

## KEY FEATURES

- ❖ Fully supports medium or dual base Camera Link™ cameras/frame grabbers
- ❖ Provides 5Gb/s transport bandwidth – up to 6 tabs 8 bits (48 bits) and 85 MHz pixel clock
- ❖ Zero loss and transparent transport – no changes required for camera and/or frame grabber
- ❖ Two LC duplex fiber interface
- ❖ 8 opto-isolated GPIO channels (4 inputs and 4 outputs) for external trigger and control
- ❖ Two full duplex RS232 for remote instrument control
- ❖ Single 5V~24V DC power supply
- ❖ Locking AC/DC power adapter
- ❖ Transmission distance depending on your choice of fiber:
  - Multi-mode fiber – up to 250m
  - Single-mode fiber – up to 80km

## APPLICATIONS

- ❖ High precision security surveillance (e.g. border control, airport)
- ❖ Bar code reading and sorting (e.g. postal center, packaging)
- ❖ Vehicle license plate reading/recording (e.g. toll booth)
- ❖ Product inspection (e.g. automated production line)
- ❖ Port/Harbor cargo container management
- ❖ Railroad measurement/inspection
- ❖ Traffic surveillance/control
- ❖ Cameras placed in harsh environment (e.g. nuclear plant)
- ❖ Long haul image transmissions (e.g. bridge inspection)
- ❖ Other Machine Vision Applications

**PHRONTIER™**  
TECHNOLOGIES

## PHOX™ Camera Link Fiber Extender

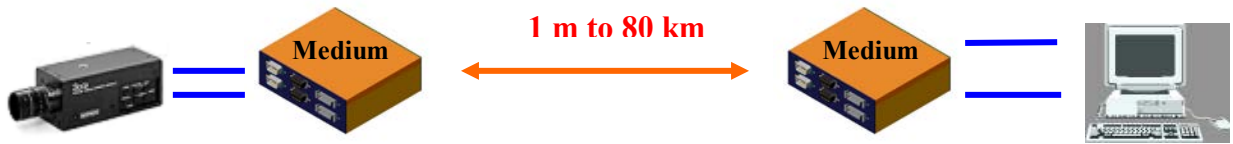
## Medium/Dual Base Convertible

**PHOX-MM-250**  
**PHOX-MM-A250**  
**PHOX-ML-10/20/40/80**  
**PHOX-ML-A10/A20/A40/A80**

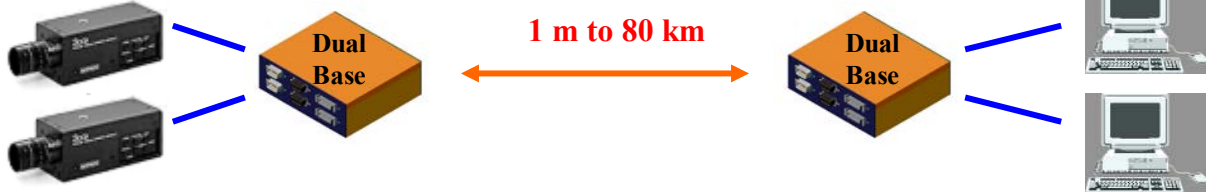


## SYSTEM FLEXIBILITY

### 1 Medium CL Camera to 1 Medium Framegrabber



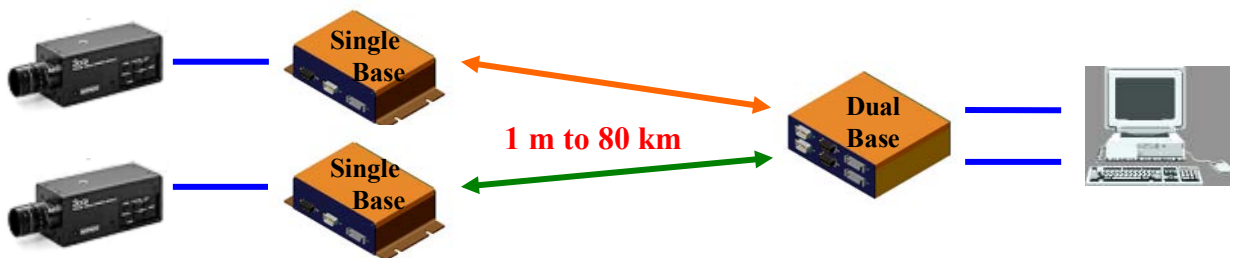
### 2 CL Cameras to 2 separate CL Base Framegrabbers



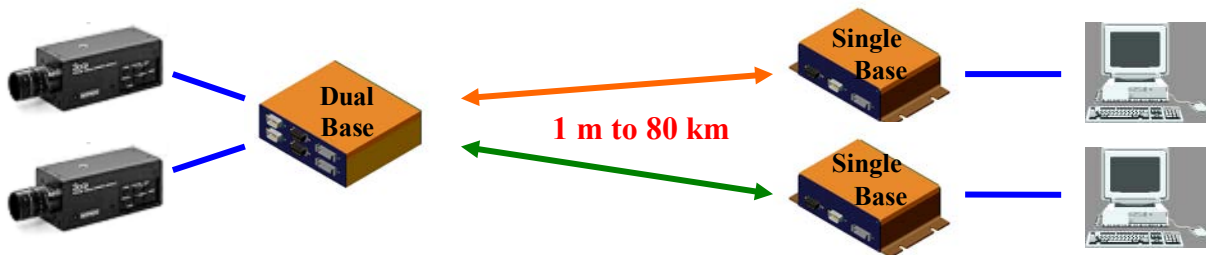
### 2 CL Cameras to 1 Dual Base Framegrabber



### 2 Remote CL Cameras to 1 Dual Base Framegrabber



### 2 CL Cameras to 2 Remote CL Framegrabbers

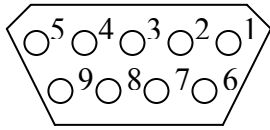


## TECHNICAL SPECIFICATIONS

| <b>Camera Link Interface</b>            |  |                         |                      |                                    |
|---|--|-------------------------|----------------------|------------------------------------|
| Max Pixel Clock                         | PHOX-BM-00250                                | 66 MHz                  | PHOX-BM-A250         | 85 MHz                             |
| Max Data Width                          | 48 bits                                      |                         |                      |                                    |
| Compatibility                           | Camera Link Medium/Dual Base/Base mode       |                         |                      |                                    |
| Connector Type                          | 2x MDR26                                     |                         |                      |                                    |
| <b>Opto-isolated GPIO Interface</b>     |  |                         |                      |                                    |
| Number of I/O Channels                  | 4 input and 4 output (all are opto-isolated) |                         |                      |                                    |
| Operating Voltage                       | 0~3.3V (5V with external supply)             |                         |                      |                                    |
| Max. Data Rate                          | 1 Mbps                                       |                         |                      |                                    |
| Connector Type                          | 2x DB9 male                                  |                         |                      |                                    |
| <b>RS232 Interface</b>                  |  |                         |                      |                                    |
| Number of Data Channels                 | 8 (2 sets of RxD TxD RTS CTS)                |                         |                      |                                    |
| Operating Voltage                       | Input: +/- 25V, Output: +/- 6V               |                         |                      |                                    |
| Max Data Rate                           | 250 Kbps                                     |                         |                      |                                    |
| Connector Type                          | 2x DB9 female                                |                         |                      |                                    |
| <b>Optical Interface</b>                |  |                         |                      |                                    |
| Model #                                 | Operating Wavelength                         | Optical Tx Output Power | Min Optical Rx Power | Fiber Type                         |
| PHOX-MM-250                             | 850 nm                                       | -9 to -4 dBm            | -15 dBm              | OM1, OM2, OM3, OM4 multimode fiber |
| PHOX-MM-A250                            | 850 nm                                       | -9 to -2.5 dBm          | -15 dBm              |                                    |
| PHOX-ML-10                              | 1310 nm                                      | -9.5 to -3 dBm          | -18 dBm              | 9/125 $\mu$ m single mode fiber    |
| PHOX-ML-A10                             | 1310 nm                                      | -8 to -3 dBm            | -18 dBm              |                                    |
| PHOX-ML-20                              | 1310 nm                                      | -5 to 0 dBm             | -18 dBm              |                                    |
| PHOX-ML-A20                             | 1310 nm                                      | -5 to 0 dBm             | -18 dBm              |                                    |
| PHOX-ML-40                              | 1550 nm                                      | -2 to +3 dBm            | -20 dBm              |                                    |
| PHOX-ML-A40                             | 1550 nm                                      | 0 to +4 dBm             | -18 dBm              |                                    |
| PHOX-ML-80                              | 1550 nm                                      | -2 to +3 dBm            | -28 dBm              |                                    |
| PHOX-ML-A80                             | 1550 nm                                      | 0 to +4 dBm             | -26 dBm              |                                    |
| Connector Type                          | LC duplex                                    |                         |                      |                                    |
| <b>General Electrical Specification</b> |  |                         |                      |                                    |
| Input Voltage                           | DC 5 ~ 24 V                                  |                         |                      |                                    |
| Supply Current                          | 600 mA @12V each module                      |                         |                      |                                    |
| Typical Power Consumption               | 7.2 W each module                            |                         |                      |                                    |
| Operating Temperature                   | 0 ~ 50°C (non-condensing)                    |                         |                      |                                    |
| Connector Type                          | Switchcraft TA3FX locking connector          |                         |                      |                                    |
| Weight (Approx. each module)            | 370 gram                                     |                         |                      |                                    |

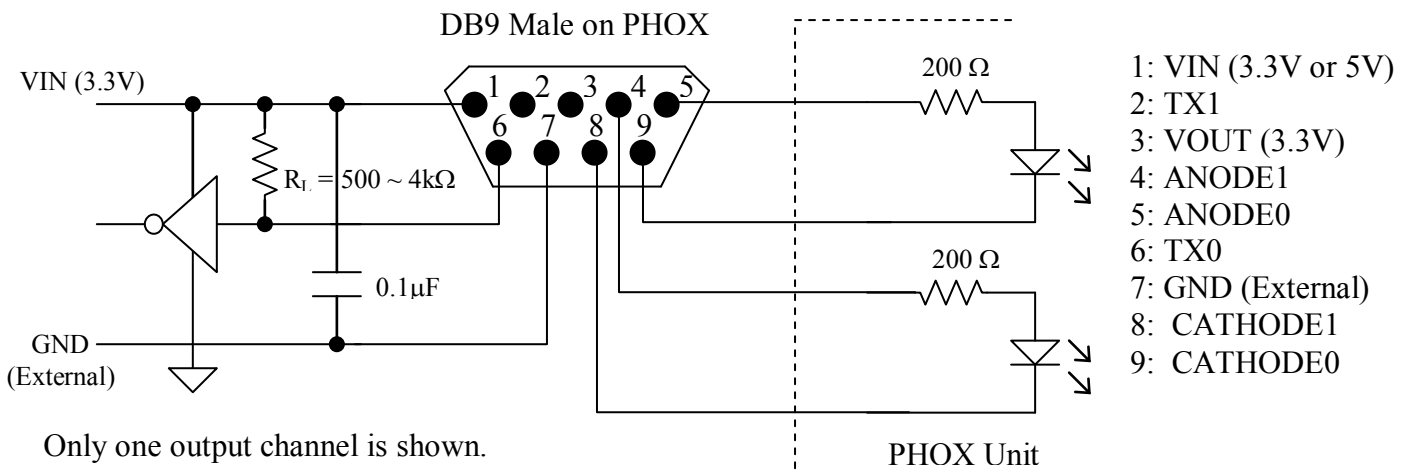
## RS232 PIN ASSIGNMENT (FEMALE DB9)

DB9 Female on PHOX

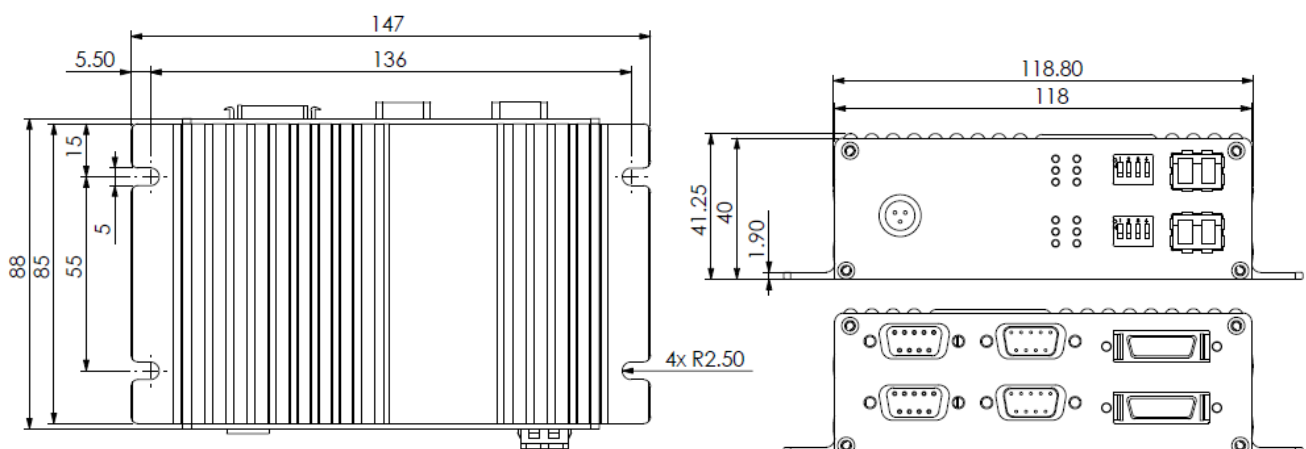


- 1: N/C
- 2: Data Tx
- 3: Data Rx
- 4: N/C
- 5: GND
- 6: N/C
- 7: CTS (Clear To Send)
- 8: RTS (Request To Send)
- 9: N/C

## GPIO PIN ASSIGNMENT (MALE DB9)



## MECHANICAL INFORMATION (mm)



## ORDERING INFORMATION

| Model #      | Pixel Clock | Transport Distance   | Check List  |
|--------------|-------------|----------------------|---|
| PHOX-MM-250  | 66 MHz max. | Up to 250 meters*    | 1x PHOX-CM<br>1x PHOX-FG<br>2x international AC/DC power adapters<br>12V DC output with locking plug<br>4x DB9 Male-Female 6ft cable (upon request)<br>(LC duplex fiber cable not included) |
| PHOX-MM-A250 | 85 MHz max. | Up to 250 meters*    |   |
| PHOX-ML-xx   | 66 MHz max. | Up to 80 kilometers* |   |
| PHOX-ML-Axx  | 85 MHz max. | Up to 80 kilometers* |   |

- Note: xx = Maximum transporting distance in kilometers. Available in 10KM, 20KM, 40KM, and 80KM.
- \* Distance depending on fiber type and system design. 250 m transmission distance for PHOX-MM is based on 50/125 MM fiber. Extra optical losses in the system will reduce the maximum transmission distance.