



Technology Solution Guide

Deploying Omnitron PoE Media Converters with
Aruba Access Points



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Introduction

This document describes the Omnitron products that are interoperable with Aruba wireless access points, and is intended to supplement Aruba and Omnitron product documentation. Please contact the Aruba Partner Solution Engineering team at pse@arubanetworks.com should additional information be required.

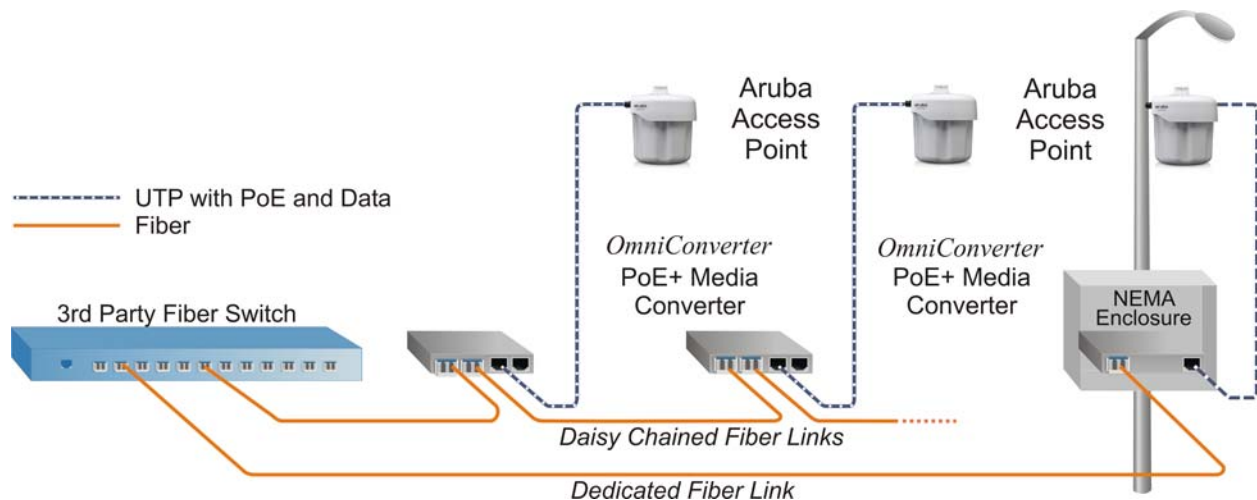
Solution Components

Enterprise networks must support a wide range of installation environments, located indoors and out, that leverage wireless, wired, and remote access infrastructure. Since installation scenarios vary widely, it's important for integrators to have a wide range of media converters and power supply options available. If fiber optic cabling is used to minimize the effects of lightning and electrical noise – or to traverse long distances – then fiber-to-Ethernet media converters will be needed at the access points, switches, and remote locations. Similarly, if Power-over-Ethernet (PoE) is needed to power access points and client devices then PoE supplies or injectors will be required.

The primary benefit of PoE is the elimination of power supplies, power cables, and power outlets that would otherwise be required for the remote device. As such, PoE lowers costs and saves money when deploying remote devices. This is especially relevant when these devices are installed in locations that are otherwise difficult and/or expensive to wire with AC power, such as ceilings, rooftops, and outdoors.

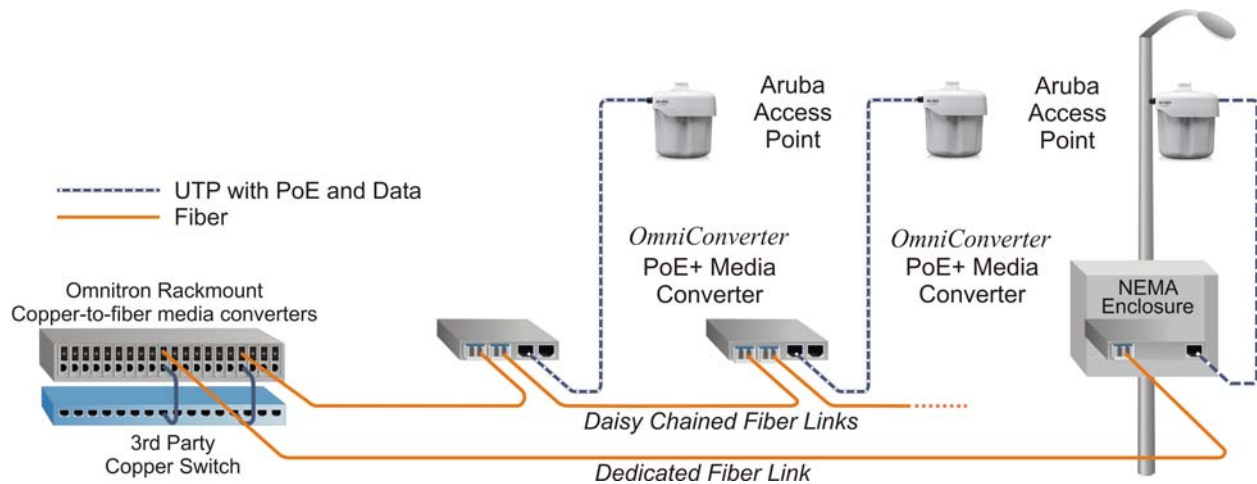
The maximum reach of Power-over-Ethernet is 100 meters using Ethernet on unshielded twisted pair (UTP) LAN cabling. This distance limitation challenges network engineers to find alternate solutions when access points and mesh routers must be located more than 100 meters from the Ethernet switch.

Omnitron's OmniConverter™ power sourcing media converters with integrated PoE overcome this distance limitation by combining the benefits of fiber optic data cabling (long distances) with power-over-Ethernet. An example application is shown in the diagram below.



In this application, fiber optic cabling originates from a fiber port on the Ethernet switch, and connects to a fiber port on an AC or DC powered OmniConverter media converter, located near the access point. The OmniConverter's 10/100 or 10/100/1000 UTP ports are connected to access points using up to 100 meters of Cat5 or better LAN cabling, as required, and provide both power and an Ethernet link across this single medium.

In applications where the Ethernet switch has no fiber port(s) available, low-cost standalone or rack mounted media converters can be used to convert copper switch ports into fiber, as shown in the diagram below.



In this example, no fiber ports are available at the Ethernet switch. Rack mounted copper-to-fiber media converters are used to create the fiber interface. Rack mounted media converters can provide up to 19 media conversion ports in less than 2U of rack space. For low density applications, standalone media converters may also be used.

OmniConverter Media Converters

OmniConverter power sourcing media converters are available with fixed fiber (SC, ST) and SFP (LC) interfaces. The 10/100 and 10/100/1000 UTP ports support both 802.3af (PoE) and 802.3at (PoE+) standards. Commercial temperature OmniConverters operate from 0 to +50 degrees C. Wide (-40 to +60 degrees C) and extended temperature (-40 to +75 degrees C) models are also available.

OmniConverter /S and /SL models feature one or two RJ-45 ports, one or two fiber ports, and provide advanced features that can be configured with DIP-switches.

FPoE/S and FPoE+/S are Fast Ethernet media converters that provide PoE or PoE+.

FPoE/SL are cost-effective Fast Ethernet media converters that provide PoE.

GPoE/S, GPoE+/S and GHPoE/S are Gigabit media converters that provide PoE, PoE+ or 60W PoE.



OmniConverter GPoE+/SX models are Gigabit media converters and switches that provide PoE+ and support four RJ-45 ports and up to two fiber ports. The GPoE+/SX models provide several advanced features that can be configured with DIP-switches.



These models support PoE power reset, which enables a PD device to be re-initialized remotely. When a problem with a PD is identified, the fiber port on a managed switch can be shut down or disconnected, enabling the PoE power reset function on the OmniConverter. The PoE power to the PD is disabled for 2 seconds when a loss of receive fiber link is detected by the OmniConverter, eliminating the need for costly truck rolls to remote PD sites.

OmniConverter /SE models support one or two RJ-45 ports, and one fiber port. The /SE models provide a low-cost alternative for applications that do not require advanced features or two fiber ports. There are no DIP-switches for simple, plug-and-play installation.

FPoE/SE and FPoE+/SE are cost-effective Fast Ethernet media that provide PoE or PoE+.

GPoE/SE and GPoE+/SE are cost-effective Gigabit Ethernet media converters that provide PoE or PoE+.

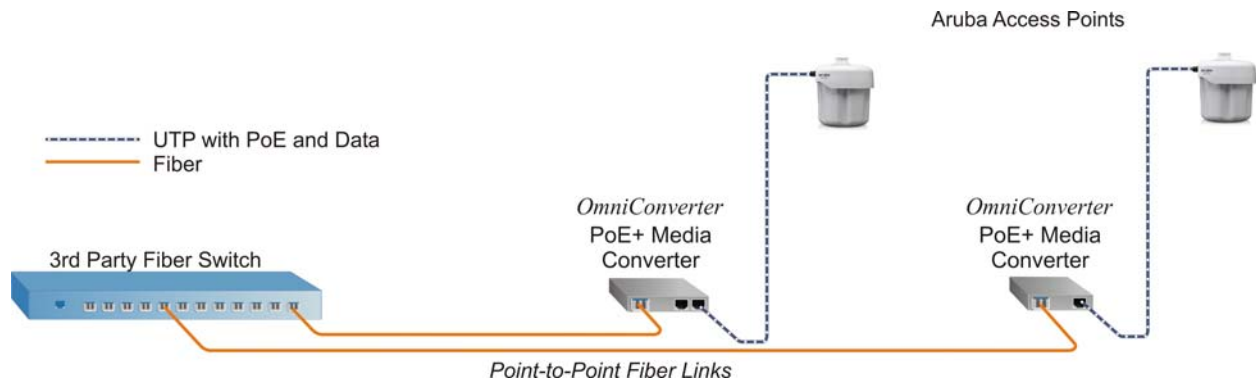


Omnitron Deployment Scenarios

The OmniConverter power sourcing media converters support multiple network architectures, including point-to-point, daisy-chain, redundant, dual PoE device mode and mux mode layouts.

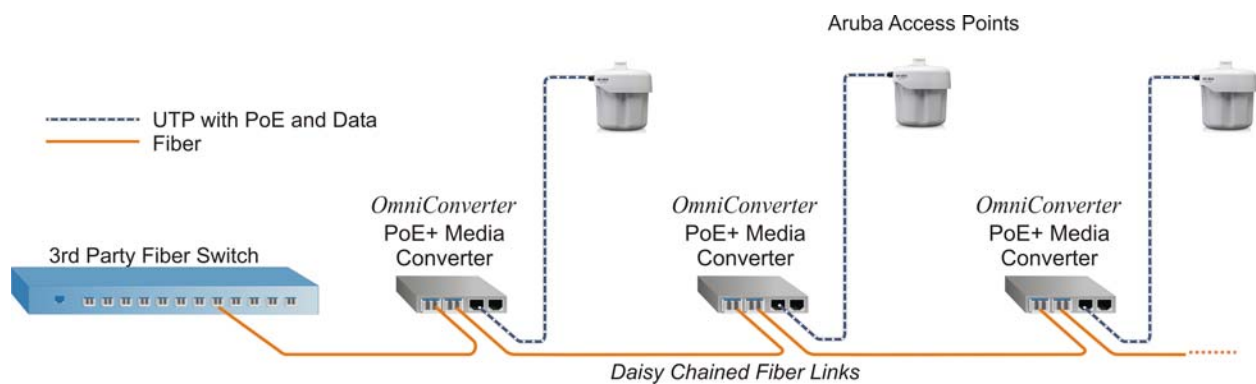
Point-to-point Fiber

A point-to-point architecture uses dedicated fiber links from the Ethernet switch to each power sourcing media converter, and is best suited for applications where the Ethernet switch resides in a central wiring closet, data center, or monitoring station and the fiber connections fan out radially.



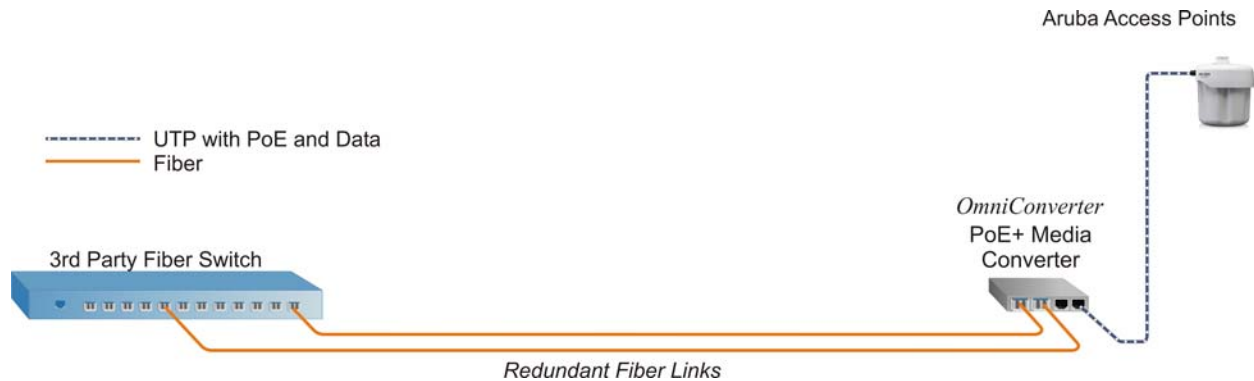
Daisy-chain

Daisy-chain fiber uses dual fiber ports to support connections in a linear chain. This architecture can be used to support long-haul applications along pipelines, subways, and rail lines.



Redundant Fiber

Redundant fiber architecture uses two fiber connections. One is active and carries the data traffic. The other is in standby mode. In the event of a failure in the primary link, the OmniConverter will switch traffic to the back-up in less than 50ms. Typically, the two fibers are routed in “geo-diverse” paths that are widely separated so that a physical disturbance to one cable will not affect the other.



Dual PoE Device Mode

For applications requiring two separate fiber runs to the same location and independent connectivity to the Powered Devices, the GPoE+/SX can be configured for Dual PoE Device Mode. The GPoE+/SX provides separate and independent data traffic paths between the two fiber links and four RJ-45 ports. The blue lines represent one independent data traffic path and the red lines represent the other independent data traffic path.



MUX Mode

Configuring the GPoE+/SX converters in MUX Mode provides point-to-point connectivity of Powered Devices to a head end switch over a fiber. MUX Mode tunnels the data traffic between two GPoE+/SX converters, so data traffic from the RJ-45 ports on one GPoE+/SX is routed to the matching RJ-45 ports on the other GPoE+/SX. This is illustrated by the colored lines. Port 2 on the GPoE+/SX on the left is associated with Port 2 on the GPoE+/SX on the right, shown with the purple line. The same port associations are illustrated with the red, green and blue lines.



ArubaEdge Certified Products

Additional information on OmniConverter power sourcing media converters can be found at Omnitron's Web site: <http://www.omnitron-systems.com/products/omnicconverter-media-converters-with-power-over-ethernet-poe.php>. The list of ArubaEdge certified products is shown below.

Fast Ethernet (10/100) w/PoE:

OmniConverter FPoE/SL - IEEE 802.3af PoE

9 3 x x - x - x a b

<Blank>	Commercial Operating Temperature Range Model 0 to 50°C
Z	Extended Operating Temperature Range Model -40* to 75°C

1	External AC Adapter, 100-240VAC, with US Power Cord
2	External AC Adapter, 100-240VAC, with no Power Cord
8	External AC Adapter, 100-240 VAC (JET/PSE), with JPN Power Cord
9	Direct DC Input, with 2 pin terminal connector

Fiber Type	Distance	Number of RJ-45 Ports	Connector Type			Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Attenuation (dB)	Link Budget (dB)
			ST	SC	SFP								
MM	5km	1	9340-0-1	9342-0-1	-	1310	1310	-24	-14	-31	-14	-	7
		2	9340-0-2	9342-0-2	-								
SM	30km	1	9341-1-1	9343-1-1	-	1310	1310	-15	-8	-31	-8	-	16
		2	9341-1-2	9343-1-2	-								
SM	60km	1	9341-2-1	9343-2-1	-	1310	1310	-5	0	-31	-3	3	26
		2	9341-2-2	9343-2-2	-								
SM	120km	1	-	9343-3-1	-	1550	1550	-5	0	-31	-3	3	26
		2	-	9343-3-2	-								
MM-SF*	5km	1	-	9350-0-1	-	1310	1550	-8	0	-28	0	-	20
		2	-	9350-0-1	-								
MM-SF*	5km	1	-	9351-0-1	-	1550	1310	-8	0	-28	0	-	20
		2	-	9351-0-1	-								
SM-SF*	20km	1	-	9350-1-1	-	1310	1550	-15	-5	-30	-3	-	15
		2	-	9350-1-2	-								
SM-SF*	20km	1	-	9351-1-1	-	1550	1310	-15	-5	-30	-3	-	15
		2	-	9351-1-2	-								
SM-SF*	40km	1	-	9350-2-1	-	1310	1550	-8	0	-30	-3	3	22
		2	-	9350-2-2	-								
SM-SF*	40km	1	-	9351-2-1	-	1550	1310	-8	0	-30	-3	3	22
		2	-	9351-2-3	-								
SFP (x1)	-	1	-	-	9359-0-1	-	-	-	-	-	-	-	-
		2	-	-	9359-0-2	-	-	-	-	-	-	-	-
SFP (x2)	-	1	-	-	9359-1-1	-	-	-	-	-	-	-	-
		2	-	-	9359-1-2	-	-	-	-	-	-	-	-

* When using single-fiber (SF) media converter models, the Tx wavelength on one end has to match the Rx wavelength on the other.

Contact Omnitron for other fiber options, operational temperature ranges and RoHS (5/6) compliant models.

Order the appropriate SFPs separately. [Visit the Omnitron Optical Transceivers web page.](#)

OmniConverter FPoE/S - IEEE 802.3af PoE

9 3 x x - x - x a b

<Blank>	Commercial Operating Temperature Range Model 0 to 50°C
Z	Extended Operating Temperature Range Model -40* to 75°C
1	External AC Adapter, 100-240VAC, with US Power Cord
2	External AC Adapter, 100-240VAC, with no Power Cord
8	External AC Adapter, 100-240 VAC (JET/PSE), with JPN Power Cord
9	Direct DC Input, with 3 pin terminal connector

Fiber Type	Distance	Number of RJ-45 Ports	Connector Type			Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Attenuation (dB)	Link Budget (dB)
			ST	SC	SFP								
MM	5km	1	9300-0-1	9302-0-1	-	1310	1310	-24	-14	-31	-14	-	7
		2	9300-0-2	9302-0-2	-								
SM	30km	1	9301-1-1	9303-1-1	-	1310	1310	-15	-8	-31	-8	-	16
		2	9301-1-2	9303-1-2	-								
SM	60km	1	9301-2-1	9303-2-1	-	1310	1310	-5	0	-31	-3	3	26
		2	9301-2-2	9303-2-2	-								
SM	120km	1	-	9303-3-1	-	1550	1550	-5	0	-31	-3	3	26
		2	-	9303-3-2	-								
MM-SF*	5km	1	-	9310-0-1	-	1310	1550	-8	0	-28	0	-	20
		2	-	9310-0-2	-								
MM-SF*	5km	1	-	9311-0-1	-	1550	1310	-8	0	-28	0	-	20
		2	-	9311-0-2	-								
SM-SF*	20km	1	-	9310-1-1	-	1310	1550	-15	-5	-30	-3	-	15
		2	-	9310-1-2	-								
SM-SF*	20km	1	-	9311-1-1	-	1550	1310	-15	-5	-30	-3	-	15
		2	-	9311-1-2	-								
SM-SF*	40km	1	-	9310-2-1	-	1310	1550	-8	0	-30	-3	3	22
		2	-	9310-2-2	-								
SM-SF*	40km	1	-	9311-2-1	-	1550	1310	-8	0	-30	-3	3	22
		2	-	9311-2-3	-								
SFP (x1)	-	1	-	-	9319-0-1	-	-	-	-	-	-	-	-
		2	-	-	9319-0-2	-	-	-	-	-	-	-	-
SFP (x2)	-	1	-	-	9319-1-1	-	-	-	-	-	-	-	-
		2	-	-	9319-1-2	-	-	-	-	-	-	-	-

* When using single-fiber (SF) media converter models, the Tx wavelength on one end has to match the Rx wavelength on the other.

Contact Omnitron for other fiber options, operational temperature ranges and RoHS (5/6) compliant models.

Order the appropriate SFPs separately. [Visit the Omnitron Optical Transceivers web page.](#)

OmniConverter FPoE/SE - IEEE 802.3af PoE

9 3 x x - x - x a b

<blank>	Commercial Temperature Model (0 to 50°C)
W	Wide Temperature Model (-40 to 60°C, -20° Cold Start)
1	External AC Adapter, 100-240VAC, with US Power Cord
2	External AC Adapter, 100-240VAC, with no Power Cord
8	External AC Adapter, 100-240 VAC (JET/PSE), with JPN Power Cord
9	Direct 48 VDC Input, with 2 pin terminal block

Fiber Type	Distance	Number of RJ-45 Ports	Connector Type			Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Attenuation (dB)	Link Budget (dB)
			ST	SC	SFP								
MM	5km	1	9360-0-1	9362-0-1	-	1310	1310	-24	-14	-31	-14	-	7
		2	9360-0-2	9362-0-2	-								
SM	30km	1	9361-1-1	9363-1-1	-	1310	1310	-15	-8	-31	-8	-	16
		2	9361-1-2	9363-1-2	-								
SM	60km	1	9361-2-1	9363-2-1	-	1310	1310	-5	0	-31	-3	3	26
		2	9361-2-2	9363-2-2	-								
SM	120km	1	-	9363-3-1	-	1550	1550	-5	0	-31	-3	3	26
		2	-	9363-3-2	-								
MM-SF*	5km	1	-	9370-0-1	-	1310	1550	-8	0	-28	0	-	20
		2	-	9370-0-2	-								
MM-SF*	5km	1	-	9371-0-1	-	1550	1310	-8	0	-28	0	-	20
		2	-	9371-0-2	-								
SM-SF*	20km	1	-	9370-1-1	-	1310	1550	-15	-5	-30	-3	-	15
		2	-	9370-1-2	-								
SM-SF*	20km	1	-	9371-1-1	-	1550	1310	-15	-5	-30	-3	-	15
		2	-	9371-1-2	-								
SM-SF*	40km	1	-	9370-2-1	-	1310	1550	-8	0	-30	-3	3	22
		2	-	9370-2-2	-								
SM-SF*	40km	1	-	9371-2-1	-	1550	1310	-8	0	-30	-3	3	22
		2	-	9371-2-3	-								
SFP (x1)	-	1	-	-	9379-0-1	-	-	-	-	-	-	-	-
		2	-	-	9379-0-2	-	-	-	-	-	-	-	-

* When using single-fiber (SF) media converter models, the Tx wavelength on one end has to match the Rx wavelength on the other.
 Contact Omnitron for other fiber options, operational temperature ranges and RoHS (5/6) compliant models.
 Order the appropriate SFPs separately. [Visit the Omnitron Optical Transceivers web page.](#)

Fast Ethernet (10/100) w/PoE+:

OmniConverter FPoE+/S - IEEE 802.3at PoE+

9 3 x x - x - x a b

<Blank>	Commercial Operating Temperature Range Model 0 to 50°C
Z	Extended Operating Temperature Range Model -40° to 75°C
1	External AC Adapter, 100-240VAC, with US Power Cord
2	External AC Adapter, 100-240VAC, with no Power Cord
8	External AC Adapter, 100-240 VAC (JET/PSE), with JPN Power Cord
9	Direct DC input, with 3 pin terminal connector

Fiber Type	Distance	Number of RJ-45 Ports	Connector Type			Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Attenuation (dB)	Link Budget (dB)
			ST	SC	SFP								
MM	5km	1	9320-0-1	9322-0-1	-	1310	1310	-24	-14	-31	-14	-	7
		2	9320-0-2	9322-0-2	-								
SM	30km	1	9321-1-1	9323-1-1	-	1310	1310	-15	-8	-31	-8	-	16
		2	9321-1-2	9323-1-2	-								
SM	60km	1	9321-2-1	9323-2-1	-	1310	1310	-5	0	-31	-3	3	26
		2	9321-2-2	9323-2-2	-								
SM	120km	1	-	9323-3-1	-	1550	1550	-5	0	-31	-3	3	26
		2	-	9323-3-2	-								
MM-SF*	5km	1	-	9330-0-1	-	1310	1550	-8	0	-28	0	-	20
		2	-	9330-0-2	-								
MM-SF*	5km	1	-	9331-0-1	-	1550	1310	-8	0	-28	0	-	20
		2	-	9331-0-2	-								
SM-SF*	20km	1	-	9330-1-1	-	1310	1550	-15	-5	-30	-3	-	15
		2	-	9330-1-2	-								
SM-SF*	20km	1	-	9331-1-1	-	1550	1310	-15	-5	-30	-3	-	15
		2	-	9331-1-2	-								
SM-SF*	40km	1	-	9330-2-1	-	1310	1550	-8	0	-30	-3	3	22
		2	-	9330-2-2	-								
SM-SF*	40km	1	-	9331-2-1	-	1550	1310	-8	0	-30	-3	3	22
		2	-	9331-2-3	-								
SFP (x1)	-	1	-	-	9339-0-1	-	-	-	-	-	-	-	-
		2	-	-	9339-0-2	-	-	-	-	-	-	-	-
SFP (x2)	-	1	-	-	9339-1-1	-	-	-	-	-	-	-	-
		2	-	-	9339-1-2	-	-	-	-	-	-	-	-

* When using single-fiber (SF) media converter models, the Tx wavelength on one end has to match the Rx wavelength on the other.

Contact Omnitron for other fiber options, operational temperature ranges and RoHS (5/6) compliant models.

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OmniConverter FPoE+/SE - IEEE 802.3at PoE+

9 3 x x - x - x a b

<blank>	Commercial Temperature Model (0 to 50°C)
W	Wide Temperature Model (-40 to 60°C, -20° Cold Start)
1	External AC Adapter, 100-240VAC, with US Power Cord
2	External AC Adapter, 100-240VAC, with no Power Cord
8	External AC Adapter, 100-240 VAC (JET/PSE), with JPN Power Cord
9	Direct 56 VDC Input, with 2 pin terminal block (non-isolated)
F	Direct 56 VDC Input, with 3 pin terminal block (isolated)

Fiber Type	Distance	Number of RJ-45 Ports	Connector Type			Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Attenuation (dB)	Link Budget (dB)
			ST	SC	SFP								
MM	5km	1	9380-0-1	9382-0-1	-	1310	1310	-24	-14	-31	-14	-	7
		2	9380-0-2	9382-0-2	-								
SM	30km	1	9381-1-1	9383-1-1	-	1310	1310	-15	-8	-31	-8	-	16
		2	9381-1-2	9383-1-2	-								
SM	60km	1	9381-2-1	9383-2-1	-	1310	1310	-5	0	-31	-3	3	26
		2	9381-2-2	9383-2-2	-								
SM	120km	1	-	9383-3-1	-	1550	1550	-5	0	-31	-3	3	26
		2	-	9383-3-2	-								
MM-SF*	5km	1	-	9390-0-1	-	1310	1550	-8	0	-28	0	-	20
		2	-	9390-0-2	-								
MM-SF*	5km	1	-	9391-0-1	-	1550	1310	-8	0	-28	0	-	20
		2	-	9391-0-2	-								
SM-SF*	20km	1	-	9390-1-1	-	1310	1550	-15	-5	-30	-3	-	15
		2	-	9390-1-2	-								
SM-SF*	20km	1	-	9391-1-1	-	1550	1310	-15	-5	-30	-3	-	15
		2	-	9391-1-2	-								
SM-SF*	40km	1	-	9390-2-1	-	1310	1550	-8	0	-30	-3	3	22
		2	-	9390-2-2	-								
SM-SF*	40km	1	-	9391-2-1	-	1550	1310	-8	0	-30	-3	3	22
		2	-	9391-2-3	-								
SFP (x1)	-	1	-	-	9399-0-1	-	-	-	-	-	-	-	-
		2	-	-	9399-0-2	-	-	-	-	-	-	-	-

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Contact Omnitron for other fiber options, operational temperature ranges and RoHS (5/6) compliant models.

Order the appropriate SFPs separately. [Visit the Omnitron Optical Transceivers web page.](#)

Gigabit Ethernet (10/100/1000) w/PoE:

OmniConverter GPoE/S - IEEE 802.3af PoE

9 4 x x - x - x a b

<Blank>	Commercial Operating Temperature Range Model 0 to 50°C
Z	Extended Operating Temperature Range Model -40° to 75°C
1	External AC Adapter, 100-240 VAC, with US Power Cord
2	External AC Adapter, 100-240 VAC, with no Power Cord
8	External AC Adapter, 100-240 VAC (JET/PSE), with JPN Power Cord
9	Direct DC Input, with 3 pin terminal connector

Fiber Type	Distance	Number of RJ-45 Ports	Connector Type			Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Attenuation (dB)	Link Budget (dB)
			ST	SC	SFP								
MM	220/550m ¹	1	9400-0-1	9402-0-1	-	850	850	-10	-4	-17	-3	-	7
		2	9400-0-2	9402-0-2	-								
SM	12km	1	9401-1-1	9403-1-1	-	1310	1310	-9.5	-3	-19.5	-3	-	10
		2	9401-1-2	9403-1-2	-								
SM	34km	1	-	9403-2-1	-	1310	1310	-5	0	-23	-3	3	18
		2	-	9403-2-2	-								
SM	80km	1	-	9403-3-1	-	1550	1550	-5	0	-23	-3	3	18
		2	-	9403-3-2	-								
SM	110km	1	-	9403-4-1	-	1550	1550	0	5	-24	-3	8	24
		2	-	9403-4-2	-								
SM	140km	1	-	9403-5-1	-	1550	1550	2	5	-28	-8	13	30
		2	-	9403-5-2	-								
MM-SF ²	550m	1	-	9410-0-1	-	1310	1550	-9	-3	-18	-3	-	9
		2	-	9410-0-2	-								
MM-SF ²	550m	1	-	9411-0-1	-	1550	1310	-9	-3	-18	-3	-	9
		2	-	9411-0-2	-								
SM-SF ²	20km	1	-	9410-1-1	-	1310	1550	-9.5	-3	-20	-3	-	10.5
		2	-	9410-1-2	-								
SM-SF ²	20km	1	-	9411-1-1	-	1550	1310	-9.5	-3	-20	-3	-	10.5
		2	-	9411-1-2	-								
SM-SF ²	40km	1	-	9410-2-1	-	1310	1550	-3	0	-20	-3	3	17
		2	-	9410-2-2	-								
SM-SF ²	40km	1	-	9411-2-1	-	1550	1310	-3	0	-20	-3	3	17
		2	-	9411-2-2	-								
SFP (x1)	-	1	-	-	9419-0-1	-	-	-	-	-	-	-	-
		2	-	-	9419-0-2	-	-	-	-	-	-	-	-
SFP (x2)	-	1	-	-	9419-1-1	-	-	-	-	-	-	-	-
		2	-	-	9419-1-2	-	-	-	-	-	-	-	-

¹ 62.5/125µm, 100/140µm multimode fiber up to 220m. 50/125µm multimode fiber up to 550m. Refer to the fiber cable manufacturer for multimode distance specifications.

² When using single-fiber (SF) media converter models, the Tx wavelength on one end has to match the Rx wavelength on the other.

Contact Omnitron for other fiber options, operational temperature ranges and RoHS (5/6) compliant models.

Order the appropriate SFPs separately. [Visit the Omnitron Optical Transceivers web page.](#)

OmniConverter GPoE/SE - IEEE 802.3af PoE

9 4 x x - x - x a b

<Blank>	Commercial Operating Temperature Range Model 0 to 50°C
W	Wide Operating Temperature Range Model -40° to 60°C
1	External AC Adapter, 100-240VAC, with US Power Cord
2	External AC Adapter, 100-240VAC, with no Power Cord
8	External AC Adapter, 100-240 VAC (JET/PSE), with JPN Power Cord
9	Direct DC Input, with 2 pin terminal connector (non-isolated)
F	Direct DC Input, with 3 pin terminal connector (Isolated)

Fiber Type	Distance	Number of RJ-45 Ports	Connector Type			Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Attenuation (dB)	Link Budget (dB)
			ST	SC	SFP								
MM	220/550m ¹	1	9460-0-1	9462-0-1	-	850	850	-10	-4	-17	-3	-	7
		2	9460-0-2	9462-0-2	-								
SM	12km	1	9461-1-1	9463-1-1	-	1310	1310	-9.5	-3	-19.5	-3	-	10
		2	9461-1-2	9463-1-2	-								
SM	34km	1	-	9463-2-1	-	1310	1310	-5	0	-23	-3	3	18
		2	-	9463-2-2	-								
SM	80km	1	-	9463-3-1	-	1550	1550	-5	0	-23	-3	3	18
		2	-	9463-3-2	-								
SM	110km	1	-	9463-4-1	-	1550	1550	0	5	-24	-3	8	24
		2	-	9463-4-2	-								
SM	140km	1	-	9463-5-1	-	1550	1550	2	5	-28	-8	13	30
		2	-	9463-5-2	-								
MM-SF ²	550m	1	-	9470-0-1	-	1310	1550	-9	-3	-18	-3	-	9
		2	-	9470-0-2	-								
MM-SF ²	550m	1	-	9471-0-1	-	1550	1310	-9	-3	-18	-3	-	9
		2	-	9471-0-2	-								
SM-SF ²	20km	1	-	9470-1-1	-	1310	1550	-9.5	-3	-20	-3	-	10.5
		2	-	9470-1-2	-								
SM-SF ²	20km	1	-	9471-1-1	-	1550	1310	-9.5	-3	-20	-3	-	10.5
		2	-	9471-1-2	-								
SM-SF ²	40km	1	-	9470-2-1	-	1310	1550	-3	0	-20	-3	3	17
		2	-	9470-2-2	-								
SM-SF ²	40km	1	-	9471-2-1	-	1550	1310	-3	0	-20	-3	3	17
		2	-	9471-2-2	-								
SFP	-	1	-	-	9479-0-1	-	-	-	-	-	-	-	-
		2	-	-	9479-0-2	-	-	-	-	-	-	-	-

¹ 62.5/125µm, 100/140µm multimode fiber up to 220m. 50/125µm multimode fiber up to 550m. Refer to the fiber cable manufacturer for multimode distance specifications.

² When using single-fiber (SF) media converter models, the Tx wavelength on one end has to match the Rx wavelength on the other.

Contact Omnitron for other fiber options, operational temperature ranges and RoHS (5/6) compliant models.

Order the appropriate SFPs separately. [Visit the Omnitron Optical Transceivers web page.](#)

Gigabit Ethernet (10/100/1000) w/PoE+:

OmniConverter GPoE+/SX - IEEE 802.3at PoE+

9 4 x x - x - x x - x

1	External AC Adapter, 100-240VAC, with US Power Cord
2	External AC Adapter, 100-240VAC, with no Power Cord
8	External AC Adapter, 100-240 VAC (JET/PSE), with JPN Power Cord
9	Direct DC Input, with 3 pin terminal connector

Fiber Type	Distance	Number of RJ-45 Ports	Connector Type				Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Attenuation (dB)	Link Budget (dB)
			ST	SC	LC	SFP								
MM/DF	220/550m ¹	4	9440-0-14	9442-0-14	9446-0-14	-	850	850	-10	-4	-17	-3	-	7
MM/DF (x2)	220/550m ¹	4	-	-	9446-0-24	-	850	850	-10	-4	-17	-3	-	7
MM/DF	2km	4	-	9442-6-14	-	-	1310	1310	-9.5	-3	-19.5	-3	-	10
SM/DF	12km	4	9441-1-14	9443-1-14	9447-1-14	-	1310	1310	-9.5	-3	-19.5	-3	-	10
SM/DF (x2)	12km	4	-	-	9447-1-24	-	1310	1310	-9.5	-3	-19.5	-3	-	10
SM/DF	34km	4	-	9443-2-14	-	-	1310	1310	-5	0	-23	-3	3	18
SM/DF	80km	4	-	9443-3-14	-	-	1550	1550	-5	0	-23	-3	3	18
SM/DF	110km	4	-	9443-4-14	-	-	1550	1550	0	5	-24	-3	8	24
SM/DF	140km	4	-	9443-5-14	-	-	1550	1550	2	5	-28	-8	13	30
MM/SF	220/550m ¹	4	-	9450-0-14	-	-	1310	1550	-9	-3	-18	-3	-	9
MM/SF	220/550m ¹	4	-	9451-0-14	-	-	1550	1310	-9	-3	-18	-3	-	9
SM/SF	20km	4	-	9450-1-14	-	-	1310	1550	-9.5	-3	-20	-3	-	10.5
SM/SF	20km	4	-	9451-1-14	-	-	1550	1310	-9.5	-3	-20	-3	-	10.5
SM/SF	40km	4	-	9450-2-14	-	-	1310	1550	-3	0	-20	-3	3	17
SM/SF	40km	4	-	9451-2-14	-	-	1550	1310	-3	0	-20	-3	3	17
SFP (x1)	-	4	-	-	-	9459-0-14								
SFP (x2)	-	4	-	-	-	9459-0-24								

¹ 62.5/125µm, 100/140µm multimode fiber up to 220m. 50/125µm multimode fiber up to 550m. Refer to the fiber cable manufacturer for multimode distance specifications.

To order extended temperature models, add a "Z" to the end of the model number. 9459-0-14-1Z (One SFP, Four RJ-45, AC power adapter, extended temperature). Contact Omnitron for other fiber options. Order the appropriate SFPs separately. [Visit the Omnitron Optical Transceivers web page.](#)

OmniConverter GPoE+/S - IEEE 802.3at PoE+

9 4 x x - x - x a b

<Blank>	Commercial Operating Temperature Range Model 0 to 50°C
Z	Extended Operating Temperature Range Model -40° to 75°C

1	External AC Adapter, 100-240 VAC, with US Power Cord
2	External AC Adapter, 100-240 VAC, with no Power Cord
8	External AC Adapter, 100-240 VAC (JET/PSE), with JPN Power Cord
9	Direct DC Input, with 3 pin terminal connector

Fiber Type	Distance	Number of RJ-45 Ports	Connector Type			Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Attenuation (dB)	Link Budget (dB)
			ST	SC	SFP								
MM	220/550m ¹	1	9420-0-1	9422-0-1	-	850	850	-10	-4	-17	-3	-	7
		2	9420-0-2	9422-0-2	-								
SM	12km	1	9421-1-1	9423-1-1	-	1310	1310	-9.5	-3	-19.5	-3	-	10
		2	9421-1-2	9423-1-2	-								
SM	34km	1	-	9423-2-1	-	1310	1310	-5	0	-23	-3	3	18
		2	-	9423-2-2	-								
SM	80km	1	-	9423-3-1	-	1550	1550	-5	0	-23	-3	3	18
		2	-	9423-3-2	-								
SM	110km	1	-	9423-4-1	-	1550	1550	0	5	-24	-3	8	24
		2	-	9423-4-2	-								
SM	140km	1	-	9423-5-1	-	1550	1550	2	5	-26	-8	13	30
		2	-	9423-5-2	-								
MM-SF ²	550m	1	-	9430-0-1	-	1310	1550	-9	-3	-16	-3	-	9
		2	-	9430-0-2	-								
MM-SF ²	550m	1	-	9431-0-1	-	1550	1310	-9	-3	-16	-3	-	9
		2	-	9431-0-2	-								
SM-SF ²	20km	1	-	9430-1-1	-	1310	1550	-9.5	-3	-20	-3	-	10.5
		2	-	9430-1-2	-								
SM-SF ²	20km	1	-	9431-1-1	-	1550	1310	-9.5	-3	-20	-3	-	10.5
		2	-	9431-1-2	-								
SM-SF ²	40km	1	-	9430-2-1	-	1310	1550	-3	0	-20	-3	3	17
		2	-	9430-2-2	-								
SM-SF ²	40km	1	-	9431-2-1	-	1550	1310	-3	0	-20	-3	3	17
		2	-	9431-2-2	-								
SFP (x1)	-	1	-	-	9439-0-1	-	-	-	-	-	-	-	-
		2	-	-	9439-0-2	-	-	-	-	-	-	-	-
SFP (x2)	-	1	-	-	9439-1-1	-	-	-	-	-	-	-	-
		2	-	-	9439-1-2	-	-	-	-	-	-	-	-

¹ 62.5/125µm, 100/140µm multimode fiber up to 220m. 50/125µm multimode fiber up to 550m. Refer to the fiber cable manufacturer for multimode distance specifications.

² When using single-fiber (SF) media converter models, the Tx wavelength on one end has to match the Rx wavelength on the other.

Contact Omnitron for other fiber options, operational temperature ranges and RoHS (5/6) compliant models.

Order the appropriate SFPs separately. [Visit the Omnitron Optical Transceivers web page.](#)

OmniConverter GPoE+/SE - IEEE 802.3at PoE+

9 4 x x - x - x a b

<Blank>	Commercial Operating Temperature Range Model 0 to 50°C
W	Wide Operating Temperature Range Model -40° to 60°C
1	External AC Adapter, 100-240VAC, with US Power Cord
2	External AC Adapter, 100-240VAC, with no Power Cord
8	External AC Adapter, 100-240 VAC (JET/PSE), with JPN Power Cord
9	Direct DC Input, with 2 pin terminal connector (non-Isolated)
F	Direct DC Input, with 3 pin terminal connector (Isolated)

Fiber Type	Distance	Number of RJ-45 Ports	Connector Type			Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Attenuation (dB)	Link Budget (dB)
			ST	SC	SFP								
MM	220/550m ¹	1	9480-0-1	9482-0-1	-	850	850	-10	-4	-17	-3	-	7
		2	9480-0-2	9482-0-2	-								
SM	12km	1	9481-1-1	9483-1-1	-	1310	1310	-9.5	-3	-19.5	-3	-	10
		2	9481-1-2	9483-1-2	-								
SM	34km	1	-	9483-2-1	-	1310	1310	-5	0	-23	-3	3	18
		2	-	9483-2-2	-								
SM	80km	1	-	9483-3-1	-	1550	1550	-5	0	-23	-3	3	18
		2	-	9483-3-2	-								
SM	110km	1	-	9483-4-1	-	1550	1550	0	5	-24	-3	8	24
		2	-	9483-4-2	-								
SM	140km	1	-	9483-5-1	-	1550	1550	2	5	-28	-8	13	30
		2	-	9483-5-2	-								
MM-SF ²	550m	1	-	9490-0-1	-	1310	1550	-9	-3	-18	-3	-	9
		2	-	9490-0-2	-								
MM-SF ²	550m	1	-	9491-0-1	-	1550	1310	-9	-3	-18	-3	-	9
		2	-	9491-0-2	-								
SM-SF ²	20km	1	-	9490-1-1	-	1310	1550	-9.5	-3	-20	-3	-	10.5
		2	-	9490-1-2	-								
SM-SF ²	20km	1	-	9491-1-1	-	1550	1310	-9.5	-3	-20	-3	-	10.5
		2	-	9491-1-2	-								
SM-SF ²	40km	1	-	9490-2-1	-	1310	1550	-3	0	-20	-3	3	17
		2	-	9490-2-2	-								
SM-SF ²	40km	1	-	9491-2-1	-	1550	1310	-3	0	-20	-3	3	17
		2	-	9491-2-2	-								
SFP	-	1	-	-	9499-0-1	-	-	-	-	-	-	-	-
		2	-	-	9499-0-2	-	-	-	-	-	-	-	-

¹ 62.5/125µm, 100/140µm multimode fiber up to 220m. 50/125µm multimode fiber up to 550m. Refer to the fiber cable manufacturer for multimode distance specifications.

² When using single-fiber (SF) media converter models, the Tx wavelength on one end has to match the Rx wavelength on the other.

Contact Omnitron for other fiber options, operational temperature ranges and RoHS (5/6) compliant models.

Order the appropriate SFPs separately. [Visit the Omnitron Optical Transceivers web page](#). See page 4 for ordering Accessories.

Gigabit Ethernet (10/100/1000) w/HPoE:

OmniConverter
GHPoE/S - 60W PoE

9 5 x x - x - x a b

<Blank>	Commercial Operating Temperature Range Model 0 to 50°C
Z	Extended Operating Temperature Range Model -40° to 75°C
1	External AC Adapter, 100-240 VAC, with US Power Cord
2	External AC Adapter, 100-240 VAC, with no Power Cord
8	External AC Adapter, 100-240 VAC (JET/PSE), with JPN Power Cord
9	Direct DC Input, with 3 pin terminal connector

Fiber Type	Distance	Number of RJ-45 Ports	Connector Type				Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Power (dBm)	Max. Rx Power (dBm)	Min Attenuation (dB)	Link Budget (dB)
			ST	SC	LC	SFP								
MM	220/550m ¹	1	9500-0-1	9502-0-1	9506-0-1	-	850	850	-10	-4	-17	-3	-	7
		2	9500-0-2	9502-0-2	9506-0-2	-								
LC MM (x2)	220/550m ¹	1	-	-	9506D-0-1	-	850	850	-10	-4	-17	-3	-	7
		2	-	-	9506D-0-2	-								
SM	12km	1	9501-1-1	9503-1-1	9507-1-1	-	1310	1310	-9.5	-3	-19.5	-3	-	10
		2	9501-1-2	9503-1-2	9507-1-2	-								
LC SM (x2)	12km	1	--	-	9507D-1-1	-	1310	1310	-9.5	-3	-19.5	-3	-	10
		2	-	-	9507D-1-2	-								
SM	34km	1	9501-2-1	9503-2-1	-	-	1310	1310	-5	0	-23	-3	3	18
		2	9501-2-2	9503-2-2	-	-								
SM	80km	1	-	9503-3-1	-	-	1550	1550	-5	0	-23	-3	3	18
		2	-	9503-3-2	-	-								
SM	110km	1	-	9503-4-1	-	-	1550	1550	0	5	-24	-3	8	24
		2	-	9503-4-2	-	-								
SM	140km	1	-	9503-5-1	-	-	1550	1550	2	5	-28	-8	13	30
		2	-	9503-5-2	-	-								
MM-SF ²	550m	1	-	9510-0-1	-	-	1310	1550	-9	-3	-18	-3	-	9
		2	-	9510-0-2	-	-								
MM-SF ²	550m	1	-	9511-0-1	-	-	1550	1310	-9	-3	-18	-3	-	9
		2	-	9511-0-2	-	-								
SM-SF ²	20km	1	-	9510-1-1	*	-	1310	1550	-9.5	-3	-20	-3	-	10.5
		2	-	9510-1-2	*	-								
SM-SF ²	20km	1	-	9511-1-1	*	-	1550	1310	-9.5	-3	-20	-3	-	10.5
		2	-	9511-1-2	*	-								
SM-SF ²	40km	1	-	9510-2-1	*	-	1310	1550	-3	0	-20	-3	3	17
		2	-	9510-2-2	*	-								
SM-SF ²	40km	1	-	9511-2-1	*	-	1550	1310	-3	0	-20	-3	3	17
		2	-	9511-2-2	*	-								
SFP (x1)	-	1	-	-	-	9519-0-1	-	-	-	-	-	-	-	-
		2	-	-	-	-	9519-0-2	-	-	-	-	-	-	-
SFP (x2)	-	1	-	-	-	9519-1-1	-	-	-	-	-	-	-	-
		2	-	-	-	-	9519-1-2	-	-	-	-	-	-	-

¹ 62.5/125µm, 100/140µm multimode fiber up to 220m. 50/125µm multimode fiber up to 550m. Refer to the fiber cable manufacturer for multimode distance specifications.

² When using single-fiber (SF) media converter models, the Tx wavelength on one end has to match the Rx wavelength on the other.

Contact Omnitron for other fiber options, operational temperature ranges and RoHS (5/6) compliant models. Order the appropriate SFPs separately. [Visit the Omnitron Optical Transceivers web page](#). See page 5 for ordering Accessories.