

PHOX-F™

KEY FEATURE

- ❖ Provides 10 Gb/s or 1250 MB/s transporting bandwidth for image, GPIO and RS232
- ❖ Fully support Camera Link standard for Base, Medium, Full and 10tapx8bits modes
- ❖ Operating pixel clock range from 20 to 100 MHz exceeding Camera Link standard
- ❖ Plug-and-play – no changes or programming required for camera and/or frame grabber
- ❖ Optional 2- fiber LC duplex or 1-fiber LC simplex optical interface
- ❖ Includes 4 GPIO channels (2 inputs and 2 outputs) for external trigger and control
- ❖ Includes a full duplex RS232 for remote instrument control
- ❖ Accept 10V~24V DC input power with locking mechanism for industrial applications
- ❖ Extended operating temperature range are available
- ❖ Transmission distances:
 - OM3 Multi-mode fiber – up to 300m
 - Single-mode fiber – up to 10km

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

PHOX™ Camera Link Fiber Extender

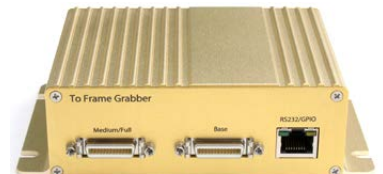
**Base/Medium/Full
/Deca
Configuration**

**PHOX-FM-300
PHOX-FL-10
PHOX-FL-L10
PHOX-FL-xx-Cxx**

PHOX Front View

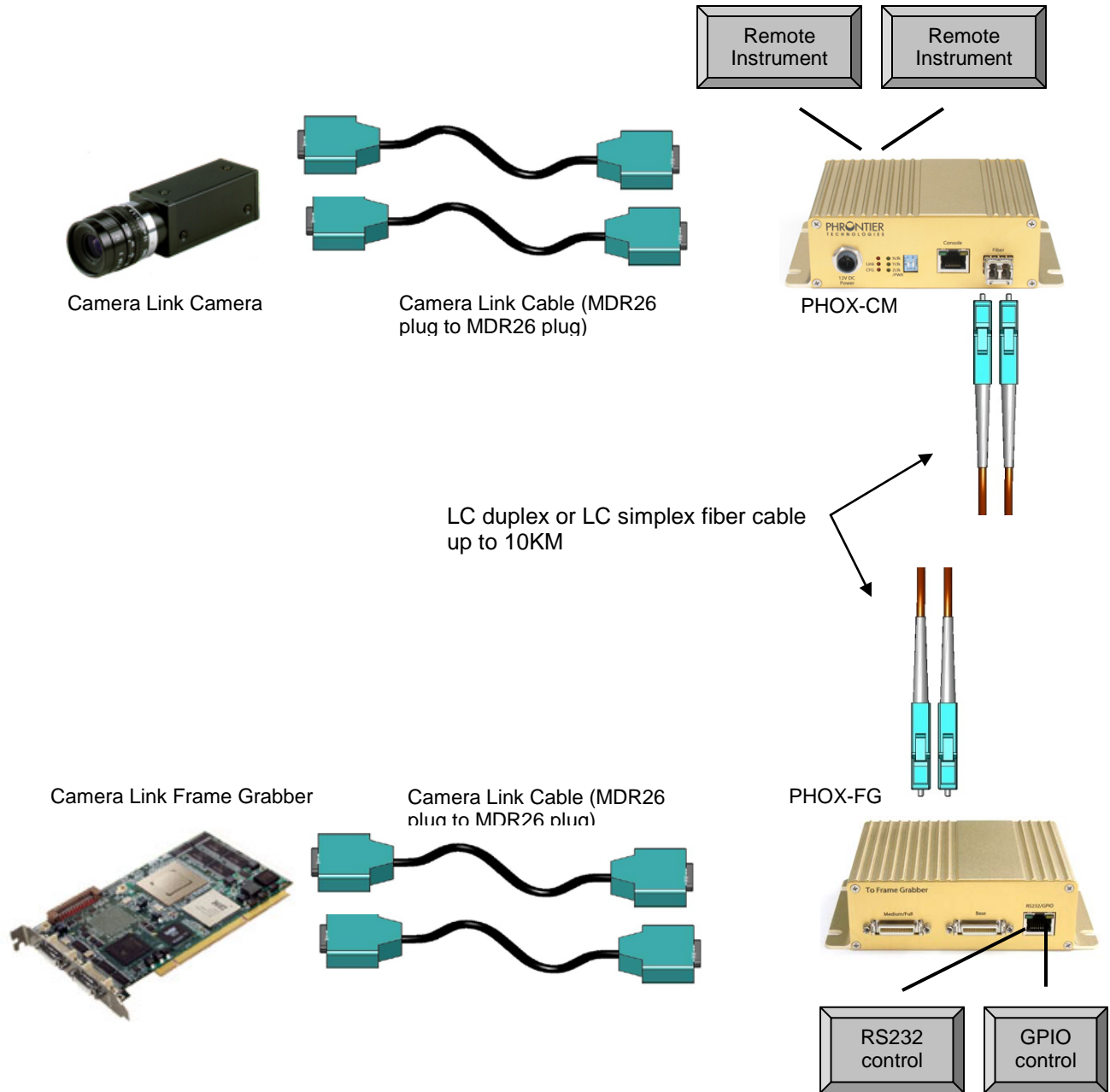


PHOX Back View



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TYPICAL SET UP DIAGRAM



Fiber Guide

- Use 62.5/125 OM1 MM fiber for <30 m
- Use 50/125 OM2 MM fiber for <80 m
- Use 50/125 OM3 MM fiber for <300 m
- Use 9/125 SM fiber for <10 km

TECHNICAL SPECIFICATIONS

General Specification

| | | | | |
|------------------------------|---------------------------|-------------|-----------|----------|
| Operating Case Temperature | Standard | 0 ~ 55 °C | | |
| | Extended | -40 ~ 70 °C | | |
| Operating Humidity | 20 ~ 80% (non-condensing) | | | |
| Input Voltage | DC 10 ~ 24 V | | | |
| Supply Current @12V | CM module | 0.5 Amp | FG module | 0.6 Amp |
| Typical Power Consumption | CM module | 6 Watt | FG module | 7.2 Watt |
| Connector Type | Switchcraft TRAPC3MX | | | |
| Approx. Weight (each module) | 325 g | | | |

Camera Link Interface

| | |
|------------------------|---------------------------------|
| Pixel Clock Range | 20 ~ 100 MHz |
| Supported Camera Modes | Base/Medium/Full/10 tapsx8 bits |
| Image Data Throughput | 8.4 Gbits/s or 1050 Mbytes/s |
| Connector Type | MDR26 x2 |

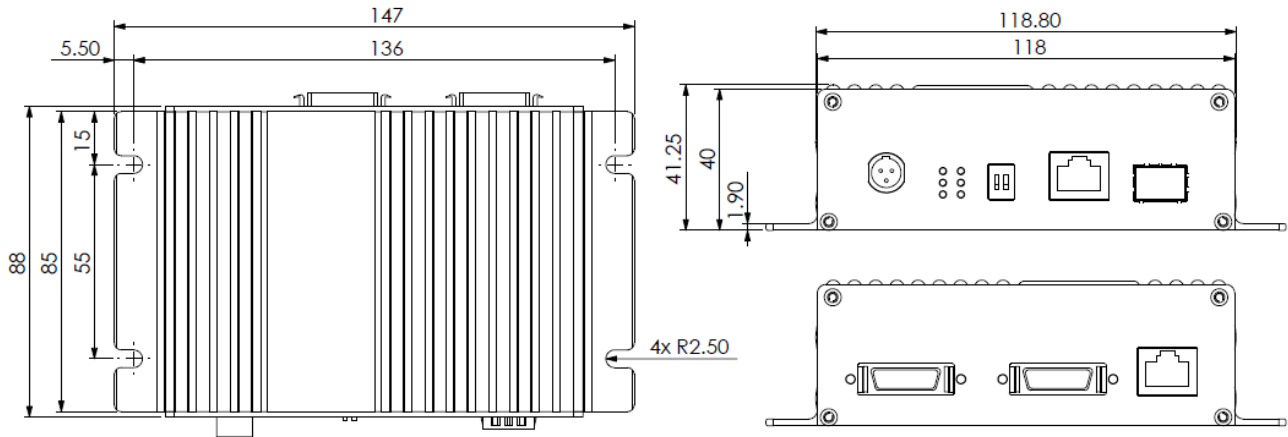
Additional Input/Output Interface

| | |
|----------------------------------|--------------------------------|
| GPIO Interface (optional) | |
| Number of I/O Channels | 2 input and 2 output |
| Operating Voltage | 0~3.3V |
| Max. Data Rate | 250 Kbps |
| Connector Type | RJ45 |
| RS232 Interface | |
| Number of Data Channels | one TxD and one RxD |
| Operating Voltage | Input: +/- 25V, Output: +/- 6V |
| Max Data Rate | 250 Kbps |
| Connector Type | RJ45 |

Optical Interface

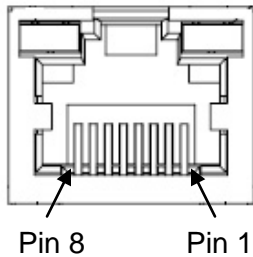
| | PHOX-FM-300 | PHOX-FL-10 | PHOX-FL-L10 | PHOX-FL-14-Cxx |
|-----------------------------|--------------------|--------------------|----------------------------------|------------------------------------|
| Operating Wavelength | 850nm | 1310nm | CM Tx: 1270 nm FG Tx: 1330 nm | 1270 ~ 1610nm with 20nm spacing |
| Min Optical Tx Output Power | -5 ~ -1 dBm | -8 ~ +0.5 dBm | -5 ~ 0 dBm | -1 ~+3 dBm |
| Min Optical Rx Power | -11.1 dBm | -14.4 dBm | -14 dBm | -15 dBm |
| Connector Type | LC duplex | LC duplex | LC simplex | LC duplex |
| Fiber Type | 50/125µm MM fibers | 9/125 µm SM fibers | | |

MECHANICAL INFORMATION (mm)



RS232 and GPIO PIN ASSIGNMENT (RJ45)

Note: RS232 is connected by default. GPIO is optional and not connected in standard product. Please contact sales representative for this option before purchase.



- | | |
|--------------|--------------|
| 1: GPIO TX1 | 5: GND |
| 2: GPIO TX2 | 6: RS232 RxD |
| 3: RS232 TxD | 7: GPIO RX1 |
| 4: GND | 8: GPIO RX2 |

ORDERING INFORMATION

| Model # | Operating Temperature | Transport Distance* | Items included |
|---------------|-----------------------|---|--|
| PHOX-FM-300 | Standard | OM1 fiber up to 30 m OM2 fiber up to 80 m OM3 fiber up to 300 m | 1x PHOX camera (CM) side module 1x PHOX frame grabber (FG) side module 2x 12V international wall mount AC/DC power adapters (LC duplex fiber cable not included) |
| PHOX-FM-300-T | Extended | | |
| PHOX-FL-10 | Standard | Up to 10 km | |
| PHOX-FL-10-T | Extended | | |
| PHOX-FL-L10 | Standard | Single fiber up to 10 km | |

Note:

* Distance depending on fiber type and system design. 300 m is estimated based on 50/125 OM3 MM fiber and 10 km is estimated based on 9/125 SM fiber. Extra optical losses in the system will reduce the maximum transmission distance.

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

| Model # | Optical Power Budget | Optical Wavelengths | Items Provided |
|-----------------------|----------------------|--|--|
| PHOX-FL-14-Cxx | 14dB | 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 xx=37 for 1370 nm | 1x PHOX camera (CM) side module 1x PHOX frame grabber (FG) side module 2x 12V international wall mount AC/DC power adapters (LC duplex fiber cable not included) |
| PHOX-FL-16-Cxx | 16dB | 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 xx=49 for 1490 nm | |
| PHOX-FL-24-Cxx | 24dB | 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 |
|------------------|--|
| TR10R120-12A03 | 12V DC international wall mount AC/DC adapter with Switchcraft TA3FX |
| 614-14T26-xx-0LC | Camera Link cable – Plug to Plug. xx = desired length in meters. |
| LC-LC-MD-xxM2 | LC to LC duplex 50/125 μm OM2 MM fiber. xx = desired length in meters. |
| LC-LC-MD-xxM3 | LC to LC duplex 50/125 μm OM3 MM fiber. xx = desired length in meters. |
| PXF-DB9RJ45-6 | 6 ft RJ45 plug to DB9 female cable |



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