ICS Regent +Plus®

PD-7009

I/O Transceiver Modules

I/O XCVR
(T7310)

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I/O transceiver modules provide an interface between the processor modules in the controller chassis and the I/O modules in the I/O chassis. Three I/O transceiver modules are installed in the three left slots of each I/O chassis.

Features

- Three modules per I/O chassis for triple redundant operation.
- Interfaces processor modules to I/O modules.
- Hot replaceable.
- Front panel indicators on each module show active and fault status.
- TÜV certified for safety, Risk Class 5.

I/O transceiver modules are triple redundant and can be removed and replaced without interrupting system operation.

Module Operation

A block diagram of a typical I/O transceiver module is shown in Figure 1.

Each I/O transceiver module communicates with one of the three processor modules in the controller assembly. During I/O Safetybus communications, the control logic on the I/O transceiver module reads the I/O chassis' identification code from the I/O commands and compares them to the chassis' identification switch settings. Appropriately addressed I/O commands are directed along the chassis' backplane Safetybus to the I/O modules.

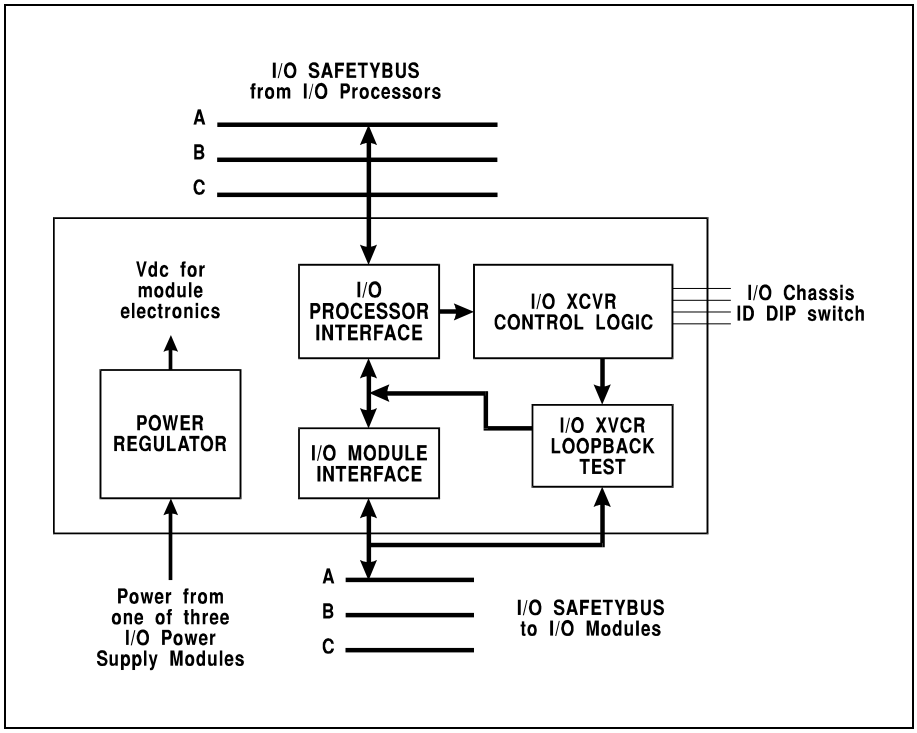

Figure 1. Block Diagram of I/O Transceiver Module.

I/O module responses are buffered and transmitted back along the chassis' backplane Safetybus to the I/O transceiver, and from the I/O transceiver along the I/O Safetybus cable to the processor modules.

Triplicated power is cabled into the I/O chassis and distributed to the I/O transceiver modules. Each I/O transceiver module receives power from one of the three I/O power supplies. Power regulation circuits in the I/O transceiver modules provide the necessary regulated voltages for the module's electronics. Should a single power supply fail, an interlock signal from the failed power supply will cause the I/O transceiver it normally powers to shut down.

Testing and Diagnostics

Loopback tests, periodically sent from the processor modules, are used to test the health of the I/O transceiver modules.

All detected failures produce an I/O module error indication on the processor modules and a module fault indication on the I/O transceiver module.

Front Panel Indicators

Figure 2 shows the physical features of the I/O transceiver modules. The front panel of each module contains active and fault status indicators.

Active and Fault Status Indicators

These green and red LEDs indicate the overall health of the module. During normal operation the green ACTIVE indicator is on. If a module fault occurs the red FAULT indicator turns on and the green ACTIVE indicator turns off.

Figure 2. I/O Transceiver Module.

Maintenance

No periodic maintenance or calibration is required for I/O transceiver modules. There are no user replaceable parts inside these modules.

Safety Considerations

TÜV The I/O transceiver modules are TÜV certified for Risk Class 5 safety critical applications.

Specifications

Safetybus Power	Not applicable (included in I/O power supply output capacity, see PD-6008: I/O Power Supply Modules)
I/O Interface	One leg of triplicated I/O Safetybus
Heat Dissipation	8 Watts, 27 BTUs/hour
Operating Temperature	0° to 60° C (32° to 140° F)
Storage Temperature	-40° to 85° C (-40° to 185° F)
Operating Humidity	0 to 95% relative humidity, non-condensing
Vibration	
10 to 55 Hz:	±0.15mm
Shock	
Operating:	15 g, ½ sine wave, 11 msec

Electromagnetic Interference	
• IEC 801 Part 2 - Electrostatic Discharges	Level 3: Contact discharge of 6 kV
• IEC 801 Part 3 - Radiated Electromagnetic Fields	Level 3: 10 V/M, 27 MHz - 500 MHz
• IEC 801 Part 4 - Transients and Bursts	Level 4: 2 kV, 2.5 kHz for t = 60 sec
• IEC 801 Part 5 - Surge Immunity	Level 3: 2 kV
• ANSI/IEEE C37.90 - Surge Withstand Capability	2.5 kV damped 1 MHz sine wave 4 kV bi-directional impulse, 10 nsec rise time, fast transient
Safety	Certified to DIN V VDE 0801 for Risk Class 5. Also designed to meet UL 508 and CSA 22.2, No. 142-M1981
Dimensions	
Height:	12.6" (320 mm)
Width:	1.27" (32 mm)
Depth:	10.12" (257 mm)
Weight	3.0 lbs (1.4 kg)