

OVERVIEW

Committed to quality and performance, Alpha Gruis provides reliable active optical cable (AOC) solutions designed for today's high-speed connectivity needs.

USB4 delivers faster data transfer, higher-resolution video streaming, and multi-protocol support—all through a single, compact, and versatile port. Our AOC products are built to fully support these advanced capabilities with outstanding reliability.



FEATURES

- ✧ USB type C (USB-C) active optical cable (AOC).
- ✧ Data rate up to 40Gbps
- ✧ Fiber link up to 30 meter.
- ✧ Low latency, low weight, daisy-chaining and longer cable length.
- ✧ Compliant with USB4 specification
- ✧ Low cost AOC solution
- ✧ Feature only support USB-C port with PD

ORDERING INFORMATION

USB4 - OLL - O39-AG007

OLL → 005 = 5M

010 = 10M

015 = 15M

020 = 20M

030 = 30M

0XX = Custom

Standard Active Optical Cable Part Numbers

Model	Length	Nominal OD	Minimum Bend Radius (R)	NOTES
USB4005-O39-AG007	5 m	3.2 +/- 0.2 mm	ODx15	
USB4010-O39-AG008	10 m			
USB4015-O39-AG009	15 m			
USB4025-O39-AG010	25 m			
USB4030-O39-AG011	30 m			

USB4 ACTIVE OPTICAL CABLE

1.1. Operating Specifications

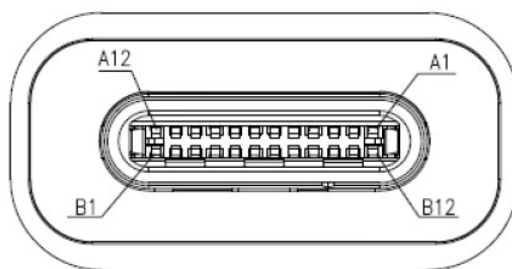
Parameter	Min	Typ	Max	Units	Note
Supply voltage	4.75	5	5.25	V	5V +/- 5%
Supply current		150		mA	Per end
Power consumption	750		900	mW	Per end
Data rate		20		Gbps	Per lane
Post FEC BER		Error free			
Input swing		700	900	mV	Differential
Output swing	150			mV	Differential
Fiber length (OM3)			30	m	

1.2. Environmental specifications

Parameter	Min	Max	Units	Note
Operating case Temperature	0	40	°C	
Storage Temperature	-20	85	°C	
Operating Relative Humidity	5	85	%	
Max Supply Voltage	-0.5	5.25	V	

1.3. USB4 Cable Pin Definitions

PIN# (A Side)	Signal Name (A Side)	PIN# (B Side)	Signal Name (B Side)
A1	GND	B12	GND
A2	TX1+	B11	RX1+
A3	TX1-	B10	RX1-
A4	VBUS	B9	VBUS
A5	CC1	B8	SBU2
A6	NIL	B7	NIL
A7	NIL	B6	NIL
A8	SBU1	B5	CC2
A9	VBUS	B4	VBUS
A10	RX2-	B3	TX2-
A11	RX2+	B2	TX2+
A12	GND	B1	GND



USB4 ACTIVE OPTICAL CABLE

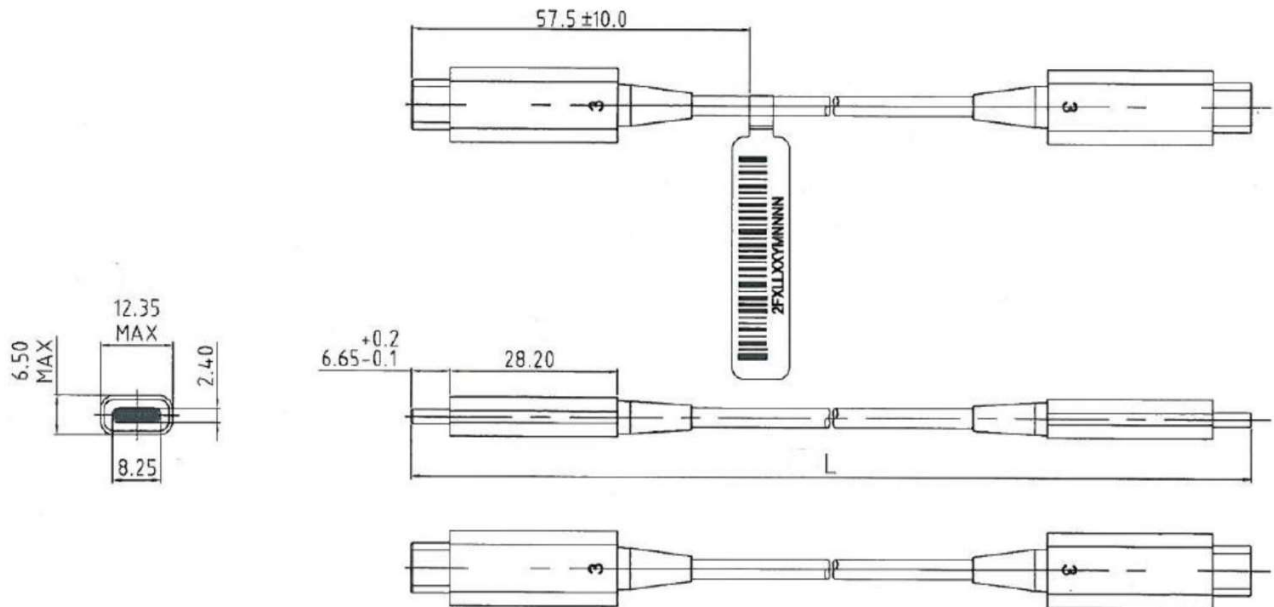
1.4. Protocol and Compatibility		
Protocol	Data rate	Support
TBT4	40Gbps	Yes
TBT3	40Gbps	Yes
USB4	40Gbps	Yes
USB3.2 Gen2x2	20Gbps	Compatible
USB3.2 Gen2x1	10Gbps	Compatible
USB3.2 Gen1x1	5Gbps	Compatible
USB2.0	480Mbps	No
Display Port		No
Power delivery		No

Note: Above protocol only support USB-C port with PD

	DEVICE		
	Intel Goshen Ridge Board (TBT3)	Targus DOCK430USZ-50 USB-C Dock (USB 3.2 Gen1)	Targus DOCK190USZ-85 USB-C Dock (USB 3.2 Gen1)
Host	SanDisk SDCZ43 (USB 3.2 Gen1)	SanDisk SDCZ43 (USB 3.2 Gen1)	SanDisk SDCZ43 (USB 3.2 Gen1)
Lenovo ThinkPad X1 Carbon 5th Gen (KabyLake) (TBT3) + Dell WD19TB (TR) Dock (USB 3.2 Gen2)	Conditional *	Pass	Pass
Lenovo ThinkPad T14 Gen1 (TBT3)	Conditional *	Pass	Pass
Dell XPS 13 9310 (TBT4)	Pass	Pass	Pass
Apple MacBook M1 (TBT3/USB4)	Pass	Pass	Pass
Apple MacBook Pro TR (TBT3)	Pass	Pass	Pass
Apple MacBook Pro AR (TBT3)	Pass	Pass	Pass
Apple MacBook Intel Core M (USB 3.2 Gen1)	Conditional *	Conditional *	Conditional *

Compatible Table

1.5 Mechanical Dimension



Revision	Description	Date
R01	1st Release	2025/06/20

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