



WONDERFUL Advanced Cabling Systems



萬泰科技 趙金根 Kim / 歐陽裕 Joe

AGENDA

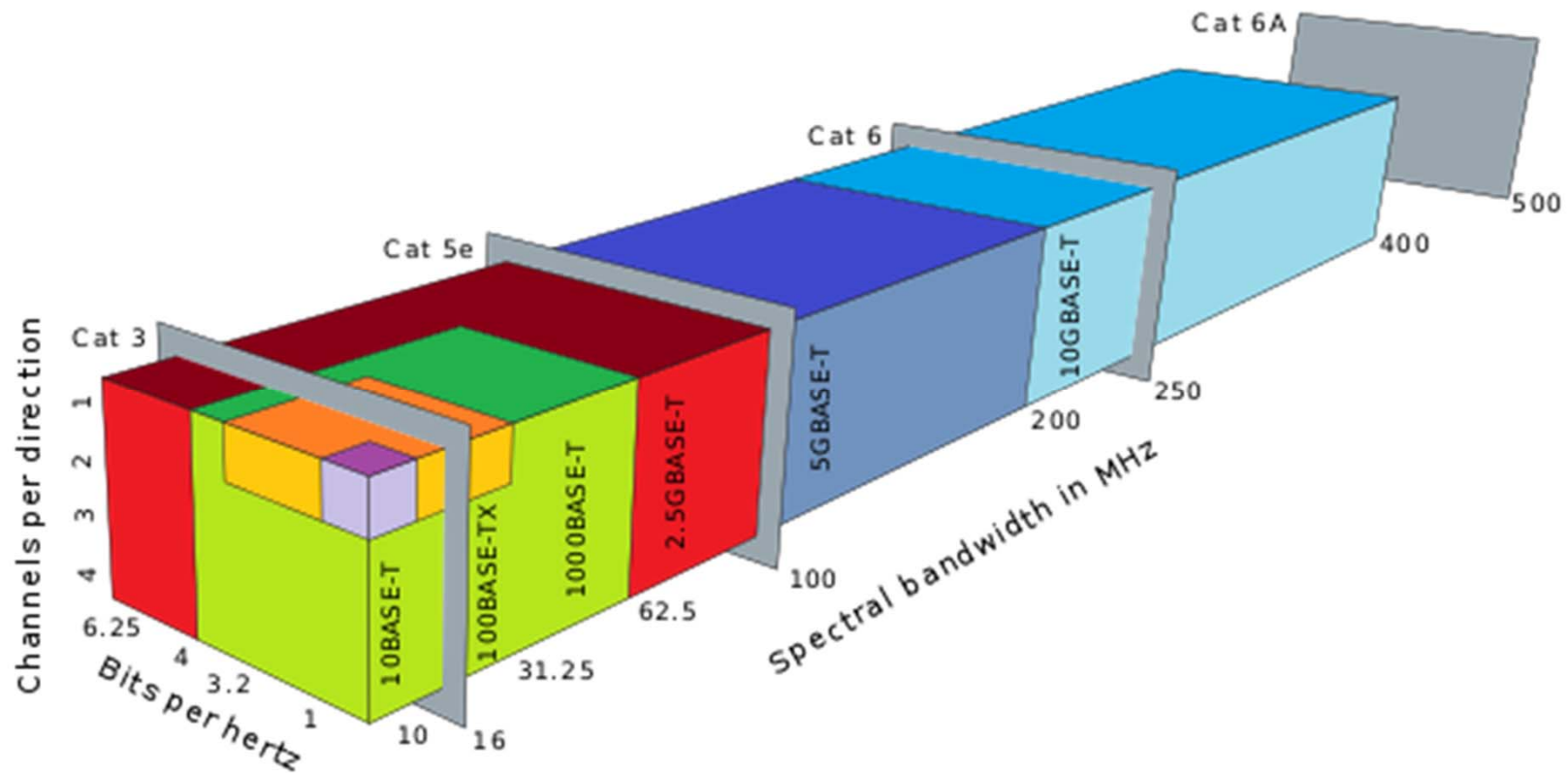
- 市場分析
(Market analysis)
- 佈線系統的發展與運用
(Development and application of cabling system)
- 產品介紹
(Product introduction)
- 數據中心的產品運用
(Products using the data center)
- 測試分析比較
(Test analysis and comparison)
- 認證
(Certification)



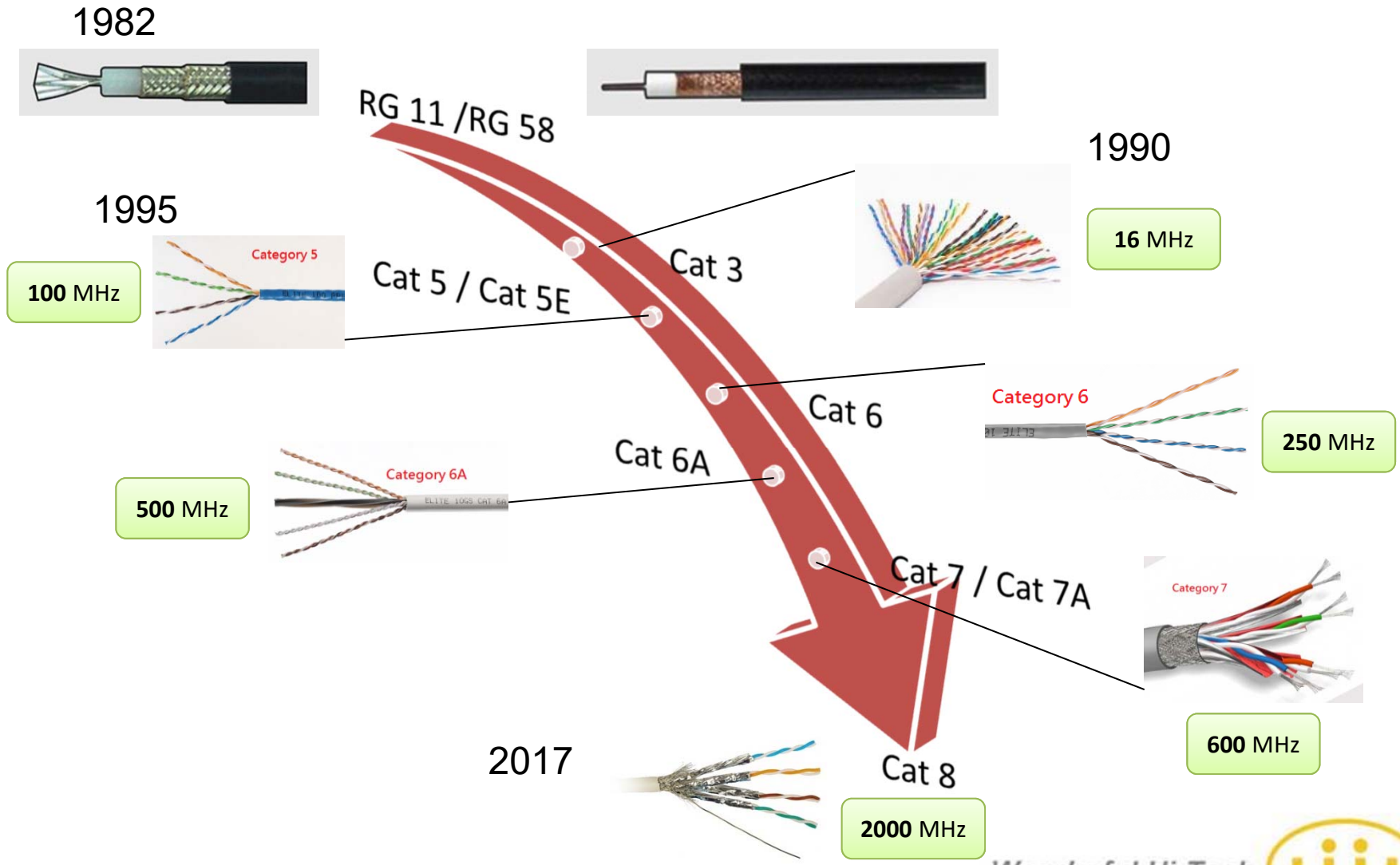
市場分析 (Market analysis)

- 數據中心、機房及廣泛用途產品增加
(Data centers, computer rooms and a wide range of products increased)
- 光纖運用增加 13% ↗ 19%
(Increase fiber utilization)
- CAT.5E ↘ CAT.6 ↗ CAT.6A ↗
- SFTP FTP CMP ↗
- OM1 ↘ OM2 ↘ OM3 ↗ OM4 ↗
- OS2 ↗ G657A ↗
- High-End Cable MPO/MTP ↗

線纜規格與頻寬(Cable specifications and bandwidth)



網路演化(Network Generation)



網路發展 (Network Development)

Catelogy	TIA/EIA	Bandwide	Network Base
Cat-1	TIA/EIA 未表列	電話線	N/A
Cat-2	TIA/EIA 未表列	電話線	4 Mbs
Cat-3	TIA / EIA 568.A	16 MHz	10 Mbs
Cat-4	TIA/EIA 未表列	20 MHz	16 Mbs
Cat-5	TIA / EIA 568.A	100 MHz	100 Mbs
Cat-5E	TIA / EIA 568.B	125 MHz	1,000 Mbs (1G)
Cat-6	TIA / EIA 568.C	250 MHz	1,000 Mbs (1G)*
Cat-6E	TIA/EIA 未表列	400 Mhz	1,000 Mbs (1G)*
Cat-6A	TIA / EIA 568.C2	500 Mhz	10,000 Mbs (10 G)
Cat-7	TIA / EIA 568.C2	600 MHz	10,000 Mbs (10 G)
Cat-7A	TIA / EIA 568.C2	1000 MHz	25,000 Mbs (25 G)
Cat-8	TIA / EIA 568.C2-1	2000 MHz	40,000 Mbs (40 G)

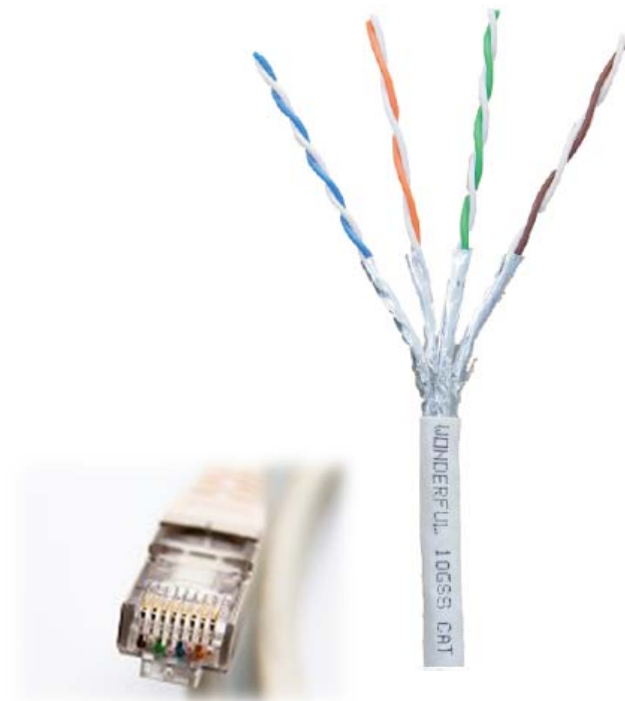
* 1G網路環境取決於用戶端網路卡，如使用更高階的網路卡如10G，則C6網路線60M可以達到與C6A一樣的10G網路基礎環境

New Category 8

Cat 8

TIA/EIA2017第一季發表Cat 8 的規範568C.2-1
Cat 8 關於線材的部分將不會再更動

1. Interface : RJ45 (8Pin)
2. Total length 30M · (Data Center)
3. Band wide 2000MHz (40GBaseT)
4. Structure : S/FTP
5. Conductor : < 22AWG (0.62 mm)
6. O.D : 8.1 mm



乙太網路發展 ((Ethernet development))

Cat 8

使用RJ45的原因：

等級	PLUG水晶頭
C5E	RJ45
C6	RJ45
C6A	RJ45
C7	RJ45
C7A	ARJ45 (GG45)
C8	RJ45

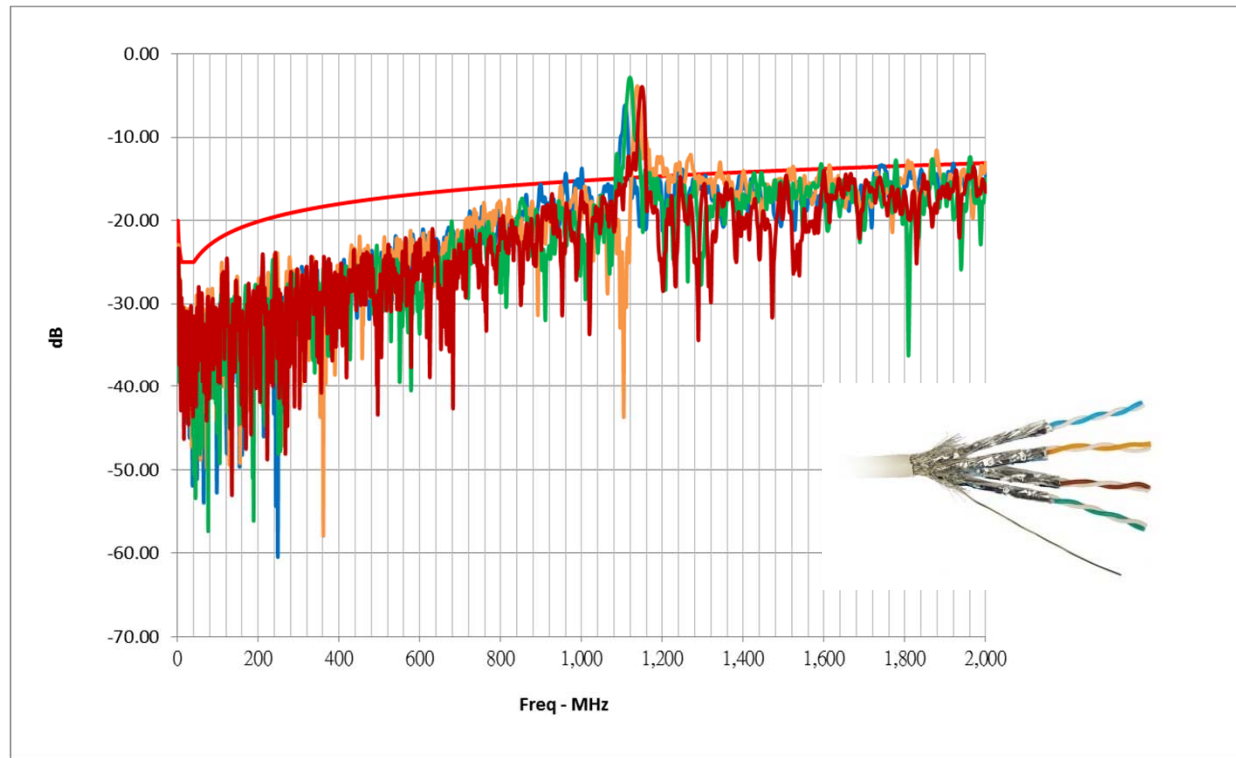


乙太網路發展 (Ethernet development)

Cat 8

使用S/FTP遮蔽的原因：

當頻率超過1000MHz (1GHz)後，銅纜需要有遮蔽才能解決傳輸問題

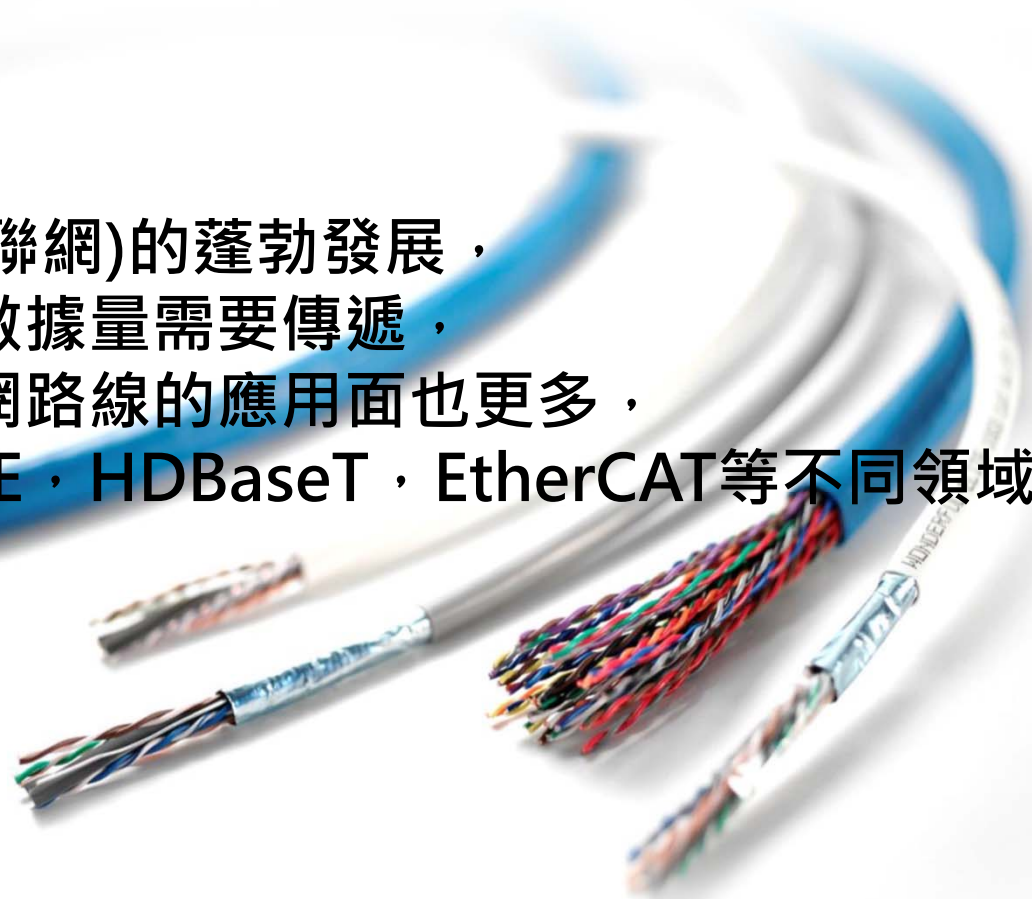


乙太網路接頭運用發展(Ethernet connector development)

Attribute	Cat 5e	Cat 6	Cat 6A	Cat 7/7A	Cat 8
Frequency	100 MHz	250 MHz	500 MHz	1000 MHz	2000 MHz
Data Rate	1000Base-T	1000Base-T	10GBase-T	25GBase-T	40GBase-T
Distance	100 Meter	100 Meter	100 Meter	100 Meter	30 Meter
Connectors in Channel	4	4	4	4	2
Construction	Unshielded or Shielded	Unshielded or Shielded	Unshielded or Shielded	Shielded	Shielded
Connector Type	RJ45	RJ45	RJ45	ARJ45/ GG45	RJ45

乙太網路新應用 (Ethernet new application)

自從IOT (物聯網)的蓬勃發展，
越來越多的數據量需要傳遞，
因此形成了網路線的應用面也更多，
以下說明POE，HDBaseT，EtherCAT等不同領域介紹

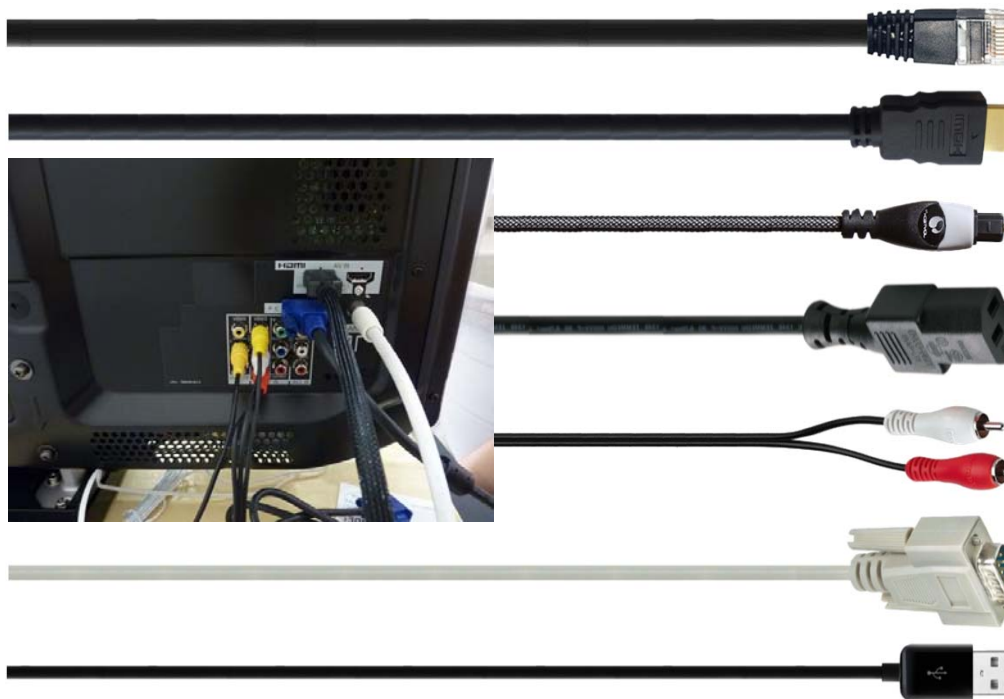


乙太網路新應用(Ethernet new application)

HDBaseT

HDBTTM
ASE

以往電視影音媒體連線方式會用到以下的線材



HDMI

S/PDIF
OPTICAL AUDIO



RCA
AUDIO

RS
232
485



Wonderful Hi-Tech



乙太網路新應用(Ethernet new application)

HDBaseT

HDBT™
ASE

未來僅需要一條“網路線”就可以完成連接



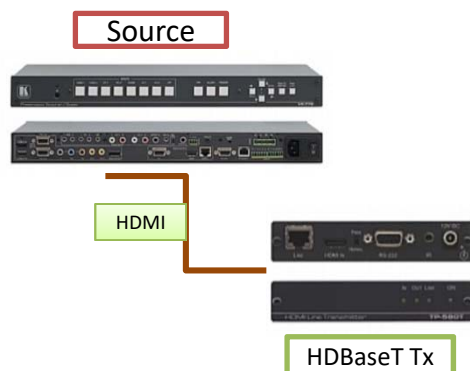
Wonderful Hi-Tech



乙太網路新應用(Ethernet new application)

HDBaseT

實際使用案例



Wonderful Hi-Tech



乙太網路新應用(Ethernet new application)

EtherCAT

EtherCAT
Technology Group

乙太網路使用在工業自動控制領域



Lan cable

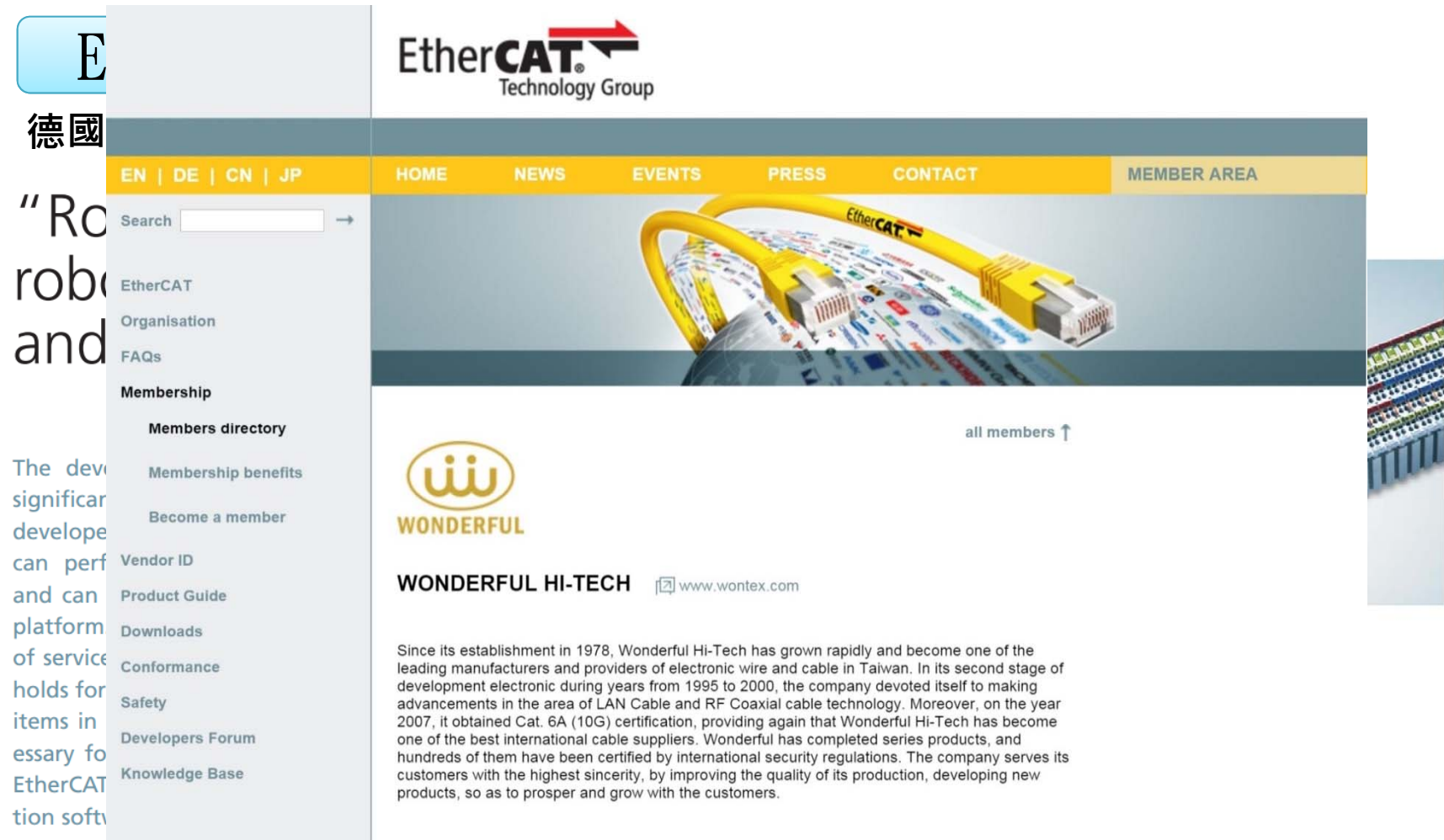


網路線需遮蔽，抗EMI，符合工業標準
抵抗特殊溫度，抵抗環境影響
特殊材質，耐彎曲

Wonderful Hi-Tech



乙太網路新應用(Ethernet new application)



The screenshot shows the website for EtherCAT Technology Group. The main header features the EtherCAT logo and a navigation menu with links for HOME, NEWS, EVENTS, PRESS, CONTACT, and MEMBER AREA. A search bar is located in the top left. The main content area displays a large image of yellow Ethernet cables and a globe, with the text "all members ↑" below it. The sidebar on the left contains a menu with the following items: EN | DE | CN | JP, Search, EtherCAT, Organisation, FAQs, Membership (with sub-items: Members directory, Membership benefits, Become a member), Vendor ID, Product Guide, Downloads, Conformance, Safety, Developers Forum, and Knowledge Base. The footer includes the Wonderful logo and the text "Wonderful HI-TECH" with the website URL "www.wontex.com".


EN | DE | CN | JP

HOME NEWS EVENTS PRESS CONTACT MEMBER AREA

Search

EtherCAT
Organisation
FAQs
Membership
Members directory
Membership benefits
Become a member
Vendor ID
Product Guide
Downloads
Conformance
Safety
Developers Forum
Knowledge Base

all members ↑


WONDERFUL

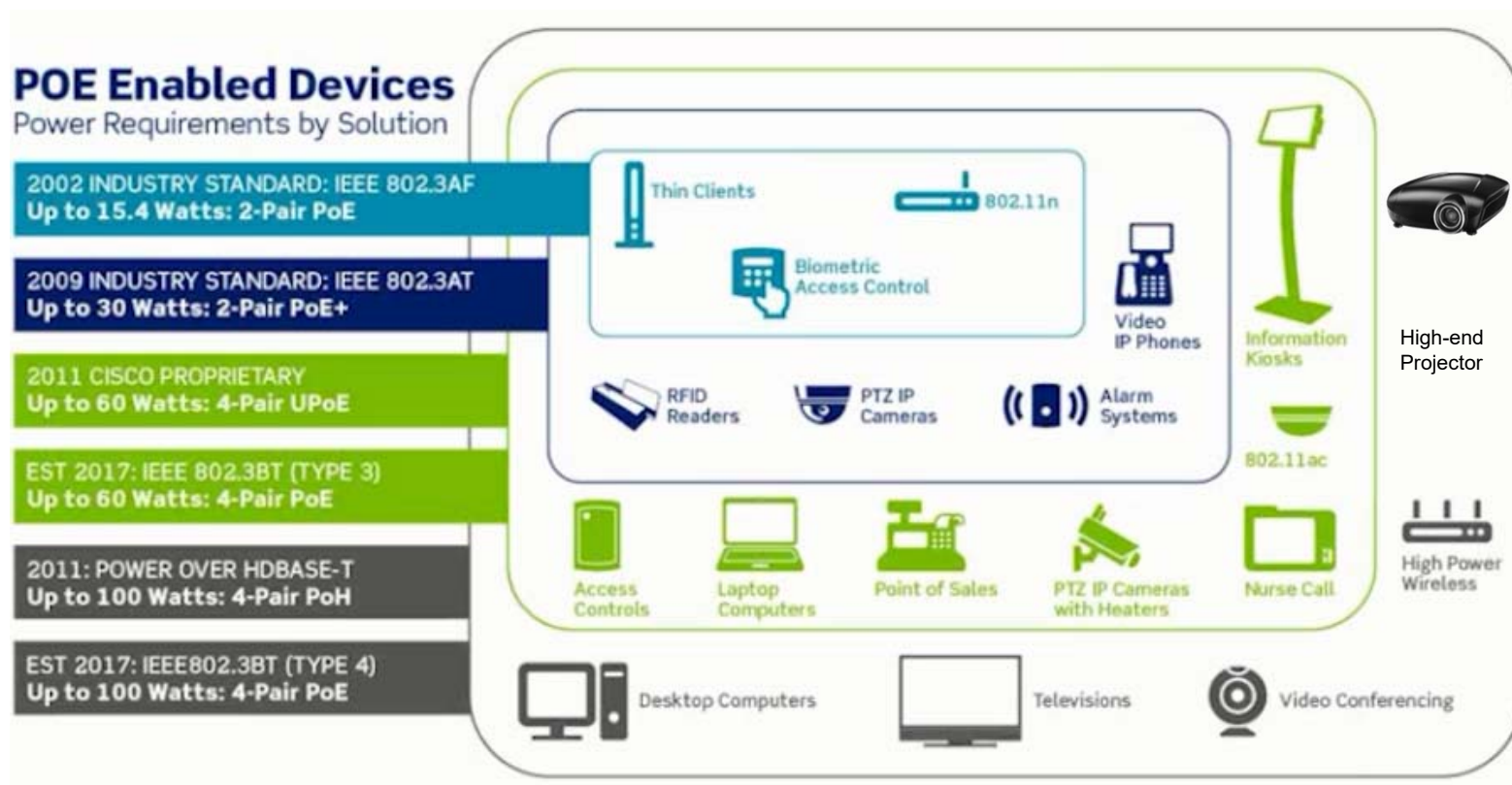
WONDERFUL HI-TECH www.wontex.com

Since its establishment in 1978, Wonderful Hi-Tech has grown rapidly and become one of the leading manufacturers and providers of electronic wire and cable in Taiwan. In its second stage of development electronic during years from 1995 to 2000, the company devoted itself to making advancements in the area of LAN Cable and RF Coaxial cable technology. Moreover, on the year 2007, it obtained Cat. 6A (10G) certification, providing again that Wonderful Hi-Tech has become one of the best international cable suppliers. Wonderful has completed series products, and hundreds of them have been certified by international security regulations. The company serves its customers with the highest sincerity, by improving the quality of its production, developing new products, so as to prosper and grow with the customers.

乙太網路新應用(Ethernet new application)

POE

使用乙太網路傳輸電力標準



Wonderful Hi-Tech



乙太網路新應用(Ethernet new application)

POE

使用乙太網路傳輸電力標準



Benefits

- LED lighting and control system with breakthrough Total Cost of Ownership, reducing installation costs by around 25% and commissioning costs by around 50%
- Software applications optimize working processes, comfort, and asset utilization and management

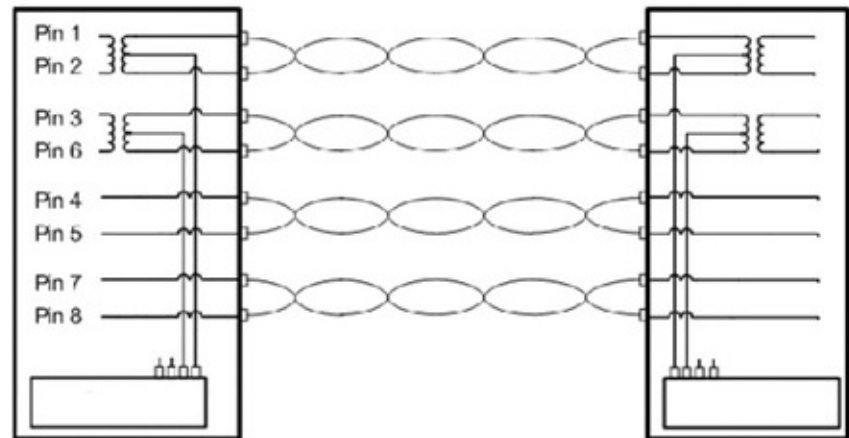


Wonderful Hi-Tech



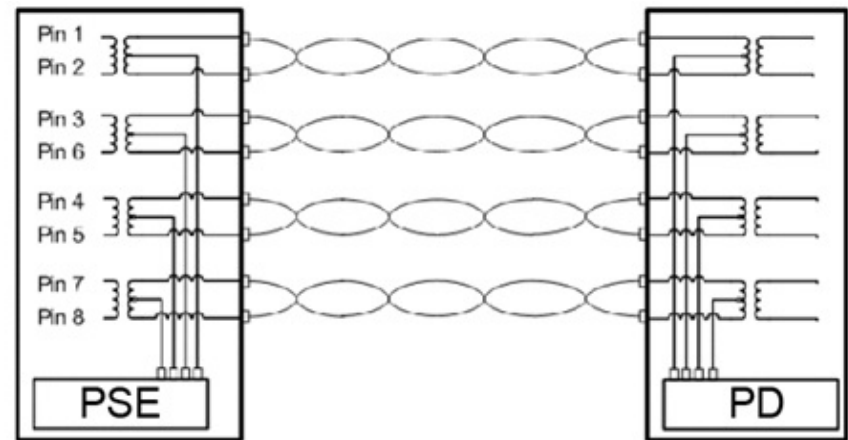
How does PoE work?

- TODAY:
 - IEEE802.3af, IEEE802.3at Type 1 & 2
 - Trade names of PoE, PoE+
 - Max speed of 1000GBASE-T
 - Power on 2 out of 4 pairs
 - Up to 600mA / pair (300mA / wire)
 - PSE: Max of 30 W
 - PD: Max of 25.5 W



Where is PoE Going?

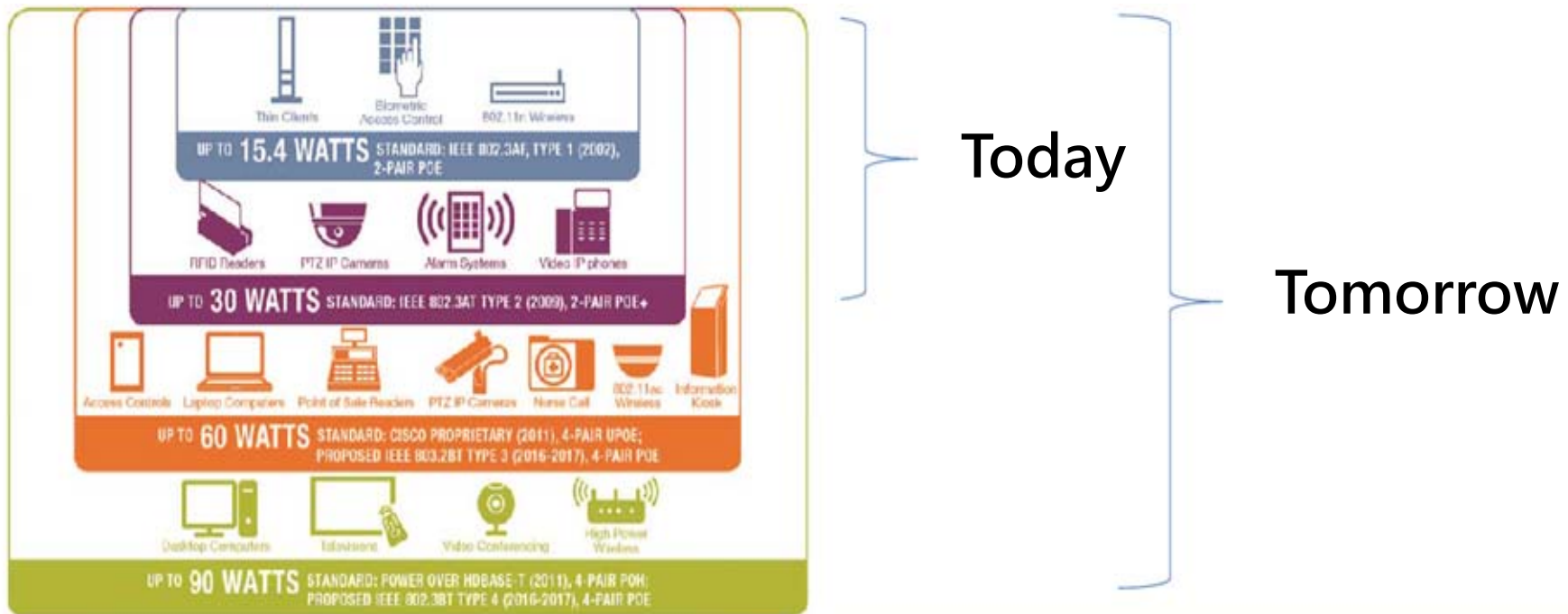
- TOMORROW:
 - IEEE802.3bt, Types 1, 2, 3, and 4
 - Trade names of PoE++, 4PPoE
 - Max speed of 10GBASE-T
 - Power on 4 out of 4 pairs
 - Up to 960mA / pair (480mA / wire)
 - PSE: Max of 99.9 W
 - PD: Max of 71 W



PoE Standards Summary

Type	Standards	Maximum Current	Number of Energized Pairs	Power at Source	Power at Device	Maximum Data Rate	Standard Ratified
PoE	IEEE 802.3af (802.3at Type 1)	350 mA	2	15.4 W	13 W	1000BASE-T	2003
PoE+	IEEE 802.3at Type 2	600 mA	2	30 W	25.5 W	1000BASE-T	2009
PoE++ (4PPoE)	Proposed IEEE 802.3bt Type 3 Proposed IEEE 802.3bt Type 4	600 mA 960 mA	4	60 W 99 W	51 W 71 W	10GBASE-T	Expected 1Q2018
No IEEE standard	Cisco UPOE HDBaseT (www.hdbaset.org)	600 mA 1000 mA	4	60 W 100 W	51 W 100 W	Varies	Exists today – no official ratification

Why is the new PoE standard exciting?



Summary of New PoE Standards

Uses 4 out of 4 pairs

Up to 71W to end devices

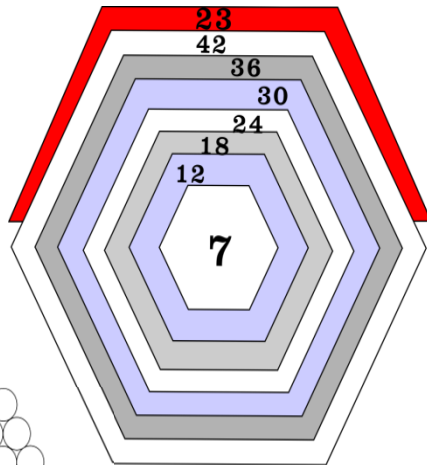
Up to 10GBASE-T data rates

Called PoE++ or 4PPoE

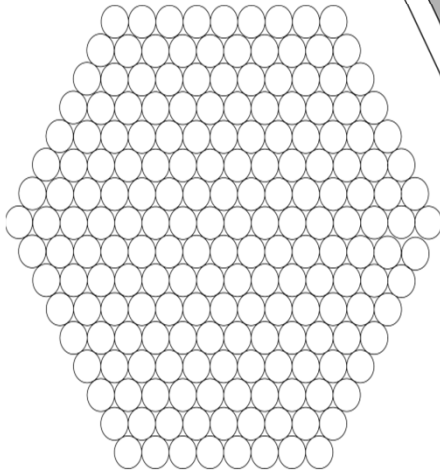


乙太網路新應用(Ethernet new application)

POE



總計192個



192 cables bundled



乙太網路新應用(Ethernet new application)

POE (Power Over Ethernet)

安全性認證

UL 已經公布 -LP

POE網路線材安全性認證

這是目前世界上唯一一家公開說明
測試POE安全性認證的第三方公司

CMR



CMP

UNDERWRITERS LABORATORIES INC. CERTIFICATION REQUIREMENT DECISION

This Certification Requirement Decision is prepared and published by Underwriters Laboratories Inc. (UL). It is normative for the applicable UL Product Certification Program(s); however, it is currently not part of the UL Standard(s) referenced below.

Product Category (CCN): DUZX
Standard Number: UL 444
Standard Title: Standard for Communications Cables
Edition Date: July 11, 2008
Edition Number: 4
Section / Paragraph Reference: 7.24 (New), 8.4.6 (New)
Subject: New - LP ratings



Supersedes prior Certification Requirement Decision issued 09-14-2015

DECISION:

1.4 In Canada, Type CMUC, cross-connect communications cables, “-LP” and the “-CI” circuit integrity markings are not recognized by the Canadian Electrical Code, Part I.

In the US, Type CMH is not recognized in the NEC.

8.4.6 (NEW) (United States only)

Cables that comply with the cable heating test described in Clause 7.24 are permitted to be marked with the suffix LP (XX) where XX shall be 0.5A, 0.6A, 0.7A, 0.8A, 0.9A or 1.0A to designate the current rating of each conductor in the cable. If so marked, the suffix “LP” shall be added immediately after the cable designation. This marking is not required.

7.24 (NEW) Cable Heating Test

7.24.1 When tested as described in this section, the temperatures measured on the insulation and jacket of the cables, after being corrected to an ambient of 45°C, shall not exceed the temperature rating of the cable.

7.24.2 The cables shall be arranged in a bundle consisting of 192 cables and electrically connected in series to a power supply capable of providing the rated current marked as part of the LP rating. The inner 37 cables shall be arranged in a hexagonal densest packing structure which represents the worst case thermal dissipation situation. The remaining cables shall be evenly distributed in a random fashion to form a 192 cable bundle. The bundle shall be placed in a 6 foot long (1.83 m) commercially available non-metallic conduit (Schedule 40) with the minimum diameter needed to install the bundle without putting pressure on the cables. Each end of the conduit shall be filled with insulation.

7.24.3 The temperatures shall be measured on the outer jacket and conductor insulation of the center cable at the midpoint of the cable. In addition, temperatures shall be measured on the jacket and conductor insulation on the center cable two feet (0.6 m) on each side of center thermocouple.

7.24.4 Temperatures are to be measured by means of thermocouples consisting of iron and constantan wires not larger than 24 AWG (0.21 mm²) and not smaller than 30 AWG (0.05 mm²). When thermocouples are used in determining temperatures in electrical equipment, it is common practice to employ thermocouples consisting of 30 AWG iron and constantan wires with a potentiometer-type of indicating instrument. This equipment is to be used whenever a reference measurement of temperature is necessary.

Wonderful Hi-Tech



產品介紹(Product introduction)

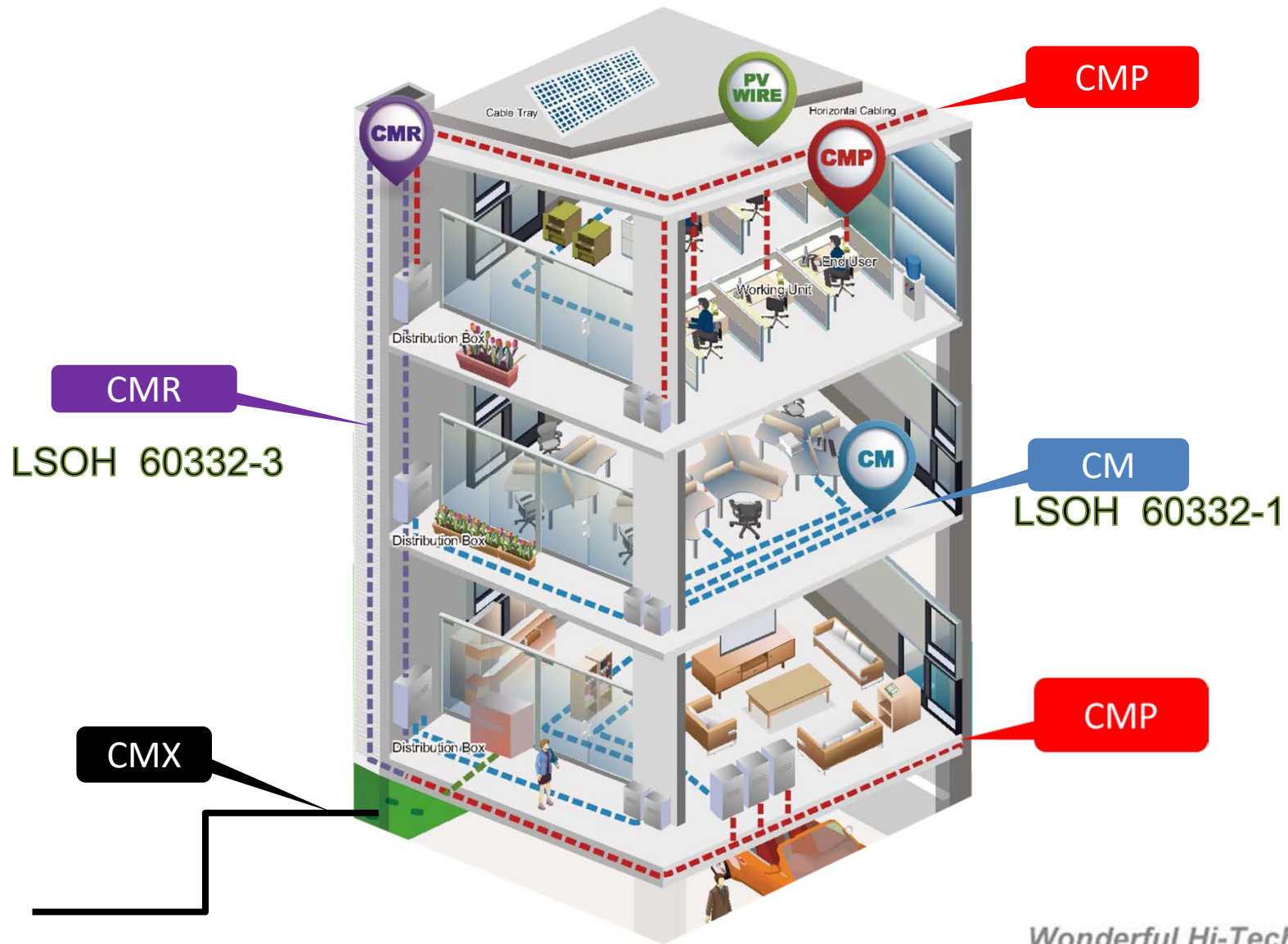
- Cable Type
- PATCH PANEL
- KEYSTONE JACK
- CAT.6A STP 自動防塵蓋型資訊插座
- CAT6 28AWG UTP Patch Cord
- LC-Easy Pull FIBER Patch Cord
- Plug (SOS)維修接頭
- Cable label (Color)

Wonderful Cabling System Product Director
趙金根/ KIM CHAO

線纜種類與防火層級(Cable Type & Flame Rating)

CAT.5E 100MHz	CAT.6 250MHz	CAT.6A 500MHz	CAT.7 600MHz	CAT.8 2000MHz
UTP 非屏蔽		CM		Box
FTP 單屏蔽鋁箔麥拉隔離		CMR		Reel
SFTP 雙屏蔽鋁箔麥拉隔離		CMP		Pallet
Solid 單股線		CMX		
Stranded 多股絞線		LSOH		
CAT.3 16MHz	CAT.4 20MHz			

防火層級(Flame Rating)



燃燒測試(Burning Test)



WONDERFUL HI-TECH

Test method :

實驗方法

Same standard bind 7 same flame rate cables install on the rack vertically.

同規格綁七條相同耐燃等級的線材，垂直於架子上。

Fire source 90sec and remove it.

火源燃燒90秒，移開。

Keep fire more long, fire retardant less.

繼續燃燒的時間越長，表示阻燃的效果越差

Wonderful Hi-Tech



線纜種類(Cable Type)

Different types of twisted pair cables



S/FTP:

overall braid screen (S),
elements foil screened (FTP)



F/UTP:

overall foil screen (F),
elements unscreened (UTP)



SF/UTP:

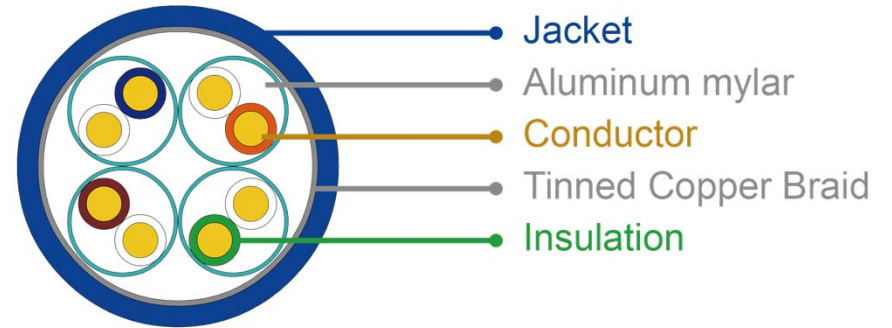
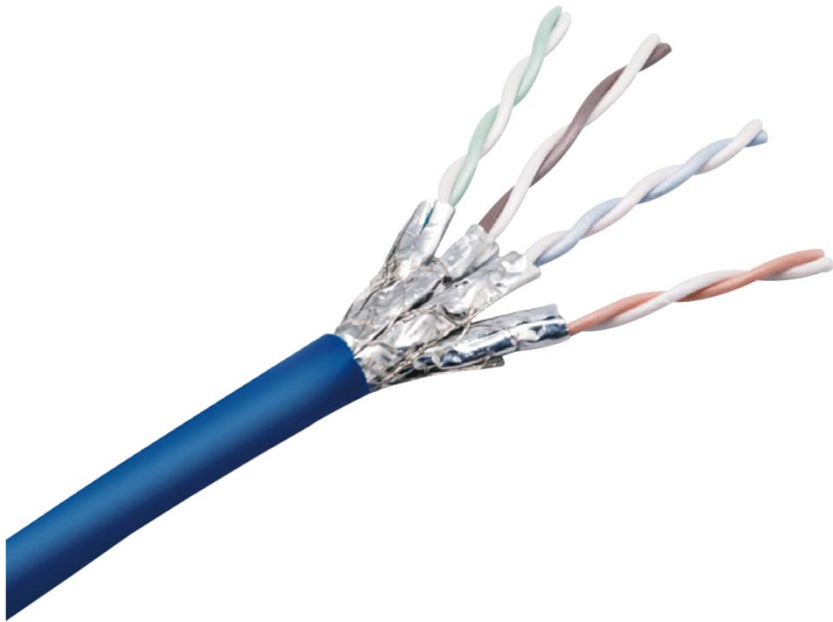
overall braid and foil screen
elements unscreened (UTP)



U/UTP:

no overall screen (U),
elements unscreened (UTP)

CAT.6A / 7 / 7A / 8 S/FTP Cable



Product Feature

High performance of transmission.
High quality of safety property.
Sweep frequency up to 500/ 750/1000/2000MHz.

Product Description

S/FTP, 23AWG solid bare copper, CAT.6A/7/7A
Each pair twist with metal foil screen.
With braid wire.

Application

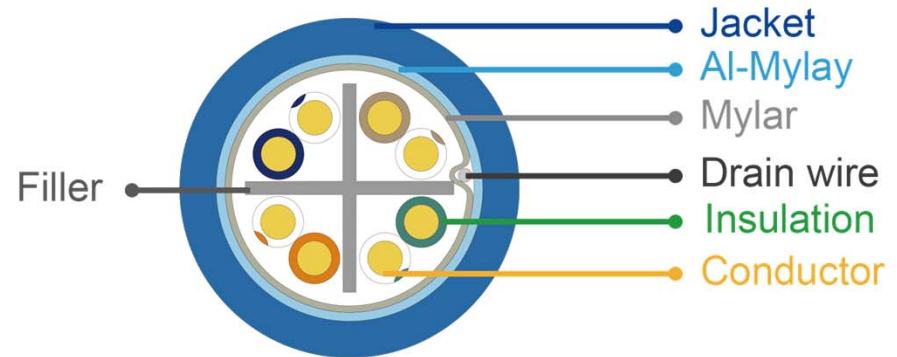
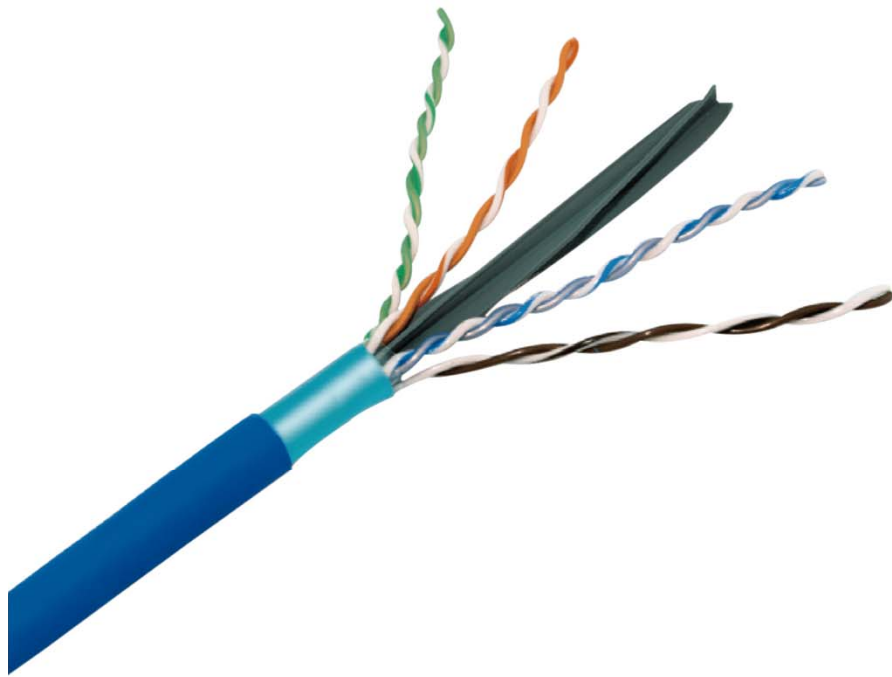
Structure cabling for horizontal and building backbone cable.
Transmission of digital and analogue for data, video and audio applications.
Metal shielded and braided providing good protection from EMI noise.
10 / 100 / 1G / 10G / 40G Base-T IEEE 802.3 i / u / ab / an / ba.
CDDI / FDDI / ATM / Token Ring.
IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
Limit Power -LP UL POE Safety standard.
HDBaseT 2.0 standard.
EtherCAT Industrial standard.



Wonderful Hi-Tech



CAT.6 / 6A F/UTP



Product Feature

High performance of transmission.
High quality of safety property.
Sweep frequency up to 250/500 MHz.

Product Description

F/UTP, 23AWG solid bare copper, CAT.6.6A.
F/UTP, 26AWG stranded bare copper, CAT.6.6A.
With cross filler.
Overall metal foil screen with drain wire.

Application

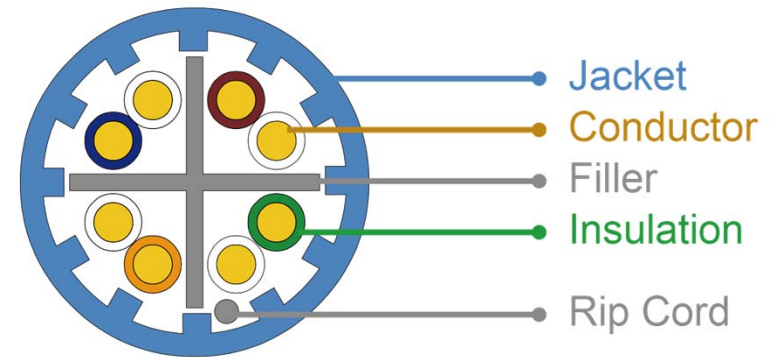
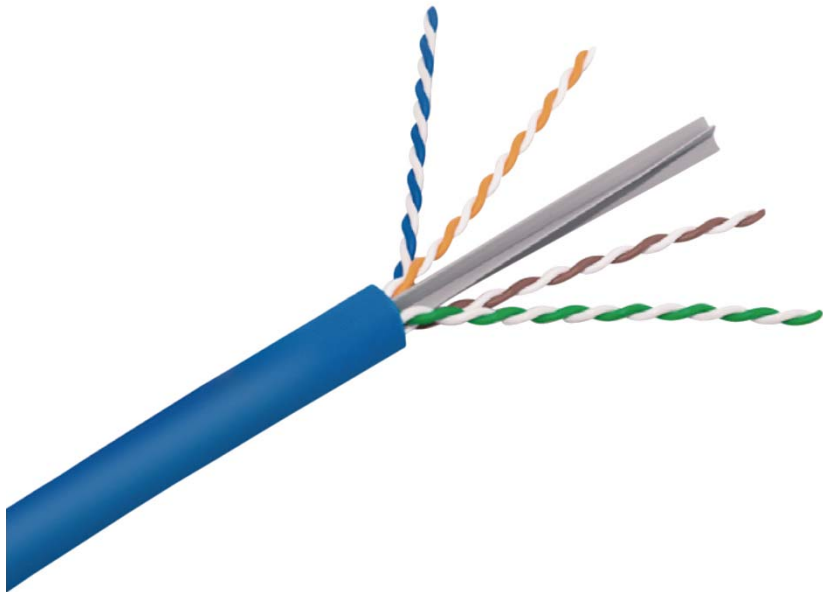
Structure cabling for horizontal and building backbone cable.
Transmission of digital and analogue for data, video and audio applications.
Overall metal shielded providing good protection from EMI noise.
10 / 100 / 1G / 10G Base-T IEEE 802.3 i / u / ab / an.
CDDI / FDDI / ATM / Token Ring.
IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
Limit Power -LP UL POE Safety standard.
HDBaseT 2.0 standard.
EtherCAT Industrial standard.



Wonderful Hi-Tech



CAT.6A U/UTP



Product Feature

High performance of single cable transmission.
Zigzag jacket design provides excellent performance of six around one.
bundle transmission.
Round and smooth jacket without twisted stripe.
High quality of safety property.
Sweep frequency up to 500 MHz.

Product Description

U/UTP, 23AWG solid bare copper, CAT.6A.
With cross filler.
With rip cord.

Application

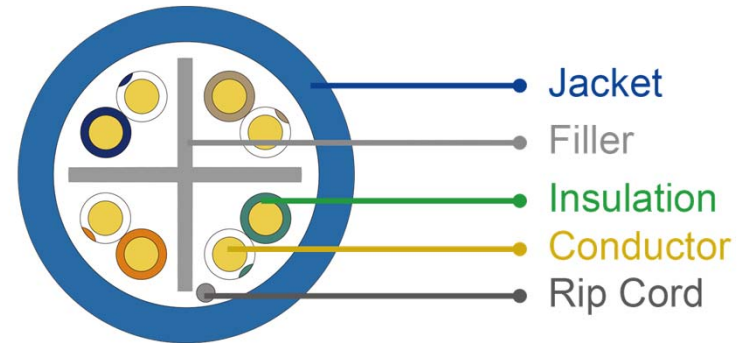
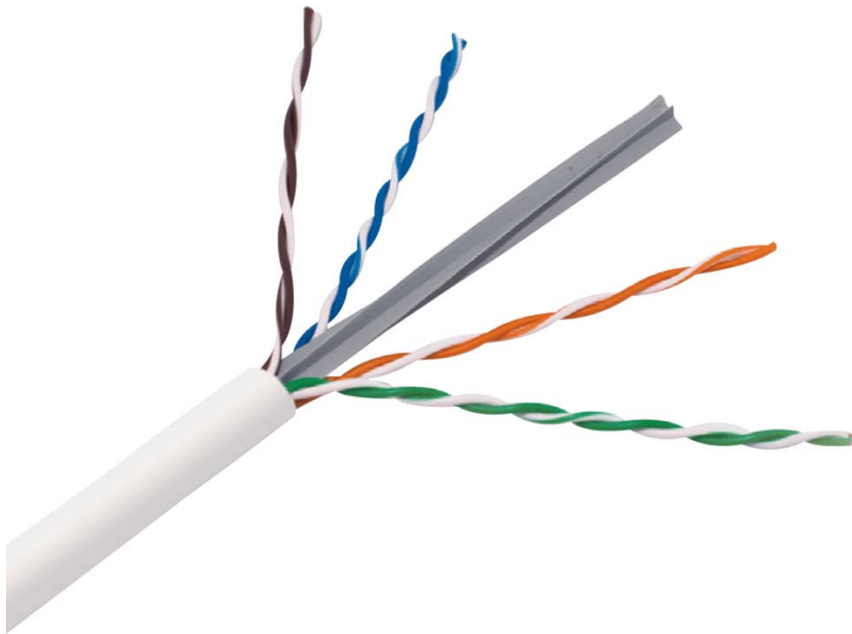
Structure cabling for horizontal and building backbone cable.
Transmission of digital and analogue for data, video and audio applications.
10 / 100 / 1G / 10G Base-T IEEE 802.3 i / u / ab / an.
CDDI / FDDI / ATM / Token Ring.
IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
Limit Power -LP UL POE Safety standard.
HDBaseT 2.0 standard.
EtherCAT Industrial standard.



Wonderful Hi-Tech



CAT. 6 / 6E U/UTP



Product Feature

High performance of transmission.
High quality of safety property.
Sweep frequency up to 250/400 MHz.
Reellex II carton and easy to pull out.
Carton with one layer corrugated design providing sufficient strength and saving packaging space.

Product Description

U/UTP, 23/24 AWG solid bare copper, CAT.6/6E.
With cross filler.
With rip cord.

Application

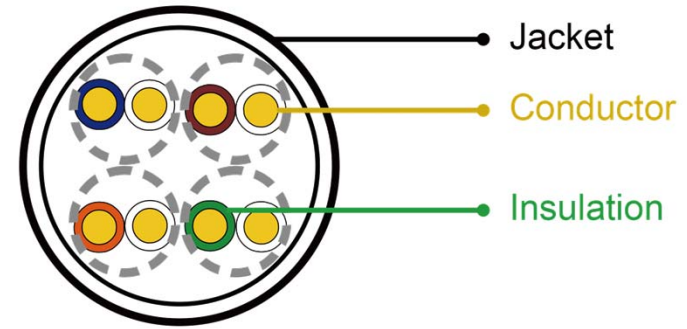
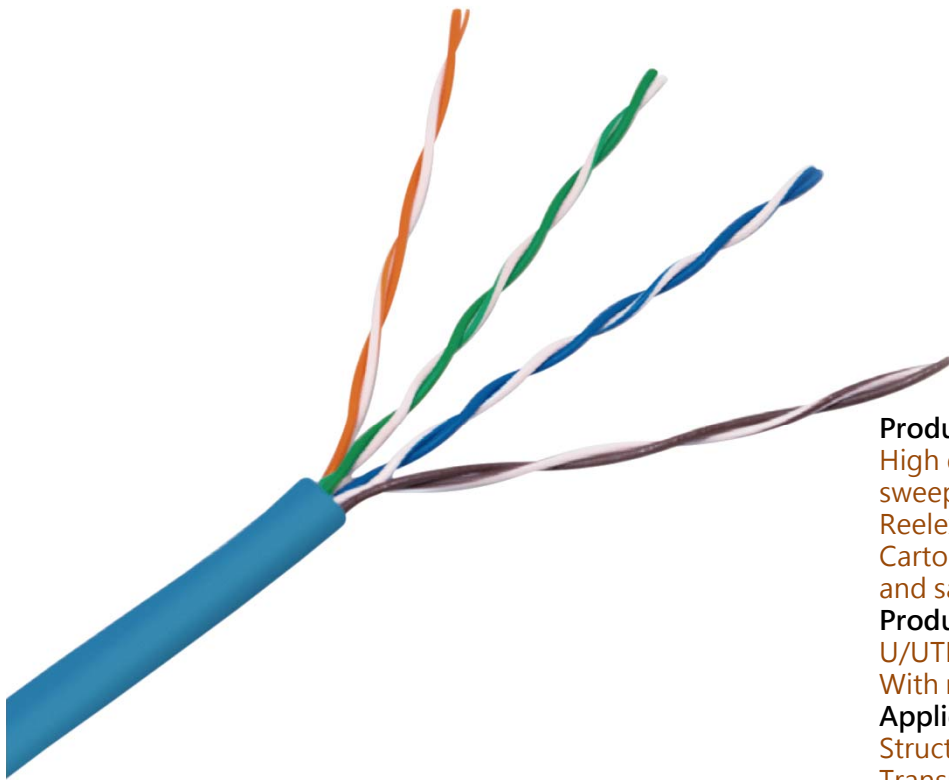
Structure cabling for horizontal and building backbone cable.
Transmission of digital and analogue for data, video and audio applications.
10 / 100 / 1G Base-T IEEE 802.3 i / u / ab.
CDDI / FDDI / ATM / Token Ring.
IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
Limit Power -LP UL POE Safety standard.
HDBaseT 2.0 standard.
EtherCAT Industrial standard.



Wonderful Hi-Tech



CAT.5E / 6 U/UTP



Product Feature

High quality of safety property.
sweep frequency up to 100 MHz.
Reellex II carton and easy to pull out.
Carton with one layer corrugated design providing sufficient strength
and saving packaging space.

Product Description

U/UTP, 22AWG / 24AWG solid bare copper, CAT.5E.
With rip cord.

Application

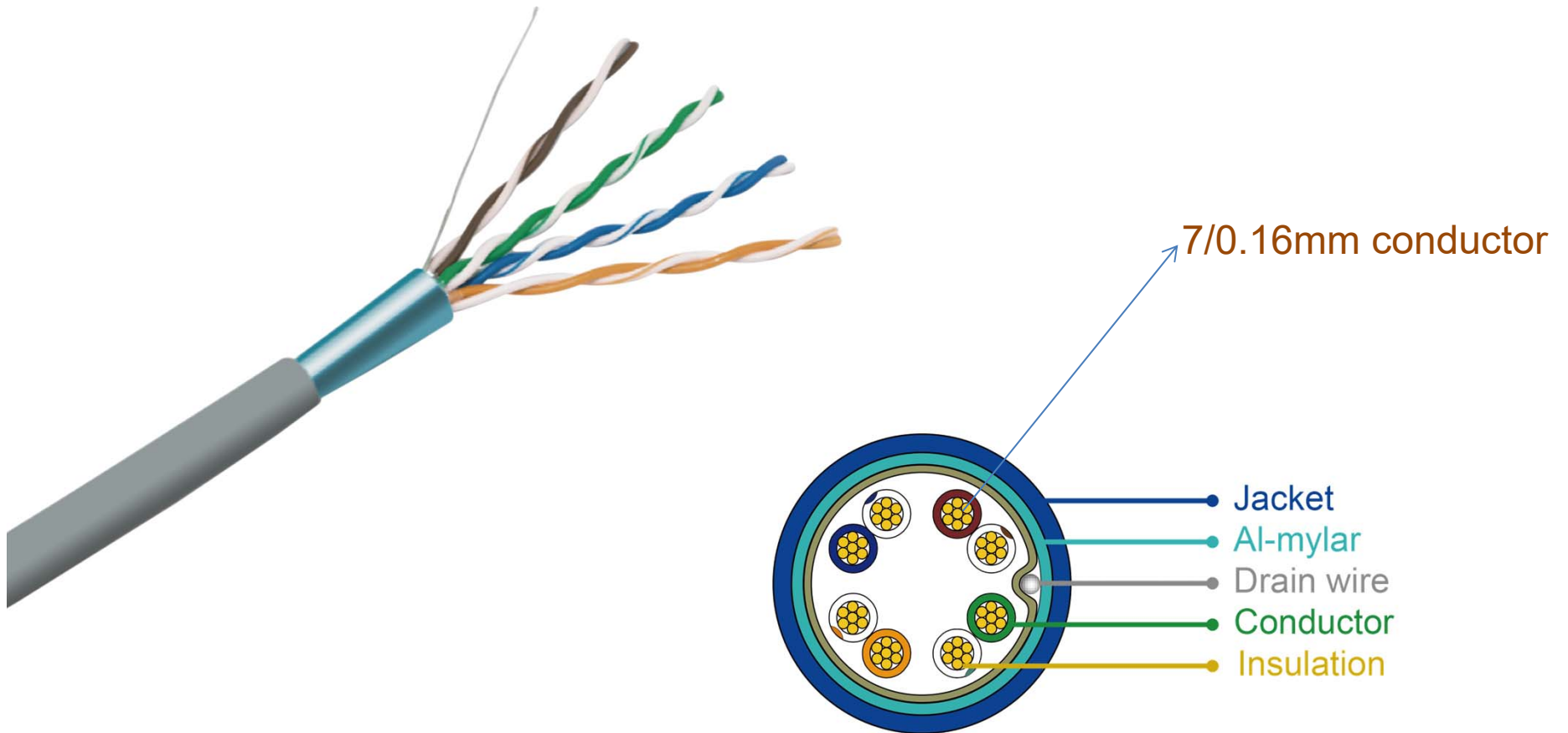
Structure cabling for horizontal and building backbone cable.
Transmission of digital and analogue for data, video and audio applications.
10 / 100 Base-T IEEE 802.3 i / u.
CDDI / FDDI / ATM / Token Ring.
IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
Limit Power -LP UL POE Safety standard.
HDBaseT 2.0 standard.
EtherCAT Industrial standard.



Wonderful Hi-Tech



CAT.5E F/UTP Stranded Cable



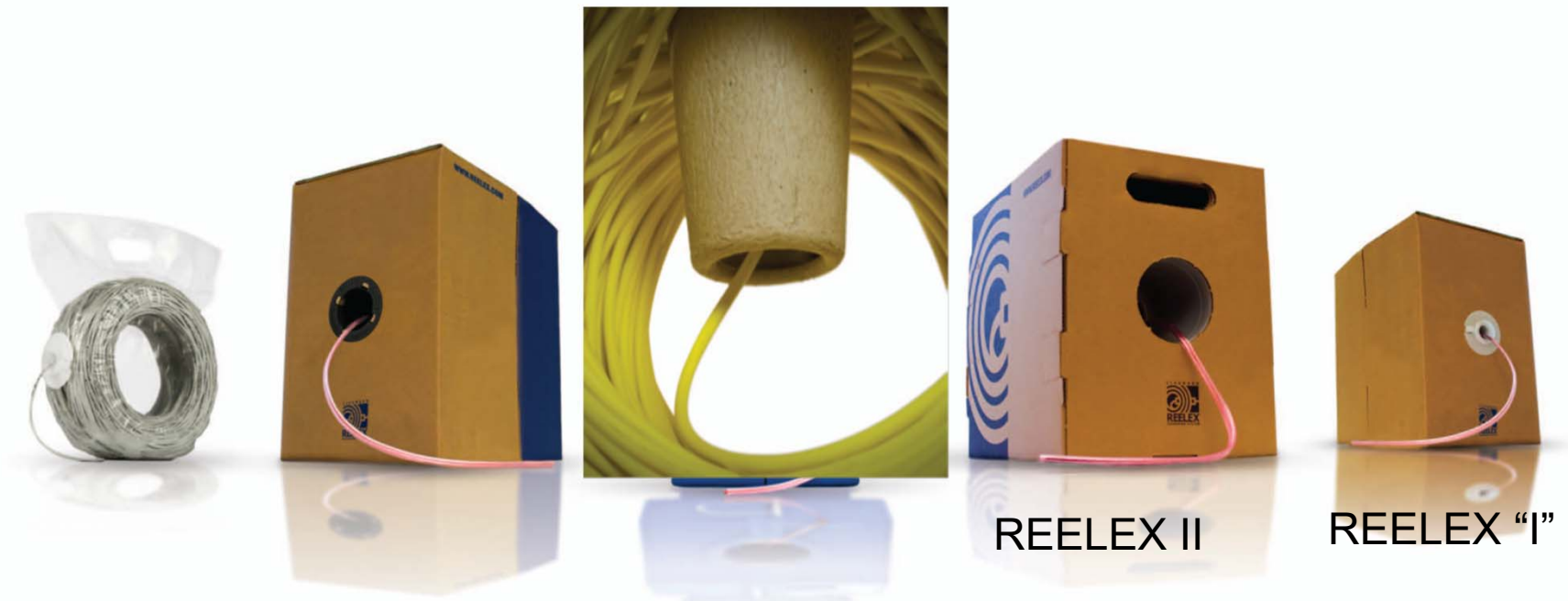
Cable Package(線纜包裝)

請指明使用 REELEX II 專利包裝

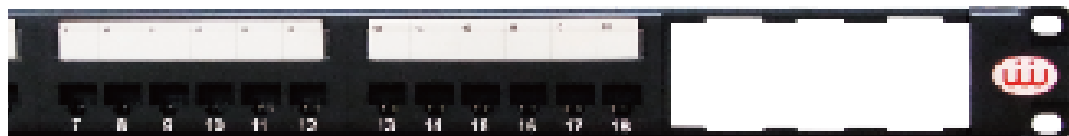
Please indicate the use of REELEX II patented packaging

大口徑可有效降低卡線及拉力輕鬆佈放

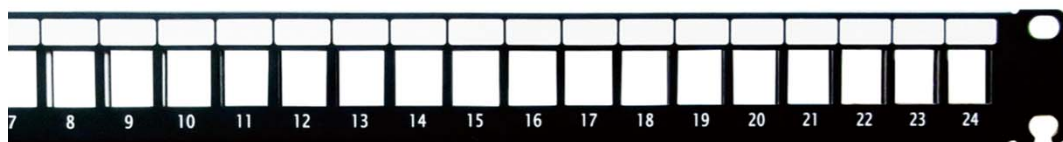
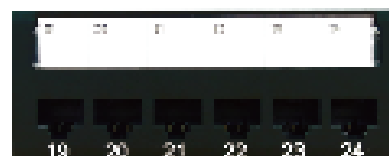
Large-diameter can effectively reduce tension and ease employment



Patch Panel



可前方拆卸式6模組單體
Modules can be replaced by the front



1U 24 Port 模組式V 型配線架
1U V type patch panel

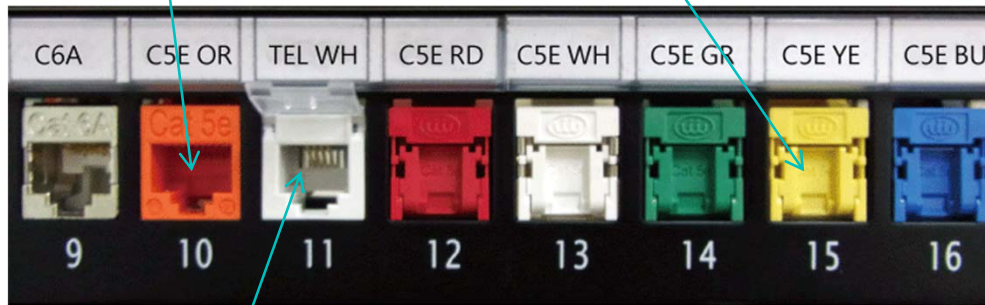
Wonderful Hi-Tech



Keystone Jack

Standard Type

Shutter Type



Cover Type



IP67 RJ45
Waterproof



wire – wire
Coupler



RJ45 –RJ45
Coupler



C6A STP



C6A UTP



C6 FTP



C6/5E UTP Shutter

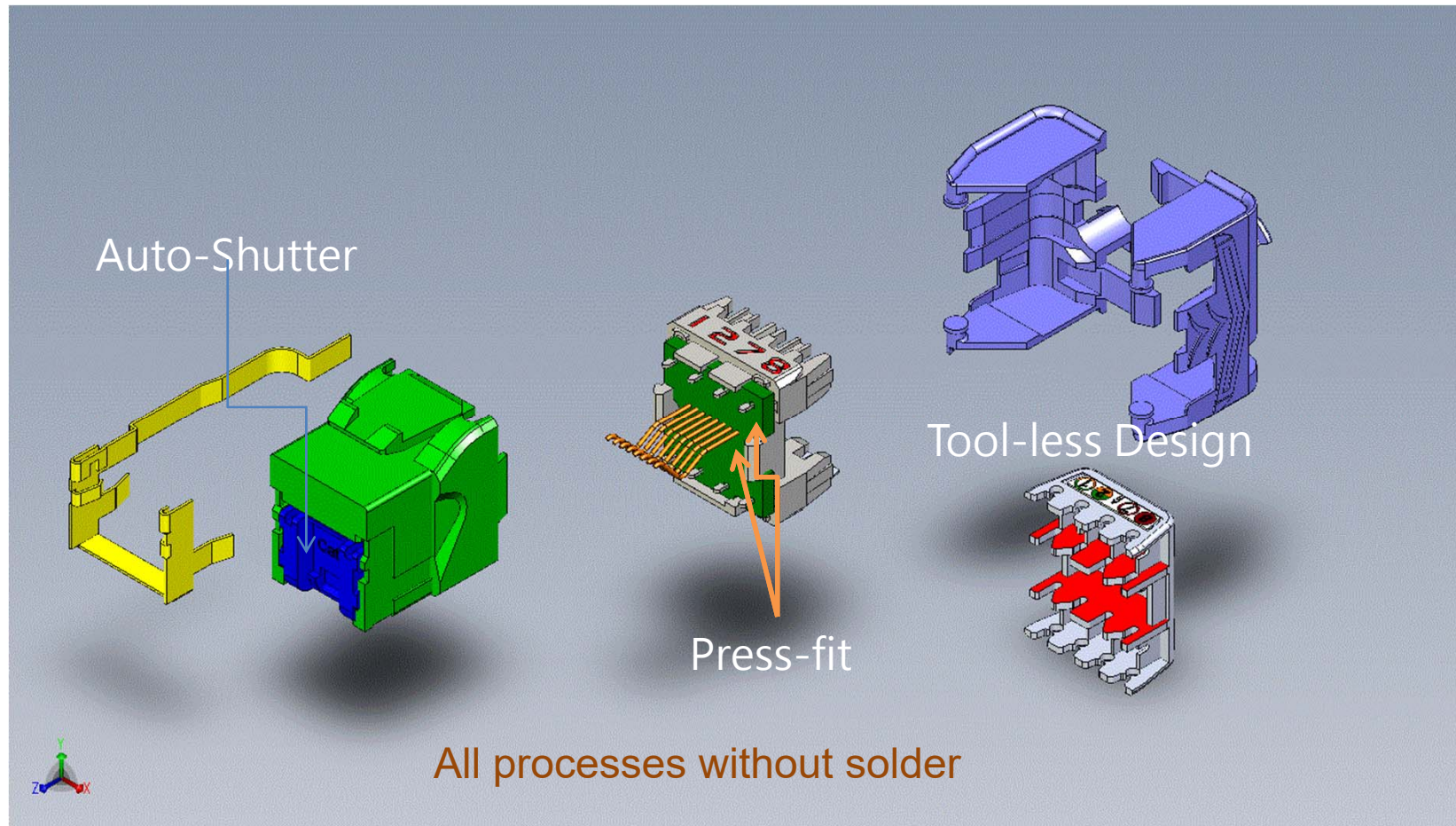


UTP-Cover

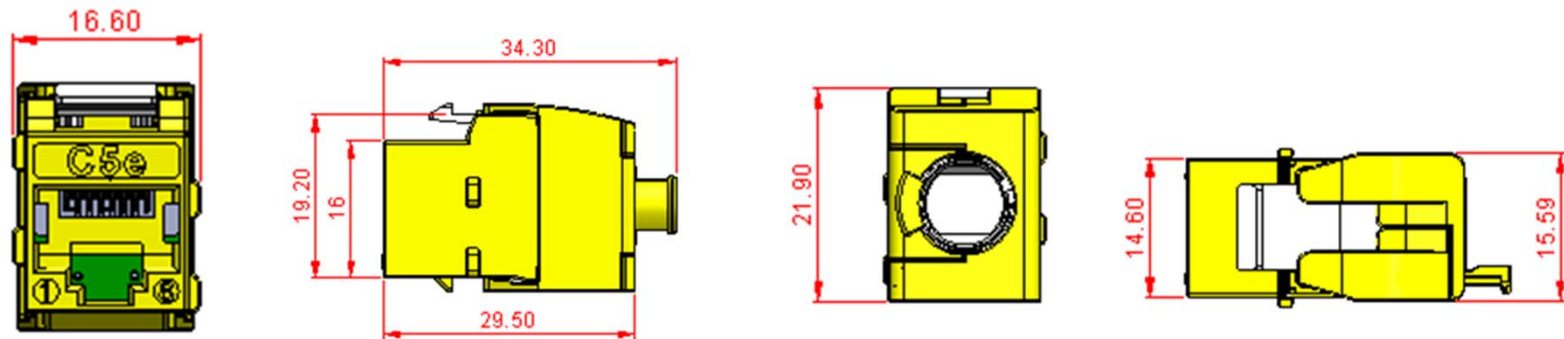


UTP -110

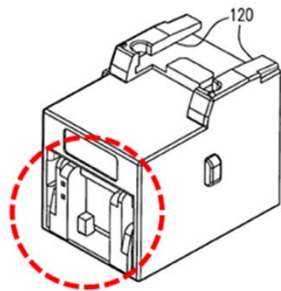
Press –Fit Technology



New CAT.5E/6/6A STP Shutter Type

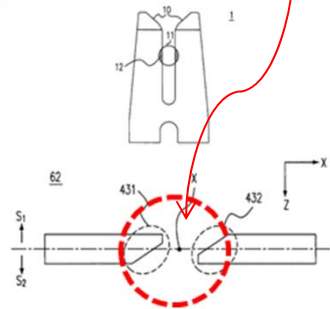


New IDC Design



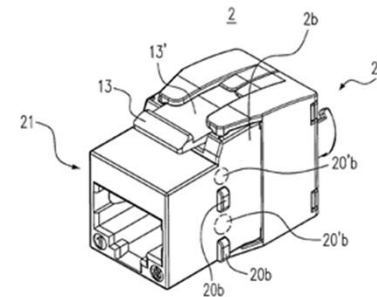
Inward Turning Network Jack

Patent type: New Design
Patent number: M475723



**Staggered Insulation
Displacement Connector**

Patent type: New Design
Patent number: M481530



Network Jack

Patent Type: New Design
Patent Number: M487556

Wonderful Hi-Tech



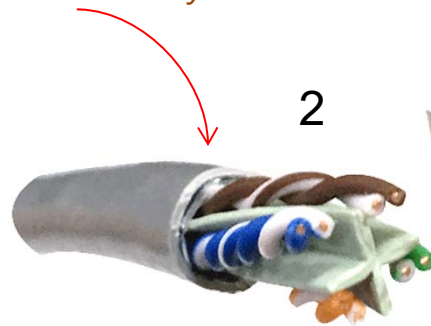
Keystone Jack Assembly 1

Two way cable color code

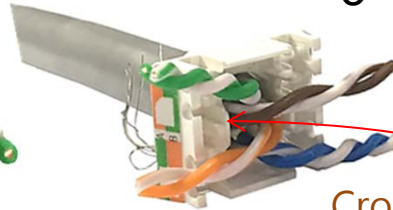
Reverse side cable assembly



1

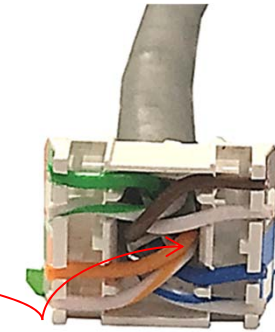


2

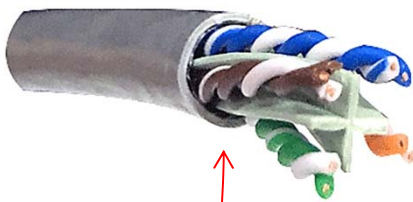


3

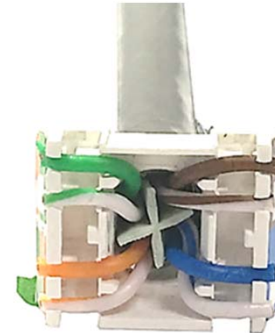
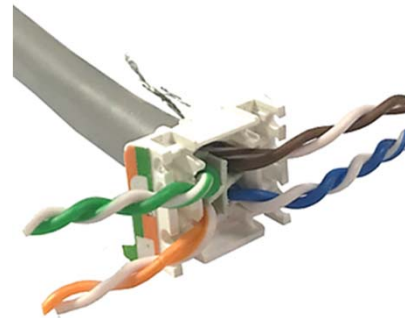
Cross way each pair



4

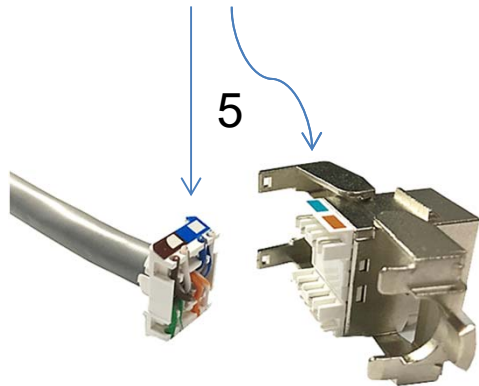


Normal side cable assembly

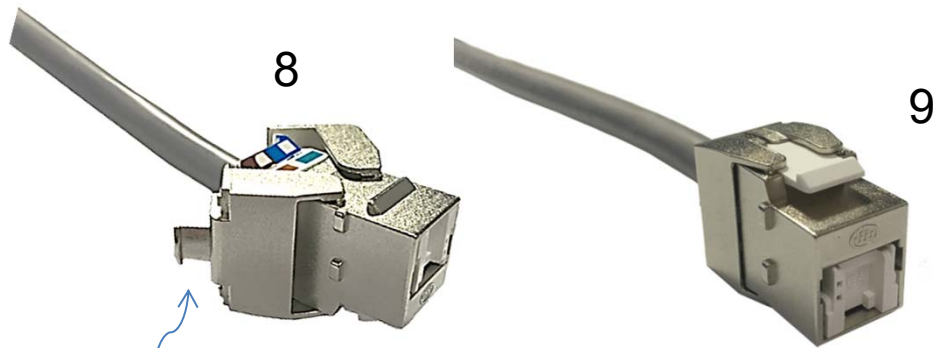
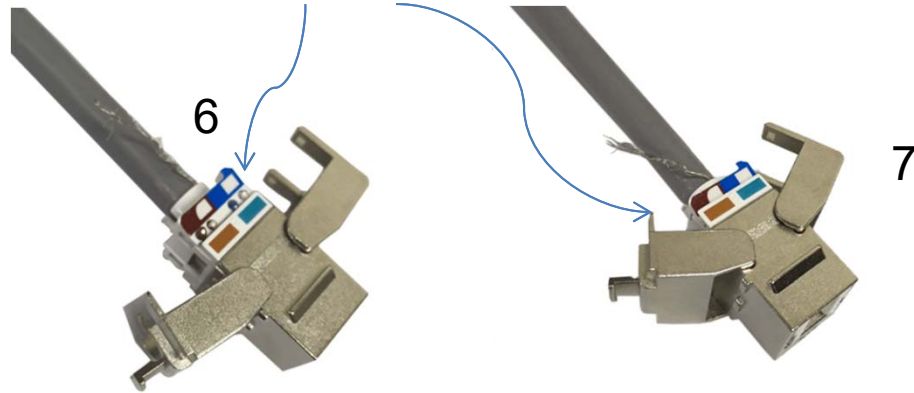


Keystone Jack Assembly 2

藍棕色對色壓入安裝

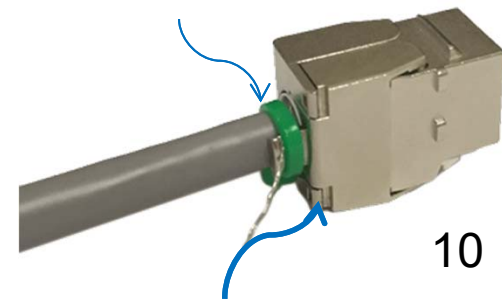


線材裁切後
有擋板隔離鐵殼



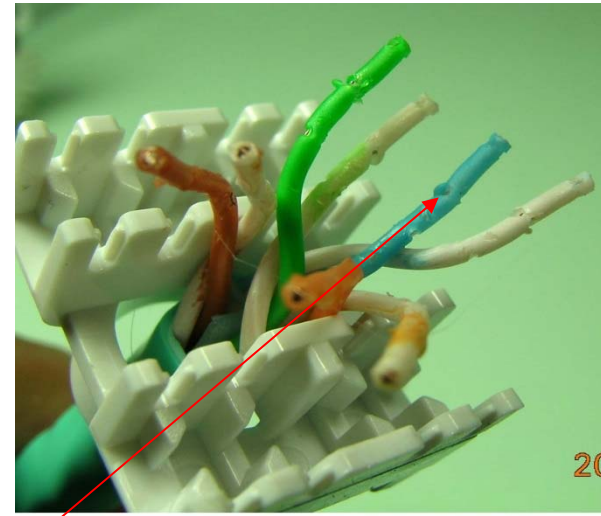
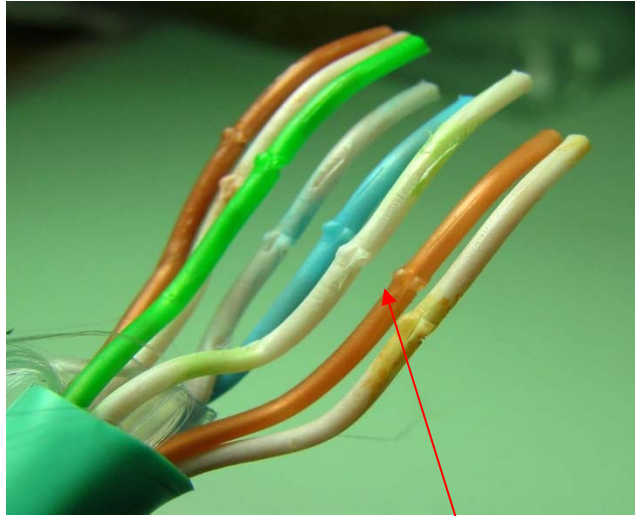
有耳面較低先壓入

束帶需綁住地線

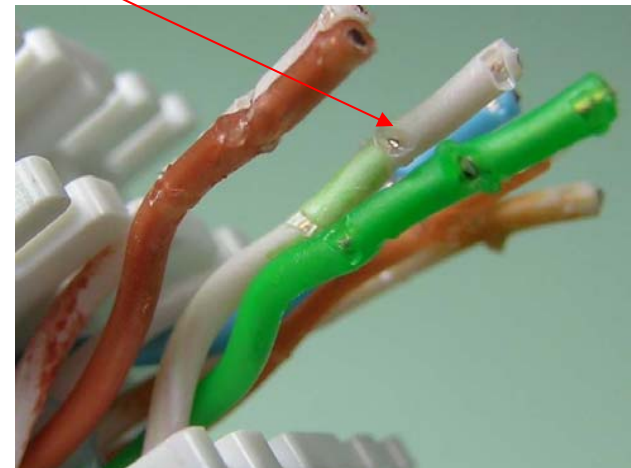
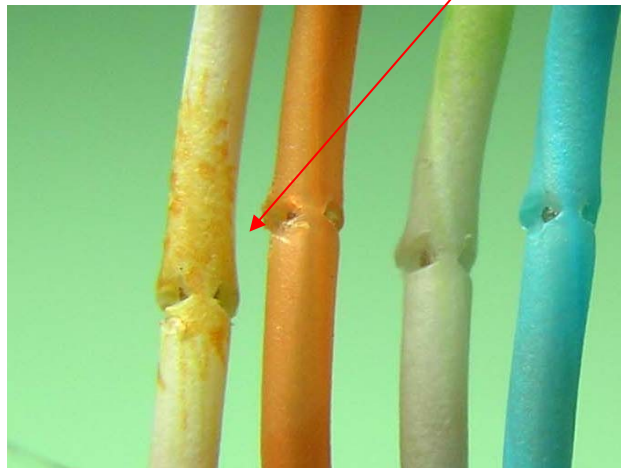


壓扣面積加大

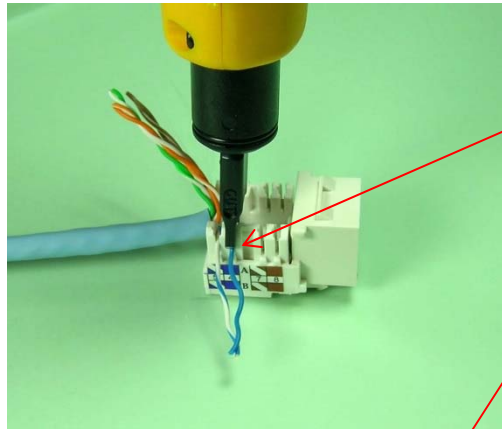
Tool-less Type



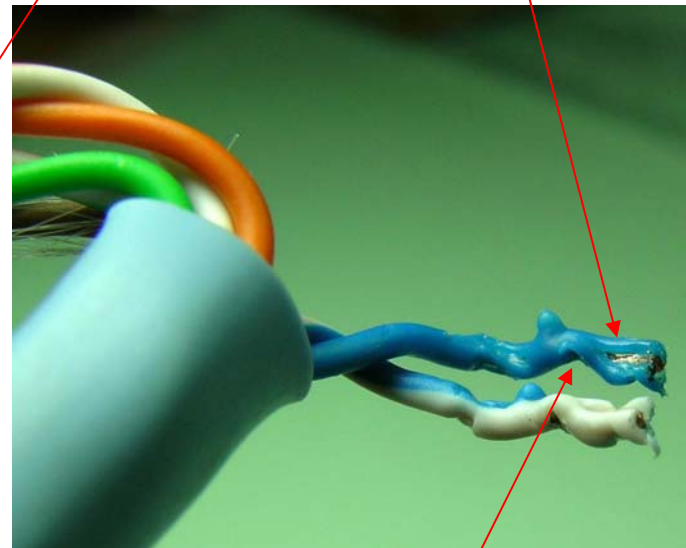
Only contact area



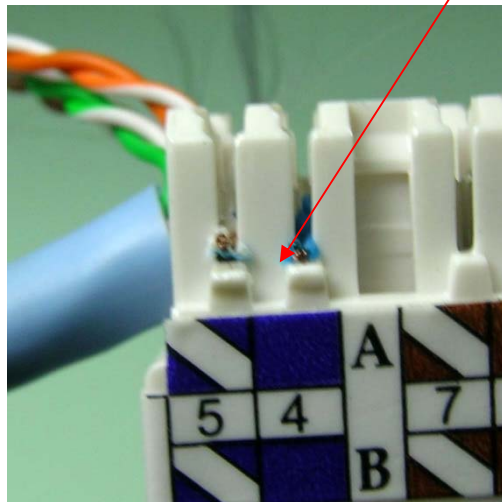
110 & Krone IDC Type

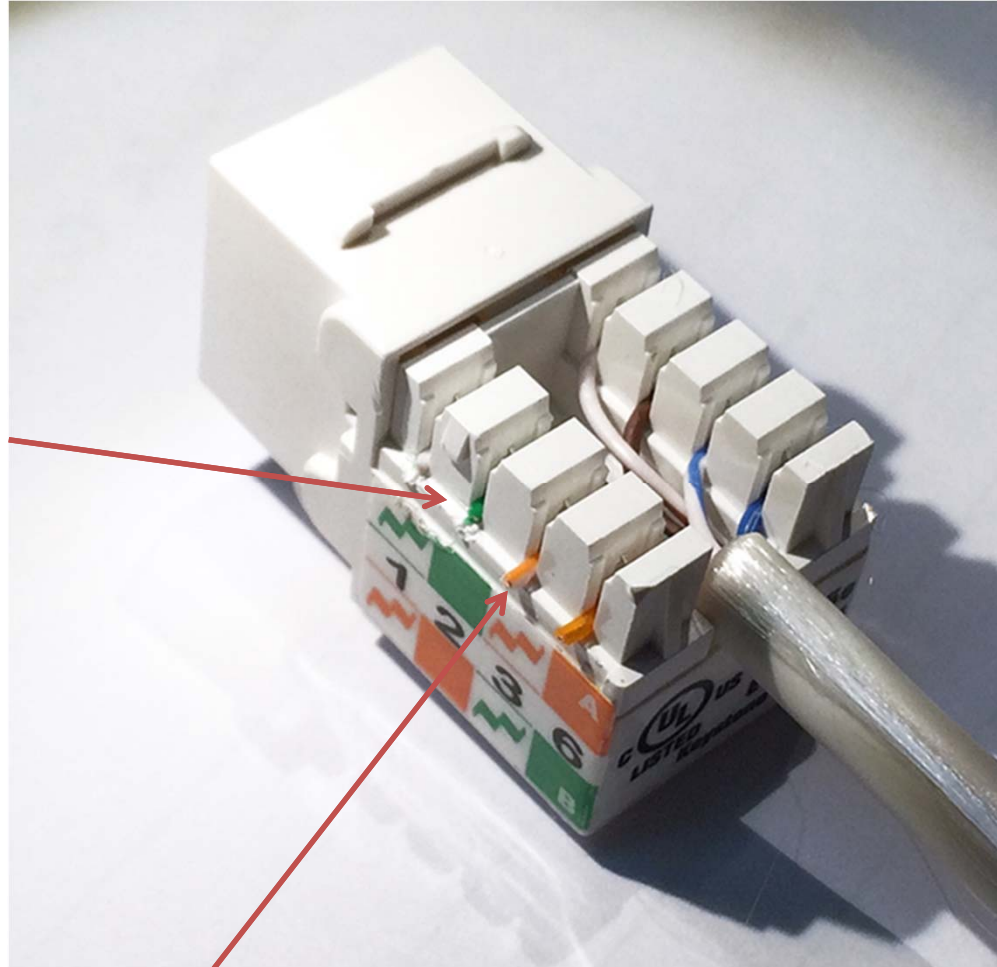


Used Punch down tool



Before punch down tool wire

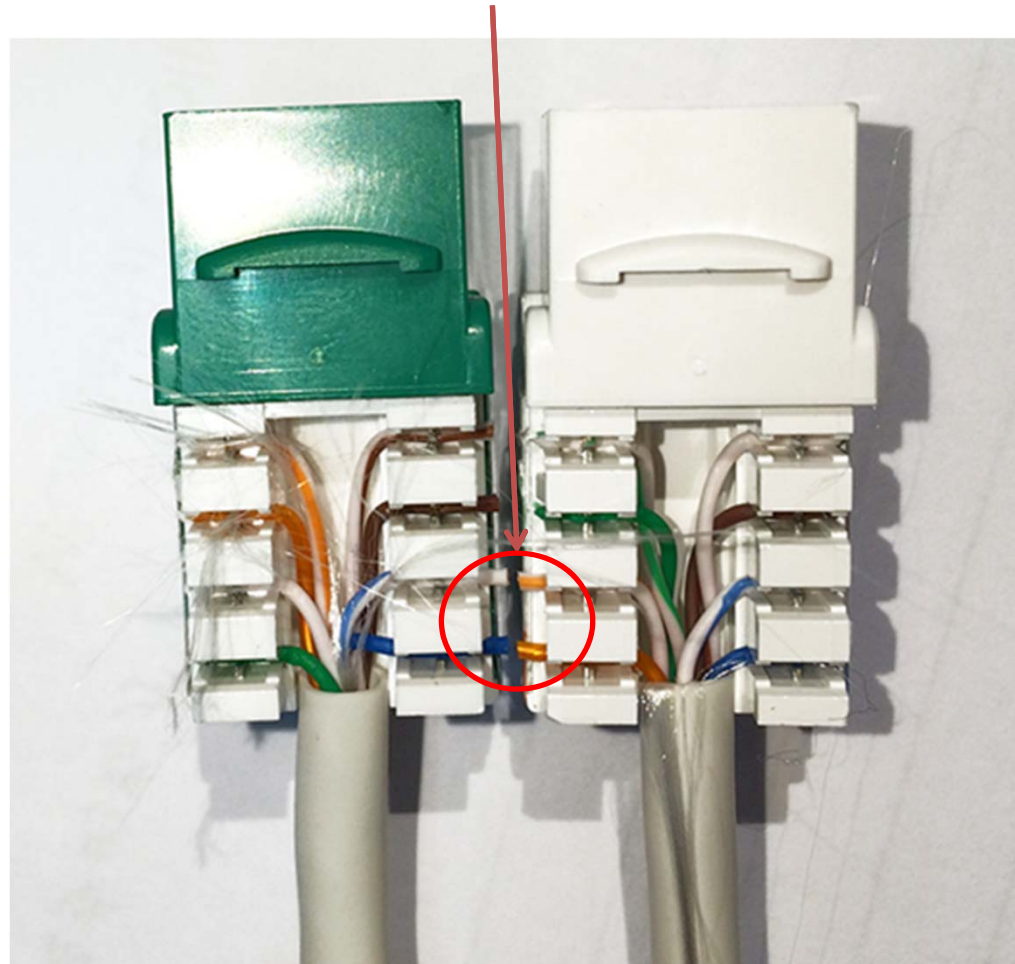




Normal

Bad Cut for wire to long

Bad installation will make a foul test !



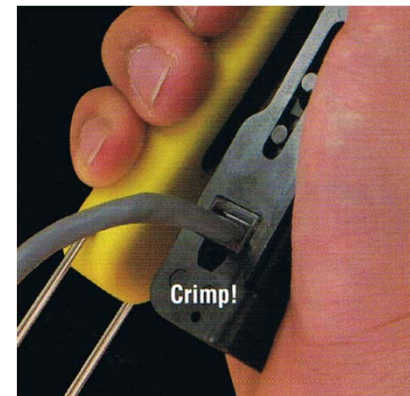
八芯一次壓接工具 90 / 180 ° 共用工具

RJ 45 punch down & crimping tool

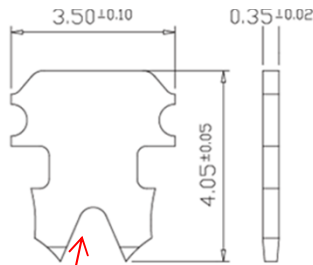
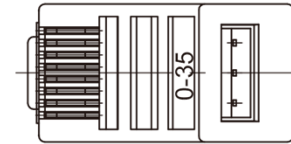
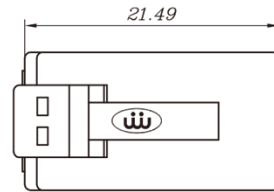
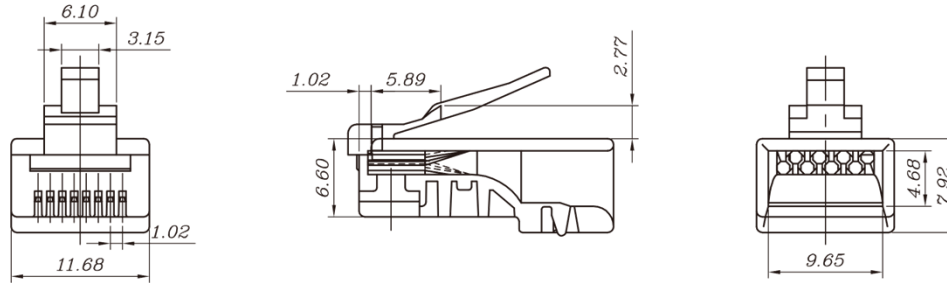
90° Keystone



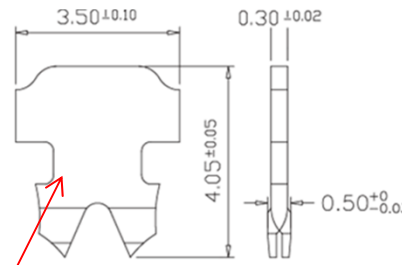
180° Keystone



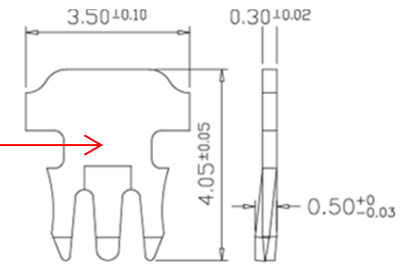
Plug Specification



“ ” : 2 PRONGS FOR STRANDED WIRE
多芯線用二叉型金片



“ 2 ” : 2 PRONGS FOR SOLID WIRE(SS)
單芯線用大拐角型金片

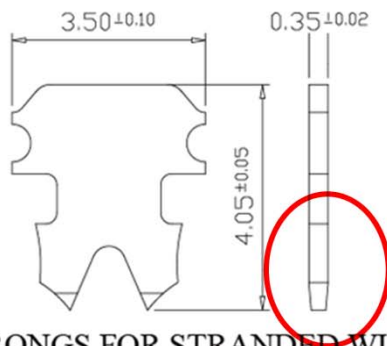
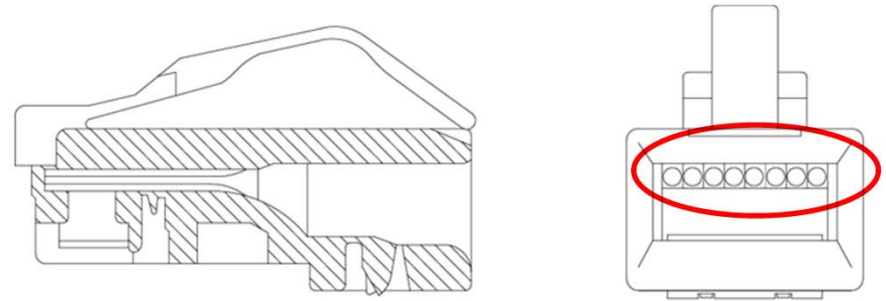


“ 3 ” : 3 PRONGS FOR SOLID WIRE(S)
單芯線用三叉型金片

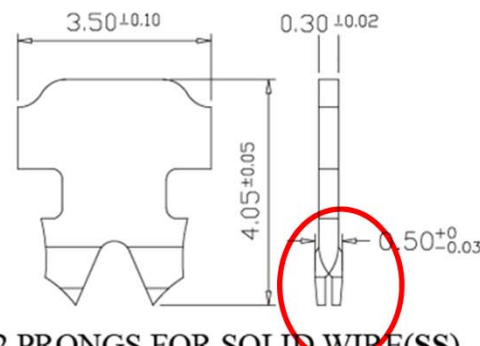
BLADE:	E	EB	Y	YB	Z	A	AE	AB	EC	AL	ZL	YBL
Drawing												
Mark					✓						✓	
GOLD PLATING	3Mu"	3u"	6u"	15u"	30u"	50u"	CABLE TYPE	ROUND	FLAT			
Mark						✓	Mark	✓				

C5E Channel Plug

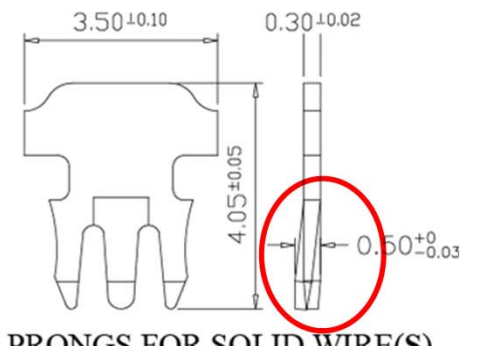
商標:WONDERFUL
 塑膠材質:UL 94V-0
 金片型式:二又型金片/
 二又大拐角金片/三又金片
 鍍金厚度:Flash 3/6/15 μ /30 μ /50 μ
 金片材質:磷青銅



“ ” : 2 PRONGS FOR STRANDED WIRE
 多芯線用二又型金片



“ 2 ” : 2 PRONGS FOR SOLID WIRE(SS)
 單芯線用大拐角型金片



“ 3 ” : 3 PRONGS FOR SOLID WIRE(S)
 單芯線用三又型金片

C5E Component /C6 Channel 單件式

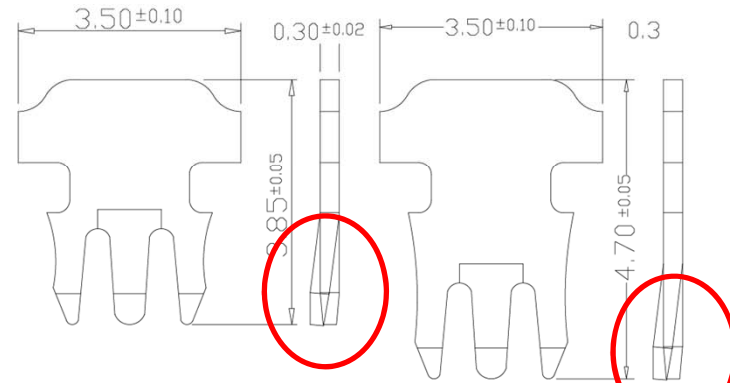
商標:WONDERFUL

塑膠材質:UL 94V-0

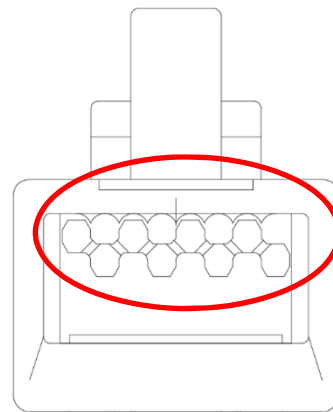
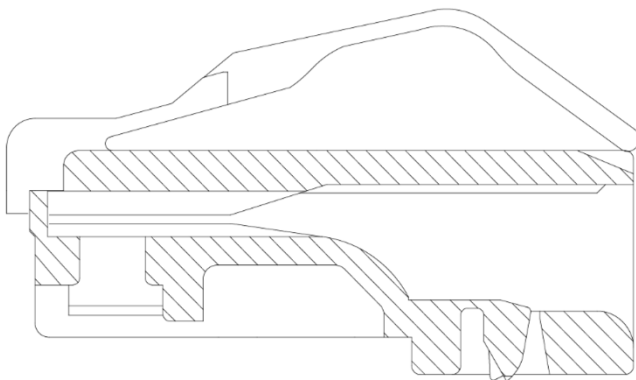
金片型式:二叉型金片/大拐角金片/三叉金片

鍍金厚度:Fμ/15μ/30μ/50μ

金片材質:磷青銅



“3” : 3 PRONGS FOR SOLID WIRE(S)
單芯線用三叉型金片



Wonderful Hi-Tech



C6/C6A Component 2/3 Pieces Plug

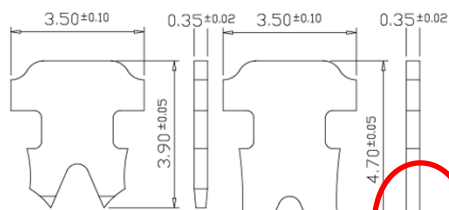
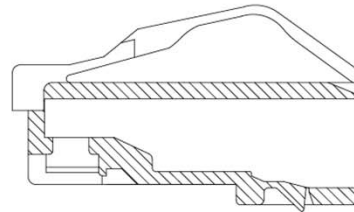
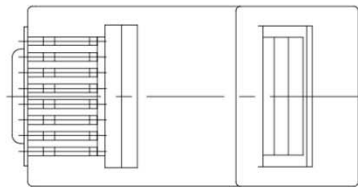
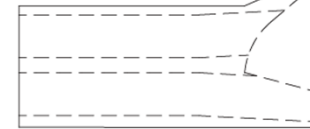
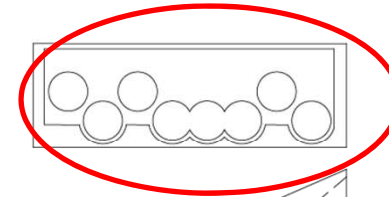
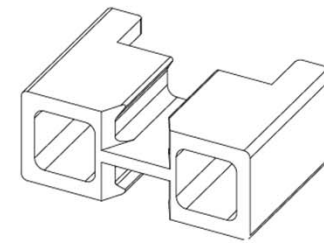
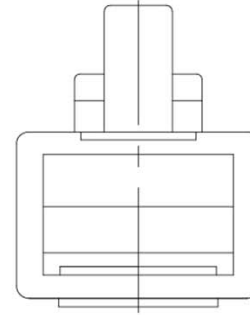
商標:WONDERFUL

塑膠材質:UL 94V-0

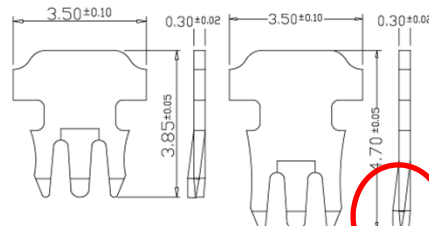
金片型式:二叉型金片/大拐角金片/三叉金片

鍍金厚度:F μ /15 μ /30 μ /50 μ

金片材質:磷青銅



“ ” : 2 PRONGS FOR STRANDED WIRE
多芯線用二叉型金片

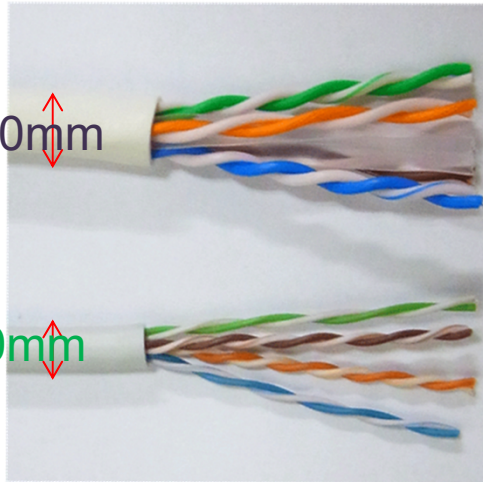


“ 3 ” : 3 PRONGS FOR SOLID WIRE(S)
單芯線用三叉型金片

CAT.6 28AWG UTP Patch Cord

- Test meet EIA/TIA 568 C2 Patch Cord Standard
- O.D.< 4.0mm 3.7+/-0.2 easy to management to patch panel
- Install to all system (without POE)
- LSOH /PVC meet TIA 569 color code standard
- 1M 1.5M 2M 3M 5~10M

24AWG C6 6.0mm



28AWG C6 4.0mm



Patch cord 單體測試 (Single test)



28AWG 2M Headroom (NEXT) 1.8/1.5 dB

電纜識別碼: CAT.6 UTP 28AWA GY 2M01
Cat 6 U/UTP
12/25/2015 10:16 AM

TIA Patch Cord Cat6 2.0m
DSX-5000

餘量(Headroom) (NEXT): 1.8 dB
序號: 2968403

通過

測試	詳細	狀態	數值	極限	餘量
NEXT (dB)	線對 36-45, 250.0 MHz	通過	40.6	38.8	1.8
RL (dB)	線對 36, 25.3 MHz	通過	26.8	24.0	2.8
長度 (ft)	線對 36		7		
傳導延遲 (ns)	線對 12		11		
時延偏離 (ns)	線對 12		1		
電阻值 (ohms)	線對 45		0.3		
接線圖		通過			

電纜識別碼: CAT.6 UTP 28AWG GY2M02
Cat 6 U/UTP
12/25/2015 10:16 AM

TIA Patch Cord Cat6 2.0m
DSX-5000

餘量(Headroom) (NEXT): 1.5 dB
序號: 2968403

通過

測試	詳細	狀態	數值	極限	餘量
NEXT (dB)	線對 36-45, 11.1 MHz	通過	66.5	65.0	1.5
RL (dB)	線對 36, 225.0 MHz	通過	17.0	14.5	2.5
長度 (ft)	線對 36		7		
傳導延遲 (ns)	線對 12		11		
時延偏離 (ns)	線對 12		1		
電阻值 (ohms)	線對 45		0.3		
接線圖		通過			



CAT.6 UTP 24AWG Channel



CAT.6 24AWG 5M 2+2M Headroom (NEXT) 4.6dB

電纜識別碼: WONDERFUL CAT.6 UTP 24AWG 28PC

通過

Cat 6 U/UTP

TIA Cat 6 Channel

餘量(Headroom) (NEXT): 4.6 dB

12/23/2015 03:50 PM

DSX-5000

序號: 2968403

測試	詳細	狀態	數值	極限	餘量
插入損耗 (dB)	線對 36, 248.5 MHz	通過	5.3	35.8	30.5
NEXT (dB)	線對 36-45, 102.0 MHz	通過	44.4	39.8	4.6
PS NEXT (dB)	線對 36, 103.0 MHz	通過	43.2	36.9	6.3
ACR-N (dB)	線對 36-45, 3.0 MHz	無效	73.0	61.5	11.5
PS ACR-N (dB)	線對 36, 3.0 MHz	無效	70.9	58.5	12.4
ACR-F (dB)	線對 45-36, 248.5 MHz	通過	24.1	15.4	8.7
PS ACR-F (dB)	線對 36, 1.0 MHz	通過	71.6	60.3	11.3
RL (dB)	線對 36, 135.0 MHz	通過	15.1	10.7	4.4
長度 (ft)	線對 12	通過	5M+2M*2 30	328	298
傳導延遲 (ns)	線對 45	通過	45	555	510
時延偏離 (ns)	線對 45	通過	1	50	49
電阻值 (ohms)	線對 78	通過	2.4		
接線圖		通過			

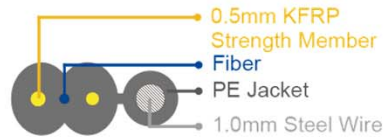
Wonderful Hi-Tech



Drop & In/Outdoor Fiber Cable

Drop Cable	
Part No.	E
Product	Self Support 3-Circle PE Indoor-Outdoor Drop Cable
Cores	2
Jack Diameter (mm)	1.0

Sectional Drawing



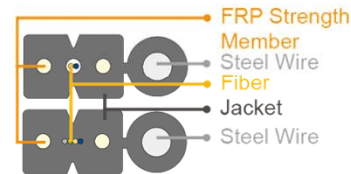
Indoor/outdoor Cable	
Part No.	WW
Product	Gel-Filled Loose Tube Cable
Cores	4/6/8/12
Jack Diameter (mm)	8.0

Sectional Drawing



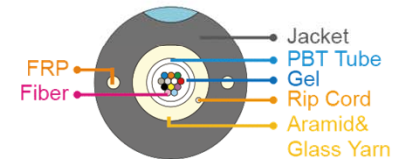
Drop Cable	
Part No.	E
Product	Self Support Drop Cable
Cores	2
Jack Diameter (mm)	2.2 x 5.3

Sectional Drawing



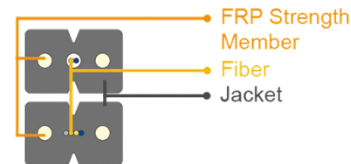
Indoor/outdoor Cable	
Part No.	WW
Product	Gel-Filled Loose Tube Cable-Mini Tube
Cores	4/6/8/12
Jack Diameter (mm)	1.0

Sectional Drawing



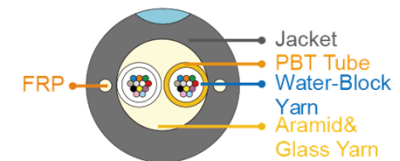
Drop Cable	
Part No.	F
Product	Drop Cable
Cores	2
Jack Diameter (mm)	2.0 x 3.1

Sectional Drawing



Indoor/outdoor Cable	
Part No.	DV
Product	Gel-Free Dual Loose Tube Cable
Cores	16/24
Jack Diameter (mm)	8.00

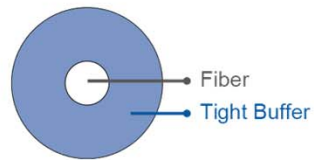
Sectional Drawing



Tight Buffer & Micro MPO Cable

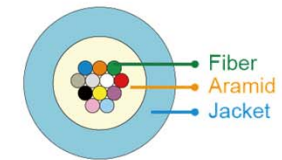
TBF (Tight Buffer Cable)	
Part No.	0.9 S
Product	Simplex 900um
Cores	1
Jack Diameter (mm)	0.9
UL1651	OFNP/OFNR/OFN (1-12C)

Sectional Drawing



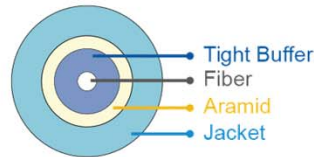
Mini(Micro) Bundle for MTP MPO Cable	
Part No.	L
Product	Mini Bundle Cable
Cores	8/12
Jack Diameter (mm)	3.0
UL1651	OFNP/OFNR/OFN (1-12C)

Sectional Drawing



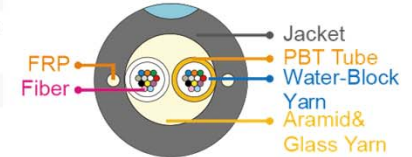
TBF (Tight Buffer Cable)	
Part No.	S
Product	Simplex Round Cable
Cores	1
Jack Diameter (mm)	1.6/2.0/3.0
UL1651	OFNP/OFNR/OFN (1-12C)

Sectional Drawing



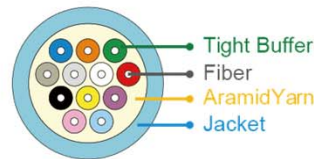
Indoor/outdoor Cable	
Part No.	DW
Product	Gel-Free Loose Tube Cable
Cores	4/6/8/12
Jack Diameter (mm)	6.50 mm

Sectional Drawing



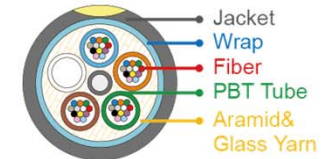
TBF (Tight Buffer Cable)	
Part No.	T
Product	Distribution Cable
Cores	2
Jack Diameter (mm)	3.5/4.0/5.0/6.0
UL1651	OFNP/OFNR/OFN (1-12C)

Sectional Drawing



Indoor/outdoor Cable	
Part No.	SMF-28E
Product	Gel-Filled Multi-Loose Tube Cable 4+1 T
Cores	48C
Jack Diameter (mm)	10.2 mm

Sectional Drawing



乾式無充膠非金屬複合纜

Gel-Free & Hyper cable

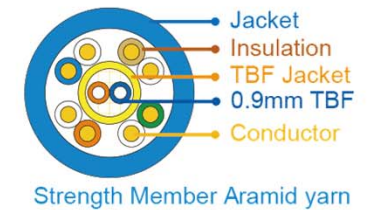
TBF (Tight Buffer Cable)	
Part No.	D
Product	Duplex Zipcord Cable
Cores	2
Jack Diameter (mm)	1.6 x 3.3 2.0 x 4.1
UL1651	OFNP/OFNR/OFN (1-12C)

Sectional Drawing



Indoor/outdoor Cable	
Part No.	2C A2
Product	HYBRID +U-UTP #23 Solid CAT 6 LSZH
Cores	*
Jack Diameter (mm)	7.4 mm

Sectional Drawing



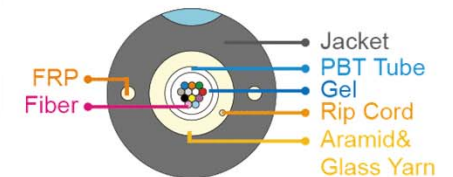
TBF (Tight Buffer Cable)	
Part No.	B
Product	Duplex Flat Cable
Cores	2
Jack Diameter (mm)	3.0 x 5.0
UL1651	OFNP/OFNR/OFN (1-12C)

Sectional Drawing



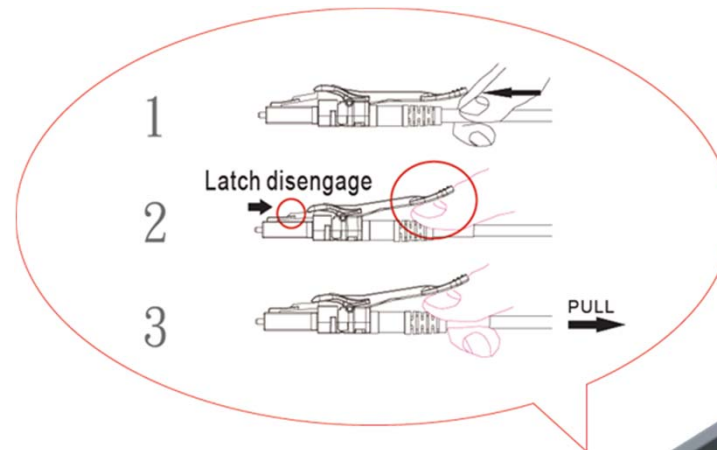
Indoor/outdoor Cable	
Part No.	WW
Product	Gel-Filled Loose Tube Cable
Cores	4/6/8/12
Jack Diameter (mm)	6.5-6.7

Sectional Drawing

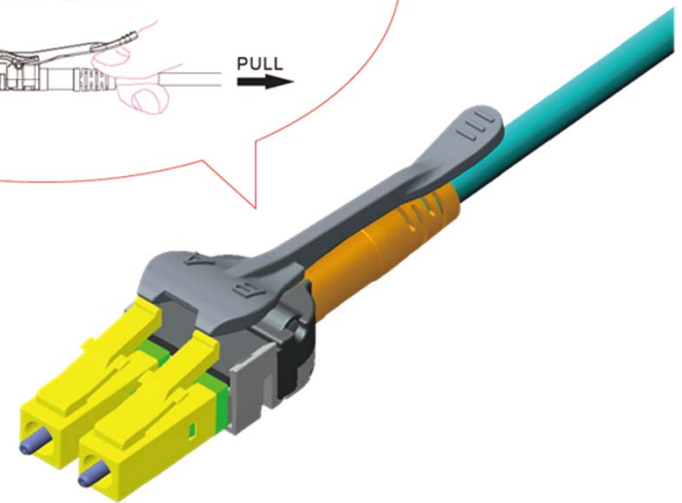


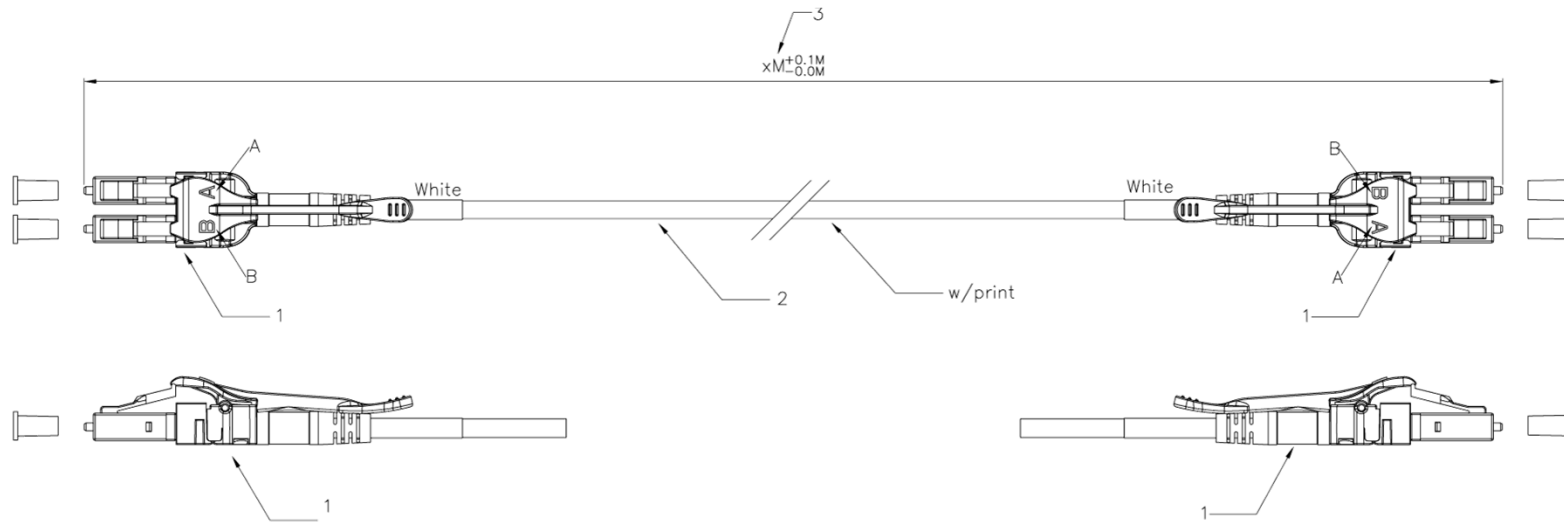
LC-Easy Pull 3.0mm

- 3.0/2.0mm 圓型纜線 (非ZIP Cord 双芯)
- TIA 942 Data Center guideline
- IEC61754-7 Standard
- TIA568-C3 Standard
- M/M OM3/OM4
- S/M-G657A1/2



1. 適合安裝在高密度96C 1/3U MPO/MTP PANEL
2. 高密度機房及數據中心整線及安裝
3. 可使用LSOH 或 OFNP 高耐燃等級外被材料
4. 全系列使用耐彎形G657A 或 OM3進口光絲
5. 標準庫存 2.3.5.10.15.20M 單多模





Specification:

1. LC Extractor Connector :

Mode	Ferrule	Housing	Clip	Control	Boot	Tube	Cap
OM1/OM2	Zirconia(Ø1.25mm)	Ivory(PC)	Ivory(ABS+PC)	Ivory(PC+10%)	White(TPV)	White(PVC)	White(PE)
OM3/OM4	Zirconia(Ø1.25mm)	Aqua(PC)	Aqua(ABS+PC)	Aqua(PC+10%)	White(TPV)	White(PVC)	White(PE)
SM	Zirconia(Ø1.25mm)	Blue(PC)	Blue(ABS+PC)	Blue(PC+10%)	White(TPV)	White(PVC)	White(PE)

2. Cable Type : Round Duplex

Category	Jacket O.D.	Jacket Material	Color
OM1(62.5/125um)	Ø3.0mm	PVC OFNR/PVC OFNP/LSFRZH	Orange
OM2(50/125um)	Ø3.0mm	PVC OFNR/PVC OFNP/LSFRZH	Gray/Orange
OM3(50/125um)	Ø3.0mm	PVC OFNR/PVC OFNP/LSFRZH	Aqua
OM4(50/125um)	Ø3.0mm	PVC OFNR/PVC OFNP/LSFRZH	Aqua
G.652D(9/125um)	Ø3.0mm	PVC OFNR/PVC OFNP/LSFRZH	Yellow
G.657A2(9/125um)	Ø3.0mm	PVC OFNR/PVC OFNP/LSFRZH	Yellow

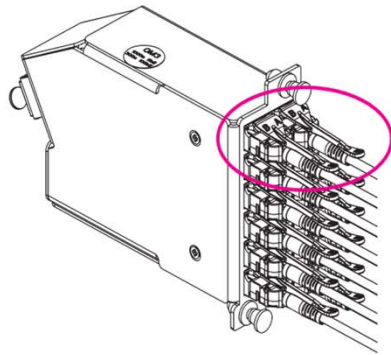
3. Length : xM

Performance:

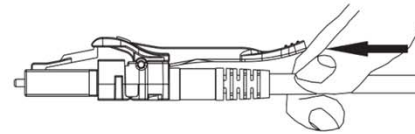
- a. Insertion Loss :
 - a-1: Multimode<0.5 dB(Low Loss<0.15 dB)
 - a-2: Singlemode<0.3 dB
- b. Return Loss :
 - b-1: Singlemode/SPC>45 dB
 - b-2: Singlemode/UPC>55 dB
- c. Fiber Extention : $-0.05\mu\text{m} < H < +0.05\mu\text{m}$
- d. Ø1.25mm Ferrule End-face Radius : $7 < R < 25\text{mm}$
- e. Apex Offset : $< 50\mu\text{m}$
- f. Insertion Loss will be Increased after 500 mating : 0.2 dB Max
- g. Operating Temperature : -20°C to $+70^{\circ}\text{C}$
- h. Storage Temperature : -40°C to $+80^{\circ}\text{C}$

Used in Cassette & Panel

Remove From Panel / Cassette



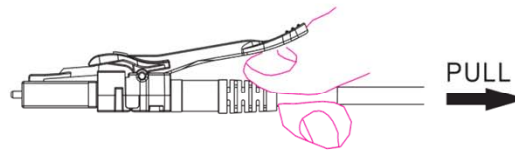
1



2

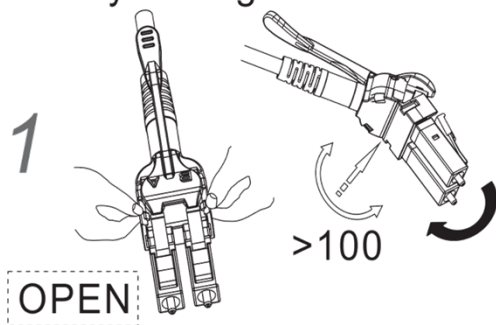


3

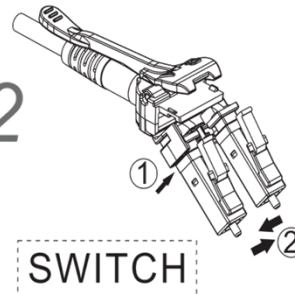


Polarity Change

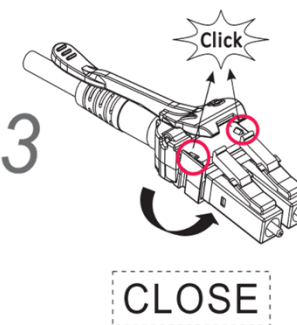
1



2



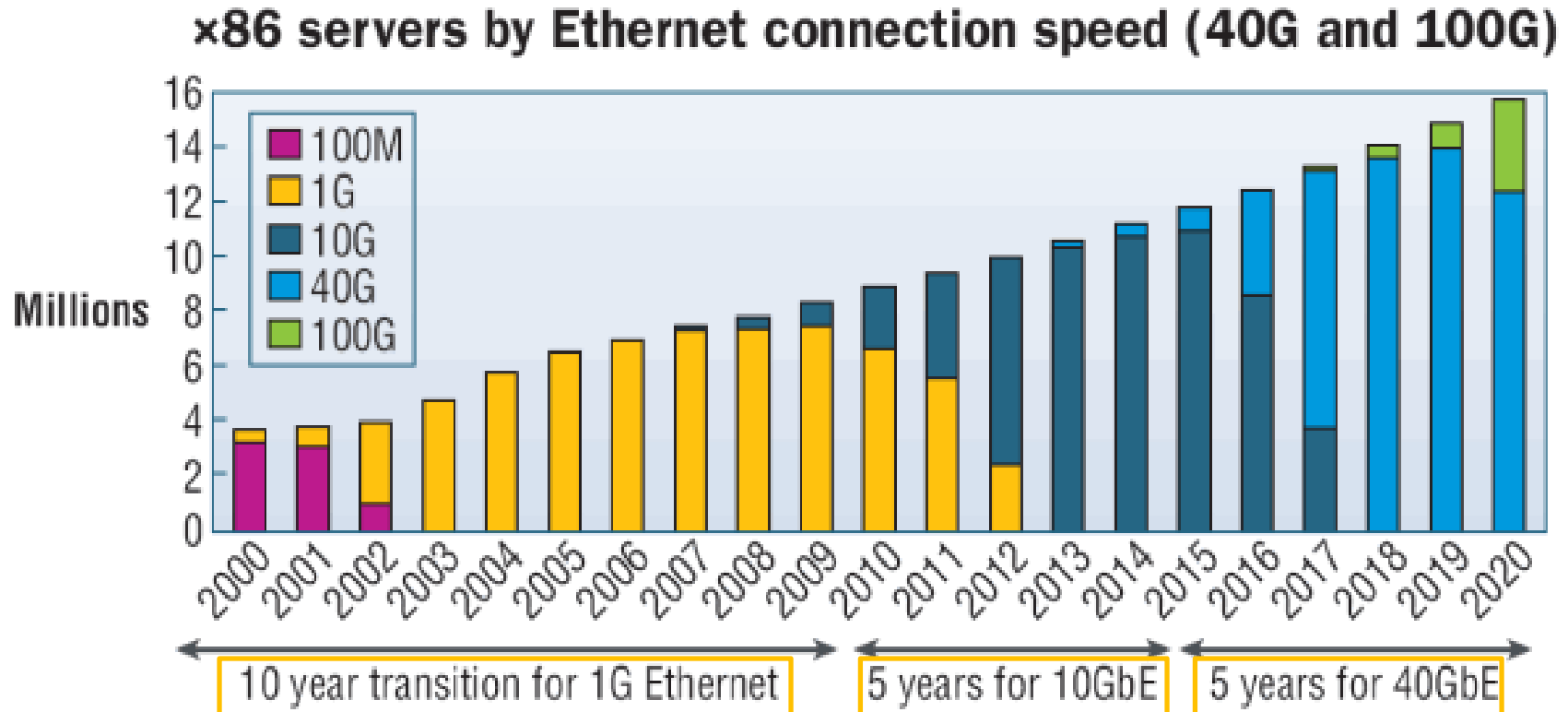
3



數據中心的運用(The use of data center)

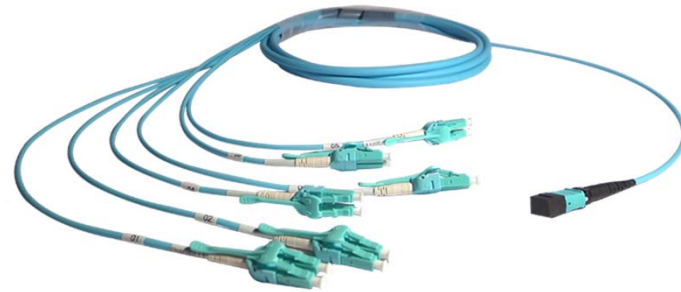
- 網路傳輸速率的發展
Network transmission rate of development
- MPO/MTP 系列
MPO/MTP series
- C6A FTP 系列
C6A FTP series
- 大容量理線槽
High capacity cable management
- 28AWG 跳接線
28AWG patch cord
- LC 易拔插型光纖跳線
LC easy plug-type fiber patch cord

Ethernet transmission speed development



High speed transmission over 10G to 40G~100G Need use FIBER

MPO/MTP



8x1 12x1 16x1 12x2 16x2

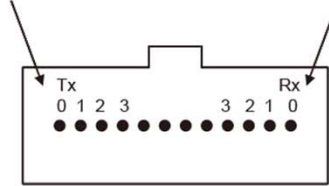
US Conec Trademarks MTP® connector

Wonderful Hi-Tech



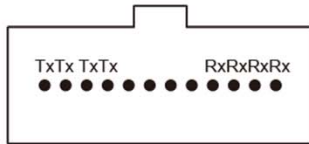
1-plug × 1-row applications

Requires lateral transposition



10GFC 1200-Mx-SN4P-I

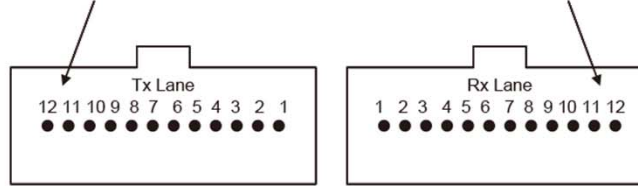
Compatible with lateral transposition



40GBASE-SR4

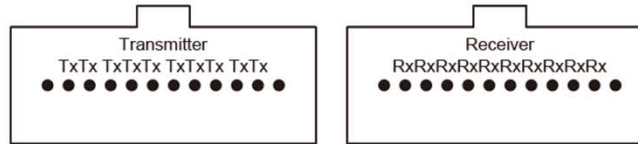
2-plug × 1-row applications

Requires lateral transposition

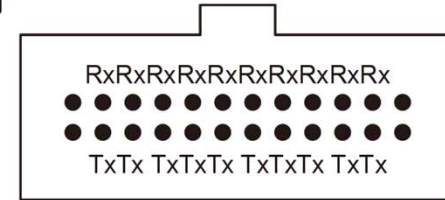


HIPPI-6400

Compatible with lateral transposition



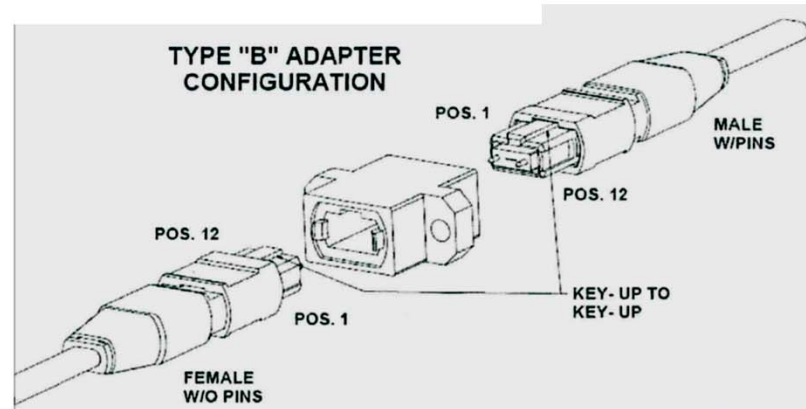
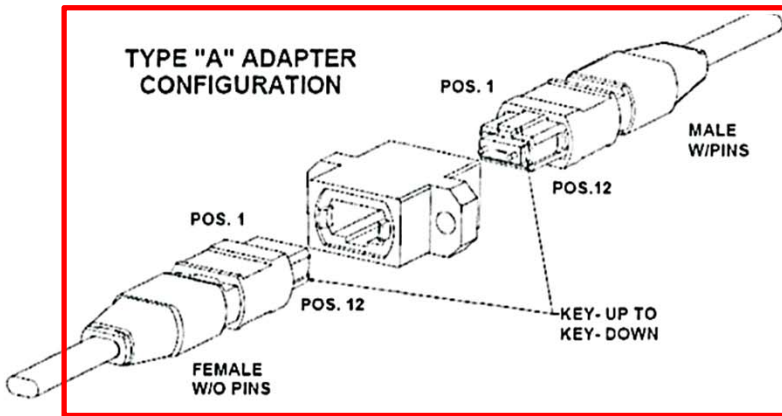
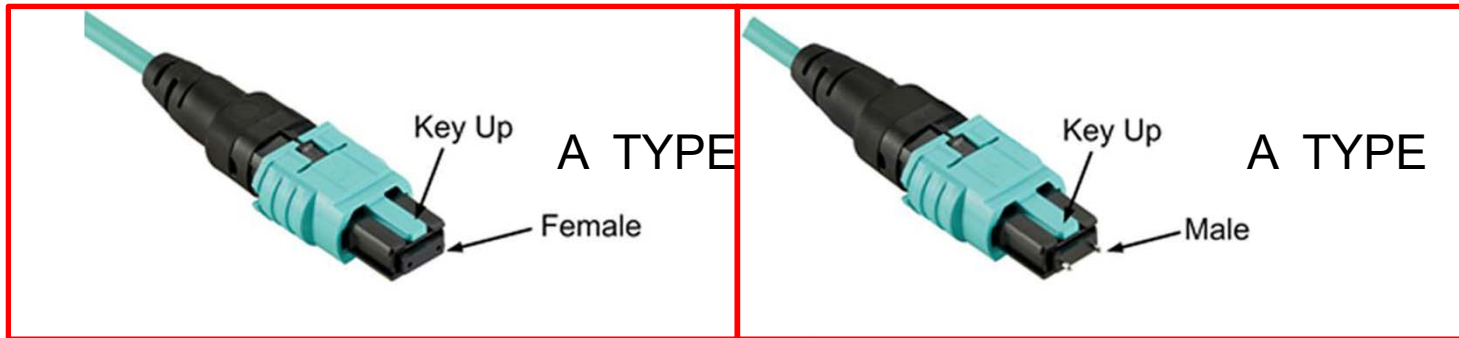
100GBASE-SR10 options B and C



	10G/Fiber	25G/Fiber	25G/l - 4l /Fiber
10G	●●	N/A	N/A
25G	N/A	●●	N/A
40G	●●●●●●●●●●	N/A	N/A
100G	●●●●●●●●●● ●●●●●●●●●●	●●●●●●●●●●	●●●●
400G	N/A	●●●●●●●●●● ●●●●●●●●●●	●●●●●●●●●●



MPO/MTP Connector & Adapter Type

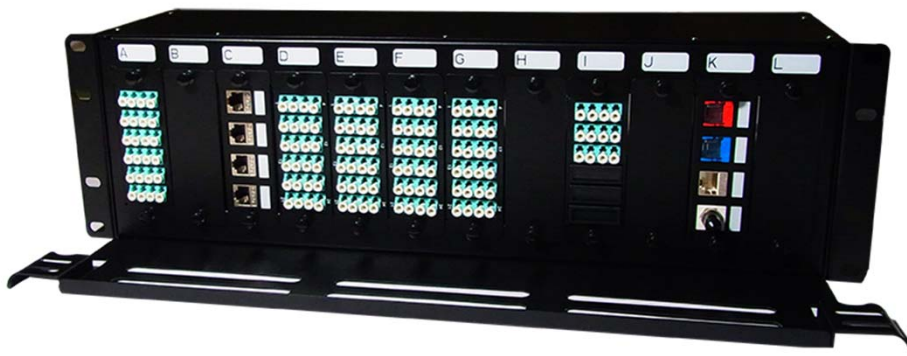


MPO /MTP Panel

IU 4Cassette(24LC) Panel



3U 12 (24LC)Cassette Panel



2U 12 Cassette Panel
(可專案訂購)

Cassette Function

24LC/MPOx2 Cassette



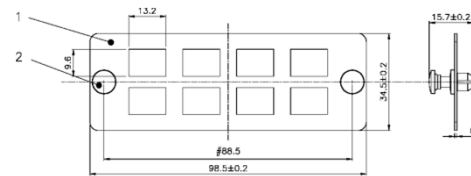
Universal Panel



Blank Panel



12LC/MPOx1 Cassette

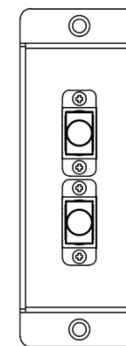
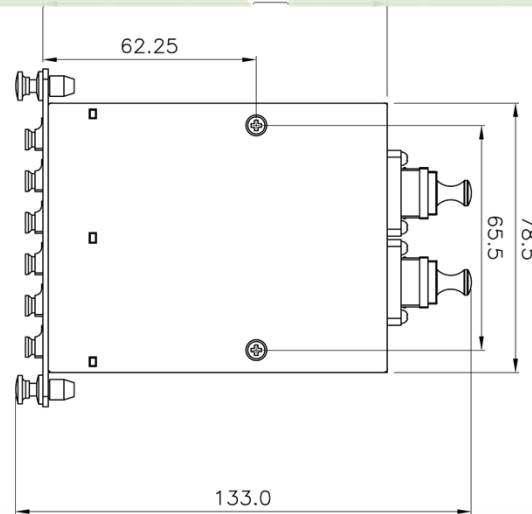
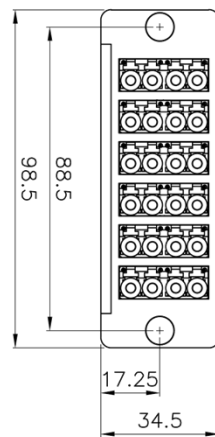


8 PORT MPO Panel

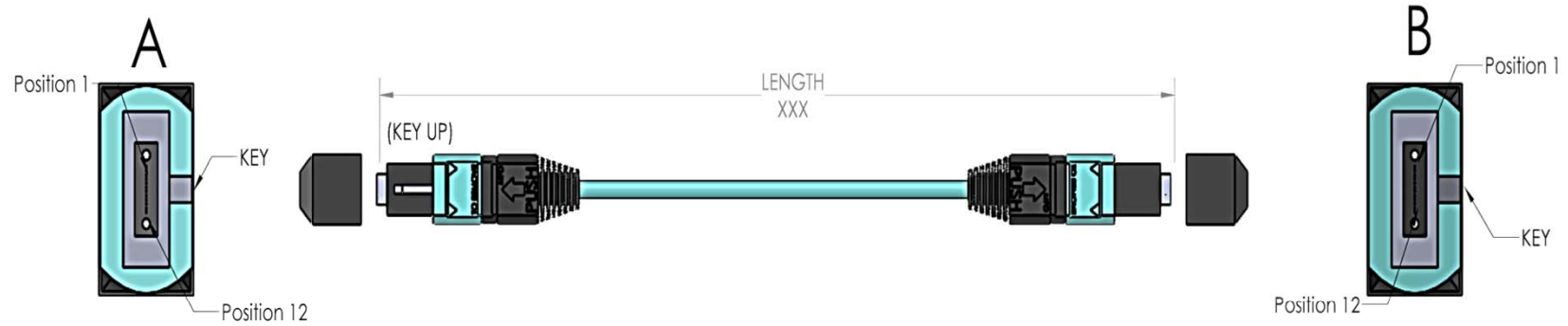


MPO/MTP Cassette Function

Fiber color	MPO/MTP Connector . A	MPO/MTP Connector. B	Position # Connector B
• Blue	• 1	• 1	• A1 /B12/C2
• Orange	• 2	• 2	• A2 /B11/C1
• Green	• 3	• 3	• A3 /B10/C4
• Brown	• 4	• 4	• A4 /B 9 /C 3
• Grey	• 5	• 5	• A5 /B 8 /C 6
• White	• 6	• 6	• A6 /B 7 /C 5
• Red	• 7	• 7	• A7 /B 6 /C 8
• Black	• 8	• 8	• A8 /B 5 /C 7
• Yellow	• 9	• 9	• A9 /B 4 /C10
• Purple	• 10	• 10	• A10/B 3 /C 9
• Pink	• 11	• 11	• A11/B 2 /C12
• Aqua	• 12	• 12	• A12/B 1 /C11

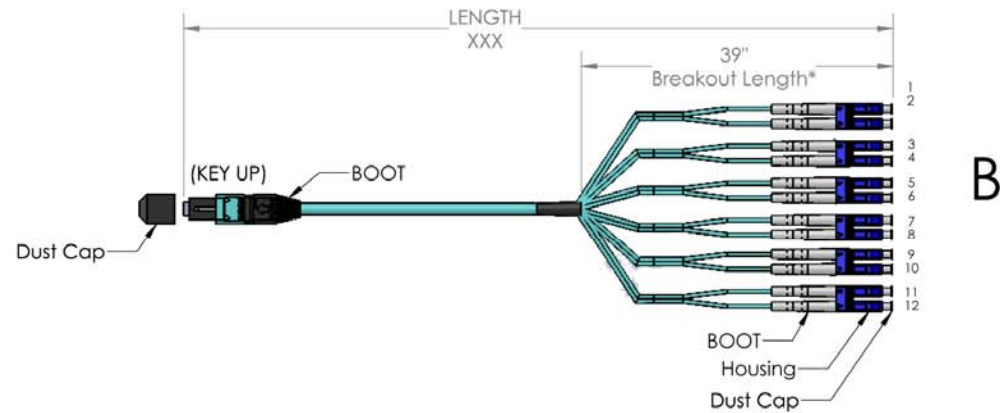
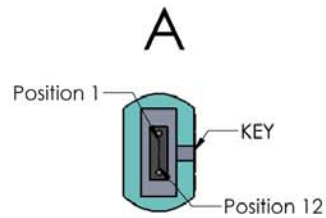


MPO/MTP 10G Trunk cable



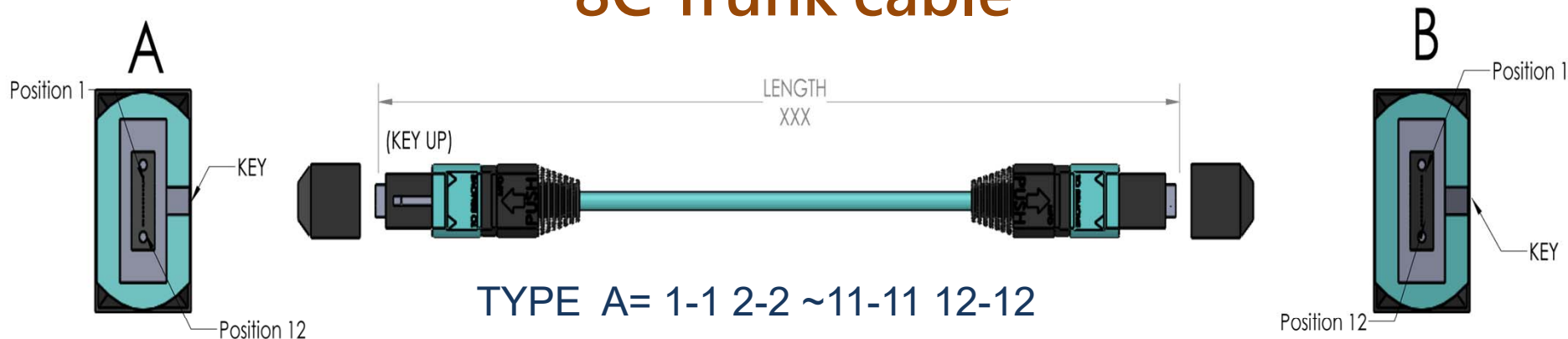
Fiber color	Connector A	Position # Connector A	Position # Connector B
• Blue	• TX1	• 1	• A1 /B1 2/C2
• Orange	• TX2	• 2	• A2 /B 11/C1
• Green	• TX3	• 3	• A3 /B 10/C4
• Brown	• TX4	• 4	• A4 /B 9 /C 3
• Grey	• TX5	• 5	• A5 /B 8 /C 6
• White	• TX6	• 6	• A6 /B 7 /C 5
• Red	• TX7	• 7	• A7 /B 6 /C 8
• Black	• TX8	• 8	• A8 /B 5 /C 7
• Yellow	• TX9	• 9	• A9 /B 4 /C 10
• Purple	• TX10	• 10	• A10/B 3 /C 9
• Pink	• TX11	• 11	• A11/B 2 /C12
• Aqua	• TX12	• 12	• A12/B 1 /C11

MPO FAN-OUT Cable



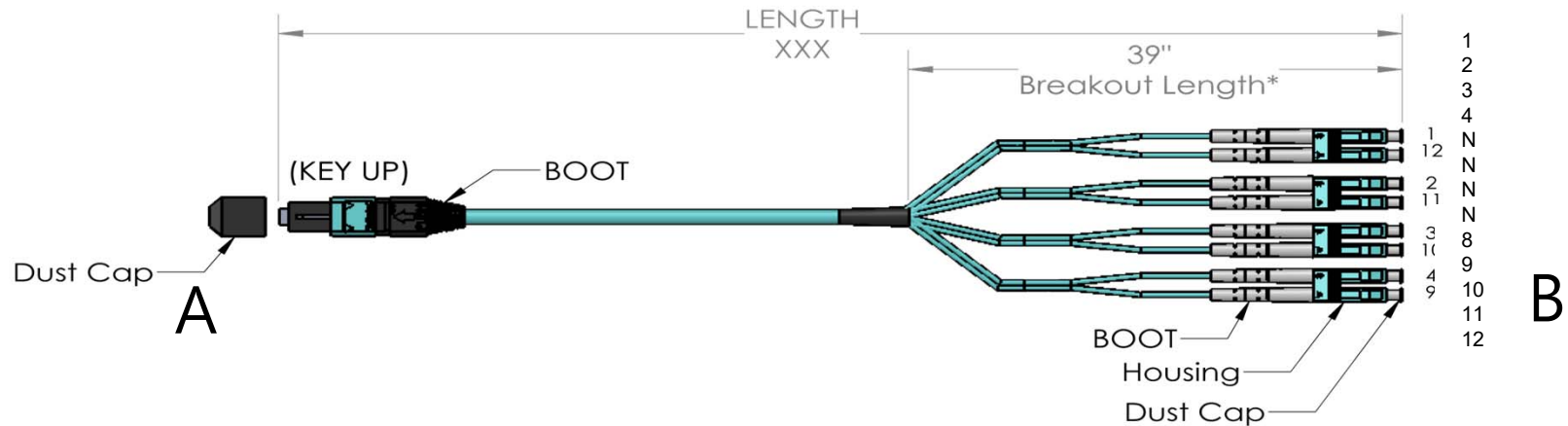
Fiber color	Connector A	Position # Connector A	Position # Connector B
• Blue	• TX1	• 1	• A1 /B 2/C12
• Orange	• TX2	• 2	• A2 /B 1/C11
• Green	• TX3	• 3	• A3 /B 4/C10
• Brown	• TX4	• 4	• A4 /B 3/ C 9
• Grey	• TX5	• 5	• A5 /B 6/ C 8
• White	• TX6	• 6	• A6 /B 5/ C 7
• Red	• TX7	• 7	• A7 /B 8/ C 6
• Black	• TX8	• 8	• A8 /B 7/ C 5
• Yellow	• TX9	• 9	• A9 /B10/ C 4
• Purple	• TX10	• 10	• A10/B 9/ C 3
• Pink	• TX11	• 11	• A11/B12/C 2
• Aqua	• TX12	• 12	• A12/B11/C 1

MPO/MTP 40/100G 8C Trunk cable



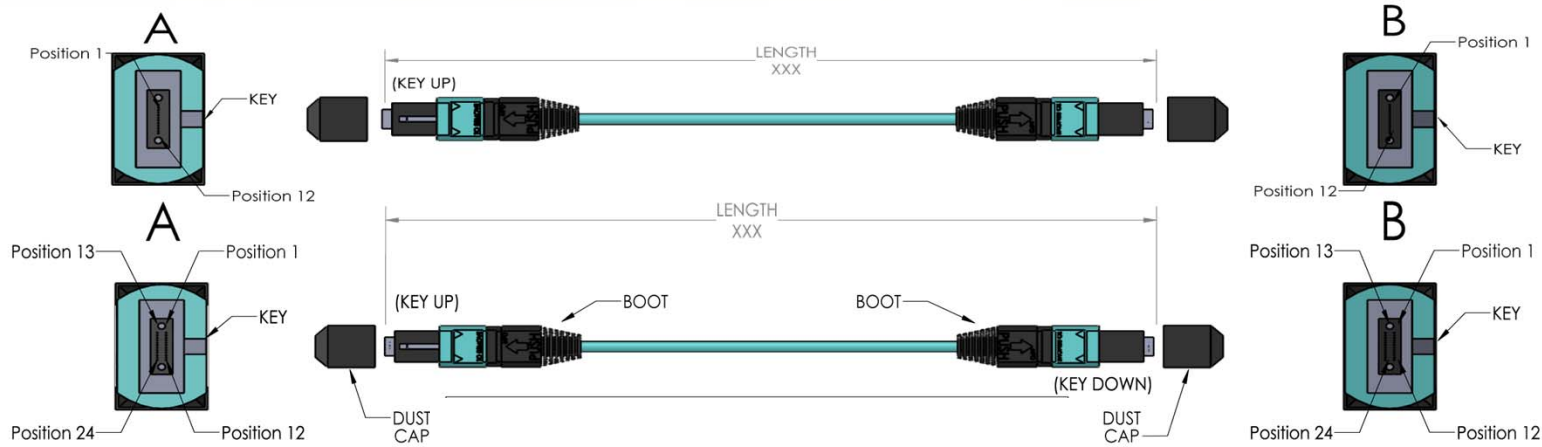
Fiber color	Connector A	Position # Connector A	Position # Connector B	Connector B
• Blue	• TX1	• 1	• 12	• RX1
• Orange	• TX2	• 2	• 11	• RX2
• Green	• TX3	• 3	• 10	• RX3
• Brown	• TX4	• 4	• 9	• RX4
• Grey	• Not Used	• 5	• 8	• Not Used
• White	• Not Used	• 6	• 7	• Not Used
• Red	• Not Used	• 7	• 6	• Not Used
• Black	• Not Used	• 8	• 5	• Not Used
• Yellow	• TX5	• 9	• 4	• RX5
• Purple	• Tx6	• 10	• 3	• Rx6
• Pink	• TX7	• 11	• 2	• RX7
• Aqua	• TX8	• 12	• 1	• RX8

MPO/LC 40/100G 8 C Fan-out cable



Fiber color	Connector A	Position # Connector A	Position # Connector B	Connector B
• Blue	• TX1	• 1	• 12	• RX1
• Orange	• TX2	• 2	• 11	• RX2
• Green	• TX3	• 3	• 10	• RX3
• Brown	• TX4	• 4	• 9	• RX4
• Grey	• Not Used	• 5	• 8	• Not Used
• White	• Not Used	• 6	• 7	• Not Used
• Red	• Not Used	• 7	• 6	• Not Used
• Black	• Not Used	• 8	• 5	• Not Used
• Yellow	• TX5	• 9	• 4	• RX5
• Purple	• Tx6	• 10	• 3	• Rx6
• Pink	• TX7	• 11	• 2	• RX7
• Aqua	• TX8	• 12	• 1	• RX8

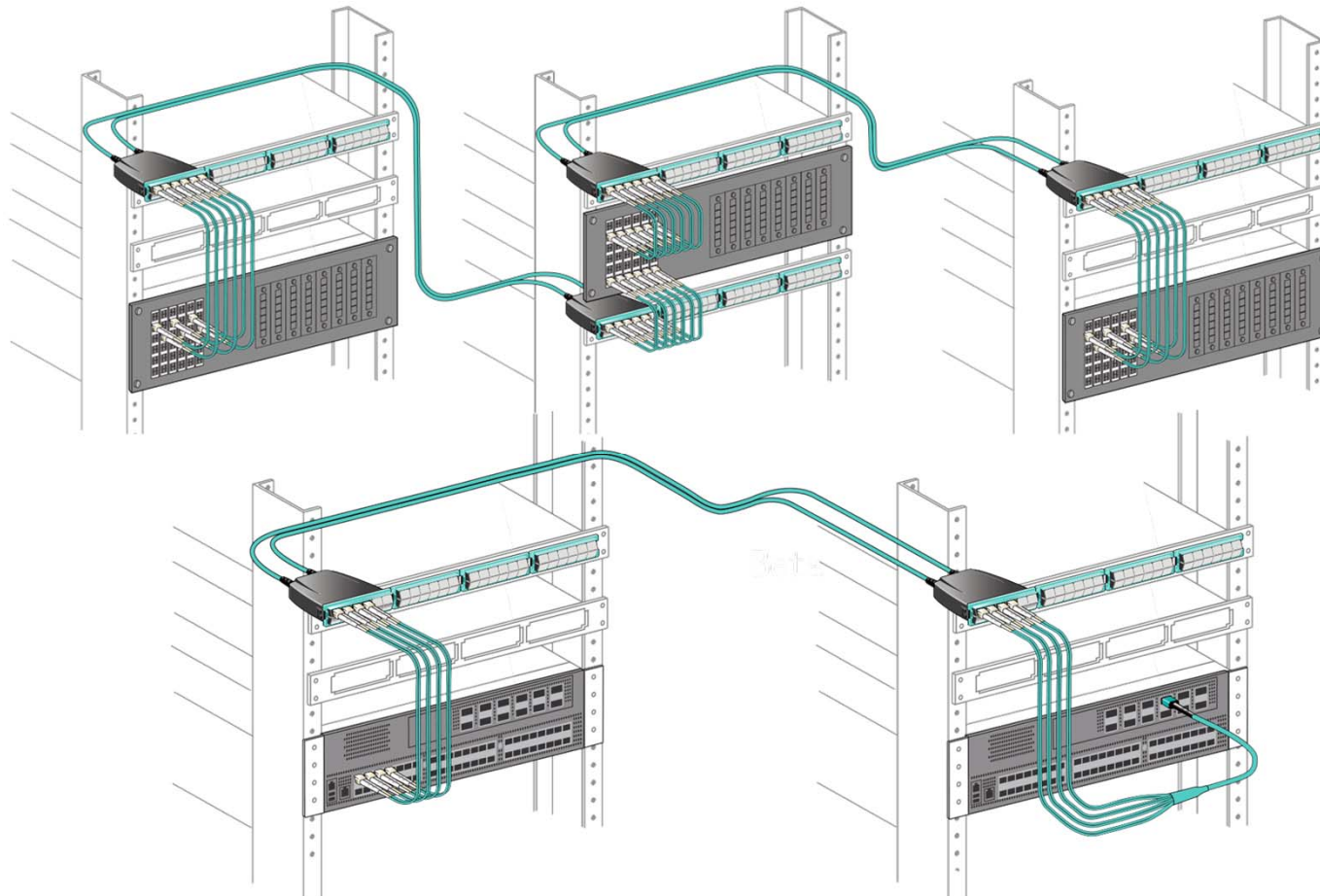
MPO/MTP 100G 12/24C 幹纜線位圖 (Pin map)



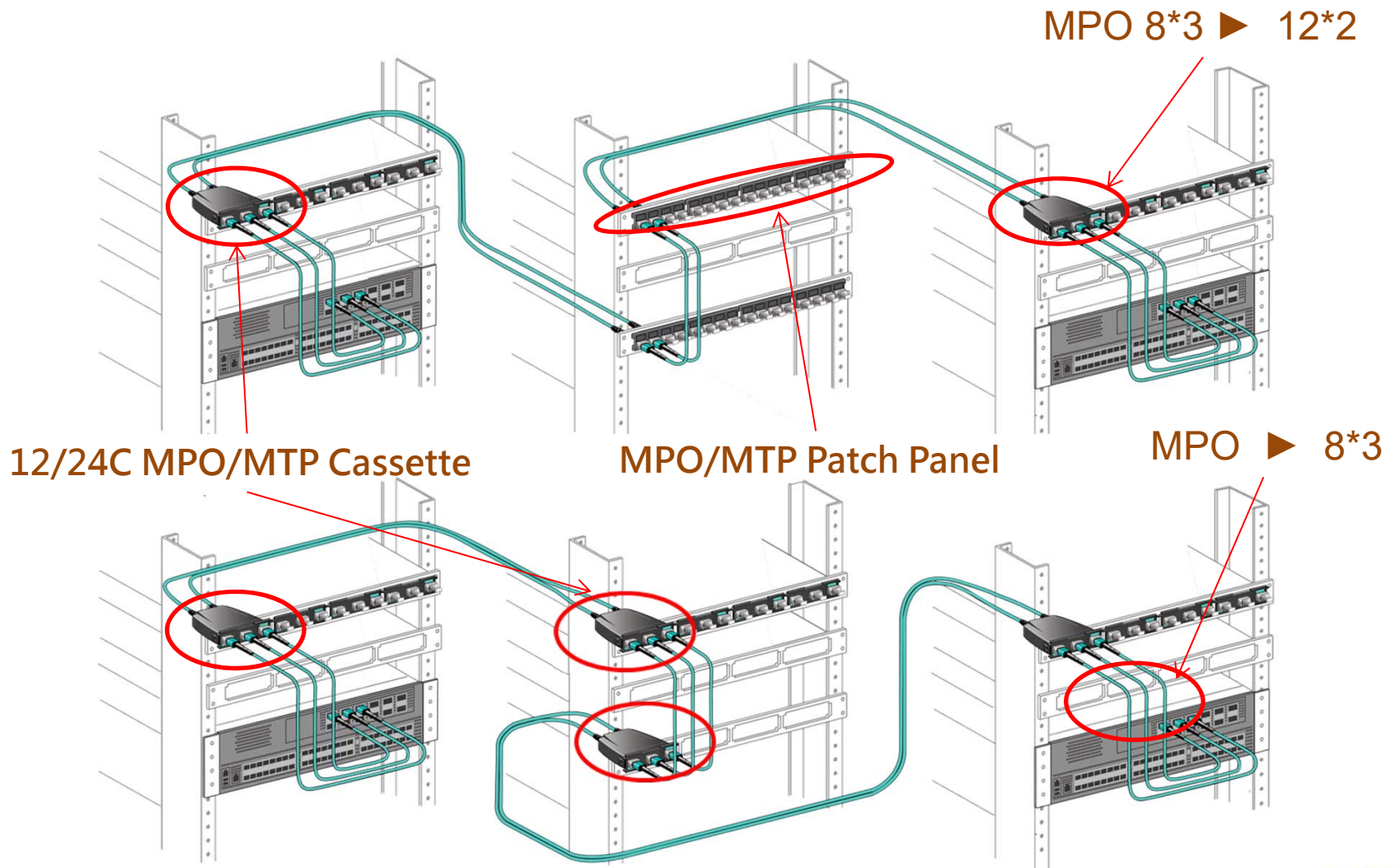
Fiber color	Connector A/B	Position # Connector A/B	Position # Connector B/A	Connector B
• Blue	• Unused	• 1/13	• 13/1	• Unused
• Orange	• TX0 /RX0	• 2/14	• 14/2	• RX0/TX0
• Green	• TX1/RX1	• 3/15	• 15/3	• RX1/TX1
• Brown	• TX2/RX2	• 4/16	• 16/4	• RX2/TX2
• Grey	• TX3/RX3	• 5/17	• 17/5	• RX3/TX3
• White	• TX4/RX4	• 6/18	• 18/6	• RX4/TX4
• Red	• TX5/RX5	• 7/19	• 19/7	• RX5/TX5
• Black	• TX6/RX6	• 8/20	• 20/8	• RX6/TX6
• Yellow	• TX7/RX7	• 9/21	• 21/9	• RX7/TX7
• Purple	• TX8/RX8	• 10/22	• 22/10	• RX8/TX8
• Pink	• TX9/RX9	• 11/23	• 23/11	• RX9/TX9
• Aqua	• Unused	• 12/24	• 24/12	• Unused

Basic Installation

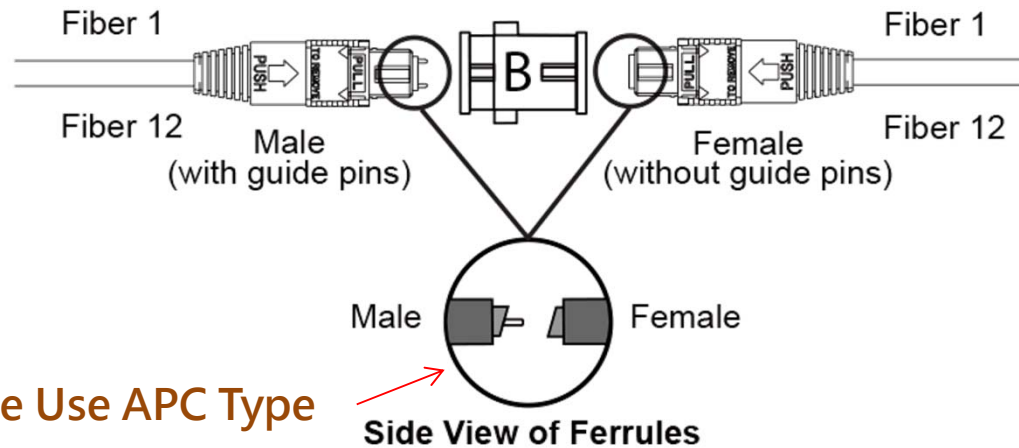
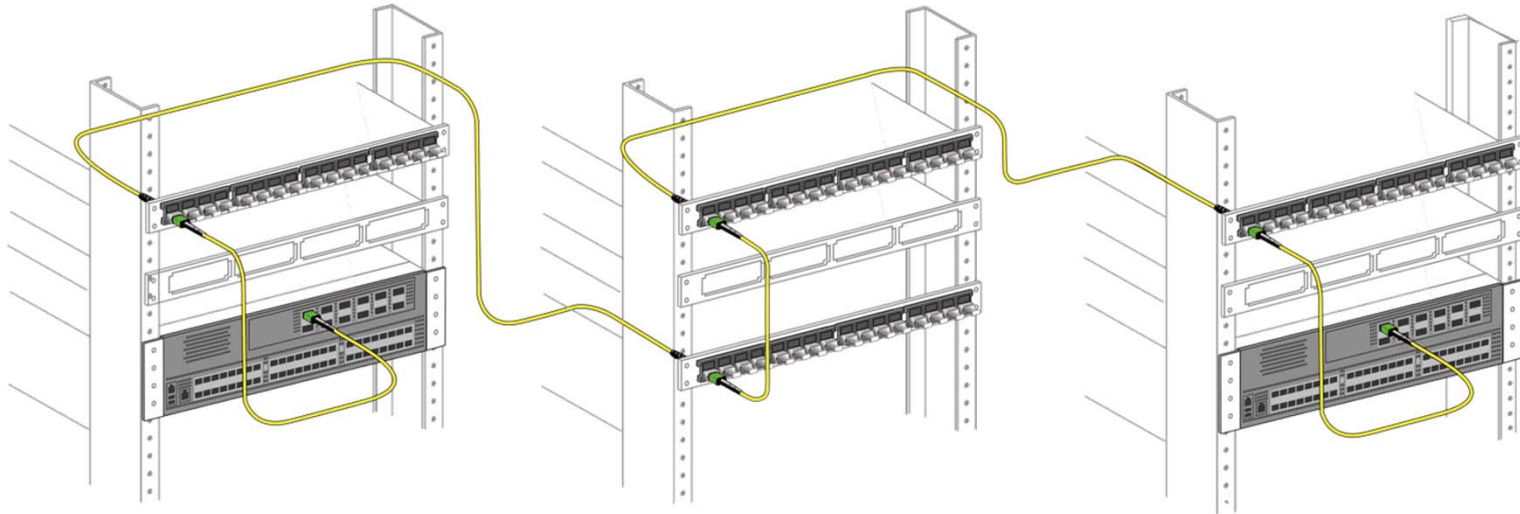
Fan-out cable + MPO/MTP cassette + 24/12C MPO Trunk Cable



40/100G MPO/MTP



Single-Mode



Single-Mode Use APC Type

MPO/MTP Performance Testing

MPO Level	IL/Lose	500Mating Test	Temp. Test -20~60°
M/M Normal Lose	<0.55dB	<0.2dB	0.2dB
Low Lose	<0.35dB	<0.2dB	0.2dB
S/M Normal	<0.50dB	<0.2dB	0.2dB
S/M Low lose	<0.35dB	<0.2dB	0.2dB

理線架與 V型配線架

Cable management and V-type patch panel



1U 60/120mm 水平上下掀蓋式理線架
Up and down horizontal cable management



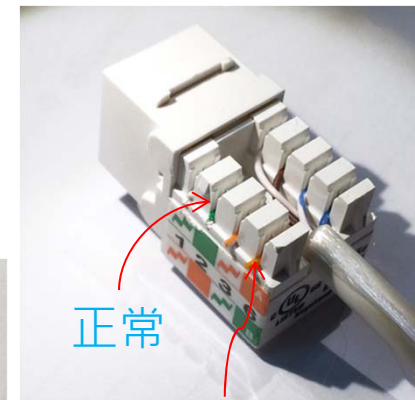
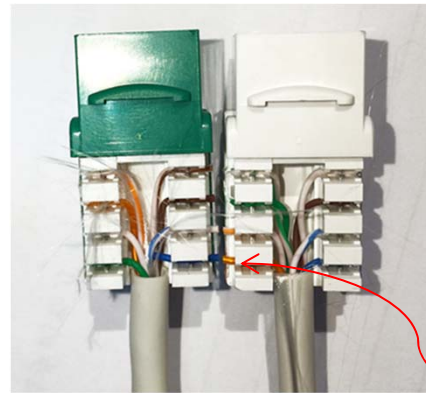
水平垂直兩用150mm
H&V can be use

常發現的問題 (Trouble Shutting)

- 跳線的特性質影響通路測試的測值
(更換基準線)使用較好的跳線
- RJ45 資訊插座與PULG 接觸問題
- 90°資訊插座相鄰組裝 會影響
- 號碼環或貼紙標示問題

Keystone 影響測值(Affect the measurement)

- 切線不平整 “ 相鄰線位 ”
- 資訊插座排線方式
- STP 鐵殼影響



正常

太長

在模組式配線架或多孔面板相鄰過近會有影響

Patch cord & Plug 導通問題(Turn on the problem)

最常見壓傷
PLUG 導槽

RJ`45工具壓痕
常見於1' 8Pin



測試與比較(Test and Compare)

- C6A Permanent Link 5M Test
- C6 Permanent Link 5M 15M Test
- C6 Channel Test
- C6 test for C6A SPEC Test

5M Perm. Link Test



CAT.6A Perm. Link 5M Headroom (NEXT) 2.2dB

電纜識別碼: WONDERFUL CAT.6A FTP 23AWG 5M

Cat 6A U/UTP

12/23/2015 10:37 AM

TIA Cat 6A Perm. Link
DSX-5000

餘量(Headroom) (NEXT): 2.2 dB
序號: 2968403

通過

測試	詳細	狀態	數值	極限	餘量
插入損耗 (dB)	線對 36, 500.0 MHz	通過	3.9	43.8	39.9
NEXT (dB)	線對 36-45, 392.0 MHz	通過	32.4	30.2	2.2
PS NEXT (dB)	線對 36, 393.0 MHz	通過	29.7	27.4	2.3
ACR-N (dB)	線對 12-36, 3.3 MHz	無效	80.9	61.8	19.1
PS ACR-N (dB)	線對 36, 3.3 MHz	無效	78.5	58.8	19.7
ACR-F (dB)	線對 12-45, 7.3 MHz	通過	65.5	47.0	18.5
PS ACR-F (dB)	線對 45, 1.0 MHz	通過	80.6	61.2	19.4
RL (dB)	線對 36, 477.0 MHz	通過	10.6	8.0	2.6
長度 (ft)	線對 12	通過	5.2M 18	295	277
傳導延遲 (ns)	線對 45	通過	28	498	470
時延偏離 (ns)	線對 36	通過	1	44	43
電阻值 (ohms)	線對 45	通過	1.0		
接線圖		通過			



5M + 2Mx2 Channel Test



CAT.6A Channel 5M 2+3M Headroom (NEXT) 4.7dB

電纜識別碼: WONDERFUL CAT.6A FTTP 23AWG JE285M
Cat 6A U/UTP
12/23/2015 04:41 PM

TIA Cat 6A Channel
DSX-5000

餘量(Headroom) (NEXT): 4.7 dB
序號: 2968403

通過

28AWG 跳線

測試	詳細	狀態	數值	極限	餘量
插入損耗 (dB)	線對 36, 482.0 MHz	通過	7.4	48.3	40.9
NEXT (dB)	線對 36-45, 412.0 MHz	通過	33.1	28.4	4.7
PS NEXT (dB)	線對 36, 372.0 MHz	通過	32.5	26.6	5.9
ACR-N (dB)	線對 45-78, 2.8 MHz	無效	79.2	61.5	17.7
PS ACR-N (dB)	線對 78, 3.0 MHz	無效	77.0	58.4	18.6
ACR-F (dB)	線對 78-36, 420.0 MHz	通過	23.0	10.8	12.2
PS ACR-F (dB)	線對 36, 418.0 MHz	通過	21.1	7.8	13.3
RL (dB)	線對 36, 499.0 MHz	通過	13.1	6.0	7.1
長度 (ft)	線對 12	通過	33	328	295
傳導延遲 (ns)	線對 45	通過	51	555	504
時延偏離 (ns)	線對 36	通過	1	50	49
電阻值 (ohms)	線對 45		2.8		
接線圖		通過			

(NEXT) 5.2dB

電纜識別碼: WONDERFUL CAT.6A FTTP 23AWG JE265M
Cat 6A U/UTP
12/23/2015 04:42 PM

TIA Cat 6A Channel
DSX-5000

餘量(Headroom) (NEXT): 5.2 dB
序號: 2968403

通過

26AWG 跳線

測試	詳細	狀態	數值	極限	餘量
插入損耗 (dB)	線對 36, 458.0 MHz	通過	7.5	47.0	39.5
NEXT (dB)	線對 12-36, 396.0 MHz	通過	34.1	28.9	5.2
PS NEXT (dB)	線對 36, 394.0 MHz	通過	32.0	26.0	6.0
ACR-N (dB)	線對 36-78, 2.6 MHz	無效	79.0	61.6	17.4
PS ACR-N (dB)	線對 78, 3.3 MHz	無效	76.6	58.2	18.4
ACR-F (dB)	線對 45-36, 373.0 MHz	通過	24.7	11.8	12.9
PS ACR-F (dB)	線對 36, 395.0 MHz	通過	23.7	8.3	15.4
RL (dB)	線對 36, 456.0 MHz	通過	9.7	6.0	3.7
長度 (ft)	線對 12	通過	34	328	294
傳導延遲 (ns)	線對 45	通過	53	555	502
時延偏離 (ns)	線對 45	通過	2	50	48
電阻值 (ohms)	線對 45		2.4		
接線圖		通過			

5M 2+3M = 10M

Wonderful Hi-Tech



CAT.6A VS Brand A



Wonderful VS Brand A

電纜識別碼	摘要	測試標準	長度	餘量(Headroom)	日期/時間
SYSTIMAX CAT.6A UTP 23AWG 5M	通過	TIA Cat 6A Perm. Link	18 ft	2.8 dB (NEXT)	12/23/2015 10:40 AM
WONDERFUL CAT.6A FTP 23AWG 5M	通過	TIA Cat 6A Perm. Link	18 ft	2.2 dB (NEXT)	12/23/2015 10:37 AM
SYSTIMAX CAT.6A UTP 23AWG 26 6M	通過	TIA Cat 6A Channel	37 ft	5.4 dB (NEXT)	12/23/2015 04:36 PM
WONDERFUL CAT.6A FTP 23AWG 26 6M	通過	TIA Cat 6A Channel	36 ft	5.5 dB (NEXT)	12/23/2015 04:35 PM
WONDERFUL CAT.6A FTP 23AWG 28 5M	通過	TIA Cat 6A Channel	33 ft	4.7 dB (NEXT)	12/23/2015 04:41 PM
SYSTIMAX CAT.6A UTP 23AWG 28 5M	通過	TIA Cat 6A Channel	33 ft	5.3 dB (NEXT)	12/23/2015 04:39 PM

5.2M Perm.Link Headroom 2.8/2.2dB

5.2M 2+3M 26AWG PC Channel Headroom 5.4 / 5.5dB

5.2M 2+3M 28AWG PC Channel Headroom 4.7/ 5.3dB

CAT.6 UTP Channel vs Other Brand



電纜識別碼	摘要	測試標準	長度	餘量(Headroom)	日期/時間
CAT.6 UTP 15M 23AWG 24HDWN	失敗	TIA Cat 6 Channel	18.4 m	-0.4 dB (NEXT)	12/25/2015 01:36 PM
CAT.6 UTP 15M 23AWG 28PC WN	通過	TIA Cat 6 Channel	18.6 m	4.7 dB (NEXT)	12/25/2015 01:35 PM
CAT.6 UTP 15M 23AWG 26PC WN	通過	TIA Cat 6 Channel	18.4 m	4.2 dB (NEXT)	12/25/2015 01:34 PM
CAT.6 UTP 15M 23AWG 24PC WN	通過	TIA Cat 6 Channel	18.4 m	4.7 dB (NEXT)	12/25/2015 01:33 PM
CAT.6 UTP 15M 23AWG 24HD AMP	失敗	TIA Cat 6 Channel	18.8 m	-1.2 dB (NEXT)	12/25/2015 12:18 PM
CAT.6 UTP 15M 23AWG 28PCAMP	通過	TIA Cat 6 Channel	19.0 m	4.7 dB (NEXT)	12/25/2015 12:17 PM
CAT.6 UTP 15M 23AWG26PC AMP	通過	TIA Cat 6 Channel	18.8 m	1.7 dB (NEXT)	12/25/2015 12:17 PM
CAT.6 UTP 15M 23AWG 24PC AMP	通過	TIA Cat 6 Channel	18.8 m	4.8 dB (NEXT)	12/25/2015 12:16 PM
CAT.6 UTP 15M 23AWG 24HD SMX	失敗	TIA Cat 6 Channel	19.0 m	-1.5 dB (NEXT)	12/25/2015 12:15 PM
CAT.6 UTP 15M 23AWG 28PC SMX	通過	TIA Cat 6 Channel	18.8 m	6.5 dB (NEXT)	12/25/2015 12:14 PM
CAT.6 UTP 15M 23AWG 26PC SMX	通過	TIA Cat 6 Channel	19.0 m	3.4 dB (NEXT)	12/25/2015 12:13 PM
CAT.6 UTP 15M 23AWG 24PC SMX	通過	TIA Cat 6 Channel	19.0 m	3.9 dB (NEXT)	12/25/2015 12:12 PM
CAT.6 UTP 5M 23AWG 24HD AMP	失敗	TIA Cat 6 Channel	9.1 m	-1.6 dB (NEXT)	12/25/2015 12:06 PM
CAT.6 UTP 5M 23AWG 28PC AMP	通過	TIA Cat 6 Channel	9.1 m	5.7 dB (NEXT)	12/25/2015 12:05 PM
CAT.6 UTP 5M 23AWG 26PC AMP	通過	TIA Cat 6 Channel	9.1 m	3.0 dB (NEXT)	12/25/2015 12:05 PM
CAT.6 UTP 5M 23AWG 24PCAMP	通過	TIA Cat 6 Channel	9.1 m	2.3 dB (NEXT)	12/25/2015 12:04 PM
CAT.6 UTP 5M 23AWG 24HD SMX	失敗	TIA Cat 6 Channel	9.1 m	-2.1 dB (NEXT)	12/25/2015 12:02 PM
CAT.6 UTP 5M 23AWG 28PC SMX	通過	TIA Cat 6 Channel	9.1 m	4.1 dB (NEXT)	12/25/2015 12:01 PM
CAT.6 UTP 5M 23AWG 26PC SMX	通過	TIA Cat 6 Channel	9.1 m	1.9 dB (NEXT)	12/25/2015 12:00 PM
CAT.6 UTP 5M 23AWG 24PC SMX	通過	TIA Cat 6 Channel	9.1 m	3.1 dB (NEXT)	12/25/2015 11:59 AM
CAT.6 UTP 5M 24AWG 28PC WN	通過	TIA Cat 6 Channel	9.1 m	4.9 dB (NEXT)	12/25/2015 11:52 AM
CAT.6 UTP 5M 24AWG 24HD WN	失敗	TIA Cat 6 Channel	8.9 m	-2.7 dB (NEXT)	12/25/2015 11:51 AM
CAT.6 UTP 5M 24AWG 26PC WN	通過	TIA Cat 6 Channel	8.9 m	1.9 dB (NEXT)	12/25/2015 11:50 AM
CAT.6 UTP 5M 24AWG 24PC WN	通過	TIA Cat 6 Channel	8.9 m	1.9 dB (NEXT)	12/25/2015 11:49 AM

15M +2*3

Wonderful

15M +2*3

Brand TY

15M +2*3

Brand C

5M +2*3

Brand TY

5M +2*3

Brand C

5M +2*3

Wonderful



CAT.6 UTP 110M Test



Brand C 361FT 110M IL -0.1dB

電纜識別碼: SYSTIMAX CAT.6 UTP 23AWG 110M 失敗
 Cat 6 U/UTP TIA Cat 6 Channel 餘量(Headroom) (NEXT): 5.8 dB
 12/23/2015 01:22 PM DSX-5000 序號: 2968403

測試	詳細	狀態	數值	極限	餘量
插入損耗 (dB)	線對 36, 71.8 MHz	失敗	17.8	17.7	-0.1
NEXT (dB)	線對 36-45, 34.8 MHz	通過	53.4	47.6	5.8
PS NEXT (dB)	線對 36, 3.6 MHz	通過	67.7	61.2	6.5
ACR-N (dB)	線對 36-45, 34.8 MHz	無效	41.5	35.6	5.9
PS ACR-N (dB)	線對 36, 3.6 MHz	無效	64.0	57.4	6.6
ACR-F (dB)	線對 45-36, 198.0 MHz	失敗	16.5	17.3	-0.8
PS ACR-F (dB)	線對 36, 198.0 MHz	通過	16.2	14.3	1.9
RL (dB)	線對 12, 3.0 MHz	通過	25.7	19.0	6.7
長度 (ft)	線對 45	通過	361	328	-33
傳導延遲 (ns)	線對 12	失敗	560	555	-5
時延偏離 (ns)	線對 12	通過	28	50	22
電阻值 (ohms)	線對 12		15.9		
接線圖		通過			

Wonderful 363FT 110M IL -0.3dB

電纜識別碼: WONDERFUL CAT.6 UTP 24AWG 110M 失敗
 Cat 6 U/UTP TIA Cat 6 Channel 餘量(Headroom) (NEXT): 6.2 dB
 12/23/2015 01:23 PM DSX-5000 序號: 2968403

測試	詳細	狀態	數值	極限	餘量
插入損耗 (dB)	線對 45, 28.0 MHz	失敗	11.0	10.7	-0.3
NEXT (dB)	線對 12-78, 8.6 MHz	通過	63.8	57.6	6.2
PS NEXT (dB)	線對 36, 5.5 MHz	通過	65.5	58.3	7.2
ACR-N (dB)	線對 12-78, 8.6 MHz	無效	58.0	51.7	6.3
PS ACR-N (dB)	線對 36, 5.5 MHz	無效	60.8	53.6	7.2
ACR-F (dB)	線對 36-45, 230.0 MHz	通過*	17.2	16.0	1.2
PS ACR-F (dB)	線對 45, 230.0 MHz	通過	16.9	13.0	3.9
RL (dB)	線對 78, 53.5 MHz	通過	17.2	14.7	2.5
長度 (ft)	線對 78	失敗	363	328	-35
傳導延遲 (ns)	線對 45	失敗	561	555	-6
時延偏離 (ns)	線對 45	通過	26	50	24
電阻值 (ohms)	線對 45		18.0		
接線圖		通過			

Wonderful Hi-Tech



CAT.6 Cable Test CAT.6A Spec

C6 Cable Can use in C6A /10G 60M



CAT.6 54M Perm. link WON 0.4dB
Brand A -1.2dB

電纜識別碼	摘要	測試標準	長度	餘量(Headroom)	日期/時間
6/6A-52M PR-WN	通過*	TIA Cat 6A Perm. Link	172 ft	0.4 dB (NEXT)	12/31/2015 11:16 AM
6/6A-52M PR-STX	失敗	TIA Cat 6A Perm. Link	174 ft	-1.2 dB (NEXT)	12/31/2015 11:22 AM
電纜識別碼	摘要	測試標準	長度	餘量(Headroom)	日期/時間
6/6A-15M PR-WN	通過*	TIA Cat 6A Perm. Link	50 ft	0.6 dB (NEXT)	12/29/2015 01:18 PM
6/6A-15M PR-STX	通過*	TIA Cat 6A Perm. Link	48 ft	0.1 dB (NEXT)	12/29/2015 01:21 PM
6/6A-15M PR-TE	失敗	TIA Cat 6A Perm. Link	48 ft	-2.0 dB (NEXT)	12/29/2015 01:24 PM
6/6A-15M PR-NXS	失敗	TIA Cat 6A Perm. Link	48 ft	-2.6 dB (NEXT)	12/29/2015 01:26 PM
6/6A-15M PR-AS	失敗	TIA Cat 6A Perm. Link	48 ft	-1.1 dB (NEXT)	12/29/2015 01:30 PM
電纜識別碼	摘要	測試標準	長度	餘量(Headroom)	日期/時間
6/6A-56M CH-WN	通過	TIA Cat 6A Channel	185 ft	5.0 dB (NEXT)	12/31/2015 11:51 AM
6/6A-56M CH-STX	通過*	TIA Cat 6A Channel	188 ft	2.0 dB (NEXT)	12/31/2015 11:53 AM

CAT.6A Perm. Link WON 0.6dB
C 0.1dB
TY -2.0dB
NX -2.6dB
AS -1.1dB

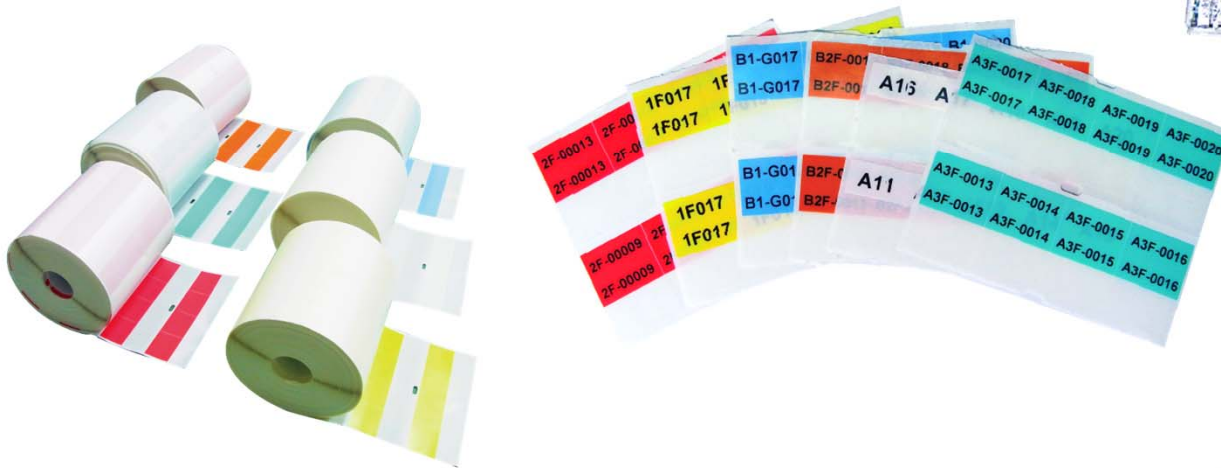
CAT.6A 54M Channel WON 5.0dB
Brand C 2.0dB



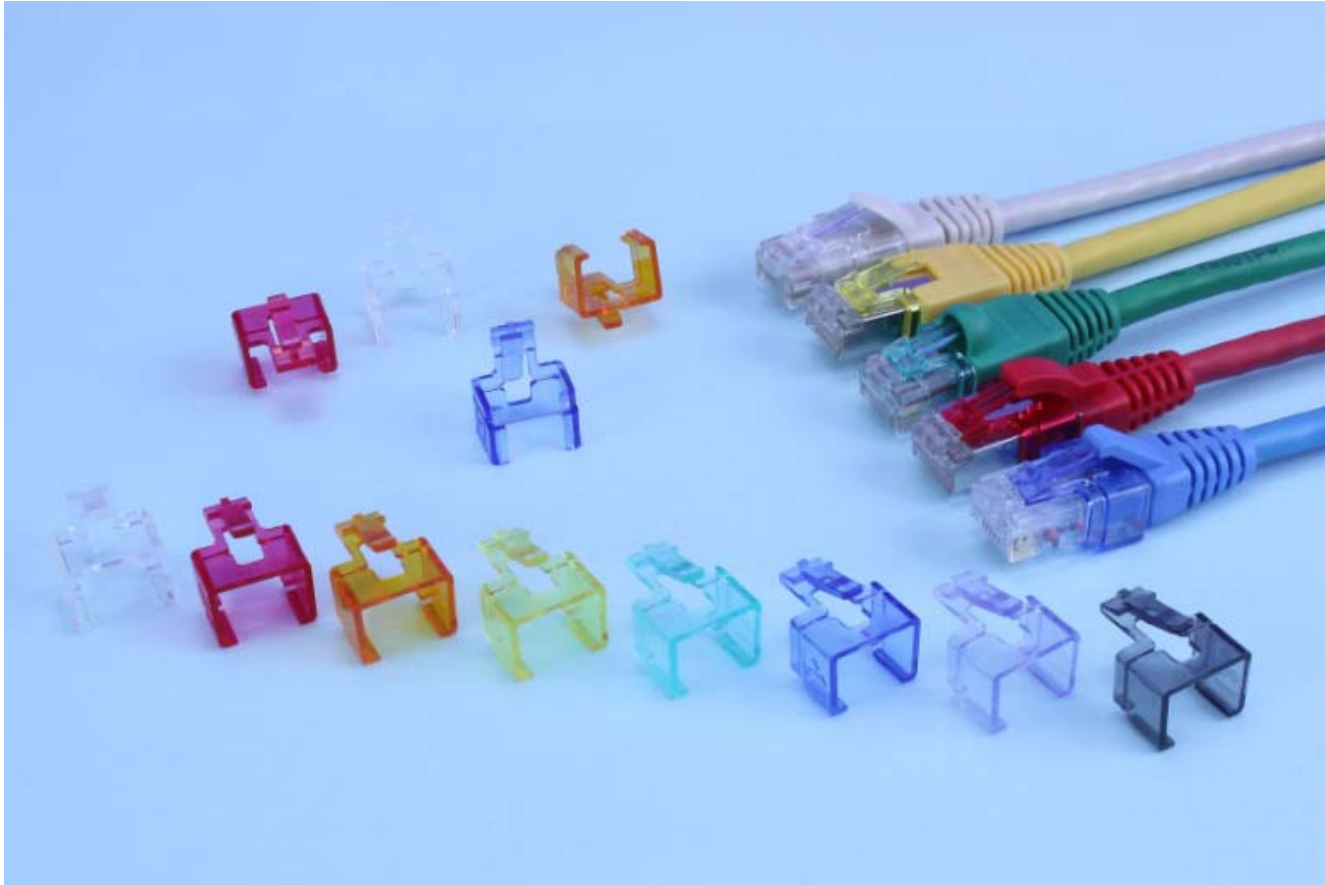
Cable label (Color)

- 適合現場施工及機架安裝
- 一般標籤機即可列印
- 彈性材質可服貼在線纜上
- 6種顏色(以上需訂製)
- 調整貼紙間距可上下面都有標示
- 適用溫度範圍:-20°C~150°C

配合庫存廠製跳線 '不再受制於套號碼環加工'
即時安裝



PLUG SOS



PLUG SOS

V. 20150212

PLUG-SOS

* Quick & Easy to repair a damaged plug

PATENT

Suitable for broken latch

Not suitable for cleaned latch

Repair a damaged plug

↓ Assembly

↓ Finish

Damaged plug → Finish

⚠ Don't let PLUG-SOS over the nose that will cause jam in Jack !!!

17.2
13.9
10.2

V. 20150212

PLUG-SOS

* Quick & Easy for patch cord color management

PATENT

1. Bending the latch by using fingers till it breaks.
Or using cutter to cut the latch with proper remaining length.
If the remaining length is too short or too long, which will cause in bad conjunction.
2. To choose different colors from PLUG-SOS for patch cord color management.

✓

proper length

✗
too short

✗
too long

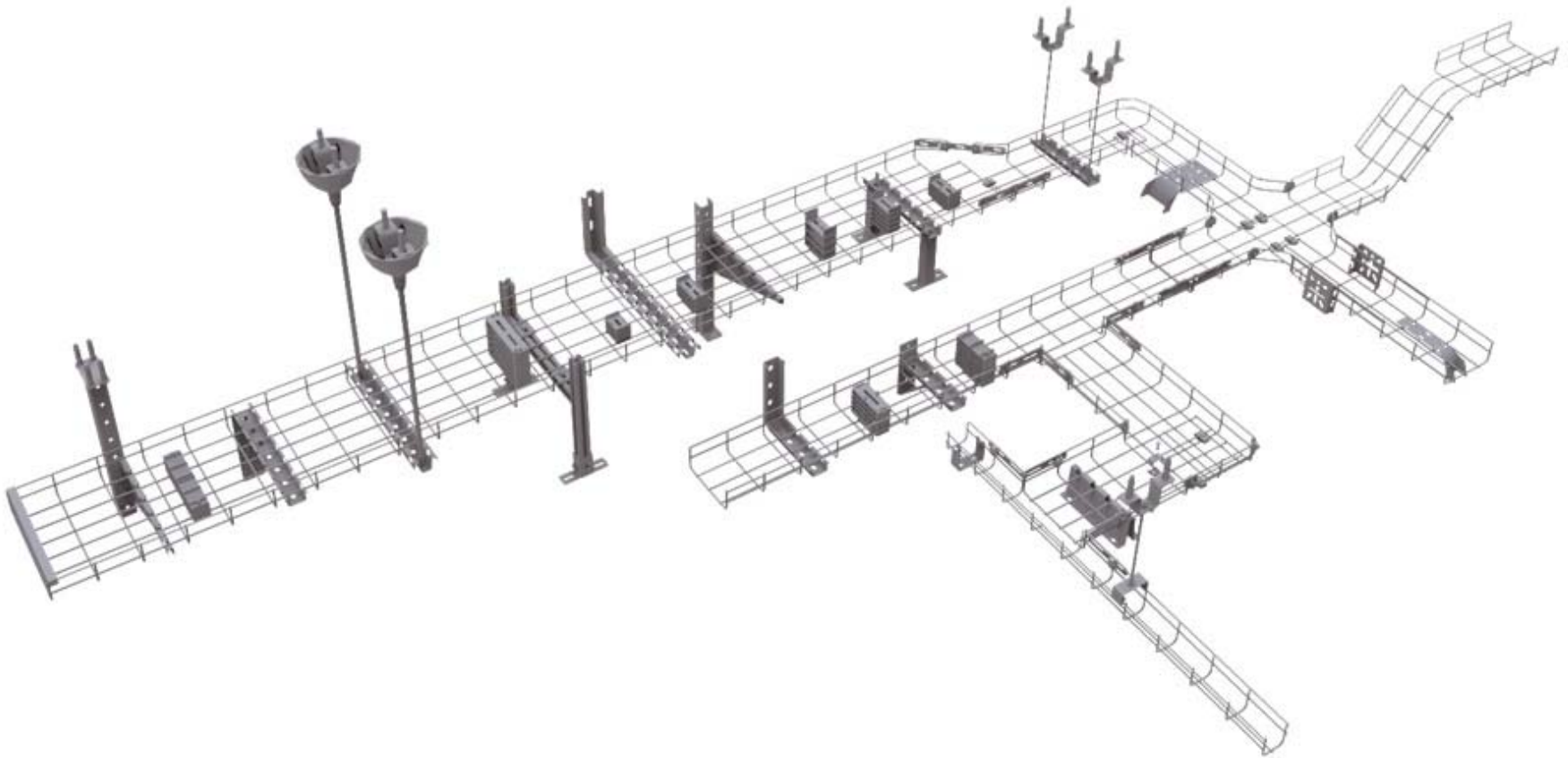
8 colors available :

1. Transparent
2. Transparent red
3. Transparent blue
4. Transparent black
5. Transparent green
6. Transparent purple
7. Transparent yellow
8. Transparent orange

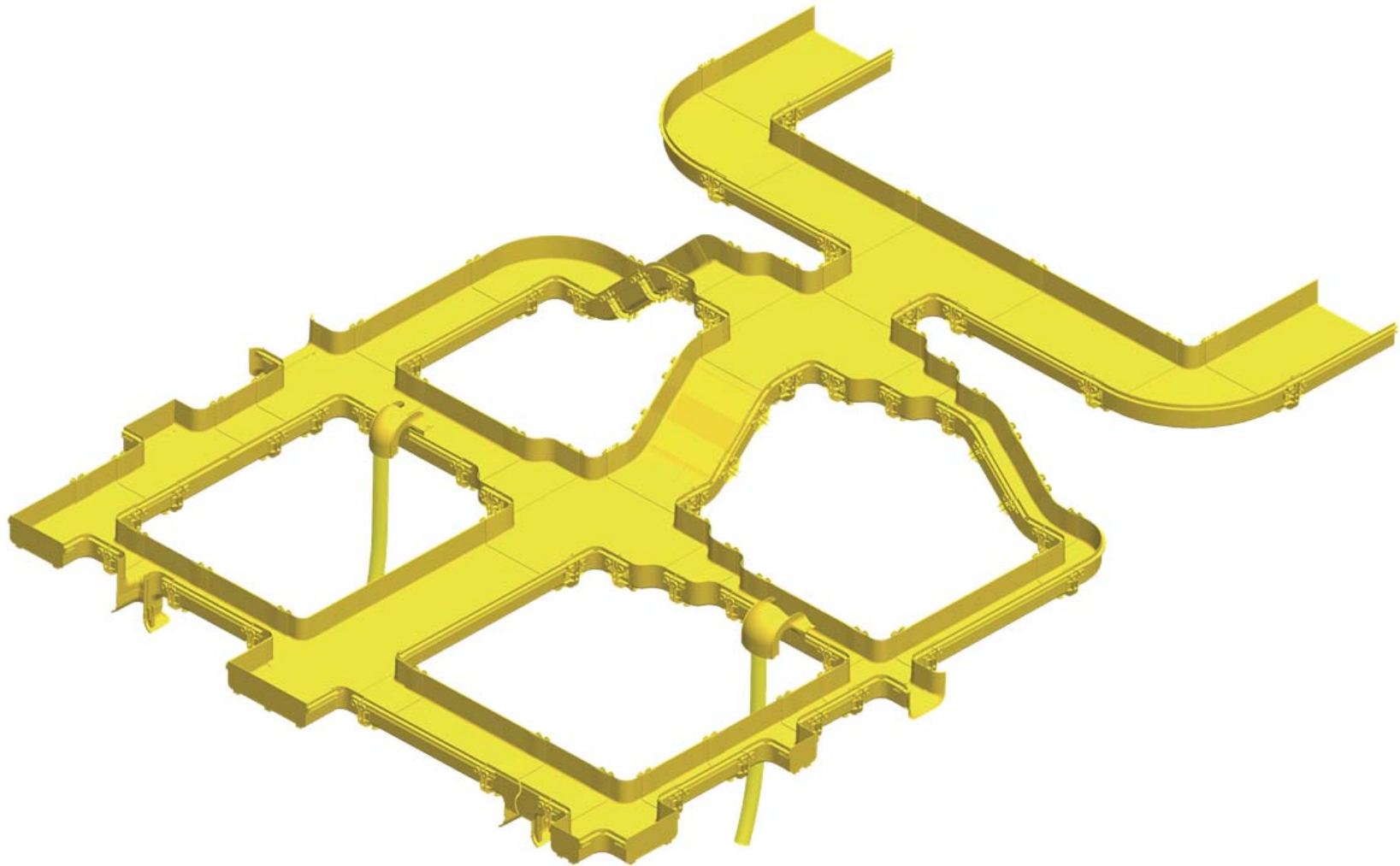
Other colors also available to offer



Wire Mesh Cable Tray

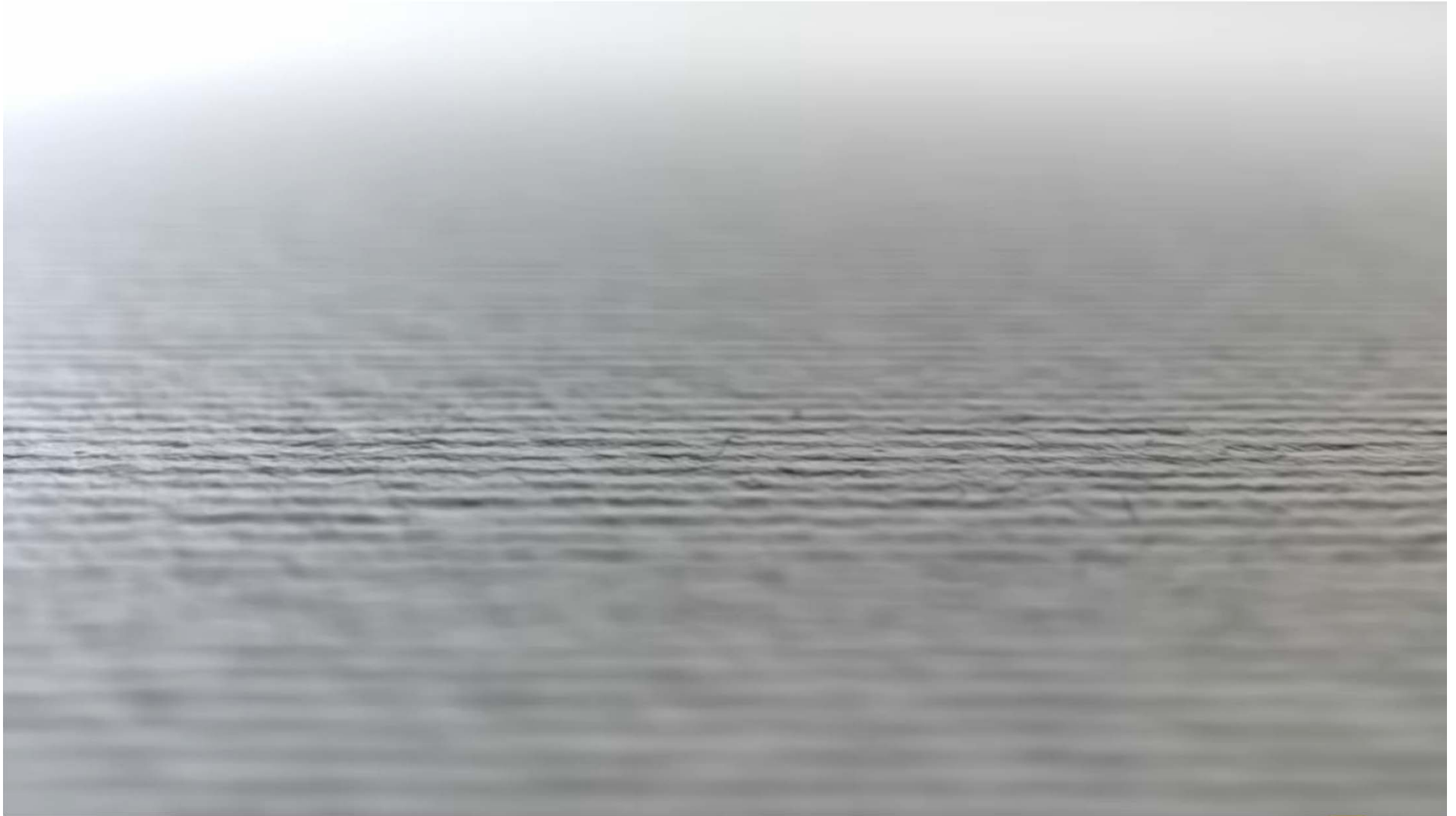


Fiber Race way





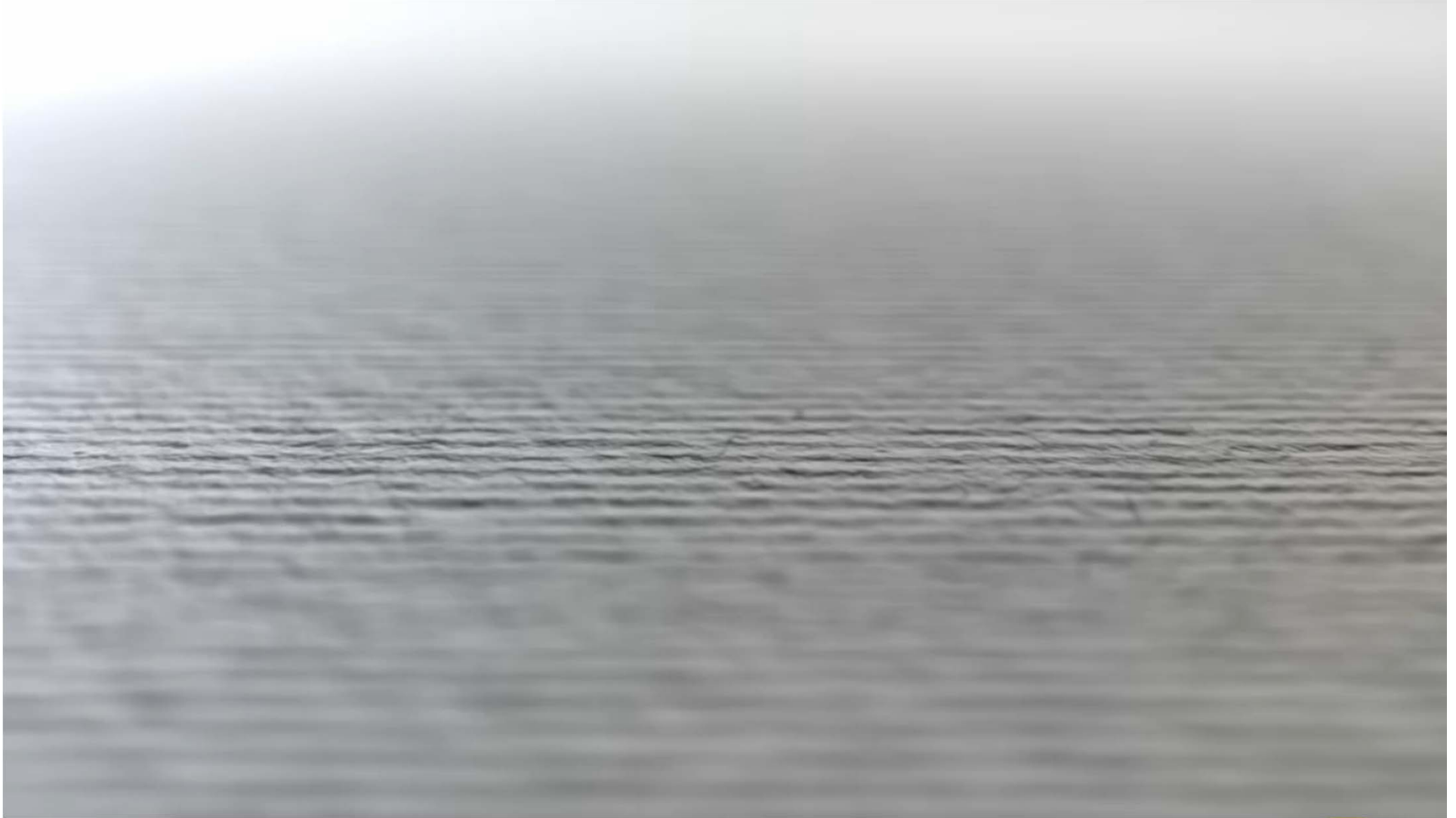
Fiber Raceway Video



Wonderful Hi-Tech



Wire Mesh Cable Tray Video



認證 (Certification)

1. UL



ONLINE CERTIFICATIONS DIRECTORY

[Home](#) [Quick Guide](#) [Contact Us](#) [UL.com](#)

Search results

You may choose to [Refine Your Search](#).

Company Name	Category Name	Link to File
WONDERFUL HI-TECH CO LTD	Appliance Wiring Material - Component	AVLV2.E77981
WONDERFUL HI-TECH CO LTD	Appliance Wiring Material - Component	AVLV2.E150612
WONDERFUL HI-TECH CO LTD	Appliance Wiring Material Certified for Canada - Component	AVLV8.E150612
WONDERFUL HI-TECH CO LTD	Appliance Wiring Material Certified for Canada - Component	AVLV8.E77981
WONDERFUL HI-TECH CO LTD	Cable Routing Assemblies	QBAA.E495118
WONDERFUL HI-TECH CO LTD	Cable Trays, Metal	CYNW.E495118
WONDERFUL HI-TECH CO LTD	Communications Cable	DUZX.E142890
WONDERFUL HI-TECH CO LTD	Communications Cable Certified for Canada	DUZX7.E142890
WONDERFUL HI-TECH CO LTD	Communications-, Audio/Video-, Data- and Other Signaling-circuit Accessories	DUXR.E343523
WONDERFUL HI-TECH CO LTD	Communications-, Audio/Video-, Data- and Other Signaling-circuit Accessories	DUXR.E183184

Page: [1](#) | [2](#) | [3](#) | [4](#)

Model number information is not published for all product categories. If you require information about a specific model number, please contact [Customer Service](#) for further assistance.

[Search Tips](#)

[Print this page](#)

[Terms of Use](#)

[iQ Family of Databases](#)

© 2017 UL LLC

認證 (Certification)

2. Intertek-ETL

The screenshot shows the Intertek website interface. At the top, there is a navigation bar with links for Careers, Investors, Sustainability, Media & Events, Worldwide, and a Search bar. Below this is the Intertek logo with the tagline "Total Quality. Assured." and a secondary navigation bar with links for Industries & Services, About Us, Knowledge & Education, and Locations & Contacts. The main content area features a breadcrumb trail: Home / Wonderful Hi-Tech Co., Ltd. A red box highlights the company name and the text "Cabling Products - ETL Verified Certificates of Conformance:". To the right of this text is the ETL Verified Intertek logo. Further right, there is a "Need help or have a question?" section with a "SEND US A REQUEST" button and a phone number "+86 400 886 9926". Below this is a "Cabling Directory" section with a "Cabling Directory" title, a small image of a directory book, and the text "ETL Verified Cabling Products". At the bottom of this section, it says "Find ETL Verified certificates by company:" followed by a dropdown menu labeled "Select Company...".

Home / Wonderful Hi-Tech Co., Ltd.

Wonderful Hi-Tech Co., Ltd.

Cabling Products - ETL Verified Certificates of Conformance:

Category 5 Cables:
4 x 24, UTP CMP Horizontal Solid Cable p/n CZZ2404PN01
4 x 24, UTP CMR Horizontal Solid Cable p/n TUM2404PN03
4 x 24, UTP CMR Patch Stranded Cable p/n Elite 100 E142890

Category 5e Cables:
4 x 24, UTP CMR Horizontal Solid Cable p/n TUR2404E55
4 x 24, UTP CM Patch Stranded Cable p/n Elite 100 Premier
4 x 24, UTP CM Patch Stranded Cable p/n Elite 100 UTP Premier
4 x 24, UTP CMR Horizontal Solid Cable p/n Elite 350 TUR2404P24
4 x 24, UTP, CMR Patch Stranded Cable p/n Elite 100 TUR2404E56
4 x 24, UTP, CM Horizontal Solid Cable p/n Wonderful U/UTP CAT. 5E CM

Category 5e Cable with limit lines extended up to 350 MHz:
4 x 24, UTP, CMP Horizontal Solid Cable p/n TUP2404KXX

Category 6 Cables:
4 x 24, UTP CM Patch Stranded Cable
4 x 24, UTP CMP Horizontal Solid Cable p/n TUP2404Y

Need help or have a question?
SEND US A REQUEST
+86 400 886 9926

Cabling Directory
ETL Verified Cabling Products
Find ETL Verified certificates by company:
Select Company...

認證 (Certification)

3. 3P

The screenshot displays the website for 3P Third Party Testing ApS. At the top left is the 3P logo, a circular emblem with '3P' in the center and 'THIRD PARTY TESTING' around the perimeter. To its right is the text '3P Third Party Testing ApS' in a large, bold, blue font, with the tagline 'independent testing - for end user confidence' below it. A dark navigation bar contains links for 'Home', 'CPR', '3P Qualified Producers', 'PCB Analysis', 'About us', and 'Contact', along with a search icon and the text 'Verify 3P Certificate'. The main content area features a blurred image of a document with the 3P logo and the word 'Statement' visible. Below this, the text 'Wonderful Hi-Tech Co. Ltd.' is displayed. To the left of the company name is the Wonderful Hi-Tech logo, a stylized 'w' inside a circle, followed by the Chinese name '萬泰科技股份有限公司' and 'WONDERFUL HI-TECH'. To the right of the logo is the company address: '17 Pei Yuan Road, Chung Li Industrial Park, Taoyuan, Taiwan R.O.C.'. Further right are the contact details: 'Phone: +886 3452 7777', 'Fax: +886 3451 7214', and the website 'www.wontex.com'. At the bottom left, there are two tabs: 'All Products' and 'CPR Certified Cables', with 'CPR Certified Cables' selected. Below the tabs, the text 'Cable: Category 5e' is partially visible.

認證 (Certification)

4. HDBaseT

The screenshot shows the HDBaseT website interface. At the top left is the HDBaseT logo. To the right are links for 'Members Login', 'Installers Zone', and language options 'En | Cn'. Below this is a navigation bar with categories: Copper, Fiber, Video, Audio, Ethernet, Controls, Power, USB, and Class. An 'Apply Filters' button is on the right. The main content area is titled 'Search Results' and features a 'Wonderful Hi-Tech >' link. To the right of the search results are buttons for 'ANDROID APP ON Google play' and 'Available on the iPhone App Store', with a note to 'Check out the HDBaseT Product Search App'. Three product listings are shown, each with a small 'wi' logo icon above it. The first listing is 'Wonderful Hi-Tech - WONDERFUL CAT.6 LAN CABLE Cable' with a link to 'Check out the HDBaseT Product Search App'. The second listing is 'Wonderful Hi-Tech - WONDERFUL CAT.6A LAN CABLE Cable'. The third listing is 'Wonderful Hi-Tech - WONDERFUL CAT.7A LAN CABLE Cable'.

認證 (Certification)

5. ABS



TYPE APPROVAL DATABASE

SEARCH CRITERIA [+Expand Search](#)

Wonderful X

EXPORT CSV

EXPORT/PRINT PDF

EMAIL

Type Approval Database Search Results

Status Key: ■ Active ■ Limited

Company / City ^	Product	Model	Product Category ?	ABS Approval Tier ?	Certificate Number	Status / Expiry ?
WONDERFUL HI-TECH CO., LTD. Client #: 425194 NO. 17, BEIYUAN ROAD, ZHONGLI DISTRICT, TAoyUAN CITY, TAIWAN, R.O.C., 32063						
TAoyUAN CITY	Communication Cable	TGL2604A	Type Approved	3	14-T1249311-PDA	10-SEP-2019

結論

- CAT.6A 10G 佈線模式時代正式來臨
- 網路佈線運用功能會擴張
- 光纖的運用將逐步成長
- 機房(數據中心)不斷的增加
- 佈線的施工的品質要求更嚴謹
- 萬泰提供與全球一線品牌同步的品質
- 生產及銷售 累積數十年經驗

