

DDC Controllers

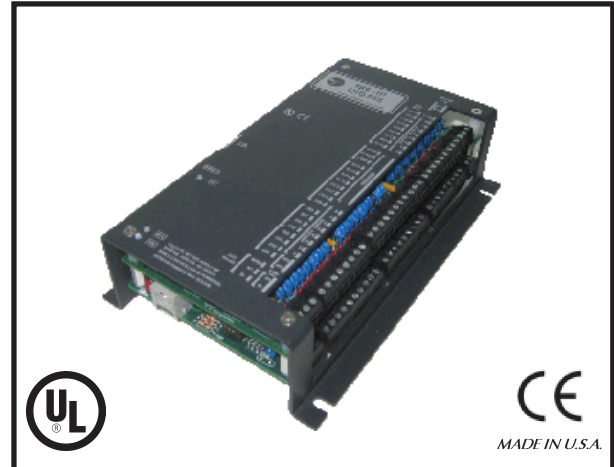
RZ IP-100

RZ's latest IP I/O Controller

The RZ IP-100 controller is a flexible and advanced IP based fully programmable distributed control module to be used in RZ Mediator applications.

From reading values to outputting voltages and much more, this powerful and flexible controller will exceed your expectations for an IP based I/O controller. The IP-100 distributed control module combines PerfectHOST's random logic Graphical programming with 40 to 96 I/O points, 2 active serial communication ports and numerous TCP/IP functions along with the ability to work in concert with the entire RZ product offering.

This versatile controller implements a complete range of automation functions and can easily be set up in a number of different hardware configurations — including host controller, VAV controller, or subnet bridge controller. In addition, any combination of three RZ digital expansion boards can be connected to the I/O expansion port. Through its main RS-485 port, the unit can share information on a peer-to-peer basis with other RZ controllers or third party devices. A second, selectable RS-485 or RS-232 port can act as a remote serial port for many Mediator based protocols. The TCP/IP feature can be used to integrate the IP-100 with the Mediator and fully merge the internal control functions with the Mediator Framework or it can be used in stand alone applications to deliver internal Alarms and TrendLogs to PerfectHOST or remote printers. Graphical Application Programming and User Interface are accomplished using the RZ Mediator/OMEGA and/or perfectHOST software.



MECHANICAL SPECIFICATIONS	
WEIGHT	29 oz.
DIMENSIONS	8.0"L X 6.0"W X 4.75"H
ENVIRONMENTAL REQUIREMENTS	32° to 140° deg F, 10% to 95% RH Non-Condensing
MOUNTING	Screw Terminals and removable wire headers - up to 18 Gauge max
CONNECTIONS	10-pin modular connection: RJ485 for Xport Ethernet
Add-on to RZ100	Max 6" between expansion I/O cards
Add-on I/O Bus	Up to 3 additional expansion I/O Boards per IP-100

Features

- 10/100 mbps TCP/IP communication with the RZ Mediator or RZ perfectHOST
- 8 12-bit analog inputs (selectable voltage and current ranges)
- 8 analog outputs (0-24 VDC, up to 20 ma per output. Also PWM)
- 16 digital inputs (24 VDC/VAC opto-isolated inputs)
- 8 digital outputs (Normally Open relay contacts)
- Point count expandable up to 48 additional I/O with expansion boards
- RS-485 Local-Area Network (LAN) to support any other RZ Peer controllers
- RS-232 or RS-485 auxiliary port to support third party protocol (i.e. Modbus)
- Seamless integration with other Richards-Zeta products
- Transient protection for all I/O points
- Continuous self-diagnostics with sanity indicator
- On-board trending and alarms
- Paging and Email support

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Applications

- small box retail stores for HVAC, Lighting, Metering, etc.
- Stand-alone HVAC control, VAV, AHU, & fan control
- Random custom logic control via powerful graphical programming ~perfectHOST
- Data acquisition

INPUT CONFIGURATION SETTINGS

Types

Three different types of resistor packs come with the IP-100. They are labeled on top of the resistor pack, and have the following resistances:

- 000 = Shunt (0 ohm resistor)
- 101 = 100 ohm resistors
- 102 = 1000 ohm resistors

Configuration: All Inputs

The three resistor packs are arranged in resistor sockets RP2 and RP3 to configure all of the inputs on the control board

Configuration: Individual Inputs

When two different kinds of inputs are required on an IP-100, configure the board for 10K thermistors (Configuration #1). Then configure the inputs that are not 10K thermistors as follows (Example A below corresponds to A in the diagram above):

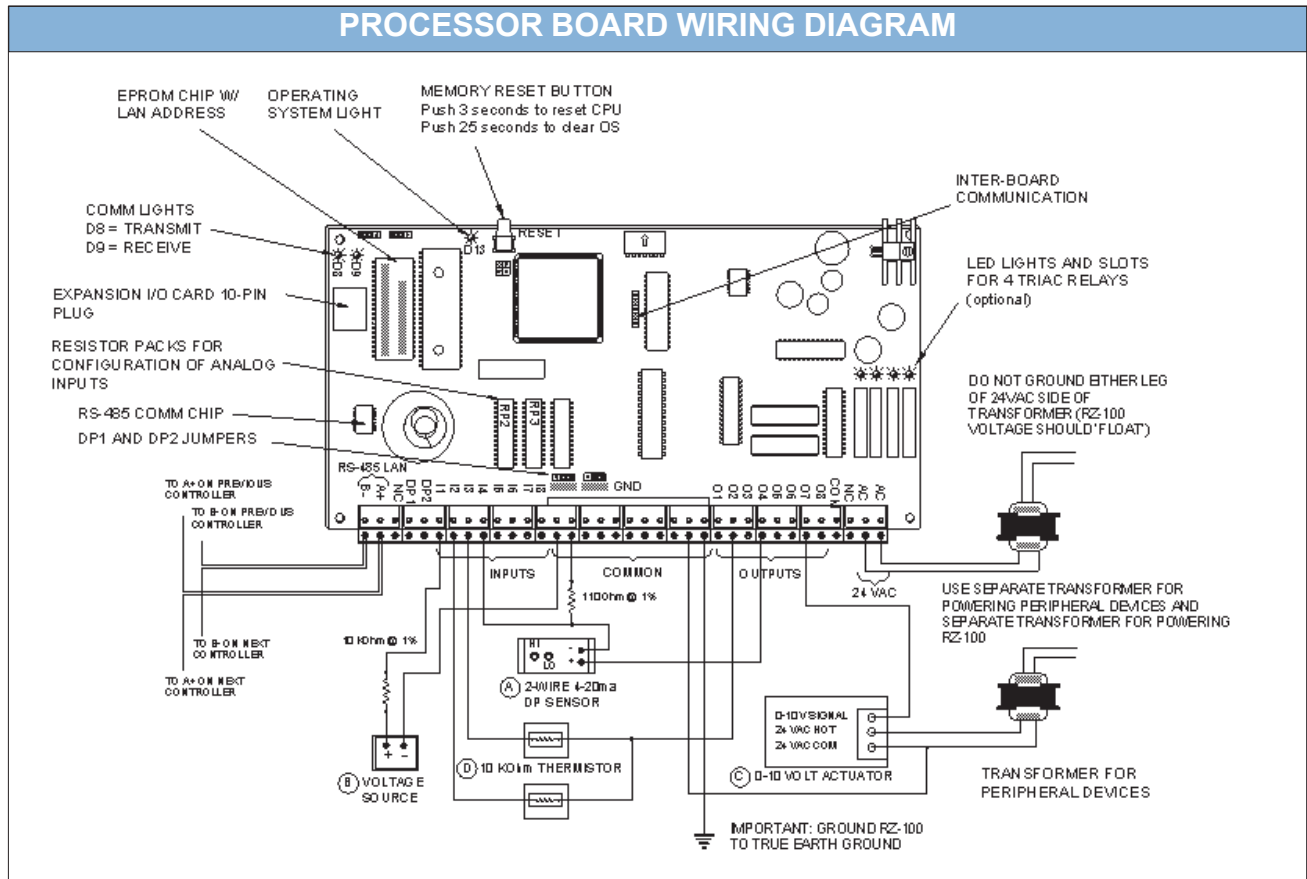
Note: The board is calibrated with the resistor packs that it comes with. Trading these with the resistor packs of another controller will cause the board to produce inaccurate values. Keep the resistor packs with the controller with which they came.

ELECTRICAL SPECIFICATIONS	
POWER	
Supply Voltage	24 vac +/- 10% 60 Hz Class II, Floating 500mA
Supply Current	500 mA
INPUTS	
Voltage Range	0 to 24 VDC, 0 to 24 VDC (adjustable)
Pulse Counting	0.5 Hz on RZ100-E Analog Input, 8 Hz on 1st expansion boards Digital Input
OUTPUTS	
Voltage Range	0 to 24 VDC - Option: Triac Relays on outputs #5-#8. Triacs switch 24 VAC loads (triacs can only switch AC) at a maximum 2 amps
Current Range	20 mA maximum
Resolution	8 bits or 0.03 seconds PWM mode
BAUD RATE	9600 or 19,200
MEMORY	128K RAM (expandable to 256K), 64K EPROM, 128K EPROM, FLASHROM Option
REAL TIME CLOCK	Synchronized th 50 or 60 Hz line, Optional Battery Powered RTC for stand-alone applications
BATTERY BACKUP	3 weeks with Super Capacitor

- 4-20 mA (2-WIRE CURRENT DEVICE) Input: Attach a 110 Ohm (1%) resistor in parallel with an input and ground. Avoid using a 3-wire current device with an IP-100 unless the device is known to be full-wave rectified.
- 0-24 VDC (VOLTAGE SOURCE) Input: Attach a 10 K Ohm (1%) resistor in series with an input (see B).

	RP2	RP3
#1: 10K Thermistor Type III, 5K-50K Ohms, 0-2.5 vdc @ 1000 Ohm Impedance	000	102
#2: 4-20 mA, 1k Ohm RTD, 500-5k Ohms, 0-2.5vdc@ 100 Ohm Impedance	000	101
#3: 0-24 vdc	102	101
#4: 0-2.4 vdc	000	BLANK

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Other Wiring Examples

- C. 3-WIRE DAMPER MOTOR:** Devices requiring analog DC voltages, such as a 0-10 volt damper motor, should be powered by a separate transformer. In some instances, it is acceptable to run a device requiring a constant AC voltage, such as a drive open/drive closed damper motor, off of the same transformer that powers the IP-100.
- D. 10 K Ohm THERMISTORS:** A device that is powered or receives excitation voltage from the IP-100, such as a thermistor, can share the excitation with other devices, thereby saving an output. The signal processing is taken care of through software — i.e., using split templates in the *perfectHOST* program.

Note: Total current draw should not exceed 20 mA per output.

JUMPER SETTINGS

: J01 is factory-set — do not change

J02		Allows eeprom to be written		Prevents eeprom from being written
CLR MEM OPTION		Sets board timing from optional real time clock (RTC)		Sets board time from 60 Hz power line
DP1		Input #1: runs in normal analog mode		Input #1: divides the voltage of the incoming signal by 2
DP2		Input #2: runs in normal analog mode		Input #2: divides the voltage of the incoming signal by 2

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OTHER RZ IP-100 SETTINGS

Miscellaneous Terminal Block Connections:

DP1: For differential pressure sensor #1

DP2: For differential pressure sensor #2

O5-O8: Analog Outputs or Triac Relay Outputs

COM: Common to other side of the 4 triacs

NC: No connection

Transmit, Receive, and Operating System (OS)

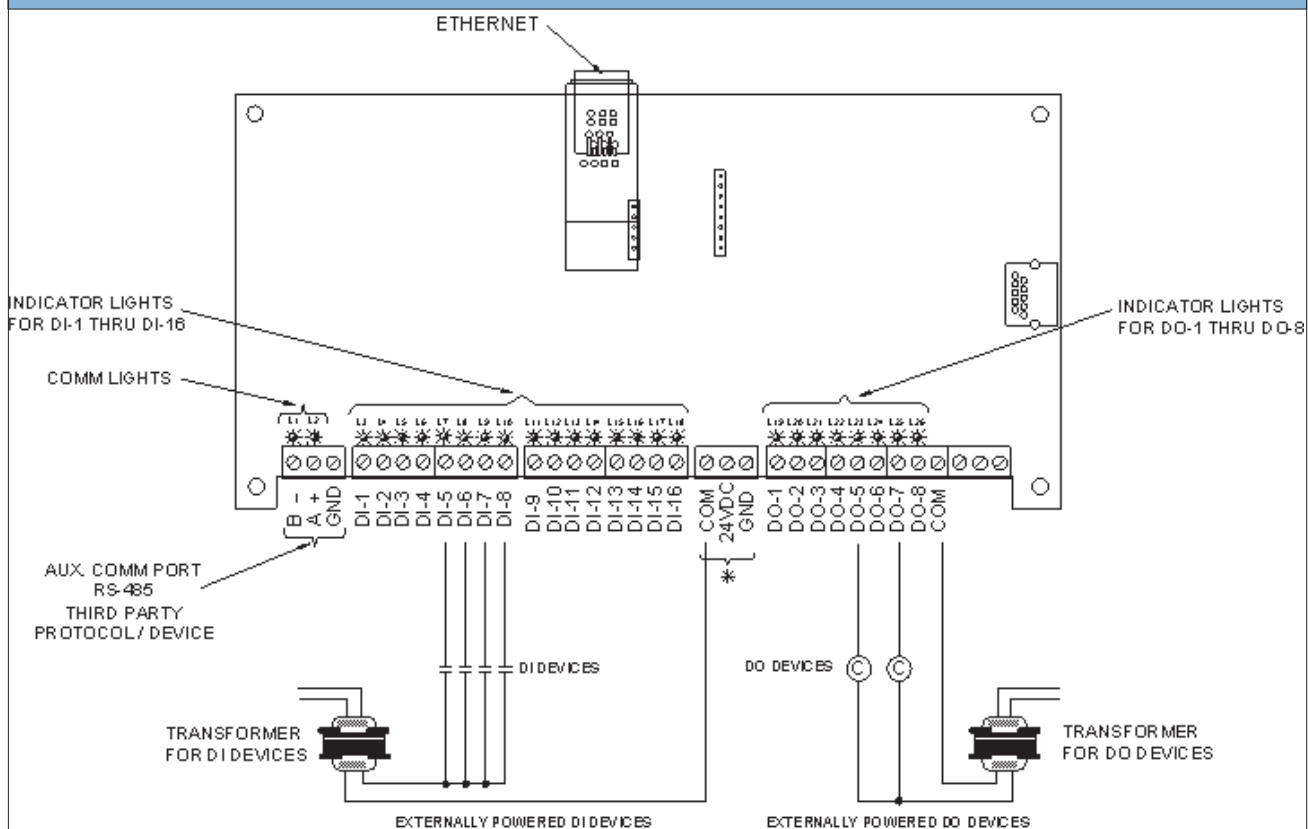
Light Patterns:

TRANSMIT: When an IP-100 sends a packet of information out onto the LAN, the TRANSMIT light blinks once. When it is connected to the LAN and is communicating properly, this light should blink quickly, but in short bursts.

RECEIVE: When the IP-100 is connected to the LAN and is communicating properly, the RECEIVE light should blink very rapidly for most of the time, without ever becoming solidly lit for long periods.

OPERATING SYSTEM (OS): When the board does not have its OS (i.e., is in *boot rom*) this light will blink on for 125 ms, off for 125 ms, on for 125 ms, and then off for 375 ms before it repeats the same cycle. When the board has its OS, the light blinks on for 125 ms and off for 125 ms, repeatedly.

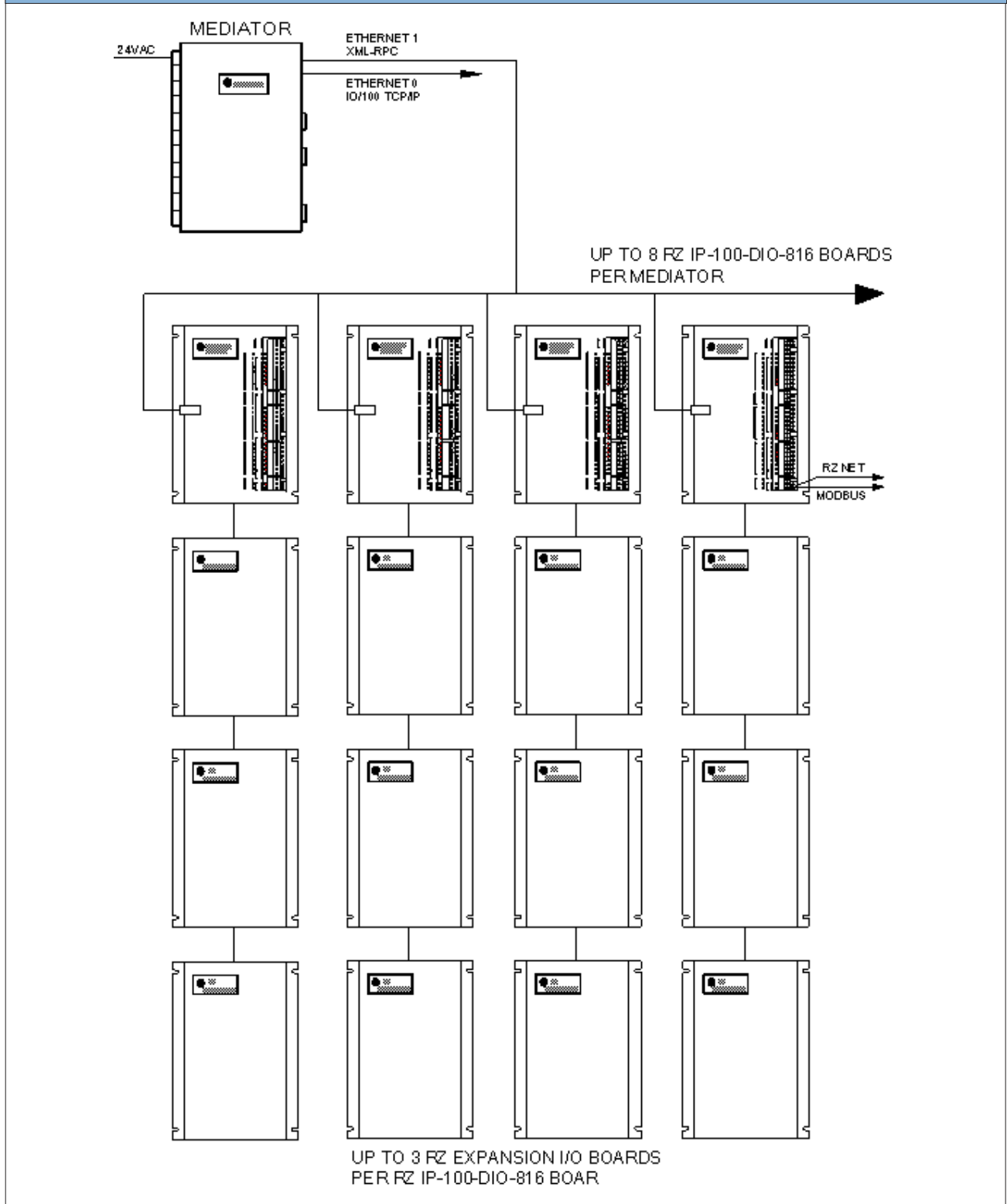
RZ IP-DIO-816 WIRING DIAGRAM



*TO INTERNALLY POWER THE DI AND DO DEVICES - INSTALL A JUMPER WIRE BETWEEN THE '24 VDC' TERMINAL AND THE 'COM' TERMINAL (next to the respective DI and DO terminal strips); THEN RUN A WIRE FROM THE RESPECTIVE 'GND' TERMINAL TO THE DI AND DO DEVICES. IMPORTANT: THE DIGITAL INPUTS ARE ALL POWERED EITHER INTERNALLY OR EXTERNALLY. THE SAME IS TRUE FOR THE DIGITAL OUTPUTS.

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RZ IP-100 SYSTEM ARCHITECTURE DRAWING



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Real-Time Clock (RTC) Chip

Left: Using a chip puller, remove the EPROM chip (it is the chip with the LAN address on it).

Middle: Install the real-time clock (RTC) chip into the socket, as shown. As with any socketed chip, to ensure a good connection, push chip firmly until it is flush in the socket.

Right: Insert the EPROM chip into the top of the RTC.

Jumper: Put jumper on top two pins of the **clr mem option** jumper.

RZ IP-100 INPUT/OUTPUT Expansion Board Options

Expansion Board Options: The adjacent table gives model numbers and point counts for the different IP-100 I/O expansion boards. Any combination, up to a maximum of 3 additional expansion boards, can be added to the IP-100.

Installation: The expansion boards are connected to the IP-100 in a daisy chain-style connection. Wiring diagrams, cable length restrictions, and jumper settings are available on the cut sheets for the individual expansion boards.

	DIGITAL OUTPUT			DIGITAL INPUTS		MISC
	8 TRIAC RELAYS	4 FORM C RELAYS	8 FORM C RELAYS	8 DIGITAL INPUTS	16 DIGITAL INPUTS	HAND OFF AUTO
RZ-DIO-48H		X		X		X
RZ-DIO-48		X		X		
RZ-DO-8H			X			X
RZ-DO-8			X			
RZ-DIO-88	X			X		
RZ-DI-16					X	