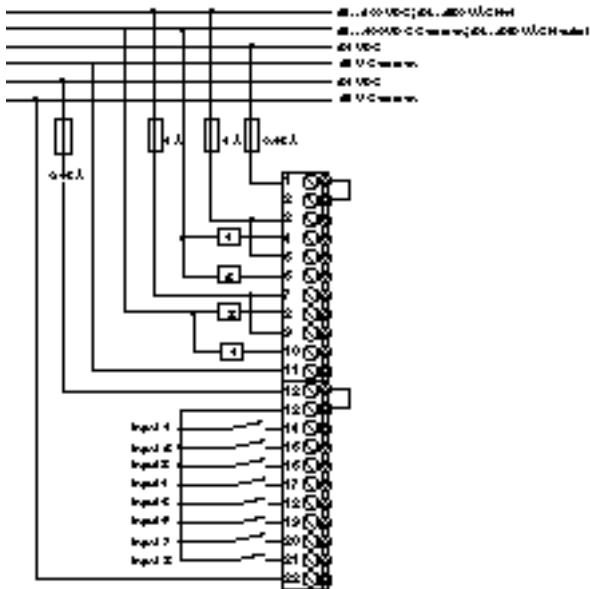
Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

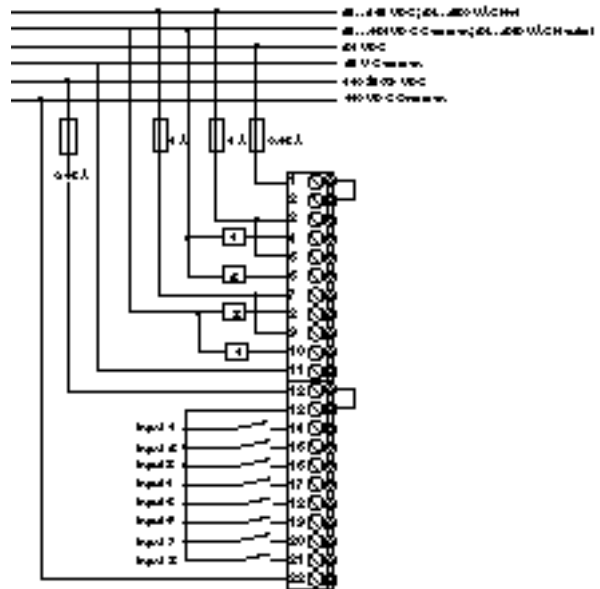
| Specification | BDAP-252 | |
|--------------------|---|---|
| Description | Extended temperature 24 Vdc In/Relay Out | |
| Number of Points | 8 in | 4 out |
| Operating Voltage | 24 Vdc, +25%/-15% | 24...110 Vdc, 24...250 Vac |
| Isolation | Isolated from output group | Relay contact individually isolated |
| Number of Groups | 1 | 4 |
| Points per Group | 8 | 1 |
| ON Condition | +12...+37 Vdc | |
| OFF Conditions | -2...+5 Vdc | |
| ON Current (Cont.) | 4 mA @ 24 Vdc | 2A |
| Wetting Current | | 5 mA |
| Response Time | 7 ms typical | 10 ms typical |
| Power Required | | |
| Internal | <15 mA @ 5 Vdc | |
| External | 150 mA @ 24 Vdc | |
| Dimensions | | |
| Space Required | 1 slot | |
| Weight | .52 lbs (.24 kg) | |
| Agency Approvals | UL, CSA, CE | |

| Specification | BDAP-253 | |
|--------------------|--|---|
| Description | Extended temperature 110 Vdc ±40% Input/Relay Output | |
| Number of Points | 8 in | 4 out |
| Operating Voltage | +66...+154 Vdc | +24...+154 Vdc, 24...250 Vac |
| Isolation | Isolated from output group | Relay contact individually isolated |
| Number of Groups | 1 | 4 |
| Points per Group | 8 | 1 |
| ON Condition | +55...+170 Vdc | |
| OFF Conditions | -2...+10 Vdc | |
| ON Current (Cont.) | 2.2 mA @ 110 Vdc | 2A |
| Wetting Current | | 5 mA |
| Response Time | 6 ms | 10 ms |
| Power Required | | |
| Internal | <15 mA @ 5 Vdc | |
| External | +110 Vdc ±40%, 70 mA @ 24 Vdc | |
| Dimensions | | |
| Space Required | 1 slot | |
| Weight | .52 lbs (.24 kg) | |
| Agency Approvals | UL, CSA, CE | |

BDAP-252
Wiring Diagram



BDAP-253
Wiring Diagram



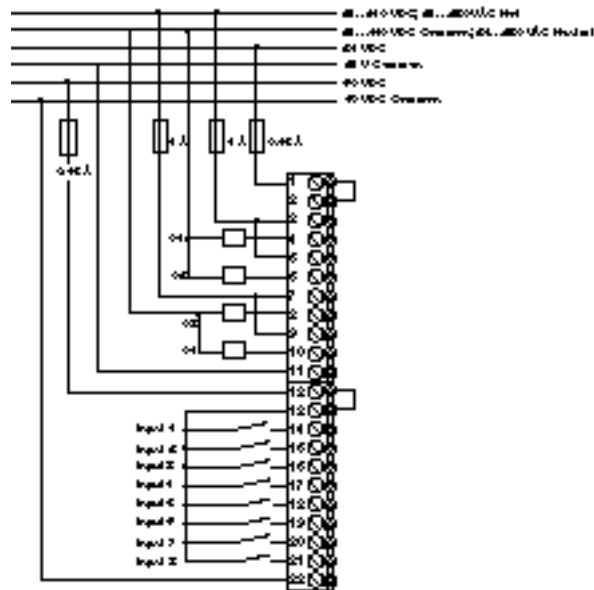
Combination Discrete Input/Output Modules

Technical Specifications and Wiring Diagrams

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BDAP-292 | |
|--------------------|--------------------------------------|---|
| Description | 60 Vdc Isolated In/Relay Out | |
| Number of Points | 8 in | 4 out |
| Operating Voltage | 60 Vdc | 24...110 Vdc, 24...250 Vac |
| Isolation | Isolated from output group | Relay contact individually isolated |
| Number of Groups | 1 | 4 |
| Points per Group | 8 | 1 |
| ON Condition | +35...+70 Vdc | |
| OFF Conditions | -4 ... +13 Vdc | |
| ON Current (Cont.) | | 2A |
| Wetting Current | | 1 mA |
| Response Time | 4 ms typical | 10 ms typical |
| Power Required | | |
| Internal | <25 mA @ 5 Vdc | |
| External | <150 mA @ 24 Vdc <150 mA @ 60 Vdc | |
| Dimensions | | |
| Space Required | 1 slot | |
| Weight | .52 lbs (.24 kg) | |
| Agency Approvals | UL, CSA, CE | |

**BDAP-292
Wiring Diagram**



Note:
This module is I/O mapped as a DAP-212.

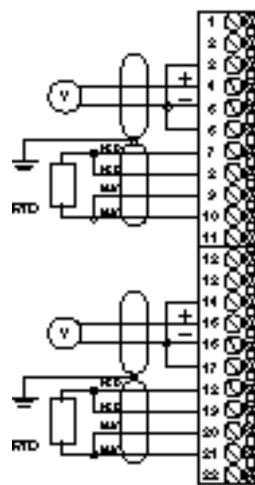
Analog Input Modules

Technical Specifications and Wiring Diagram

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BADU-204 |
|---------------------------|-----------------------------|
| Description | Voltage (2 pole) Input |
| Pt 100 RTD (4 Pole) Input | |
| Number of Channels | 4 |
| Operating Range | |
| Voltage/Temperature | ± 500 mV/-200...+850° C |
| Isolation | None |
| Number of Groups | 1 |
| Points per Group | 4 |
| Input Impedence | >10 M Ω |
| Resolution | 12 bit + sign |
| Accuracy | 0.4% of Full Scale |
| Conversion Time | |
| 50 Hz | 80 ms/channel |
| 60 Hz | 66 ms/channel |
| Power Required | |
| Internal | <50 mA @ 5 V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, FM, CE |

BADU-204
Wiring Diagram



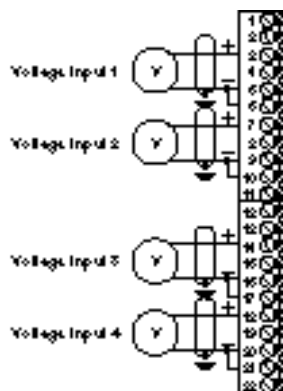
Analog Input Modules

Technical Specifications and Wiring Diagram

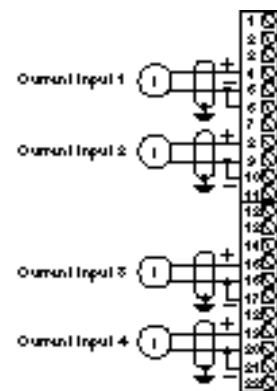
(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BADU-205 |
|---------------------------|------------------------------------|
| Description | Voltage/Current (2 Pole) Input |
| Number of Channels | 4 |
| Operating Range | |
| Voltage/Current | $\pm 10\text{ V}/\pm 20\text{ mA}$ |
| Isolation | None |
| Number of Groups | 1 |
| Points per Group | 4 |
| Input Impedance (Voltage) | 50 k Ω |
| Input Impedance (Current) | 50 Ω |
| Resolution | 12 bit + sign |
| Accuracy | 0.5% of Full Scale |
| Conversion Time | |
| 50 Hz | 80 ms/channel |
| 60 Hz | 66 ms/channel |
| Power Required | |
| Internal | <50 mA @ 5 V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, FM, CE |

BADU-205
Wiring Diagram
Voltage Mode



BADU-205
Wiring Diagram
Current Mode



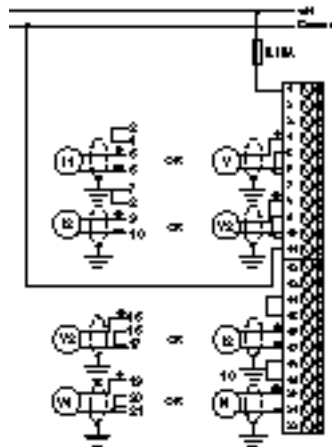
Analog Input Modules

Technical Specifications and Wiring Diagram

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BADU-206 |
|--------------------|---|
| Description | Voltage/Current (2 Pole) Input |
| Number of Channels | 4 |
| Operating Range | |
| Voltage | $\pm 1, \pm 10$ Vdc, 0...1, 0 ...10, 0.2...1 2.0...10 Vdc |
| Current | $\pm 20, 4...20, 0...20$ mA |
| Isolation | Channel - Bus: 500 V Channel - External Supply: 500 V Channel - Channel: None |
| Number of Groups | 1 |
| Points per Group | 4 |
| Input Impedance | |
| Voltage | >1 M Ω |
| Current | 50 Ω |
| Resolution | 11 bit + sign |
| Accuracy | 0.4% of Full Scale Voltage 0.56% of Full Scale Current |
| Conversion Time | 10 ms for all channels, Max. |
| Power Required | |
| Internal | <100 mA @ 5 V |
| External | <100 mA @ 24 V |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .725 lbs (.33 kg) |
| Agency Approvals | UL, CSA, FM, CE |

BADU-206
Wiring Diagram



Note:

Module requires PC-(A or E)984-xxx or
Micro 512/612 controller for operation.

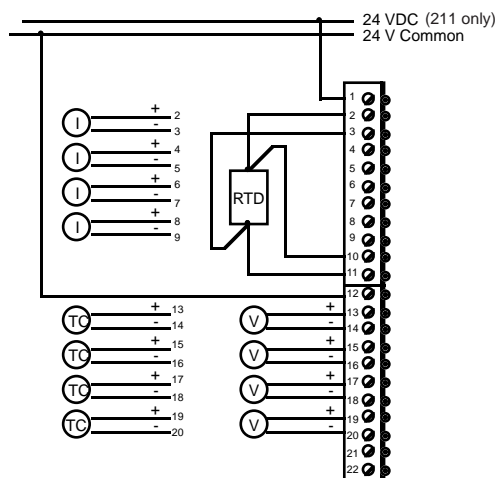
Analog Input Modules

Technical Specifications and Wiring Diagram

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BADU-211 | BADU-212 |
|-------------------------------|---|---|
| Description | Universal Analog Input Thermocouple, RTD, Voltage, & Current | |
| Operating Range | Thermocouple types: J, K, T, E, R, S, & B RTD: 3- or 2/4-wire, 100 Ω , 385 or 392 alpha Bipolar Voltage: 50, 500, 2000, 5000, & 10000 mVdc Current: 4 - 20 & \pm 20 mA | All current specs are identical except as noted below. |
| Isolation | Channel - Common: Opto-Coupler (500 V) Channel - Channel: 30 V | |
| Number of Groups | 2 | |
| Points per Group | Up to 4 thermocouple, voltage, or current inputs or 1 RTD input in either group | |
| Resolution | Up to 16-bit | |
| Accuracy | Thermocouple: \pm 1.2° C (Type E), \pm 1.5° C (Type J), \pm 3.0° C (Type T), \pm 1.5° C (Type B), \pm 7.0° C (Types S, R), CJC accuracy \pm 1.7° C typ RTD: \pm 0.40° C Voltage: \pm 0.11% ... \pm 0.40% of Full Scale Current: \pm 0.20% of Full Scale Total accuracy is the sum of error for all components in the circuit. | |
| Nominal Single-Channel Update | (Integration time x 1.5) + 10 msec Available integration times are 33.3, 40, 50, 60, 100, & 200 msec | |
| Power Required | | |
| Internal | <1mA (TTL Loading) | 450 mA nominal/600 mA max |
| External | 4 VA @ 20 - 30 V (200 mA maximum) | Not required |
| Dimensions | | |
| Space Required | 1 Slot | |
| Weight | 0.8 lbs (0.36 kg) | |
| Agency Approvals | CE, UL, CSA, FM | |

**BADU-211, 212
Wiring Diagram**



Note:

A software loadable driver (SW-IODR-001) is required for proper operation.

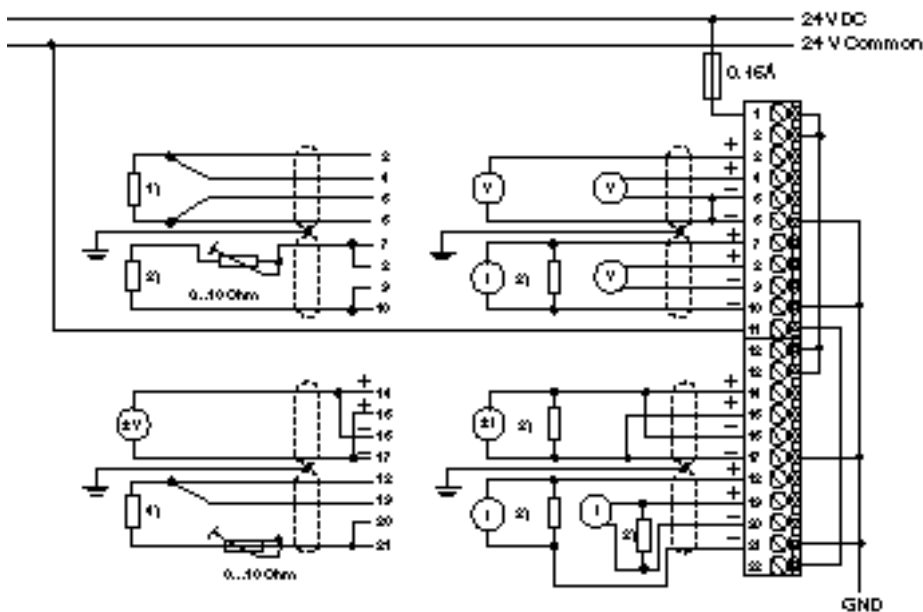
Analog Input Modules

Technical Specifications and Wiring Diagram

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BADU-214 |
|--------------------|--|
| Description | Voltage/Current/RTD/Resistance Input |
| Number of Channels | 4 Four Wire/8 Two Wire or Combinations |
| Operating Ranges | |
| Voltage | 0...0.5, 0...1, 0...5, 0...10V, 0.1...0.5, 0.2...1, 1...5, 2...10V, ± 0.5 , ± 1 , ± 5 , ± 10 V |
| Current | 0...5, 0...10, 0...20 mA, 1...5, 2...10, 4...20 mA, ± 5 , ± 10 , ± 20 mA |
| RTD Temperature | -160/-60...+160°C, -200...+320°C, -200...+640°C |
| Resistance | 0...100, 0...200, 0...500, 0...1000, 0...2000 Ω |
| Isolation | None |
| Number of Groups | 1 |
| Points per Group | 4...8 |
| Input Impedance | |
| Voltage | >1 M Ω |
| Current | 50 or 100 Ω via external resistor |
| RTD | >1M Ω |
| Resistance | >1M Ω |
| Resolution | .003% to .3% of final value |
| Accuracy | |
| Voltage | ± 0.01 ... ± 0.35 depending on range |
| Current | ± 0.01 ... ± 0.35 depending on range |
| RTD | 0.3...1.6°C depending on range, not including detector error |
| Resistance | 0.1...0.3% depending on range |
| Conversion Time | 300 ms for all inputs |
| Power Required | |
| Internal | <100 mA @ 5 Vdc |
| External | <150 mA @ 24 Vdc |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, CE |

BADU-214
Wiring Diagram



- 1) Four-wire RTD (Pt100...1000, Ni 100...1000) or resistance (0...2000 Ω)
- 2) External reference resistance 50 or 100 Ω , 0.1%, 0.125 W for current measurement
- 3) Two-wire RTD (Pt 100...1000, Ni 100...1000) with 10 Ω compensation
- 4) Three-wire RTD (Pt 100...1000, Ni 100...1000) with 10 Ω compensation

Note:

A software loadable driver (SW-IODR-001) is required for proper operation.

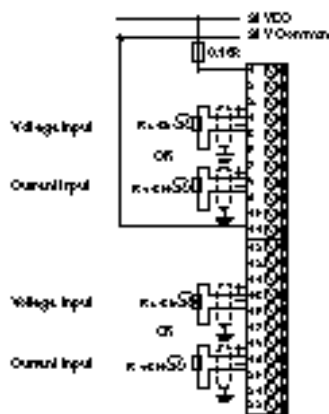
Analog Output Modules

Technical Specifications and Wiring Diagram

(Reference 890 USE 109 00 for Complete Specifications)

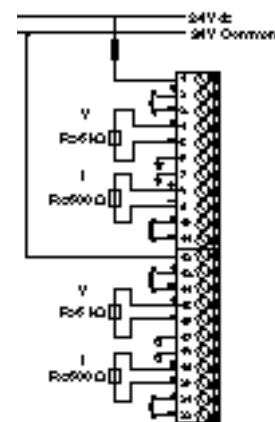
| Specification | BDAU-202 |
|--------------------|--|
| Description | Voltage/Current Output (2 Pole) |
| Number of Channels | 2 |
| Operating Range | |
| Voltage/Current | $\pm 10 \text{ V} / \pm 20 \text{ mA}$ |
| Isolation | Channel - Channel: 700V Channel - Bus: 700V |
| Number of Groups | 2 |
| Points per Group | 1 |
| Input Impedence | $< 500 \Omega @ \pm 20 \text{ mA}$ $> 5 \text{ K}\Omega @ \pm 10 \text{ V}$ |
| Data Range | 0...4000 Counts |
| Resolution | 11 bit + sign |
| Accuracy | $\pm 0.4\%$ of Full Scale |
| Output Error Range | $\pm 0.6\%$ @ 0...60°C |
| Conversion Time | 1 ms/channel typical |
| Power Required | |
| Internal | 60 mA @ 5 V |
| External | 150 mA @ 24 Vdc |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CSA, FM, CE |

BDAU-202
Wiring Diagram



| Specification | BDAU-204 |
|--------------------|---|
| Description | Voltage/Current Output (2 Pole) |
| Number of Channels | 4 |
| Operating Range | |
| Voltage | Bipolar: $\pm 1, \pm 5, \& \pm 10 \text{ Vdc}$ Unipolar: 0...1, 0...5, & 0...10 Vdc |
| Current | Unipolar: 0...20 & 4...20 mA |
| Isolation | Channel 1,2 - Channel 3, 4: $\geq 500 \text{ Vdc}$ Channel - Bus: $\geq 500 \text{ Vdc}$ |
| Number of Groups | 2 |
| Points per Group | 2 |
| Impedence | Current: $< 500 \Omega @ \pm 20 \text{ mA}$ Voltage: $> 5000 \Omega @ \pm 10 \text{ V}$ |
| Resolution | 12 bit |
| Display Format | 12-bit unsigned count (0...4095) |
| Accuracy @ 25°C | $\pm 0.2\%$ of Full Scale |
| Linearity | $\pm \text{LSB}$ |
| Conversion Time | $< 5 \text{ ms}$ per channel |
| Fault Detection | Open circuit in current mode |
| Power Required | |
| Internal | $< 1 \text{ mA}$ (TTL Loading) |
| External | 200 mA @ 24 Vdc |
| Dimensions | |
| Space Required | 1 slot |
| Weight | .5 lbs (.22 kg) |
| Agency Approvals | UL, CUL, FM, CE |

BDAU-204
Wiring Diagram
Counting



Note:

A software loadable driver (SW-IODR-001) is required for proper operation.

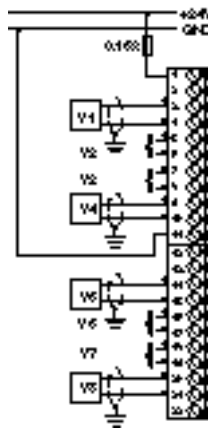
Analog Output Modules

Technical Specifications and Wiring Diagram

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BDAU-208 |
|----------------------------|----------------------------|
| Description | Voltage Output (2 Pole) |
| Number of Channels | 8 |
| Operating Range | ± 10 V |
| Isolation | |
| Channel to Bus | 700 V |
| Channel to External Supply | 700 V |
| Channel to Channel | None |
| Number of Groups | 1 |
| Points per Group | 8 |
| Load Impedence | >3.3 k Ω |
| Resolution | 11 bit + sign |
| Accuracy | 0.1% of Full Scale |
| Conversion Time | <1 ms for All Outputs |
| Power Required | |
| Internal | ≤ 30 mA @ 5 V |
| External | ≤ 120 mA @ 24 Vdc |
| Dimensions | |
| Space Required | 1 slot |
| Weight | 0.77 lbs (.35 kg) |
| Agency Approvals | UL, CUL, FM, CE |

**BDAU-208
Wiring Diagram**



Note:

Module requires PC-(A or E)984-xxx or
Micro 512/612 controller for proper operation.

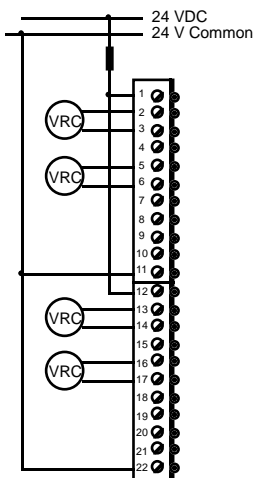
Intelligent Modules

Technical Specifications and Wiring Diagram

(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BVIC-2xx |
|------------------|--|
| Description | High-Speed Counter Variable Reluctance Coil Input (flowmeters, positive displacement meters, AC waveforms, etc.) TTL (5 Vdc) Input 12 Vdc Input 24 Vdc Input |
| Number of Points | 4 |
| Voltage Range | BVIC-200: VRC (0.025 Vac min...36 Vac Peak) BVIC-205: TTL (5 Vdc) BVIC-212: 12 Vdc BVIC-224: 24 Vdc |
| Frequency Range | VRC inputs: 0 - 10.0 kHz Vdc inputs: 0 - 25.0 kHz Minimum pulse width: 20 usec Overspeed: 12.5 kHz detection |
| Data Formats | Accumulated, scaled accumulated, rate (Hz) & scaled rate |
| Accuracy | Accumulated data: ± 1 count Rate data: $\pm 0.10\%$ of full scale ± 1 count |
| Power Required | |
| Internal | <1 mA @ 5 Vdc (TTL Loading) |
| External | 1.68 VA @ 20 - 30 V (90 mA maximum) |
| Dimensions | |
| Space Required | 1 Slot |
| Weight | .7 lbs (.30 kg) |
| Agency Approvals | UL, CE, CSA, FM |

**BVIC-2xx
Wiring Diagram**



Note:

A software loadable driver (SW-IODR-001) is required for proper operation.

Intelligent Modules

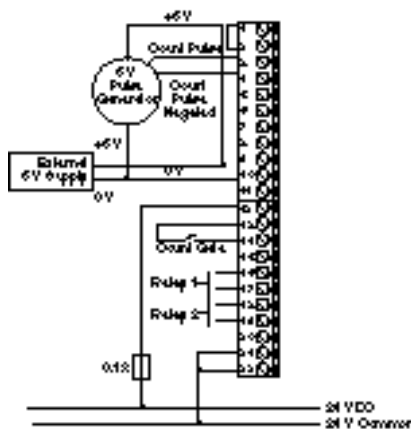
Technical Specifications and Wiring Diagram

(Reference 890 USE 109 00 for Complete Specifications)

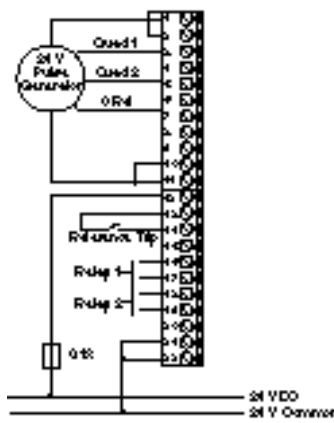
Specification

| | | |
|-------------------|--|-----------------|
| Description | Counter/Positioner with 2 Relay Outputs (NO) | |
| Number of Points | 1 Counter/1 Gate | 2 Relay Outputs |
| Operating Voltage | 5/24 V Count Signal | 24 - 60 Vdc |
| | 24 Vdc Count Gate | 24 - 250 Vac |
| Isolation | | Relay contact |
| Counter Type | Pulse or Quadrature | |
| Count Frequency | | |
| 5 V | 500 kHz | |
| 24 V | 50 kHz | |
| Number of Groups | 1 | 1 |
| Points per Group | 1 | 2 |
| Wetting Current | | 5 mA |
| Response Time | 4 ms (Gate) | 10 ms typical |
| Power Required | | |
| Internal | ≤ 100 mA @ 5 V | |
| External | 30 mA @ 24 V | |
| Dimensions | | |
| Space Required | 1 slot | |
| Weight | .7 lbs (.3 kg) | |
| Agency Approvals | UL, CSA, FM, CE | |

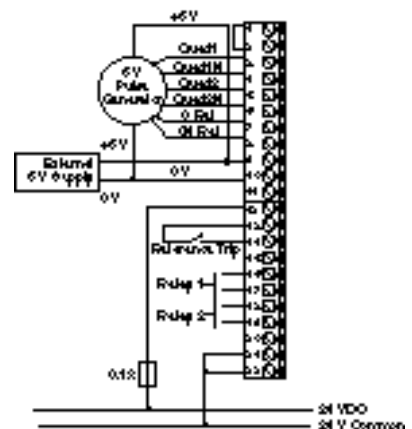
BZAE-201
Wiring Diagram
Counting



BZAE-201
Wiring Diagram
Positioning (24V)



BZAE-201
Wiring Diagram
Positioning (5V)



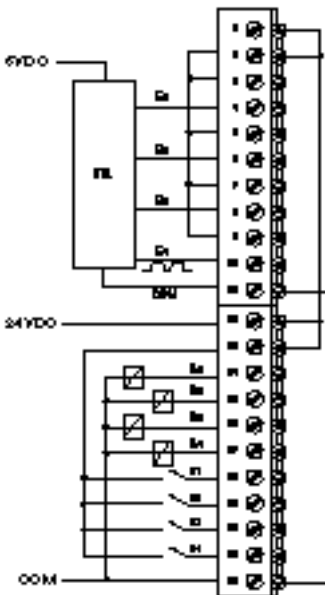
Intelligent Modules

Technical Specifications and Wiring Diagram

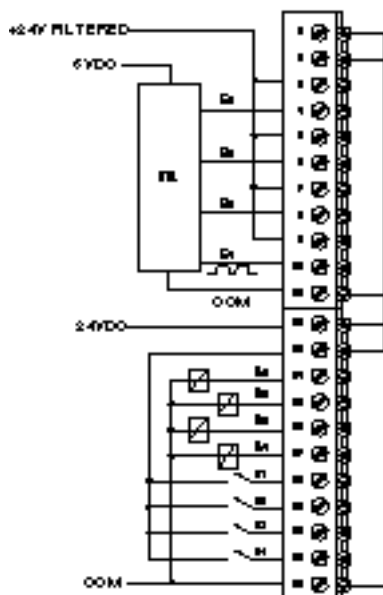
(Reference 890 USE 109 00 for Complete Specifications)

| Specification | BZAE-204 | |
|--------------------|--|-----------------|
| Description | High Speed Counter with 24 Vdc Outputs | |
| Number of Points | 4 Counters/4 Gates | 4 Outputs |
| Operating Voltage | 5/24 V Count Signal | 24 Vdc |
| Isolation | Optocoupler | Semiconductor |
| Counter Type | Pulse | |
| Count Frequency | 1 kHz (10kHz on input 1 @ 5 Vdc) | |
| 5 V | 1 kHz | |
| 24 V | 1 kHz | |
| Number of Groups | 1 | 1 |
| Points per Group | 4 | 4 |
| ON Current (Cont.) | | |
| Max. per Point | | .5 A |
| Max. per Group | | 1 A |
| Max. per Module | | 1 A |
| Current | ≤ 2.5 mA / 7 mA | 500 mA |
| Leakage Current | | 1 mA |
| Response Time | 4 ms (Gate) | <1 ms |
| Power Required | | |
| Internal | < 100 mA @ 5 V | 10 mA @ + 5 Vdc |
| External | Count Inputs | 25 mA @ 24 Vdc |
| | Count Inputs | 25 mA @ 24 Vdc |
| | Gate Inputs | 30 mA @ 24 Vdc |
| | Outputs | 1A @ 24 Vdc |
| Dimensions | | |
| Space Required | 1 slot | |
| Weight | .7 lbs (.3 kg) | |
| Agency Approvals | UL, CSA, FM, CE | |

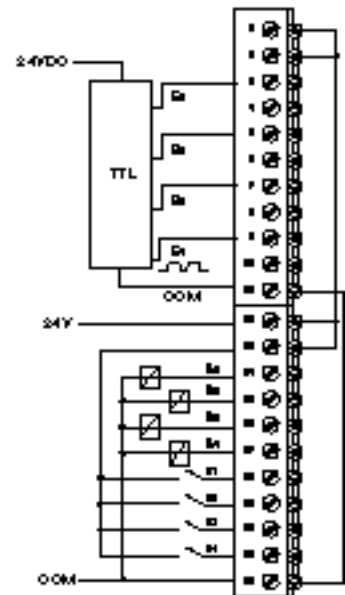
BZAE-204
Wiring Diagram
5 V Inputs



BZAE-204
Wiring Diagram
5 V Inputs (High Interference)



BZAE-204
Wiring Diagram
24 V Inputs



Motion Modules

Technical Specifications*

MOT-20x Motion Module Technical Specifications

Motion

| | |
|----------------------------|---|
| Absolute Positioning Range | 2 ³² bits; in., mm, or other units |
| Speed Range | 2 ³² to 1; counts/sec, in/sec, mm/sec, RPM, etc. |
| Digital Servo Loop | |
| Position Loop Update | 1 msec |
| Velocity Loop Update | 0.5 msec |
| Communication Update | 0.25 msec |
| Potentiometer Adjustments | None: Parameters set in software |

Feedback

| | |
|---------------------------------|---|
| Encoder (Two Channels) | Encoders supplied by customer Used for position and velocity |
| Type | Differential |
| Voltage | 5 volt ±20% |
| Impedance | 145 Ω, nominal |
| Frequency | |
| Nominal | 200 KHz |
| Maximum | 500 KHz |
| Input Multiplier | 4X |
| Maximum Speed | Encoder dependent, 2 MHz internal pulse rate max. |
| System Accuracy | Encoder dependent; 0.5 arcmin max. |
| Source Power Supplied by Module | 5 Vdc ±10% @ 75 mA max. |
| Resolver (-202 only) | Modicon "T" type brushless Used for position, velocity and commutation |
| Maximum Speed | 6,000 RPM, motor/drive dependent |
| Resolution | 65535 (16 bit) counts/revolution (max.) |
| System Accuracy | |
| Typical | ±10 arcmin |
| Worst Case | ±15 arcmin |
| Position Repeatability | ±3 arcmin |

Servo Interface

| | |
|---------------------|--|
| -201 | Bipolar current or velocity command (±10 V, 3 mA max., 12 bit resolution) for DC or hydraulic drives. |
| -202 | 3-phase bipolar commutated current command compatible with all Modicon Cyberline drives or Bipolar current or velocity command (±10 V, 3 mA max., 12 bit resolution) for DC or hydraulic drives. |
| Drive Enable Output | Form "C" relay contact, 30 Vdc @ 0.5 A resistive max. |
| Drive Fault Input | True High with internal pullup, TTL compatible |

I/O

| | |
|-----------------|-------------------------------------|
| Digital Inputs | 5 (24 Vdc, ±20%) |
| Digital Outputs | 1 (24 Vdc, ±20%, 150 mA max.) |
| Analog Output | ±10 V, 3 mA max., 12 bit resolution |

Communications

| | |
|---------------------|---|
| Communications Port | RS-232 serial, Modbus slave |
| Baud Rate | 300-9600 baud, software selectable (9600 default) |
| Connector | D9, female |
| Backplane | I/O bus, 6 input/6 output registers |

Power required

| | |
|--|---|
| Internal (Without encoder or Modbus Port Load) | 300 mA @ 5V (-201) 600 mA @ 5V (-202) |
| External | 24 Vdc, ±20% @ 200 mA max. (for I/O only) |

Dimensions

| | |
|------------------|--|
| Space Required | 1 slot (-201) 2 slots (-202) |
| Weight | 0.8 lbs (.36 kg) (-201) 1.4 lbs (.64 kg) (-202) |
| Agency Approvals | UL, CSA on MOT 201 & MOT 202, CE on MOT 201 only. |

Notes:

A software loadable driver (SW-IODR-001) is required for proper operation. Reference Chapter 5 for Motors, Drives, and Power Supplies for use with the BMOT-2xx Motion Modules.

* Reference Chapter 5 for wiring diagrams or 890 USE 109 00 for Complete Specifications.

MOT-201 Wiring Information

(Reference 890 USE 109 00 for Complete Wiring Diagrams)

| | | | | | |
|---|--|--|--|--|--|
| Discrete Wiring Connector (J1) <u>Connector Pin</u> | | Included in bezel <u>Function</u> | Encoder Feedback Connector (J4) <u>Connector Pin</u> | | Shielded AMP MT-type <u>Function</u> |
| 7 | | Analog output | 1 | | Encoder Power |
| 8 | | Analog output return | 2 | | + Phase A |
| 9 | | +5 Vdc | 3 | | + Phase B |
| 10 | | Encoder Power | 4 | | + Mark |
| 11 | | Encoder Power return | 5 | | |
| 13 | | 24 Vdc Power | 6 | | Key |
| 14 | | 24 Vdc Power | 7 | | - Phase A |
| 15 | | +Travel limit/Aux in 1 | 8 | | - Phase B |
| 16 | | - Travel limit/Aux in 2 | 9 | | - Mark |
| 17 | | Home/Aux in 3 | 10 | | Encoder Power return |
| 18 | | Jog - / Aux in 4 | | | |
| 19 | | Jog + /Aux in 5 | | | |
| 20 | | Aux 1 output | | | |
| 21 | | 24 Vdc Common | | | |
| 22 | | 24 Vdc Common | | | |
| Modbus Connector (J2) <u>Connector Pin</u> | | D-sub type, female <u>Function</u> | Encoder Feedback Connector (J5) <u>Connector Pin</u> | | Shielded AMP MT-type <u>Function</u> |
| 1 | | Shield | 1 | | Encoder Power |
| 2 | | Receive | 2 | | + Phase A |
| 3 | | Transmit | 3 | | + Phase B |
| 4 | | DTR | 4 | | + Mark |
| 5 | | Ground | 5 | | |
| 6 | | DSR | 6 | | Key |
| 7 | | RTS | 7 | | - Phase A |
| 8 | | CTS | 8 | | - Phase B |
| 9 | | +5Vdc | 9 | | - Mark |
| | | | 10 | | Encoder Power return |
| Drive Connector (J3) <u>Connector Pin</u> | | Shielded AMP MT-type <u>Function</u> | | | |
| 1 | | +Velocity command | | | |
| 2 | | Common | | | |
| 3 | | - Velocity command | | | |
| 4 | | Drive fault return (Remote common) | | | |
| 5 | | Drive fault input | | | |
| 6 | | Drive enable contact (NC) | | | |
| 7 | | Drive enable contact (NO) | | | |
| 8 | | Drive enable common | | | |
| 9 | | Common | | | |
| 10 | | Key | | | |

MOT-202 Wiring Information

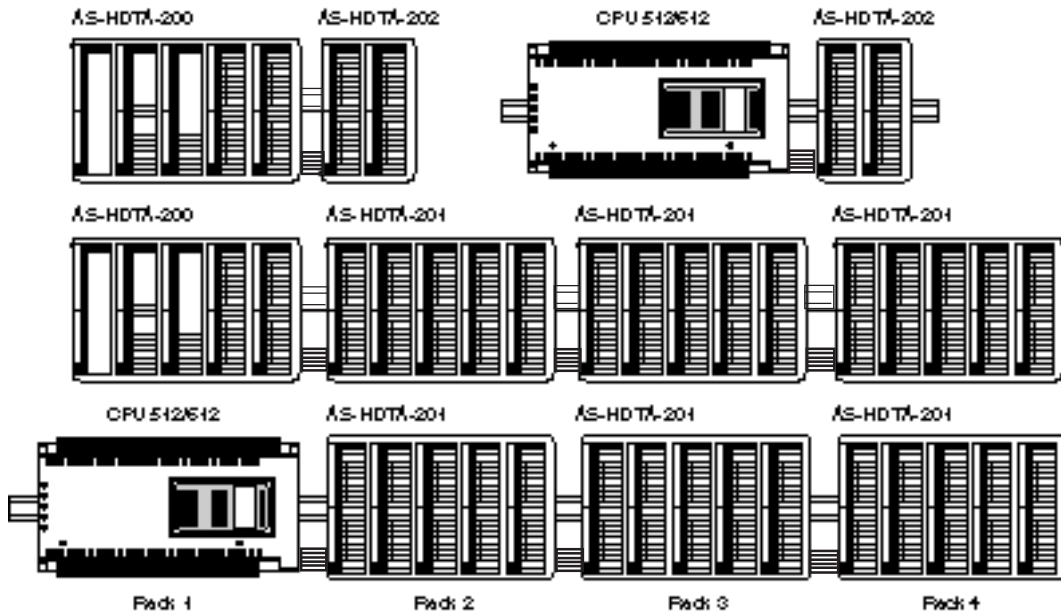
(Reference 890 USE 109 00 for Complete Wiring Diagrams)

| | | | | | |
|--|-------------------------|--|---|----|--|
| Discrete Wiring Connector (J1) <u>Connector Pin</u> | | included in bezel <u>Function</u> | Drive Connector (J6) <u>Discrete Wiring Connector (J8)</u> | | Shielded AMP MT-type <u>Included in bezel</u> <u>Function</u> |
| 7 | Analog output | J6 Pin | J8 Pin | 1 | Phase A current command |
| 8 | Analog output return | 1 | 1 | 2 | Phase B current command |
| 9 | +5 Vdc | 2 | 2 | 3 | Phase C current command |
| 10 | Encoder Power | 3 | 3 | 4 | Remote common |
| 11 | Encoder Power return | 4 | 4 | 5 | Drive fault input |
| | | 5 | 5 | 6 | Drive enable contact (NC) |
| 13 | 24 Vdc Power | 6 | 6 | 7 | Drive enable contact (NO) |
| 14 | 24 Vdc Power | 7 | 7 | 8 | Drive enable common |
| 15 | + Travel limit/Aux in 1 | 8 | 8 | 9 | Common |
| 16 | - Travel limit/Aux in 2 | 9 | 9 | 10 | Shield |
| 17 | Home/Aux in 3 | | | | Key |
| 18 | Jog - / Aux in 4 | 10 | 10 | | |
| 19 | Jog + /Aux in 5 | | | | |
| 20 | Aux 1 output | | | | |
| 21 | 24 Vdc Common | | | | |
| 22 | 24 Vdc Common | | | | |
| Modbus Connector (J2) <u>Connector Pin</u> | | D-sub type, female <u>Function</u> | Resolver Feedback Connector(J7) <u>Discrete Wiring Connector (J8)</u> | | Shielded AMP MT-type <u>Included in bezel</u> <u>Function</u> |
| 1 | Shield | J7 Pin | J8 Pin | 2 | Reference output high |
| 2 | Receive | 2 | 12 | 7 | Reference output low |
| 3 | Transmit | 7 | 13 | 4 | Shield |
| 4 | DTR | 4 | 14 | 3 | Sine input high |
| 5 | Ground | 3 | 15 | 8 | Sine input low |
| 6 | DSR | 8 | 16 | | Shield |
| 7 | RTS | | 17 | 5 | Cosine input high |
| 8 | CTS | 5 | 18 | 10 | Cosine input low |
| 9 | +5Vdc | 10 | 19 | 1 | Thermistor input high |
| | | 1 | 20 | 6 | Thermistor input low |
| | | 6 | 21 | 9 | Key |
| | | 9 | | | |
| Encoder Feedback Connector (J4) <u>Connector Pin</u> | | Shielded AMP MT-type <u>Function</u> | | | |
| 1 | Encoder Power | | | | |
| 2 | + Phase A | | | | |
| 3 | + Phase B | | | | |
| 4 | + Mark | | | | |
| 5 | | | | | |
| 6 | Key | | | | |
| 7 | - Phase A | | | | |
| 8 | - Phase B | | | | |
| 9 | - Mark | | | | |
| 10 | Encoder Power return | | | | |
| Encoder Feedback Connector (J5) <u>Connector Pin</u> | | Shielded AMP MT-type <u>Function</u> | | | |
| 1 | Encoder Power | | | | |
| 2 | + Phase A | | | | |
| 3 | + Phase B | | | | |
| 4 | + Mark | | | | |
| 5 | Key | | | | |
| 6 | | | | | |
| 7 | - Phase A | | | | |
| 8 | - Phase B | | | | |
| 9 | - Mark | | | | |
| 10 | Encoder Power return | | | | |

Modicon Micro and 984/A120 Compact Mounting Configurations

Modicon Micro and 984/A120 Compact A120 I/O Expansion

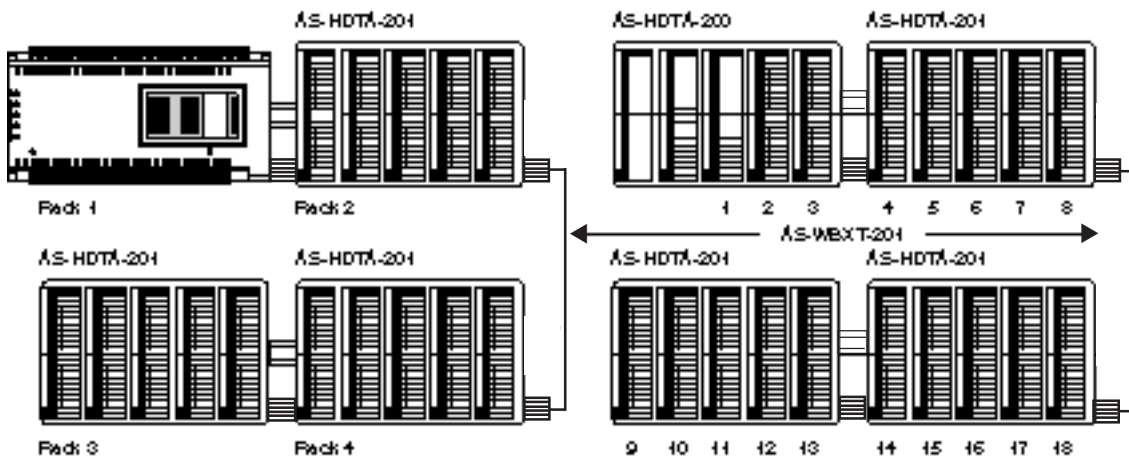
Linear Configurations



The AS-HDTA-200 (a.k.a. DTA 200) is the primary base plate for mounting 1 CPU and up to 3 I/O modules. The DTA 200 sub-rack or a Modicon Micro CPU 512/612 can be expanded by a maximum of three DTA 201 expansion sub-racks.

This allows expansion to the maximum of 18 I/O slots on the 984/A120 Compact and 15 on the Modicon Micro (256 discrete inputs/outputs, any mix). The DTA 202 expansion sub-rack provides two slots for I/O modules and must be the last rack in a 2, 3, or 4 rack linear system. (One DTA 202 sub-rack per system; only in a linear configuration.)

Tiered Configurations (Tiered configurations require the use of 1 AS-WBXT-201 Expansion Cable)



15 I/O Modules maximum

18 I/O Modules maximum

| Dimensions | Height | Width | Depth |
|-------------|--------|----------|-------|
| AS-HDTA-200 | 142 mm | 213.4 mm | 31mm |
| AS-HDTA-201 | 142 mm | 213.4 mm | 31mm |
| AS-HDTA-202 | 142 mm | 91.5 mm | 31mm |

Notes



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