



HIGH DENSITY EQUIPMENT PANEL

Featuring Quareo Technology

2nd Edition

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Understanding Quareo Physical Layer Management

TE's Quareo physical layer management is an end-to-end solution, combining hardware and software elements to provide accurate visibility on the state of the physical network at all times. It enables easier, smarter network management for everyone from cable installers to network managers, strengthening physical security, boosting availability and providing real-time communication with network assets.

The Quareo physical layer management system leverages an innovative technology called connection point identification (CPID) to capture accurate information on the state of the network. This is done by incorporating chips on connectors throughout the network. Factory installed, these chips are programmed with all the pertinent information about a product, starting with the serial number. Once installed in the network, the product becomes fully discoverable, and the information can be accessed by a technician.

The Quareo physical layer management software captures data from the hardware and turns it into information that can be used to more effectively and efficiently manage the network. Field technicians and installers are armed with better, more accurate data, which reduces labor times and errors in service turn up and troubleshooting.

To learn more about Quareo physical layer management solutions, visit: www.te.com/Quareo



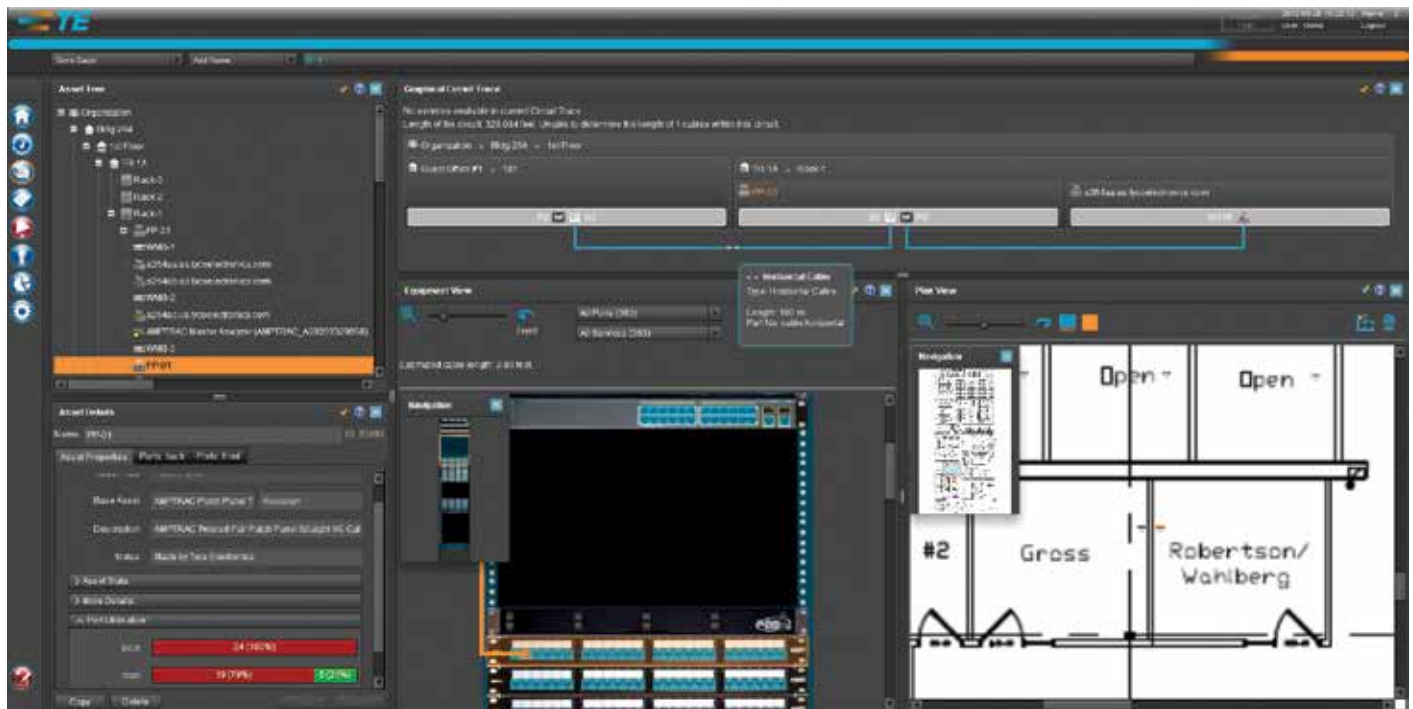
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Quareo Software

TE's software is a server software application designed to document and administer both passive and active network connectivity infrastructure. The Quareo software enables management of various levels of network components from existing brownfield infrastructure to TE's traditional and automated physical layer management solutions.

As part of the Quareo physical layer management system, Quareo software enables immediate notification and response to changes in connectivity and automatically records the configurations of the physical layer cabling system and its devices with accurate documentation.



FEATURES

- Accountability of assets by location and date
- Availability of assets and utilization is improved
- Reduced operational costs
- Best practice and regulatory requirements are more easily attained
- Network problems are more easily diagnosed and corrected
- Security is greatly enhanced
- Remote visibility of the physical layer
- DoD/DISA/JITC tested



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Overview

HIGH DENSITY EQUIPMENT PANEL FEATURING QUAREO TECHNOLOGY (QHDEP)

The QHDEP is a 1RU (1.75") fiber optic connector panel with six technician-friendly access trays. Each tray features a mounting location for holding one LC or MPO adapter pack, or MPO module or cabled module. A single access tray can serve up to 24 LC fiber connections or 8 MPO fiber connections. At full capacity, the QHDEP panel will hold up to 144 (LC) or 48 (MPO) fiber connections. Each panel includes mounting brackets for 19-inch (48.26cm), 23-inch, or ETSI mounting applications.

CONNECTION POINT IDENTIFICATION (CPID)

TE's CPID technology provides a unique identifier for every Quareo-enabled component in the network – enabling immediate recognition of a patch cord upon installing or removing. CPID gives network operators complete visibility to all connection events in the network and provides detailed information on the network elements being used.

ADAPTER PACKS

Adapter packs are designed to provide easy connector insertion/removal, and clearer adapter port identification. Adapter packs are available in 24-fiber (12 duplex) LC or eight MPO adapter pack configurations. Each tray supports one adapter pack, for a total of up to six packs per chassis.

MPO MODULES

MPO modules offer the same craft-friendly interface management as adapter packs, but include a low-loss MPO adapter at the rear for connecting an MPO trunk cable. MPO modules are available in 12-fiber LC-MPO, or 24-fiber LC-MPO configurations. Support for MPOOptimate performance.

CABLED MODULES

Cabled modules have the same factory tested termination as MPO modules or adapter packs except they have a fiber cable pigtail exiting the rear. These pigtails can be directly terminated or spliced at the other end to eliminate excess cable length. Cabled modules are available in LC (24-fiber) configurations.



24 port LC adapter pack



8 port MPO adapter pack



LC to MPO module



24 fiber LC cabled module

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High Density Equipment Panel featuring Quareo Technology (QHDEP)

The 1RU QHDEP is part of the end-to-end Quareo physical layer management system utilizing CPID technology. It is designed to hold LC or MPO adapter packs, LC-MPO modules, or LC cabled modules.

- Supports Quareo 1RU Panel Controller
- Quareo user LED indicators
 - Chassis status
 - Tray level / work order (one LED per each access tray)
 - Port level / work order
- Panel doors, mounting ears and vertical cable guides are included with the panel
- Mounting dimensions HxWxD: 1.75 x 19/23 x 20 inches (4.5 x 48.3/58.4 x 50.8 cm)
- Cable clamps and breakout cable management solutions are available for incoming trunk cables
- Maintenance Services available



Panel Capacity

Connector Type	Fibers
LC	144-fiber (72 duplex ports)
MPO	48 ports (576 fibers using 12-fiber MPO or 1152 fibers using 24-fiber MPO)

ORDERING INFORMATION

Description	Part Number
1RU QHDEP Empty Panel	QE-HEP-1000000000
1RU QHDEP Panel with Controller	QE-HEP-10000S0000

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SPECIFICATIONS

Mechanical

Dimensions DxWxH: 19.64" x 19.09" x 1.7"
(49.9 cm x 48.5 cm x 4.32 cm)
Weight: 14.9 lb (8.1 kg)

Electrical

Power consumption: 12.95W max
Voltage: 37-57 VDC, 48VDC nominal
Input current: 350mA @ 37VDC

Environmental

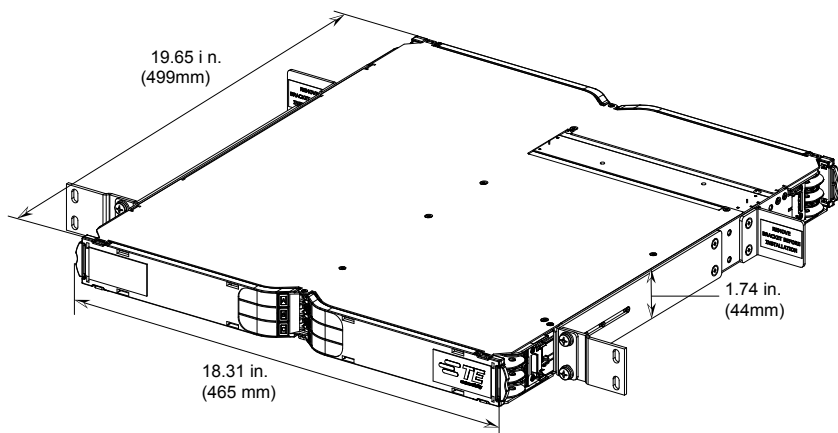
Operating conditions: +14° F to + 140° F (-10° C to + 60° C)
5% to 95% RH

Storage conditions: -40° F to + 158° F (-40° C to + 70° C)
10% to 95% RH

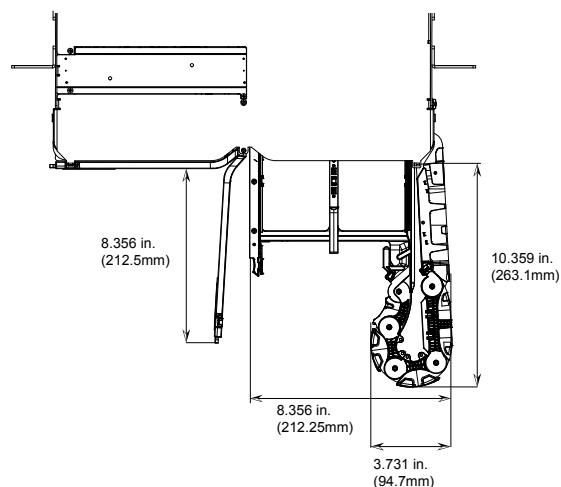
Components

See following pages for supported adapter packs and modules.

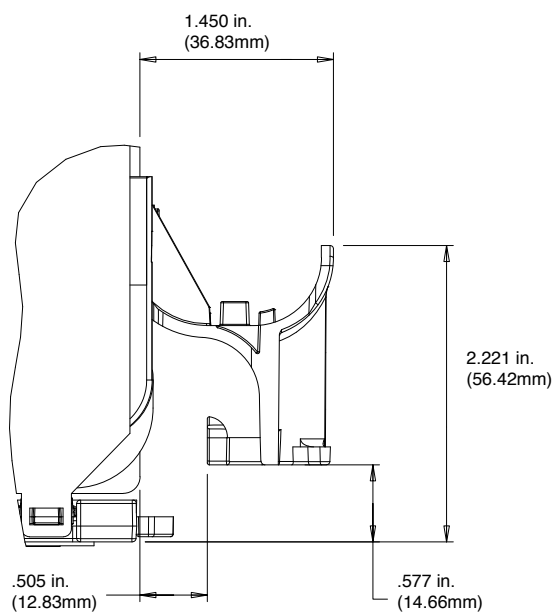
Product Dimensions



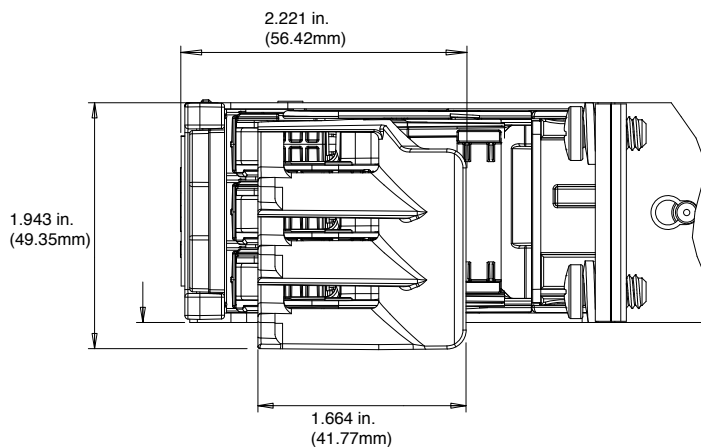
Panel - ISO View



Tray/Door - Open Position from rear



Vertical Cable Guide - Top View



Vertical Cable Guide - Side View

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Controller

The controller unit mounts into a slot on the front side of a single high density equipment panel to provide power and functionality for communicating over the network with the Quareo software / middleware.

FEATURES

- Supports a 1RU high density fiber panel
- User Indicators:
 - Power - Green
 - Status - Red/Green
 - Ethernet Jack - Green - Link/Activity
 - Ethernet Jack - Yellow - 100 Base-TX
- Maintenance Services available on this product



SPECIFICATIONS

Physical

Dimensions (HxWxD):	25.2 mm x 76.2 mm x 113mm (0.99"x 3"x 4.45")
Electrical I/F:	RJ45
Electrical Aux. I/F:	4-Pin pluggable terminal

Environmental

Operating Temperature:	+14° F to +140° F (-10° C to +60° C)
Storage Temperature:	-40° C to +70° C (-40° F to +158° F)
Humidity:	5% to 95% non-condensing
RoHS Compliant	

Electrical

- Power Input (or Aux Supply)
- Power Over Ethernet (PoE) Input:
 - IEEE 802.3af - class 0 PD - 12.95W max

AUX Input

- Dual input, diode or'd
- Input Voltage: 37-57 VDC, 48 VDC nominal
- Input Current: 350mA at 37VDC
- Mating Connector: TE 284506-4 or equivalent

AC Power Supply

- Input Voltage: 100-240VAC
- Input Current: 0.5A max
- Output Voltage: 48V
- Output Current Max: 0.40A
- Max Watts: 19.2W

AUX Connector

- 4 Position Terminal Block (TE Part 284506-4)
- Pitch: 3.5mm
- Wire Gauge Range: 30-14
- Current Rating: 11A
- Voltage Rating: 300VAC

Communications

- 10/100Base-T/TX

ORDERING INFORMATION

Description	Part Number
Controller for 1RU QHDEP panel	QE-HEP-CTR1000000

*Controller can be ordered separately or included with the network chassis

High Density Equipment Panel

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Adapter Packs

Universal adapter packs are designed to accept a variety of connector types, including singlemode and multimode, angled and ultra-polished connections. The flexibility of the universal adapter pack helps service providers reduce ordering SKU's and total inventory requirements. The staggered adapter pack design helps installers access connectors without pinching or moving adjacent connections; it also eliminates the need for installers to use an extraction tool, and helps clearly identify individual fiber ports. One 24-fiber (12 duplex port) LC adapter pack can be installed per tray or one eight-port MPO adapter pack (12- or 24-fiber MPO) per tray; up to six total adapter packs per panel. A specially designed latch window on the rear of the adapter pack allows easy identification of the connector type on the front side of the unit. As a result, technicians will always know the connector type installed on the unit, no matter if they are working from the front or rear side of the panel.



LC adapter pack



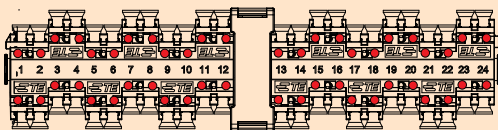
MPO adapter pack

ORDERING INFORMATION

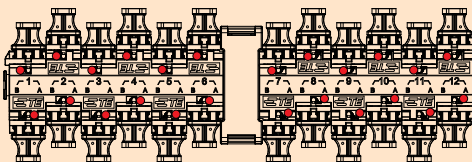
Description	Part Number
Managed Adapter Pack, LC-LC Black, 24 fibers (24 simplex ports, managed front and rear)	QE-ADP-24HPLCS000
Managed Adapter Pack, LC-LC Black, 24 fibers (12 duplex ports, managed front and rear)	QE-ADP-24HPLCD000
Managed Adapter Pack, LC-LC Black, 24 fibers (12 duplex ports, managed front only)	QE-ADP-24HPLCE000
Managed Adapter Pack, LC-LC Black, 24 fibers (24 simplex ports, managed front only)	QE-ADP-24HPLCF000
Managed Adapter Pack, MPO-MPO Black, 96 fibers (8, 12F MPO, managed front and rear)	QE-ADP-96HPMPG000
Managed Adapter Pack, MPO-MPO Black, 96 fibers (8, 12F MPO, managed front only)	QE-ADP-96HPMPF000
Managed Adapter Pack, LC-LC Aqua, 24 fibers (12 duplex ports, managed front and rear)	QE-ADP-24HP0CD000
Managed Adapter Pack, LC-LC Blue, 24 fibers (12 duplex ports, managed front and rear)	QE-ADP-24HP0KD000
Managed Adapter Pack, LC-LC Green, 24 fibers (12 duplex ports, managed front and rear)	QE-ADP-24HP0MD000
Managed Adapter Pack, MPO-MPO Aqua, 192 fibers (8, 24F MPO ports, managed front and rear)	QE-ADP-192HPMAG000
Managed Adapter Pack, MPO-MPO Green, 192 fibers (8, 24F MPO ports, managed front and rear)	QE-ADP-192HPMGG000

ADAPTER PACK PORT MONITORING

LC

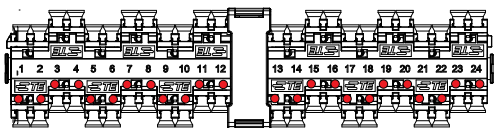


Simplex Front / Rear Monitoring

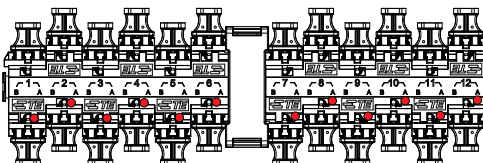


Duplex Front / Rear Monitoring

LC

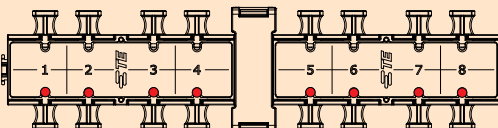


Simplex Front Monitoring

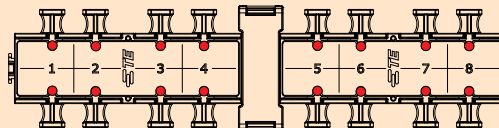


Duplex Front Monitoring

MPO



Simplex Front Monitoring



Simplex Front/Rear Monitoring

● = LED

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MPO Modules

The MPO module offers a craft-friendly interface for connecting 24 LC connectors to an MPO adapter – enabling a rapid connection to electronics or a fiber tie panel such as TE's Rapid Fiber panel solution. Leveraging an MPO architecture, technicians can route and install higher fiber counts faster and easier, while simplifying cable inventory and ordering requirements. Up to 6 MPO modules can be loaded per panel and are available as a dual 12-fiber LC-MPO for singlemode and multimode configurations or a single 24-fiber LC-MPO multimode configurations. Support for MPOptimate performance.



LC-MPO module - left orientation

SPECIFICATIONS

MPOptimate Performance:

- o Multimode 12f MPO – LC: Factory measured 0.35 dB loss maximum per MPO-LC OM4 module
- o Multimode 24f MPO – LC: Factory measured 0.35 dB loss maximum per MPO-LC OM4 module

Singlemode Performance:

(<0.75 dB) @ 1310 nm/1550 nm)

Insertion & Return Loss:

IL ≤ 0.35dB

RL ≥ 27dB

Traceable:

Each module is uniquely identified and linked to factory measurement data

Standard Fiber Path:

Compatible with TIA 568-C.O-2 draft standard for Method A

24-Fiber Trunk Compatible:

Fiber path supports 24-fiber deployment

Pinned Cassettes:

MPO alignment pins are maintained inside the module, reducing damage risk

Used in Pairs:

Assures proper fiber map, polarity and location of MPO alignment pins

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ORDERING INFORMATION

	Module Orientation	Adapter Color	LC Port Monitoring	Polarity	Part Number
LC-to-MPOOptimate (2x12-fiber MPO) QHDEP Module Multimode MPOOptimate (OM4); Loss (<0.35 dB @ 850 nm/1300 nm)	Left	Black	Simplex	A-A/B-B (Straight)	QE-MPM-24HPCUMLA
	Right				QE-MPM-24HPCUMRA
	Left		Duplex	A-A/B-B (Straight)	QE-MPM-24HPDUMLA
	Right				QE-MPM-24HPDUMRA
	Left	Aqua	Duplex	A-A/B-B (Straight)	QE-MPM-24HPFAHLA
	Right				QE-MPM-24HPFAHRA
	Left			A-B/B-A (Straight)	QE-MPM-24HPFAHLB
	Right				QE-MPM-24HPFAHRB
LC-to-MPOOptimate (1x24-fiber MPO) QHDEP Module Multimode MPOOptimate (OM4); Loss (<0.35 dB @ 850 nm/1300 nm)	Left	Aqua	Duplex	A-A/B-B (Straight)	QE-MPM-24HPFAJLA
	Right				QE-MPM-24HPFAJRA
	Left			A-B/B-A (Flipped)	QE-MPM-24HPFAJLB
	Right				QE-MPM-24HPFAJRB
	Left			10G HD	QE-MPM-24HPFAJLE
	Right				QE-MPM-24HPFAJRE
MPO (1x24-Fiber) to MPO (3x8-Fiber) QHDEP Module Multimode MPOOptimate (OM4); Loss (<0.35 dB @ 850 nm/1300 nm)	Straight	Black	MPO	A-A/B-B (Straight)	QE-MPM-48GAGUA
LC-to-MPO(2x12-fiber MPO) QHDEP Module Singlemode; Loss (<0.75 dB) @ 1310 nm/1550 nm)	Left	Black	Simplex UPC	A-A/B-B (Straight)	QE-MPM-24HPKUELA
	Right				QE-MPM-24HPKUERA
	Left		Simplex APC	A-A/B-B (Straight)	QE-MPM-24HPMUELA
	Right				QE-MPM-24HPMUERA
	Left	Blue	Duplex UPC	A-A/B-B (Straight)	QE-MPM-24HPNBELA
	Right				QE-MPM-24HPNBERA

Order "R" option for mounting MPO module on left side of chassis (LC connectors facing forward)



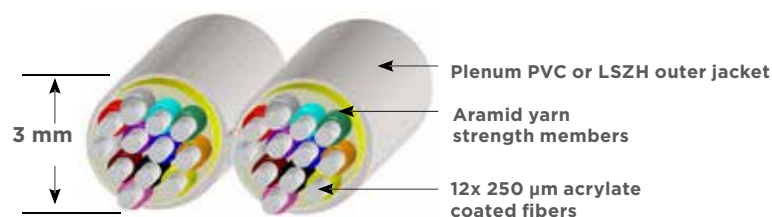
Order "L" option for mounting MPO module on right side of chassis (LC connectors facing forward)

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Multifiber Cable Assemblies

TE's Quareo-enabled multifiber cable assemblies are LSZH, GR 409 compliant, and designed for use in a variety of in-building environments. Built with reduced bend radius technology, each cable assembly provides ideal cable protection and reduces concerns around proper handling, slack storage and attenuation loss from tight bends. The robust microcable design offers maximum space savings, and is available in Singlemode and multimode configurations.



24-fiber dual-zip microcable



MPO Trunk Cable

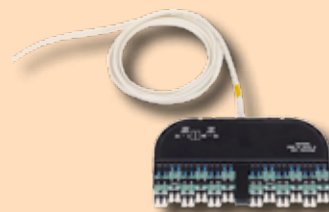


Cabled Modules

Cabled modules will save operators significant time and cost in their cable deployments. Using the LC cabled module, for example, an installer can route a 24-fiber cable to any access tray in the panel, then rapidly terminate the module's 24-fiber connectors with a single click, rather than installing 24 individual connectors. Cabled modules are available in 24-fiber (12 duplex) LC in Singlemode or multimode configurations. Each module is designed for craft friendliness. Individual adapter ports are labeled for easy identification. Cabled modules are ordered as as part of a multifiber cable assembly.



LC cabled module with 24-fiber microcable installed in panel



24-fiber LC cabled module

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Cable Specifications for 3 mm 24-Fiber Zip LSZH Rated Microcable

JACKET COLOR

Singlemode Plenum Rated: Yellow
Multimode OM4: Aqua

ENVIRONMENTAL

Storage Temperature: -40° to 70° C (-40° to 158° F)
Operating Temperature: 0° to 70° C (32° to 158° F)
Installation Temperature: 0° to 50° C (32° to 122° F)

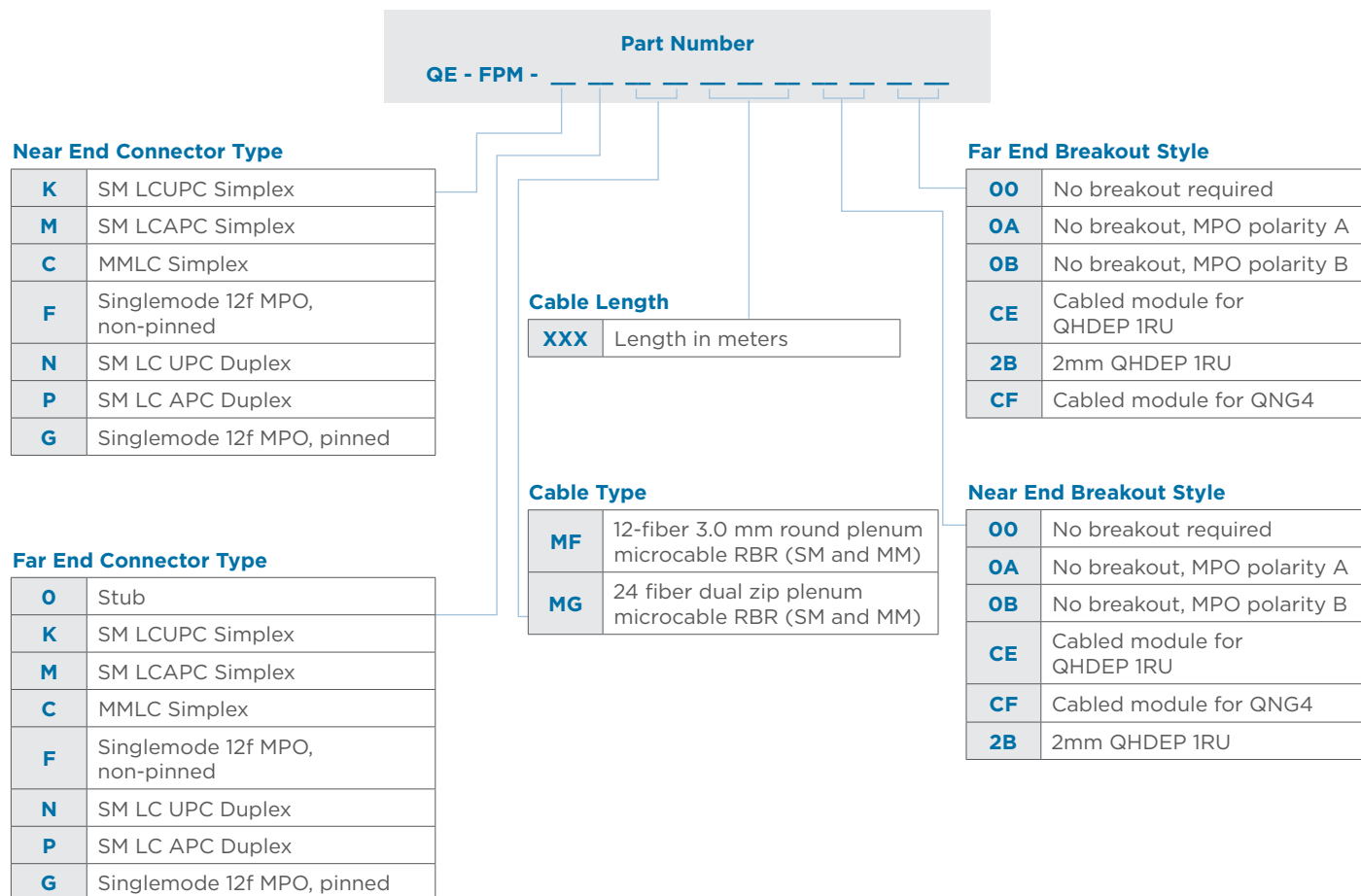
MECHANICAL

Number of Fibers: 24
Maximum Tensile Load
Short Term: 660 N (150 lbf)
Long Term: 200 N (45 lbf)
Minimum Bend Radius
Installed: 30mm (1.18")
Loaded: 60mm (2.36")
Maximum Compression: 10 N/mm (57 lbf/in)
Maximum Impact: 2.94 N•m (2.17 lbf•ft)

COMPLIANCES

- Telcordia GR-409-CORE Interconnect Category, Impact and compression compliant to horizontal and vertical backbone cable requirements
 - Tensile compliant to horizontal backbone cable requirements
 - UL 910 plenum flammability rating
 - EIA/TIA FOTPS
EIA/TIA 568-B
NFPA 262, NEC OFNP, FT-6
 - Restriction of the use of hazardous substances. RoHS (2002/95/EC)
 - California Prop 65 for Safe Drinking Water and Toxic Enforcement Act
- *Reduced Bend Radius Fiber is compliant to ITU-T G.652.D, ITU-T G.657A&B, and IEC 60793-2-50 Type B.1.3

ORDERING INFORMATION



Note: *LSZH cables available upon request. For multimode MPO cable assembly options, see TE document no. 109883AE.

Fiber Patch Cords

As an integral part of the Quareo physical layer management product portfolio, TE's multimode and singlemode fiber patch cords are essential to meet the requirements of today's high-speed data networks. These managed fiber patch cords can be used throughout the network in cross-connect, test, or equipment areas to link optical equipment.



ORDERING INFORMATION

GE - FPC -

Part Number

0000

Near End Connector Type

K	SM LCUPC Simplex
M	SM LCAPC Simplex
C	MM LC Simplex

Far End Connector Type

O	Stub
K	SM LCUPC Simplex
M	SM LCAPC Simplex
C	MMLC Simplex

Cable Length

XXX

Length in meters

Cable Type

AA	1.2 mm Simplex (SM only)
BA	1.7 mm Simplex (SM and MM)
BB	1.7 mm Zip (SM and MM)

*LSZH cables available upon request

Duplex Patch Cords

ORDERING INFORMATION

Description	Fiber Type		Polarity	Part Number
LC-to-LC Plenum	Multimode	OM3	A-to-A	QFPC-MPPM3PA-xxxF
			A-to-B	QFPC-MPPM3PB-xxxF
		OM4	A-to-A	QFPC-MPPM4PA-xxxF
			A-to-B	QFPC-MPPM4PB-xxxF
	Singlemode		A-to-A	QFPC-MKKSMPA-xxxF
			A-to-B	QFPC-MKKSMPB-xxxF
LC-to-LC LSZH	Multimode	OM3	A-to-A	QFPC-MPPM3ZA-xxxM
			A-to-B	QFPC-MPPM3ZB-xxxM
		OM4	A-to-A	QFPC-MPPM4ZA-xxxM
			A-to-B	QFPC-MPPM4ZB-xxxM
	Singlemode		A-to-A	QFPC-MKKSMZA-xxxM
			A-to-B	QFPC-MKKSMZB-xxxM



Replace xxx with desired length in meters or feet

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Intrafacility Cable

TE's Quareo-enabled intrafacility cable is designed to meet fire resistant characteristics for in-building applications. Fiber counts range from 72 to 144. Standard IFC assemblies are riser rated and meet UL-1666 OFNR. Two types of IFC cable are available: stranded and ribbon.



Preterminated IFC Cable with LC Connectors

ORDERING INFORMATION

Part Number	
QE - IFC -	
Near End Connector Type	Far End Breakout Style
K SM LCUPC Simplex	00 No breakout required/stub
M SM LCAPC Simplex	2B 2mm QHDEP 1RU
C MMLC Simplex	CE Cabled module for QHDEP
F Singlemode 12f MPO, non-pinned	CF Cabled module for QNG4
	0A No Breakout, MPO Polarity A
	0B No Breakout, MPO Polarity B
	0C No Breakout, MPO Polarity C
Far End Connector Type	Near End Breakout Style
O Stub	00 No breakout required
K SM LCUPC Simplex	2B 2mm QHDEP 1RU
M SM LCAPC Simplex	CE Cabled module for QHDEP
C MMLC Simplex	CF Cabled module for QNG4
F Singlemode 12f MPO, non-pinned	0A No Breakout, MPO Polarity A
	0B No Breakout, MPO Polarity B
	0C No Breakout, MPO Polarity C
Cable Type	Cable Length
SK 72-fiber stranded (SM and MM)	XXX Length in meters
SL 96-fiber stranded (SM and MM)	
SM 144-fiber stranded (SM and MM)	
RK 72-fiber ribbon (SM only)	
RL 96-fiber ribbon (SM only)	
RM 144-fiber ribbon (SM only)	

*LSZH cables available upon request

Connector Specifications

QUAREO FIBER CABLES

Singlemode Ultra Polish Connectors (UPC) LC

Insertion Loss:	0.3 dB max
(1310 and 1550nm):	0.1 dB typical
Return Loss:	-55 dB min
(1310 and 1550nm)	
Fiber Recess:	-100 TO +50 nm
Apex Offset:	50 µm max
Radius of Curvature:	10-25 MM

Multimode (PC) LC

Insertion Loss:	0.3 dB max
(850 and 1300nm):	0.2 dB typical
Return Loss:	-20 dB max
(850 and 1300nm)	

Singlemode Low Loss MPO Connector

Insertion Loss:	0.45 dB max
(1310 1490, 1550 and 1625nm)	
Return Loss:	-55 dB min
(1310 1490, 1550 and 1625nm)	

Environmental:

Operating Temperature:	-10° C to +60° C (+14° F to +140° F)
Storage Temperature:	-40° C to +85° C (-40° F to +185° F)
Humidity:	5% to 95% non-condensing

RoHS Compliant

Transmission Performance and Reliability:

ANSI /TIA 568-C.3, ISO /IEC 11801, Edition 2
U L/CSA Approved, IEC 60950, A-TICK

Safety:

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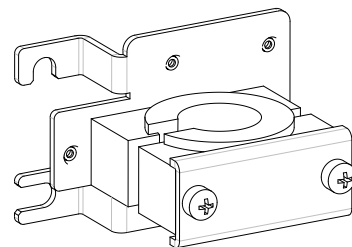
ACCESSORIES FOR THE QHDEP

Cable Clamp Kits

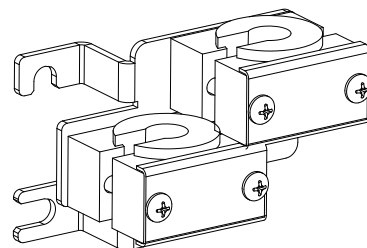
To be used for cable to chassis fixation. Not included with the panel.

ORDERING INFORMATION

Description	Part Number
Cable Clamp Kit - Large For cable diameters 0.81" through 1.10". Includes one bracket with a mounting location and hardware for one cable	QE-HEP-ACCUCCL0000
Cable Clamp Kit - Small Universal cable clamp kit for cable diameters .40" through .80". Includes one bracket with mounting locations and hardware for two cables	QE-HEP-ACCUCCS0000



Large Cable Clamp



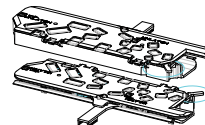
Small Cable Clamp

IFC Breakout Cable Management

To be used for multi-fiber breakout cable installations. Not included with the panel.

ORDERING INFORMATION

Description	Part Number
Fanout Installation kit, 900 μm fibers Secures 900 μ m fanout and manages un-reinforced 900 μ m fibers installed in the chassis	
Left	QE-HEP-ACCUFKR0000
Right	QE-HEP-ACCUFKL0000



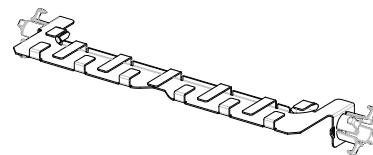
Left and Right Tray Fanout Kit

Cable Cross-Over Manager

To be used for addressing cable exit to one side only, typically cabinet applications.

ORDERING INFORMATION

Description	Part Number
Snap-on bracket to manage cables crossing over or underneath a 1RU chassis	QE-HEP-ACC1DRK0000

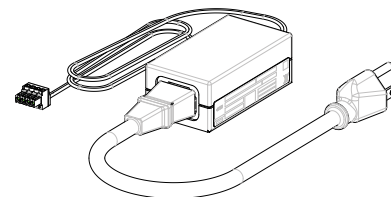


Cable Cross-Over Manager

Power Cable Kit

ORDERING INFORMATION

Description	Part Number
Power Supply with US Cable (Power Supply Optional when not using PoE)	QE-HEP-ACCUPWR0000
Power Supply without Cable	QE-HEP-ACCUPWR0001



Power Cable Kit

REPLACEMENT PARTS FOR THE QHDEP

Replacement Access Trays

ORDERING INFORMATION

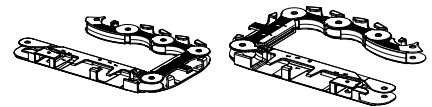
Description	Part Number
Single access tray: Empty for replacement in the high density panel	QE-HEP-ACC1TRY0000



Replacement Cable Guide Assembly

ORDERING INFORMATION

Description	Part Number
Cable guide assembly, front and rear (left or right)	QE-HEP-ACCUCGA0000

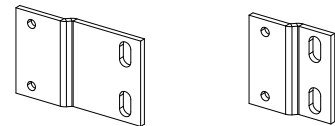


Cable Guide Assembly (Left or Right)

Replacement 19"-23" Extender Bracket Kit

ORDERING INFORMATION

Description	Part Number
Set of extension brackets for mounting a 1RU to a 23" or ETSI frame or cabinet	QE-HEP-ACC1EXT0000



23 Inch and ETSI Extender Brackets

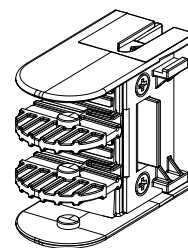
High Density Equipment Panel

Featuring Quareo Technology

Replacement Controller Cover

ORDERING INFORMATION

Description	Part Number
Controller Cover for 1RU Chassis	QE-HEP-ACC1CER0000



Controller Cover

Replacement Panel Door Kits

ORDERING INFORMATION

Description	Part Number
Universal door kit (front/back)	QE-HEP-ACC1DRK0000



Universal Door Kit

Replacement Vertical Cable Guides

ORDERING INFORMATION

Description	Part Number
Vertical cable guide assembly, front left	QE-HEP-ACC1VFL0000
Vertical cable guide assembly, front right	QE-HEP-ACC1VFR0000
Vertical cable guide assembly, rear left	QE-HEP-ACC1VRL0000
Vertical cable guide assembly, rear right	QE-HEP-ACC1VRR0000



Vertical Cable Guides

High Density Equipment Panel

Featuring Quareo Technology

High Density Equipment Panel

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