

**Unlimited** throughput  
over existing  
multimode fibers



A simple box to increase network bandwidth  
without replacing existing cabling infrastructure

An **efficient** and **effective** solution

**Quick** and **easy** to install

**Passive** equipment

**Economic** benefits



# Convert

your multimode fibers  
into single-mode fibers

**2 to 10 times  
less expensive**

than optical fibers  
roll-outs

**AROONA-STAR** – a **quick** and **easy**  
solution for unlimited throughput

## Increased multimode fiber transmission capacity and compatibility with standard equipment

- From 1 Gb/s to 100 Gb/s on multimode fibers over up to several kilometers
- Compatible with OM1 to OM5 fibers (62.5 or 50/125  $\mu\text{m}$ )
- Compatible with standard duplex or bidirectional single-mode transceivers
- Wavelength Division Multiplexing (WDM) compatibility for flexible scalability of transmission capacity

## Quick and easy to install

- Simplified audit and deployment, without the need for recabling
- Solution operational after a simple fiber fusion splice
- **Passive equipment:** no power supply or electronics needed
- Short-term service interruption (average of 1 hour per link)
- Non-intrusive intervention on patch panels only
- Impact on site activity minimized
- Zero configuration, zero maintenance



**5-YEAR**  
warranty





The **AROONA-STAR** solution is available in two different formats, depending on the number of multimode fibers to be upgraded and the available space in the existing infrastructure.



**19" 1U rack**  
inserted into the network cabinet  
for the 4, 8, 12 or 24 fiber versions

**Compact module**  
inserted into the existing patch panel  
for the 1 or 2-fiber version



Many Local Area Networks (LANs) are wired with **multimode fibers (MMF) that are limited in bandwidth**. The transmitted throughput cannot exceed 1 Gb/s or even 100 Mb/s and therefore does not meet the growing demand for increased network bandwidth. The various solutions offered by the AROONA series make it possible to **overcome these limitations and transmit tens of Gb/s over an existing multimode fiber structured cabling infrastructure just by installing a simple box**.

## A few testimonials



AROONA solution approved by French Ministry of Defense



### French Army

- **Type of fiber: OM1 MMF**
- **40 high bandwidth optical links between 600 and 1500 m [1970 and 4920 ft] in length**

*"This AROONA installation, implemented quickly and without constraints, demonstrated a measurable clear improvement in terms of network fluidity, especially for INTRADEF navigation and our business applications."*

#### Military



More than 12 tons of CO<sub>2</sub> saved: only on the production of the cable, not counting the impact of civil engineering avoided

### Georgia Tech campus

- **Type of fiber: OM1 MMF**
- **35 high bandwidth optical links between 400 and 1100 m [1310 and 3610 ft] in length**

*"All houses are up and running on 10 Gb/s network speeds. Thank you for all your help! It is pretty cool to have magical technology in use and functioning so well!"*

**Robert Toledano**, Network engineer III, Georgia Institute of Technology



More than 15 tons of CO<sub>2</sub> saved: only on the production of the cable, not counting the impact of civil engineering avoided



### Deux Alpes ski resort

*"Despite the distance and connection between old generation OM1 fibers over 3.3 km [2 mi], we now have several links at 10 Gb/s at up to 3200 m [2 mi] of altitude thanks to AROONA. It's allowed us to provide new digital services to our customers and colleagues. To sum up, it is a successful encounter between high mountains and high technology."*

**Patrick Jullian**, Network administrateur, Deux Alpes Loisirs



More than 2.5 tons of CO<sub>2</sub> saved: only on the production of the cable, not counting the impact of civil engineering avoided

## Boost the throughput

of your multimode fiber link with AROONA-STAR



### ISSUE

**Limited bandwidth**  
over multimode fiber



1

**INSTALL**  
the AROONA-STAR box  
in the existing network rack



2

**SPLICE**  
the multimode fibers to be upgraded  
to the AROONA-STAR fibers



3

**CHECK**  
the link performance



4

**CONNECT**  
the AROONA-STAR to the single-mode active layer  
via single-mode optical patchcords



### RESULT

**High throughput over MMF**  
= future-proof infrastructure

## Passive media converter function



Beyond the increase in bandwidth on MMF, **AROONA-STAR** can be used as a passive media converter by providing **transparent transmission of high-speed optical signals between single-mode and multimode fiber.**

- Intermediate active layer removed
- Single-mode transceivers on either end of the hybrid link

# Technical specifications

| PARAMETER                 | AROONA-STAR  |
|---------------------------|--|
| Reach                     | <800 m with device installed <b>at one link end only</b>   |
|                           | <10 km with device installed <b>at both link ends</b>  |
| Fiber type                | Exists in 62.5/125 μm (OM1) or 50/125 μm (OM2/OM3/OM4/OM5)   |
| Number of fibers          | Exists in 1/2/4/8/12/24 fiber versions   |
| Device insertion losses   | <2 dB (typical: 1.5 dB)  |
| System capacity           | From 1 to 100 Gb/s* (typically: 10 Gb/s)<br>Independent throughput on each fiber   |
| Wavelength                | [1250 nm – 1600 nm]  |
| Transceiver compatibility | Duplex or bidirectional single-mode transceiver<br>(1000BASE-LX, 10GBASE-LR/ER/ZR, 25GBASE-LR/ER,<br>40GBASE-LR4/ER4, 100GBASE-LR4/CWDM4, etc.)<br>Passive device transparent to communication protocol  |
| Packaging and connectors  | 19" 1U rack for 4/8/12/24 fiber versions.<br>LC/UPC connector on the front panel of the 19" rack<br>and unconnectorized multimode fiber on the rear panel to be spliced<br><br>Compact module for 2 fiber version.<br>ST/SC/LC-UPC connector on the single-mode side.<br>Unconnectorized multimode fiber to be spliced |
| Operating temperature     | -40°C to +70°C (ETSI EN 300 019-1-3 class 3.4)   |
| Transportation tolerance  | ETSI EN 300 019-1-2 class 2.3  |

\*subject to the complexity and condition of the link

## Dimensions in mm [inches]

### Rack 19" 1U

⊕ 43 [1.7] ⊖ 480 [18.9] ⊙ 250 [9.8]

4m-long MMF on rear panel



### Compact module

⊕ 5 [0.2] ⊖ 100 [3.9] ⊙ 12 [0.5]

MMF: 900 [35.4] / SMF: 400 [15.7]



Do not change your fiber,

**optimize it!**

## How to integrate the **AROONA-STAR** device on an existing cabling infrastructure

- For links less than 400 m: **only one device is required**



- For links between 400 and 800 m: **only one device is required, as well as changing the multimode connectors of the remote sites to single-mode connectors**



- For links more than 800 m: **two devices are required (one at each end)**



1 Patch panel

2 Fusion splice

## Implementing **POLAN** on an existing multimode cabling infrastructure

**AROONA-STAR** allows the implementation of an emerging network architecture of Passive Optical LAN (POLAN) on multimode fibers. This innovative solution is compatible with all active and passive single-mode POLAN devices.

For more information on POLAN applications, please refer to the AROONA brochure dedicated to POLAN.

The AROONA solution has obtained numerous innovation awards worldwide, including:



# cailabs

SHAPING THE LIGHT

Founded in 2013, **Cailabs** is a French deep tech company which designs, manufactures and distributes innovative photonic products for telecommunications, free space transmission, industrial lasers, and LANs. A global leader in complex light shaping, its technology is currently protected by 19 patent families. Its innovative optical components are used in a variety of sectors and have contributed to several world records (notably the optical fiber bandwidth record achieved by the Japanese operator KDDI).

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