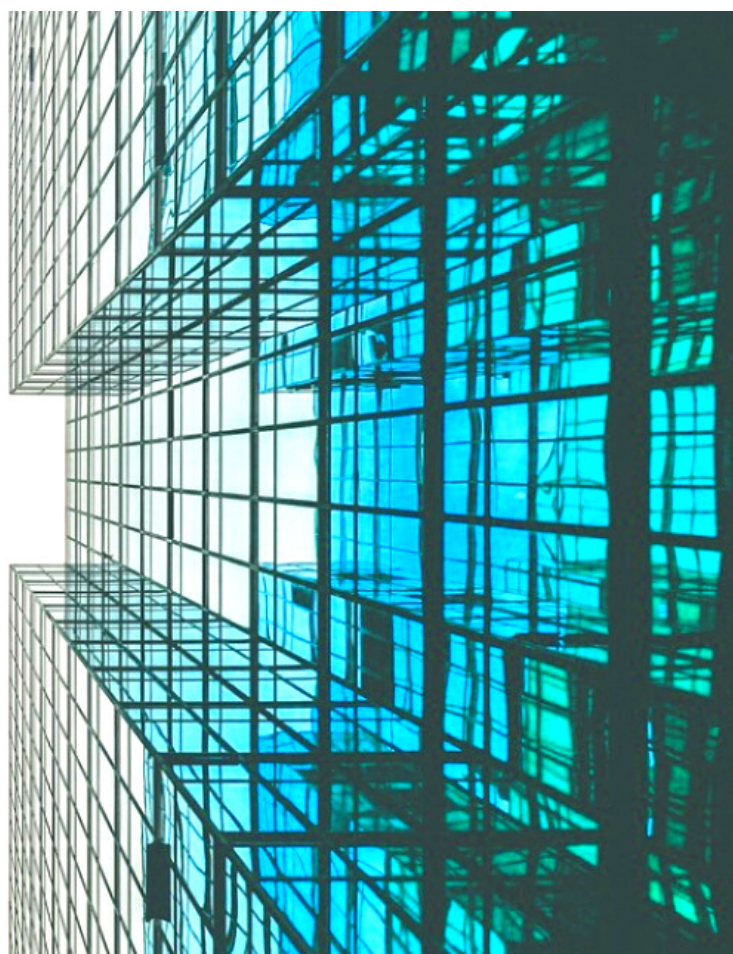


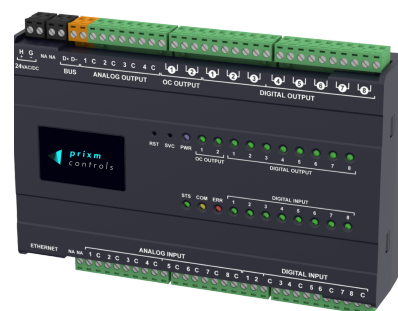


ARC D1 CONTROLLER

2021 CATALOGUE



THE ARC SERIES CONTROLLERS ARE RUGGED, NETWORK CENTRIC, HIGH PERFORMANCE MULTI-PROTOCOLS INPUT/OUTPUT CONTROLLERS TO ACCOMMODATE GENERAL AND SPECIFIC APPLICATIONS, FEATURING MODBUS (RS-485, TCP/IP) AND BACNET® (RS-485, IP AND ETHERNET) PROTOCOLS PLUS A BUILT-IN WEB SERVER FOR EASY CONFIGURATION



GENERAL FEATURES



Web Browser Configuration

Built-in Web server enables configuration with popular web browser over an Ethernet connection. I/O status can be monitored over the Internet connection.

Multi Protocols Support

Modbus and BACnet® are supported on the same controller which provides flexibility for implementation.

High-Speed Data Rates

Multiple serial communication (RS-485) speed selection from 9.6kbps to 76.8kbps. Supports Ethernet 10Base-T/100Base-T interface, half or full duplex.

As Bridge Controller

The controller (Modbus Version) can be configured as Bridge Controller providing a network bridge for Ethernet and serial communication (RS-485) via built-in protocol converter.

Device ID

Complementing existing standard protocols, the ARC Series Controllers can be uniquely identified over the network. This facilitates online network device search and simplify reconfiguration.

Network Security

All configurations changes are protected via password setting, either through standard network protocol access (BACnet®) or web browser.

Multiple Input/Output Type

The controller has eight (8) Digital Inputs, eight (8) Analogue Input for current, voltage, resistance and temperature sensor, eight (8) Digital Outputs (relay), four (4) Analogue Output (current and voltage), and two (2) isolated Open Collector outputs (with PWM control) for high speed switching.

High Accuracy Analogue Channels

High speed 14-bits A/D converter with programmable gain amplifier yields a high resolution and accuracy reading on analogue input points. 12-bits D/A provides more accurate analogue output control.

Programmable / Standalone Functionality

The controller can be configured to operate as standalone device. Over 40 types of programmable functions are available, typically thermostat, PID, scheduler, conversion, timer, utilities, totaliser and etc.

Online Help / Information

All related information/helps are available through the controller web server. Information such as registers details, wiring diagram, device specification and etc are provided to assist the user.

Status Indicator

Operational activity on each individual channel of DI, DO and Open Collector Outputs (PWM) are conveniently indicated by LED, so as the Power, Operation, Communication and Faults status

Reset & Broadcast Switch

A Reset Switch has been provided for system reset without power removal (Warm Start operation). The Broadcast Switch allows the controller to broadcast itself to the network during installation and implementation.

Online Firmware

Upgrade/Configuration

The controller firmware can be upgraded either through RS-485 or Ethernet connection. Network communication and operation parameters can be changed via RS-485/Ethernet with the built-in boot-loader and terminal program.

Robust System Operation

The controller has a built-in High Accuracy Real Time clock with backup battery. Software and hardware watchdog timer are provided for high reliability operation.

Ease of Installation

All I/Os are connected via field removable terminal block connectors for easy maintenance. The controller casing fits standard DIN rail mounting.

SPECIFICATIONS



Inputs & Outputs

Universal Input:

8 Channels (14 bits Resolution)

- Voltage: 0 – 10V ($\pm 0.005V$), 0 – 5V ($\pm 0.003V$)
- Current: 0 – 20mA ($\pm 0.01mA$), 4 – 20mA ($\pm 0.01mA$)
- Resistance: 0 – 30k ($\pm 10\Omega$), 0 – 10k ($\pm 5\Omega$), 0 – 1.5k ($\pm 1\Omega$)
- Thermistor: 10k, 10k Shunt, 1k Balco, 1k Platinum (All $\pm 0.01^{\circ}C$)

Analogue Output:

4 Channels (12 bits Resolution)

- Voltage: 0 – 10V ($\pm 0.003V$)
- Current: 0 – 20mA, 4 – 20mA (up to 800 Ω load) ($\pm 0.01mA$)

Digital Input:

8 Channels

- Type: Voltage Free
- Limit: +5V at 500 Ω maximum

Digital Output:

8 Channels

- Type: Relay Contacts, SPST NO, Pilot Duty
 - Max Rating: 5A, 250VAC/30VDC
 - Life expectancy Electrical: 200,000

Transistor Output:

2 Channels

- Type: Open Collector Output, Isolation 3.75KV
- Max Rating: 1A, 60V

Supply Connection & Environmental Limits

- Power Supply: 24VAC $\pm 5\%$ or 24 VDC $\pm 5\%$
- Consumption: 3.6VA max or 300mA max
- Operating Temperature: 32° to 150° F (0° to 65° C)
- Storage Temperature: -4° to 150° F (-20° to 65° C)
- Operating Humidity: 10% to 95% HR (non-condensed)

FUNCTION BLOCKS

Input & Output

1. Digital Input
2. Digital Output
3. PWM Control
4. Analogue Input
5. Analogue Output
6. Digital & Analogue Internal Register
7. Multi-state
8. Fan Control
9. Digital State Latch
10. Digital State Timer
11. Digital State Counter
12. Digital Input Expander

Loop/Process

13. Thermostat
14. Loop Control (PID)
15. Drive
16. Selection
17. Flow Detect
18. Momentary Start/Stop
19. Totaliser
20. Pulse Accumulator
21. Analogue Limit
22. Set Point Adjust
23. Digital Alarm
24. Analogue Alarm
25. Dew Point

Processor

- Cortex-M3 @ 100MHz
- Memory: RAM 4MB, Flash 4MB, EEPROM 64kB

Communication

Physical Interface 1 (Port 1):

- EIA-485 Standard (Bus A, B) two-wire
- Half Duplex
- Baud Rate Speed: 9.6k, 19.2k, 38.4k, 76.8k, 115.2k bit/s
- Data Bit: 8 bits
- Application Protocol: Modbus, BACnet® MSTP
- Multi-drop Capability: Yes (Hardware ID Setting)

Physical Interface 2 (Port 2):

- Ethernet 10/100 Base-T
- Ethernet Support: IP, TCP, UDP, ICMP, IGMP, FTP, HTTP
- Application Support: BACnet® IP, BACnet® Ethernet, Modbus

Status Indicators

- Power Status LED
- Operation Status LED
- Communication Status LED
- Error Status LED
- Digital Input, Digital Output & Transistor Output LEDs

Compliance

- EMC Directive 2004/108/EC
- FCC Part 15:2010, Subpart B, Class A
- UL: PAZX.E323947
- BTL Certified (Revision 14)

Mechanical

- Dimension: 187mm (L) x 129mm (W) x 45mm (H)
- Material: UL94 ABS
- Weight: 420g

Conversion

26. Digital to Analogue
27. Analogue to Digital
28. Analogue to Percentage
29. Percentage to Analogue
30. Scaling
31. Table Conversion

Schedule

32. Holiday
33. Scheduler
34. Optimum start/stop

Timer/Sequencer

35. Sequencer
36. Timer Function

Utilities

37. Logic
38. Counter
39. Mathematic
40. Digital Gate
41. Analogue Gate
42. Sample & Hold
43. Mixed Air Volume
44. Communication Monitoring

Others

45. Coil Output Register Binding
46. Holding register binding