

*Welcome to*



**C-FLINK**



[www.c-flink.com](http://www.c-flink.com)





# Contents



- Company Introduction
- Quality Assurance
- Applications
- DAC Introduction
- Future Development
- AOC & Transceivers Introduction

# Company Introduction

Founded in:	March 2017
Registered Capital:	10 million RMB
Address:	No. 7 Guangtai Rd, Hui-nan Science Park, Zhongkai High-tech Zone, Huizhou, Guangdong Province, China
Main Business:	R & D and sales of DAC cables, AOC cables and transceiver modules
Workspace:	Plant area of 2000m <sup>2</sup> (including 400m <sup>2</sup> of dust-free workshop), 56 employees (15 technicians)
Certificates:	ISO9001, CE, ROHS, FCC





# Company Introduction

## Product Range:

Huizhou C-FLINK Technology Co., Ltd

DAC Cable

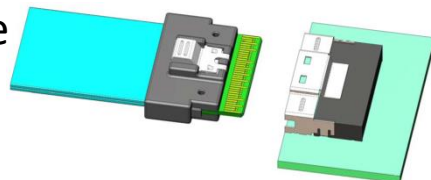
Mini  
sas



HD  
mini  
sas



Slimline  
sas



SAS series- Applied  
data storage.

Switch big data  
transmission, up to  
400Gps



QSFP28



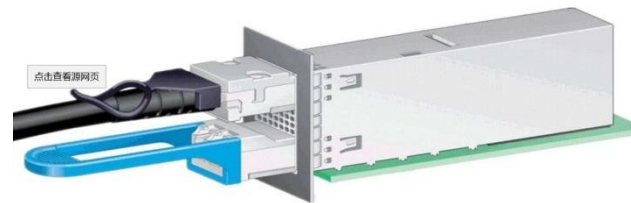
SFP28



SR & LR module



QSFP DD 400G



Transceivers

SFP & RJ45 Module

AOC Cable



SFP AOC

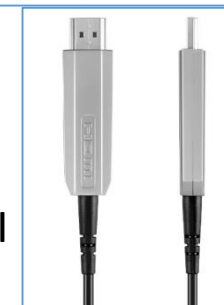


QSFP  
AOC



HD mini sas AOC

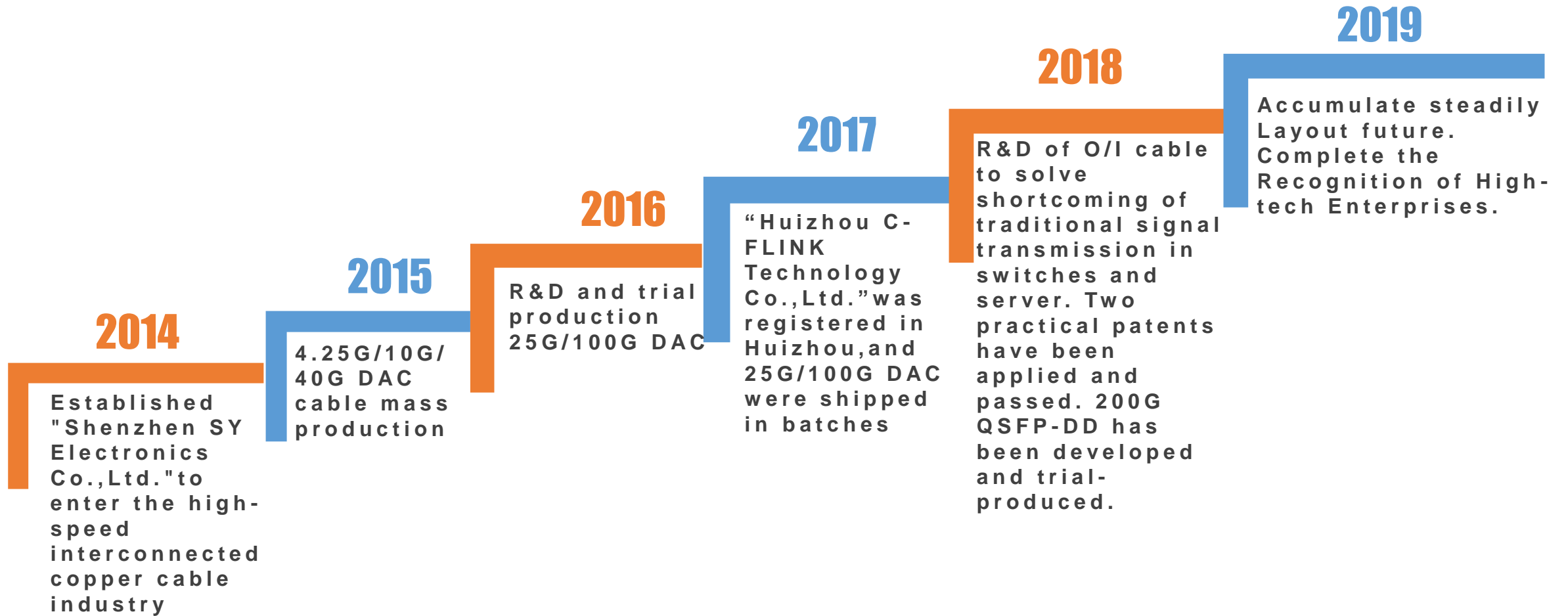
HDMI  
AOC



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# Company Introduction

## Development History



# Corporate Culture

## Enterprise core values

- People-oriented innovation and pragmatism.
- Honest management, return society.

## Enterprise spirit

- Professionalism, Integrity,
- Quality, Innovation.

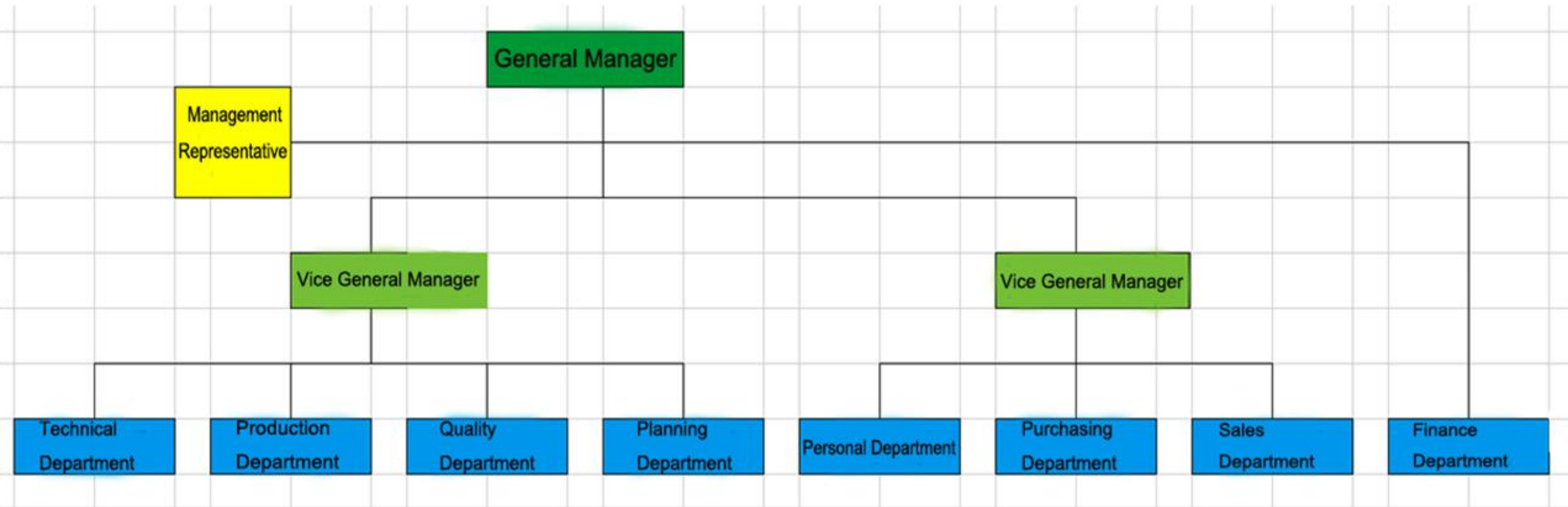
## Service

- More perfect design, better products, more reasonable prices, more considerate service.
- Customer needs oriented to bring more comprehensive solutions to customers.

## Enterprise mission

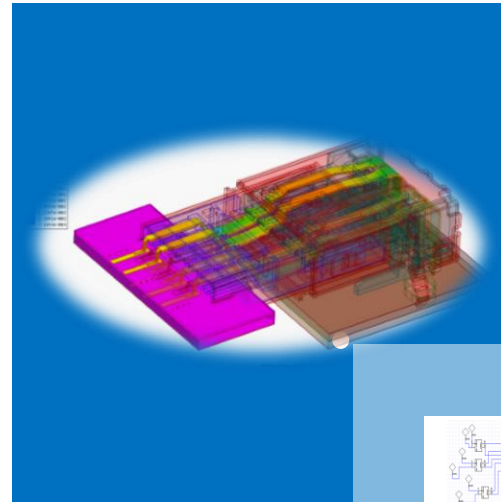
- Excellent suppliers for data center and Cloud computing.

# Organizational Structure



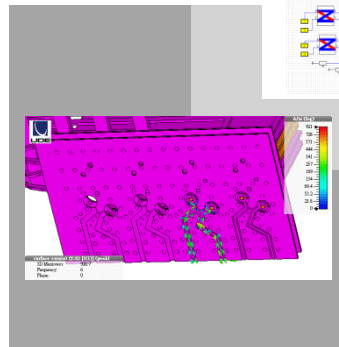
## Process Validation

AUTOCAD and Pro-E are applied to design verification, product data management and design communication to ensure product design reliability.



## Product Development

Have rich experience in PCB material selection, circuit design and structural parts development for different speed products, and can independently complete all development of the entire product.



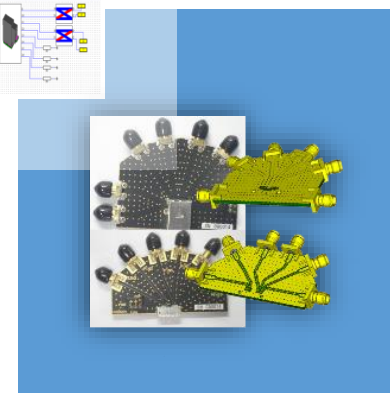
## Signal Simulation

Cooperate with professional signal simulation institutions to simulate high-frequency signals in the early stage of product development, shorten product development cycle and ensure project progress.



## Test Equipment

We have the ability to develop test fixture and switch independently, reduce product test cost and improve test efficiency.





# Supply Chain Management

1. We choose the nearest supply chain to provide competitive and reliable components.
2. Meet ROHS and REACE standards.
3. We seek win-win results among the three parties.

Supply chain  
Management



Materials/Parts

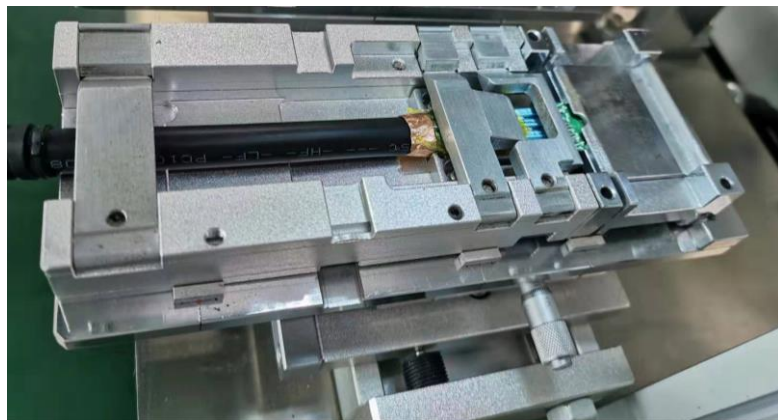
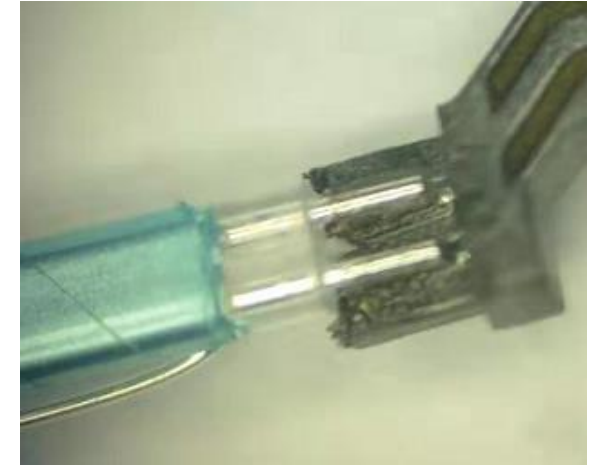
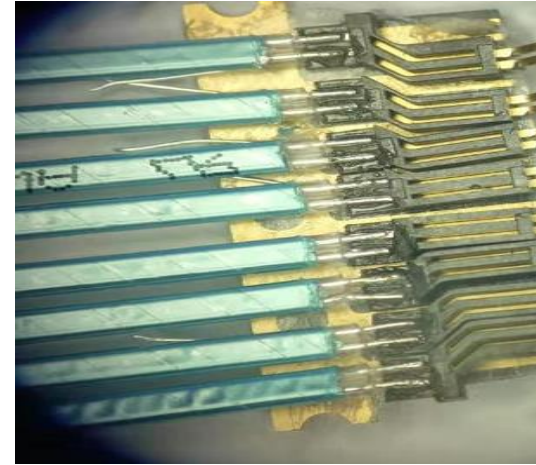


# Capability

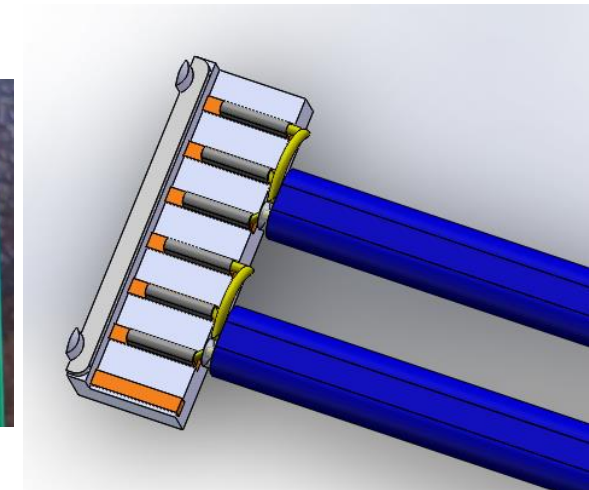
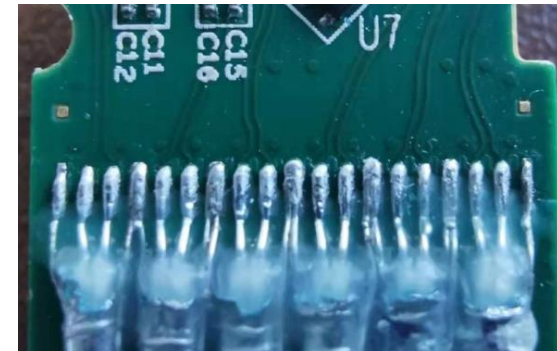
## Mature and stable processing technology



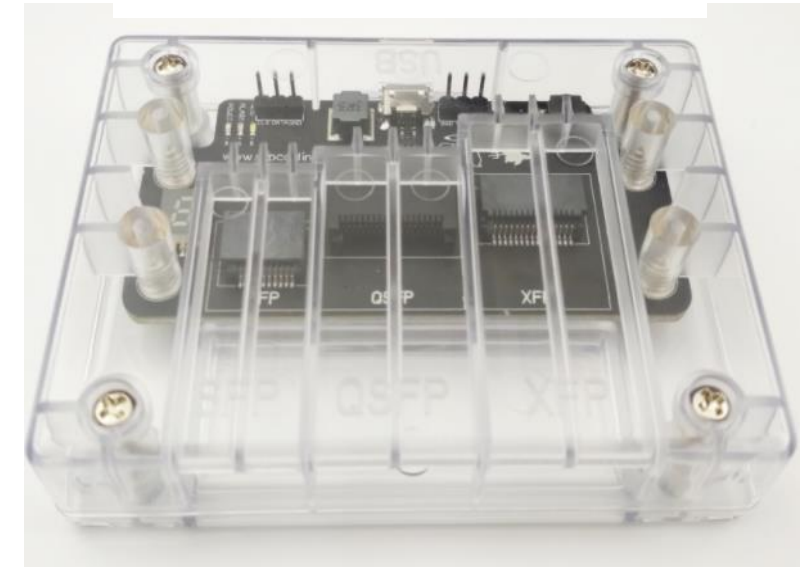
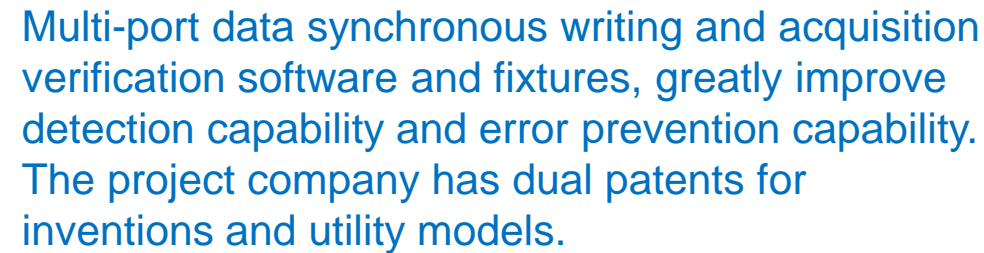
High-density design, high-precision processing has always been a difficult problem in the industry, we can make the products refined, we have laid a solid foundation for future product orientation.



The unique processing technology ensures the integrity and consistency of the signal transmission of the product, and the overall process has its own invention patent.







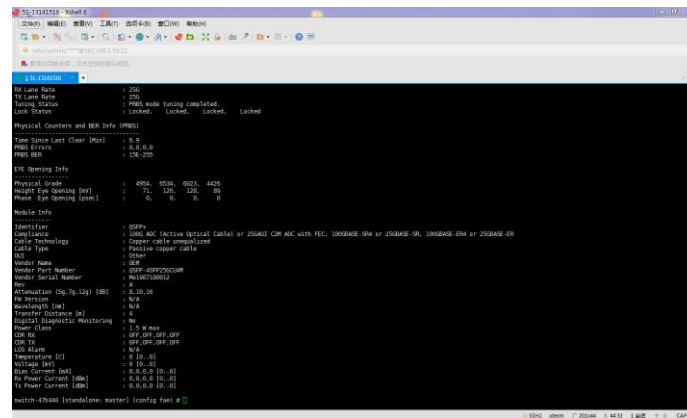
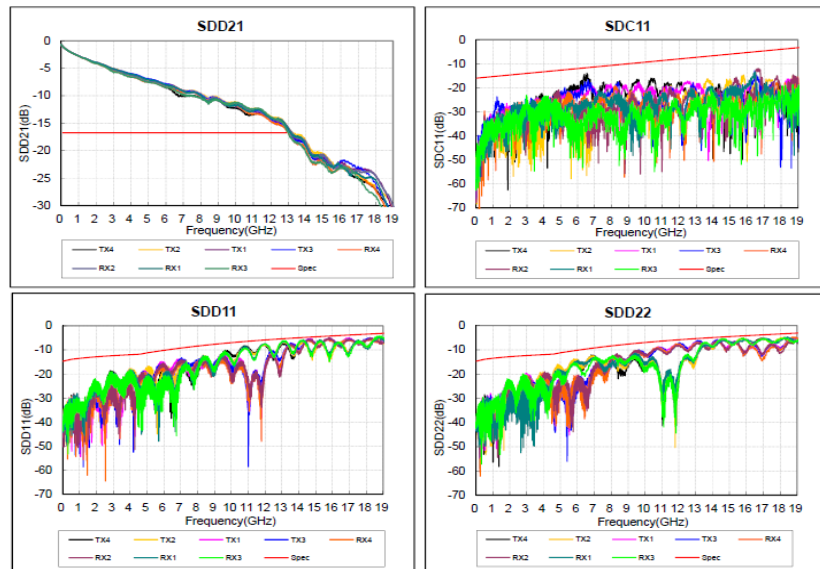
**www.c-flink.com**

Capability

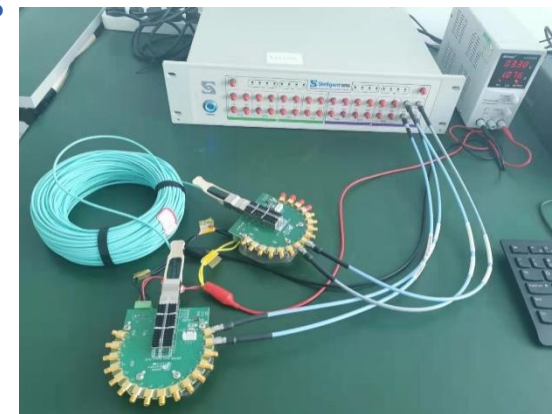
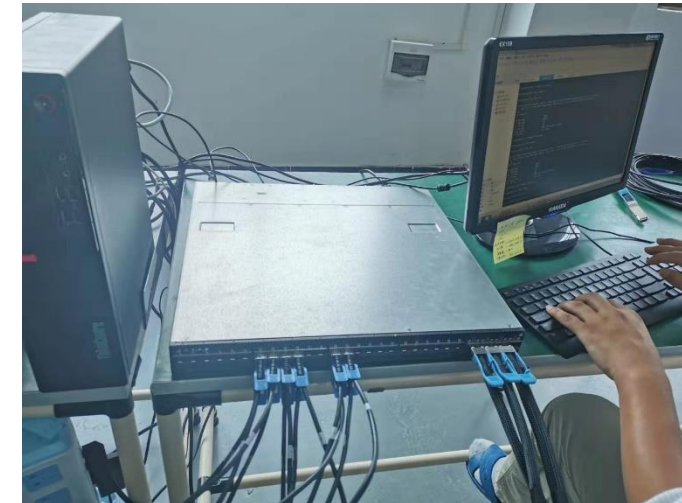
# Quality Assurance

Meet all kinds of switch application testing

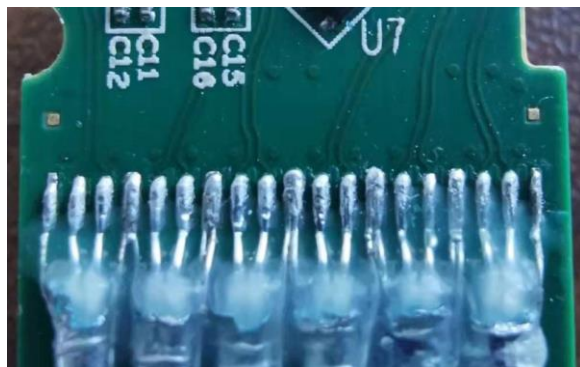
## 100G Excellent High Frequency Test Results



Packet loss test: Zero packet loss



High density design



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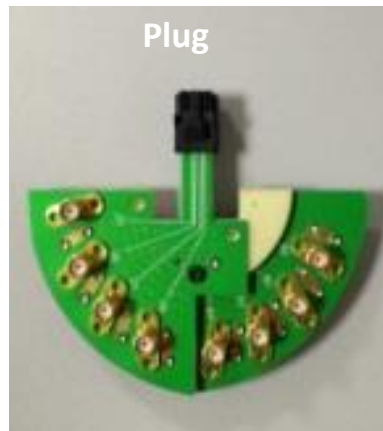
Int. Mini-SAS



Ext. Mini-SAS



Int. Mini-SAS HD



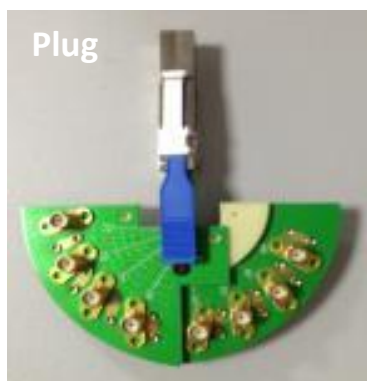
Int. Mini-SAS HD



Int. Mini-SAS HD



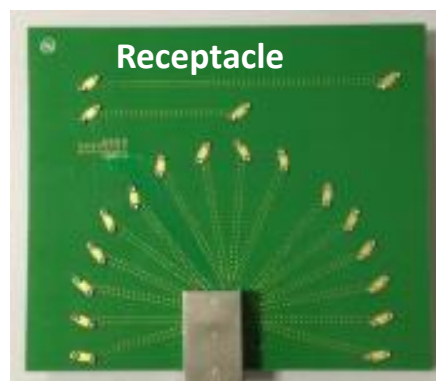
Ext. Mini-SAS HD



Ext. Mini-SAS HD



Ext. Mini-SAS HD

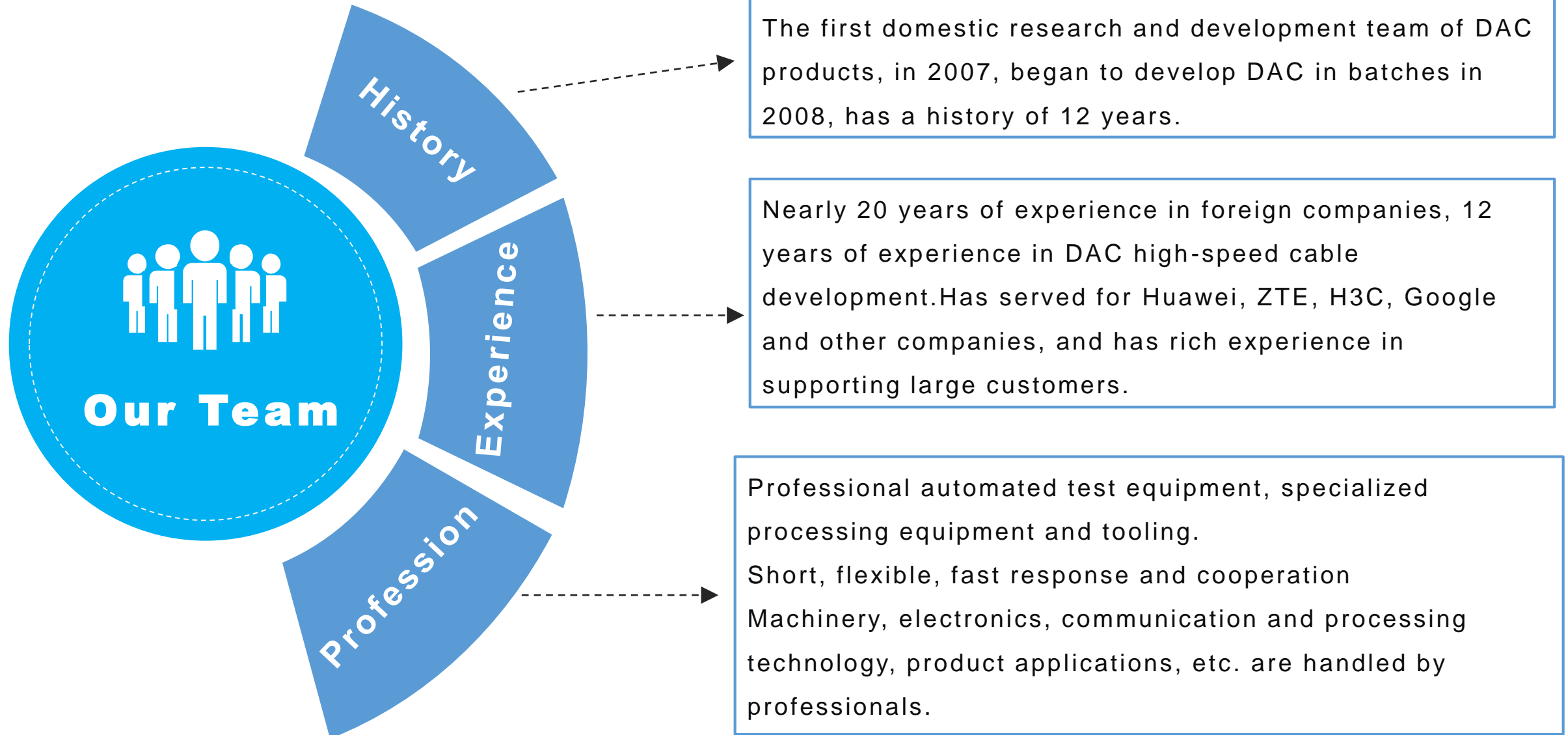


QSFP+ FDR



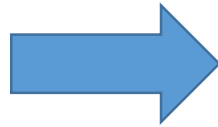
SFP+ FDR





# Enterprising management team

## Enterprising management team



- Have extensive management knowledge, skills and operational experience in the industry
- Have a leading industry management philosophy and market management capabilities
- Be good at seizing market opportunities and formulating favorable business strategies in time
- Ability to assess and manage risk ahead of time
- Strictly implement various management and production measures systems

### **Liu LiFeng** (Chairman & General Manager)

- Mainly responsible for formulating the company's overall corporate strategy, planning and business development, and the day-to-day management and operation of the company.
- 20 years of technical and managerial experience and 18 years of experience in foreign enterprises - good at market analysis, target decision-making, resource integration.

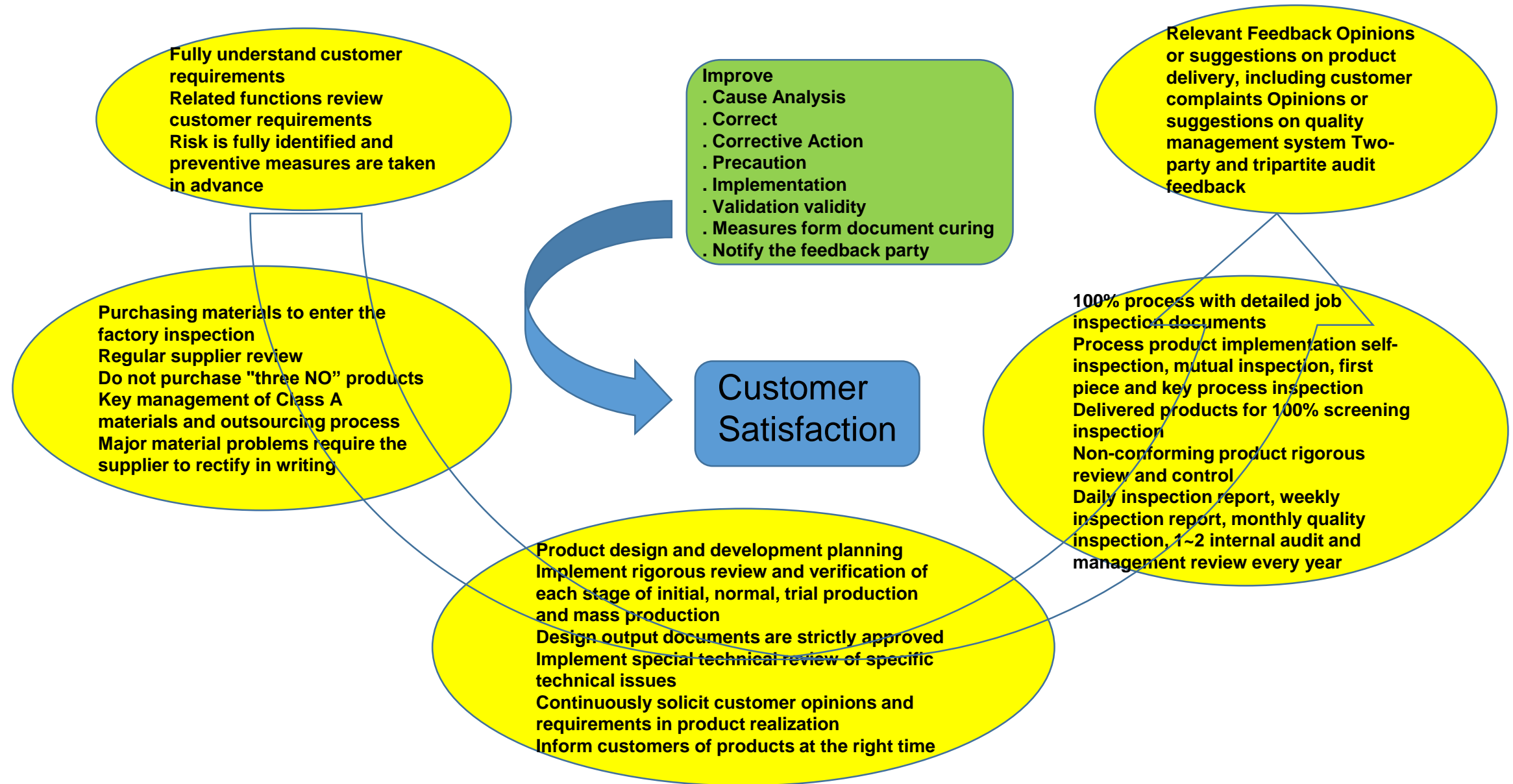
### **Xie ShiLe** (Technical Deputy General Manager and Management Representative)

- Mainly responsible for the company's new product development, process management, quality management.
- For 10 years, foreign companies are engaged in cable component development and high-speed cable R&D technical positions.
- Good at design development, project management, quality management.

### **Li YinFeng** (Deputy General Manager of Business)

- Mainly responsible for the company's market planning.
- 6 years' experience in communication module business
- Familiar with all kinds of cutting-edge technology, good at customer communication.

## Strict Quality Management System





# Certificates

# Our Quality Management

## 质量管理体系



### 国际标准认证证书



标准: GB/T19001-2016 idt ISO9001:2015

证书登记号: UKS001-2018Q0063

获证方: 惠州市联飞科技有限公司

组织机构代码 (信用) 代码 91441300MA4WACQ8XE

注册地址: 惠州市仲恺高新区江湾街道办事处三地工业区厂房一楼

经营地址: 惠州市仲恺高新区江湾街道办事处五地工业区厂房一楼

认证范围: 通讯器材、光电产品、电子产品 (通讯电缆) 的研发、生产及销售服务

通过英国标准认证 (深圳) 有限公司现场审核, 证明满足 GB/T19001-2016 idt ISO9001:2015 标准的要求

有效期: 本次发证日期: 2018 年 05 月 31 日  
本次有效日期: 2019 年 05 月 30 日

首次注册日期: 2018 年 05 月 31 日

注册有效日期: 2021 年 05 月 30 日



本证书由英国标准认证 (深圳) 有限公司注册颁发, 获证组织应于证书有效期内按照规定接受监督审核并维持本证书认证资格, 是否有有效应登录优卡国际认证 (深圳) 有限公司官方网站 [www.uk-sz.com](http://www.uk-sz.com) 查询证书信息, 亦可在国家认证认可监督管理委员会官方网站 ([www.cnca.gov.cn](http://www.cnca.gov.cn)) 上查询。

地址: 中国广东·深圳市宝安区西乡街道宝民一路流塘大厦1504室 邮编: 518101

**Supplier's Declaration of Conformity**

Certificate Number: DL-2019051094C

Applicant: Huizhou C-FLINK Technology Co., Ltd.  
Building B, No. 7, Guangtai Rd, Hui-nan Science Park, Zhongkai High-tech Zone, Huizhou, Guangdong Province, China

Manufacturer: Huizhou C-FLINK Technology Co., Ltd.  
Building B, No. 7, Guangtai Rd, Hui-nan Science Park, Zhongkai High-tech Zone, Huizhou, Guangdong Province, China

Product: High Speed Cable

Brand Name: C-FLINK

M/N: 10G SFP+ Cable, 25G SFP28 Cable, 40G QSFP+ Cable, 56G QSFP+ Cable, 100G SFP28 Cable, Mini SAS HD Cable, Mini SAS Cable

The submitted sample of the above equipment has been tested and found to comply with the following standards:

- FCC Part 15, Subpart B
- ANSI C63.4: 2014

This certificate is part of the full test report(s) and should be read in conjunction with it. The referred Test report(s) show that the product complies with standard(s) recognized as giving presumption of compliance with the essential requirements in the specified FCC standard.

This Verification does not imply assessment of the production of the product.

The EU/T declared above has been tested at our laboratory with positive results. The test records were represented in reference No.: DL-2019051094C.

FCC logo and CE mark are visible.

**CERTIFICATE**

Certificat - Certificado - Сертификат - Zertifikat - 證書

1) APPLICANT: (who finally puts the product on the market)  
Huizhou C-FLINK Technology Co., Ltd.  
Building B, No. 7, Guangtai Rd, Hui-nan Science Park, Zhongkai High-tech Zone, Huizhou, Guangdong Province, China

2) CERTIFICATE NO.: ISETC-003620190429

3) FILE REFERENCE: DL-2019040978E

4) CAUTION ABOUT CE MARKING (Instruction for the Applicant who puts the product on the EU market):  
The label of the CE Marking on the left side should be not less than 5mm height. CE Marking and EC Declaration of Conformity are duties for the manufacturer or its applicant who puts the product on the market. This one is responsible to start the CE marking and certification procedure as required by the legislation in force. Only for the products which are compulsorily included into specific Directives or Regulations will be necessary to appoint a Notified Body.

5) TYPE OF PRODUCT: High Speed Cable

TRADE MARK: C-FLINK

MODELS: 10G SFP+ Cable, 25G SFP28 Cable, 40G QSFP+ Cable, 56G QSFP+ Cable, 100G SFP28 Cable, Mini SAS HD Cable, Mini SAS Cable

6) LIST OF DIRECTIVES / REGULATIONS / STANDARDS (as declared by the manufacturer itself):  
Electromagnetic Compatibility 2014/30/EU  
EN 55032:2015, EN 55035:2017

7) NOTE: The applicant is aware about the contents and information included in the ModCM04.06 Regulation for this type of Certificate that is considered totally accepted. The latest revision of the Regulation is available and can be downloaded from the website [www.etsi.org/standards](http://www.etsi.org/standards). This document is not referred to any evaluation that could be considered as included in the scope of the activities covered by the standard BS EN ISO/IEC 17065:2012 or European Regulation 765/2008.

8) REMARK: Certificate is issued on voluntary application from the Client and it gives to the applicant the right to use and affix the ISET Mark (at point 3) on their products, even if it doesn't imply any assessment on the safety and compliance of the product. ISET declares that the only scope of the assessment is to verify the existence of the declaration issued by the manufacturer or an applicant under its own responsibilities.

9) DATE OF ISSUE: 28/04/2019

10) SIGNATURE: Miriam Campbell

EXPIRY DATE: 28/04/2022

ISET S.r.l. logo and CE mark are visible.

**HUIZHOU C-FLINK TECHNOLOGY CO., LTD**

Technical Report: (8819)113-0033  
Date Received: Apr 23, 2019  
Page 1 of 7

Sample Description: HIGH SPEED CABLE ASSEMBLY  
Manufacturer: HUIZHOU C-FLINK TECHNOLOGY CO., LTD  
Style No(s): QSPF + SERIES (40G/56G/100G) SFP + SERIES (15G/14G/25G) HD MINI TYPE NOT PROVIDE NOT PROVIDE CHINA

Buyer: N/A  
Labeled Age Grade: NOT RECORD  
Appropriate Age Grade: NOT REQUESTED  
Client Specified Age Grade: NOT SPECIFIED  
Tested Age Grade: N/A  
UPC Code: N/A  
Test Starting Date: APR 23, 2019

SKINSKU No.:  
PO No.:  
Ref #:  
Country of Origin:  
Assessment No.:  
Test Finished Date: APR 30, 2019

**EXECUTIVE SUMMARY**

The tested component sample(s) MEETS the following requirement(s):

- The heavy metals and flame retardants content requirements of the European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendment Directive 2015/863/EU.
- The BPP/DP/DEHP/DBP content requirements of the European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendment Directive 2015/863/EU.

To be continued

BUREAU VERITAS SHENZHEN CO., LTD  
DONGGUAN BRANCH

Harvey Xue  
Manager, Analytical Lab

RTICZ00  
REMARK:  
If there are questions or concerns on this report, please contact the following persons:  
Report Enquiry: (86) 0769 85922999 Ext. 8175  
Business Contact: (86) 0769 85933595  
This report shall not be reproduced except in full, without the written approval of our laboratory.

ISO9001

FCC

CE

ROHS

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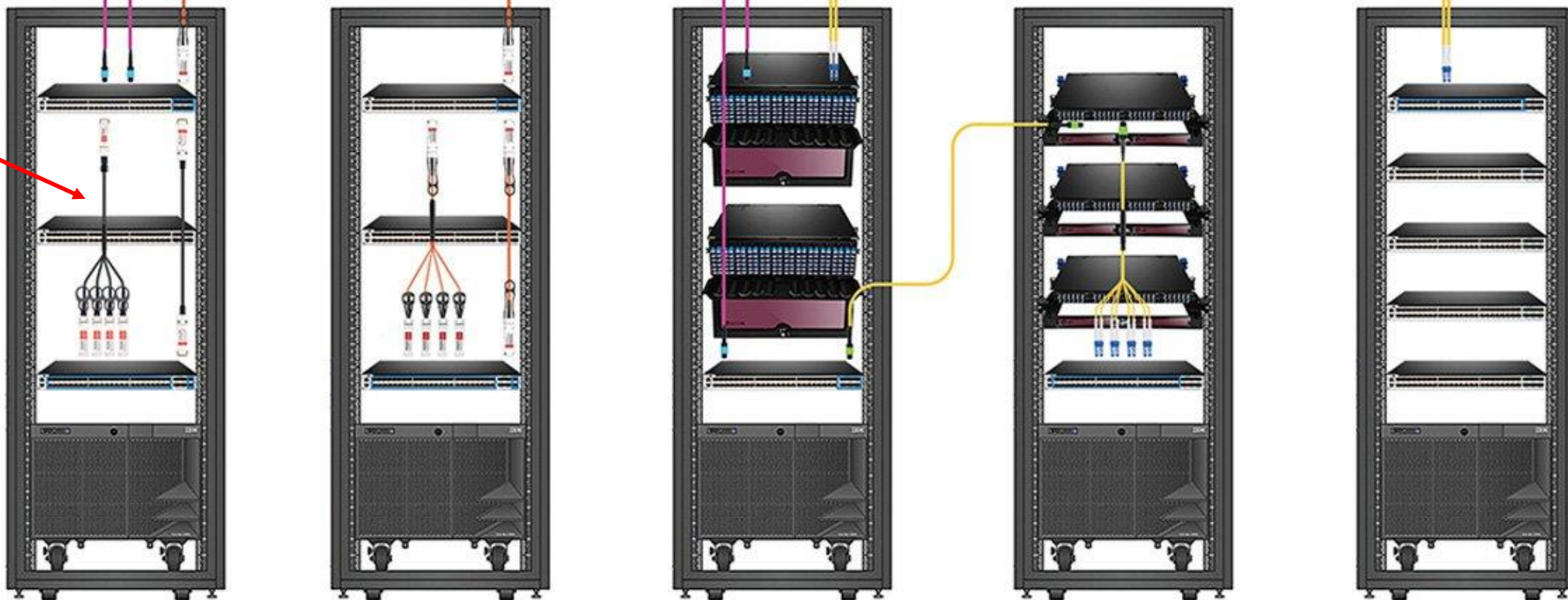
## Data Center Cable Applications

AOC application  
5~30m rack and  
rack connection

DAC  
application  
0~7m rack  
switch  
connection


MTP&MPO fiber  
optic application  
is connected to the  
rack within 500m

LC conventional fiber  
jumper application  
within 10Km rack and  
rack connection





# Data center & big data storage applications



**Cable** { Electric  
Optical

## High-speed Interconnect Product Selection Solution

C-FLINK.COM 2018.8

速率	产品	传输距离	1Meter	3Meter	5Meter	7Meter	10Meter	15Meter	70Meter	100Meter	300Meter	500Meter	2KM	10KM	40KM	80KM	120KM
4.25G	SFP		Copper	Copper	Copper	Copper	Copper	Copper Active &AOC	AOC	AOC	SR			LH	ER	ZR	EZX
10G	SFP+		Copper	Copper	Copper	Copper	Copper	Copper Active &AOC	AOC	AOC	SR	LR	LR	LR	ER	ZR	
25G	SFP28		Copper	Copper	Copper	Copper Active &AOC	Copper Active &AOC	Copper Active &AOC	AOC	SR/OM4	LR	LR	LR	LR			
40G	QSFP+		Copper	Copper	Copper	Copper	Copper Active &AOC	Copper Active &AOC	AOC	AOC	SR4	PSM4 &CWDM4	CWDM4	LR4			
100G	QSFP28		Copper	Copper	Copper	Copper Active &AOC	Copper Active &AOC	Copper Active &AOC	AOC	SR/OM4		PSM4 &CWDM4	CWDM4	LR4			
6G	mini SAS		Copper	Copper	Copper	Copper	Copper Active &AOC		AOC								
12G	HD mini SAS		Copper	Copper	Copper	Copper	Copper Active &AOC	Copper Active &AOC	AOC	AOC							
120G	CXP		Copper	Copper	Copper	Copper	Copper Active &AOC	Copper Active &AOC	AOC	SR10							
10G	XFP		Copper	Copper	Copper	Copper	Copper				SR			LR		ER	TBD
4.5G	CX4		Copper	Copper	Copper	Copper	Copper										
200G	QSFP-DD		copper	copper	copper	Copper Active &AOC	Copper Active &AOC	Copper Active &AOC	AOC	SR8							
100G	micro QSFP		copper	copper	copper	Copper Active &AOC	Copper Active &AOC	Copper Active &AOC									
8G	Oculink		copper														
12G	Slimline SAS3.0		copper														
24G	Slimline SAS4.0		copper														
400G	iQSFP3		copper														
600G	iCXP4		copper														



High speed cable

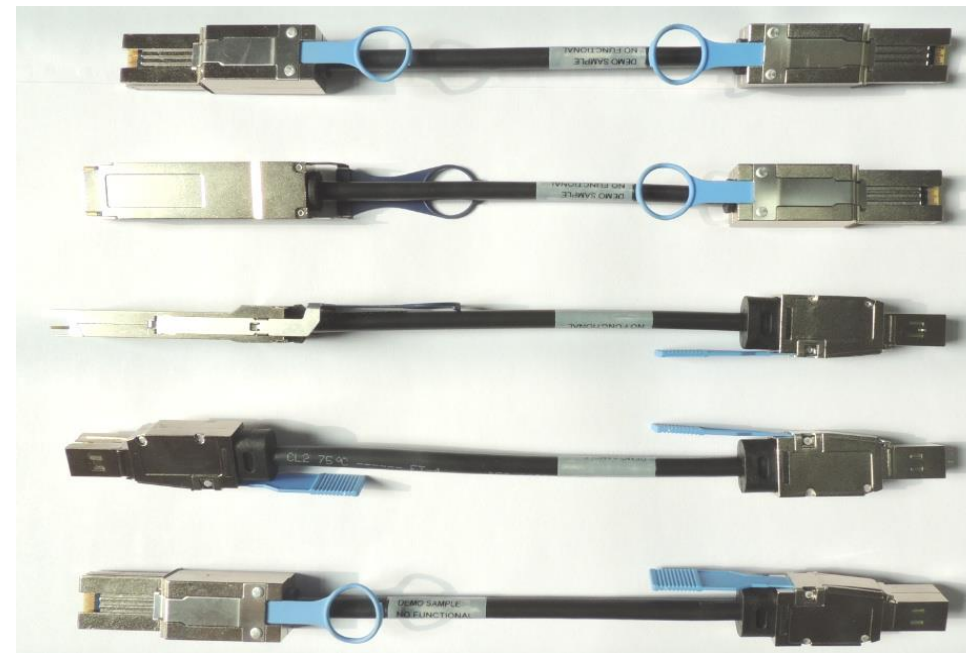
# Internal Mini-SAS HD Cables Series

- SFF-8643
- 4i 36Pos 12Gbps/Channels (Dual ports 8i is available)
- With & Without side band or PCIe application
- Customize length for your application up to 1200mm
- Customize cables
- Plug type with Straight / Right Angle / Side Exits (Left & Right)
- Hybrid cables / Y cables

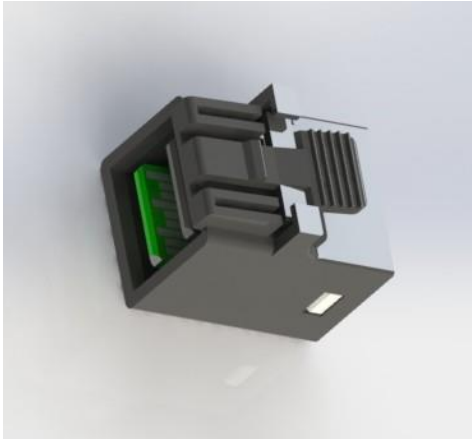


## External Mini-SAS HD Cables Series

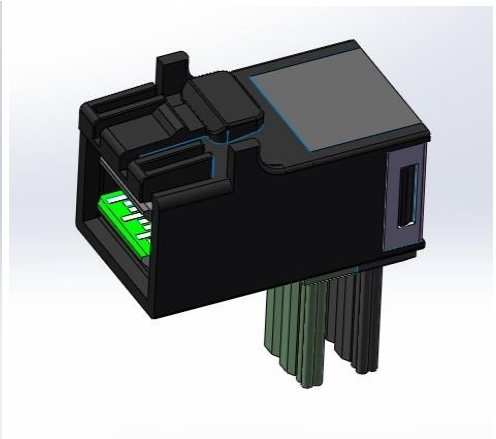
- . Compliant with external Mini SAS HD MSA SFF-8644 protocol
- . Compliance with single channel 6Gps and 12Gps SAS2.1 and SAS3.0 interface design
- . 4x36pos 12Gps/channel
- . Low power, EMI anti-jamming design
- . Support customer custom and hybrid cable
- . External Mini SAS supports 24~30AWG wire gauge diversity selection,supporting passive .10M and active .15M transmission distance
- . Support serial port ID function via EEPROM
- . Meet REACH and ROHS



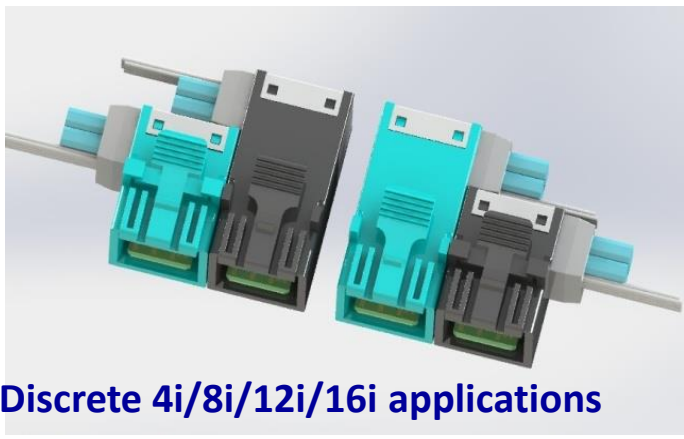
# Different Right Angle Plug Design



SFF-8643  
Short Body



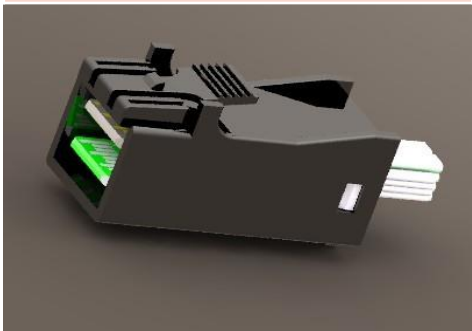
SFF-8643  
Right Angle



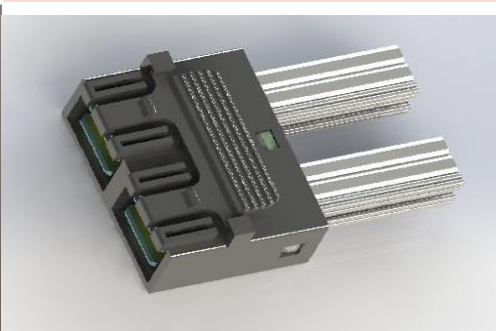
Discrete 4i/8i/12i/16i applications

SFF-8643 Short & Long  
Left & Right Exits

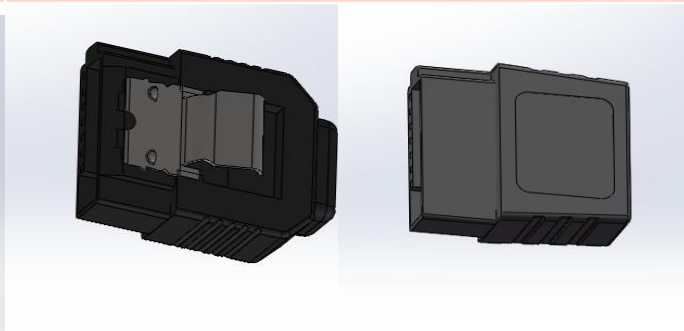
SFF-8643  
Long Body



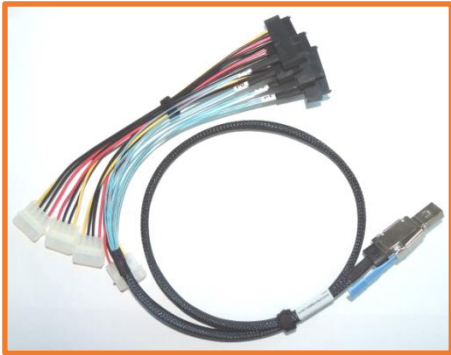
8i Dual Port  
Short Body Type



SATA 6G/12G  
with/without Latch



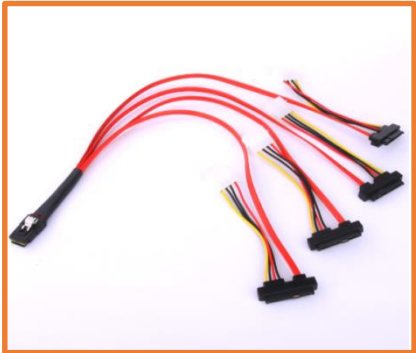
# SAS Series



**SFF-8644 to  
4xSAS29P+4P**



**SFF-8644 to SFF-  
8087**



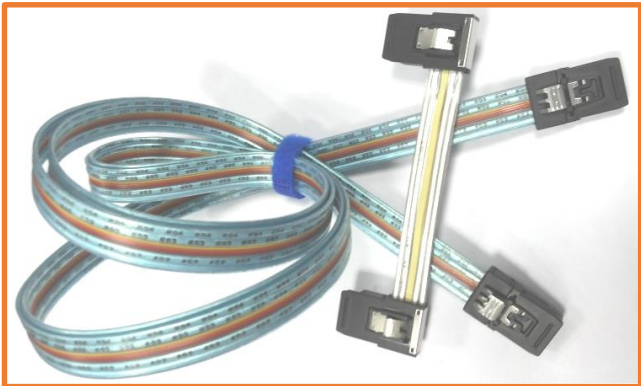
**SFF-8087 to  
4xSATA+4P**



**8639 68P to 8643 36P With  
SATA 15P Power Flying**



**SAS7P/15P to  
4xSAS29P**



**SFF-8087 with Ribbon SAS  
Cable**



**SFF-8088 to SFF-  
8087**



**8639 68P to 8643 36P With  
4P Power Flying**

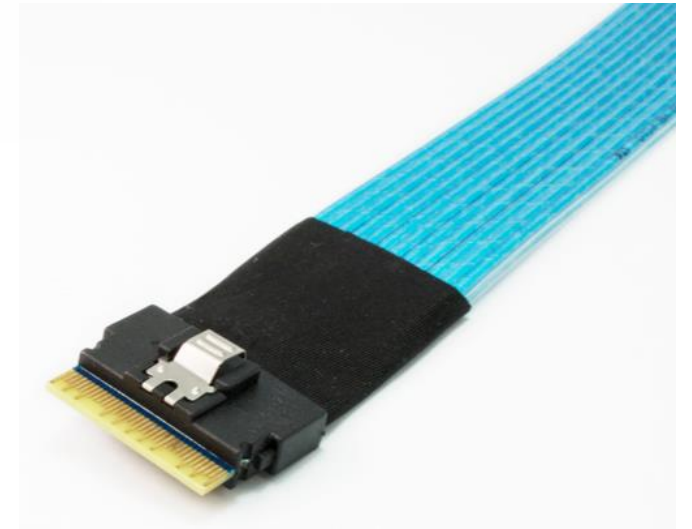


# Slim SAS Series

C-FLINK's Slim SAS is developed to meet anticipated I/O and directly attached storage needs

## Features:

- High density, flexible and compact
- A strong lock structure
- Supports transmission rate up to 24Gbps
- Signal plus clock
- 16 pairs of signals
- Compliant with SFF- 8654
- Support PCIe3.0 and PCIe 4.0
- 100Ω and 85Ω characteristic impedance for selection
- Operating temperature ranges from -20°C to 75°C



High speed cable

# SFP+ Direct Attached Cables Series

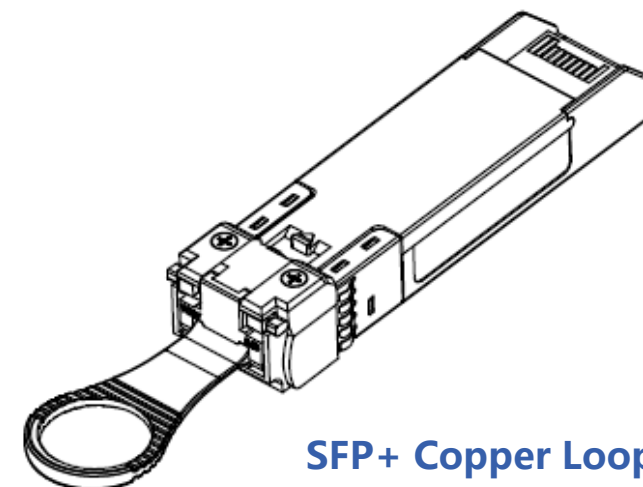


- Small Form-Factor Pluggable - SFP, SFP+, SFP28(SFP+ EDR 25G)
- SFP-MSA/SFF-8431/SFF-8432/SFF-8461/SFF-8081
- Data-rate up to 25Gbps per channels
- 24 AWG to 32 AWG cable size available
- Customize length for your application up to 7M
- Compatible with IEEE 802.3by and IBTA EDR



**SFP=4.25Gbps; SFP+=10Gbps; SFP++=14Gbps; SFP28=25Gbps**

SFP & RJ45 electrical module



SFP+ Copper Loopbacks

Attenuation: 0dB, 3dB, 5dB

Power consumption: 0W, 1W, 1.5W

High speed cable

# QSFP+ Direct Attached Cables Series

- Quad Small Form-factor Pluggable – QSFP+, QSFP28(QSFP+ 100G)
- QSFP-MSA/SFF-8635/SFF-8636/SFF-8665/SFF-8685
- Data-rate up to 25Gbps per channels
- Compatible with Ethernet IEEE 802.3bj and InfiniBand QDR/FDR/EDR

QDR=40Gbps; FDR=56Gbps; EDR=100Gbps; Intel Omni-Path100G



Patent

Copper DAC



Hybrids DAC



Loopback





# 200G QSFP DD DAC

QSFP-DD (four small form factor pluggable dual density) uses an eight-way electrical interface that supports 28 Gbps NRZ or 56 Gbps PAM-4 for 200 or 400 Gbps aggregation per port, doubling the density of QSFP interconnects. Backward compatibility of the QSFP-DD portfolio allows existing QSFP modules to be plugged into the QSFP-DD port. The QSFP-DD housing features a proprietary heat sink design that makes it the only low-cost solution for 15-18W applications – delivering superior thermal and signal integrity performance.

### Feature :

1. QSFP density is doubled by 8 differential pairs, each up to 50 Gbps to achieve 400G
2. Provides superior thermal and signal integrity performance
3. Support for next-generation high-density data center/cloud computing data transmission solutions
4. Compliant with IEEE 802.3cd SDD21
5. 16 maximum installation of 28AWG cable (2.5m), minimum available for 32AWG

### Combination

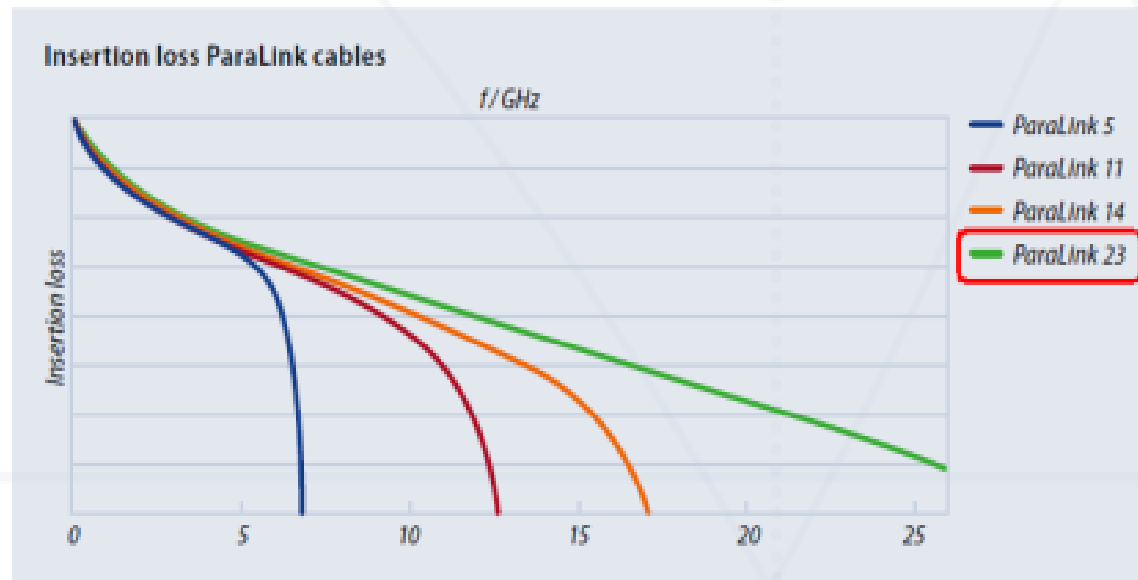
- . QSFP-DD to QSFP-DD
- . QSFP-DD to 2x and 4x QSFP28/56
- . QSFP-DD to 8x SFP28/56



Leoni & Belden & LTK

## 1. Optimised signal integrity

- technical expertise leads to suck-out free frequency ranges up to 26 GHz, as well as excellent XT and shielding performance
- insertion loss 15 – 20 % improvement in different frequency ranges with an insertion loss variation (ILV) of  $\pm 5\%$
- shielding effectiveness (EMC) up to 90 dB



AWG	Single pair	1x	4x
30	L45468-J112-C60	L45468-J12-C855 (PVC)	L45468-J412-C855 (PVC)
		L45468-J12-C856 (FRNC)	L45468-J412-C856 (FRNC)
28	L45468-J113-C60	L45468-J13-C855 (PVC)	L45468-J413-C855 (PVC)
		L45468-J13-C856 (FRNC)	L45468-J413-C856 (FRNC)
26	L45468-J114-C60	L45468-J14-C855 (PVC)	L45468-J414-C855 (PVC)
		L45468-J14-C856 (FRNC)	L45468-J414-C856 (FRNC)
24	L45468-J115-C60	L45468-J15-C855 (PVC)	L45468-J415-C855 (PVC)
		L45468-J15-C856 (FRNC)	L45468-J415-C856 (FRNC)

# PCB Material Selection

PCB Materials	Price Level	Data Rate Applications	Product Applications	Selection
FR4 Hi-Tg	Low	<6Gbps/Channel	Mini-SAS 6G	Major
FR-370HR	Middle	<16Gbps/Channel(FDR)	Mini-SAS HD, SFP+, QSFP+,	Major
FR-406HR				N/A
FR-408HR	High	>25Gbps/Channel	Mini-SAS HD 24G	24G
Panasonic M6/M7/M8	Very High	>25Gbps/Channel(EDR)	SFP28, QSFP28	EDR 28G
ROGERS 4350	Expensive		SI Test Boards	Test Boards



# EEPROM compatibility

*We have successfully tested, and in several cases supplied, our DACs with all the handshaking firmware listed as follows:*

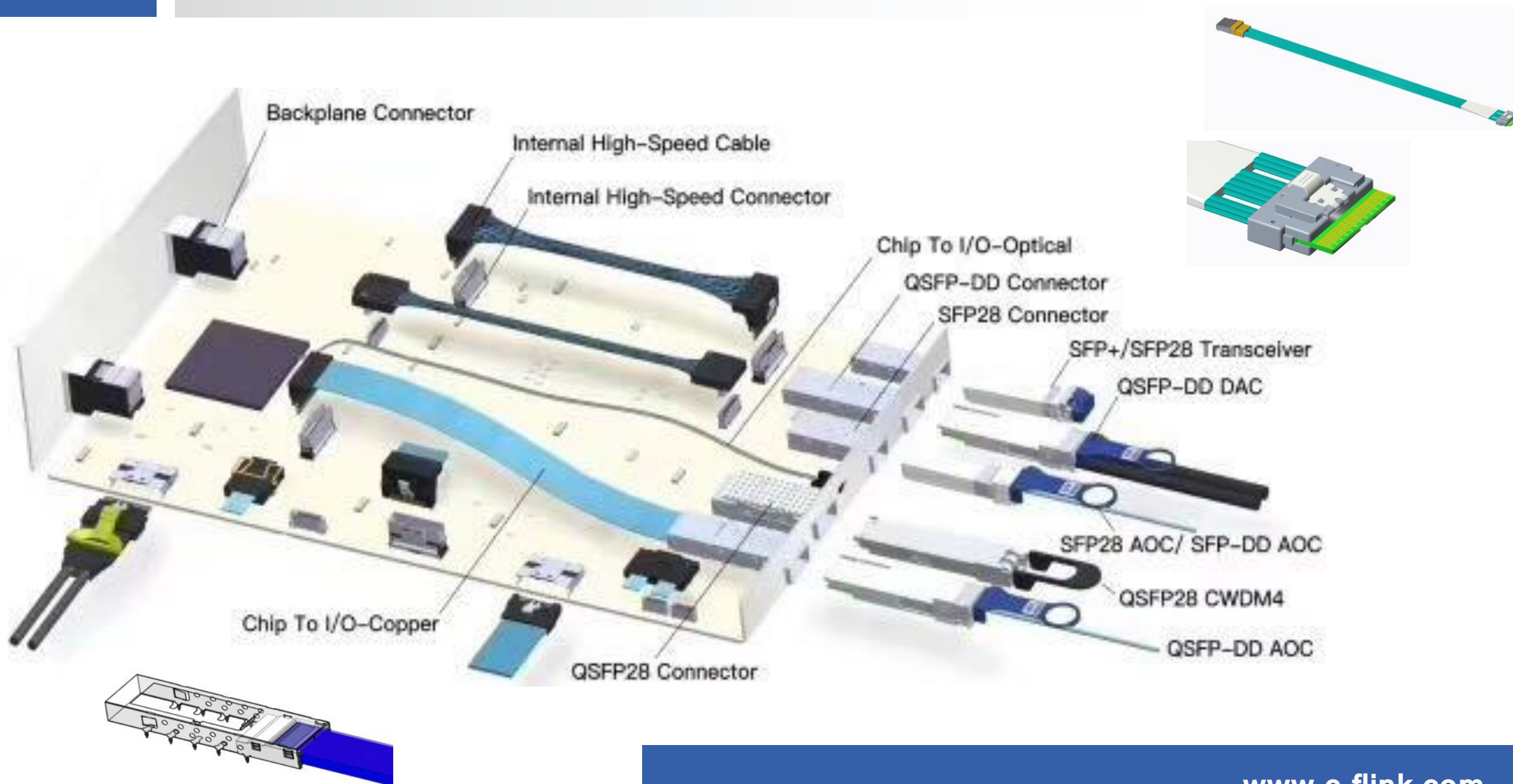
*Cisco  
Mellanox  
Huawei  
Juniper  
Dell&EMC  
Arista  
Broadcom  
Qlogic(Cavium)  
Chelsio  
Intel  
HP*

*Alcatel Lucent  
Allied Telesis  
SolareFlare  
Winyao  
ZTE  
D-Link  
TP-Link  
Ruijie  
Maipu  
Feixun  
H3C*

*Brocade (Broadcom)  
Netgear  
SMC  
Foundry  
Force 10(Dell)  
Linksys  
McAfee  
Extreme  
Marconi  
Blade*

# Future

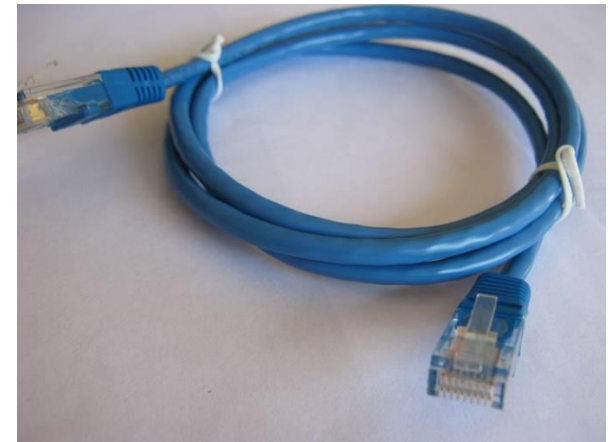
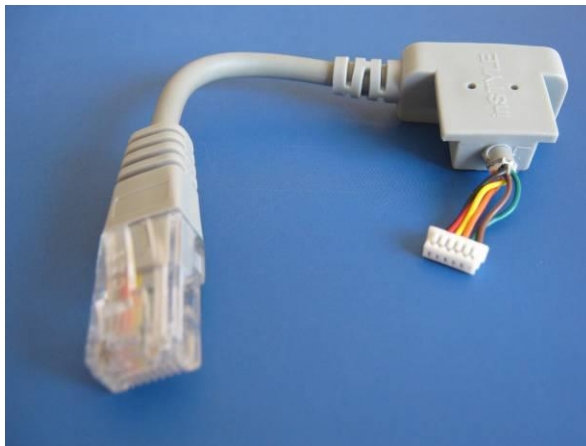
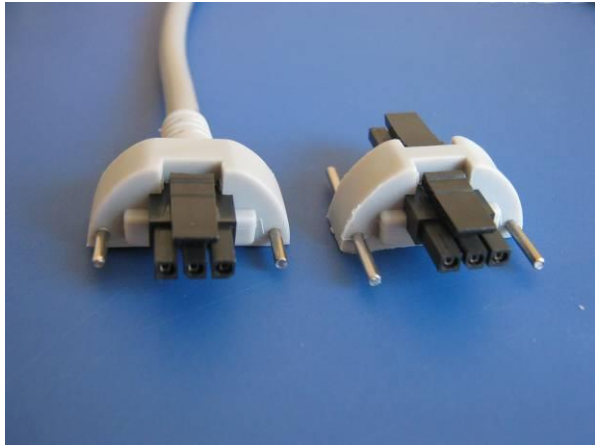
## The future application and development of high-speed cable in data center



High Speed Interconnectivity Solutions Roadmap				
Internal Cables	Mini-SAS 12G	Slimline SAS 12G	Slimline SAS 24G	
	Mini-SAS HD 12G	Mini-SAS HD 24G	Micro SAS 24G	
		OCulink/ Nano-Pitch	MBCu	
External Cables	SFP28 Passive	Intel Omni-Path SFP28-25G	SFP56 Passive	micro SFP56
	QSFP28 Passive	Intel Omni-Path QSFP28-100G	QSFP56 Passive	micro QSFP56
	Mini-SAS HD 12G	Mini-SAS HD 24G	Mini-SAS HD 24G Active	
		SAS 4.0 24G	SAS 4.X 48G	
Timeline	2017	2018	2019	2020



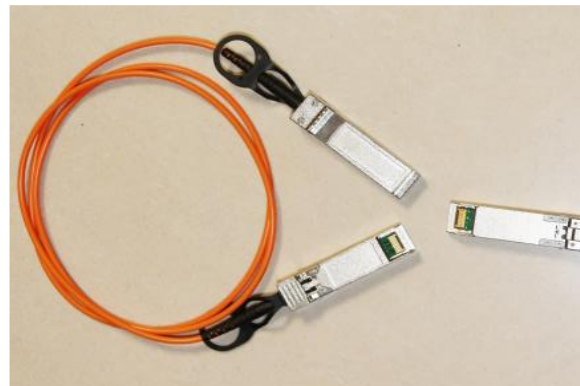
# Cable Assembly



CAT5/CAT5E/CAT6/CAT6E/CAT7 cable assembly

# AOC Fiber Optic Products

- . Compliant with Ethernet SFF-8431&IEEE802.3.ba/bj
- . Transmission rate up to 1/2/4/8/10/25Gbps
- . Supporting I2C two-wire serial interface
- . 850nm VCSEL laser and PIN photo detector
- . 10G SFP AOC supports up to 150m with OM2 fiber and 300m with OM3 fiber
- . 10G SFP AOC supports up to 70m with OM3 fiber and up to 100m with OM4 fiber
- . Operating temperature 0°C to 70 °C
- . Power supply voltage 3.3V
- . Hot plug/low power/good EMI performance
- . Compliance with REACH and ROHS
- . Meet Infiniband: SDR (2.5Gbps), DDR (5Gbps), QDR (10Gbps), FDR (14Gbps), EDR (25Gbps)





- . Compliant with SFF-8436/ Ethernet IEEE802.3Ba; 25G/100G Ethernet IEEE802.3Bj
- . Supporting transmission rate 40G(4X10Gbps), 100G(4X25Gbps)
- . Supporting I2C two-wire serial interface
- . 850nm VCSEL laser
- . 40G supports up to 70m with OM2 fiber and 100m with OM3 fiber
- . 100G supports up to 70m with OM3 fiber, and 100m with OM4 fiber
- . Operating temperature 0°C to 70 °C
- . Power supply voltage 3.3V
- . Hot plug/low power/good EMI performance
- . Meet Infiniband: SDR (2.5Gbps), DDR (5Gbps), QDR (10Gbps), FDR (14Gbps), EDR (25Gbps)
- . Compliance with REACH and ROHS



# Mini SAS HD AOC Series

Mini SAS HD AOC is fully compliant to SAS2.1 and SAS3.0 industry standards as well as the SFF-8644 interface standard. The managed interface includes connection discovery functionality, I2C bus communication, and the capability to customize labeling and MCU memory map extensions. Compared to conventional copper cables, longer, lighter, and flexible optical cables enable the data-center cabling more convenient. High-quality of 850nm VCSELs and PIN PDs are utilized in the AOC cables, with superior signal integrity and bit-error-rate performance, which enables reliable operation performance.



- Full duplex 4 channel 850nm parallel active optical cable
- Transmission data rate up to 12Gbps per channel
- Meet sff-8644 mini SAS HD compatible
- Hot plug electrical interface
- Differential ac coupled high speed data interface
- 4 channels 850nm VCSEL array
- 4 channels PIN photo detector array
- Links up to 100m over OM3 MMF
- Low power consumption <1W (per end)
- Operating temperature 0°C to +70°C
- 3.3V power supply voltage
- Comply with REACH and ROHS



## Features

- . Transmission rate 10Gbps
- . Plug and play, easy to use
- . Support all optical fibers (not USB 2.0) and mixed copper optical cables (USB 2.0)
- . Fully compatible with USB3.1 second-generation specifications
- . USB power supply, no additional power supply

## Applications

Used in personal computers and laptop computers, medical imaging equipment display, blue light, 3D video, projector, set-top box, DVR, game console, LED signs, airport, stadium and outdoor advertising panel information display.



- . Support bandwidth 10Gbps
- . Support distance up to 300 meters
- . Optical Converter 850nm VCSEL
- . Power supply voltage 5V
- . Operating temperature 0~80° C
- . Connector Type USB Type A and Type C
- . Cable Type All Fiber, Hybrid Copper Fiber
- . Differential input impedance 100 ohms
- . Differential output amplitude 940mV
- . Compliance with regulations
- . USB 3.1 second generation super high speed
- . USB 2.0 high speed / full speed with copper wire

## Features

1. Support HDMI 2.1 and HDCP 2.2
2. The Image transmission with out signal compression, the image quality with out distortion
3. Support DDC CEC HPD ARC HEC signal transmission
4. OM3 multimode fiber, 18Gbps band width transmission distance upto 100 meters
5. Support all 4Kx2Kx60 optical converter
6. Standard HDMI interface, comply with HDMI 2.1 specification
7. EMI/RFI impedance
8. 850nm VCSEL and PIN photodetector
9. Plug and play, no external power supply or signal amplifier
10. Cable outer diameter only 4.2mm, suitable for small space installation construction

## Applications

This product is widely used in large international conference center, home theater, gymnasium, commercial cinema, medical equipment, industrial automation, large ornamental Hall, International Exhibition Hall, Outdoor screen advertising, Airport, Railway display screen and soon

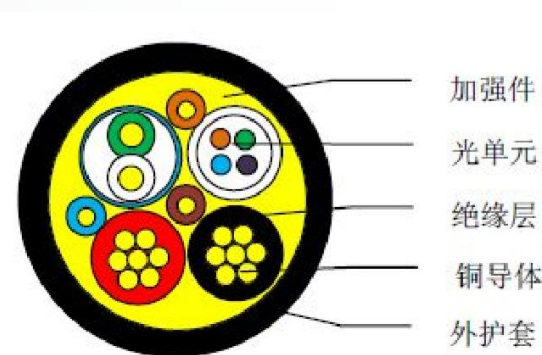


Figure 1 Cable Structure





## Parameters

Parameter	Min	Typ	Max	Unit	Note
Cable outer diameter	3.8	4.2	4.5	mm	
Cable length	1	30		M	
Refresh rate	Up to 120 Hz			Hz	MAX Support 120Hz 1080P & 2160P 4:2:0
Support resolution	Up to 4Kx2K			px	4Kx2K 4:4:4 60Hz
Support 3D	Yes				
Support HDCP	HDCP1.4/HDCP2.2				
Wavelength	850			nm	
Execution error rate	1.00E-12				
Output power	Class 1				EN 60825-1 2007 EN 60825-2 A2 2010
Ethernet	Yes				
Audio return	Yes				
CEC	Yes				
Hot pluggable	Yes				

## Absolute Maximum Ratings

Parameter	Min	Typ	Max	Unit	Note
Transmission rate		18	48	GHz	Total bandwidth
Operating temperature	-20	25	50	° C	
Power consumption		0.6	1	W	
Operationg voltage	4.5	5	5.5	V	
Operating current		70	120	mA	RX
		60	100	mA	TX
Tensile Strength		200		N	Short-term 300N Long-term 150N
Crush Resistance		100		N	Short-term 500 N/100mm Long-term 100N/100mm
Bending radius	20	40		mm	static 40mm, dynamic 80mm
Repeated bending		2000 0		次	180° Swing Sheath without cracking

## Specifications

Parameter	Min	Typ	MAX	Unit	Note
Cable specification	Optical fiber	4*OM3-850		nm	Four optical and seven electric hybrid copper-optical cable
	Copper cable	AWG20+AWG22+5*AWG28		UIT	
Mechanism specification	19			Pins	HDMI A Type Port
Environmental performance	complies with RoHS				

### DESCRIPTION:

- Compliant with SFF-8431/ SFF-8402&IEEE802.3.Ba/IEEE802.3.Bj
- SFP SR Channel Data Rate up to 10.3125Gbps;SFP28 SR Channel Data Rate up to 25.78125Gbps
- Digital diagnostics functions are available via the I2C interface
- 850nm VCSEL laser and PIN photo-detector
- 10G SR Maximum link length of 150m on OM2 MMF and 300m on OM3 MMF
- 25G SFP28 SR Maximum link length of 70m on OM3 MMF and 100m on OM4 MMF
- Commercial temperature range(COM): 0 to 70°C
- Single 3.3V power supply
- Duplex LC Connector Interface
- Compliant with RoHS

### APPLICATION:

- Switches, servers, routers, network hubs
- Enterprise storage

### Protocol:

- 10G Ethernet IEEE802.3ae/25G Ethernet IEEE802.3Bj
- 1/2/4/8G/10G/25G Fiber channel
- Infiniband:SDR(2.5Gbps), DDR(5Gbps), QDR(10Gbps), FDR(14Gbps), EDR(25Gbps)



## QSFP+ /QSFP28 Optical Module

### DESCRIPTION:

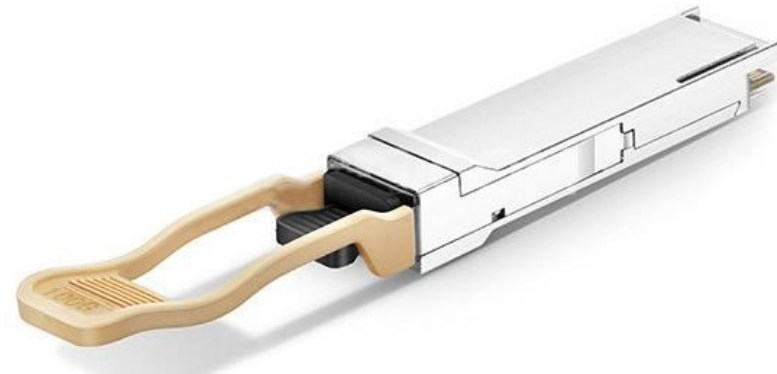
- . Compliant with SFF-8436&IEEE802.3.Ba/bj
- . Data Rate up to 40G(4X10Gbps), 100G(4X25Gbps)
- . 12C based two-wire serial interface for easy control and monitoring
- . 40G QSFP+SR Maximum link length up to 300M
- . 100G QSFP28 SR Maximum link length up to 100m on OM4 MMF
- . Commercial temperature range(COM): 0 to 70°C
- . Single 3.3V power supply
- . Single MPO12 receptacle
- . Hot Pluggable/Low power consumption/superior EMI
- . Compliant with RoHS

### APPLICATION:

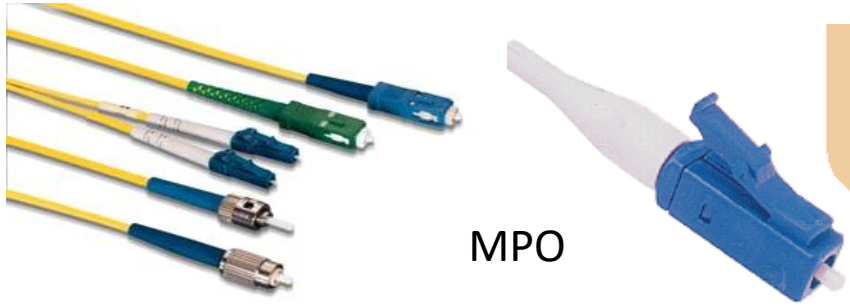
- . Switches, servers, routers, network hubs
- . Enterprise storage

### Protocol:

- . 10G/40G Ethernet IEEE802.3ae; 25G/100G Ethernet IEEE802.3Bj
- . 10G/25G/100G Fiber channel
- . InfiniBand: QDR(10Gbps), FDR(14Gbps), EDR(25Gbps)

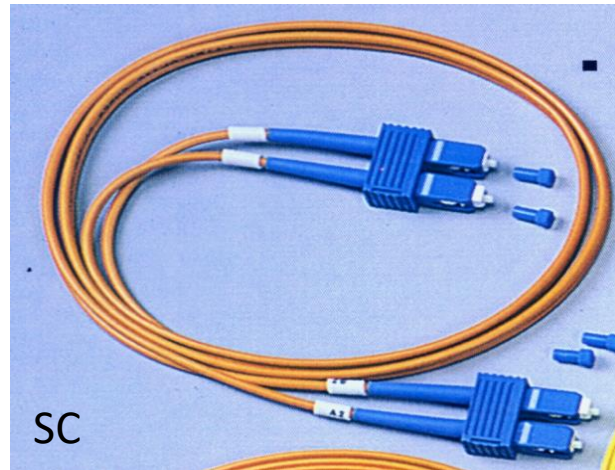
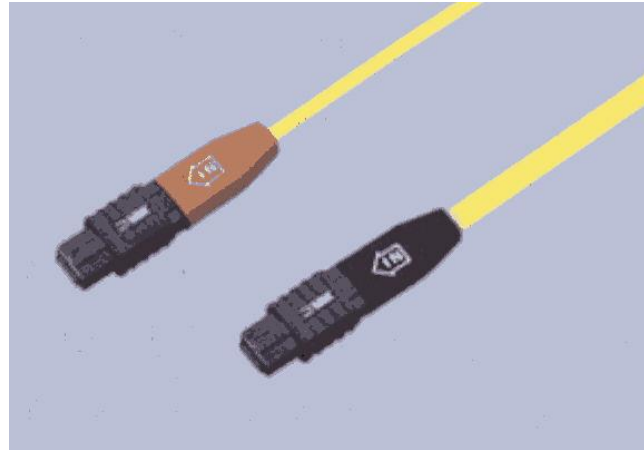


# Optical Fiber



MPO

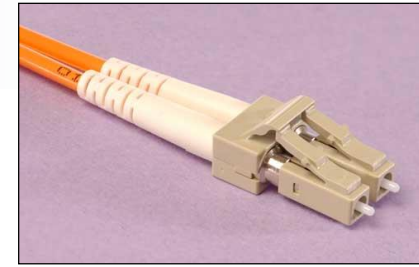
LC&LC duplex



SC



ST



MT-RJ



MT



FC







# Thank you!

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