Remote Input Output

The Pharos RIO 80, 44 and 08 (Remote Input Output) devices provide a convenient and scalable way to add inputs and outputs to a Pharos Designer system for show control and integration. Each device can be placed where it is needed and connected to the Controllers over an Ethernet network. Each RIO has a multi-protocol serial port, supporting DMX output, and a combination of multi-functional digital/analog inputs and relay outputs.

Supported in Pharos Designer 2.0 or later.

RIO Features

Designer Trigger
Timing is everything. Whatever the stimulus, Designer Trigger can handle it. You can control your lighting with responsive, reactive programming. Designer Trigger is a rules engine that uses conditional logic and a broad range of interfaces and protocols. Send and receive any command, to and from any system. Conditional logic is supported, along with a powerful built-in scripting language for unlimited flexibility.

Scalable
Up to 200 Remote Devices can be combined with one or more Pharos Designer Controllers on the same network to build the ideal system for your installation. Each RIO is easily addressed using a convenient thumb wheel. Whether one Controller or many, it's all easily programmed using our Designer software.

Pharos Designer
Programmed and configured using the free Pharos Designer software – available for Windows or macOS – with upload over Ethernet.

Multi-Protocol
Every RIO has a multi-protocol serial port, whose protocol (RS232 or RS485), data rate and format settings (baud, parity, stop bits, etc.) are configurable in software. The port can also be configured to output a full universe of local DMX512 or to support DMX input for triggering.

Installer Friendly
Made for permanent installation, with installer-friendly connectors and easy DIN rail mounting.

Flexible Inputs
Each input is individually configurable in one of three modes. As a Contact Closure an external volt-free switch may be connected across the input. As a Digital Input an external DC voltage source (up to 24V) can be connected across the input and thresholds for 'high' and 'low' triggering can be set. As an Analog Input a variable external voltage can be measured within a configurable range.

Relay Outputs
Our outputs use solid-state relays to ensure silent operation and long-term reliability. They are designed for low voltage, low current switching (48V, 0.25A) and are also fully isolated. Where necessary they enable higher currents to be controlled from a Pharos Designer system by integration with commonly available third-party contactors.

Power-over-Ethernet
As a Power-over-Ethernet (PoE) device, the RIO can be placed at any remote location and only needs a single Ethernet cable that provides both power and data.

Network
Works with any Pharos Designer Controller and links to it using standard protocols over an Ethernet network.

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Specifications subject to change without notice.

Capabilities

Contact Closure	Connect an external volt-free switch between input and ground (internal 2.2kohm pull-up to 5V)
Digital In	Connect an external DC voltage source between input and ground (24V maximum; internal 2MOhm pull-down to 0V); software configurable low/high threshold
Analog In	Connect an external DC voltage source between input and ground (24V maximum); software-configurable range
Relay Outs	Individually isolated (1KV) relay outputs (48V 250mA)
Serial Data	RS232, RS485; configurable port; send/receive free syntax in ASCII, HEX or decimal
DMX In	For triggering (Designer 2.16.3 or later)
DMX Out	512 channels (USITT E1.11-2008)

Interfaces

Ethernet	RJ45 socket for 10/100Base-TX Ethernet with Link/Data LEDs; Static IP or DHCP; Power-over-Ethernet (PoE)
Serial	RS232 / RS485 / DMX out *
Inputs	Individually selectable operating mode for contact closure, digital or analog input (24V maximum) *
Relay Outs	Individually isolated (1KV) solid-state relay outputs rated at 48V 0.25A (AC/DC) * An external PSU is required to power the relay outputs

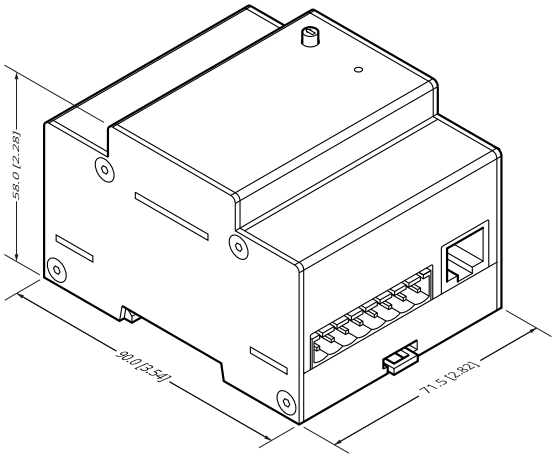
System Limits

Remote Device system limit count includes all RIO, EDN, TPS and BPS in project.

In Project	Maximum 200 remote devices across multiple controllers in a single Pharos Designer project.
Per Controller	Maximum remote device limits assigned to controllers depend on controller type: 64 for each LPC, TPC 100 for each LPC X, VLC

Specifications

Power	PoE (IEEE802.3af, Class 1), 1.5W typical
Required	Any Pharos Designer Controller
Configuration	Pharos Designer 2.0 or later
Addressing	By rotary selector switch
Temperature	0°C to 50°C (32°F to 122°F)
Humidity	10-50% relative, non-condensing
Ingress	IP40
Physical	4 unit wide DIN rail mounting enclosure (DIN43880 / EN60715 (35/7.5 rail)) 7.2 x 9 x 5.8 cm (2.8 x 3.5 x 2.3 in) 0.3 kg (0.7 lbs)
Shipping	20 x 15 x 12 cm (8 x 6 x 5 in) 0.5 kg (1.1 lbs)
Recovery	Hardware watchdog and recessed reset button



Order Code & Variants

RIO 08	Designer Remote Input Output Device 08 (0 input, 8 output, Serial/DMX)
RIO 44	Designer Remote Input Output Device 44 (4 input, 4 output, Serial/DMX)
RIO 80	Designer Remote Input Output Device 80 (8 input, 0 output, Serial/DMX)

Pharos Designer Controller required

Warranty & Certifications

Warranty	5 years
Certifications	CE compliant, UKCA compliant, ETL/cETL listed.

* Install-friendly 0.200" (5.08mm) plug in rising clamp connectors (included)

RIO26002

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