

Circaflex™ 315

Rapid Prototyping & Deployment Control System



READY FOR PROTOTYPING WITH AN ARRAY OF TYPICAL INDUSTRIAL INPUTS AND OUTPUTS

Circaflex is a family of off-the-shelf control systems, prototyping boards, and signal conditioning modules which combine to make customized embedded control systems based on the National Instruments RIO platform. Each Circaflex product is designed to support a variety of sensors and devices commonly used in industrial, medical, and biotech device development. Using Circaflex engineers and scientists can develop feature-packed control systems for prototyping or deployment, which can be developed or modified in just days without the risk and cost of custom designed control systems.

Circaflex 315 is a prototyping daughterboard for use with the NI sb-RIO 9651 SOM designed originally for a 24V vehicle application. The board includes a variety of I/O such as 12 high-speed TTL digital inputs/outputs, plus 16 Industrial Digital Inputs and 16 Industrial Digital Outputs, and an additional 4 high-speed Digital Outputs. With a generous six sockets for Circaflex modules, users can meet application-specific needs like reed relays, pH probes, RTDs, and steppers. After prototyping and choosing the modules, use Circaflex software for LabVIEW to create your application.

OEM PRICING

Aggressive discounts are available for higher-volume customers.

For pricing information please call 888-508-7355 (US) or email us at sales@cyth.com.

PROJECTS & CUSTOMIZATIONS

Cyth is the best resource worldwide for embedded control integration projects using NI RIO products like Compact-RIO and Single-Board RIO.

Contact Cyth for advice, product recommendations, and cost estimates for your product development goals.

STANDARD FEATURES

- For use with NI sb-RIO 9651 SOM
- 24V Power Input
- Power & Status LED's
- Primary Gigabit Ethernet
- USB 2.0 Host Port
- RS232 / Console Port
- RTC Battery
- Reset Button
- Micro SD Card Socket

UNIQUE FEATURES

- 12 x LVTTTL Lines
- 16 x 24V IndDI, Sinking, Lo Spd
- 16 x 24V IndDO, Sinking, Lo Spd
- 4 x 24V IndDO, Sourcing, Hi Spd
- 6 x Circaflex Modular I/O Sockets

HELPFUL FEATURES

- 9-30V Power options
- Reverse power protection
- Strictly regulated power onboard
- Fuses protect Circaflex, modules, and RIO SOM during prototyping
- LED's for power, blown fuses, and most I/O signals help with troubleshooting
- On-board power terminals make prototyping and changes easy
- Two power connectors for proper benchtop and deployment use
- Circaflex modules make expansion easy and efficient
- Attractive and powerful user interfaces via embedded computers, remote computers, and Android and iOS devices.
- Can be redesigned and customized to match application requirements

PACKING LIST (920-00315)

CFX-315 OEM Modular Control System
24V, 4 Amp Power Supply
Quick Start Guide
Circaflex Screwdriver
Circaflex Thumb-drive with software
Spare Fuses, Standoffs

FEATURES, CHANNELS, PERIPHERALS

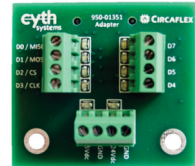
Circaflex provides the necessities to quick-start embedded control projects using the NI RIO SOM 9651, as well as most common basic I/O, plus expansion ports for customization.

1	Power Input, 24V with reverse polarity protection
2	Power Regulators for 3.3, 5.0 V
3	Fuses to protect Circaflex and RIO SOM
3	LED Red/Green indicators to illustrate power on / blown fuse
8	LED's for Status and Performance
1	Gigabit Ethernet Port
1	USB 2.0 Host port
1	MicroSD adaptor
1	RS-232 Serial / Device Console Port
12	Digital I/O, Low-Voltage TTL/CMOS
16	Digital In, Industrial 24V, Sinking, 20 kS/s
16	Digital Out, Industrial 24V, Sinking, 2 kS/s
4	Digital Out, Industrial 24V, Sourcing, 20 kS/s
48	Power & Ground Terminals: 8 x 24V, 8 x 5V, 16 GND
6	Circaflex I/O Module adaptors

CIRCAFLEX I/O EXPANSION MODULES

The customizations never end with Circaflex I/O Expansion modules. Choose from a variety of most common I/O types made by Cyth, or request something new and Cyth will share the cost.

8 ch TTL (3.3V, 5V)	2 Axis Stepper/Encoder
8 ch Analog Input	1 Axis Stepper Driver
4 ch Analog Input Current	4 ch 12V DC Power Supply
4 ch Analog Output	4 ch Power Breakout (5V, 24V)
4 ch Analog Output Current	GPS
8 ch Industrial Digital Input	IMU
8 ch Industrial Digital Output	
4 ch Thermocouple	
2 ch RS-485	
2 ch CAN Bus	
4 ch Solid State Relay	
1 ch RTD	



SPECIFICATIONS & DETAILS

General / SOM Features

• Compatible NI sbRIO	NI sb-RIO SOM 9651
• Processor Type	Xilinx Zync 7020 SoC
• Processor Architecture	Dual-Core ARM Cortex A9
• Processor Speed	667 MHz
• Operating System	NI Linux Real-Time
• RAM/Nonvolatile Storage	512 MB / 512 MB
• Environmental Range	-40 to +85 Deg C
• Physical Size	104 x 127 x 29 mm

Input Power

• Voltage	24 V +/- 0.5V
• Current (idle)	1.2 A
• Current (common)	1.2-2.6 A
• Current (max, fused)	4 A
• Connector for Benchtop	2.5 x 5.5 mm barrel plug
• Connector for Deployment	2-pos MTA-156
• Power Usage	3-5 W Typical

OnBoard Power

• 3.3 V DC Regulation	0.1%
• 3.3 V DC Current (max, fused)	2A
• 5 V DC Regulation	1%
• 5 V DC Terminal Current	500mA/terminal
• 5 V Current (max, fused)	2A

Network & Communications

• Network Interface	10/100/1000 (Gigabit)
• Network Cabling	auto-neg, half-/full-duplex
• RS-232 Speed (Default, max)	9600 baud, 230k baud
•	

TTL Digital I/O

• Settle and Transfer time	< 1 ns
• Maximum Update Rate	200MHz
• Input Off State	Off < 1V, On > 2V
• Output Voltage States	Off = 0V, On = 3.3V

Industrial Digital Input, Sinking, Low Speed

• Output Type	PNP, Sinking Input
• Settle and Transfer time	10 us Max
• Output Voltage States	Off < 8V, On > 12V
• Maximum Reading Rate	20 kS/s

Industrial Digital Output, Sinking, Low Speed

• Output Type	NPN, Sinking Output
• Output Voltage States	Off = 0V, On = V_{in} = 24V
• Output Type	Sourcing, Hi-Side Sw
• Output Current	500 mA/ch, 2A Total
• Maximum Update Rate	2 kS/s

Industrial Digital Output, Sourcing, High Speed

• Output Type	PNP, Sourcing Output
• Output Voltage States	Off = 0V, On = V_{in} = 24V
• Output Type	Sourcing, Hi-Side Sw
• Output Current	50 mA/ch, 400mA Total
• Maximum Update Rate	20 kS/s

Status & Performance LED's

• Code Status	RTOS, FPGA
• RIO SOM Status	FPGA Config, SOM Status
• RIO SOM Other	Temp Alert
• Communication	Ethernet Activity
• User LED's	User 1, User 2