

# 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 two USB3.1 Gen1 devices
- ❖ Supports any USB3.1 Gen1 device connection but not backward compatible with USB2.0
- ❖ 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
- ❖ Low power consumption ~2W while operating
- ❖ 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 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

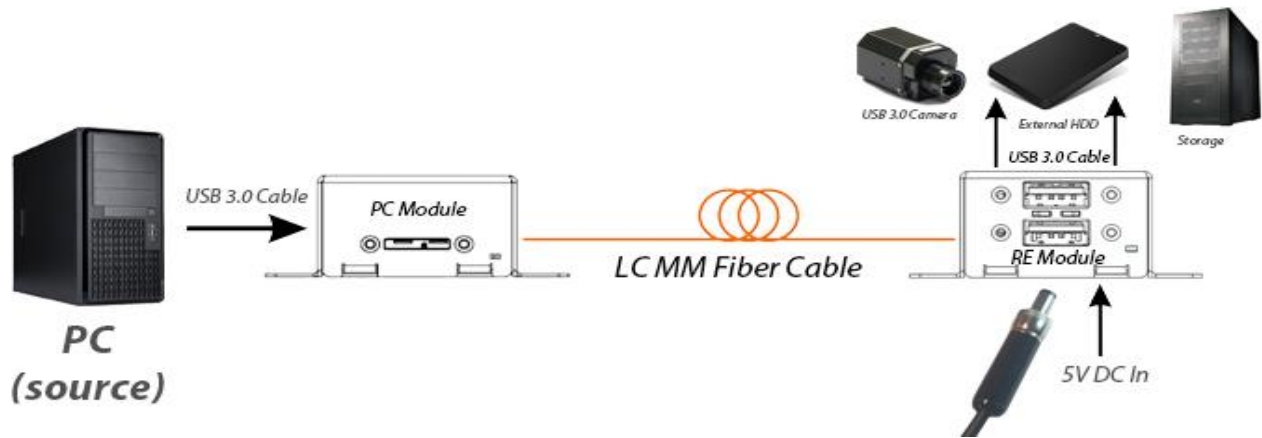
## PHORCE

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

PHU31-M  
PHU31-S  
PHU31-SL  
PHU31-Cxx



## TYPICAL SET UP DIAGRAM



## TECHNICAL SPECIFICATIONS

### Module Specifications

Available Models		PHU31-M	PHU31-S	PHU31-SL	PHU31-Cxx
Max Link Distance <sup>*1</sup>		300 m (1000 ft)			
Wavelength		850nm	1310nm	1270/1330nm	CWDM grid
Optical output power <sup>*2</sup>		-6.5 ~ -1 dBm	-8.2 ~ +0.5 dBm	-8.2 ~ +0.5 dBm	-4 ~ +3 dBm
Optical receiver sensitivity <sup>*2</sup>		-11.1 dBm	-14.4 dBm	-14.4 dBm	-14.4 dBm
Required number of fibers		2	2	1	2
Optical Connector Type		LC Duplex	LC Duplex	LC Simplex	LC Duplex
Fiber Type		OM2, OM3, OM4	9/125 um SM		
Input Voltage		5 +/- 0.25 V DC			
USB connectors	PC module	Micro-B receptacle			
	RE module	Type-A receptacle			
Power Consumption with 1 USB device <sup>*3</sup>		1.8W excluding USB bus powered devices			
Power Consumption with 2 USB devices <sup>*3</sup>		2.3W excluding USB bus powered devices			
Operating Temperature (standard version)	Case	0 ~ 65 °C			
	Ambient	0 ~ 50 °C			
Operating Temperature (industrial version)	Case	-40 ~ 80 °C			-20 ~ 80 °C
	Ambient	-40 ~ 65 °C			-20 ~ 65 °C
Operating Humidity		20~80% Non-condensing			
Storage Temperature		-40 ~ 85°C			
Storage Humidity		10~90% Non-condensing			
Dimensions (L x W x H) excluding mounting wings		72 x 38 x 24 mm 2.83 x 1.5 x 0.94 inches			
Weight		PC module: 60g ; RE module: 70g			

# PHU31-M/S/SL/Cxx

\*1 The link distances are estimated with 50/125um OM3 MM fiber and 9/125um SM fiber.

\*2 Measured with average optical power

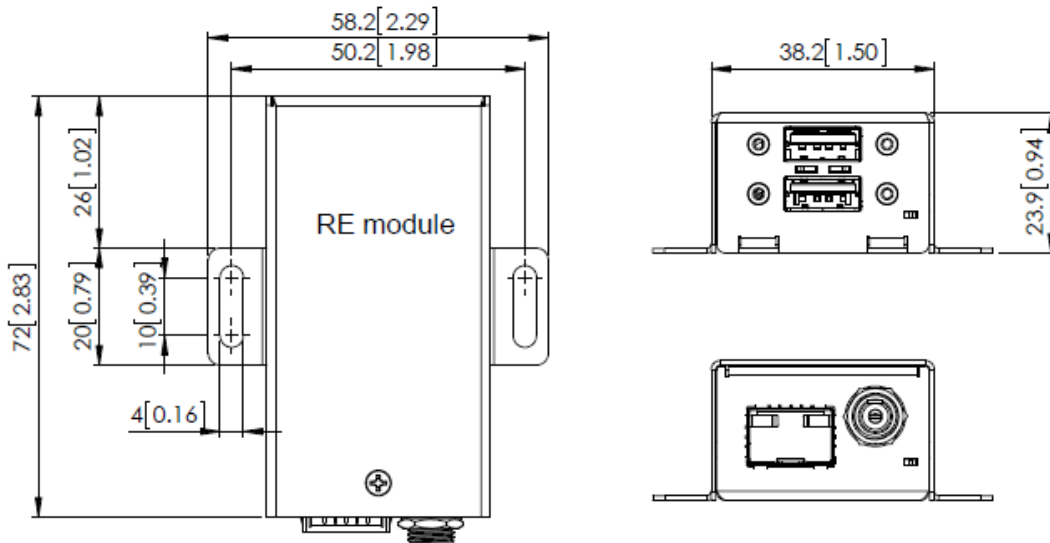
\*3 The power consumption was measured with PHU31-M at 25C.

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

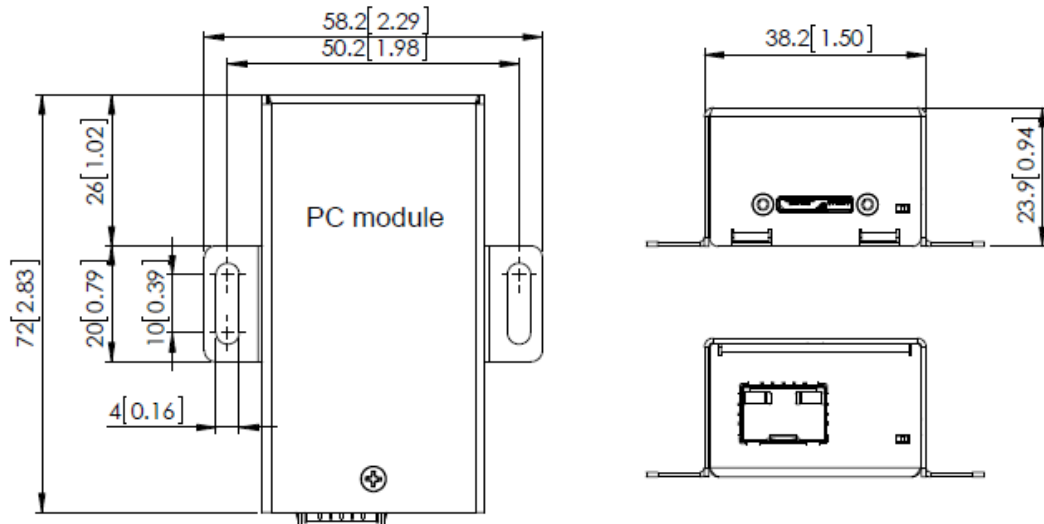
AC Input	100 ~ 240V AC
DC Output	3.0 A @ 5V DC
DC Jack Polarity	Center 5V
DC Jack Part Number	Switchcraft S760K

## MECHANICAL INFORMATION (mm)[inch]

### RE Module



### PC Module



## ORDERING INFORMATION

### Standard models

Ordering Part #	Link Distance	Fiber type	Connector type	Items included
PHU31-M	300m (1000 ft)	2x OM2 or OM3 or OM4 fiber	LC duplex	1x PHU31-M-PC module 1x PHU31-M-RE module 1x 15W wall mount power supply
PHU31-S	300m (1000 ft)	2x SM fiber	LC duplex	1x PHU31-S-PC module 1x PHU31-S-RE module 1x 15W wall mount power supply
PHU31-SL	300m (1000 ft)	1x SM fiber	LC simplex	1x PHU31-SL-PC module 1x PHU31-SL-RE module 1x 15W wall mount power supply

### Industrial models

Add "-T" at the end of the standard model part number.

### CWDM models (user needs to specify wavelength for both -PC and -RE device)

Ordering Part #	Tx Optical Wavelength	Rx Optical range	Connect or type	Items included
PHU31-C27-xx	1270 nm	1260 ~ 1620 nm	LC duplex	1x PHU31-Cxx-PC module 1x PHU31-Cxx-RE module 1x 15W wall mount power supply
PHU31-C29-xx	1290 nm			
PHU31-C31-xx	1310 nm			
PHU31-C33-xx	1330 nm			
PHU31-C35-xx	1350 nm			
PHU31-C37-xx	1370 nm			
PHU31-C39-xx	1390 nm			
PHU31-C41-xx	1410 nm			
PHU31-C43-xx	1430 nm			
PHU31-C45-xx	1450 nm			
PHU31-C47-xx	1470 nm			
PHU31-C49-xx	1490 nm			
PHU31-C51-xx	1510 nm			
PHU31-C53-xx	1530 nm			
PHU31-C55-xx	1550 nm			
PHU31-C57-xx	1570 nm			
PHU31-C59-xx	1590 nm			

# PHU31-M/S/SL/Cxx

PHU31-C61-xx	1610 nm			
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## Accessory

Part #	Description
618-GE24I05-S760K	15W AC/DC adapter with 5V DC output
LC-LC-M2-D-xxxM	LC to LC duplex 50/125 $\mu$ m OM2 MM fiber. xxx = desired length in meters.
LC-LC-M3-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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