

# Rosenberger

## Rosenberger HDCS® Data Center Cabling Solution

OPTICAL INFRASTRUCTURE SOLUTION





## Introduction

Rosenberger Hochfrequenztechnik GmbH&Co. was founded in Germany in 1958 and ranks among the leading manufacturers of high-speed interconnect solutions worldwide. To serve the continuous growth and demand of the global market, Rosenberger Asia Pacific Electronic Co., Ltd. was established in China in 1997. With its long tradition of excellence and innovation, Rosenberger has excelled and earned an outstanding reputation all over the world.

Rosenberger Asia Pacific provides products and solutions for the Telecommunication, Automotive Electronics, Information Technology, Test & Measurement, Aviation, and Medical & Industrial sectors. A sales network covering the entire Asia Pacific region generates an annual turnover more than 500 million USD. Reliability and competitiveness are the cornerstones of this sustainable growth which has resulted in long-term partnerships with most of the leading companies in their respective industries.



- A: Beijing, China
- B: Kunshan, Jiangsu, China
- C: Pudong, Shanghai, China
- D: Manesar, India
- E: Goa, India
- F: Pune, India
- G: Augsburg, Germany
- H: Plano(TX), USA
- I: New Jersey(NJ), USA
- J: Taksnoy, Hungary
- K: Sao Paulo, Brazil

Rosenberger Asia Pacific maintains 9 modern manufacturing and R&D base locations in Beijing, Kunshan, Shanghai and Dongguan in China, Manesar, Goa and Pune in India, Sydney in Australia as well as New Jersey in the USA. Rosenberg Asia Pacific is an ISO 9001 quality system, ISO 14001 environmental system, and IATF 16949 automotive industry system certified company. Equipped with advanced machinery, electronic plating, assembly and testing centers and operated by a large group of more than 400 R&D engineers, Rosenberg Asia Pacific has developed first class production assembly lines and exercises stringent product and quality control.

At present, Rosenberg Asia Pacific maintains a far-reaching network of R&D, Production, Sales and Service which extends to the whole Asia Pacific, Middle East and Africa regions. For over 60 years Rosenberg has established its brand all over the world. In the future, Rosenberg Asia Pacific will continue to provide excellent product solutions and services for its customers in the entire region.



## ROSENBERGER MISSION

- Customer always comes first
- Drive innovation together with and for our customers
- Maintain a secure, humane and happy environment for our employees
- Develop our employees by investing in their education
- Take social responsibility
- Protect our environment with ecologically friendly products, production and processes

## CORE VALUE

- Value Innovation
- Customer Focus
- Sustainable Growth
- Social Responsibility

## PRODUCTS & SERVICES

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### Telecommunication

Antenna  
Active System  
Passive Components  
S-Link Feeder System  
Site Solution Accessories  
RF Coaxial Products  
FTTx-ODN Technologies  
Fiber-To-The-Antenna (FTTA)  
FO Connectivity & Cables

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### Enterprise

iIMS Smart System  
Data Center Solutions  
Enterprise Network Solutions  
Micro Datacenter

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### Automotive Electronics

Data Connector  
Cable Assembly  
High-Voltage Connector  
Magnetic Connector

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### Test & Measurement

Calibration Kits  
Test Cables  
Adaptors  
Precision Connectors  
PCB Connectors  
PIM Testing  
CoMeT - Coupling Measuring Tube

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### Medical & Industries

Magnetic Products  
Non Magnetic Products  
Hybrid Products  
High Speed Connectivity  
Optic Module  
Smart Home  
Power Products  
Machine to Machine - M2M

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25+  
Years of CABLING  
1991-2017 COMPETENCE

# Rosenberger

## Data Center Cabling Solution Memorial Events

- 2017 — Released 3<sup>rd</sup> version of patented Pyixs Intelligent Infrastructure Management System  
Rewarded as Huawei Excellent Core Partner at 9<sup>th</sup> times  
Rewarded as Tencent Excellent Partner at 3<sup>rd</sup> times  
Rewarded as China Top 10 Cabling Brand at the 8<sup>th</sup> times
- 2016 — Rewarded as Huawei Excellent Core Partner at 8<sup>th</sup> times  
Rewarded as Tencent Excellent Partner at 2<sup>nd</sup> times  
Rewarded as China Top 10 Cabling Brand at the 7<sup>th</sup> times
- 2014 — Kunshan base, the largest operating base of Rosenberger in Asia , was formally put into operation  
Rewarded as Huawei Excellent Core Partner at 4<sup>th</sup> times  
Rewarded as China Top 10 Cabling Brand at the 5<sup>th</sup> times
- 2012 — Released 2<sup>nd</sup> version of patented Rosenberger Pyxis Intelligent Infrastructure Management System  
Rewarded as China Best Data Center Supplier at the 5<sup>th</sup> times  
Rewarded as Huawei Excellent Core Partner at the 4<sup>th</sup> times  
Rewarded as China Top10 Cabling Brand at the 3<sup>rd</sup> times
- 2011 — The 20th anniversary of Rosenberger Data Center Solution R&D and production base
- 2010 — Rewarded as China Top10 Cabling Brand  
Expanded production base for data center products in Taksony, Hungary
- 2009 — Rewarded as Huawei Excellent Core Partner
- 2008 — Rewarded as China Best Data Center Supplier  
Released LC optical fiber connector and with mass production
- 2007 — Released pre-connect copper cable and with mass production
- 2005 — Set up 11 divisions and 4 logistic centers in Asia Pacific region
- 2004 — Released MU and SC optical fiber connectors and with mass production
- 2003 — Marketed MU connector, developed Preconnect cable series  
Obtained ISO 16949 Quality System Certification
- 2002 — Rosenberger Shanghai Factory obtained IBM data center solution global certification  
HDCS<sup>®</sup> network and data center cabling solution launched in Asia Pacific region
- 2001 — Rosenberger established new R&D and production base in Augsburg, Germany  
Set up new production factory in Beijing, China  
Set up new production facility for fiber optics and premise cabling products in Shanghai, China
- 2000 — Developed MTP<sup>®</sup>/MPO pre-terminated trunk cable up to 114 cores
- 1999 — Rosenberger Asia Pacific obtained ISO 9001 Quality System and ISO 14001 Environment Certificates
- 1997 — Established production base for data center products in Taksony, Hungary  
Rosenberger Asia Pacific found in Beijing, China
- 1995 — Started to supply pre-terminated trunk fiber cables for data center cabling system
- 1991 — Set up R&D and production base for data center cabling solutions in Ichenhausen, Germany

# Rosenberger HDCS®

## Data Center Cabling Solution



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# HDCS<sup>®</sup> Data Center Solution

For over 25 years Rosenberger has provided innovative and exceptional Data Center Cabling Solutions for a variety of industries: finance, telecommunications, internet service providers, government organizations, manufacturers, and airports. From medium-sized entities to Fortune-500 companies, these enterprises have trusted in Rosenberger Data Center Cabling Solutions to provide excellent performance, reliability, and security for critical data center application.

The development of Rosenberger's PRECONNECT<sup>®</sup> trunk system is the cornerstone for cabling architecture and has been synonymous with decades of world-class expertise for state-of-art data center solutions.

Rosenberger Data Center Solutions comply with all relevant standards:

- ANSI/TIA-942-B
- ANSI/TIA-568-D
- ISO/IEC 24764
- ISO/IEC 11801
- EN 50173-5
- GB50174

## Definitions and Terms:

### MDA:

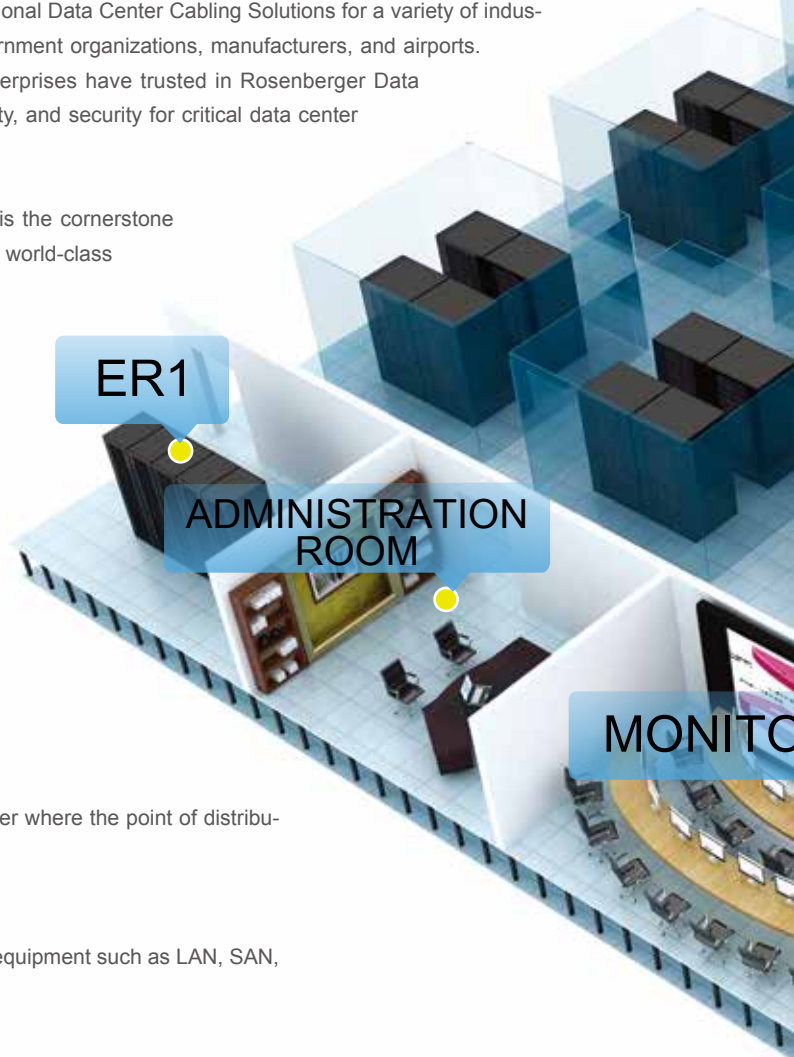
The main distribution area is the primary space within the data center where the point of distribution for the structured cabling system is located.

### HDA:

The horizontal distribution areas are spaces that support cabling to equipment such as LAN, SAN, Consoles, and KVM switches.

### EDA:

The equipment distribution area is the space allocated for end equipment, including computer systems and communications equipment.



100GigaBit Ready

Rosenberger Data Center Solutions support IEEE 802.3ba 40G/100G standard



Professional Data Center

Rosenberger has over 20 years expertise in Data Center Solutions



Green IT Ready

Green IT technology reduces CO2 emissions and power consumption to help minimize carbon footprint



Individually Tested Quality

All HDCS<sup>®</sup> data center products are individually tested



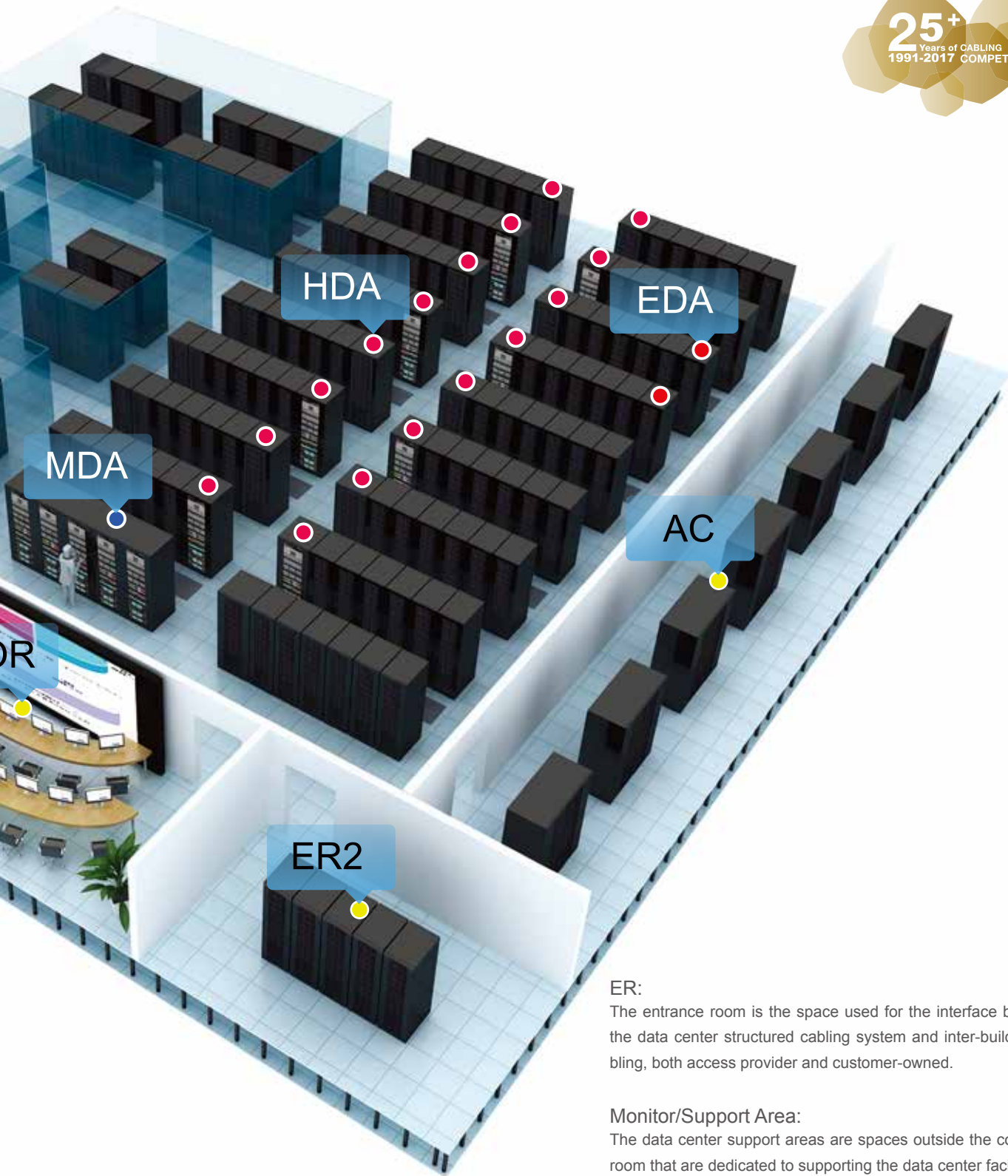
With Registered

ALL HDCS<sup>®</sup> Fiber products with registered SN are traceable to manufacturing test data



Protected

PRECONNECT<sup>®</sup> system helps to avoid potential damage during installation and provides robust connectivity



**ER:**

The entrance room is the space used for the interface between the data center structured cabling system and inter-building cabling, both access provider and customer-owned.

**Monitor/Support Area:**

The data center support areas are spaces outside the computer room that are dedicated to supporting the data center facility.

**Administration/Office Area:**

Work area to support data center.

**AC:**

Air Conditioning for computer room.

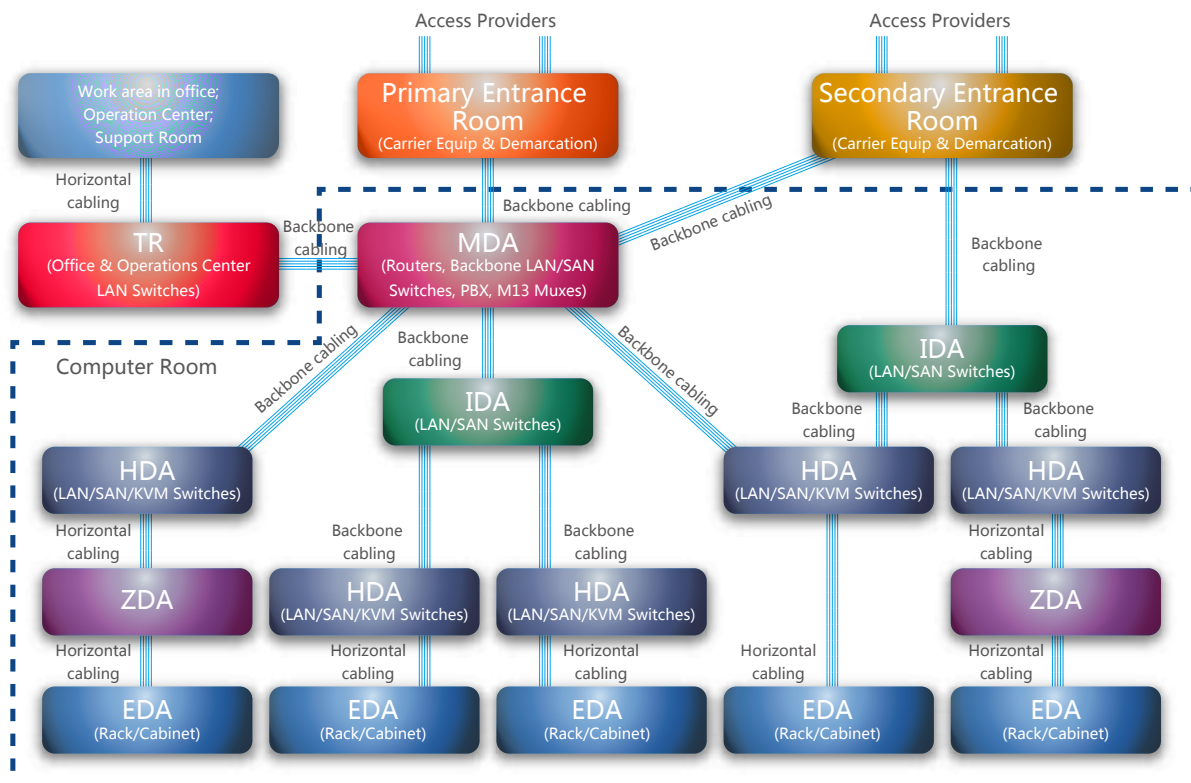


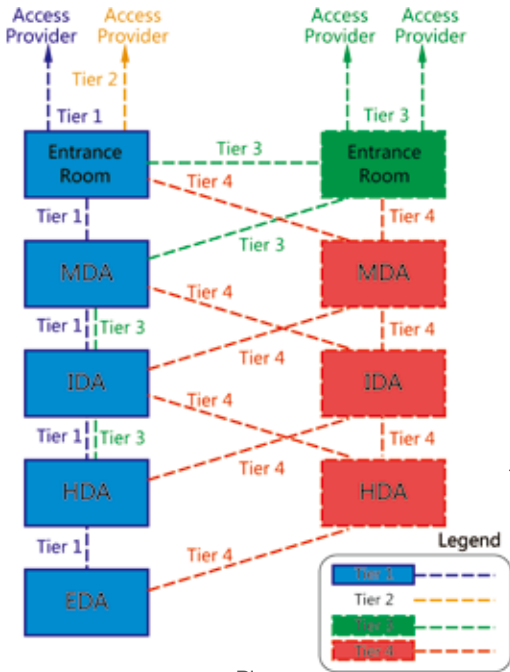
# HDCS<sup>®</sup> Architecture of Data Center Cabling Design

In the first stage of a data center project, planning of the MDA is critical to allow for flexibility in possible future expansions. A majority of customers will reserve 1x rack space in the MDA to allow for such expansion. The fiber and copper cabling are designed

separately for the MDA to allow for ease of cable management. Also, based on the size of the data center and user's needs, the HDA and IDA could be optional.

For large size data center cabling applications, designers can refer to ANSI/TIA-942-B standard. A block diagram is listed below:





Pic a

## The Relationship Between Cabling Levels and Topological Structure

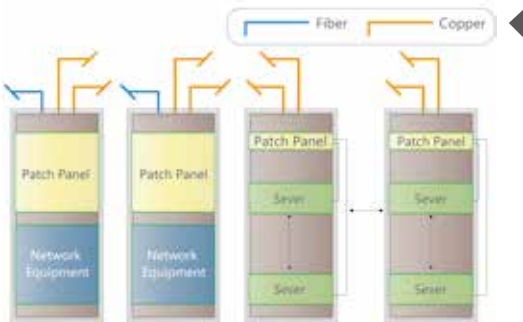
According to TIA942-B, data centers are graded to four tiers according to their availability. As such, each tier is designed with different redundancy mechanisms to meet the availability criteria. (See figure below)

	Tier1	Tier2	Tier3	Tier4
Availability	99.671%	99.749%	99.982%	99.995%
Yearly Downtime	28.8H	22.0H	1.6H	0.4H

Tier 1 requires a basic single cable route. Tier 2 requires an additional access provider. Tier 3 requires a minimum of two ERs with each ER having independent cabling ingress. TIA-942-B emphasizes that the physical distance between individual ingress points should be more than 20 meters apart. For Tier 4, there are redundant MDA, IDA and HDA.

## Comparison of EOR and TOR

There are 2 conventions for cabling: TOR (Top of Rack) and EOR (End of Rack). Often EOR is chosen for data center cabling deployments, due to potential for higher availability and ease of management. In an EOR configuration, usually the first rack in a row of racks is designated for HDA equipment which then manages the subsequent equipment within the same row.

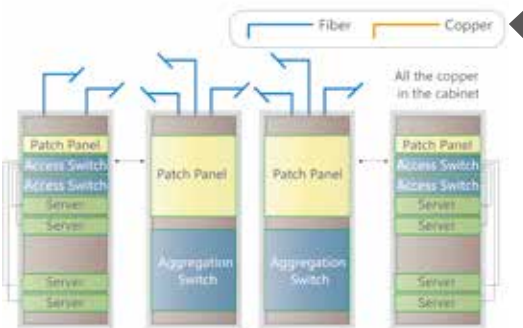


Pic b

## EOR Cabling Advantage and Shortage

The key advantage of EOR is that the switch resource can be shared for an entire row providing a higher utilization rate compared with TOR. Also cable management between equipment and the access switch is more convenient allowing for ease of moves, adds, and changes. EOR does require an increased number of cables, thereby increasing the cabling costs with respect to TOR.

In TOR configuration, the access switch is installed in the top of each rack and manages the equipment within the respective rack.



Pic c

## TOR Cabling Advantage and Shortage

The key advantage of TOR cabling is that it is generally simpler and cable lengths are shorter than in an EOR installation. TOR may be preferred in high-density applications and where frequent moves, adds, changes are not anticipated, thereby keeping cabling costs to a minimum. However, the switch utilization rate is lower in this structure compared with EOR, resulting in unused resources.

# HDCS<sup>®</sup> Characteristic Data Center Cabling Solution

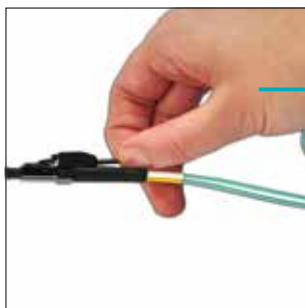
## Cabling the Cloud      Sharing the Future

For over 25 years, Rosenberger HDCS<sup>®</sup> has provided a range of data center cabling solutions that provide high density, modularity, reliability, and performance. In addition to providing world-class leading products, Rosenberger offers consultation services to guide customers in developing custom data center applications, planning for future growth/capabilities, and improving operational efficiencies.



### ▲ High Density Modular Fiber Patch Panel

For high density application areas such as MDA, IDA, etc. The 4HU modular panel supports a maximum 384 fiber cores with a slide structure design for easy management and maintenance.



### ▲ Quick Release<sup>™</sup> Fiber Patch Cord

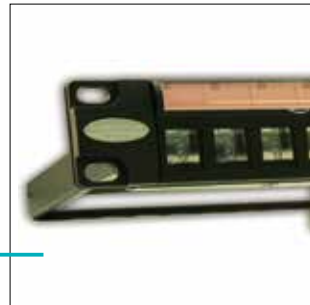
Patented Quick Release<sup>™</sup> patch cords with bend-insensitive fiber is designed for use in high density data center applications and provides installation and operating conveniences. A german-designed high-precision 3D surface geometry test ensures exceptional fiber transmission performance.





### PRECONNECT® Fiber Trunk Cable

PRECONNECT® fiber trunk cable is mainly used within the data center back bone to connect MDA to IDA and HAD. Offering pre-terminations with reliable mechanical performance and excellent fiber transmission performance to support 40G/100G speeds.



### Dust-proof Patch Panel

Applied in the IDA, HDA, or EDA, the dust-proof patch panel utilizes a patented Pegasus “tool-less” keystone jack and offers dust/dirt ingress protection.



### Hybrid Patch Panel

Offered in 1HU height, it combines copper and fiber modules and for flexible interconnect within the EDA. It can be installed on a cable tray or under a raised floor.

### Pre-terminated Bunched Copper Cable

Pre-terminated bunched copper cable is suitable for modular data center deployments and ensures efficient installation and high bandwidth performance.



**25** Years  
**WARRANTY**





# HDCS<sup>®</sup> Quality Management System and Product Certification

## Global Quality Management, Consistent Service Quality

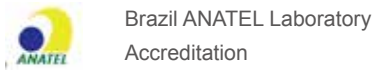
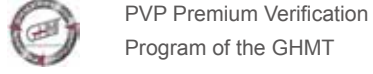
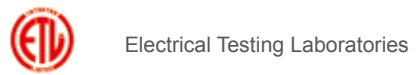
In combination with our project-management and quality assurance procedures, certified according to international standards, this ensures that we can provide a range of high quality products and

a total solution to meet high-end customer needs, especially for large-scale applications such as new construction of a large enterprise data center and cloud computing data center.

Rosenberger is certified according to the following quality management system.



Rosenberger cabling system is also certified by third party lab.



# Benefits of HDCS® PRECONNECT® Installation and Deployment

## High-efficient PRECONNECT® Solutions

Statistics show that HDCS® PRECONNECT® solutions saves 80% on installation time compared to traditional methods under the same conditions.

96 core fiber cable needs to be pre-terminated with connectors, 100 meter length, 2 operators.

## Traditional Splicing Solution

Cable laying for a 100 meter route: 1 hour

96 Fibers - splicing, testing and ancillary work: 8 hours

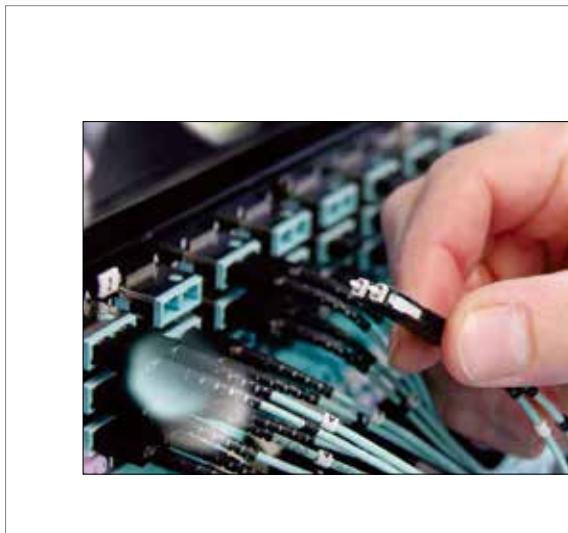
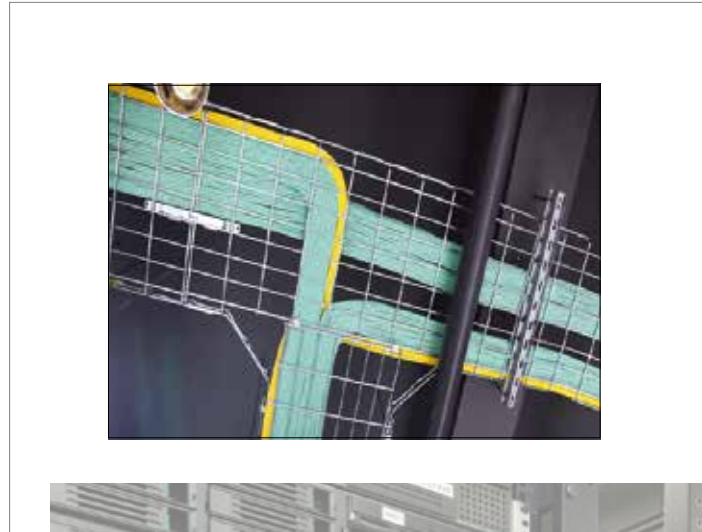
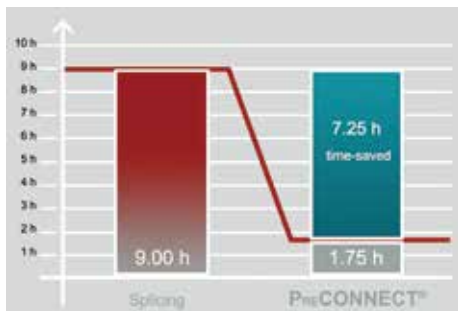
Total: 9 hours

## HDCS® PRECONNECT® Solution

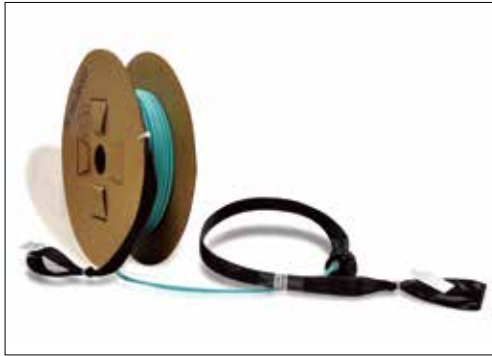
Cable laying for a 100 meter route: 1 hour

Connector connection and channel testing: 0.75 hours

Total: 1.75 hours



# PRECONNECT® Solution 3-Step Deployment



## Step 1 – Laying PRECONNECT® Fiber Trunk Cable

Laying the MTP terminated fiber connector PRECONNECT® trunk cable in the customer data center room according to the system design map. Laying the cable either under a floor or above in a cable tray on the rack is suitable for Rosenberg PRECONNECT® trunk cables. Each PRECONNECT® trunk cable end is installed with protection & pulling sleeves, which can be directly and quickly pulled to the right area along the route.

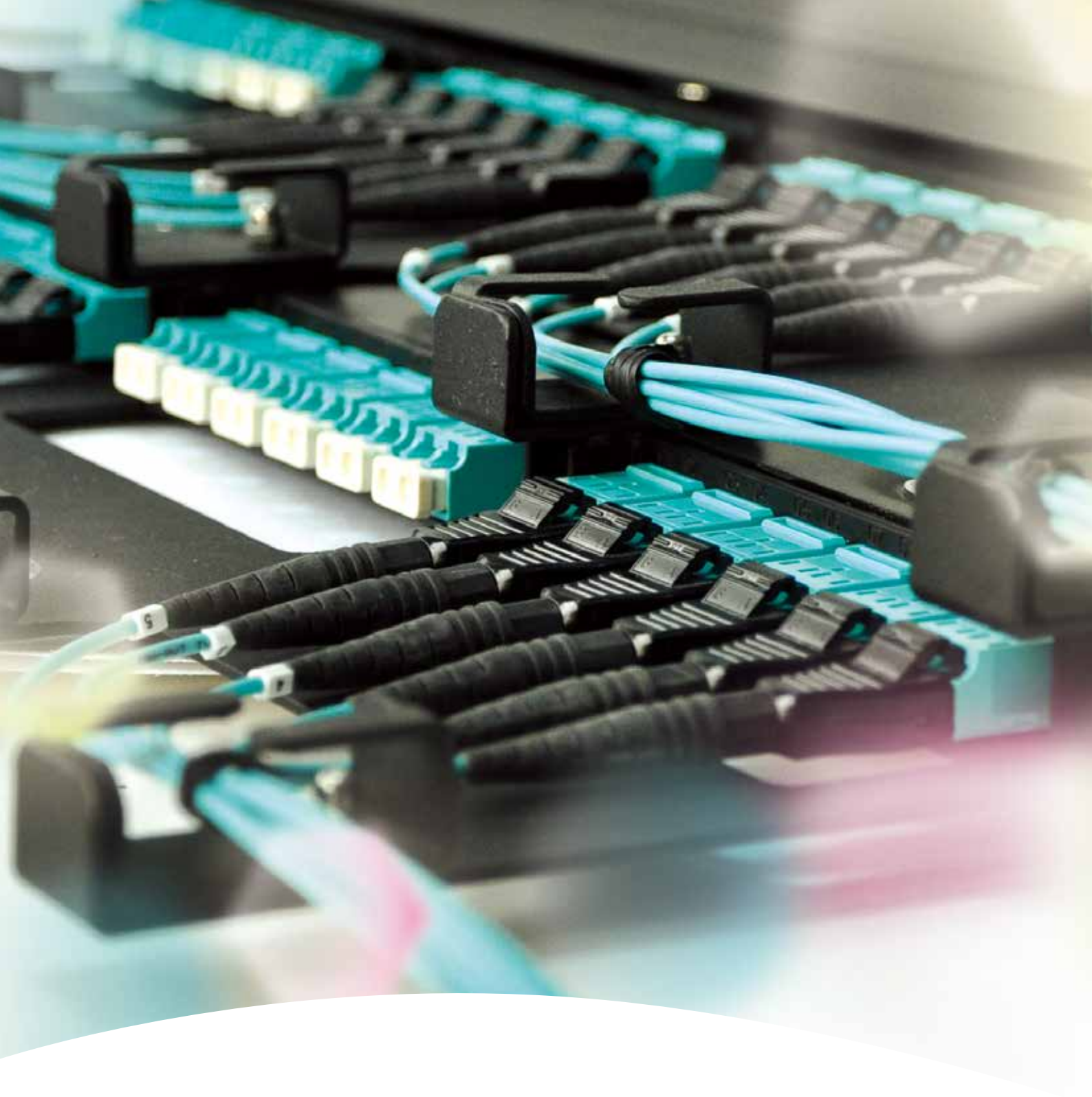


## Step 2 - PRECONNECT® Trunk Connection

Refer to the PRECONNECT® trunk cable installation manual, remove the protection sleeves at each end of the trunk, connect the fiber optic connector to the rear of the fiber patch panels or equipment per transmission channel. No special tool or fusion splicing is required.

## Step 3 - Fiber Channel Test

In order to ensure correct installation and that desired fiber channel performance is achieved, it is recommended to test each fiber channel with a fiber power meter and OTDR. This is recommended for 10G or 40G/100G applications.



# HDCS<sup>®</sup> Data Center Cabling Solution Products

Norma <sup>™</sup> Trunk Fiber cable	22
Vela <sup>™</sup> Trunk Fiber Cable	24
Norma <sup>™</sup> High Density Modular Fiber Patch Panel	26
Vela <sup>™</sup> Data Center Pull-out Modular Fiber Patch Panel	28
Taurus <sup>™</sup> III Data Center Modular Fiber Patch Panel	30
Vela <sup>™</sup> Bridge-type Fiber Patch Panel	32
Taurus <sup>™</sup> MTP/MPO-LC Harness cord	34
Taurus <sup>™</sup> LC Fiber Patch Cord	35
Taurus <sup>™</sup> MTP Patch Cord	37
Fornax <sup>™</sup> Active Optical Cable	38
Fornax <sup>™</sup> SFP+/QSFP+ Direct Attach Passive Copper Cables	40
Taurus <sup>™</sup> I Hybrid patch Panel	41
Taurus <sup>™</sup> II Modular 24 Ports FO-CU Hybrid Patch Panel	42
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Apus <sup>™</sup> CAT6 UTP Copper Cabling System	46
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# HDCS<sup>®</sup> Data Center Cabling Solution Products

## HDCS<sup>®</sup> PRECONNECT<sup>®</sup> Fiber solution

### Norma<sup>™</sup> Trunk Fiber cable



#### Applications

- Used for fiber trunk connections between the MDA and IDA or HDA, as well as from HDA to ZDA or EDA.

#### Features

- Norma<sup>™</sup> PreCONNECT<sup>®</sup> trunk cable is compatible with fiber cores ranging from 12 to 144 for high-density application.
- Convenient installation and re-location.
- Each PreCONNECT<sup>®</sup> trunk cable end is installed with protection & pulling sleeves for crush-resistance, torsion-resistance, as well as water and dust proofing up to IP50 (indoor trunk). Up to 500N of pulling force can be applied to the PreCONNECT<sup>®</sup> trunk cable.
- Multi-mode OM2 50/125 $\mu$ m, 10G OM3 50/125 $\mu$ m, OM4 50/125 $\mu$ m, OM5 50/125 $\mu$ m and low water-peak single-mode G652D 9/125 $\mu$ m, G657A 9/125 $\mu$ m fiber options available for different requirements.
- No splicing points within the entire PreCONNECT<sup>®</sup> trunk cable. Each fiber connector is tested in the Rosenberger factory for transmission and connectivity performance to ensure minimal insertion loss.
- PE, OFNR, OFNP or LSZH sheathed fiber cables are available. LSZH rated fiber cable meets and passes IEC60332-1 and IEC60332-3 requirements, OFNR rated cable meets and passes UL-1666 requirements, and OFNP rated cable meets and passes UL-910 requirements.

# HDCS<sup>®</sup> PRECONNECT<sup>®</sup> Fiber solution

## Norma<sup>™</sup> Trunk Fiber cable

Technical Parameters for Indoor Norma <sup>™</sup> Trunk Cable								
Number of Fiber Core		12	24	36	48	72	96	144
Length of Legs, cm	MTP	86	86-90	86-94	86-98	86-106	86-106	86-106
	LC-duplex	86-106						
Fan-out Diameter, mm		16*17*105						
Trunk Cable Max. Tensile Force-installation, N		500						
Min. Bending Radius (Installation), mm		100	100	120	120	120	140	180
Min. Bending Radius (Operation), mm		50	50	60	60	60	70	90
Crush Resistance Cable, N/cm		800	800	800	800	800	800	800
Temperature Range (Installation) °C		0°C~+50°C						
Temperature Range (Operation) °C		-20°C~+60°C						

Norma <sup>™</sup> PRECONNECT <sup>®</sup> Trunk Fiber Cable Ordering Information							
Indoor Classic Trunk Cable	X: Cable Jacket Type	X: Fiber Type	X: Connector Type	X: Fiber Cores	X: Polarity	—	XXX: Cable Length
23: Norma	3: LSZH	1: G652D 9/125µm	7: LC/LC	4:12 core	(C): TIA568 Type C (MTP or LC)	—	005:5m
	6: OFNR	2: 50/125µm OM2	F:MPO(F)/MPO(F)	6:24 core	A: TIA568 Type B(MTP)		010:10m
	8: OFNP	A: 50/125µm OM3	J: MPO(M)/LC	7:36 core	S: TIA568 Type A(MTP)		015:15m
		B: 50/125µm OM4	M: MPO(F)/LC	8:48 core	J: TIA568 Type C(MPO)		020:20m
		D: 50/125µm OM5	L: MPO(M)/MPO(M)	9:72 core	F: TIA568 Type B(MPO)		025:25m
		8: G657A 9/125µm		0:96 core	Z: TIA568 Type A(MPO)		030:30m
				A:144 core			...

Norma<sup>™</sup> PreCONNECT<sup>®</sup> Trunk Fiber Cables are ordered using 10 digits: Digit1 and Digit2, Norma<sup>™</sup> type trunk cable; Digit3, Cable jacket selection; Digit4, Fiber type selection; Digit5 connector type selection; Digit6, fiber cores selection; Digit7, polarity, MPO connector or US Conec MTP<sup>®</sup> connector; Digit8 to Digit10, Cable length selection.

Example: 233174-025 Norma Trunk, LSZH jacket, SM G652D, LC-LC, 12core, TIA568 Type C, 25m

233BL4A-100 Norma Trunk, LSZH jacket, MM OM4, MTP(M)-MTP(M), 12core, TIA568 Type B, 100m

# HDCS<sup>®</sup> Data Center Cabling Solution Products

## HDCS<sup>®</sup> PRECONNECT<sup>®</sup> Fiber Solution

### Vela<sup>™</sup> Trunk Fiber Cable



#### Applications

- Used for fiber trunk connections between the MDA and IDA or HDA, as well as from HDA to ZDA or EDA.

#### Features

- Vela<sup>™</sup> PreCONNECT<sup>®</sup> trunk cable is compatible with 12 fiber cores
- Convenient installation and re-location
- Provides smaller bend radius trunk cable for high density cabling application in data center
- Each PreCONNECT<sup>®</sup> trunk cable end is installed with protection & pulling sleeves for protected terminated connectors
- Multi-mode of 50/125µm OM2, 10G 50/125µm OM3, 50/125µm

OM4, 50/125µm OM5 and low water-peak single-mode of 9/125µm G652D and 9/125µm G657A fiber options available for different requirements

- No splicing points within the entire PreCONNECT<sup>®</sup> trunk cable, and each pre-terminated fiber connector is tested in the Rosenberger factory for transmission and connectivity performance to ensure minimal insertion loss
- PE, OFNR, OFNP or LSZH sheathed fiber cables are available. LSZH rated fiber cable meets and passes IEC60332-1 and IEC60332-3 requirements, OFNR rated cable meets and passes UL-1666 requirements, and OFNP rated cable meets and passes UL-910 requirements



# HDCS<sup>®</sup> PRECONNECT<sup>®</sup> Fiber solution

## Vela<sup>™</sup> Trunk Fiber Cable

Technical Parameters of Indoor Vela <sup>™</sup> PRECONNECT <sup>®</sup> Trunk Cable									
Number of Fiber Core	Fiber Cable Diameter	Min. Bending Radius (mm)		Crush Resistance Cable (N/10cm)		Trunk Cable Max. Tensile Force-installation, N		Temperature Range(°C)	
		Operation	Installation	Long Term	Short Term	Long Term	Short Term	Installation	Operation
4-12	4.5	45	90	250	750	150	300	0°C~+50°C	-20°C~+60°C

Vela <sup>™</sup> PRECONNECT <sup>®</sup> Trunk Fiber Cable Ordering Information							
Indoor Trunk Cable	X: Cable Jacket Type	X: Fiber Type	X: Connector Type	X: Fiber Cores	X: Polarity	—	XXX: Cable Length
21: Vela	3: LSZH	1: G652D 9/125µm	F: MPO(F)/ MPO(F)	4: 12 core	(C): TIA568 Type C(MTP)		005:5m
	6: OFNR	2: 50/125µm OM2	L: MPO(M)/ MPO(M)		A: TIA568 Type B(MTP)		010:10m
	8: OFNP	A: 50/125µm OM3	P: MPO(M)/ MPO(F)		S: TIA568 Type A(MTP)		015:15m
		B: 50/125µm OM4			J: TIA568 Type C(MPO)		020:20m
		D: 50/125µm OM5			F: TIA568 Type B(MPO)		025:25m
		8: G657A 9/125µm			Z: TIA568 Type A(MPO)		030:30m

Vela<sup>™</sup> PreCONNECT<sup>®</sup> Trunk Fiber Cables are ordered using 10 digits: Digit1 and Digit2, Norma<sup>™</sup> type trunk cable; Digit3, Cable jacket selection; Digit4, Fiber type selection; Digit5 connector type selection; Digit6, fiber cores selection; Digit7, polarity, MPO connector or US Conec MTP<sup>®</sup> connector; Digit8 to Digit10, Cable length selection.

Example: 2131F4-025 Vela Trunk, LSZH Jacket, SM G652D, MTP(F)-MTP(F), 12core, TIA568 Type C, 25m  
 213BL4A-100 Vela Trunk, LSZH Jacket, MM OM4, MTP(M)-MTP(M), 12core, TIA568 Type B, 100m

# HDCS<sup>®</sup> Data Center Cabling Solution Products

## HDCS<sup>®</sup> PRECONNECT<sup>®</sup> Fiber Solution

### Norma<sup>™</sup> High Density Modular Fiber Patch Panel



1HU Norma<sup>™</sup> Fiber Patch Panel



4HU Norma<sup>™</sup> Fiber Patch Panel



MTP-LC Module



LC Adapter Plate



MTP/MPO Adapter Plate

#### Applications

- Norma<sup>™</sup> high density modular fiber patch panels are used in MDA, IDA or HDA for fiber cable distribution and management.

#### Features

- A maximum of 12 and 48 sets of the Norma<sup>™</sup> module/front plate can be installed on each 1HU and 4HU modular patch panel respectively.
- 1HU panel can reach up to 144 fibers (LC) and 576 fibers(MTP). 4HU panel can reach up to 576 fibers(LC) and 2304 fibers(MTP).
- The connectivity capacity can be up to 12 fibers for each module and front plate with an LC interface.
- PreCONNECT<sup>®</sup> fiber module accepts multi-mode 50/125um OM2, OM3, OM4, OM5 or a low water- peak single-mode 9/125um fiber cable harness.
- Modular structure on patch panel is innovated and designed with a pull-out feature for quick and safe PreCONNECT<sup>®</sup> trunk fiber cable installation and maintenance.

- Label panel has hidden drawer design, it can hang downwards after pull-out for better observation.

#### Technical Parameters

- The outer shape of the patch panel complies with ETSI 1HU and 4HU standards
- Salt mist cyclic test (24H)
- Attenuation (Typical): single-mode MTP-LC module 0.5dB, multimode MTP-LC module 0.4dB
- Storage temperature: -40°C ~ +70°C
- Operation temperature: -20°C ~ +60°C

#### Relative Standards

- ANSI/TIA-942-B
- ANSI/TIA-568-D.3
- ISO/IEC 24764
- ISO/IEC 60794
- ISO/IEC 61754
- EN 50173-5

# Norma™ I Data Center Modular Fiber Patch Panel

Norma™ Modular Fiber Patch Panel Ordering Information	
Ordering Number	Description
<b>Norma™ Fiber Patch Panel</b>	
CPB1-150-21	Norma™ 1HU high density FO modular patch panel without module (max 144F)
CPB1-150-61	Norma™ 4HU high density FO modular patch panel without module (max 576F)
<b>MTP/MPO(Female)-LC Module, Type A</b>	
CPB2-A61-11	Norma™ 12F module A, G652D MTP(F)-LC
CPB2-A63-11	Norma™ 12F module A, OM2 MTP(F)-LC
CPB2-A64-11	Norma™ 12F module A, OM3 MTP(F)-LC
CPB2-A65-11	Norma™ 12F module A, OM4 MTP(F)-LC
CPB2-A66-11	Norma™ 12F module A, OM5 MTP(F)-LC
CPB2-A61-31	Norma™ 12F module A, G652D MPO(F)-LC
CPB2-A63-31	Norma™ 12F module A, OM2 MPO(F)-LC
CPB2-A64-31	Norma™ 12F module A, OM3 MPO(F)-LC
CPB2-A65-31	Norma™ 12F module A, OM4 MPO(F)-LC
CPB2-A66-31	Norma™ 12F module A, OM5 MPO(F)-LC
<b>MTP/MPO(Female)-LC Module, Type B</b>	
CPB2-A61-12	Norma™ 12F module B, G652D MTP(F)-LC
CPB2-A63-12	Norma™ 12F module B, OM2 MTP(F)-LC
CPB2-A64-12	Norma™ 12F module B, OM3 MTP(F)-LC
CPB2-A65-12	Norma™ 12F module B, OM4 MTP(F)-LC
CPB2-A66-12	Norma™ 12F module B, OM5 MTP(F)-LC
CPB2-A61-32	Norma™ 12F module B, G652D MPO(F)-LC
CPB2-A63-32	Norma™ 12F module B, OM2 MPO(F)-LC
CPB2-A64-32	Norma™ 12F module B, OM3 MPO(F)-LC
CPB2-A65-32	Norma™ 12F module B, OM4 MPO(F)-LC
CPB2-A66-32	Norma™ 12F module B, OM5 MPO(F)-LC
<b>Adapter Plate</b>	
CPB4-345-51	Norma™ MTP Adapter plate with 4Pcs MTP adapter, Up/Up
CPB4-347-51	Norma™ MTP Adapter plate with 4Pcs MTP adapter, Up/Up
CPB4-242-21	Norma™ LC Adapter plate with 6Pcs blue LC duplex adapter
CPB4-243-21	Norma™ LC Adapter plate with 6Pcs aqua LC duplex adapter
<b>Blind Cover</b>	
CPB4-041-11	Norma™ blind cover

# HDCS<sup>®</sup> Data Center Cabling Solution Products

## Vela<sup>™</sup> Data Center Pull-out Modular Fiber Patch Panel



1HU Vela<sup>™</sup> Patch Panel



4HU Vela<sup>™</sup> Patch Panel



MTP-LC Module



LC Adapter Plate



MTP/MPO Adapter Plate



Blind Cover

### Applications

- 1HU, 4HU modular fiber patch panels are used in MDA, IDA or HDA for fiber Cable distribution and management.

### Features

- Modular and ergonomic design with front and rear drawers for ease of installation and maintenance.
- 1HU and 4HU could handle 96 fibers and 288 fibers respectively.
- The connectivity capacity can be up to 12 fibers for each module and front plate with an LC interface.
- PreCONNECT<sup>®</sup> fiber module accepts multi-mode 50/125um OM2, OM3, OM4, OM5 or a low water-peak single-mode 9/125um fiber cable harness.
- Rear cabling manager with layered design and pull-out rotation function.
- Label panel has hidden drawer design, it can hang downwards after pull-out for better observation.

### Technical Parameters

The outer shape of the patch panel complies with ETSI 1HU and 4HU standards.

Salt mist cyclic test (24H).

Attenuation (Typical): single-mode MTP-LC module 0.5dB, multi-mode MTP-LC module 0.4dB.

Storage temperature: -40°C ~ +70°C.

Operation temperature: -20°C ~ +60°C.

### Relative Standards

- ANSI/TIA-942-B
- ANSI/TIA-568-D.3
- ISO/IEC 24764
- ISO/IEC 60794
- ISO/IEC 61754
- EN 50173-5

# Vela™ Data Center Pull-out Modular Fiber Patch Panel

Vela™ Data Center Modular Fiber Patch Panel Ordering Information	
Ordering Number	Description
<b>Vela™ Fiber Patch Panel</b>	
CPB1-730-41	Vela™ 1HU High density fiber patch panel without module (8Pcs 40G module available)
CPB1-730-61	Vela™ 4HU High density fiber patch panel without module (24Pcs 40G module available)
<b>MTP/MPO(Female)-LC Module, Type A</b>	
CPB2-A51-11	Vela™ 12F module A, G652D MTP(F)-LC
CPB2-A53-11	Vela™ 12F module A, OM2 MTP(F)-LC
CPB2-A54-11	Vela™ 12F module A, OM3 MTP(F)-LC
CPB2-A55-11	Vela™ 12F module A, OM4 MTP(F)-LC
CPB2-A56-11	Vela™ 12F module A, OM5 MTP(F)-LC
CPB2-A51-31	Vela™ 12F module A, G652D MPO(F)-LC
CPB2-A53-31	Vela™ 12F module A, OM2 MPO(F)-LC
CPB2-A54-31	Vela™ 12F module A, OM3 MPO(F)-LC
CPB2-A55-31	Vela™ 12F module A, OM4 MPO(F)-LC
CPB2-A56-31	Vela™ 12F module A, OM5 MPO(F)-LC
<b>MTP/MPO(Female)-LC Module, Type B</b>	
CPB2-A51-12	Vela™ 12F module B, G652D MTP(F)-LC
CPB2-A53-12	Vela™ 12F module B, OM2 MTP(F)-LC
CPB2-A54-12	Vela™ 12F module B, OM3 MTP(F)-LC
CPB2-A55-12	Vela™ 12F module B, OM4 MTP(F)-LC
CPB2-A56-12	Vela™ 12F module B, OM5 MTP(F)-LC
CPB2-A51-32	Vela™ 12F module B, G652D MPO(F)-LC
CPB2-A53-32	Vela™ 12F module B, OM2 MPO(F)-LC
CPB2-A54-32	Vela™ 12F module B, OM3 MPO(F)-LC
CPB2-A55-32	Vela™ 12F module B, OM4 MPO(F)-LC
CPB2-A56-32	Vela™ 12F module B, OM5 MPO(F)-LC
<b>Data Center Splicing Module</b>	
CPB2-553-11	Vela™ 12F LC Splicing module with LC adapter without pigtail
<b>Adapter Plate</b>	
CPB4-335-51	Vela™ MTP Adapter plate with 4Pcs MTP adapter Up/Up
CPB4-337-51	Vela™ MPO Adapter plate with 4Pcs MTP adapter Up/Up
CPB4-232-21	Vela™ LC Adapter plate with 6Pcs LCD SM adapter
CPB4-233-21	Vela™ LC Adapter plate with 6Pcs LCD OM3 adapter
<b>Blind Cover</b>	
CPB4-611-11	Vela™ Blind Cover

# HDCS<sup>®</sup> Data Center Cabling Solution Products

## Taurus<sup>™</sup> III Data Center Modular Fiber Patch Panel



1HU Taurus<sup>™</sup> III Modular Patch Panel



4HU Taurus<sup>™</sup> III Modular Patch Panel



MTP-LC Module



MTP Adapter Plate



LC Adapter Plate



Blind Plate

### Applications

- 1HU, 4HU Taurus<sup>™</sup> III modular fiber patch panels are used in MDA, IDA or HDA for fiber cable distribution and management.

### Features

- High density and modular design, suitable for upgrade
- 1HU panel body accommodates 4 modules and supports max. 96-core fibers (LC connector) and 384-core fibers (MTP connector) connectivity.
- 4HU panel body accommodates 12 modules and supports max. 288-core fibers (LC connector) and 1152-core fibers (MTP connector)
- Connectivity.
- MTP-LC, MTP-MTP and LC-LC modules with different density are available to achieve most flexible and optimized configuration.
- Distinctive rear cabling cable storage and management design provide wider operation space for best maintainability.
- Front plate of panel is made of a special transparent material designed for fiber cable protection and convenient system maintenance.
- Both 4U and 1U panel are with horizontal cable management

ring to facilitate patch cord management.

- The patent hidden label system makes the product more tidy and practical.
- Both side or rear cable installation are available.
- Compatible with 10G/40G/100G /400G applications.

### Technical Parameters

- The outer shape of the patch panel complies with ETSI 1HU and 4HU standards.
- Salt mist cyclic test (24H).
- Attenuation (Typical): single-mode MTP-LC module 0.5dB, multi-mode MTP-LC module 0.4dB.
- Storage temperature: -40°C ~ +70°C.
- Operation temperature: -20°C ~ +60°C.

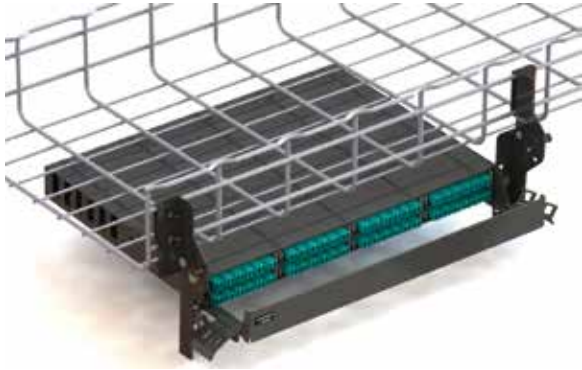
### Relative Standards

- ANSI/TIA-942-B
- ANSI/TIA-568-D.3
- ISO/IEC 24764
- ISO/IEC 60794
- ISO/IEC 61754
- EN 50173-5

<b>Taurus™ III Modular Fiber Patch Panel Ordering Information</b>	
Ordering Information	Description
<b>Taurus™ III Fiber Patch Panel</b>	
CPB1-120-61	Taurus™ III Modular Patch Panel Box, Grey, 4HU
CPB1-120-21	Taurus™ III Modular Patch Panel Box, Grey, 1HU
<b>Taurus™ III MTP/MPO(Female)-LC A module</b>	
CPB2-A41-11	Taurus™ III Module-A,MTP(F)-LC,24F,9/125µm SM
CPB2-A43-11	Taurus™ III Module-A,MTP(F)-LC,24F,OM2 50/125µm MM
CPB2-A44-11	Taurus™ III Module-A,MTP(F)-LC,24F,OM3 50/125µm MM
CPB2-A45-11	Taurus™ III Module-A,MTP(F)-LC,24F,OM4 50/125µm MM
CPB2-A46-11	Taurus™ III Module-A,MTP(F)-LC,24F,OM5 50/125µm MM
CPB2-A41-31	Taurus™ III Module-A,MPO(F)-LC,24F,9/125µm SM
CPB2-A43-31	Taurus™ III Module-A,MPO(F)-LC,24F,OM2 50/125µm MM
CPB2-A44-31	Taurus™ III Module-A,MPO(F)-LC,24F,OM3 50/125µm MM
CPB2-A45-31	Taurus™ III Module-A,MPO(F)-LC,24F,OM4 50/125µm MM
CPB2-A46-31	Taurus™ III Module-A,MPO(F)-LC,24F,OM5 50/125µm MM
<b>Taurus™ III MTP/MPO(Female)-LC B module</b>	
CPB2-A41-12	Taurus™ III Module-B,MTP(F)-LC,24F,9/125µm SM
CPB2-A43-12	Taurus™ III Module-B,MTP(F)-LC,24F,OM2 50/125µm MM
CPB2-A44-12	Taurus™ III Module-B,MTP(F)-LC,24F,OM3 50/125µm MM
CPB2-A45-12	Taurus™ III Module-B,MTP(F)-LC,24F,OM4 50/125µm MM
CPB2-A46-12	Taurus™ III Module-B,MTP(F)-LC,24F,OM5 50/125µm MM
CPB2-A41-32	Taurus™ III Module-B,MPO(F)-LC,24F,9/125µm SM
CPB2-A43-32	Taurus™ III Module-B,MPO(F)-LC,24F,OM2 50/125µm MM
CPB2-A44-32	Taurus™ III Module-B,MPO(F)-LC,24F,OM3 50/125µm MM
CPB2-A45-32	Taurus™ III Module-B,MPO(F)-LC,24F,OM4 50/125µm MM
CPB2-A46-32	Taurus™ III Module-B,MPO(F)-LC,24F,OM5 50/125µm MM
<b>Front Plate</b>	
CPB4-222-22	Taurus™ III LC 12F Front Plate With Adapter, SM
CPB4-223-22	Taurus™ III LC 12F Front Plate With Adapter, MM
CPB4-222-32	Taurus™ III LC 24F Front Plate With Adapter, SM
CPB4-223-32	Taurus™ III 24F Front Plate With Adapter, MM
CPB4-325-22	Taurus™ III MTP Up/Up 6 Port Front Plate With Adapter
CPB4-325-42	Taurus™ III MTP Up/Up 8 Port Front Plate With Adapter
CPB4-327-22	Taurus™ III MPO Up/Up 6 Port Front Plate With Adapter
CPB4-327-42	Taurus™ III MPO Up/Up 8 Port Front Plate With Adapter
<b>Blind Plate</b>	
CPB4-911-12	Taurus™ III Blind Front Plate

# HDCS® Data Center Cabling Solution Products

## Vela™ Bridge-type Fiber Patch Panel



Bridge-type Fiber Patch Panel (Installed under the bridge)



12F MTP-LC Module

### Applications

- 1HU 96F Vela™ bridge-type fiber patch panel is used in MDA, IDA or HDA for fiber cable distribution and management
- A maximum of 8 set of the Vela™ 12F module, 1HU Vela™ bridge-type fiber patch panel can be installed 96 cores
- Supplied the mounting bracket, bridge-type fiber patch panel
- Can be installed on the bridge or under the bridge

### Features

- Easy installation and maintenance, the maximum capacity that can reach up to 96 fibers with two layers, 8 set of the Vela™ 12F module.
- 12F MTP-LC module and 12F LC adapter front plate are available for the patch panel.
- Vela™ 12F fiber module is defined respectively by using multi-mode 50/125um OM2, OM3, OM4, OM5 or a low water- peak single-mode 9/125um fiber cable harness inside.
- The front panel can be flipped 180 degrees downward, with labels.

- No separate installation horizontal cable manager, the patch panel can manage the wiring by itself.
- Dedicated pre-connection splitter fixing accessories protect pre-connection trunk

### Parameters

- The outer shape of the patch panel complies with ETSI 1HU standard
- Salt mist cyclic test (24H)
- Attenuation (Typical): single-mode MTP-LC module 0.5dB, multi-mode MTP-LC module 0.4dB
- Storage temperature: -40°C ~ +70°C
- Operation temperature: -20°C ~ +60°C

### Standards

- ANSI/TIA-568-D.3
- ISO/IEC 60794
- ISO/IEC 61754
- EN 50173-5
- GB 50174



# Vela™ Bridge-type Fiber Patch Panel

<b>Vela™ Data Center Bridge-type Patch Pane Ordering Information</b>	
<b>Ordering Number</b>	<b>Description</b>
<b>Vela™ Fiber Patch Panel</b>	
CPB1-730-41	Vela™ Fiber Patch Panel, Black, without Module
<b>Bridge Mounting Bracket</b>	
CP46-120-12	2HU rotating bridge mounting bracket
CP46-120-14	4HU rotating bridge mounting bracket
<b>MTP/MPO(Female)-LC Module, Type A</b>	
CPB2-A51-11	Vela™ 12F module A, G652D MTP(F)-LC
CPB2-A53-11	Vela™ 12F module A, OM2 MTP(F)-LC
CPB2-A54-11	Vela™ 12F module A, OM3 MTP(F)-LC
CPB2-A55-11	Vela™ 12F module A, OM4 MTP(F)-LC
CPB2-A56-11	Vela™ 12F module A, OM5 MTP(F)-LC
CPB2-A51-31	Vela™ 12F module A, G652D MPO(F)-LC
CPB2-A53-31	Vela™ 12F module A, OM2 MPO(F)-LC
CPB2-A54-31	Vela™ 12F module A, OM3 MPO(F)-LC
CPB2-A55-31	Vela™ 12F module A, OM4 MPO(F)-LC
CPB2-A56-31	Vela™ 12F module A, OM5 MPO(F)-LC
<b>MTP/MPO(Female)-LC Module, Type B</b>	
CPB2-A51-12	Vela™ 12F module B, G652D MTP(F)-LC
CPB2-A53-12	Vela™ 12F module B, OM2 MTP(F)-LC
CPB2-A54-12	Vela™ 12F module B, OM3 MTP(F)-LC
CPB2-A55-12	Vela™ 12F module B, OM4 MTP(F)-LC
CPB2-A56-12	Vela™ 12F module B, OM5 MTP(F)-LC
CPB2-A51-32	Vela™ 12F module B, G652D MPO(F)-LC
CPB2-A53-32	Vela™ 12F module B, OM2 MPO(F)-LC
CPB2-A54-32	Vela™ 12F module B, OM3 MPO(F)-LC
CPB2-A55-32	Vela™ 12F module B, OM4 MPO(F)-LC
CPB2-A56-32	Vela™ 12F module B, OM5 MPO(F)-LC
<b>Data Center Splicing Module</b>	
CPB2-553-11	Vela™ 12F LC Splicing module with LC adapter without pigtail
<b>Adapter Plate</b>	
CPB4-335-51	Vela™ MTP Adapter plate with 4Pcs MTP adapter Up/Up
CPB4-337-51	Vela™ MPO Adapter plate with 4Pcs MTP adapter Up/Up
CPB4-232-21	Vela™ LC Adapter plate with 6Pcs LCD SM adapter
CPB4-233-21	Vela™ LC Adapter plate with 6Pcs LCD OM3 adapter
<b>Blind Cover</b>	
CPB4-611-11	Vela™ Blind Cover

# HDCS<sup>®</sup> Data Center Cabling Solution Products

## Taurus<sup>™</sup> MTP/MPO-LC Harness cord



### Applications

- Provide connection between Equipment with LC connector and MTP type trunk cable
- Provide connection between Equipment with MTP connector and LC type trunk cable
- Datacenter MDA, EDA

### Parameters

- Fiber type: OM2, OM3, OM4, OM5, G652D
- Fire redundant: LSZH, OFNR, OFNP
- Max. insert loss: 0.5dB(MM); 0.7dB(SM)
- Working temperature: -10°C ~ +60°C
- Minimum fiber bending radius: <30mm

### Features

- Supports custom lengths
- The number of harness cord is optional
- 40G/100G application
- LC connector polarity inversion optional
- Low attenuation loss
- 100% tested
- Easy Plug&Play installation and maintenance
- 

### Standards

- IEC 61754-7
- IEC 61754-20
- IEC 61300-3-4
- ISO/IEC 11801
- ANSI/TIA-568-D

### Ordering Information

Digit1-2	Digit3-4	Digit5	Digit6	Digit7-8	Digit9-10	Digit11-12	Digit13	Digit14-17	
Har- ness	XX: Fiber Count	X: Jacket Material	X: Fiber Type	—	XX: Connector (Left)	XX: Con- nector (Right)	—	XX: Branch Length	X X X X : Length
HA	04=4F	H=LSZH	2=OM2		MP=MPO(Male)	LC=LC	05: 0.5m	A=TIA 568 A	0005=0.5
	08=8F	R=OFNR	G=OM3		MF=MTP(Female)	LD=LCD	15: 1.5m	B=TIA 568 B	0030=3
	12=12F	P=OFNP	H=OM4		MS=MPO(Male)	LU=LC Uniboot	20: 2m	C=TIA 568 C	0120=12
			J=OM5		MK=MPO(Female)			D=40G-4*10G	
			9=G652D						

Rosenberger MTP-LC Harness cords are ordered using 17 digits: Digit 1-2, Harness cord; Digit 3-4, the number of cores; Digit 5, Outer sheath material or flammability class; Digit 6, fiber type; Digit 7-8, MTP connector type selection; Digit 9-10, Branch connector type; Digit 11-12, Branch length; Digit 13, Fiber polarity; Digit 14-17, Length selection.

PN Example: HA12RG-MPLD-A0050 Harness, 12F, OM3, MTP(M)-LCD, Type A, OFNR,5M

# HDCS<sup>®</sup> Data Center Cabling Solution Products

## Taurus<sup>™</sup> LC Fiber Patch Cord



LC Uniboot Fiber Patch Cord



LC Quick-Release Fiber Patch Cord

### Applications

- Between fiber patch panels
- Between fiber patch panel and equipment with fiber connection
- Between equipment with fiber connection

### Features

- Fire redundant: LSZH, OFNR, OFNP
- Duplex mode: Full duplex
- Custom lengths
- Fiber type: OM2, OM3, OM4, OM5, G652D
- 100% performance tested and very low attenuation
- Uniboot fiber patch cord can be reversed A/B polarity
- Quick-release fiber patch cord can be plug quickly without tools in high-density space

### Parameters

- Comply with: IEC 61754-20, IEC 61300-3-4, IEC 61300-3-6
- Storage temperature: -25°C ~ +70°C
- Working temperature: -5°C ~ +70°C
- 

### Delivery

- Patch cord separately packed in plastic bag
- Labeled with serial number
- 

### Standards

- ANSI/TIA-568-D.3
- ISO/IEC 11801

# Taurus™ LC Fiber Patch Cord

Taurus™ LC Patch cord Ordering Information								
	Digit4	Digit5	Digit6	Digit7	Digit8	Digit9	Digit10	Digit11-14
	X	X	X	X	X	X	X	XXXX
98C	S:G652D OFNR	2:2.0mm	3: Duplex Patch Cord	1:UPC-UPC(SM)	4: LC	4: LC	M: Meter	Cable Length XXX.X meter or XXX.X feet
	E: G652D LSZH		5: Duplex Patch Cord (Separately)					
	T: G652D OFNP						F: Feet	
	G: OM3 OFNR		6: Uniboot	5:UPC-UPC(MM)				
	H: OM3 LSZH							
	N: OM3 OFNP							
	V: OM4 OFNR		A: Duplex Quick Release					
	X: OM4 LSZH							
	W: OM4 OFNP							
	Q: OM5 OFNR							
	K: OM5 LSZH							
	R: OM5 OFNP							

Rosenberger patch cords and pigtailed are ordered using 14 digits: Digit4, fiber type selection; Digit5, cable diameter selection; Digit6, connector type selection; Digit7, polishing level selection for SM or core diameter selection for MM; Digit8& Digit9, connector type selection; Digit10, Unit of length; Digit11-14, length selection, the format and digits are listed below.  
 Example: 98CG23544M0030 Patch cord, OM3, OFNR, 2.0mm, UPC-UPC, LC-LC, 3meters

# HDCS<sup>®</sup> Data Center Cabling Solution Products

## Taurus<sup>™</sup> MTP Patch Cord



### Applications

- Used for datacenter fiber cabling, providing connection between equipment and MTP patch panel
- Used for 40G and 100G when the equipment adopts multichannel parallel transmit technology

### Features

- MTP patch cord adopts 12 core MTP connector at both sides
- Quick and convenient installation; improved and simplified fiber routing
- Multi-mode OM2, OM3, OM4, OM5, low water-peak single-mode 9/125um G652D and 9/125um G657A fiber options available to support a variety of applications
- Each MTP patch cord is tested in the Rosenberger factory for transmission and connectivity performance to ensure uniformity for 12 core fibers and minimal average insertion loss

- MTP fiber optical connector exceeding requirement of durability single mode 500 mattings and multi-mode 1000 mattings in EIA/TIA-455-21A
- OFNR, OFNP or LSZH sheathed fiber cables are available. LSZH rated fiber cable meets and passes IEC60332-1 and IEC60332-3 requirements, OFNR rated cable meets and passes UL-1666 requirements, and OFNP rated cable meets and passes UL-910 requirements

### Standards

- IEC 61754-7
- IEC 61754-20
- IEC 61300-3-4
- ISO/IEC 11801
- ANSI/TIA-568-D

### Taurus<sup>™</sup> MTP-MTP Patchcord Technical Parameters

	Single-mode(8°)	Multi-mode
Insertion Loss (Typical dB)	0.6	0.5
Standards	EIA/TIA-455-21A IEC-61754-7 TIA-604-5	
Temperature Range (Installation) °C	-5°C~ 50°C	
Temperature Range (Operation) °C	-20°C~ 60°C	

### Taurus<sup>™</sup> MTP/MPO Patch cord Ordering Information

Digit 1-2	Digit 3-4	Digit 5	Digit 6	—	Digit 7-8	Digit 9-10	—	Digit 11	Digit 12-15
Taurus <sup>™</sup> MTP/MPO Patch cord	XX: Fiber	X: Cable Jacket Type	X: Fiber Type		XX: Connector	XX: Connector Type		X: Polarity	XXXX: Cable
	04:4 core	H: LSZH	G: OM3		MP: MTP(Male)	MP: MTP(Male)		A: TIA568 Type A	0005:0.5M
MS	06:6 core	R: OFNR	H: OM4	—	MF: MTP(Female)	MF: MTP(Female)	—	B: TIA568 Type B	0100:10M
	08:8 core	P: OFNP	J: OM5		MS: MPO(Male)	MS: MPO(Male)		C: TIA568 Type C	0150:15M
	12:12 core		9: G652D		MK:MPO (Female)	MK: MPO (Female)			0200:20M
			A: G657A2						0250:25M

MTP patch cords are ordered using 15 digits: Digit1 and Digit2, Taurus<sup>™</sup> MTP patch cord; Digit3 and Digit4, fiber cores selection; Digit5, cable jacket selection; Digit6, fiber type selection; Digit7 and Digit8, connector type selection on one end; Digit9 and Digit10, connector type on another end; Digit 11, polarity; Digit12 to Digit15, cable length selection.  
 Example: MS12RG-MFMF-B0030 MTP Patch cord, 12F, OFNR, OM3, MTP(F)-MTP(F), type B, 3meters

# HDCS<sup>®</sup> Data Center Cabling Solution Products

## Fornax<sup>™</sup> Active Optical Cable



QSFP+/QSFP28 Active Optical Cable



SFP+/SFP28 Active Optical Cable



100G QSFP28 to 4\*25G SFP28 Active Optical Cable

### Applications

- High capacity I/O in storage area networks
- Network attached storage, and storage servers
- Switched fabric I/O such as ultra high bandwidth switches and routers
- Data center cabling infrastructure
- Connectivity for storage, server and HPC

### Product Features

- 850nm VCSEL transmitter
- Hot Pluggable, suitable for Industrial optional
- 3.3V power supply voltage
- All-metal housing for superior EMI performance
- Operating case temperature: 0 to 70 °C
- RoHS, REACH compliant

### Standards

- SFP+: SFF-8431
- SFP28: EDR InfiniBand
- QSFP+: SFF-8436
- QSFP+: QDR/DDR/SDR InfiniBand
- QSFP28: SFF-8665

Product Type	Support Distance(meter)	
	OM3 fiber	OM4 fiber
10G SFP+ AOC	300	550
25G SFP28 AOC	70	100
40G QSFP+ AOC	100	150
100G QSFP28 AOC	70	100

Product Types

PN Series	Description
<b>10G/40G Active Optical Cable</b>	
CPS2-261-XXXX	AOC,10G SFP+ to SFP+, OM3 LSZH XXX.Xm
CPQ2-161-XXXX	AOC, 40G QSFP to 4x 10G SFP+, OM3 LSZH XXX.Xm
CPQ2-361-XXXX	AOC, 40G QSFP to 40G QSFP, OM3 LSZH XXX.Xm
<b>25G/100G AOC Active Optical Cable</b>	
CPG2-461-XXXX	AOC,25G SFP28 to SFP28, OM3 LSZH XXX.Xm
CPH2-561-XXXX	AOC, 100G QSFP28 to 4x 25G SFP28, OM3 LSZH XXX.Xm
CPH2-661-XXXX	AOC, 100G QSFP28 to 100G QSFP28, OM3 LSZH XXX.Xm
Remark: XXXX for cable length. 0050 represents 5meters	
PN example: CPH2-661-0050 100G QSFP28 AOC, OM3 LSZH 5meters	

# HDCS® Data Center Cabling Solution Products

## Fornax™ SFP+/QSFP+ Direct Attach Passive Copper Cables



10G SFP+/25G SFP28 Passive Copper Cable



100G QSFP28/40G QSFP to 4X25G/10G Splitter Copper Cable

### Applications

- High capacity I/O in storage area networks
- Network attached storage, and storage Servers
- Switched fabric I/O such as ultra high bandwidth switches and routers
- Data center cabling infrastructure
- High density connections between networking equipment

### Features

- Support for multi-gigabit data rates up to 10G, 25G, 40G, 100G
- Data rates backward compatible to 1Gbps
- Hot-pluggable SFP 20PIN footprint
- I/O Connector designed for high speed differential signal applications
- Improved Pluggable Form Factor (IPF) compliant for enhanced EMI/EMC performance

- Compatible to SFP+ MSA

### Parameters

- Bit error rate: < 10E-12
- Hot-pluggable, industry-standard small form-factor
- Pluggable (SFP+/SFP28) copper cable, ≤ 7m
- Pluggable (QSFP/QSFP28) copper cable, ≤ 5m
- Temperature range: 0°C ~ +70 °C
- RoHS compliant

### Standards

- SFP+: SFF 8431
- QSFP+: SFF 8436
- QSFP+: QDR InfiniBand
- QSFP28: SFF-8665

### Fornax™ SFP+/QSFP+ DAC Ordering Information

	Digit3	Digit4	Digit5	Digit6	Digit7	Digit8-11
CP	S:SFP+	1: Passive	1: 4xSFP+(40G)	1: 30AWG	1: 0°C~70°C	Cable Length XX.X meter
	Q:QSFP+/QSFP28	2: Active	2: SFP+(10G)	2: 28AWG	2: -5°C~85°C	
			3: QSFP+(40G)	3: 26AWG	3: -40°C~85°C	
			4: QSFP28(100G)	4: 24AWG		
			5: SFP28(25G)			

Rosenberger Direct Attach Passive Copper Cables (DAC) are ordered using 11 digits: Digit3, module type selection; Digit4, power supply; Digit5, splitter module selection; Digit6, copper selection; Digit7, operating case temperature; Digit8-11, length selection.  
Example: CPS1-241-030 10G DAC cable, SFP+-SFP+, 24AWG, 0-70°C, 3meters



# HDCS<sup>®</sup> Data Center Cabling Solution Products

## Taurus<sup>™</sup> I Hybrid patch Panel



Open Type Hybrid



Box Type Hybrid

**Applications**

- Data Center EDA
- Administration Room of Building Structure cabling system

**Features**

- Hybrid type for both Fiber and Copper solution
- Maximum three modules can be installed into one patch panel, up to 72 cores with LC connector or 36 copper connections; can intermix fiber and copper
- Support both trunk cable and fusion solution for fiber cable

- Built-in cable management; easy maintenance
- All Rosenberger Keystone and fiber adapters can be installed into modules
- Patch panel can be both installed in standard 19" cabinet and open cable tray

**Parameters**

- Materials: steel
- Size: 1HU height, 19" width
- With accessory for fixing patch panel on open cable tray

Order Information		
Type	Ordering Number	Products Description
Open Type Hybrid	CPB1-310-21	1HU Open Type Hybrid Patch Panel (Empty)
	CPB5-101-21	CAT5E Module (Incl. 12 CAT5E Keystone)
	CPB5-102-21	CAT6 Module (Incl. 12 CAT6 Keystone)
	CPB5-203-21	LC 24F 9/125 Module (with Adapter)
	CPB5-204-21	LC 24F 50/125 Module (with Adapter)
	CPB5-205-21	LC 24F Laser Optimize 50/125 Module (with Adapter)
	CPB5-203-31	LC 12F 9/125 Module (with Adapter)
	CPB5-204-31	LC 12F 50/125 Module (with Adapter)
	CPB5-205-31	LC 12F Laser Optimize 50/125 Module (with Adapter)
	CPB5-305-11	MPO 96F Module (with Adapter)
	CPB5-404-41	Module Protective Box
Box Type Hybrid	CPB1-310-28	1HU Box Type Hybrid Patch Panel (Empty)
	CPB5-108-11	UTP Module (Empty with 8 Ports)
	CPB5-508-11	FTP Module (Empty with 8 Ports)
	CPB5-233-21	LC 24F 9/125 Fusion Type Module (with Adapter)
	CPB5-234-21	LC 24F 50/125 Fusion Type Module (with Adapter)
	CPB5-235-21	LC 24F Laser Optimize 50/125 Fusion Type Module (with Adapter)
	CPB5-233-31	LC 12F 9/125 Fusion Type Module (with Adapter)
	CPB5-234-31	LC 12F 50/125 Fusion Type Module (with Adapter)
CPB5-235-31	LC 12F Laser Optimize 50/125 Fusion Type Module (with Adapter)	
Splice Chip	997844003	Splice Chip (12 Slices)

# HDCS® Data Center Cabling Solution Products

## Taurus™ II Modular 24 Ports FO-CU Hybrid Patch Panel



Taurus™ II Modular 24 Ports FO-CU Hybrid Patch Panel



Module Holder

### Applications

- Taurus™ II Modular 24 Ports FO-CU Hybrid Patch Panel is generally used for connecting optical and copper LAN cable at each distribution area in data center room, such as EDA zone.

### Features

- The empty panel is capable of holding 24 modules
- The module supports fiber and copper
- Each port has a spring dust cover that is good for dust protection
- The empty panel has separately label with every module in front side
- Labels come in various colors for easy identification
- The module can be maintained in front

### Technical Data

- Plug insertion life: 750 cycles min.
- Plug retention force: 30 Lbs min.
- IDC contactor: accept 22-26 AWG solid wires
- Storage temperature: -40°C ~ +70°C
- Working temperature: -20°C ~ +60°C

### Standards

- ANSI/TIA568-D.2
- ANSI/TIA568-D.3
- ANSI/TIA 942-B
- ISO/IEC11801
- EN50173-5

### Order Information

Ordering Number	Products Description
CPB1-540-21	24P Modular FO-CU Hybrid Patch Panel (with Black Module Holder without Module)
CPB1-510-21	24P Modular FO-CU Hybrid Patch Panel (without Module Holder and Module)
CPB8-000-01	Module Holder for FO-CU Hybrid Patch Panel, Black
CPB8-000-02	Module Holder for FO-CU Hybrid Patch Panel, Yellow
CPB8-000-03	Module Holder for FO-CU Hybrid Patch Panel, Blue
CPB8-000-05	Module Holder for FO-CU Hybrid Patch Panel, Red
CPB8-000-06	Module Holder for FO-CU Hybrid Patch Panel, Green
CP33-364-01	LC Duplex MM Module, Beige
CP33-36H-01	LC Duplex OM3/OM4 MM Module, Aqua
CP33-368-01	LC Duplex SM Module, Blue
CP31-13C-11	CAT6 UTP 90 Degree Tool-less Module, Black
CP31-171-21	CAT6 UTP Keystone, Black, 180°

# HDCS® Data Center Cabling Solution Products

## Pegasus™ Pre-connect Copper Cable



Pre-connect Copper Cable



Pre-connect Copper Cable

### Applications

- Pegasus™ PreCONNECT Copper cable can be used to quickly deploy a permanent link between the distribution area to equipment area in a data center.

### Features

- Quick and easy installation, saving on-site labor costs
- Guarantee high reliability base on 100% quality inspection in factory
- CAT6 , CAT6A and Unshielded , shielded various of type for option
- CM, CMR, CMP and LSZH series Fire retardant Pre-connect

copper cable available

- Each copper permanent link performance far exceeds standard TIA568-D and ISO11801 especially for short link performance

### Parameters

- Storage temperature: -40°C ~ +70°C
- Operation temperature: -20°C ~ +60°C

### Standards

- ANSI/TIA- 568-D
- TIA-942-B
- ISO/IEC11801
- EN50173-5

Order Information	
Ordering Number	Products Description
CPB6-121-3-XXX	Pegasus™ 6Port CAT6 UTP Fan-Out Preconnect Copper Cable, CM
CPB6-123-3-XXX	Pegasus™ 6Port CAT6 UTP Fan-Out Preconnect Copper Cable, LSZH
CPB6-221-3-XXX	Pegasus™ 6Port CAT6 FTP Fan-Out Preconnect Copper Cable, CM
CPB6-223-3-XXX	Pegasus™ 6Port CAT6 FTP Fan-Out Preconnect Copper Cable, LSZH
CPB6-131-3-XXX	Pegasus™ 6Port CAT6A UTP Fan-Out Preconnect Copper Cable, CM
CPB6-133-3-XXX	Pegasus™ 6Port CAT6A UTP Fan-Out Preconnect Copper Cable, LSZH
CPB6-231-3-XXX	Pegasus™ 6Port CAT6A FTP Fan-Out Preconnect Copper Cable, CM
CPB6-233-3-XXX	Pegasus™ 6Port CAT6A FTP Fan-Out Preconnect Copper Cable, LSZH
Remark: XXX represent length, as 5 meters: "005"	

# HDCS<sup>®</sup> Data Center Cabling Solution Products

## Apus<sup>™</sup> 48 Ports Patch Panel



Apus<sup>™</sup> 48 Ports Unshielded Patch Panel



Apus<sup>™</sup> 48port Shielded Panel

### Applications

- Apus<sup>™</sup> high density modular panel is generally used to connect copper LAN cable at each distribution area in data center room, such as EDA, MDA and SAN zone.

### Features

- 48 ports is available in 1HU
- Meets multiple requirements with double label system
- Distinct markers for rotating label and protection cover
- Easy cable management
- Controlling cable bending radius from cabling managements of panel
- Diversiform patch cords and modules optional

### Technical Parameters

- Plug insertion life: 750 cycles min
- Plug retention force: 30 Lbs Min
- IDC contactor: accept 22-26 AWG solid wires
- Temperature range: -40°C ~ +70°C

### Standards

- ANSI/TIA568-D.2
- ANSI/TIA 942-B
- ISO/IEC11801
- EN50173-5

### Transmission Parameter (for Connecting Hardware, at 20°C)

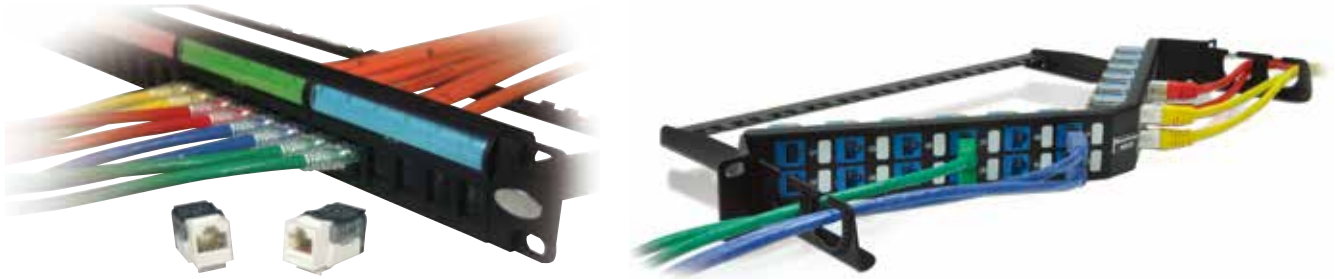
Frequency (MHz)	Attenuation (dB/100m)	NEXT (dB)	RL (dB)	PSNEXT (dB)	ACRF (dB)	PSACRF (dB)
	Max.	Min.	Min.	Min.	Min.	Min.
1.0	0.1	75.0	30.0	73.0	83.1	80.1
4.0	0.1	75.0	30.0	72.3	71.1	68.1
8.0	0.1	75.0	30.0	71.0	66.1	65.4
10.0	0.1	74.0	30.0	70.0	63.1	60.1
16.0	0.1	69.9	30.0	65.9	59.0	56.0
20.0	0.1	68.0	30.0	64.0	57.1	54.1
25.0	0.1	66.0	30.0	62.2	53.2	52.6
31.25	0.11	64.1	30.0	60.1	50.0	50.2
62.5	0.16	58.1	28.1	54.1	47.2	44.2
100.0	0.20	54.0	24.0	50.0	43.1	40.1
200.0	0.28	48.0	18.0	44.0	37.1	34.1
250.0	0.32	46.0	16.0	42.0	35.1	32.1

# Apus™ 48 Ports Patch Panel

Order Information	
Ordering Number	Products Description
CP41-431-08-E	CAT6 1HU 48 Ports UTP Copper Panel, without Keystone
CP31-131-21	CAT6 UTP Keystone, Black, 180°
CP31-131-22	CAT6 UTP Keystone, Yellow, 180°
CP31-131-23	CAT6 UTP Keystone, blue, 180°
CP31-131-24	CAT6 UTP Keystone, Ivory, 180°
CP31-131-25	CAT6 UTP Keystone, Red, 180°
CP41-431-08	CAT6 1HU 48 Ports UTP Copper Panel, W/BK Keystone
CP41-431-08L	CAT6 1U 48port UTP Modular panel W/Front Mgmt and BK Keystone
CP41-451-08-E	CAT6A 1HU 48 Ports UTP Copper Panel, without Keystone
CP31-171-21	CAT6 UTP Keystone, Black, 180°
CP31-171-22	CAT6A UTP Keystone, Yellow, 180°
CP31-171-23	CAT6A UTP Keystone, blue, 180°
CP31-171-24	CAT6A UTP Keystone, Ivory, 180°
CP31-171-25	CAT6A UTP Keystone, Red, 180°
CP41-451-08	CAT6A 1HU 48 Ports UTP Copper Panel, W/BK Keystone
CP41-451-08L	CAT6A 1U 48port UTP Modular Panel W/Front Mgmt and BK Keystone
CP41-451-08-E	CAT6A 1HU 48 Ports UTP Copper Panel, without Keystone
CP41-331-08	CAT6 1HU 48 Ports FTP Copper Panel, W/BK Keystone
CP41-331-08E	CAT6 1HU 48 Ports FTP Copper Panel, without Keystone
CP41-331-08L	CAT6 1HU 48 Ports FTP Copper Panel, W/Front Mgmt and Keystone
CP31-532-14	CAT6 FTP Zinc Alloy Keystone, Tool-less, 90°
CP41-351-08	CAT6A 1HU 48 Ports FTP Copper Panel, with Keystone
CP41-351-08E	CAT6A 1HU 48 Ports FTP Copper Panel, without Keystone
CP41-351-08L	CAT6A 1HU 48 Ports FTP Copper Panel, W/Front Mgmt and BK Keystone
CP31-572-14	CAT6A FTP Zinc Alloy Keystone, Tool-less, 90°
CP91-100-00	Keystone Dummy Plug for Modular Panel or Faceplate, Black
CP91-200-00	Keystone Dummy Plug for Modular Panel or Faceplate, White
* Note: more detail information, please contact with Rosenberger sales	

# HDCS<sup>®</sup> Data Center Cabling Solution Products

## Apus<sup>™</sup> CAT6 UTP Copper Cabling System



### Applications

Apus<sup>™</sup> CAT6 data cable for structured premise cabling transmits voice, data and video signals. It supports current high-bandwidth applications, especially suitable for application of Fast-Ethernet. Used in connecting copper LAN cable at each distribution area in data center room.

- VoIP
- ISDN
- Token ring
- 100 Mbps TP-PMD
- Analog and digital video
- TR-16 Active and Passive
- 155 Mbit /622Mbit /1.2 Gbit ATM
- 10baseT/100baseTX Fast /1000baseTX Gigabit Ethernet

### Features

- Each port has a spring dust cover
- Four sets of color labels provided for cable identification and management

- Panel with longer rear cable for easy cable management and cable bending radius
- The keystone jack in panel could support excellent short link performance
- Tool-less termination based on innovative hinged pressing cover.
- Diversiform patch cords and modules optional

### Technical Parameters

- Plug insertion life: 750 cycles min.
- Plug retention force: 30 Lbs min.
- IDC contactor: Accept 22-26 AWG solid wires
- Temperature range: -40°C ~ +70°C

### Standards

- ANSI/TIA568-D.2
- ANSI/TIA568-D.3
- ANSI/TIA 942-B
- ISO/IEC11801
- EN50173-5

Transmission Parameter (for Permanent Link, at 20°C)

Frequency (MHz)	Attenuation (dB/100m)	NEXT (dB)	RL (dB)	PSNEXT (dB)	ACRF (dB)	PSACRF (dB)
	Max.	Min.	Min.	Min.	Min.	Min.
1.0	1.9	65.0	19.1	62.0	64.2	61.2
4.0	3.5	64.1	21.0	61.8	52.1	49.1
8.0	5.0	59.4	21.0	57.0	46.1	43.1
10.0	5.5	57.8	21.0	55.5	44.2	41.2
16.0	7.0	54.6	20.0	52.2	40.1	37.1
20.0	7.9	53.1	19.5	50.7	38.2	35.2

# Apus™ CAT6 UTP Copper Cabling System

Transmission Parameter (for Permanent Link, at 20°C)						
Frequency (MHz)	Attenuation (dB/100m)	NEXT (dB)	RL (dB)	PSNEXT (dB)	ACRF (dB)	PSACRF (dB)
	Max.	Min.	Min.	Min.	Min.	Min.
25.0	8.9	51.5	19.0	49.1	36.2	33.2
31.25	10.0	50.0	18.5	47.5	34.3	31.3
62.5	14.4	45.1	16.0	42.7	28.3	25.3
100.0	18.6	41.8	14.0	39.3	24.2	21.2
200.0	27.4	36.9	11.0	34.3	18.2	15.2
250.0	31.1	35.3	10.0	32.7	16.2	13.2

Order Information	
Ordering Number	Products Description
CP11-141-12	Apus™ CAT6 UTP 4-pair CM LAN Cable, 305m
CP11-141-13	Apus™ CAT6 UTP 4-pair LSZH LAN Cable, 305m
CP11-141-14	Apus™ CAT6 UTP 4-pair CMR LAN Cable, 305m
CP11-141-16	Apus™ CAT6 UTP 4-pair CMP LAN Cable, 305m
CP31-131-21	Apus™ CAT6 UTP Keystone, Black, 180°
CP31-131-24	Apus™ CAT6 UTP Keystone, Ivory, 180°
CP31-13C-11	Apus™ CAT6 UTP 90 Degree Tool-less Module, Black
CP31-13C-14	Apus™ CAT6 UTP 90 Degree Tool-less Module, Ivory
CP41-431-03N-E	Apus™ CAT6 UTP Modular Cap Patch Panel, 24-port (without Keystone)
CP41-431-03N	Apus™ CAT6 UTP Modular Cap Patch Panel, 24-port (with Standard Keystone)
CP41-431-03N-P	Apus™ CAT6 UTP Modular Cap Patch Panel, 24-port (with Tool-less Keystone)
CP41-431-13-E	Apus™ CAT6 UTP "W" Style Patch Panel, 24-port (without Keystone)
CP41-431-13	Apus™ CAT6 UTP "W" Style Patch Panel, 24-port (with Standard Keystone)
CP41-431-13-P	Apus™ CAT6 UTP "W" Style Patch Panel, 24-port (with Tool-less Keystone)
CP61-421-12	Apus™ CAT6 RJ45-RJ45 UTP 4-pair Patch Cord CM, 2m, Grey
CP61-421-22	Apus™ CAT6 RJ45-RJ45 UTP 4-pair Patch Cord LSZH, 2m, Grey
CP61-421-72	Apus™ Safety Lock CAT6 RJ45-RJ45 UTP 4-pair Patch Cord CM, 2m, Grey
CP61-421-82	Apus™ Safety Lock CAT6 RJ45-RJ45 UTP 4-pair Patch Cord LSZH, 2m, Grey
CP42-231-01	Data Center 1HU Metal Wire Management, Deep Type
CP91-100-00	Keystone Dummy Plug for Modular Panel or Faceplate, Black
CP91-200-00	Keystone Dummy Plug for Modular Panel or Faceplate, White

\*Note: more detail information, such as color, length etc., please contact with Rosenberger sales

# HDCS<sup>®</sup> Data Center Cabling Solution Products

## Apus<sup>™</sup> CAT6 FTP Copper Cabling System



### Applications

Apus<sup>™</sup> CAT6 data cable for structured premise cabling transmits voice, data and video signals. It supports current high-bandwidth applications, especially suitable for application of Fast-Ethernet. Used to connect copper LAN cable at each distribution area in data center room.

- VoIP
- ISDN
- Token Ring
- 100 Mbps TP-PMD
- Analog and Digital Video
- TR-16 Active and Passive
- 155 Mbit /622Mbit /1.2 Gbit ATM
- 10baseT/100baseTX Fast /1000baseTX Gigabit Ethernet

### Features

- Each port has a spring dust cover
- Four sets of color labels provided for cable identification and management

- Panel with longer rear cable for easy cable management and cable bending radius control
- Keystone jack in panel could support excellent short link performance
- Tool-less termination based on innovative hinged pressing cover
- Diversiform patch cords and modules optional

### Technical Parameters

- Plug insertion life: 750 cycles min.
- Plug retention force: 30 Lbs min.
- IDC contactor: accept 22-26 AWG solid wires
- Temperature range: -40°C ~ +70°C

### Standards

- ANSI/TIA568-D.2
- ANSI/TIA 942-B
- ISO/IEC11801
- EN50173-5



# Apus™ CAT6 FTP Copper Cabling System

Transmission Parameter (for Permanent Link, at 20°C)						
Frequency (MHz)	Attenuation (dB/100m)	NEXT (dB)	RL (dB)	PSNEXT (dB)	ACRF (dB)	PSACRF (dB)
	Max.	Min.	Min.	Min.	Min.	Min.
1.0	1.9	65.0	19.1	62.0	64.2	61.2
4.0	3.5	64.1	21.0	61.8	52.1	49.1
8.0	5.0	59.4	21.0	57.0	46.1	43.1
10.0	5.5	57.8	21.0	55.5	44.2	41.2
16.0	7.0	54.6	20.0	52.2	40.1	37.1
20.0	7.9	53.1	19.5	50.7	38.2	35.2
25.0	8.9	51.5	19.0	49.1	36.2	33.2
31.25	10.0	50.0	18.5	47.5	34.3	31.3
62.5	14.4	45.1	16.0	42.7	28.3	25.3
100.0	18.6	41.8	14.0	39.3	24.2	21.2
200.0	27.4	36.9	11.0	34.3	18.2	15.2
250.0	31.1	35.3	10.0	32.7	16.2	13.2

Order Information	
Ordering Number	Products Description
CP11-241-12	Apus™ CAT6 FTP 4-pair CM LAN Cable, 305m
CP11-241-13	Apus™ CAT6 FTP 4-pair LSZH LAN Cable, 305m
CP11-241-14	Apus™ CAT6 FTP 4-pair CMR LAN Cable, 305m
CP11-241-16	Apus™ CAT6 FTP 4-pair CMP LAN Cable, 305m
CP31-231-24	Apus™ CAT6 FTP Keystone, Ivory, 180°
CP31-532-24	Apus™ CAT6 FTP Zinc Alloy Tool-less, Ivory, 180°
CP41-331-03N-E	Apus™ CAT6 FTP Modular Cap Patch Panel, 24-port (without Keystone)
CP41-331-03N	Apus™ CAT6 FTP Modular Cap Patch Panel, 24-port (with Standard Keystone)
CP41-331-13-E	Apus™ CAT6 FTP "W" Style Patch Panel, 24-port (without Keystone)
CP41-331-13	Apus™ CAT6 FTP "W" Style Patch Panel, 24-port (with Standard Keystone)
CP64-421-12	Apus™ CAT6 RJ45-RJ45 FTP 4-pair Patch Cord CM, 2m, Grey
CP64-421-22	Apus™ CAT6 RJ45-RJ45 FTP 4-pair Patch Cord LSZH, 2m, Grey
CP64-421-72	Apus™ Safety Lock CAT6 RJ45-RJ45 FTP 4-pair Patch Cord CM, 2m, Grey
CP64-421-82	Apus™ Safety Lock CAT6 RJ45-RJ45 FTP 4-pair Patch Cord LSZH, 2m, Grey
CP42-231-01	Data Center 1HU Metal Wire Management, Deep Type
CP91-100-00	Keystone Dummy Plug for Modular Panel or Faceplate, Black
CP91-200-00	Keystone Dummy Plug for Modular Panel or Faceplate, White

\*Note: more detail information, such as color, length etc., please contact with Rosenberger sales

# HDCS<sup>®</sup> Data Center Cabling Solution Products

## Draco<sup>™</sup> CAT6A UTP Copper Cabling System



### Applications

HDCS<sup>®</sup> Draco<sup>™</sup> CAT6A data cable for structured premise cabling transmits voice, data and video signals. It supports current and future high-bandwidth applications, especially suitable for application of Class EA. Used in connecting copper LAN cable at each distribution area in data center room.

- VoIP
- ISDN
- Token Ring
- 100 Mbps TP-PMD
- Analog and Digital Video
- TR-16 Active and Passive
- 155 Mbps /622Mbit /1.2 Gbps ATM
- 10BaseT/100BaseTX Fast /1000BaseTX Gigabit Ethernet/10GBase-T Ethernet

### Features

- Flexible and modular
- Diversiform patch cords and modules optional
- Labels provided for cable identification and management
- Panel with longer rear cable for easy cable management and controlling cable bending radius
- Excellent short link performance based on unique design

### Technical Parameters

- Plug insertion life: 750 cycles min.
- Plug retention force: 30 Lbs min.
- IDC contactor: accept 22-26 AWG solid wires
- Temperature range: -40°C ~ +70°C

### Standards

- ANSI/TIA568-D.2
- ANSI/TIA 942-B
- ISO/IEC11801
- EN50173-5

# Draco™ CAT6A UTP Copper Cabling System

Transmission Parameter (for Permanent Link, at 20°C)							
Frequency (MHz)	Attenuation (dB/100m)	NEXT (dB)	RL (dB)	PSNEXT (dB)	ACRF (dB)	PSACRF (dB)	PSANEXT (dB)
	Max.	Min.	Min.	Min.	Min.	Min.	Min.
1.0	1.9	65.0	19.1	62.0	64.2	62.0	67.0
4.0	3.5	64.1	21.0	61.8	52.1	61.8	67.0
8.0	5.0	59.4	21.0	57.0	46.1	57.0	67.0
10.0	5.5	57.8	21.0	55.5	44.2	55.5	67.0
16.0	7.0	54.6	20.0	52.2	40.1	52.2	67.0
20.0	7.8	53.1	19.5	50.7	38.2	50.7	67.0
25.0	8.8	51.5	19.0	49.1	36.2	49.1	66.0
31.25	9.8	50.0	18.5	47.5	34.3	47.5	65.1
62.5	14.0	45.1	16.0	42.7	28.3	42.7	62.0
100.0	18.0	41.8	14.0	39.3	24.2	39.3	60.0
200.0	26.1	36.9	11.0	34.3	18.2	34.3	55.5
250.0	29.5	35.3	10.0	32.7	16.2	32.7	54.0
300.0	32.7	34.0	9.2	31.4	14.6	31.4	52.8
400.0	38.4	29.9	8.0	27.1	12.1	27.1	51.0
500.0	43.8	26.7	8.0	23.8	10.2	23.8	49.5

Order Information	
Ordering Number	Products Description
CP11-171-12	Draco™ CAT6A UTP 4-pair CM LAN Cable, 305m
CP11-171-13	Draco™ CAT6A UTP 4-pair LSZH LAN Cable, 305m
CP11-171-14	Draco™ CAT6A UTP 4-pair CMR LAN Cable, 305m
CP11-171-16	Draco™ CAT6A UTP 4-pair CMP LAN Cable, 305m
CP31-171-24	Draco™ CAT6A UTP Keystone, Ivory
CP41-451-03-E	Draco™ CAT6A UTP Modular Patch Panel, 24-port (without Keystone)
CP41-451-03	Draco™ CAT6A UTP Modular Patch Panel, 24-port (with Standard Keystone)
CP61-431-12	Draco™ CAT6A RJ45-RJ45 UTP 4-pair Patch Cord CM, 2m, Grey
CP61-431-22	Draco™ CAT6A RJ45-RJ45 UTP 4-pair Patch Cord LSZH, 2m, Grey
CP61-431-72	Draco™ Safety Lock CAT6A RJ45-RJ45 UTP 4-pair Patch Cord CM, 2m, Grey
CP61-431-82	Draco™ Safety Lock CAT6A RJ45-RJ45 UTP 4-pair Patch Cord LSZH, 2m, Grey
CP42-231-01	Data Center 1HU Metal Wire Management, Deep Type
CP91-100-00	Keystone Dummy Plug for Modular Panel or Faceplate, Black
CP91-200-00	Keystone Dummy Plug for Modular Panel or Faceplate, White

\*Note: more detail information, such as color, length etc., please contact with Rosenberger sales

# HDCS<sup>®</sup> Data Center Cabling Solution Products

## Draco<sup>™</sup> CAT6A FTP Copper Cabling System



### Applications

HDCS<sup>®</sup> Draco<sup>™</sup> CAT6A data cable for structured premise cabling transmits voice, data and video signals. It supports current and future high-bandwidth applications, especially suitable for application of Class EA. Used to connect copper LAN cable at each distribution area in data center room.

- VoIP
- ISDN
- Token Ring
- 100 Mbps TP-PMD
- Analog and Digital Video
- TR-16 Active and Passive
- 155 Mbps /622Mbit /1.2 Gbps ATM
- 10BaseT/100BaseTX Fast /1000BaseTX Gigabit Ethernet/10GBase-T Ethernet

### Features

- Each port has a spring dust cover
- Four sets of color labels provided for cable identification and management

- Panel with longer rear cable for easy cable management and cable bending radius control
- Keystone jack in panel supports excellent short link performance.
- Tool-less termination based on innovative hinged pressing cover
- Diversiform patch cords and modules optional

### Technical Parameters

- Plug insertion life: 750 cycles min.
- Plug retention force: 30 Lbs min.
- IDC contactor: accept 22-26 AWG solid wires
- Temperature range: -40°C ~ +70°C

### Standards

- ANSI/TIA568-D.2
- ANSI/TIA 942-B
- ISO/IEC11801
- EN50173-5

# Draco™ CAT6A FTP Copper Cabling System

Transmission Parameter (for Permanent Link, at 20°C)							
Frequency (MHz)	Attenuation (dB/100m)	NEXT (dB)	RL (dB)	PSNEXT (dB)	ACRF (dB)	PSACRF (dB)	PSANEXT (dB)
	Max.	Min.	Min.	Min.	Min.	Min.	Min.
1.0	1.9	65.0	19.1	62.0	64.2	62.0	67.0
4.0	3.5	64.1	21.0	61.8	52.1	61.8	67.0
8.0	5.0	59.4	21.0	57.0	46.1	57.0	67.0
10.0	5.5	57.8	21.0	55.5	44.2	55.5	67.0
16.0	7.0	54.6	20.0	52.2	40.1	52.2	67.0
20.0	7.8	53.1	19.5	50.7	38.2	50.7	67.0
25.0	8.8	51.5	19.0	49.1	36.2	49.1	66.0
31.25	9.8	50.0	18.5	47.5	34.3	47.5	65.1
62.5	14.0	45.1	16.0	42.7	28.3	42.7	62.0
100.0	18.0	41.8	14.0	39.3	24.2	39.3	60.0
200.0	26.1	36.9	11.0	34.3	18.2	34.3	55.5
250.0	29.5	35.3	10.0	32.7	16.2	32.7	54.0
300.0	32.7	34.0	9.2	31.4	14.6	31.4	52.8
400.0	38.4	29.9	8.0	27.1	12.1	27.1	51.0
500.0	43.8	26.7	8.0	23.8	10.2	23.8	49.5

Order Information	
Ordering Number	Products Description
CP11-271-12	Draco™ CAT6A FTP 4-pair CM LAN Cable, 305m
CP11-271-13	Draco™ CAT6A FTP 4-pair LSZH LAN Cable, 305m
CP11-271-14	Draco™ CAT6A FTP 4-pair CMR LAN Cable, 305m
CP11-271-16	Draco™ CAT6A FTP 4-pair CMP LAN Cable, 305m
CP31-572-24	Draco™ CAT6A FTP Zinc Alloy Tool-less, Ivory, 180°
CP41-351-03N-E	Draco™ CAT6A FTP Modular Cap Patch Panel, 24-port (without Keystone)
CP41-351-03N	Draco™ CAT6A FTP Modular Cap Patch Panel, 24-port (with Zinc Alloy Keystone)
CP41-351-13-E	Draco™ CAT6A FTP “W” Style Patch Panel, 24-port (without Keystone)
CP41-331-13	Draco™ CAT6A FTP “W” Style Patch Panel, 24-port (with Zinc Alloy Keystone)
CP64-431-12	Draco™ CAT6A RJ45-RJ45 FTP 4-pair Patch Cord CM, 2m, Grey
CP64-431-22	Draco™ CAT6A RJ45-RJ45 FTP 4-pair Patch Cord LSZH, 2m, Grey
CP64-431-72	Draco™ Safety Lock CAT6A RJ45-RJ45 FTP 4-pair Patch Cord CM, 2m, Grey
CP64-431-82	Draco™ Safety Lock CAT6A RJ45-RJ45 FTP 4-pair Patch Cord LSZH, 2m, Grey
CP42-231-01	Data Center 1HU Metal Wire Management, Deep Type
CP91-100-00	Keystone Dummy Plug for Modular Panel or Faceplate, Black
CP91-200-00	Keystone Dummy Plug for Modular Panel or Faceplate, White

\*Note: more detail information, such as color, length etc., please contact with Rosenberger sales



# Major Projects at a Glance



- HSBC London
- Citigroup, London
- Royal Bank of Scotland
- BNP Paribas, Paris
- United Bank of Switzerland
- Lloyds TSB Group
- Bank of Netherlands, Amsterdam
- Deutsche Bank, Frankfurt
- Deutsche Bundesbank
- TUV Rheinland Group
- Commerzbank
- Fortis Bank, Belgium
- Crédit Mutuel
- AXA Insurance, Paris
- Frankfurt Airport
- UniCredit SpA
- ISP Investment Company
- Allianz Group
- German\France IBM SO Datacenter
- Lehman Brother Inc.
- T-System
- BMW
- E.ON German
- Mercedes-Benz
- Baidu Data Center in Japan
- Baidu Data Center in America
- Tencent Data Center in Toronto Canada
- Tencent Data Center in Barrie, Canada
- Tencent Data Center in New Jersey, USA
- Evoswitch Data Center in Netherlands
- Akquinet Data Center in German
- Equinix Data Center in German
- Air France Cata Center in French
- Generali Data Center in Italy
- IBM SO Data Center in Italy
- The City Bank in Dhaka, Bangladesh
- Grameenphone New Storage Data Center in Dhaka, Bangladesh
- Edison Group in Dhaka, Bangladesh
- Maybank (formerly BII) in Jakarta, Indonesia
- Brazil Level 3 (Global Crossing) Data center
- Brazil Bradesco Bank

# Major Projects at a Glance



Brazil Brazilian Bank  
Brazil Itau Bank  
Brazil Oi-Telemar  
Brazil Embratel

China Construction Bank  
China Construction Bank, Guangdong  
China Construction Bank, Yunnan  
The People's Bank of China, Harbin  
Industrial and Commercial Bank of Guangzhou  
Industrial and Commercial Bank of Chengde  
Bank of Communications  
Bank of Beijing  
Huaxia Bank  
Changsha Commercial Bank Disaster Recovery Center  
PICC  
China Pacific Insurance (Group) Co., Ltd  
Taiping Life Insurance Co., Ltd  
Union Life Insurance Co., Ltd  
Jiahe Life Insurance Co., Ltd  
Dongwu Stock Jobber  
Yan'an Rural Credit Cooperatives  
Sina  
Baidu  
Soho  
Tencent  
Ifeng  
Patrol China Beijing  
Iqiyi  
North China Oil Field  
State Grid Corporation of China  
Guangzhou 2010 Asian Games  
Beijing Municipal Government  
Guangzhou Municipal Government  
Shanghai Pudong Zhangjiang  
Shanghai Volkswagen  
The Bureau of Land Resources Nanjing  
China Science and Technology Museum  
Zhejiang Local Taxation  
Dr. Peng Beijing  
Nanjing University



# Major Projects at a Glance



- Shanghai Institute of Technology
- Beijing Telecom
- Shanghai Northeast Logistics Park
- Guiyang Tobacco
- NTT Tianjing
- China Mobile DataCenter in Shanghai
- Ele.me Data center,China
- National Internet Center,China
- Suning Ecommerce Data Center,China
- JD.com Data center,China
- China Ministry of Industry and Information Technology Data Center
- Iqiyi Data Center,China
- Shenzhen Baode Data Center,China
- MI Data Center,China
- Sina Data Center,China
- Meituan Data Center,China
- DiDi Data Center,China
- Beijing Bio Corporation Data Center,China
- TravelSky Data Center,China
- State Grid Disaster Recovery Data Center,China
- Ministry of Land and Resources in Beijing ,China
- Anbang Insurance Group Data Center,China
- Jinan Yaoqiang International Airport Data Center,China
- Education Department Data Center in Shandong,China
- Supercomputer Center in Shandong,China
- Maritime Bureau Data Center in QinDao,China
- Taxation Bureau Data Center in Jinan City,China
- Submarine Academy in Qindao,China
- National Security Bureau Data Center,China
- The General Administration of Customs Data Center,China
- New Airport Data Center in Qindao,China
- China Institute of Oceanography.





## Website

For further information refer to our website:  
[www.RosenbergerAP.com](http://www.RosenbergerAP.com)

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