



# Complete Overview

Unlock Your Connectivity.

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# TABLE OF CONTENTS



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The ProLabs Promise.....	3
Transceivers.....	4
Selecting Your Transceiver.....	5
Additional Information.....	6
DACs & AOCs.....	7
Media Converters.....	9
Multiplexers Passive WDM Networking.....	10

## We are leading global providers of network solutions, tailored to your connectivity needs.

The combination of our knowledge and optical networking technology enables ProLabs to be your single source for optical transport and connectivity solutions from 100MB to 400G and beyond. We are committed to providing innovative solutions that increase network efficiencies enhanced by our world class service, quality and value.

We provide the connectivity expertise that is compatible with and enhances your switching and transport equipment.

## A Higher Standard for Technology & Service

### Industry-Leading in Every Way

ProLabs has expanded its capabilities and reach to become the most innovative and influential independent player in the global, mid-tier network products market.

### Switching the Data Center Mindset

It's time to break OEM dominance of the industry. ProLabs is a smarter choice and our customers are confident choosing us as a partner.

### Innovating in R&D and Thought Leadership

With a substantial investment in emerging technology, ProLabs offers the best technology now and for the future.

### Global Reach, Unparalleled Service

Through our extensive supplier network, we provide everything our customers need, when they need it.

### Making Upgrades Affordable

By reallocating resources from overpriced OEM products to ProLabs compatibles, companies can deploy resources more strategically to support critical upgrades.

## The ProLabs Promise

### Availability



With our global presence, regional operations and warehousing, we can offer same or next day delivery on most of our product range.

### Interoperability



Our products are designed to bridge multiple platforms, which gives you minimum stock, maximum flexibility and ease-of-use.

### Support



You can rely on our industry experts, in region customer service and trusted advisers to give you a swift and personal service.

### Quality



Our stringent product testing processes, together with coding verification under operating conditions, gives you compatibility assurance and peace of mind.

### Warranty



You can expect quality products and thorough testing, backed by a lifetime warranty on transceivers.

### Value



On balance, our range of innovative compatibility solutions enable you to maximize your connectivity with minimal initial investment.



## Transceivers

### SFP, SFP+, XFP, SFP28, OSFP, QSFP, QSFP+, QSFP28, QSFP56 & QSFP-DD

ProLabs offers an extensive range of optical and copper transceivers to fit your requirements. All transceivers are standards-based and comply with the MSA (Multi-Source Agreement). Transceivers range from 100M to 400Gb and cover optical and copper transceivers such as SFP, SFP28, OSFP, QSFP28, QSFP56 and QSFP-DD.

ProLabs transceivers are manufactured utilizing the highest quality components available. Our commitment to quality means we produce a consistent, standardized product, purpose-built for compatibility with today's top Original Equipment Manufacturer (OEM) specifications.

#### ProLabs certifies that its transceivers are compatible with:

3Com	IBM
Adtran	Infinera
Adva	Intel
Alcatel Lucent	Juniper
Allied Telesis	Linksys
Arista	Maipu
Asante	Marconi
Aruba Networks	Mellanox
Avaya	Milan
Blackbox	Moxa
Blade Network	NetApp
BTI	Netgear
Calix	Netscout
Ciena	Nokia
Cisco	Nortel
Cisco Meraki	Packetfront
Dasan Zhone	Palo Alto
Dell	Planet
Dlink	QLogic
EMC	Radware
Emulex	Raisecom
Enterasys	Redback
Ericsson	Riverstone
Extreme Networks	Ruijie
F5 Networks	SMC
Force 10	Tejas
Fortinet	Telco Systems
Foundry	TP-Link
Gigamon	Transmode
H3C	TrendNET
Hewlett-Packard	Vixel
Hirschmann	ZTE
Huawei	ZyXEL

To view more options, visit

[prolabs.com/knowledge-hub/prolabs-testbed](https://prolabs.com/knowledge-hub/prolabs-testbed)

## Selecting Your Transceiver

Our MSA Standard pluggable optical transceivers are designed to target various network challenges. Each transceiver meets the requirements for reach and data rate for any given application. We also offer legacy form factors including GBIC, X2, and XENPAK.



### SFP

Small form factor pluggable transceivers, resulting in increased density, capable of data rates up to 6Gb/s, available in 850nm, 1310nm, and 1550nm, bi-directional option (1310nm/1490 or 1310nm/1550nm), and DWDM and CWDM wavelengths/channel options. Distances range up to 160km.



### SFP28

25G Ethernet has become the building block of the today's networks. SFP28 transceivers offer 25G within the common footprint and density of SFP and SFP+ transceivers.



### SFP+

Transceivers with capability of data rates from 8Gb/s to 10Gb/s, with range of a few metres up to 80km. DWDM and CWDM wavelengths/channel options. Full range of DAC/Twinax cables available.



### OSFP

Now offering support for data rates up to 400Gb/s, the OSFP form factor and its high thermal capacity makes it ready for the coming 800Gb/s challenge.



### QSFP

A slightly larger form factor than QSFP-DD will support 400Gbit/s and 800Gbit/s networks with integrated thermal management.



### XFP

Small form factor pluggable transceivers, resulting in increased density, capable of data rates up to 6Gb/s, available in 850nm, 1310nm, and 1550nm, bi-directional option (1310nm/1490 or 1310nm/1550nm), and DWDM and CWDM wavelengths/channel options. Distances range up to 160km.



### QSFP+

Quad small form factor pluggable transceivers, capable of data rates up to 40km. Range of passive DAC cables and AOC cables available.



### QSFP-DD

QSFP-DD transceivers, DAC, and AOC cables bring network connectivity to the next level, offering support for data rates up to 400Gb/s.



### QSFP28

QSFP28 transceivers have quickly become the building block of today's networks through combination of low power consumption and increased density over past generations of 100G transceivers, as well as support for up to 80km.



### QSFP56

QSFP56 transceivers and cables have broken through, using PAM4 to offer 200Gb/s data rates with the familiar combination of low power consumption and increased port density.

## Additional Information

ProLabs provides four common distance ranges within each transceiver model:

**SX/SR/SR4** Short haul with a range up to 300m.

**LX/LR/LR4** Long haul with a range up to 10km. We are also able to provide long haul with enhanced lasers capable of 40km.

**EX/ER/ER4** Extended reach with range up to 40km, available in data rates up to 100Gb/s.

**ZX/ZR/EZX/ZR4** Extended reach with range up to 120km with GBIC/SFP and 80km with 100Gb/s transceivers.

In addition to the basic form factors, ranges and data rates of pluggable optical transceivers, there are certain applications to be identified in order to select the most appropriate optical transceiver, such as: Ethernet, SONET, DWDM, CWDM, fiber channel, data rate, wavelength, fixed or variable rate and bidirectional or unidirectional.

## Custom Solutions

ProLabs can provide technologies that are often not offered by the OEM platform. Custom solutions include:

- ✔ 2km SFP/GBIC over Multimode.
- ✔ 40km SFP over 1310nm Singlemode.
- ✔ Bi-directional SFP, 1490nm/1310nm, 60km.
- ✔ Bi-directional SFP, 1490nm/1310nm, 80km.
- ✔ High Density CWDM.
- ✔ 1G Tunable DWDM.

ProLabs can give you more tools in your network design toolbox. We offer highly versatile solutions, to deliver exceptional connectivity.

## Features

The rapid growth of open source is radically changing market dynamics. With open source, businesses are free to choose any software or product and are no longer “locked in” to OEM products. ProLabs transceivers are the high-quality, dependable, cost-effective alternative.

**Myth:** Only optical transceivers provided by the OEM will work with existing equipment.

**Fact:** All ProLabs products are designed to comply with industry standard MSA (Multi-Source Agreements). Certain vendors require an element of serialization to make the product compatible; when ordering a compatible part to the desired OEM equipment, ProLabs can offer a truly “plug and play” solution, ensuring complete compatibility. ProLabs’ industry-leading lifetime warranty will not invalidate any vendor warranty on the host device.



## SFP+ Direct Attach Copper Cable (DAC) & Active Optical Cable (AOC)



Passive copper Direct Attach Cables (DAC) are a low cost alternative for short reach applications. The passive design has no signal amplification in the cable assembly. Electronic dispersion compensation (EDC) is typically used on host board designs when passive copper cable assemblies are utilized. They are ideal for short distances up to 10 meters and offer a cost effective solution for connecting compatible OEM equipment within a rack.

Direct Attach, Active Copper and Active Optical Cables (sometimes called DAC, ACC and AOC respectively) are an indispensable part of any network.

Terminated with transceiver-style connectors, they are designed to be used in the same ports as a typical SFP+, SFP28, QSFP+, QSFP28 and QSFP-DD transceivers, with no need for adapters or converters.

ProLabs DAC and AOC cables offer compatibility with a huge range of vendors, enabling the connectivity you need within the top of rack and end of row environments.



### Direct Attach Cables (DAC) – 10G, 25G, 40G, 100G, 200G, & 400G

DACs run a direct connector-to-connector electrical connection through a thick copper wire, in order to avoid EM interference. DAC cables typically connect network elements within one to five meters in a network rack or cabinet. DACs are available in both “active” and “passive” variants. Passive DACs offer the benefits of low power consumption, while Active DACs provide a lower profile cable solution for cramped wiring environments.



### Active Optical Cables (AOC) – 10G, 25G, 40G, 100G, 200G, & 400G

AOCs offer a cost-effective solution consisting of fixed fiber optic transceivers on a fiber cable for short reach connections between 10m and 100m. AOCs are a ‘plug and play’ assembly, reducing the complexity of a standard fiber optic install. In addition, AOCs single 3.0mm cable diameter reduces the cable pile up in data center cable trays over a standard duplex fiber cable deployment.

DACs and AOCs offer many of the benefits of optical transceivers but with significant cost and power savings in short reach applications. The “plug and play” functionality of DACs and AOCs reduce the complexity and time to turn up new connections.

## Applications

- ✓ Short Reach
- ✓ Top of Rack
- ✓ End of Row

## Cable Management

Cable management is an important step in delivering a more reliable network.

Strengthened cable strands, easier management of repatching and reduced costs through improved airflow in your cabinet, makes for good cable management.

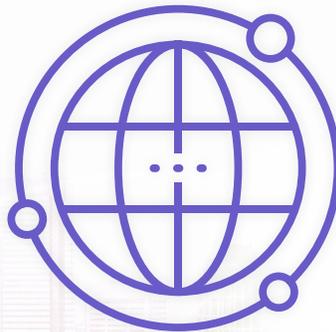
ProLabs offers a range of patch panels, cable ties, management bars, sleeving and copex. These solutions apply to CAT5E, CAT6, Fiber, Telco, and power cabling.

## Product Features

- ✓ Low Power Consumption
- ✓ Low Latency
- ✓ Plug and Play

## The ProLabs Difference

- ✓ Compatible with multiple switch models
- ✓ Multi-code options - compatibility for multiple OEMs
- ✓ Bespoke cable options available.
- ✓ Strong inventory position - most orders ship same day or next day.



We're continually striving to develop solutions for connectivity challenges.

## Media Converters

When connecting copper to fiber or single mode fiber to multimode fiber networks, ProLabs offers complete solutions seamlessly integrate these disparate networks.

ProLabs offer a low cost solution with quality products, and support all year around. Media converters come with a 5 year replacement warranty for faulty products which fail under normal working conditions. We offer a great technical support element and can usually replicate a problem in our technology lab, to help with the user's problem.

### Mini Media Converters

Can reduce space due to their compact size. If used in a cabinet, 12 MiMC's can be used in a 1U rack space. The MiMC converters come with SFP or fixed connectors. DIP switch on the back lets the user change between 100base and 1G, as well as LFP functions.

### Managed Media Converters

Managed media converters are great additions to our product range. They can be installed in a 2U 16 slot chassis, and with this set up, can provide the user with information such as Port status and Ethernet statistics on both TP and Fiber interface. This is achieved through SNMP and Event traps. QoS can be applied to differentiate traffic flows.

OAM / Loop Back Test are available for fault/maintenance diagnostics. They are powered the same way as the standard converters, and a maximum of 16 slot cards can be inserted into a 2U chassis. The managed converters come with SFP connections.

### PoE Media Converters

Power over Ethernet has become a main component for much lower power equipment, such as VoIP phones, CCTV cameras and wireless access points. We currently offer 1G with POE 15.4w, POE+ 25.5w and POE+ Industrial temp products. The PoE converters are offered with SFP connections.

## Industrial Media Converters

Our industrial media converters are a great solution for harsh environments. The converters are rated to IP40, and with a working temperature between -40~+85°C are perfect for hot or cold countries. We can provide industrial converters in both our standard form factor for basic conversion and also on some of our PoE range. These are mounted on DIN rails when installed.

The industrial range of converters comes with SFP connections.

## Standard Media Converters

ProLabs unmanaged media converters with plug and play ability, and easy installation in a cabinet or remotely installed, are a great solution when media conversion, copper to fiber or single mode fiber to multimode fiber, is required.

The range covers both Multimode 850nm up to 550m, and Single mode 1310nm up to a range of 40km. The converters are equipped with functions such as Auto MDI/MDI-X, and support low-time lag transmission.

Our media converters are powered by an AC to DC 5-12v input with a power rating less than 3w. A maximum of 4 standard converters can be installed into a 2U rack.

Reduce space, to maximize your connectivity.



## Multiplexers Passive WDM Networking

### Applications

Multiplexing offers the customer a high density, scalable fiber solution. Rather than investing in more fiber, it allows an increase in the fiber bandwidth by carrying multiple signals down an individual fiber connection. Additionally, a single unit permits a combination of ethernet and fiber channel traffic, ranging from 100Mb to 10Gb, to be sent in unison with no latency. Installing a ProLabs xWDM solution typically shows a return on investment in as little as 3 months.

### CWDM - Coarse Wave Division Multiplexing

CWDM passive solutions carry up to 16 different wavelengths (colors of light) down a lone fiber connection. The primary 8 channels operate in the 1500nm range and the secondary 8 channels operate in the 1300nm range. CWDM channel spacing is 20nm. Specific, industry standard color coding is used resulting in a simplified set up.

### DWDM - Dense Wave Division Multiplexing

DWDM passive solutions carry up to 88 different wavelengths down an individual fiber connection. The channel spacing is typically 100GHz (0.8nm) and reside in the 1530 to 1560nm band. The upshot is that a DWDM unit can carry more signals over a greater distance.

### Pay as you Populate

As your network grows your ProLabs multiplexers are scalable allowing you to expand on a pay as you populate basis via module, chassis and transceiver options.

ProLabs can offer the full range of wavelength specific optical transceivers to populate both CWDM and DWDM multiplexer solutions, as well as fiber patch cables, custom and multicore solutions.

### Chassis Options

In comparison to other industry options ProLabs offer market leading high density xWDM solutions, ideal for Data center and Telco usage.



**1U 4 slot offers up to 32 CWDM/DWDM channels**



**4U 24 slot offers up to 192 CWDM/DWDM channels**

# About ProLabs

ProLabs, an Amphenol company, is a leading provider of optical networking solutions. For over two decades, it has delivered optical connectivity solutions that give customers freedom, choice, and seamless interoperability. It serves a diverse range of industries including enterprises, governments, and the largest worldwide service providers.

By championing higher standards for technology and service, ProLabs is changing the mindset of data centers and service providers the world over. It supplies solutions that are 100% compatible in form and functionality across 100 OEM manufacturers, covering more than 20,000 systems and platforms.



## North America

[sales@prolabs.com](mailto:sales@prolabs.com)

+1 952 852 0252

## EMEA

[salesemea@prolabs.com](mailto:salesemea@prolabs.com)

+44 1285 719 600

For more information, please visit [www.prolabs.com](http://www.prolabs.com)

