

## KEY FEATURES

- ❖ Fully supports base Camera Link™ cameras/frame grabbers
- ❖ Direct plug – no electrical cable needed
- ❖ Broad bandwidth – up to 2.5 Gb/s supporting 24 bits image data at 85 MHz pixel clock
- ❖ Transparent operation – plug and play with no changes required for camera and/or frame grabber
- ❖ Standard LC duplex fiber interface
- ❖ Single 5V~24V DC power supply
- ❖ Exchangeable optical module – easy to upgrade
- ❖ Transmission distance - up to 10 km (standard), 80 km available
- ❖ Available for 18 CWDM wavelengths
- ❖ Available with -40~85C industrial grade components
- ❖ **PoCL compatible**
- ❖ **Compact size – 59L x 39.4W x 17H mm (2.326L x 1.551W x 0.669H inch)**

## TARGET APPLICATIONS

- ❖ Solar panel or glass panel inspection
- ❖ Semiconductor wafer inspection
- ❖ High speed printing inspection
- ❖ High precision surface inspection (e.g. airplane surface or automobile painting)
- ❖ Automated product inspection (e.g. food, drinking or pharmaceutical products)
- ❖ High resolution and real-time analysis for science, sports, automobile tests, and 3-D animation.
- ❖ High precision security surveillance (e.g. border control, airport)
- ❖ Traffic surveillance/control and vehicle license plate reading/recording (e.g. toll booth)
- ❖ Cameras placed in harsh environment (e.g. nuclear plant, steel mill or undersea monitoring)
- ❖ Other Machine Vision Applications

**PHRONTIER™**  
TECHNOLOGIES

## PHIRE™ Camera Link Fiber Adapter

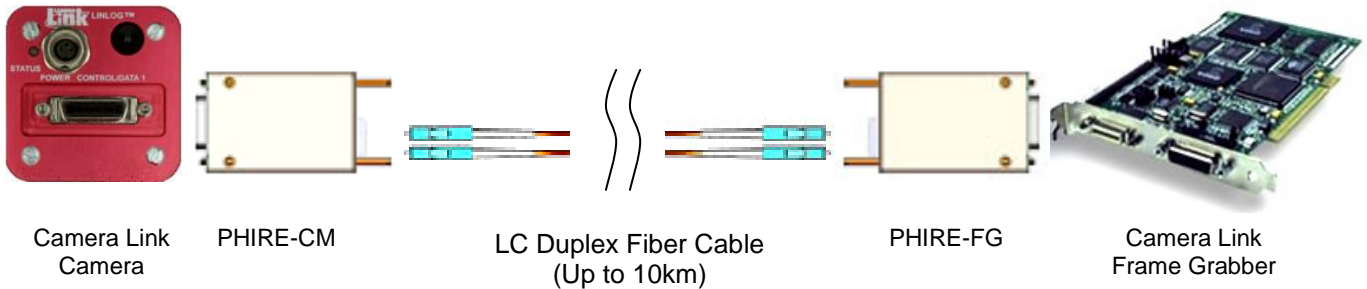
### Base Configuration

PHR-68-M025/S10-x  
PHR-85-M025/S10-x  
PHR-85-M020/S07-x  
PHR-68-C24-xx-xx  
PHR-85-C16-xx-xx  
PHR-85-C24-xx-xx



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## TYPICAL SET UP DIAGRAM



Camera Link  
Camera

PHIRE-CM

LC Duplex Fiber Cable  
(Up to 10km)

PHIRE-FG

Camera Link  
Frame Grabber

## TECHNICAL SPECIFICATIONS

### General Specification

Standard Operating Temperature	Ambient	0 ~ 50 °C	Case	0 ~ 60 °C
Extended Operating Temperature	Ambient	-40~70 °C	Case	-40~80 °C
Storage Temperature	-40 ~ 85 °C			
Operating Humidity	20 ~ 80% (non-condensing)			
Input Voltage	DC 5 ~ 24 V			
Supply Current @25 °C	0.160 A @12V each module			
Typical Power Consumption	1.9 W each module			
Connector Type	Micro USB type B with custom pin assignment			
Approx. Weight (each module)	75 gram			

### Camera Link Interface

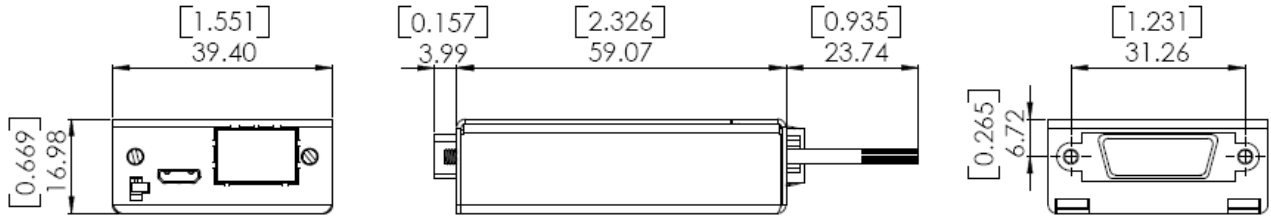
	<b>PHR-68-M025 PHR-68-S10 PHR-68-C24-xx-xx</b>	<b>PHR-85-M025 PHR-85-S10 PHR-85-C16-xx-xx</b>	<b>PHR-85-M020 PHR-85-S07 PHR-85-C24-xx-xx</b>
Max Pixel Clock	68 MHz	85 MHz	85 MHz
Max Image Data Width	24 bits	16 bits	24 bits
Transport Bandwidth	2 Gb/s	2 Gb/s	2.5 Gb/s
Connector Type	MDR26 plug		

### Optical Interface (users specify CWDM wavelength for CM and FG modules)

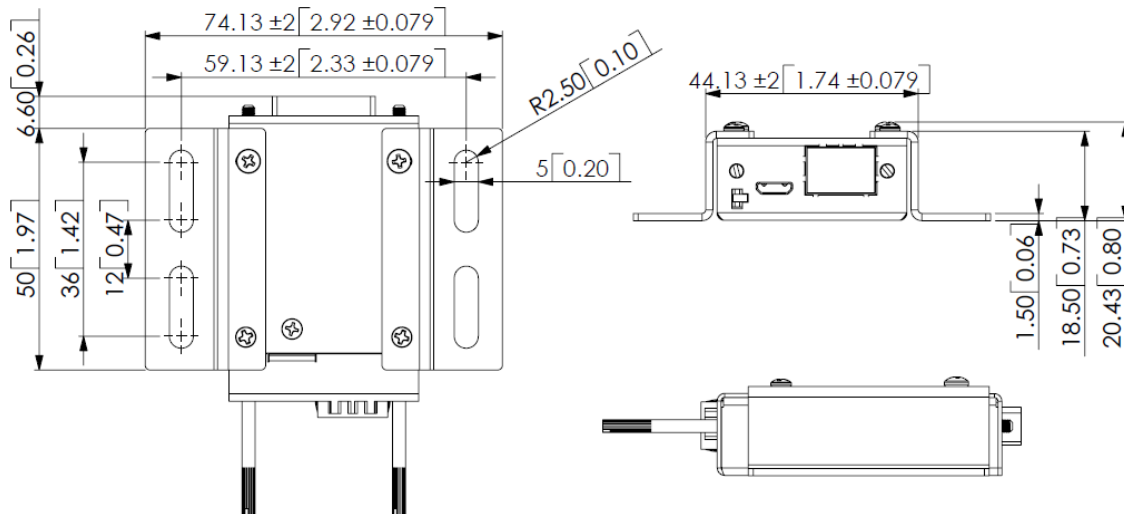
	<b>PHR-68-M025 PHR-85-M025 PHR-85-M020</b>	<b>PHR-68-S10 PHR-85-S10 PHR-85-S07</b>	<b>PHR-68-C24-xx-xx PHR-85-C16-xx-xx PHR-85-C24-xx-xx</b>
Operating Wavelength	850 nm	1310 nm	1270 ~ 1610 nm with 20nm spacing
Min Optical Tx Output Power	-9.5 dBm	-9 dBm	-2 dBm
Min Optical Rx Power	-17 dBm	-18 dBm	-20dBm
Connector Type	LC duplex	LC duplex	LC duplex
Fiber Type	50/125 μm or 62.5/125 μm MM fibers	9/125 μm SM fibers	9/125 μm SM fibers

## MECHANICAL INFORMATION (mm [inch])

### Module dimensions



### With Mounting Flange Options



## ORDERING INFORMATION

### Standard models

Model #	Data Width	Max. Pixel Clock Rate	Fiber Type & Estimated Link Distance *1		Items Provided
PHR-68-M025	24 bits	68MHz	OM3	600 m (1800 ft)	1x PHIRE-CM (transmitter) 1x PHIRE-FG (receiver) 2x 12V DC output international wall mount AC/DC adapters (LC duplex fiber cable not included)
			OM2	250 m (900 ft)	
			OM1	150 m (450 ft)	
PHR-85-M025	16 bits	85MHz	OM3	600 m (1800 ft)	
			OM2	250 m (900 ft)	
			OM1	150 m (450 ft)	
PHR-85-M020	24 bits	85MHz	OM3	550 m (1650 ft)	
			OM2	200 m (700 ft)	
			OM1	100 m (300 ft)	
PHR-68-S10	24 bits	68MHz	10 km (6.25 miles)		
PHR-85-S10	16 bits	85MHz	10 km (6.25 miles)		
PHR-85-S07	24 bits	85MHz	7 km (4.38 miles)		

\* 1. OM1 is 62.5/125um MM fiber and OM2 and OM3 are 50/125um MM fiber. Distance depending on fiber type and system design. Extra optical losses in the system will reduce the transmission distance.

### Extended temperature models

Model #	Data Width	Max. Pixel Clock Rate	Fiber Type & Estimated Link Distance *2		Items Provided
PHR-68-M025-T	24 bits	68MHz	OM3	600 m (1800 ft)	1x PHIRE-CM (transmitter) 1x PHIRE-FG (receiver)
PHR-85-M025-T	16 bits	85MHz	OM3	600 m (1800 ft)	
PHR-85-M020-T	24 bits	85MHz	OM3	550 m (1650 ft)	
PHR-68-S10-T	24 bits	68MHz	10 km (6.25 miles)		2x 12V DC output international wall mount AC/DC adapters (fiber cable not included)
PHR-85-S10-T	16 bits	85MHz	10 km (6.25 miles)		
PHR-85-S07-T	24 bits	85MHz	7 km (4.38 miles)		

\*2. Distance depending on fiber type and system design. Extra optical losses in the system will reduce the transmission distance.

### CWDM models (users need to specify wavelengths for CM and FG modules)

Model #	Data Width	Max. Pixel Clock Rate	Optical Wavelengths	Items Provided
PHR-68-C24-CM-xx or PHR-68-C24-FG-xx	24 bits	68MHz	xx=27 for 1270 nm xx=29 for 1290 nm xx=31 for 1310 nm xx=33 for 1330 nm xx=35 for 1350 nm	1x PHIRE-CM (transmitter) 1x PHIRE-FG (receiver) 2x 12V DC output international wall mount

# PHIRE Series

<b>PHR-85-C16-CM-xx</b> or <b>PHR-85-C16-FG-xx</b>	16 bits	85MHz	xx=37 for 1370 nm xx=39 for 1390 nm xx=41 for 1410 nm xx=43 for 1430 nm xx=45 for 1450 nm xx=47 for 1470 nm	AC/DC adapters (LC duplex fiber cable not included)
<b>PHR-85-C24-CM-xx</b> or <b>PHR-85-C24-FG-xx</b>	24 bits	85MHz	xx=49 for 1490 nm xx=51 for 1510 nm xx=53 for 1530 nm xx=55 for 1550 nm xx=57 for 1570 nm xx=59 for 1590 nm xx=61 for 1610 nm	

## Accessory

Part #	Description
<b>618-TRG10R-MUSB-1</b>	12V DC international wall mount AC/DC adapter with micro-USB plug
<b>LC-LC-MD-xxM2</b>	LC to LC duplex 50/125 $\mu$ m OM2 MM fiber. xx = desired length in meters.
<b>LC-LC-MD-xxM3</b>	LC to LC duplex 50/125 $\mu$ m OM3 MM fiber. xx = desired length in meters.
<b>PHIRE-W</b>	1 pair of mounting flanges



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