# 140CRA93X00 Quantum RIO Adapter Drop Single and Dual Channel Module

Overview

The Remote I/O Drop Single and Dual Channel modules are used to transfer data bi-directionally over a coaxial cable network between I/O modules installed in the same (RIO drop) backplane and the RIO head installed in the CPU backplane.

RIO Drop Module

The following figure shows the components of the Remote I/O (RIO) drop module. The specific module shown is the CRA93200.
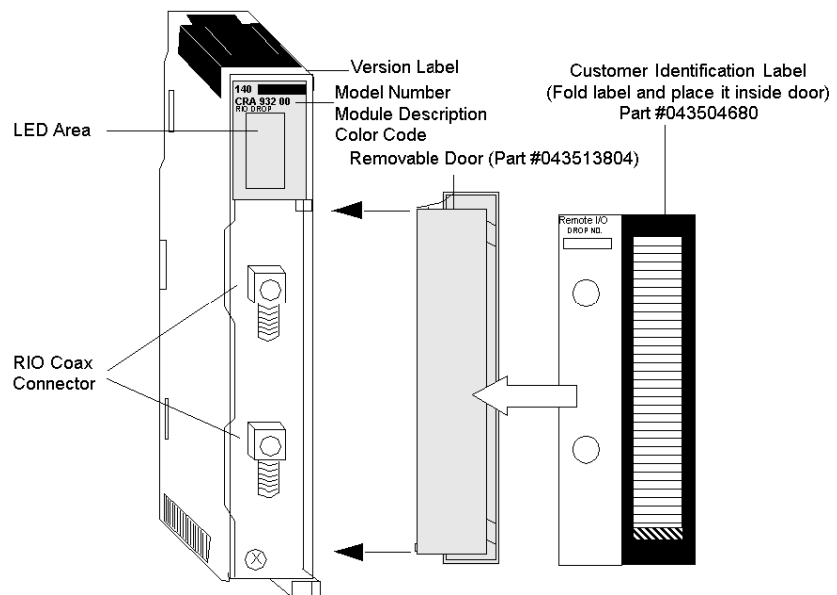
Specifications

The following table shows the specifications for the Remote I/O Drop Single and Dual Channel modules.

| Specifications		
I/O Type	Quantum	
Words/Drop	64 In / 64 Out	
Coax Termination	Internal 75 Ω	
Coax Shield	Capacitor to ground	
Data Transfer Rate	1.544 mb	
Dynamic Range	35 dB	
External Connections		
One Channel (CRA93100)	One "F" type female connector with a right angle adapter	
Two Channels (CRA93200)	Two "F" type female connectors with a right angle adapter	
General		
Holdup Time	Software configurable **Note:** In the event of a communication loss with the remote processor, this is the time that output modules will retain their last operating state. Input module data will be held in the system controlling CPU. After this time, output modules will assume their predefined time-out states, and inputs will be zeroed by the CPU.	
Diagnostics	**Power Up**	**Power Up and Runtime**
	Dual Port Memory Check	Executive Checksum
	LAN Controller Check	RAM Address/Data
Bus Current Required (Typical)	Single Channel: 600 mA	
	Dual Channel: 750 mA	
Power Dissipation (Typical)	Single Channel: 3 W	
	Dual Channel: 3.8 W	

⚠ CAUTION

Connection Compliance

To maintain CE compliance with the European Directive on EMC (89/336/EEC), the RIO Head module must be connected using quad shielded cable (see the Remote I/O Cable System Planning and Installation Guide, 890USE10100, V2.0).

Failure to follow these instructions can result in injury or equipment damage.

LED Indicators and Description

The following figure shows the LED indicators for the Drop module.
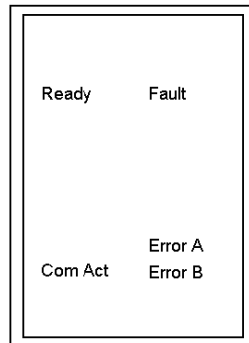
The following table shows the RIO Drop module LED descriptions.

LED Descriptions		
LEDS	**Color**	**Indication when On**
Ready	Green	The module has passed power-up diagnostics.
Com Act	Green	The module is communicating on the RIO network.
Fault	Red	Unable to communicate with one or more I/O modules.
Error A	Red	Communication error on Channel A.
Error B	Red	Communication error on Channel B (dual cable only).

LED Error Codes

Blinking Com Act LED error codes for the RIO Drop module table show the number of times the Com Act LED on the RIO Drop module blinks for each type of error and the crash codes for each (all codes are in hex).

LED Error Codes		
Number of Blinks	**Code**	**Description of Error**
3	6701H	asic test failure
4	6601H	power down interrupt
	6602H	82588 lan chip test error
	6603H	receive abort timeout
	6604H	transmission loop timeout
	6605H	transmission dma error
	6606H	cable a initialization error

LED Error Codes		
Number of Blinks	**Code**	**Description of Error**
	6607H	cable a dma xfer error
	6608H	cable b dma xfer error
	6609H	cable a dumped data error
	660AH	cable a DRQ line hung
	660BH	cable b DRQ line hung
	660CH	cable a or b DRQ hung
	660DH	power-up lan controller error
5	6501H	ram address test error
6	6401H	ram data test error
7	6301H	prom checksum error

Rear Panel Switches

Two rotary switches are located on the rear panel of the RIO Drop Modules and are used for setting RIO drop addresses (refer to the following illustration and table).

SW1 (top switch) sets the upper digit (tens); SW2 (bottom switch) sets the lower digit (ones). The illustration below shows the correct setting for an example address of 11.
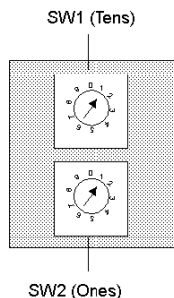
The following table shows the node addresses of the SW1 and SW2 switches.

SW1 and SW2 Address Settings		
Node Address	SW1	SW2
1 ... 9	0	1 ... 9
10 ... 19	1	0 ... 9
20 ... 29	2	0 ... 9
30 ... 39	3	0 ... 9
40 ... 49	4	0 ... 9
50 ... 59	5	0 ... 9
60 ... 64	6	0 ... 4

NOTE: If "0" or an address greater than 32 is selected, the module displays a flashing ERROR A and ERROR B LED indicating an error condition. Only addresses 2 - 32 are valid.