PHORCE USB3.2 Gen2 (PCIe version)

PRODUCT BRIEF

The PHORCE product family is designed to extend the SuperSpeed+ USB3.2 Gen2 (10Gb/s) connections beyond the typical 1~2 meter reach of copper cables. The unique feature of PHORCE family is its transparent operation. The connected remote USB devices appear as local devices to the host PC. PHORCE system consists of a PHORCE-PC PCIe card, which is installed in the PCIe slots in the host computer, and two PHORCE-RE boxes, each of which can be located in different remote sites and provides two USB3.2 root hub ports for the remote applications. The remote USB ports comply with USB3.2 Gen2 specifications and are backward compatible with USB2.0/USB3.0 devices and platforms.

KEY FEATURES

❖ Supports the following USB devices
  - USB3.2 Gen2 10Gb/s
  - USB3.2 Gen1 5Gb/s
  - USB2.0
❖ Supports up to 40Gb/s optical bandwidth for different fiber type and link distance
❖ Up to 300 m over OM3 MM duplex fiber cable
❖ Supports longer than 300 m with single mode fiber
❖ Supports two remote locations with one PCIe card
❖ Secure power connector with locking mechanism
❖ Provide optical isolation between host and devices
❖ Compact size 38 x 24 x 72 mm (1.5 x 0.94 x 2.83 in)

APPLICATIONS

❖ Solar panel or glass panel inspection
❖ Semiconductor wafer inspection
❖ High speed printing inspection
❖ Precision surface inspection
❖ High resolution and intelligent security surveillance
❖ Intelligent traffic control and license plate reading
❖ High resolution images and real-time analysis for science, sports and automobile tests
❖ Remote data storage

PHRONTIER™ TECHNOLOGIES

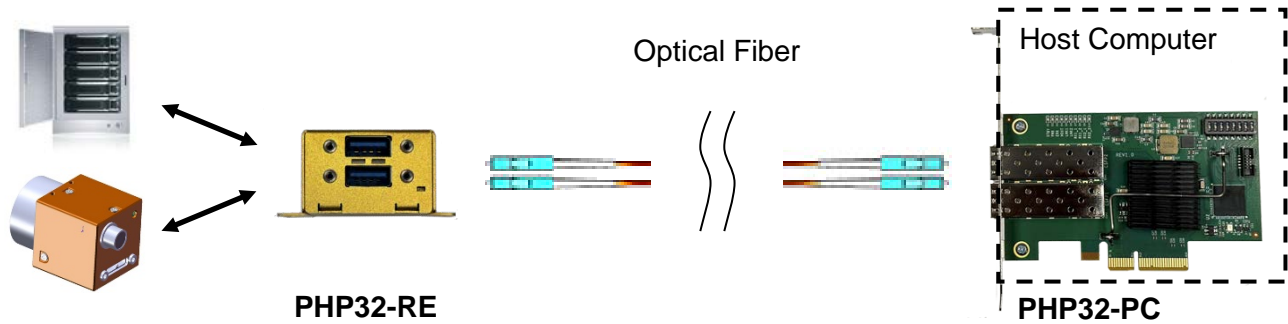### PHORCE

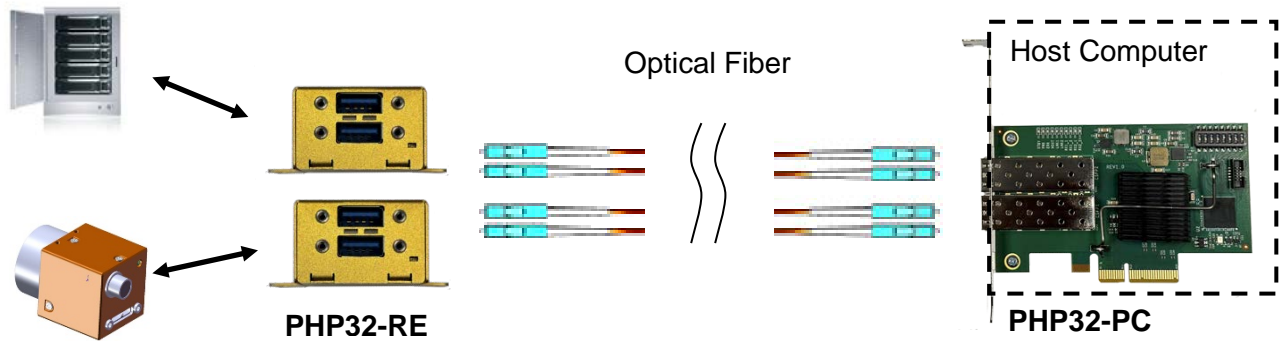### USB 3.2 Gen2 (10Gb/s) Optical Fiber Extender

PHP32-RE-x
PHP32-PC-xx

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TYPICAL SET UP DIAGRAM

System with 1 remote module:

PHP32-RE   Optical Fiber   Host Computer   **PHP32-PC**

System with 2 remote modules:

PHP32-RE   Optical Fiber   Host Computer   **PHP32-PC**

Note: Operation may require certain power-up sequence unless hotplug utility software for WIN10 is installed. When hotplug utility software is not installed, the RE side must be powered on before the PC side while the optical link is connected. If the optical link is interrupted during operation, after the optical link is re-connected the system needs to be re-started with the correct power-up sequence.

TECHNICAL SPECIFICATIONS

PHORCE-PC Card

Operating Temperature [*1]		$0 \sim 70\ ^{\circ}\text{C}$
Computer Interface		Require PCIe Gen3
PCIe Connector		PCIe Gen3 x4 lanes slot
Typical Power Consumption	PHP32-PC-2M	5.25W
	PHP32-PC-2S/2B	5.5W
	PHP32-PC-2D	7W

*1 The operating temperature refers to the components on the PCIe card.

Optical Interface (per port)

Available Models	PHP32-M	PHP32-S	PHP32-B	PHP32-D	PHP32-Cxx
Supported Bandwidth	10 Gb/s	10 Gb/s	10 Gb/s	20 Gb/s	10 Gb/s
Compatible Fiber Type	OM2/3/4	9/125 um SM			
Max Link Distance	300 m[*2]	>300m[*3]			
Wavelength	850 nm	1310 nm	1270/1330 nm	1270/1330 nm	CWDM grid
Optical Output Power[*4]	-6.5 ~ -1 dBm	-8.2 ~ +0.5 dBm	-8.2 ~ +0.5 dBm	-2 ~ +3 dBm	-4 ~ +3 dBm
Optical Receiver Sensitivity[*4]	-11.1 dBm	-14.4 dBm	-14.4 dBm	-14.4 dBm	-14.4 dBm
Required Number of Fibers Per Module	2	2	1	2	2
Optical Connector Type	LC Duplex	LC Duplex	LC Simplex	LC Duplex	LC Duplex

*2 Measured with OM3 fiber.
*3 Distance longer than 300m would reduce the data transferring rate
*4 Measured with average optical power

PHORCE-RE Module

Available Models		PHP32-RE-M (-T)	PHP32-RE-S (-T)	PHP32-RE-B (-T)	PHP32-RE-D (-T)	PHP32-RE-Cxx (-T)
Operating Temperature	Case	0 ~ 65C			0 ~ 75C	0 ~ 65C
	Ambient	0 ~ 50C			0 ~ 55C	0 ~ 50C
Extended Operating Temperature [*5]	Case	-40 ~ 75C			-40 ~ 75C	-20 ~ 70C
	Ambient	-40 ~ 60C			-40 ~ 55C	-20 ~ 55C
Power Consumption with no USB device operating		1.65W	1.8W		2.45W	1.8W [*6]
Power Consumption with 1 USB device		2.65W	3.05W		3.85W	3.05W [*6]
USB ports		2x USB 3.2 Gen2 Type-A receptacle				
DC Input Connector		Switchcraft 722A jack				
DC Input Voltage		5V DC				
AC/DC Power Supply Connector		Switchcraft S760K locking plug				
AC/DC Power Supply Rating		5V with max. 3A				
Operating Humidity		20~80% Non-condensing				
Storage Temperature		-40 ~ 85°C				
Storage Humidity		10~90% Non-condensing				

*5 The extended operating temperature only applies to the PHORCE-RE module
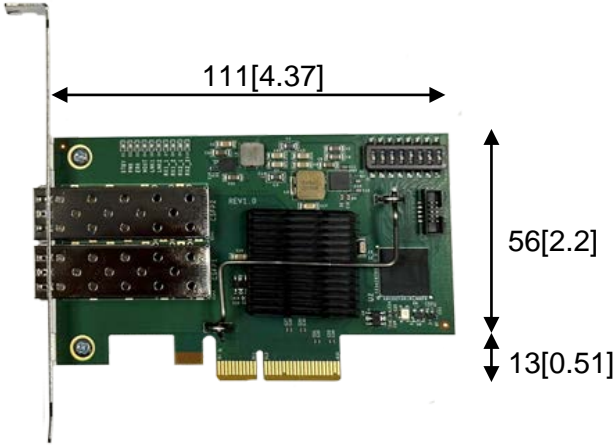*6 The power consumption was measured with CWDM SFP+ with 10dB optical power budget

MECHANICAL INFORMATION (mm)

RE Module (mm)[inch]
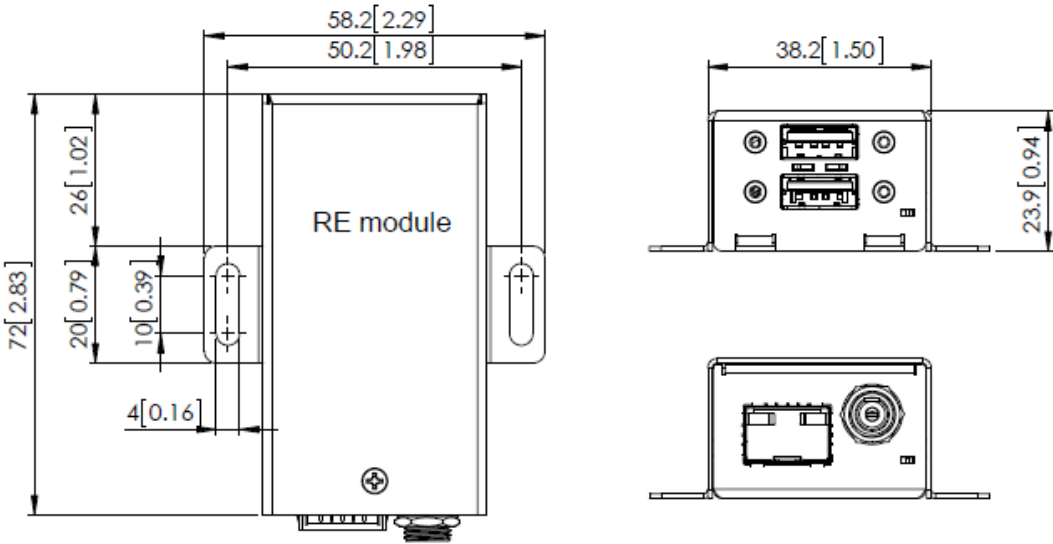
PCIe Card (mm)[inch]

ORDERING INFORMATION

PHORCE-PC PCIe card models

Ordering Part #	Optical TRx loaded	Fiber type	Fiber counts	Supported optical bandwidth	Items included
PHP32-PC-1M	1x MM SFP+	50/125um MM	2	10 Gb/s	1x PHP32-PC PCIe card 1x MM SFP+
PHP32-PC-2M	2x MM SFP+		4	20 Gb/s	1x PHP32-PC PCIe card 2x MM SFP+
PHP32-PC-1S	1x SM SFP+	9/125um SM	2	10 Gb/s	1x PHP32-PC PCIe card 1x SM SFP+
PHP32-PC-2S	2x SM SFP+		4	20 Gb/s	1x PHP32-PC PCIe card 2x SM SFP+
PHP32-PC-1B	1x SM BIDI SFP+	9/125um SM	1	10 Gb/s	1x PHP32-PC PCIe card 1x SM BIDI SFP+
PHP32-PC-2B	2x SM BIDI SFP+		2	20 Gb/s	1x PHP32-PC PCIe card 2x SM BIDI SFP+
PHP32-PC-1D	1x SM CSFP+	9/125um SM	2	20 Gb/s	1x PHP32-PC PCIe card 1x SM CSFP+
PHP32-PC-2D	2x SM CSFP+		4	40 Gb/s	1x PHP32-PC PCIe card 2x SM CSFP+
PHP32-PC-Cxx[1]	1x SM CWDM SFP+	9/125um SM	2	10 Gb/s	1x PHP32-PC PCIe card 1x CWDM SFP+
PHP32-PC-Cxx-Cxx[1]	2x SM CWDM SFP+		4	20 Gb/s	1x PHP32-PC PCIe card 2x CWDM SFP+

PHORCE-RE remote models (add -T for extended temperature)

Ordering Part #	Optical TRx loaded	Fiber type	Fiber counts	Supported optical bandwidth	Items included
PHP32-RE-M	MM SFP+	50/125um MM	2	10 Gb/s	1x PHP32-RE remote module 1x MM SFP+ 1x 15W AC/DC adapter with 5V DC output
PHP32-RE-S	SM SFP+	9/125um SM	2	10 Gb/s	1x PHP32-RE remote module 1x SM SFP+ 1x 15W AC/DC adapter with 5V DC output

PHP32-RE-B	SM BIDI SFP+	9/125um SM	1	10 Gb/s	1x PHP32-RE remote module 1x SM BIDI SFP+ 1x 15W AC/DC adapter with 5V DC output
PHP32-RE-D	SM CSFP+	9/125um SM	2	20 Gb/s	1x PHP32-RE remote module 1x SM CSFP+ 1x 15W AC/DC adapter with 5V DC output
PHP32-RE-Cxx*1	SM CWDM SFP+	9/125um SM	2	10 Gb/s	1x PHP32-RE remote module 1x CWDM SFP+ 1x 15W AC/DC adapter with 5V DC output

*1 xx = 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61 indicates the SFP+ Tx wavelength for the available 18 wavelengths in CWDM grid

Accessory

Part #	Description
618-GE24I05-S760K	15W AC/DC adapter with 5V DC output
PHP32-BR	Low profile PCIe bracket
LC-LC-M-D-xxxM	LC to LC duplex 50/125 μm OM2 MM fiber. xxx = desired length in meters.
LC-LC-G-D-xxxM	LC to LC duplex 50/125 μm OM3 MM fiber. xxx = desired length in meters.
LC-LC-S-D-xxxM	LC to LC duplex 9/125 SM fiber. xxx = desired length in meters.

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