

KEY FEATURES

- ❖ Fully supports CoaXPress 2.1 standard and CXP-over-Fiber standard
- ❖ Supports all high speed bit rates – 1.25G, 2.5G, 3.125G, 5G, 6.25G, 10G, and 12.5Gb/s
- ❖ Supports PoCXP function to supply power to camera and receive power from grabber
- ❖ Extends link distance up to 10km or longer if needed
- ❖ Provides operating status through UART port and LED indicators
- ❖ Plug and play with no configuration required
- ❖ Standard micro-BNC connector for CXP interface
- ❖ Using QSFP+ module with MPO fiber connector or SFP+ module with LC duplex fiber connector
- ❖ Available with extended operating temperature
- ❖ Available with custom CWDM wavelengths
- ❖ Accepts wide range of DC input 10V~24V DC
- ❖ Industrial M8 power connector with secure locking mechanism
- ❖ Low power consumption
- ❖ Compact size
PHE4Q and PHE4S – 88L x 147W x 41.25H mm
(3.46L x 5.79W x 1.62H in)

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

PHORTE™

**4ch
CoaXPress 2.1
Fiber Extender**

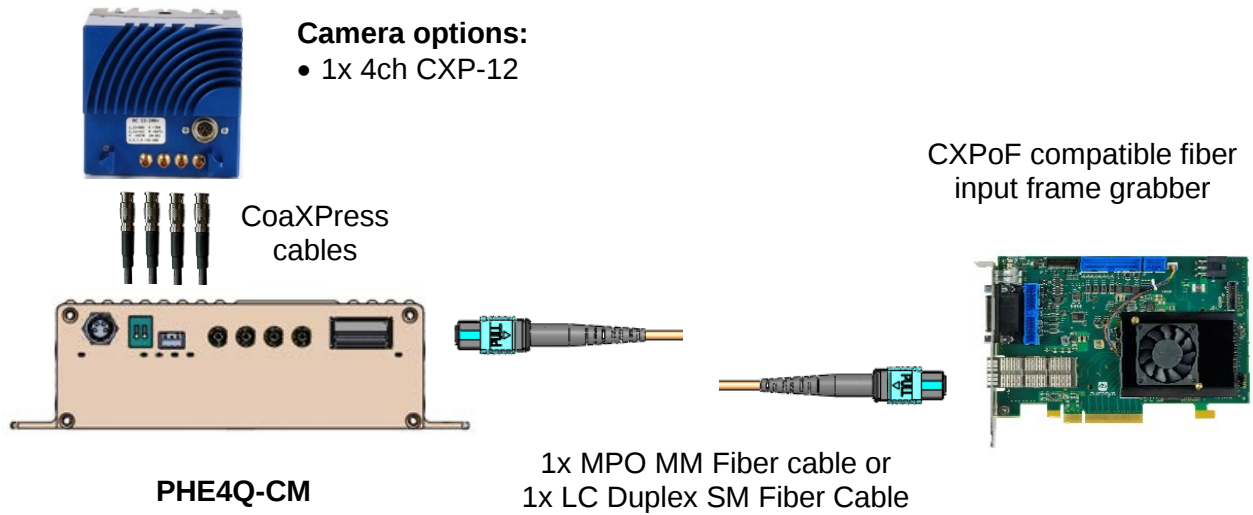
**PHE4Q-x
PHE4S-x, PHE4S-Cxx**



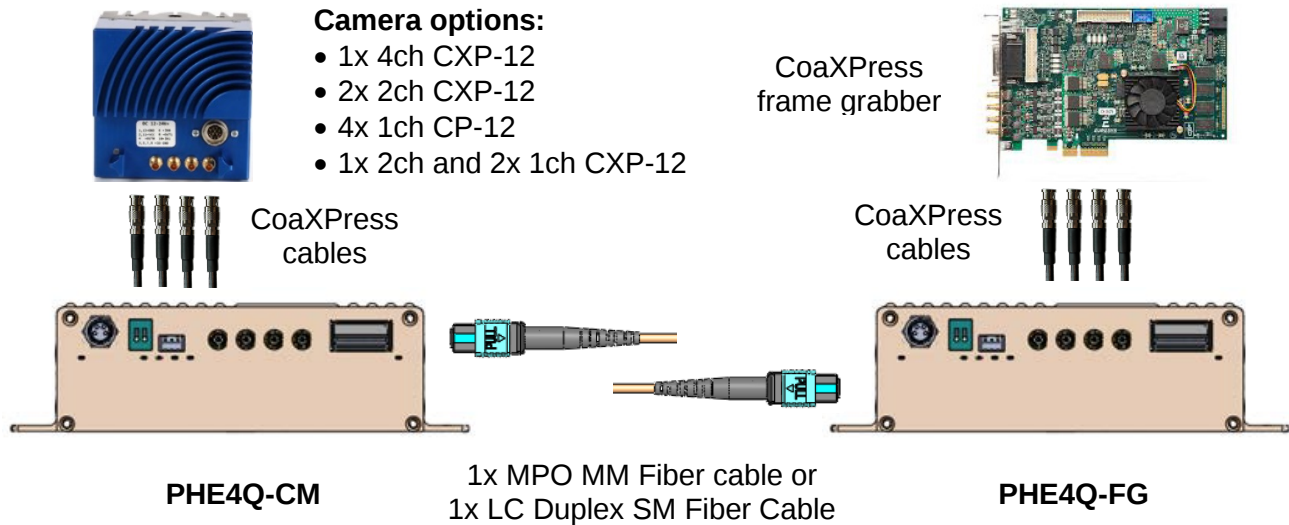
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TYPICAL SET UP DIAGRAM

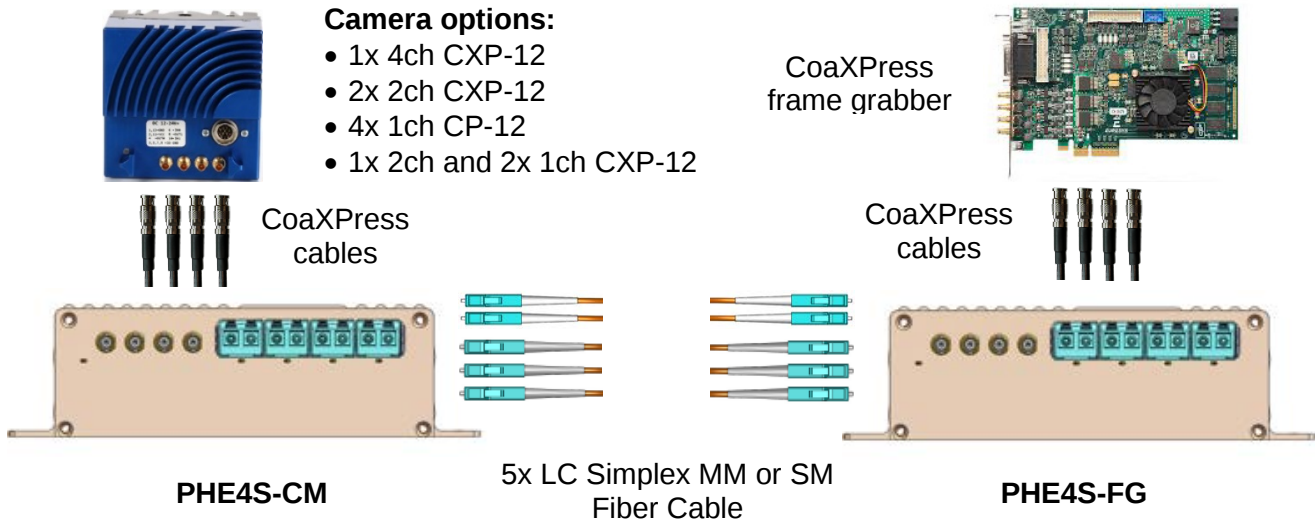
PHE4Q-CM using QSFP+ to CXPoF compatible fiber input frame grabber



PHE4Q CM+FG system (using QSFP+ module, non-compatible with CWDM)



PHE4S CM+FG system (using 4xSFP+ module, compatible with CWDM)



TECHNICAL SPECIFICATIONS

General Specification

Storage Temperature		-40 ~ 85 °C
Operating Temperature Without PoCXP	Ambient	0 ~ 50 °C
	Case	0 ~ 65 °C
Extended Operating Temperature Without PoCXP	Ambient	-40 ~ 65 °C
	Case	-40 ~ 75 °C
Operating Humidity		20 ~ 80% (non-condensing)
Input Voltage		DC 10 ~ 24 V
Typical Power Consumption Per Module ^{*1}	PHE4Q-M	CM: 6.7W, FG: 6.7W
	PHE4S-M	CM: 6.6W, FG: 7.2W
Power Connector on Module		Attend 219A-04MRF (compatible 4-pin industrial M8 receptacle connector)
Power Connector on AC/DC power supply		Attend 219A-04FF0 (compatible 4-pin industrial M8 plug connector)
Approx. Weight (each module)	PHE4Q-M	346 gram (12.2 oz)
	PHE4S-M	392 gram (13.83 oz)

^{*1} Measurements are done with PHE4Q-M and PHE4S-M @ 25C

CoaXPress Interface

Downlink Data Rate	CXP1, CXP2, CXP3, CXP5, CXP6, CXP10, CXP12
Uplink Data Rate	20.83 Mb/s, 41.67 Mb/s
Downlink latency (CM+FG)	1.2 μs
Uplink latency (CM+FG)	1.85 μs

PHORTE Series

Connector	Micro-BNC
PoCXP Output Voltage on CM module	24 V
PoCXP Supply Power on CM module ^{*2}	17W/Ch

^{*2} PoCXP supply power is provided through the DC input. Sufficient power supply is required for the CM module and all connected cameras.

Optical Interface – PHE4Q

	PHE4Q-M	PHE4Q-M1	PHE4Q-S
Operating Wavelength	850nm	850nm	1270/1290/1310/1330nm
Tx Ave. Optical Output	-7.6 ~ 2.4 dBm	-7.6 ~ 2.4 dBm	-7 ~ 2.3 dBm
Tx OMA per lane	-5.6 ~ 3 dBm	-5.6 ~ 3 dBm	-4 ~ 3.5 dBm
Peak Tx Power per lane	4 dBm	4 dBm	--
Stressed Rx Sensitivity OMA per lane	-5.4 dBm	-7.5 dBm	-9.6 dBm
Rx Sensitivity OMA per lane	--	-11.1 dBm	-11.5 dBm
Max Optical Rx Input	2.4 dBm	2.4 dBm	2.3 dBm
LOS Assert	-30 dBm	-30 dBm	-25 dBm
LOS De-assert	-7.5 dBm	-12 dBm	-15 dBm
LOS Hysteresis	0.5 dB	0.5 dB	0.5 dB
Connector Type	MTP or MPO	MTP or MPO	LC duplex
Fiber Counts	8	8	2
Fiber Type	MM	MM	SM
Estimated Link Distance	150m (500ft) on OM4	400m (1300ft) on OM4	10km (6.25miles)

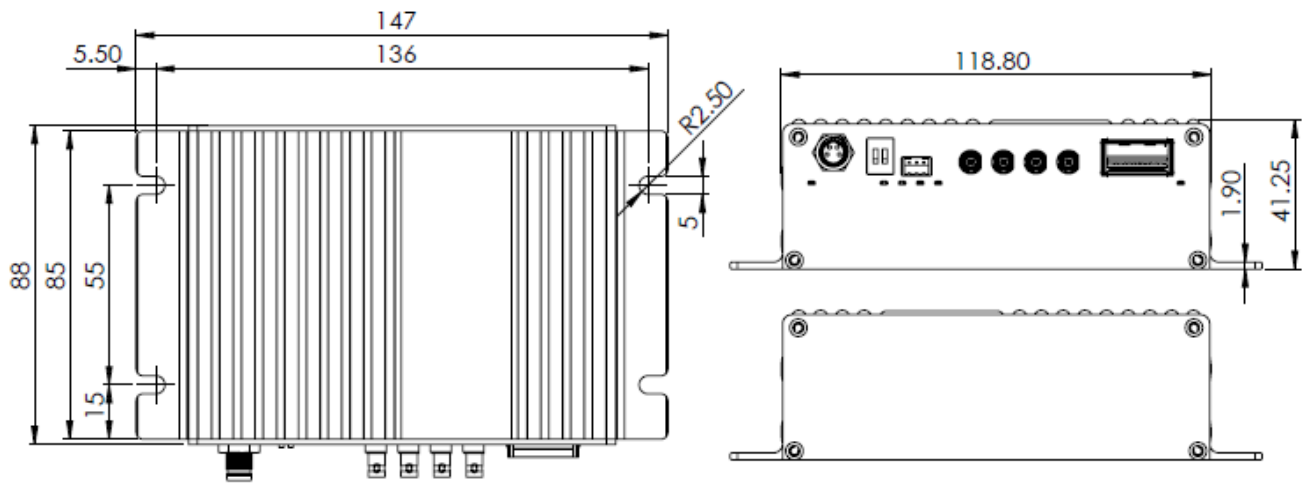
Optical Interface – PHE4S

	PHE4S-M	PHE4S-S	PHE4S-Cxx	PHE4S-B
Operating Wavelength	850nm	1310nm	CWDM grid	CM Ch1 Tx: 1270nm FG Ch1 Tx: 1330nm Ch2,3,4 Tx: 1310nm
Tx Ave. Optical Output	-6.5 ~ -1 dBm	-8.2 ~ 0.5 dBm	0 ~ 5 dBm	-8.2 ~ 0.5 dBm
Rx Sensitivity	-11.1 dBm	-14.4 dBm	-14.4 dBm	-14.4 dBm
Stressed Rx Sensitivity OMA	-7.5 dBm	-12.6 dBm	-12.6 dBm	-12.6 dBm
Max Optical Rx Input	0.5 dBm	0.5 dBm	0.5 dBm	0.5 dBm
Connector Type	LC simplex	LC simplex	LC simplex	LC simplex
Fiber Counts	5	5	5	4
Fiber Type	MM	SM	SM	SM

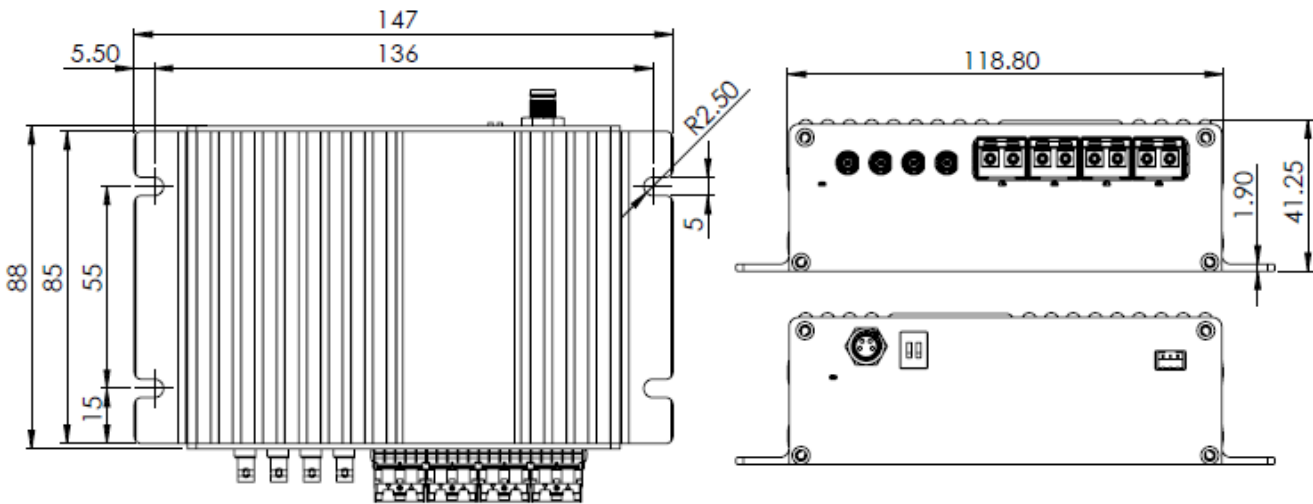
PHORTE Series

Estimated Link Distance	400m (1300ft) on OM4	10km (6.25miles)	--	10km (6.25miles)
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PHE4Q-x MECHANICAL INFORMATION (mm)



PHE4S-x MECHANICAL INFORMATION (mm)



ORDERING INFORMATION

PHE4Q Standard models

Model # *1	Fiber Type & Estimated Link Distance *2		Connector	Fiber count	Items Provided
PHE4Q-M or PHE4Q-M-T	OM3	100 m (330 ft)	MTP or MPO	8	1x PHORTE-CM 1x PHORTE-FG 1x 24W, DC 24V international wall mount AC/DC adapter (fiber cable not included)
	OM4	150 m (500 ft)			
PHE4Q-M1	OM3	300 m (1000 ft)	MTP or MPO	8	
	OM4	400 m (1300 ft)			
PHE4Q-S or PHE4Q-S-T	SM	10 km (6.25 mile)	LC duplex	2	

*1 "-T" is for extended temperature option.

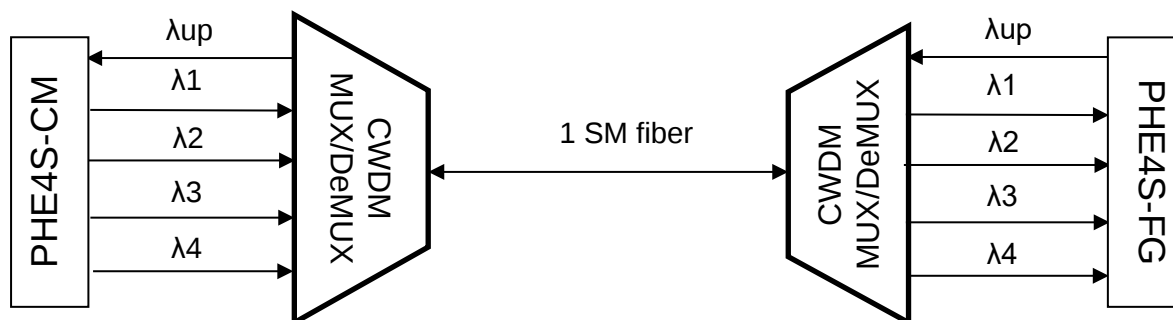
*2 Distance depends on fiber type and system design. Extra optical losses in the system will reduce the transmission distance. Longer link distance is available upon request.

PHE4S Standard models

Model # *1	Fiber Type & Estimated Link Distance *2		Connector	Fiber count	Items Provided
PHE4S-M or PHE4S-M-T	OM3	300 m (1000 ft)	LC simplex	5	1x PHORTE-CM 1x PHORTE-FG 1x 24W, DC 24V international wall mount AC/DC adapter (fiber cable not included)
	OM4	400 m (1300 ft)	LC simplex	5	
PHE4S-S or PHE4S-S-T	SM	10 km (6.25 mile)	LC simplex	5	
PHE4S-B or PHE4S-B-T	SM	10 km (6.25 mile)	LC simplex	4	

PHE4S CWDM models

Users need to specify 5 wavelengths for PHE4S in the order of Ch1, Ch2, Ch3, Ch4 and the uplink channel. For example: PHE4S-C27-29-31-33-55 will have Ch1=1270nm, Ch2=1290nm, Ch3=1310nm, Ch4=1330nm, uplink=1550nm. CWDM Mux/DeMux modules are not included in our products



Model #	Fiber Type	Optical Wavelengths	Items Provided
PHE4S-Cxx-xx-xx-xx-xx	SM	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 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 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	1x PHORTE-CM 1x PHORTE-FG 1x 24W, DC 24V international wall mount AC/DC adapters (fiber cable not included)

Accessory

Part #	Description
618-NGE30I24-M8F4	30W, DC 24V international wall mount AC/DC adapter with M8 female plug
618-VES90-M8F4	90W, DC 24V international wall mount AC/DC adapter with Binder plug
618-USB-UART-1.8	USB-to-UART serial communication port accessory cable, 1.8m
X12-UB-1-UB-01	1 meter uBNC-to-uBNC, Belden 4855R 12GHz coaxial cables.
X12-UB-1-UB-03	3 meter uBNC-to-uBNC, Belden 4855R 12GHz coaxial cables.
X6-UB-2-SC-01	1 meter uBNC-to-DIN 1.0/2.3 screw type, Belden 1855A 6GHz coaxial cables.
X6-UB-2-SC-03	3 meter uBNC-to-DIN 1.0/2.3 screw type, Belden 1855A 6GHz coaxial cables.
LC-LC-M4-D-xxM	LC to LC duplex 50/125 μ m OM4 MM fiber. xx = desired length in meters.
LC-LC-M4-S-xxM	LC to LC simplex 50/125 μ m OM4 MM fiber. xx = desired length in meters.
LC-LC-S-D-xxM	LC to LC duplex 9/125 SM fiber. xx = desired length in meters.
LC-LC-S-S-xxM	LC to LC simplex 9/125 SM fiber. xx = desired length in meters.



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