

## KEY FEATURES

- ❖ Fully supports CoaXPress standard with high speed downlink and low speed uplink
- ❖ Supports all high speed bit rates – 1.25G, 2.5G, 3.125G, 5G and 6.25Gb/s
- ❖ Supports PoCXP function to supply power to camera and receive power from grabber
- ❖ Optional AUX channels for additional RS232, RS422 and GPIO channels
- ❖ Optional remote operating status monitoring
- ❖ Transparent operation – plug and play with no configuration required
- ❖ Extends link distance up to 10km or longer if needed
- ❖ Standard DIN 1.0/2.3 connector
- ❖ Standard LC duplex fiber interface with optional 1-fiber bi-directional connection
- ❖ Available with extended operating temperature
- ❖ Accepts wide range of DC input 10V~24V DC
- ❖ Power connector with secure locking mechanism
- ❖ LED indicators for operating status
- ❖ Compact size  
PHT1 (excludes heatsink) – 72L x 62W x 18H mm  
PHT4 – 88L x 147W x 41.25H mm

## 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™ 1, 2 and 4ch CoaXPress Fiber Extender

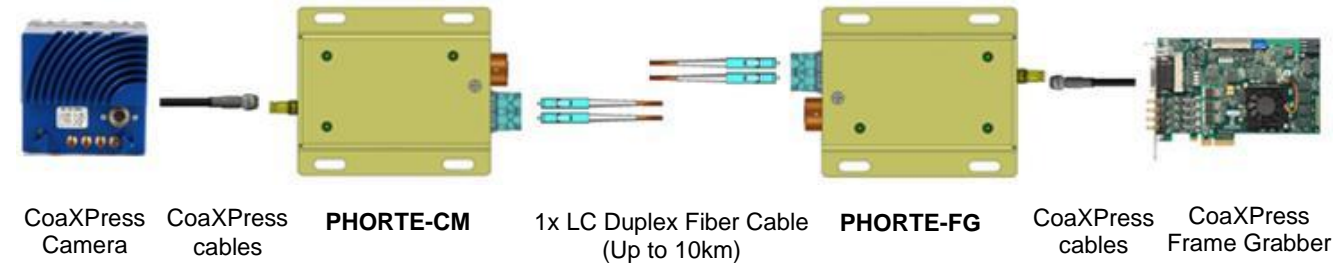
PHT1-x, PHT1-Cxx  
PHT2-x-x, PHT2-Cxx  
PHT4-x-x, PHT4-Cxx



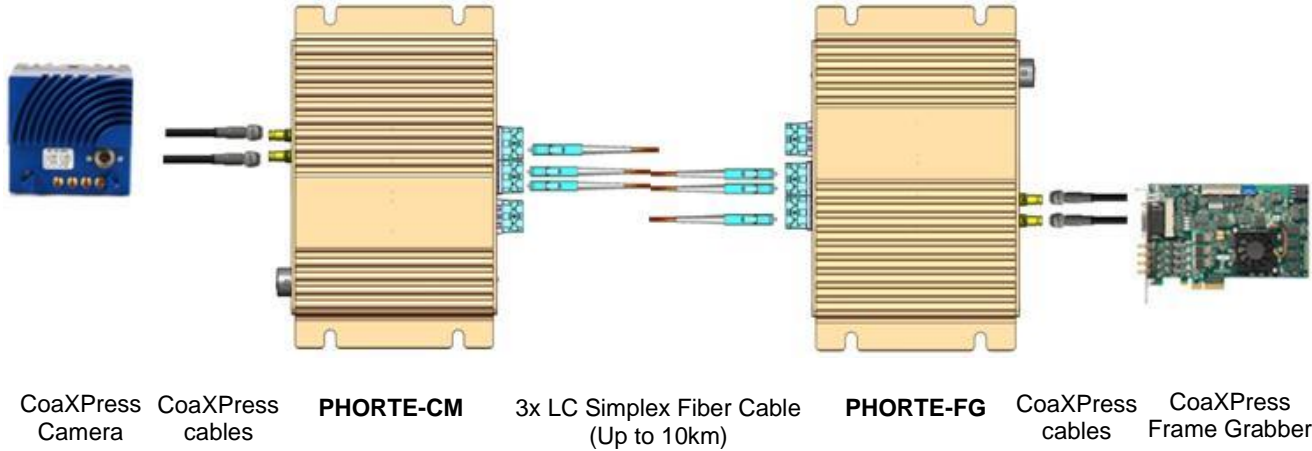
Phrontier Technologies, LLC  
[www.phrontier-tech.com](http://www.phrontier-tech.com)  
sales@phrontier-tech.com  
Toll Free: 1-866-389-2829  
Fax: 1-801-998-1855

## TYPICAL SET UP DIAGRAM

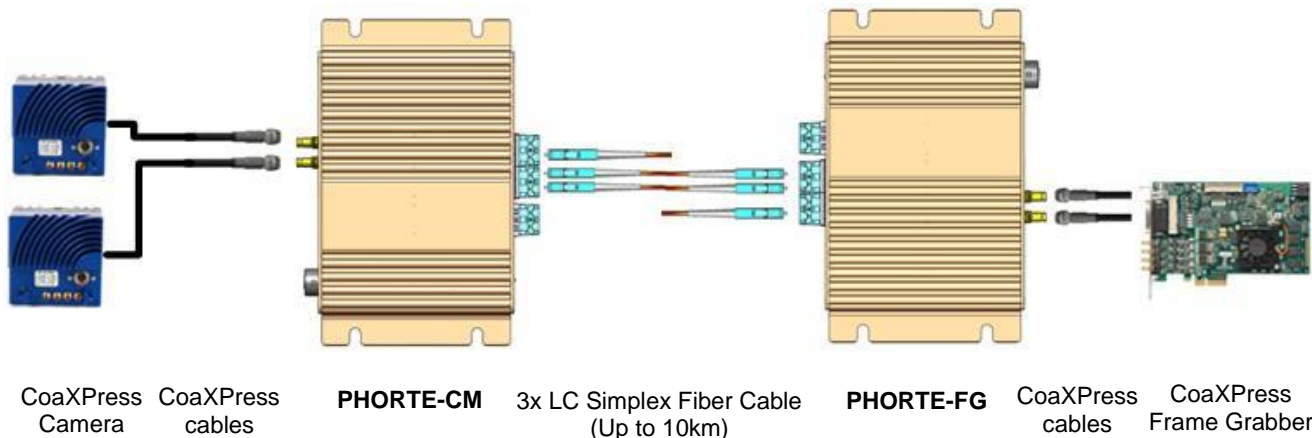
### PHT1 with 1ch CXP system



### PHT2 with 2ch CXP system (Drawing shows optical ports for AUX options)



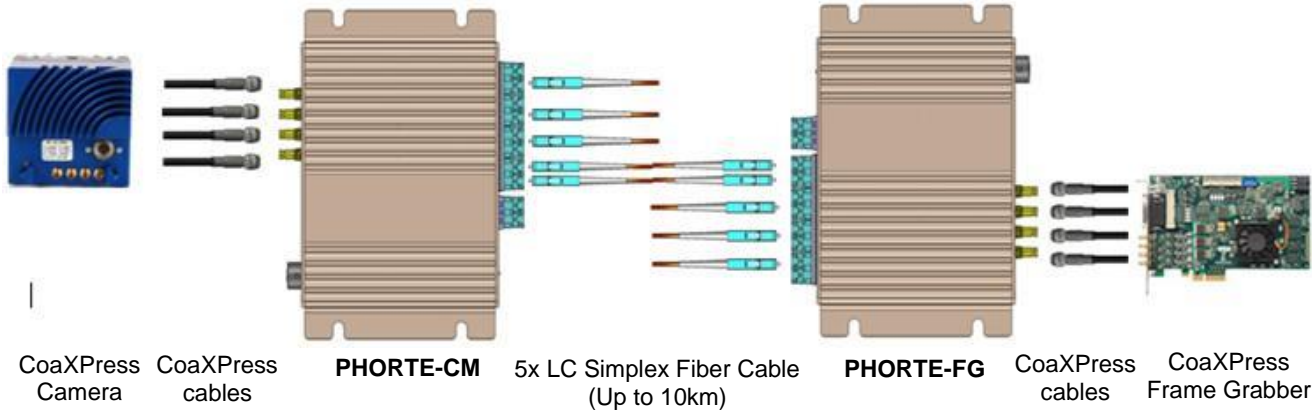
### PHT2 with 2x 1ch CXP system (Drawing shows optical ports for AUX options)



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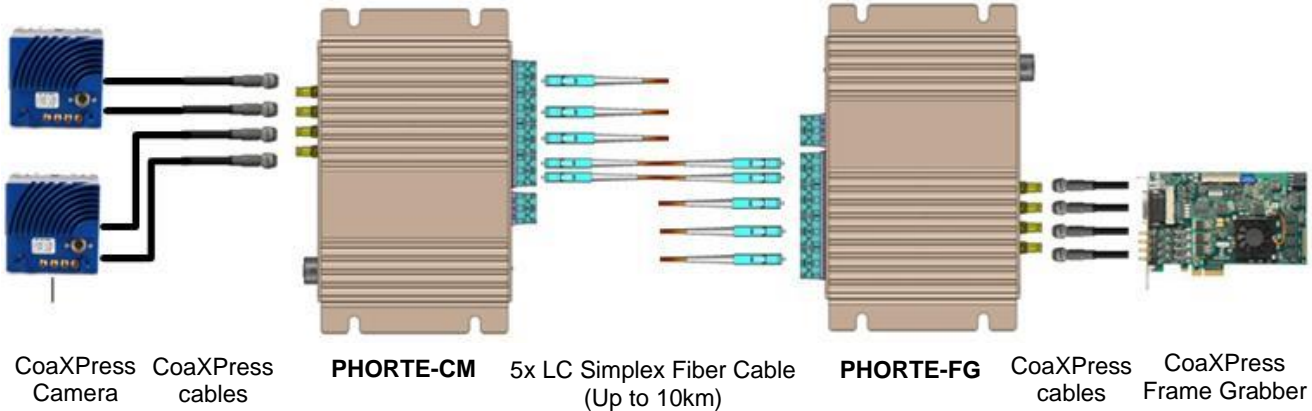
## PHT4 with 4ch CXP system

(Drawing shows optical ports for AUX options)



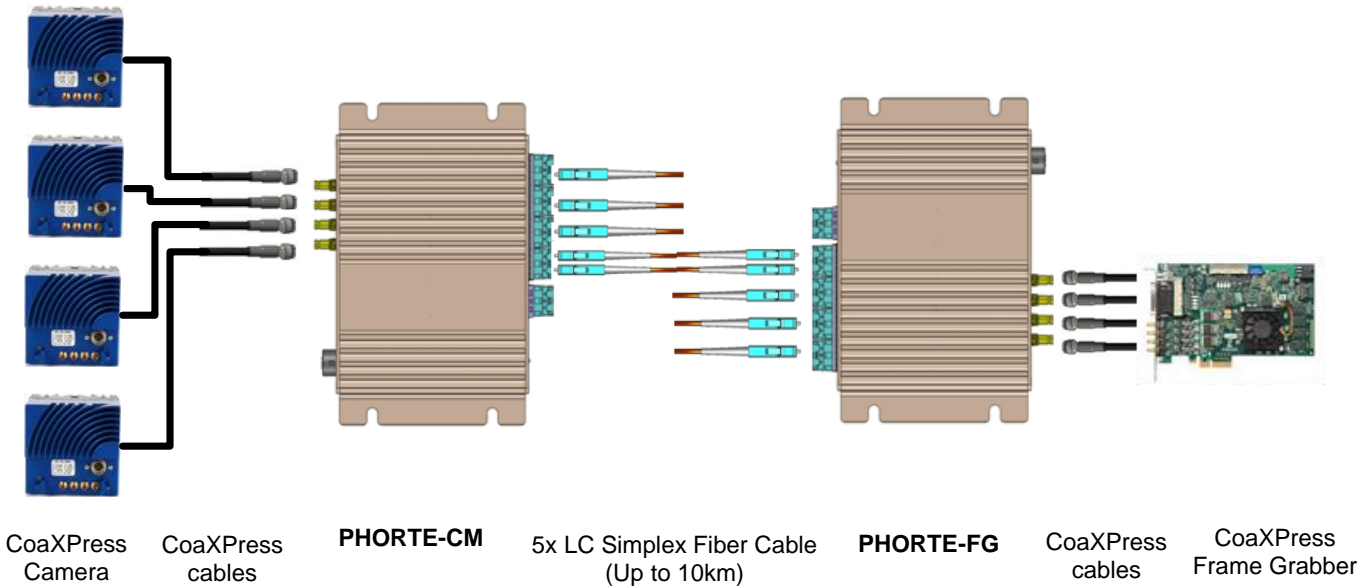
## PHT4 with 2x 2ch CXP system

(Drawing shows optical ports for AUX options)



## PHT4 with 4x 1ch CXP system

(Drawing shows I/O ports for AUX options)



## PHT1 TECHNICAL SPECIFICATIONS

### General Specification – PHT1

Storage Temperature		-40 ~ 85 °C
Operating Temperature Without PoCXP, With 11mm Heatsink	Ambient	0 ~ 45 °C
	Case	0 ~ 60 °C
Extended Operating Temperature Without PoCXP, With 11 mm heatsink	Ambient	-40 ~ 55 °C
	Case	-40 ~ 75 °C
Operating Humidity		20 ~ 80% (non-condensing)
Input Voltage		DC 10 ~ 24 V
Typical Supply Current Per Module @24V <sup>*1</sup>		0.13 A
Typical Power Consumption Per Module <sup>*1</sup>		3.2 W
Power Connector on Module		Binder 09-0982-00-04
Approx. Weight (each module)		67 gram without heatsink 93 gram with 11mm heatsink

<sup>\*1</sup> Measurements are done with PHT1-M @ 25C

### CoaXPress Interface – PHT1

Downlink Data Rate	CXP-1, CXP-2 ,CXP-3, CXP-5, CXP-6
Uplink Data Rate	20.83 Mb/s
Connector	DIN1.0/2.3
PoCXP Output Voltage	24 V
PoCXP Supply Power	17W/Ch

### Optical Interface – PHT1

	PHT1-M	PHT1-S	PHT1-B	PHT1-Cxx
Operating Wavelength	850nm	1310nm	CM Tx: 1270nm FG Tx: 1330nm	CWDM grid
Min Optical Tx Output Power <sup>*2</sup>	-5 dBm	-8.2 dBm	-6.5 dBm	-4 dBm
Min Optical Rx Power <sup>*2</sup>	-11.1 dBm	-12.6 dBm	-12 dBm	-15 dBm
Max Optical Rx Input	0.5 dBm	0.5 dBm	0.5 dBm	0.5 dBm
Connector Type	LC duplex	LC duplex	LC simplex	LC duplex
Fiber Type	MM	SM	SM	SM

<sup>\*2</sup> More optical power options are available upon requests

## PHT2 and PHT4 TECHNICAL SPECIFICATIONS

### General Specification – PHT2 and PHT4

Storage Temperature		-40 ~ 85 °C
Operating Temperature Without PoCXP	Ambient	0 ~ 55 °C
	Case	0 ~ 65 °C
Extended Operating Temperature <sup>*3</sup> Without PoCXP	Ambient	-40 ~ 70 °C
	Case	-40 ~ 80 °C
Operating Humidity		20 ~ 80% (non-condensing)
Input Voltage		DC 10 ~ 24 V
Typical Power Consumption Per Module <sup>*4</sup>	PHT2	3.6W for CM, 3.5W for FG
	PHT4	5W for CM, 5W for FG
Power Connector on Module		Binder 09-0982-00-04
Approx. Weight (each module)		365 gram

<sup>\*3</sup> For PHT1-Cxx, the extended ambient temperature range is -20 ~ 60C and the extended case temperature is -20 ~ 70C

<sup>\*4</sup> Measurements are done with PHT2-M and PHT4-M @ 25C

### CoaXPress Interface – PHT2 and PHT4

Downlink Data Rate	CXP-1, CXP-2 ,CXP-3, CXP-5, CXP-6
Uplink Data Rate	20.83 Mb/s
Connector	DIN1.0/2.3
PoCXP Output Voltage	24 V
PoCXP Supply Power	17W/Ch

### Optical Interface for CXP channels – PHT2

	PHT2-M	PHT2-S	PHT2-B	PHT2-Cxx
Operating Wavelength <sup>*5</sup>	850nm	1310nm	CM Ch1 Tx: 1270nm FG Ch1 Tx: 1330nm Ch2 Tx: 1310nm	CWDM grid
Min Optical Tx Output <sup>*6</sup>	-5 dBm	-8.2 dBm	-6.5 dBm	-4 dBm
Min Optical Rx Input	-11.1 dBm	-12.6 dBm	-12 dBm	-15 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 duplex
Fiber Counts	3	3	2	3
Fiber Type	MM	SM	SM	SM

### Optical Interface for CXP channels – PHT4

	PHT4-M	PHT4-S	PHT4-B	PHT4-Cxx
Operating Wavelength <sup>*5</sup>	850nm	1310nm	CM Ch1 Tx: 1270nm FG Ch1 Tx: 1330nm Ch2,3,4 Tx: 1310nm	CWDM grid

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Min Optical Tx Output* <sup>6</sup>	-5 dBm	-8.2 dBm	-6.5 dBm	-4 dBm
Min Optical Rx Input	-11.1 dBm	-12.6 dBm	-12 dBm	-15 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 duplex
Fiber Counts	5	5	4	5
Fiber Type	MM	SM	SM	SM

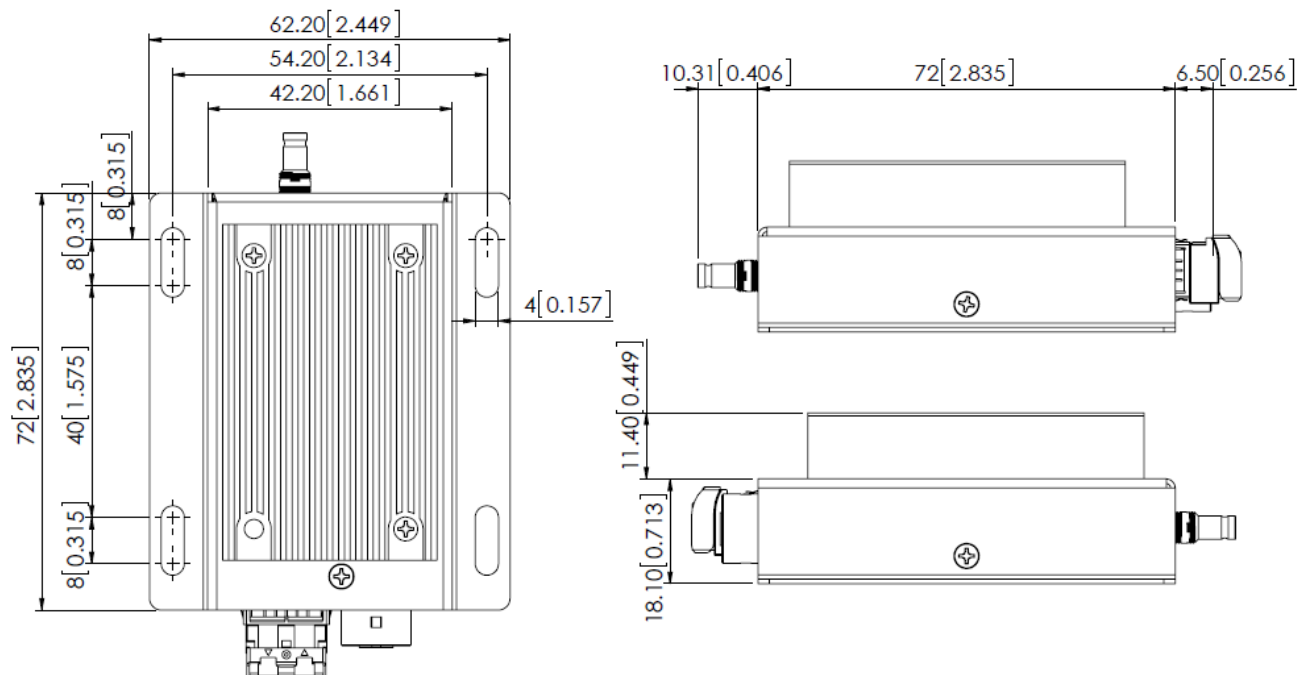
\*<sup>5</sup> CWDM options are available in the ordering information

\*<sup>6</sup> More optical power options are available upon requests

## Optical Interface for optional AUX channel – PHT2 and PHT4

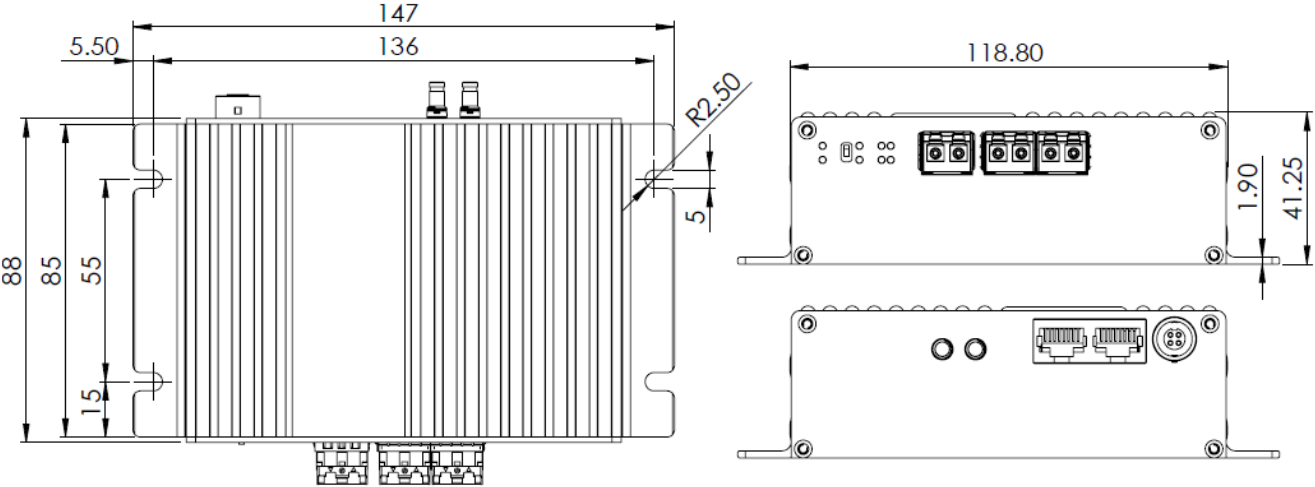
	PHTx-M-A	PHTx-S-A	PHTx-B-B
Operating Wavelength	850nm	1310nm	CM Tx: 1310nm FG Tx: 1550nm
Min Optical Tx Output	-9 dBm	-3 dBm	-3 dBm
Min Optical Rx Input	-17 dBm	-20 dBm	-20 dBm
Max Optical Rx Input	0.5 dBm	0.5 dBm	0.5 dBm
Connector Type	LC duplex	LC duplex	LC simplex
Fiber Counts	2	2	1
Fiber Type	MM	SM	SM

## PHT1-x MECHANICAL INFORMATION (mm [inch])



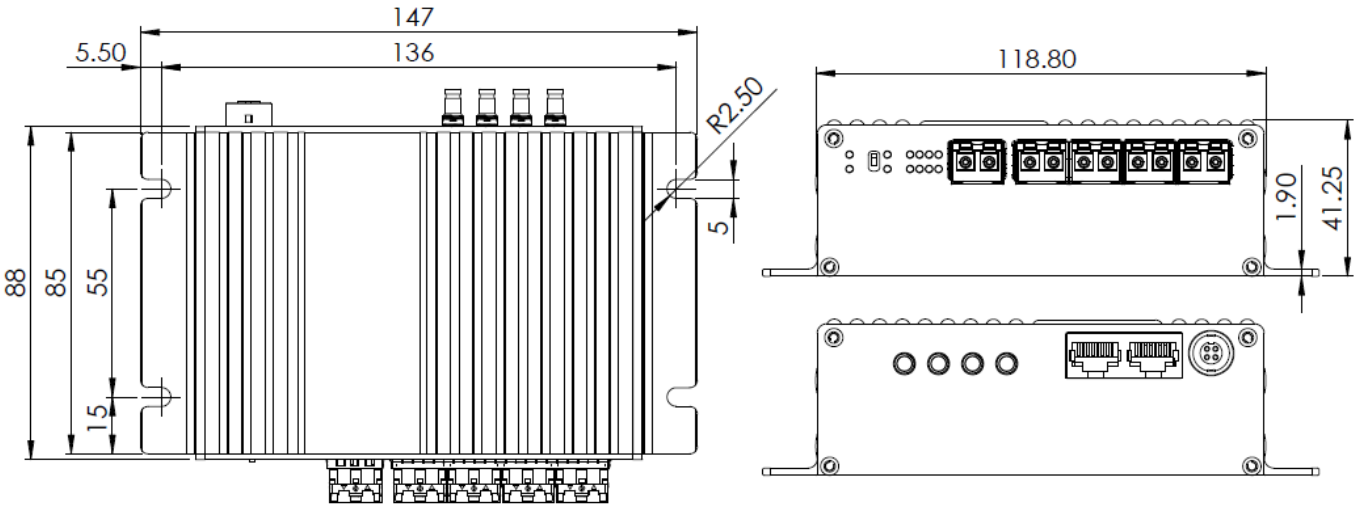
## PHT2-x-x MECHANICAL INFORMATION (mm)

(Drawing shows I/O ports for AUX options)



## PHT4-x-x MECHANICAL INFORMATION (mm)

(Drawing shows I/O ports for AUX options)



## ORDERING INFORMATION

### PHT1 Standard models

Model #	Fiber Type & Estimated Link Distance *		Fiber count	Items Provided
PHT1-M	OM2 MM	80 m (250 ft)	2	1x PHORTE-CM 1x PHORTE-FG
	OM3 MM	300 m (1000 ft)	2	
	OM4 MM	400 m (1300 ft)	2	

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<b>PHT1-S</b>	SM	10 km (6.25 mile)	2	1x 24W, DC 24V international wall mount AC/DC adapter (fiber cable not included)
<b>PHT1-B</b>	SM	10 km (6.25 mile)	1	

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

## PHT1 Temperature and Heatsink options

Model #	Options
<b>Standard # -T</b>	Extended temperature
<b>Standard # -L</b>	Large heatsink (22.9mm height)
<b>Standard # -T-L</b>	Extended temperature with large heatsink

## PHT1 CWDM models (users need to specify wavelengths for CM and FG modules)

Model #	Fiber Type	Optical Wavelengths	Items Provided
<b>PHT1-Cxx-CM or PHT1-Cxx-FG</b>	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)

## PHT2 Standard models

Model #	Fiber Type & Estimated Link Distance *		Fiber count	Items Provided
<b>PHT2-M</b>	OM2 MM	80 m (250 ft)	3	1x PHORTE-CM 1x PHORTE-FG 1x 24W, DC 24V international wall
	OM3 MM	300 m (1000 ft)	3	
	OM4 MM	400 m (1300 ft)	3	
<b>PHT2-S</b>	SM	10 km (6.25 mile)	3	



# PHORTE Series

<b>PHT2-B</b>	SM	10 km (6.25 mile)	2	mount AC/DC adapter (fiber cable not included)
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\* Distance depending on fiber type and system design. Extra optical losses in the system will reduce the transmission distance. Longer link distance is available upon request.

## PHT2 Standard models + AUX option

Model #	Fiber Type & Estimated Link Distance *		Fiber count	Items Provided
<b>PHT2-M-A</b>	OM2 MM	80 m (250 ft)	5	1x PHORTE-CM
	OM3 MM	300 m (1000 ft)	5	1x PHORTE-FG
	OM4 MM	400 m (1300 ft)	5	1x 24W, DC 24V international wall
<b>PHT2-S-A</b>	SM	10 km (6.25 mile)	5	mount AC/DC adapter
<b>PHT2-B-B</b>	SM	10 km (6.25 mile)	3	(fiber cable not included)

## PHT4 Standard models

Model #	Fiber Type & Estimated Link Distance *		Fiber count	Items Provided
<b>PHT4-M</b>	OM2 MM	80 m (250 ft)	5	1x PHORTE-CM
	OM3 MM	300 m (1000 ft)	5	1x PHORTE-FG
	OM4 MM	400 m (1300 ft)	5	1x 24W, DC 24V international wall
<b>PHT4-S</b>	SM	10 km (6.25 mile)	5	mount AC/DC adapter
<b>PHT4-B</b>	SM	10 km (6.25 mile)	4	(fiber cable not included)

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

## PHT4 Standard models + AUX option

Model #	Fiber Type & Estimated Link Distance *		Fiber count	Items Provided
<b>PHT4-M-A</b>	OM2 MM	80 m (250 ft)	7	1x PHORTE-CM
	OM3 MM	300 m (1000 ft)	7	1x PHORTE-FG
	OM4 MM	400 m (1300 ft)	7	1x 24W, DC 24V international wall
<b>PHT4-S-A</b>	SM	10 km (6.25 mile)	7	mount AC/DC adapter
<b>PHT4-B-B</b>	SM	10 km (6.25 mile)	5	(fiber cable not included)

## PHT2 and PHT4 Temperature option

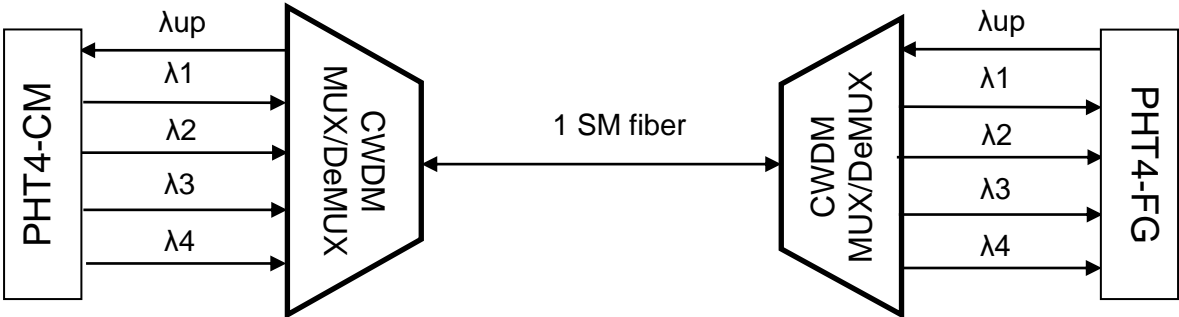
Model #	Options
<b>Standard # -T</b>	Extended temperature (ex: PHT4-M-T or PHT4-S-A-T)

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**PHT2 and PHT4 PoCXP disable option**

Model #	Options
<b>Standard # -D</b>	Disable PoCXP function on the CM module (ex: PHT2-M-D or PHT4-S-T-D)

**PHT2 and PHT4 CWDM models** (users need to specify 3 wavelengths for PHT2 and 5 wavelengths for PHT4 in the order of Ch1, Ch2, Ch3, Ch4 and the uplink channel. For example: PHT4-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
<b>PHT2-Cxx-xx-xx</b> or <b>PHT4-Cxx-xx-xx-xx-xx</b>	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
<b>618-GE24I24-BD</b>	24W, DC 24V international wall mount AC/DC adapter with Binder plug

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<b>618-VES90-BD</b>	90W, DC 24V international wall mount AC/DC adapter with Binder 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.



Phrontier Technologies, LLC  
[www.phrontier-tech.com](http://www.phrontier-tech.com)  
sales@phrontier-tech.com  
Toll Free: 1-866-389-2829  
Fax: 1-801-998-1855