# PHORCE (standalone version)

## PRODUCT BRIEF

The PHORCE product family is designed to extend the SuperSpeed USB3.1 Gen1 connections beyond the typical 3 meter reach of copper cables. The standalone version of PHORCE consists of two individual modules. A PC module directly connects to any USB3.1 Gen1 port on a host such as a PC. A separate RE module (remote module) connects to user's USB 3.1 Gen1 devices such as a camera, external hard drive, control panel, or any other USB3.1 Gen1 compatible devices. By placing an optical fiber between the PC and RE modules, the PHORCE system can achieve a 300m link distance with a choice of SM or MM fibers. By incorporating swappable optical transceivers, PHORCE can be deployed to any existing fiber networks without opening walls or digging trenches.

## KEY FEATURES

- ❖ Provide 5Gb/s transmission bandwidth for up to three USB3.1 Gen1 devices
- ❖ Supports 3 ports of USB3.1 Gen1 (USB3.0) and USB2.0 devices
- ❖ Compatible with MM, SM fibers and CWDM technologies
- ❖ Available for one fiber solution (LC simplex)
- ❖ Plug and Play, no drivers required
- ❖ LED indicators for system status
- ❖ Provide USB bus power for USB devices
- ❖ Secure power connector with locking mechanism
- ❖ Secure USB connectors with thumbscrew locking mechanism
- ❖ Secure installation with mounting wings
- ❖ Provide optical isolation
- ❖ Compact size

## APPLICATIONS

- ❖ Long distance USB3.1 Gen1 and USB2.0 accessories connections
- ❖ USB3Vision applications
- ❖ Machine vision applications
- ❖ Intelligent traffic control systems
- ❖ Security surveillance systems
- ❖ Remote data storage systems
- ❖ Automation inspection systems
- ❖ High resolution images and real-time analysis for science, sports and automobile tests
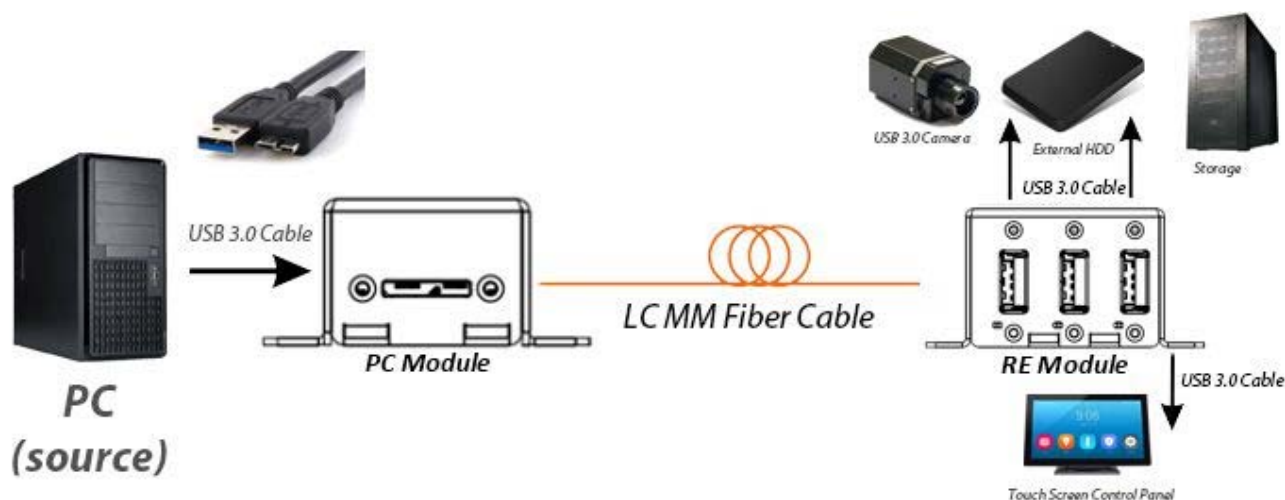
# PHRONTIER™ TECHNOLOGIES

## PHORCE

### USB 3.1 Gen1 (USB3.0/2.0) Optical Fiber Extender

PHU321-M
PHU321-S
PHU321-SL

## TYPICAL SET UP DIAGRAM



## TECHNICAL SPECIFICATIONS

### Module Specifications

| Available Models | | PHU321-M | PHU321-S | PHU321-SL |
|---|---|---|---|---|
| Max Link Distance[*1] | | 150 ~ 300 m (500 ~ 1000 ft) | | |
| Wavelength | | 850nm | 1310nm | 1270/1330nm |
| Optical Output Power[*2] | | -6.5 ~ -1 dBm | -8.2 ~ +0.5 dBm | -8.2 ~ +0.5 dBm |
| Optical Receiver Sensitivity[*2] | | -11.1 dBm | -14.4 dBm | -14.4 dBm |
| Required Number of Fibers | | 2 | 2 | 1 |
| Optical Connector Type | | LC Duplex | LC Duplex | LC Simplex |
| Fiber Type | | OM2, OM3, OM4 | 9/125 um SM | |
| Input Voltage on RE-module | | 10~ 24V DC | | |
| USB connectors | PC-module | USB 3.0 Micro-B receptacle | | |
| | RE-module | USB 3.0 Type-A receptacle | | |
| Power Consumption of RE-module with 1 USB device[*3] | | 3.4W excluding USB bus powered devices | | |
| Power Consumption of RE-module with 2 USB devices[*3] | | 3.8W excluding USB bus powered devices | | |
| Operating Temperature | Case | 0 ~ 65 °C | | |
| | Ambient | 0 ~ 50 ºC | | |
| Operating Humidity | | 20~80% Non-condensing | | |
| Storage Temperature | | -40 ~ 85°C | | |
| Storage Humidity | | 10~90% Non-condensing | | |

| Dimensions (excluding mounting wings) | PC-module | 72 x 39 x 24 mm<br>2.85 x 1.54 x 24.3 inches |
|---|---|---|
| | RE module | 87 x 43 x 30 mm<br>3.43 x 1.68 x 1.17 inches |
| Weight (PHU321) | | PC module: 60g ; RE module: 94g |

*1 The maximum link distance will strongly depend on USB host controller, USB device controller and device firmware.
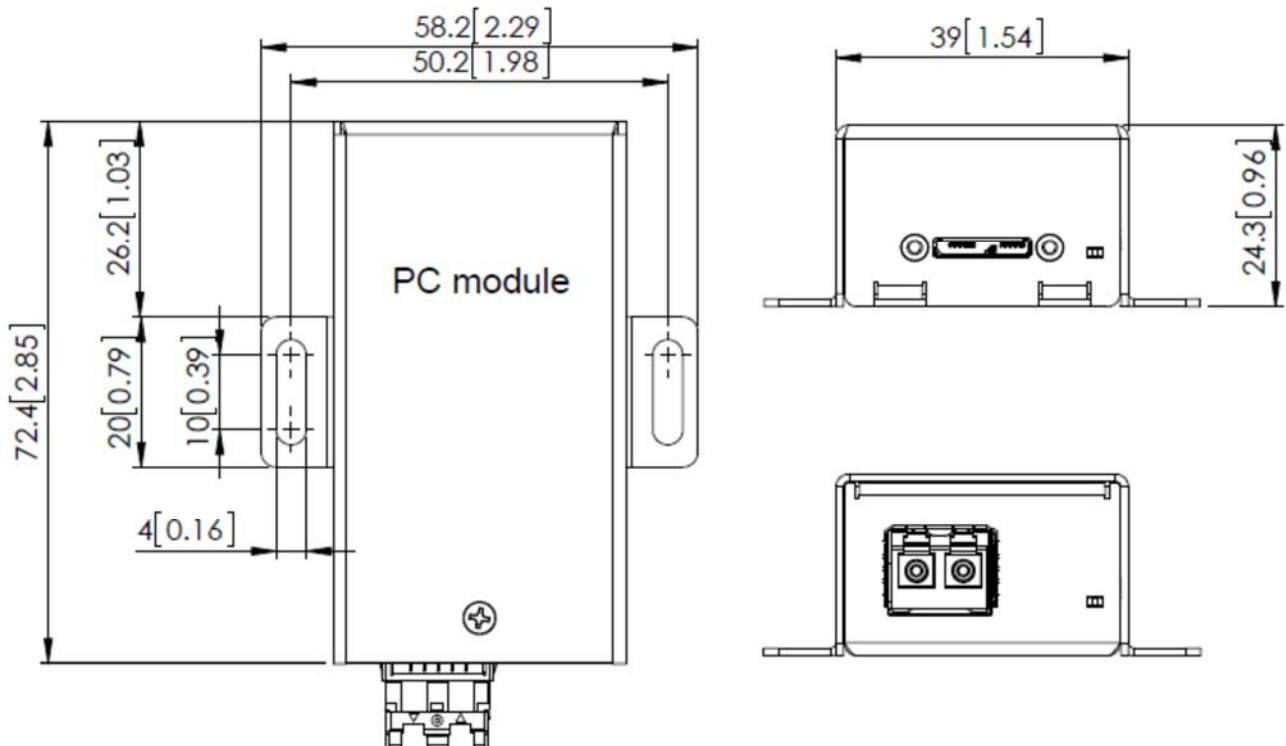*2 Measured with average optical power
*3 The power consumption was measured with PHU321-M-RE at 25C.

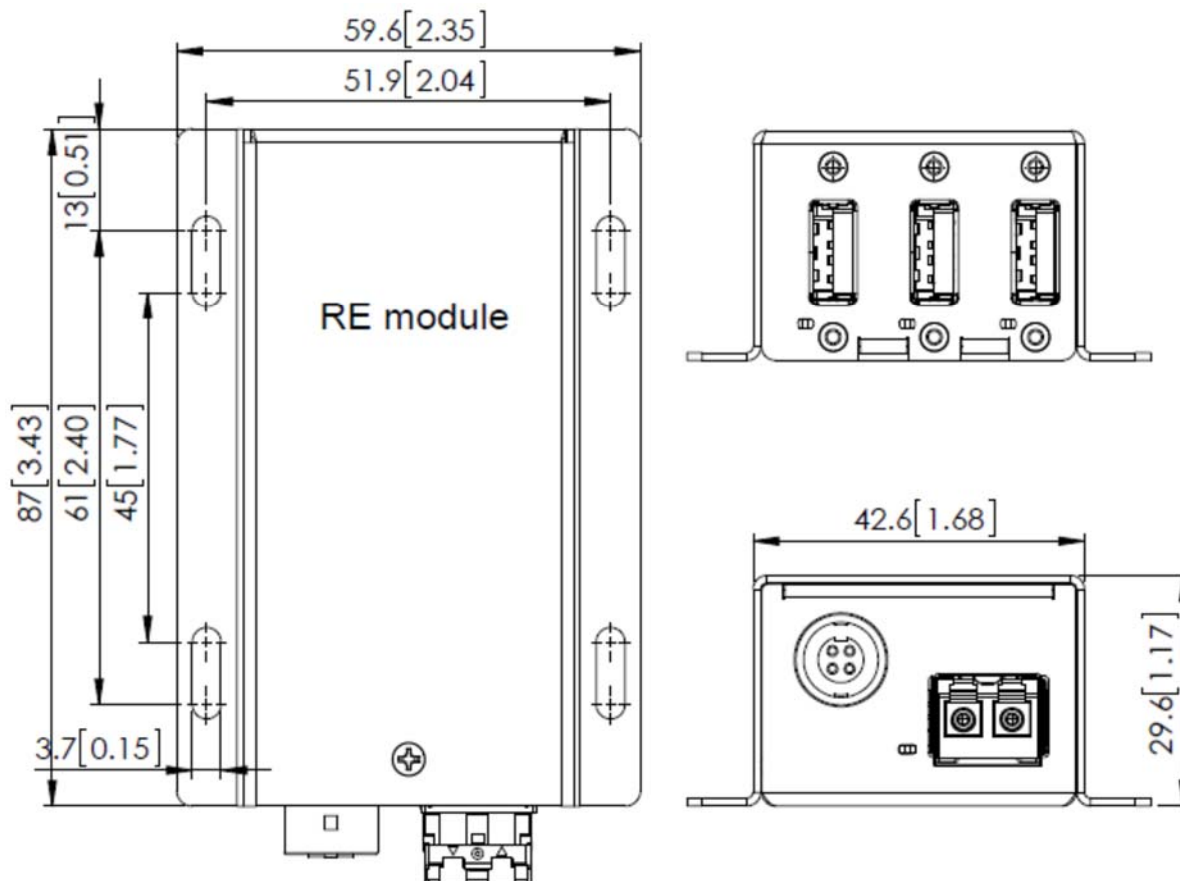## Power Supply Specifications (only apply to RE module)

| AC Input | 100 ~ 240V AC |
|---|---|
| DC Output | 1.0 A @ 24V DC |
| DC Plug Part Number | Binder 99-0979-100-04 |

## MECHANICAL INFORMATION (mm)[inch]

**PC Module**

**RE Module**



## ORDERING INFORMATION

**Standard models**

| Ordering Part # | Max. link Distance* | Fiber type | Connector type | Items included |
|---|---|---|---|---|
| **PHU321-M** | 150 ~ 300 m (500 ~ 1000 ft) | OM2 or OM3 or OM4 fiber | LC duplex | 1x PHU31B-M-PC module 1x PHU321-M-RE module 1x 24W wall mount power supply |
| **PHU321-S** | 150 ~ 300 m (500 ~ 1000 ft) | SM fiber | LC duplex | 1x PHU31B-S-PC module 1x PHU321-S-RE module 1x 24W wall mount power supply |
| **PHU321-SL** | 150 ~ 300 m (500 ~ 1000 ft) | SM fiber | LC simplex | 1x PHU31B-SL-PC module 1x PHU321-SL-RE module 1x 24W wall mount power supply |

*1 The maximum link distance will strongly depend on USB host controller, USB device controller and device firmware.

**Accessory**

| Part # | Description |
|---|---|
| **618-GE24I24-BD** | 24W, DC 24V international wall mount AC/DC adapter with Binder plug |
| **PTUSB3-A-MB-3** | 3 ft USB3.0 cable type A plug to Micro-B plug |
| **LC-LC-M-D-xxxM** | LC to LC duplex 50/125 $\mu$m OM2 MM fiber. xxx = desired length in meters. |
| **LC-LC-G-D-xxxM** | LC to LC duplex 50/125 $\mu$m 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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**TECHNOLOGIES**

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