Rosenberger

Much More Than Technology

Next Generation Site Solutions for All Architectures

Rosenberger Site Solutions –
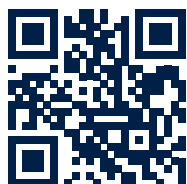# Much More Than Technology

The Rosenberger Site Solutions Group designs, manufactures and provides solutions for the wireless infrastructure market. Our products and systems offer innovative and leading-edge designs with focus on high performance and quality. Having an efficient network implementation in mind, we focus on total site kitting, logistics and delivery time leading to reduced cost of ownership. Globally present, the Rosenberger Site Solutions Group offers extensive local support making Rosenberger Site Solutions a partner instead of just a supplier.

Contents

The Rosenberger Online Catalog contains the current standard FAKRA product range with specific details, including data sheets, assembly instructions, and panel piercings.

www.rosenberger.com/ok

Home of Innovation

A global network of Rosenberger research & development and
production centers provides innovation, optimized cost structure
and outstanding local customer service.

The Rosenberger headquarters, located in Fridolfing in the Southeast part of Bavaria, Germany, is the global center for our activities.

Company Profile

Rosenberger is one of the world's leading manufacturers of impedance controlled and optical connectivity solutions. It provides connectivity solutions in high-frequency, high-voltage, and fiber-optic technology for mobile communication networks, data centers, test & measurement applications, automotive electronics, as well as high-voltage contact systems, medical electronics or aerospace engineering.

A global network of R&D, manufacturing and assembly locations provides innovation, optimized cost structure and excellent customer services worldwide – approx. 7,000 employees develop, produce and sell our products.

Rosenberger Group

Europe

- Germany: Fridolfing, Augsburg, Laufen, Radeberg
- Austria: Timelkam
- Hungary: Jászárokszállás, Jászberény, Taksony
- Denmark: Birkerød
- Sweden: Kista, Solna, Ytterhogdal
- Spain: Madrid

North America

- USA: RNA Plano, RNA Akron, RNA Pennsauken, RSS Lake Charles

SOUTH AMERICA

- Brazil: Caçapava – São Paulo
- Chile: Santiago

ASIA

- China: Beijing, Kunshan, Dongguan
- India: Manesar, Goa

Ensuring the optimum quality of products and services and taking responsibility for our environment are fundamental elements of Rosenberger's corporate philosophy. Our quality philosophy does not just cover the optimization of parts and products, but also the continuous improvement of all company processes: from product development, planning, procurement, production, sales, logistics right through to environmental policy. To summarize, we want to offer maximum benefits for our customers all over the world.

We aim to act in an environmentally conscious manner, use materials economically, protect natural resources, recycle, and ensure energy efficiency.

As we have continuously improved our processes and consistently applied our quality management systems, we have been awarded many certificates.

Certificates

- ISO / TS 16949
- DIN EN 9100
- ISO 9001
- ISO 14001
- DaKKs accreditation according to DIN EN ISO 17025

Rosenberger has won a number of prestigious quality awards and prizes from several renowned customers and organizations for implementing its quality and environmental objectives.

Our Promise to You. And to Quality and Environment.

The quality of our products, solutions and services is an essential part of our corporate strategy.

High Added Value

Rosenberger's mission is to be a leader when it comes to innovation and technology within its business segments.

The ongoing focus on cost management and process optimization complements our commitment to the increasingly stringent requirements for delivering products of the highest quality. Effective research & development, the very latest manufacturing technologies, the highest possible levels of efficiency in production processes, and continuous improvement of process automation make up Rosenberger`s core competencies.

Research & Development

Scientifically based high-frequency know-how, in-house RF, and EMC laboratories enable us to continuously improve existing products and to design innovative new products and systems. Numerous patents show Rosenberger's leadership as a reliable and creative development partner.

Production

By manufacturing everything in house and using state of-the-art manufacturing technologies, Rosenberger can continue to develop and optimize key manufacturing technologies – turned parts production, stamped & formed technology, injection molding technology. Manufacturing everything in house ensures a high degree of flexibility, and continuous quality controls, and means that newly designed products can be produced in the required quantities.

Plating Technology

Our components can be electroplated quickly and flexibly in our own in-house electroplating facilities, regardless of whether this is to provide corrosion protection, optimized conductivity, or other technical and physical characteristics. Environmental protection is another key factor which must be taken into account when coating surfaces.

Assembly

Rosenberger operates manufacturing and assembly locations around the world – fully automated assembly centers and customer-oriented cable assembly locations offer global support and local sourcing.

Injection Molding

We use the very latest machinery and methods, as well as special materials and components to ensure the precision and durability of our tools and products. Rosenberger is able to process all available high-performance plastics.

Site Solutions Overview

Next Generation Site Solutions for all Architectures

Trunk Boxless Solutions

Utilize one fiber trunk with 4 up to 24 pairs of optical fibers. Fiber jumpers are used from the Trunk to the RRH. For upgrading systems with unique fiber interfaces, only jumpers require modification or replacement.

Trunk Box Solutions

Utilize one fiber trunk with 3 up to 24 pairs of optical fibers connected to the Distribution Box. For the connection to the RRH separate fiber jumpers are used. For upgrading systems with unique fiber interfaces, only jumpers require modification or replacement.
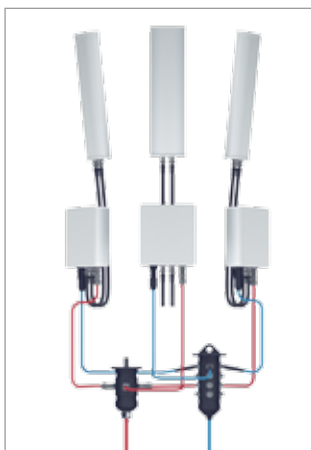
Tower Multi Fiber / Power Systems

Allow for deployment of 6 to 12 pairs of fibers and power supply for 3 to 6 RRHs without the need of a tower top distribution box.

Hybrid Boxless Solutions

Provide a single cable option for both data and DC power. One Hybrid cable supports multiple RRHs. The slim and flexible cable design reduces overall network implementation costs. The unique design allows a spliceless, continuous cable connection from BBU to RRH. Fiber and Power Jumpers are used from the Hybrid Trunk to the RRHs.

Hybrid Solutions with Box

Provide a single cable option for both data and power supply. One Hybrid Box Solution can support multiple RRHs in various configurations. The Hybrid Trunk is terminated in a Hybrid Distribution box. Separate Fiber and Power Jumpers are used for the connection to RRHs.
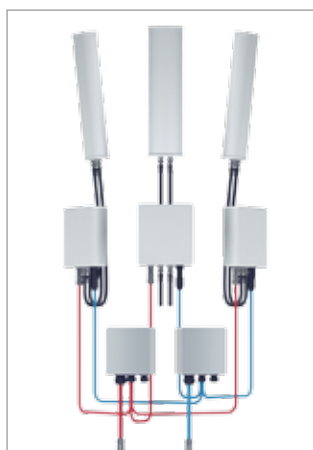
FiPro – Optimized Site Upgrades

In swap projects, no deinstallation of existing coax feeders and new deployment of fiber and power cables is required. Existing feeder cables are used as power cable and cable conduits for fiber trunk.
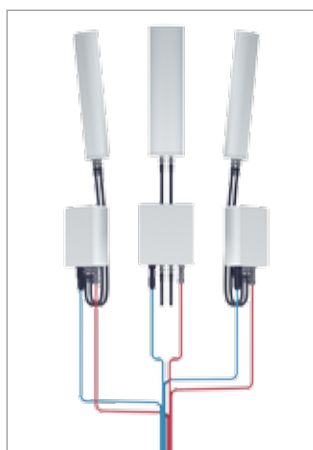
Discrete Cabling Solutions

Ideal for single runs of fiber and power cable. Each RRH is directly connected to the BBU / PSU by one fiber and one power cable.

Trunk Solutions

The Rosenberger Trunk Solutions provide a wide variety of multi power and multi fiber trunk cable configurations. Multi fiber cable up to 24 pairs and multi power cable for powering multiple RRHs. Box and boxless solutions are available.

## Features and Benefits

- One cable run for multiple RRHs
- Slim outer diameter due to coax design of power cables
- Double protection against induced currents from lightning strikes which can reduce cost for surge protection up to 50 %
- Small footprint with low wind load
- High flexibility, individual jumpers can be connected
- Easy and efficient installation
- Future proof investment

Fiber trunk

Power trunk

Alternative:
Trunk box solution

Distribution box

Multi fiber trunk
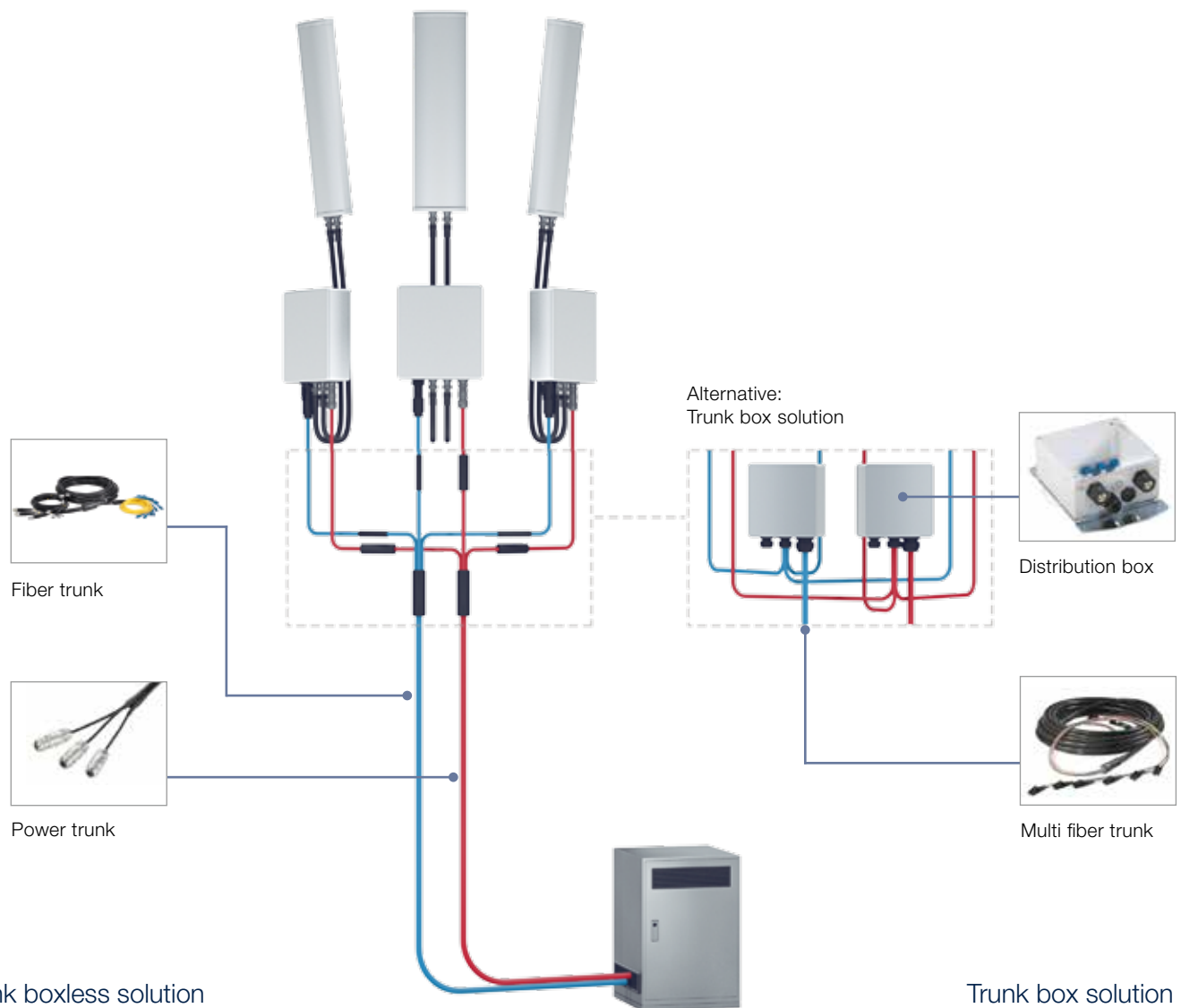
Trunk boxless solution

Trunks with outdoor power and fiber connectors for either direct RRH connection or individual jumper connection.

Trunk box solution

Trunks terminated in a cable management and distribution box.

Trunk Boxless Solution

The Trunk Boxless Solution utilizes one fiber trunk with 4 up to 24 pairs of optical fiber.
Fiber jumpers are used from the Trunk to the RRH. For upgrading systems with unique fiber interfaces, only jumpers require modification or replacement.

Features and Benefits

- Multi-channel cable for harsh outdoor environment
- Single fiber trunk with 4 to 24 Pairs
- Rosenberger Duplex Connector (RDC) at tower top; LC connectors at tower bottom
- Operating temperature range -40 °C to +85 °C
- High UV resistance
- High crush resistance
- Factory assembled Fiber Optic connectors
- Factory tested Insertion Loss (IL) with test report
- Connectors and fanouts protected with installation tube

Trunk with RDC connectors   Fiber trunk (BBU-side)

Trunk Boxless

Rosenberger No.					
single mode G.657A - 9/125	multi mode OM 2 - 50/125	Pairs	Fibers	Diameter	Connector Type
L98B-A0096-xxx	L98D-112-xxx	4	8	7.7 mm	RDC > LC Duplex
L98B-128-xxx	L98C-090-xxx	6	12	10 mm	RDC > LC Duplex
L98B-A0097-xxx	L98C-091-xxx	9	18	10 mm	RDC > LC Duplex
L98B-145-xxx	L98C-092-xxx	12	24	10 mm	RDC > LC Duplex
on request	on request	18	36	10 mm	RDC > LC Duplex
on request	on request	24	48	10 mm	RDC > LC Duplex

Further configurations available on request
xxx = length between cable dividers in mm

Trunk Box Solution

The Trunk Box Solution utilizes one fiber trunk with 3 up to 24 pairs of optical fibers connected to the Distribution Box. For the connection to the RRH separate fiber jumpers are used. For upgrading systems with unique fiber interfaces, only jumpers require modification or replacement.

IP 67 installation tube

Features and Benefits

- Multi-channel cable for harsh outdoor environment
- Single fiber trunk with 3 to 24 pairs
- LC connectors on both sides
- Operating temperature range -40 °C to +85 °C
- High UV resistance
- High crush resistance
- Factory assembled Fiber Optic connectors
- Factory tested Insertion Loss (IL) including test report
- Connectors and fanouts protected with installation tube

6-channel fiber eco trunk

24-channel fiber trunk

Fiber Distribution Box

Designed for tower as well as wall mounting, Rosenberger Fiber Distribution boxes are available in various configurations to accommodate 3 to 24 fiber optic pairs.

Features and Benefits

- 3 to 24 LC duplex adaptors
- Ventilation seal to avoid moisture
- Mast and wall mount fixation
- Easy, efficient and safe installation
- IP 67

Distribution box

Eco Trunk Box Solution

Rosenberger No.						
single mode G.657A - 9/125	multi mode OM 2 - 50/125	Pairs	Fibers	Diameter	Connector Type	Distribution Box
L98B-023-xxx	L98C-002-xxx	3	6	6 mm	3 x LC-Duplex > 3 x LC-Duplex	SLFDU003-03
L98B-030-xxx	L98C-003-xxx	6	12	7.7 mm	6 x LC-Duplex > 6 x LC-Duplex	SLFDU003-06

Trunk Box Solution

Rosenberger No.						
single mode G.657A - 9/125	multi mode OM 2 - 50/125	Pairs	Fibers	Diameter	Connector Type	Distribution Box
L98B-001-xxx	L98C-004-xxx	6	12	10 mm	6 x LC-Compact > 6 x LC-Compact	SLFDU004-06
L98B-A0095-xxx	L98C-032-xxx	9	18	10 mm	9 x LC-Compact > 9 x LC-Compact	SLFDU005-009
L98B-022-xxx	L98C-005-xxx	12	24	10 mm	12 x LC-Compact > 12 x LC-Compact	SLFDU005-12
L98B-069-xxx	L98C-066-xxx	18	36	10 mm	18 x LC-Compact > 18 x LC-Compact	SLFDU008-18
L98B-235-xxx	L98C-071-xxx	24	48	10 mm	24 x LC-Compact > 24 x LC-Compact	SLFDU021-024

Further configurations available on request
xxx = length between cable dividers in mm

Power Trunk

Rosenberger Power Trunks have a unique coaxial design providing the highest possible flexibility. Each power cable can be connected either directly to a RRH, a power distribution box or to power jumpers utilizing the Rosenberger Power Inline Connector.

Eliminating potential issues with windload and rental fees, the Power Inline connector provides the same flexibility as that of a power distribution box.

Features and Benefits

- Smaller diameter and higher flexibility compared to a two-wire design
- Three or six coaxial Power Feeders in one assembly
- Easy installation
- Feasible for box and boxless installation
- Available in 6 mm^2 or 10 mm^2
- Shielded with aluminum foil
- Low Smoke Zero Halogen
- Rosenberger Power Inline Connector for flexible installation
- 360° EMI shielding
- Suitable for shielded 2-wire power cables and coaxial power cables from 1 – 10 mm^2

Power trunk with power inline connector

Power Trunk

Rosenberger No.	Description
SL(3x4+1x4)LSZH-CX-BK	Multipower cable 3 x 4^2 coax + 1 x 4^2 drain wire
SL(3x6+1x6)LSZH-CX-BK	Multipower cable 3 x 6^2 coax + 1 x 6^2 drain wire
SL(3x10+1x10)LSZH-CX-BK	Multipower cable 3 x 10^2 coax + 1 x 10^2 drain wire
SL(6x4+1x4)LSZH-CX-BK	Multipower cable 6 x 4^2 coax + 1 x 4^2 drain wire
SL(6x6+1x6)LSZH-CX-BK	Multipower cable 6 x 6^2 coax + 1 x 6^2 drain wire
SL(6x10+1x10)LSZH-CX-BK	Multipower cable 6 x 10^2 coax + 1 x 10^2 drain wire

Delivered without Connector

Power Inline Connector

| Rosenberger No.	Description
99C084-000N1	Power inline connector
99S73B-199N1	Power connector for TMPS and varios RRHs

Tower Multi Fiber / Power System

The Rosenberger Tower Multi Fiber System (TMFS) and Tower Multi Power System (TMPS) allow for deployment of 6 to 12 pairs of fiber and power supply for 3 to 6 RRHs without the need of a tower top distribution box.

Features and Benefits

- One cable run for multiple RRHs
- Pre-connected multi fiber and power cable
- Robust interfaces
- Hoisting feature integrated
- Small footprint with low wind load
- High flexibility, separate jumpers
- Easy and efficient installation
- Future-proof investment

Tower multi
power system

Tower multi
fiber system
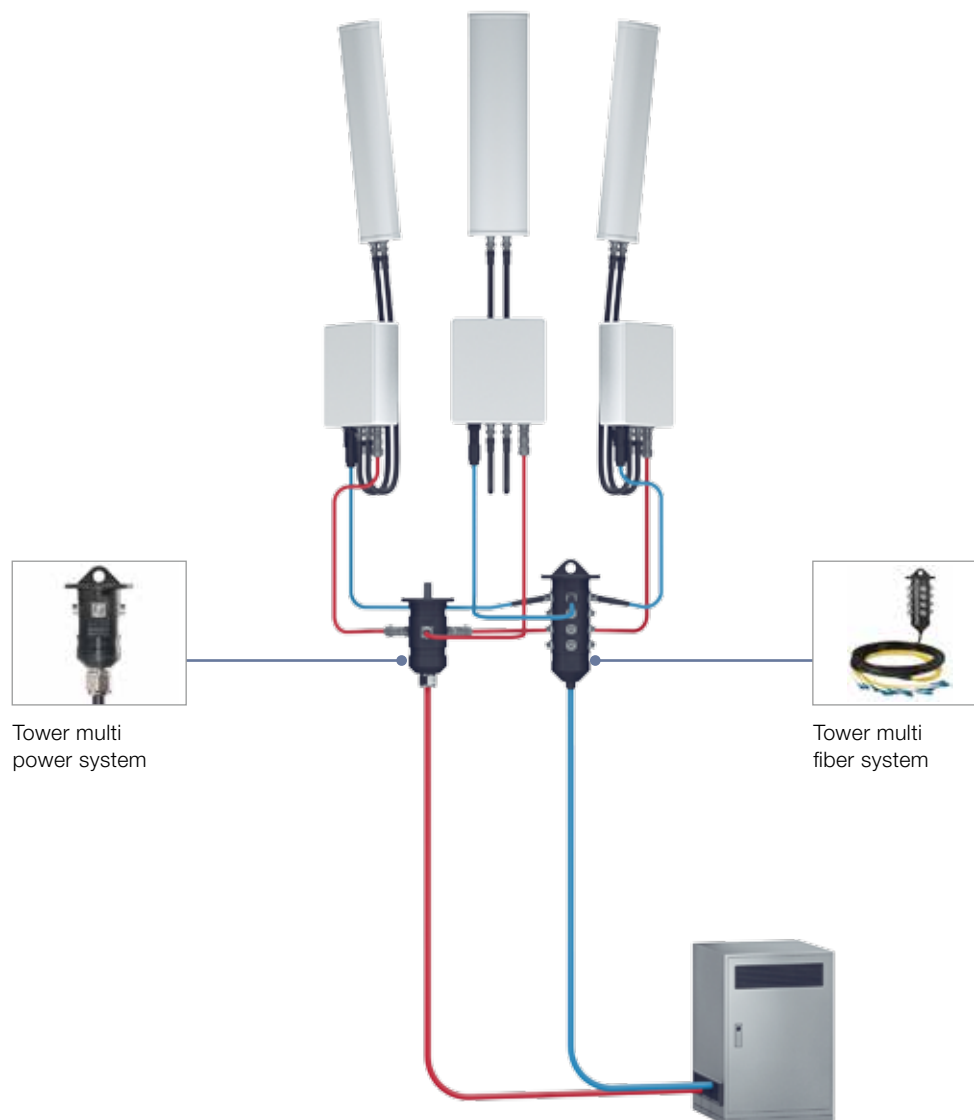
Tower Multi Fiber System (TMFS)

The Rosenberger Tower Multi Fiber System offers a major advantage in terms of flexibility and installability. The fiber trunk is terminated in a fiber housing ensuring full individual fiber protection and minimum windload. Easy to install on either towers or rooftops, the TMFS one-piece design features the Rosenberger RDC robust outdoor connectors for direct connection to fiber jumpers.

Features and Benefits

- Distribution unit with factory mounted multifiber cable
- RDC outdoor connectors for mounting of jumpers towards RRHs and LC connectors towards BBU
- Operating temperature range -40 °C to +85 °C
- Distribution unit with 6 or 12 RDC connectors
- IP 67
- High UV resistance
- High crush resistance
- Factory assembled FO connectors
- Factory tested Insertion Loss (IL) including test report
- Connectors and fanouts protected with installation tube

Tower multi fiber system

Tower Multi Fiber System

Rosenberger No.					
single mode G.657A - 9/125	multi mode OM 2 - 50/125	Pairs	Fibers	Diameter	Connector Type
L98B-A0155-xxx	L98C-116-xxx	6	12	10 mm	RDC > LC-Compact
L98B-A0156-xxx	L98C-115-xxx	12	24	10 mm	RDC > LC-Compact

Further configurations available on request
xxx = length between cable dividers in mm

Tower Multi Power System (TMPS)

The Rosenberger Tower Multi Power System offers a major advantage in terms of flexibility and installabilty. The power trunk is terminated in a fiber housing ensuring individual power cable protection and minimum windload. Easy to install on either towers or rooftops, the TMPS one-piece design features the Rosenberger robust outdoor connectors for direct connection to power jumpers.

Features and Benefits

- Factory assembled
- Power handling up to 800 W per port
- Operating temperature range -40 °C to +85 °C
- Distribution unit with 3 or 6 power connectors
- IP 67
- High UV resistance
- High crush resistance
- Accommodates shielded or unshielded power cables with 21 – 35 mm outer diameter

Tower multi power system

Tower Multi Power System

Rosenberger No.	No. of Ports
SLPDU002-03	3 power ports
SLPDU002-06	6 power ports

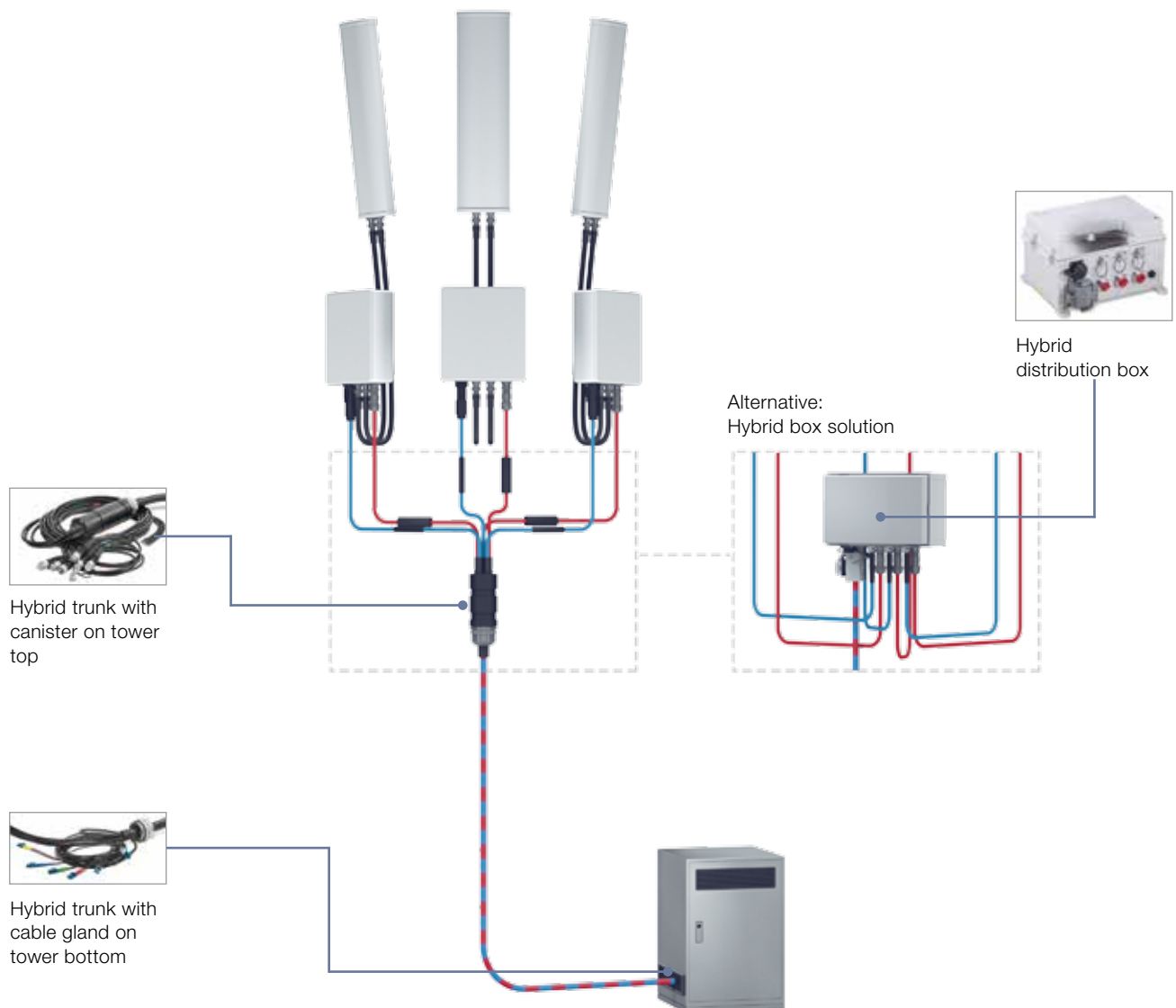Power Trunk must be ordered seperately

Hybrid Solutions

The Rosenberger Hybrid Cable Solutions provide a single cable for both fiber and power. One hybrid cable can support multiple RRHs. Box and boxless solutions are available.

Features and Benefits

- One cable run to the tower top for multiple RRHs
- Smallest footprint with low wind load
- High flexibility, individual jumpers can be connected
- Easy and efficient installation
- Reduced tower loading and reduced rental fees
- Double protection against induced currents from lightning strikes which can reduce cost for surge protection up to 50 %
- Slim outer diameter due to coax design of power cables

Hybrid
distribution box

Alternative:
Hybrid box solution

Hybrid trunk with
canister on tower
top

Hybrid trunk with
cable gland on
tower bottom

Hybrid Boxless Solution

No transition point or crimping between trunk and fanout – continuous cable run minimising the risk of system degradation.

Hybrid Cabling with Box

Hybrid cable terminated in a distribution box.

Hybrid Boxless Solution

The Rosenberger Hybrid Boxless Solution provides a single cable option for both data and DC power. One Hybrid cable supports multiple RRHs. The slim and flexible cable design reduces overall network implementation costs. The unique design allows a spliceless, continuous cable connection from BBU to RRH. Fiber and Power Jumpers are used from the Hybrid Trunk to the RRHs.

Features and Benefits

- Easy and fast installation
- Small bending radius and outer cable diameter
- Single hybrid trunk with multiple fiber and coaxial power cables
- Sturdy slim profile canister dividing fiber and power cables
- No splice connection inside the canister
- No distribution box required
- RDC outdoor connectors for mounting of jumpers towards RRHs and LC connectors towards BBU
- IP 67
- High UV resistance
- High crush resistance
- Factory assembled Fiber Optic connectors
- 6 and 10 mm^2 power cable available
- Hybrid cable shielded with aluminum foil
- Factory assembled Fiber Optic connectors
- Factory tested Insertion Loss (IL) including test report
- Connectors and fanouts protected with installation tube

Hybrid boxless

Hybrid Boxless Solution

Hybrid boxless

Hybrid Boxless

Rosenberger No.					
single mode G.657A - 9/125	multi mode OM 2 - 50/125	Pairs	Fibers	Diameter	Connector Type
L98B-237-xxx	L98C-086-xxx	6 x RDC – 6 x LCD + 3 x 6 mm² Coax	12	5/8"	RDC > LC Duplex
L98B-282-xxx	L98C-087-xxx	6 x RDC – 6 x LCD + 3 x 10 mm² Coax	12	7/8"	RDC > LC Duplex
L98B-A0093-xxx	L98C-088-xxx	18 x RDC – 18 x LCD + 9 x 6 mm² Coax	36	1 1/4"	RDC > LC Duplex
L98B-A0094-xxx	L98C-089-xxx	18 x RDC – 18 x LCD + 9 x 10 mm² Coax	36	1 5/8"	RDC > LC Duplex

Further configurations available on request
xxx = length between cable dividers in mm

Hybrid Box Solution

The Rosenberger Hybrid Box Solution provides a single cable option for both data and power supply. One Hybrid Box Solution can support multiple RRHs in various configurations.

The Hybrid Trunk is terminated in a Hybrid Distribution box.
Separate Fiber and Power Jumpers are used for the connection to RRHs.

Features and Benefits

- Easy and fast installation
- Small bending radius and outer cable diameter
- Single hybrid trunk with multiple fiber and coaxial power cables
- IP 67
- High UV resistance
- High crush resistance
- Factory assembled Fiber Optic connectors
- 6 and 10 mm² power cable available
- Hybrid cable shielded with aluminum foil
- Factory assembled Fiber Optic connectors
- Factory tested Insertion Loss (IL) including test report
- Connectors and fanouts protected with installation tube

Hybrid distribution box with OVP

Features and Benefits

- Fiber and power distribution and management
- OVP integrated as an option
- Pre-connectorized and wired
- IP 66
- Wall or mast mounting
- Easy to install mounting brackets
- High UV resistance
- High crush resistance

Hybrid Distribution Box

Rosenberger No.	Description
SLHDU006-006	Hybrid box with lightning protection for 6 RRU's
SLHDU006-012	Hybrid box with lightning protection for 12 RRU's

FiPro – Optimized Site Upgrades

In swap projects, no de-installation of existing coax feeders and new deployment of fiber and power cables required. Existing feeder cables are used as power cable and cable conduits for fiber trunk.

Features and Benefits

- Existing cable run can be used (no change in contract with Land Lord)
- No new wall ducts and sealing against fire needed
- Run high data and power through existing feeder cables to the RRHs
- No lifting platform needed
- No de-installation of feeders
- Multi fiber solutions available

Fiber seal

Power cable connection

Multi fiber trunk
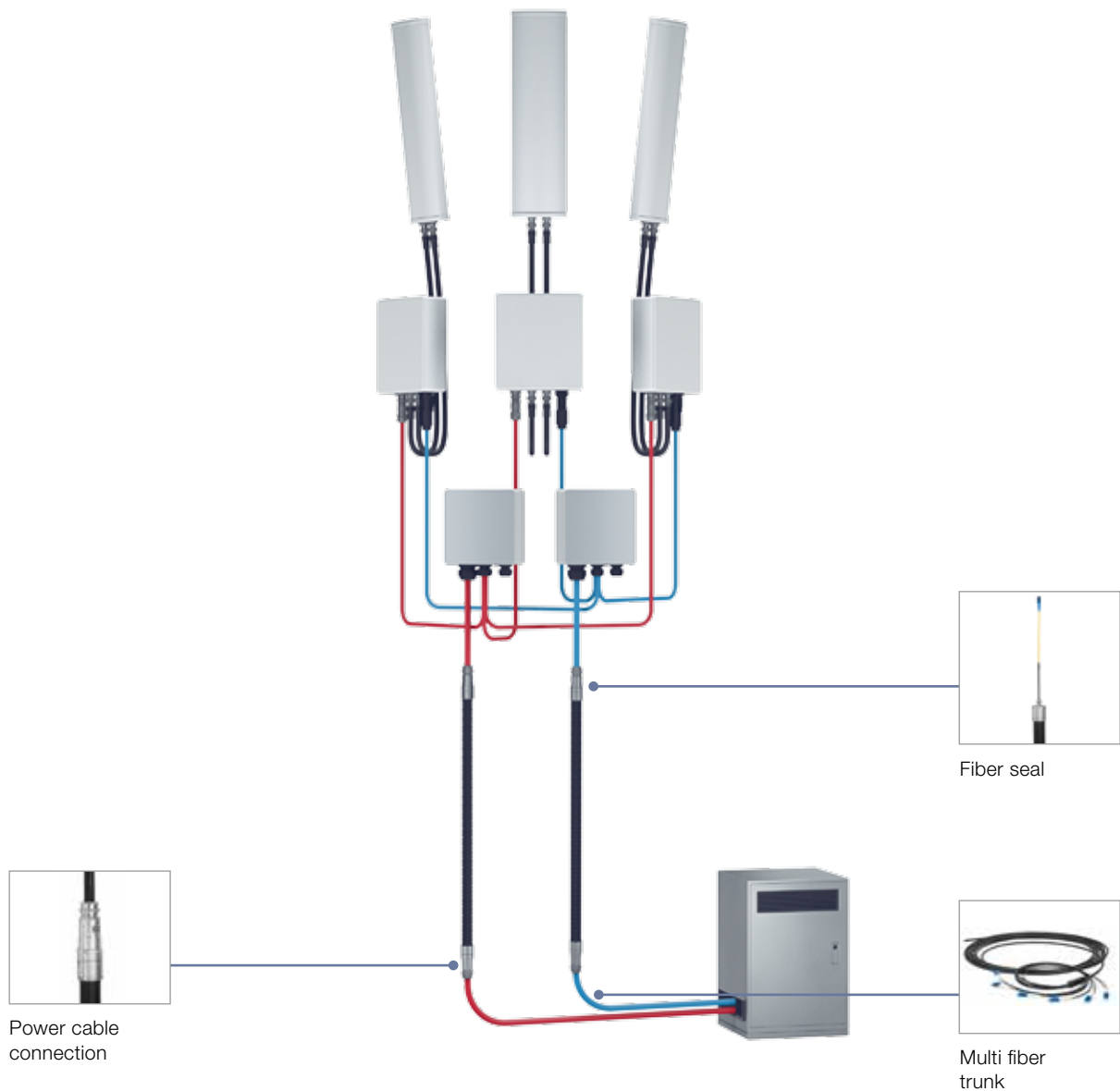
FiPro Fiber Optic Solution

Existing feeder cables are used as cable conduits for the fiber trunk. The fiber trunk runs in the inner conductor of the feeder cable. The entry points to the feeder cable are protected with a Fiber Seal.

Features and Benefits

- Available for 7/8", 1 1/4" and 1 5/8"
- Accommodates fiber cables, 3 – 7 mm
- Strain relief 30N
- Weather-proofing to seal entry point of fiber in the feeder cable
- IP 68
- Pre-configured trunk with 6 LC Duplex Connector (LCD) in one end
- Termination on tower top in fiber distribution box
- Termination on tower bottom in 19" ODF with 6 LC Duplex couplers and splice box

Fiber seal
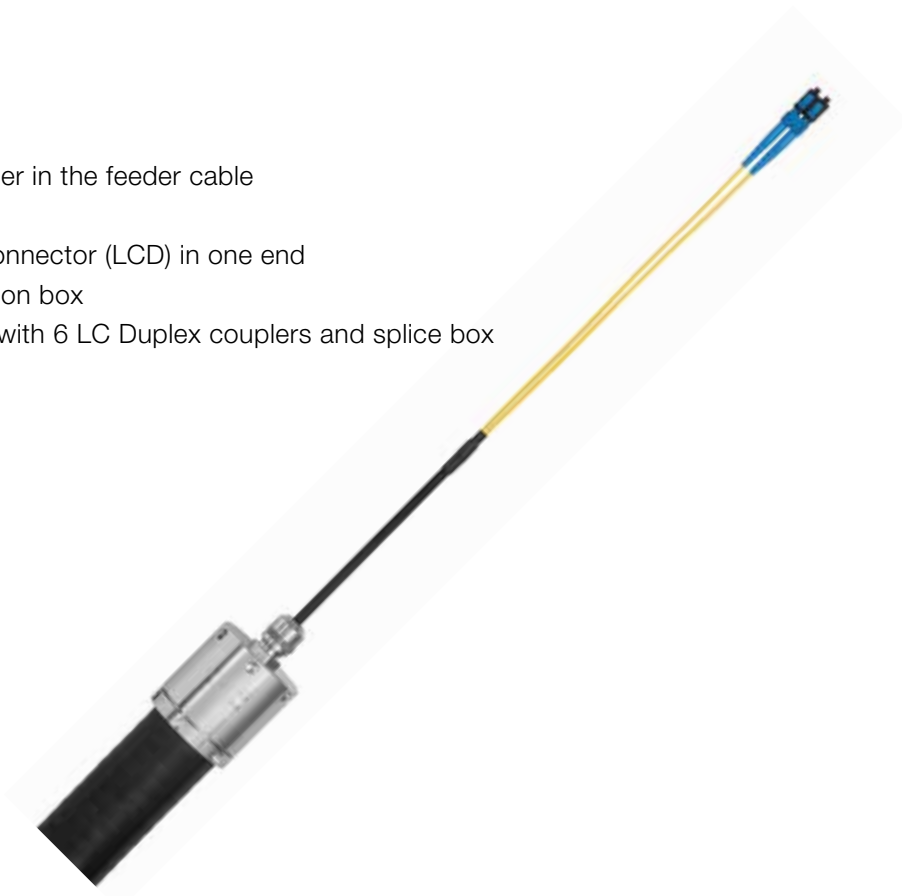
Assembled fiber seal with pigtail

FiPro Trunk Pigtail

Rosenberger No.						
single mode G.657A - 9/125	multi mode OM 2 - 50/125	Pairs	Fibers	Connector Type	Fiber Distribution Box	Optical Distribution Frame
L98B-215-xxx	L98C-067-xxx	6	12	LC-Duplex	SLFDU007-06	SLODF033-006

Fiber Seal Connection

Rosenberger No.	Feeder Cable
SLFS001-C05N	7/8" corrugated cable
SLFS001-C06N	1-1/4" corrugated cable
SLFS001-C07N	1-5/8" corrugated cable

Further configurations available on request
xxx = length between cable dividers in mm

FiPro Power Solution

Features and Benefits

- Power cable connection to adapt from power cable to corrugated cable
- Available for 1/2", 7/8", 1 1/4" and 1 5/8"
- Fits power cables up to 16 mm^2
- IP 67

Power cable connection

Assembled power cable connection

Power Cable Connection

Rosenberger No.	Feeder Cable
SLPCC001-C05N	7/8" corrugated cable
SLPCC001-C06N	1-1/4" corrugated cable
SLPCC001-C07N	1-5/8" corrugated cable
SLPCC001-C03N	1/2" corrugated cable

Discrete Cabling Solutions

The Rosenberger Discrete Cabling Solutions are ideal for single runs of fiber and power cable. Each RRH is directly connected to the BBU by one fiber and one power cable.

Features and Benefits

- Single-channel cable for harsh outdoor environment
- Appropriate for use in temperature range -40 °C to +85 °C
- High UV resistance
- High crush resistance
- Both sides factory assembled with FO connectors
- Single data channel in one cable
- Factory tested Insertion Loss (IL) including test report

Coax power cable

Fiber feeder

Roof top installation with three separate runs of fiber
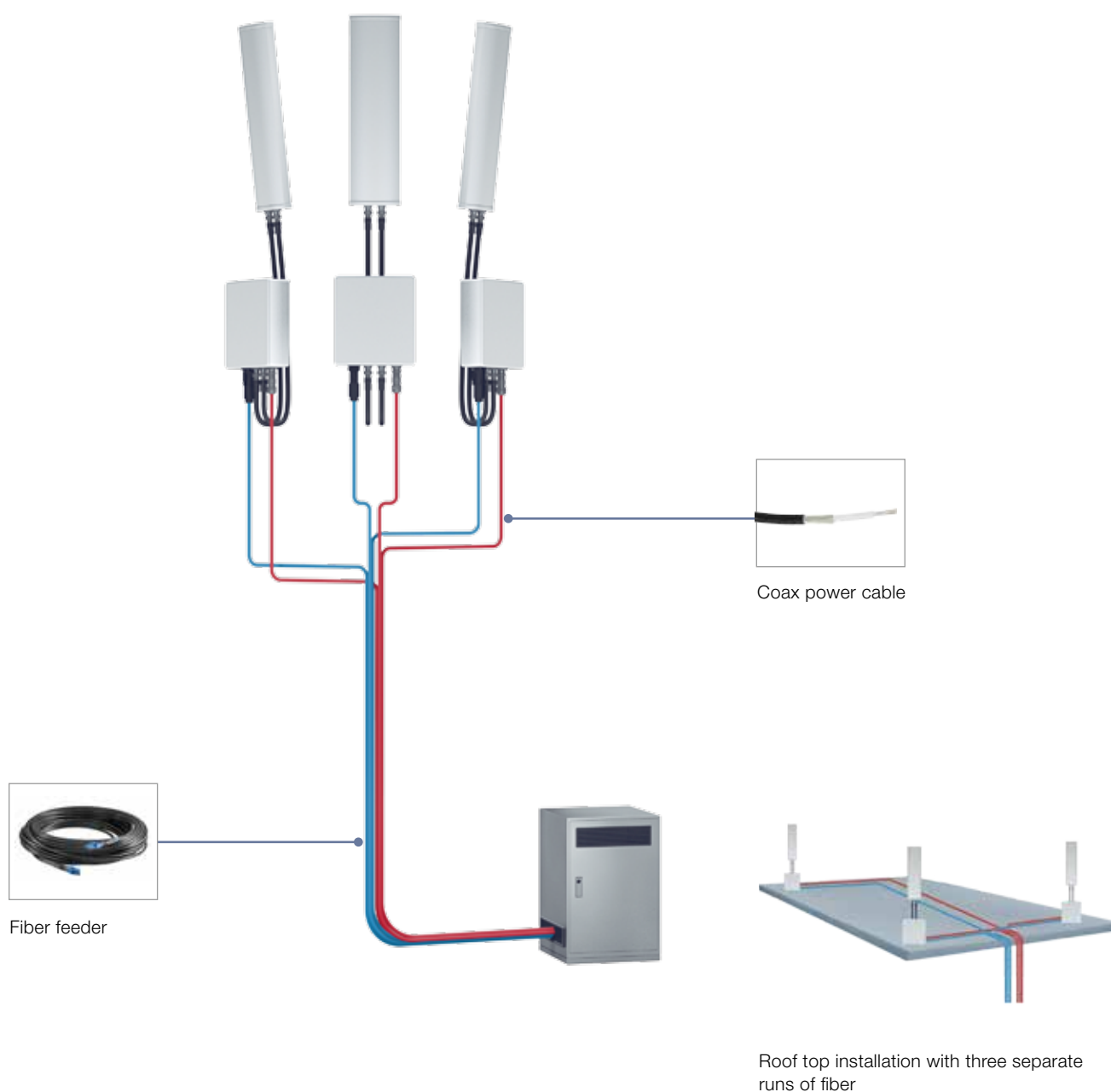
Discrete Fiber Solution

The Rosenberger Discrete Fiber Cabling Solutions are ideal for harsh outdoor environments.

Features and Benefits

- Operating temperature range -40 °C to +85 °C
- High UV resistance
- High crush resistance
- Both sides factory assembled with FO connectors
- Single data channel in one cable
- Standard light propagation "channelwise crossed" (pairwise flipped)

Fiber feeder combined

Mono pole installation with separate runs
of cable

Discrete Cabling Solution

Fiber Feeder Standard

Rosenberger No.					
single mode G.657A - 9/125	multi mode OM 2 - 50/125	Pairs	Fibers	Diameter	Connector Type
L98B-003-xxx L98B-004-xxx	L98C-023-xxx L98C-026-xxx	1	2	5 mm	LC-Duplex > LC-Duplex RDC > LC-Duplex
L98B-A0148-xxx L98B-006-xxx	L98C-025-xxx L98C-024-xxx	1	2	7 mm	LC-Duplex > LC-Duplex RDC > LC-Duplex

Fiber Feeder Overmolded

Rosenberger No.					
single mode G.657A - 9/125	multi mode OM 2 - 50/125	Pairs	Fibers	Diameter	Connector Type
L98B-A0149-xxx L98B-A0150-xxx	L98C-043-xxx L98C-044-xxx	1	2	5 mm	LC-Compact > LC-Compact RDC > LC-Compact
L98B-A0151-xxx L98B-A0152-xxx	L98C-045-xxx L98C-046-xxx	1	2	7 mm	LC-Compact > LC-Compact RDC > LC-Compact
L98B-A0153-xxx	L98C-063-xxx	2	4	7 mm	2x LC-Compact > 2x LC-Compact

Fiber Feeder Combined

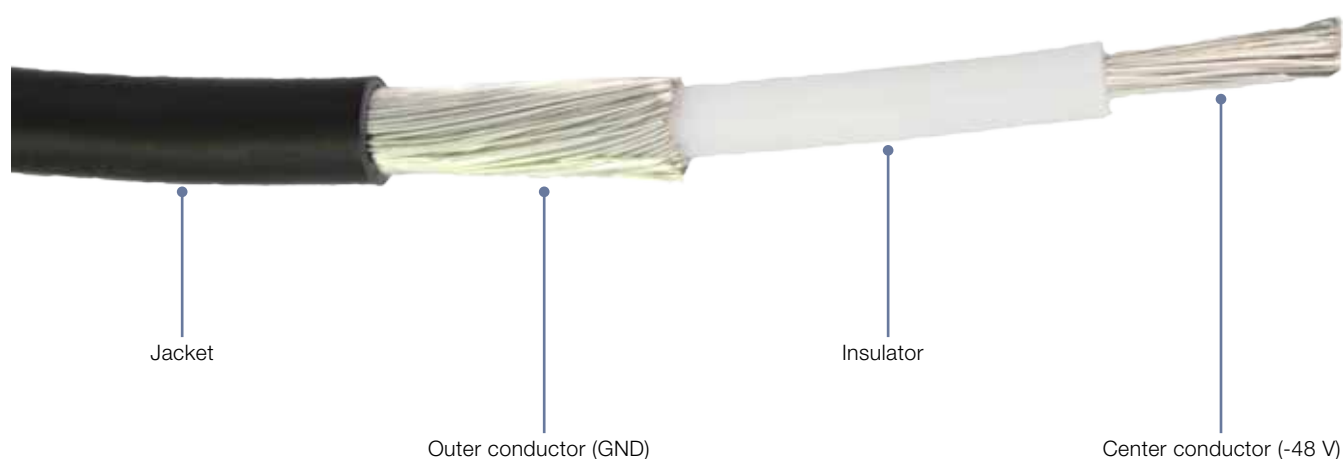| Rosenberger No.					
single mode G.657A - 9/125	multi mode OM 2 - 50/125	Pairs	Fibers	Diameter	Connector Type
L98B-180-xxx	L98D-096-xxx	1	2	4.8 mm	LC-Compact > LC-Duplex
L98B-240-xxx	L98C-068-xxx	1	2	7 mm	LC-Compact > LC-Duplex

Further configurations available on request
xxx = length between cable dividers in mm

Coax Power Cable

Rosenberger Power Cables with their unique coaxial design provide high deployment flexibility. Compared to conventional two-wire cables, the Rosenberger coaxial power cables provide smaller bending radius and higher surge protection.

Features and Benefits

- Smaller diameter and higher flexibility compared to two-wire design
- Easy installation
- Small bending radius
- Available in 6 mm^2 or 10 mm^2
- UV-resistant
- 360° EMI shielded
- Factory tested Insertion Loss (IL) including test report

Jacket   Insulator

Outer conductor (GND)   Center conductor (-48 V)

Power Trunk

Rosenberger No.	Description
SL1C4MM2LSZH-S-BK	Coax power cable 4 mm^2
SL1C6MM2LSZH-S-BK	Coax power cable 6 mm^2
SL1C10MM2LSZH-S-BK	Coax power cable 10 mm^2

Power Connector

Rosenberger No.	Cable Type
99S73B-199N1	1 – 10 mm^2 shielded two wire or coaxial power cable

Power Inline Connector

Rosenberger No.	Cable Type
99C084-000N1	1 – 10 mm^2 shielded two wire or coaxial power cable

Power Inline Surge Protection

Rosenberger No.	Cable Type
99BC001-000A1	1 – 10 mm^2 shielded two wire or coaxial power cable

Two-Core Power Cable
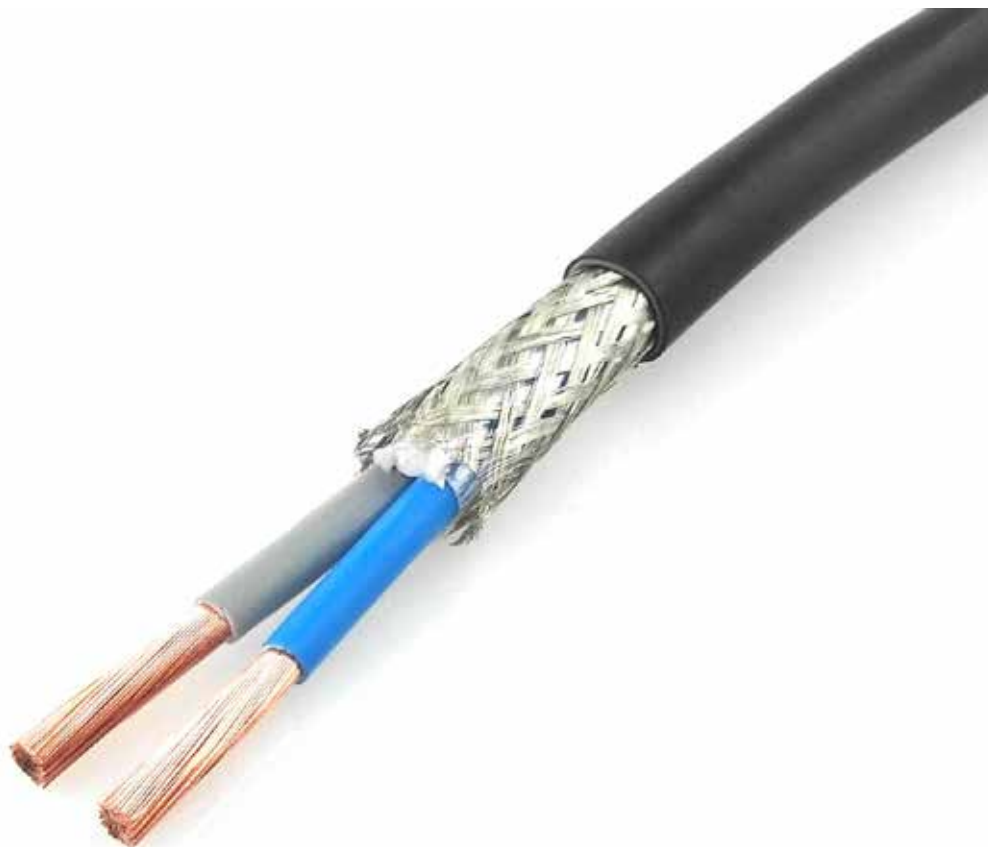
Two-Core Power Cable

Rosenberger No.	Description
SL2C4MM2FRNC-S-BK	Power Cable 2 x 4 mm², shielded, 9.2 mm
SL2C6MM2FRNC-S-BK	Power Cable 2 x 6 mm², shielded, 10.8 mm
SL2C10MM2FRNC-S-BK	Power Cable 2 x 10 mm², shielded,13.6 mm
SL2C16MM2FRNC-S-BK	Power Cable 2 x 16 mm², shielded, 15.9 mm
SL2C25MM2FRNC-S-BK	Power Cable 2 x 25 mm², shielded, 20.4 mm
SL2C35MM2FRNC-S-BK	Power Cable 2 x 35 mm², shielded, 23.6 mm

Jumper Cables

Rosenberger RF Jumper cables are designed to intercon-
nect the RRH towards the antenna. The jumpers have the
industry-best PIM levels -117 dBm / 160 dBc @ 2 x 20 W
(typ. -120 dBm / -163 dBc @ 2 x 20 W). These excellent
levels are guaranteed for every assembly that leaves the
Rosenberger production facility.

Furthermore Rosenberger offers a wide range of fiber
optic jumper cables. The fiber optic jumper cables pro-
vide a flexible interconnection to support Trunk Boxless
solutions as well as the connection of trunk box solutions
towards the RRHs. Outdoor jumper cables are designed
for harsh environments and support various interfaces
of mobile solution providers, such as overmolded LC
connectors.

Finally Power Jumper cables complete the site solution
portfolio by using the flexible outdoor Rosenberger Power
Inline connector or the Rosenberger Power connector for
RRH power provisioning.

4.3-10 Connectors

The new 4.3-10 connector series is characterized by best
electrical performance and very low passive
intermodulation.

Product Overview

- Coax Jumper Cables
- 4.3-10 Connectors
- Power Jumper Cables
- Fiber Optic Jumper Cables
- Indoor Patch Cords

Jumper Cables

Rosenberger Jumper Cables are designed using the many years of experience
gained by Rosenberger engineers.

Coax Jumper Cables

Rosenberger coaxial jumpers are designed using the many years of experience gained by Rosenberger engineers in this field and also utilize Rosenberger's unique knowledge of designing and manufacturing world-leading rack and desktop PIM testing equipment. The jumpers have the industry-best PIM levels
-117 dBm / 160 dBc @ 2 x 20 W (typ. -120 dBm / -163 dBc @ 2 x 20 W).
These excellent levels are guaranteed for every assembly that leaves the Rosenberger production facility.

Features and Benefits

- High quality – PIM and VSWR 100 % tested and serialized
- Best in class PIM and RL-values
- Superior performance up to 6 GHz
- Measurement protocol available for each jumper on webportal: http://jumper.rosenberger.com/
- Different connector types available
- More throughput
- Less dropped calls
- Supporting any technology
- WiFi-Ready

Jumper cables

4.3-10 Connectors

The new Rosenberger 4.3-10 connector series is designed to meet the rising performance needs of mobile network equipment and the demands for smaller connector sizes and ongoing space reductions at the same time.

Features and Benefits

- Low, reliable and constant PIM – independent of torque
- Smallest footprint – 40 % smaller than 7-16 connectors
- Hand screw and push-pull type: minimum pitch 25.4 mm (no torque wrench)
- Light weight modules and components
- More than 60 % weight reduction compared to bigger RF interfaces
- 3 different plug types: screw, hand screw, push-pull
- Excellent return loss / insertion loss performance
- High screening efficiency
- Reduction of space requirements in mobile communication systems
- Reliable and PIM-free site installations
- No risk of torque limit installation failures
- The universal 4.3-10 jack type is compatible with all plug types: The screw, the hand screw and the push-pull plug

Screw

Hand screw

Flange Size Comparison 7-16 vs. 4.3-10

Push-pull

Coax Jumper Cables

Jumper Cables are available with following Connectors:

7-16 Connectors

4.3-10 Connectors

| Screw | Hand screw | Push-pull |

N Connectors

Rosenberger Coax Jumpers have the industry-best PIM levels
-117 dBm / 160 dBc @ 2 x 20 W (typ. -120 dBm / -163 dBc @ 2 x 20 W)

Return Loss	
DC - 1 GHz	≥ 32 dB
1 - 2.2 GHz	≥ 30 dB
2.2 - 2.7 GHz	≥ 28 dB
2.7 - 6 GHz	≥ 23 dB
Insertion Loss typ. (½"R – flexible)	
DC - 1 GHz	≤ 0.07 dB/m + 0.01 dB
1 - 2.2 GHz	≤ 0.11 dB/m + 0.015 dB
2.2 - 2.7 GHz	≤ 0.125 dB/m + 0.016 dB
2.7 - 6 GHz	≤ 0.22 dB/m + 0.01 dB
Insertion Loss typ. (½"S – super flexible)	
DC - 1 GHz	≤ 0.10 dB/m + 0.01 dB
1 - 2.2 GHz	≤ 0.168 dB/m + 0.015 dB
2.2 - 2.7 GHz	≤ 0.19 dB/m + 0.016 dB
2.7 - 6 GHz	≤ 0.31 dB/m + 0.01 dB

Power Jumper Cables

Rosenberger Power Jumpers with their unique coaxial design provide highest flexibility. Compared to conventional two-wire cables, the Rosenberger coaxial power cables provide smaller bending radius and higher surge protection.

Features and Benefits

- Smaller diameter and higher flexibility compared to two-wire design
- Reduced wind load and weight
- 360° EMI shielding
- Low inductance
- Easy installation
- Small bending radius – higher surge protection
- Termination point for power supply independent of proprietary interface
- Available in 6 mm^2 or 10 mm^2
- UV-resistant
- Rosenberger Power Connector for Tower Multi Power System and various RRHs

Power jumper with power inline connector

Power jumper with power connector

Power Jumper

Rosenberger No.	Description
L99-P005-xxx	Power inline connector on 6 mm^2 coaxial power cable
L99-P009-xxx	Power connector on 6 mm^2 coaxial power cable

Jumper with 4 mm^2 and 10 mm^2 available on request

Fiber Optic Jumper Cables

The fiber optic jumper cables build the flexible interconnection between Box and Boxless Solutions and the RRHs.

These outdoor jumper cables are designed for harsh environments and support the various interfaces of mobile solution providers.

Features and Benefits

- Single-channel cable for harsh outdoor environment
- Operating temperature range -40 °C to +85 °C
- High UV resistance
- High crush resistance
- Both sides factory assembled with FO connectors
- Single data channel in one cable
- Factory tested Insertion Loss (IL) including test report
- Rosenberger Power Connector for Tower Multi Power System and various RRHs
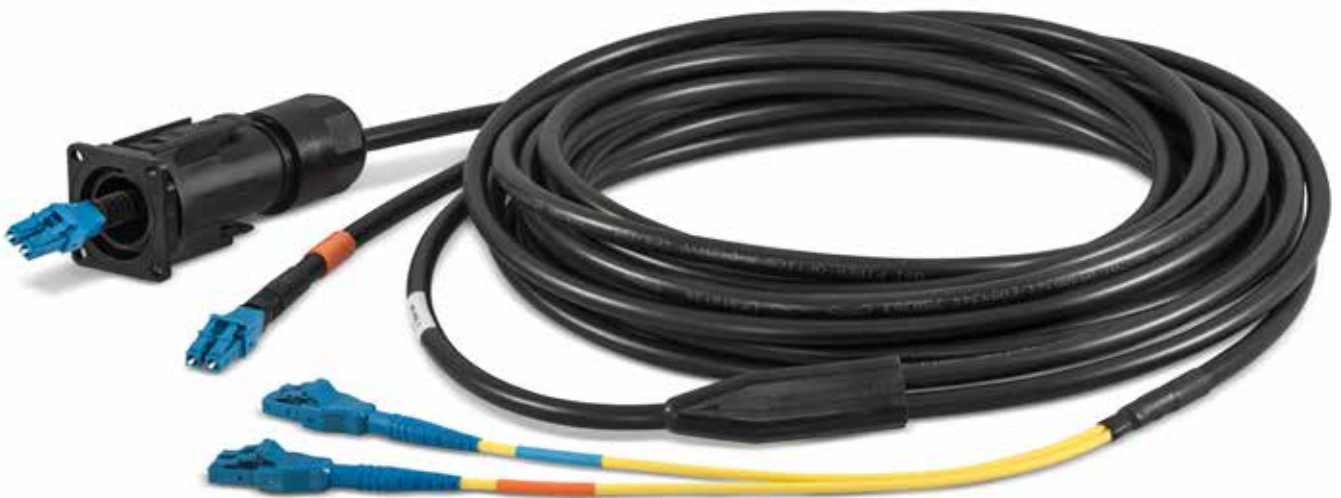
Quad jumper with RFE

Fiber Optic Jumper Cables

Fiber Feeder Standard

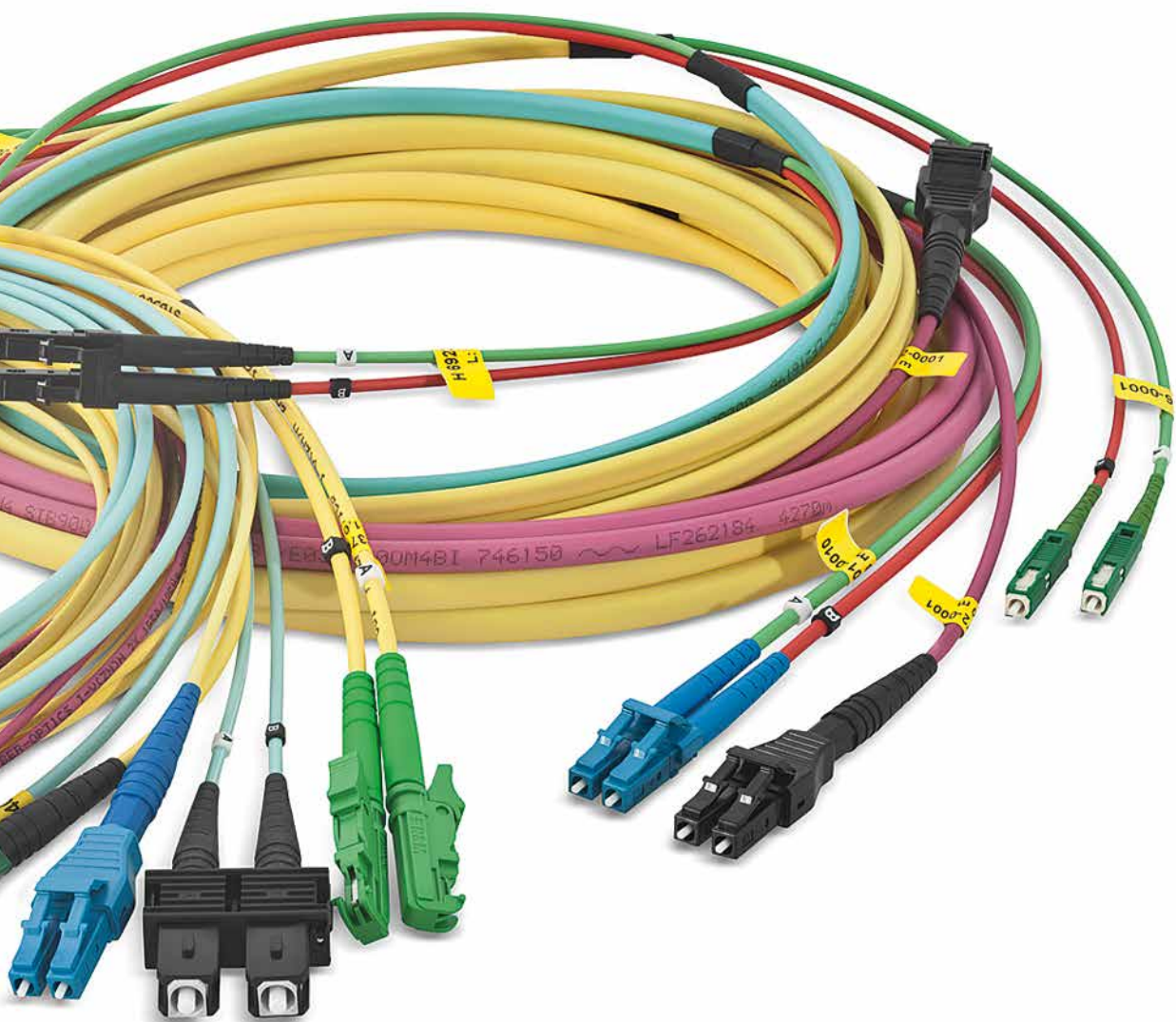| Rosenberger No.					
single mode G.657A - 9/125	multi mode OM 2 - 50/125	Pairs	Fibers	Diameter	Connector Type
L98B-003-xxx L98B-004-xxx	L98C-023-xxx L98C-026-xxx	1	2	5 mm	LC-Duplex > LC-Duplex RDC > LC-Duplex
L98B-A0148-xxx L98B-006-xxx	L98C-025-xxx L98C-024-xxx	1	2	7 mm	LC-Duplex > LC-Duplex RDC > LC-Duplex

Fiber Feeder Overmolded

Rosenberger No.					
single mode G.657A - 9/125	multi mode OM 2 - 50/125	Pairs	Fibers	Diameter	Connector Type
L98B-A0149-xxx L98B-A0150-xxx	L98C-043-xxx L98C-044-xxx	1	2	5 mm	LC-Compact > LC-Compact RDC > LC-Compact
L98B-A0151-xxx L98B-A0152-xxx	L98C-045-xxx L98C-046-xxx	1	2	7 mm	LC-Compact > LC-Compact RDC > LC-Compact
L98B-A0153-xxx	L98C-063-xxx	2	4	7 mm	2x LC-Compact > 2x LC-Compact

Fiber Feeder Combined

Rosenberger No.					
single mode G.657A - 9/125	multi mode OM 2 - 50/125	Pairs	Fibers	Diameter	Connector Type
L98B-180-xxx	L98D-096-xxx	1	2	4.8 mm	LC-Compact > LC-Duplex
L98B-240-xxx	L98C-068-xxx	1	2	7 mm	LC-Compact > LC-Duplex

Further configurations available on request
xxx = length between cable dividers in mm

Indoor Patch Cords

The Indoor Patch Cords provide the flexible Interconnection between ODF and the BBU.

Features and Benefits

- Patch Cords appropriate for use in indoor applications, such as mobile stations, shelters and office buildings
- Patch Cords for other applications on request
- Optimised kink and crush resistance with regard to application requirements
- Operating temperature range -10 °C to +60 °C
- Standard light propagation

Patch cords

| single mode G.657A - 9/125 | multi mode OM 2 - 50/125 | Pairs | Fibers | Diameter | Connector Type |

Indoor Patch Cords

Rosenberger No.					
single mode G.657A - 9/125	multi mode OM 2 - 50/125	Pairs	Fibers	Diameter	Connector Type
L98B-A0157-xxx	L98C-117-xxx	1	2	2.8 mm	LC-Compact > LC-Compact

Further configurations available on request
xxx = length between cable dividers in mm

RFE – Rosenberger Fiber Enclosure

The new Rosenberger Fiber Enclosure with its fool-proof, self-blocking bayonet lock-ing mechanism protects the connector from damage and allows installation in small spaces. The RFE, suitable for fiber optic and data cables, can come pre-assembled on cables or can be mounted on cable assemblies in the field.

RFE – Rosenberger Fiber Enclosure

Rosenberger Fiber Enclosure (RFE) provides UV resistant and watertight protection to fiber, data and power connectors.

Features and Benefits

- Enables indoor cable connectors to be used outdoor and in harsh environments
- Pre-assembled or field installable
- Fast and easy connection to RRHs, small cells, FTTA distribution boxes and in many other applications
- Extension tube for long fanout length available
- Protection cap can be used as a hoisting grip

Assembled RFE

RFE Adaptor to IP seal fiber in line connections such as in lamp posts with magnetic adaptor

RFE Rosenberger Fiber Enclosure

Rosenberger No.	Description
98Z405-K00	RFE-flange
98Z111-S01	RFE – Rosenberger fiber enclosure for cables up to 5 mm diameter, mateable with various RRHs
98Z111-S02	RFE – Rosenberger fiber enclosure for cables up to 6mm diameter, mateable with various RRHs
98Z111-S03	RFE – Rosenberger fiber enclosure for cables up to 7mm diameter, mateable with various RRHs
98Z111-S04	RFE – Rosenberger fiber enclosure for cables up to 9mm diameter, mateable with various RRHs
98Z105-S00/53	RFE protection cap, IP-protection in unmated condition + hoisting option
98Z111-S21-380	RFE with 380 mm extension tube for long fanout length and cables up to 5 mm diameter
98Z111-S22-380	RFE with 380 mm extension tube for long fanout length and cables up to 6 mm diameter
98Z111-S23-380	RFE with 380 mm extension tube for long fanout length and cables up to 7 mm diameter
98Z111-S24-380	RFE with 380 mm extension tube for long fanout length and cables up to 9 mm diameter
SLFDU018-01	Adaptor for fiber in line connection, LCD or MTP, with magnetic mount

RFE Assembly in only 10 seconds:

http://youtu.be/gsW50MR8cFU

Video

Sealing of different Cables on RFE:

http://youtu.be/LDiFGvownuk

RFE Flange

+

RFE

+

RFE Protection Cap

+

RFE Extension Tube

Power Connectors

Rosenberger provides a complete range power connectors

Power Connectors

The Rosenberger Power connectors with their robust full metal design provide a robust, 360° EMI shielded connection of power cables. The connectors are specifically designed to fit shielded or unshielded conventional two wire power cables as well as coaxial power cables. The Power connector is pluggable with the TMPS as well as various RRHs while the Power Inline Connector provides a proprietary independent termination point for the power supply without the need of a bulky power distribution box.

Features and Benefits

- 360° EMI-shielding
- Proprietary independent termination point with Power Inline connector
- Direct connection to various RRHs and TMPS with Power Connector
- Suitable for conventional 2-wire power cables and coaxial power cables 1 – 10 mm^2
- Low wind load
- IP 68
- High UV resistance
- High crush resistance

Power Connector

Power Inline Connector

Power Connectors

Rosenberger No.	Description
99BC001-000A1	Power inline surge protection connector
99C084-000N1	Power inline connector
99S73B-199N1	Power connector for TMPS and varios RRHs

Product Overview

- Optical Distribution Frames
- Interior Excess Fiber Cable Enclosures
- Cable Clamps
- Grommets

Accessories

Rosenberger accessories present a full portfolio of various site products

Optical Distribution Frames

The Rosenberger Optical Distribution Frame is designed for indoor on-site storage of excess fiber cable when pre-connected fiber trunk cables are utilized.

Features and Benefits

- Available with 3 to 24 LC Duplex
- Easy, efficient and safe installation
- Material: Unpainted steel
- Removable 19" rack ears included

Optical distribution frame

Optical Distribution Frames for Eco Trunk

Rosenberger No.	Pairs	Fibers
SLODF001-03	3	6
SLODF001-06	6	12

Optical Distribution Frames for Fiber Trunk

Rosenberger No.	Pairs	Fibers
SLODF011-006	6	12
SLODF011-009	9	18
SLODF011-012	12	24
SLODF011-018	18	36
SLODF011-024	24	48

Interior Excess Fiber Cable Enclosures

The Rosenberger excess fiber cable enclosure is designed for indoor on-site storage of excess fiber cable when pre-connected fiber cables are utilized.

Features and Benefits

- Material: Unpainted steel
- Rack mount: Removable 19" rack ears included
- Capacity: 20 or 30 meters of 10 mm cable + fanouts
- Mounting: Wall or rack mount

Interior excess fiber cable enclosure

Interior Excess Fiber Cable Enclosures

Rosenberger No.		
Stainless Steel	**Steel, Zinc Plated**	**Variant**
SLFCS001-000	SLFCS009-000	1 HU without drawer
SLFCS003-000	SLFCS011-000	1 HU with drawer

Cable Clamps

For multiple cable runs on towers where space is limited. Without additional adaptors these clamps provide sturdy, reliable and long-term support.

Rosenberger No.	Description	Size
SLCC111-C20	for 5/8"R cable, hybridcable 3 x 6 mm^2 and multipower 3 x 6 mm^2	1 x 5/8" super flexible jumper
SLCC111-C05	for 7/8"R cable and hybridcable 3 x 10 mm^2	1 x 7/8" super flexible jumper
SLCC111-PF32	for multipower 3 x 10 mm^2	1 x 23 – 25 mm
SLCC111-P03	C-clamp connection, 26 mm opening	1 x 16 – 40 mm
SLCC221-ZF1	C-clamp connection, 26 mm opening	1 x 4.5 – 7 mm / 1 x 9 – 13 mm
SLCC241-ZF1	C-clamp connection, 26 mm opening	2 x 4.5 – 7 mm / 2 x 9 – 13 mm
SLCC261-ZF1	C-clamp connection, 26 mm opening	3 x 4.5 – 7 mm / 3 x 9 – 13 mm
SLCC223-PF22	hose-clamp connection for 100 mm posts	2 x 7 – 8 mm
SLCC243-PF22	hose-clamp connection for 100 mm posts	4 x 7 – 8 mm
SLCC263-PF22	hose-clamp connection for 100 mm posts	6 x 7 – 8 mm
SLCC221-PF14	C-clamp connection, 26 mm opening	2 x 4.5 – 7 mm
SLCC241-PF14	C-clamp connection, 26 mm opening	4 x 4.5 – 7 mm
SLCC261-PF14	C-clamp connection, 26 mm opening	6 x 4.5 – 7 mm

Rosenberger Jumper Boot – RJB

Rosenberger Jumber Boots are a convenient way of fast and reliable IP-protection of RF connections on Antennas and RRHs. The kits are field installable and can easily be removed and reused. The kits add the same additional high level IP-protection to the RF connection as tape while avoiding the hassle of installation.

Features and Benefits

- Self-lubricating for fast and easy installation
- High mating cycles
- IP68
- Adapter for long threaded 7-16 connectors available

RJB Assembly Instruction

Download the assembly instruction:

http://rosenberger.com/siso/#rjbinstruction

Rosenberger Jumper Boot for 4.3-10 and 7-16

Rosenberger Jumper Boot – RJB

Rosenberger No.	Connector Type	Cable Type
SLWK111-C03	4.3-10	1/2" flexible and superflexible
SLWK112-C03	7-16	1/2" flexible and superflexible

Grommets

Grommets enable the reuse of cable clamps for thinner cables such as fiber optic or power cables in FTTA applications.
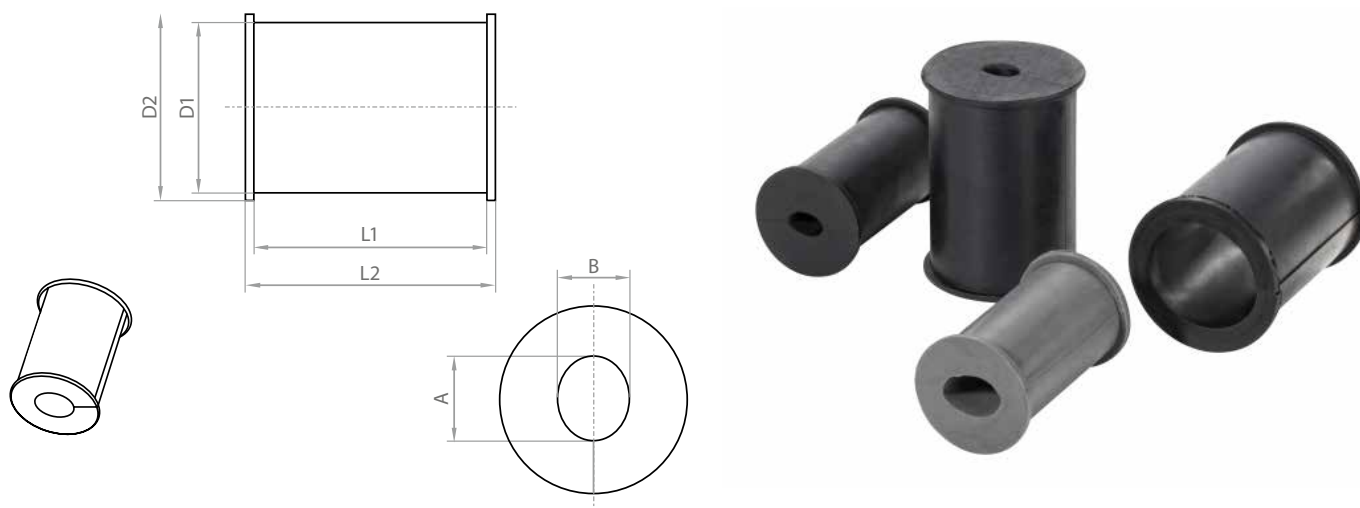
Grommets

Grounding Kits

Rosenberger No.	Equivalent Feeder Side	L1 / mm	L2 / mm	D1 / mm	D2 / mm	A / mm	B / mm	Weight in g
SLRS01-C05-0407	7/8"	52	56	28	32	7	4	43
SLRS01-C05-0711	7/8"	52	56	28	32	11	7	40
SLRS01-C05-1117	7/8"	52	56	28	32	17	11	38
SLRS01-C06-0407	1 1/4"	55	59	40	44	7	4	105
SLRS01-C06-0711	1 1/4"	55	59	40	44	11	7	102
SLRS01-C06-1117	1 1/4"	55	59	40	44	17	11	94
SLRS01-C06-1720	1 1/4"	55	59	40	44	20	17	84
SLRS01-C06-3032	1 1/4"	55	59	40	44	32	30	43
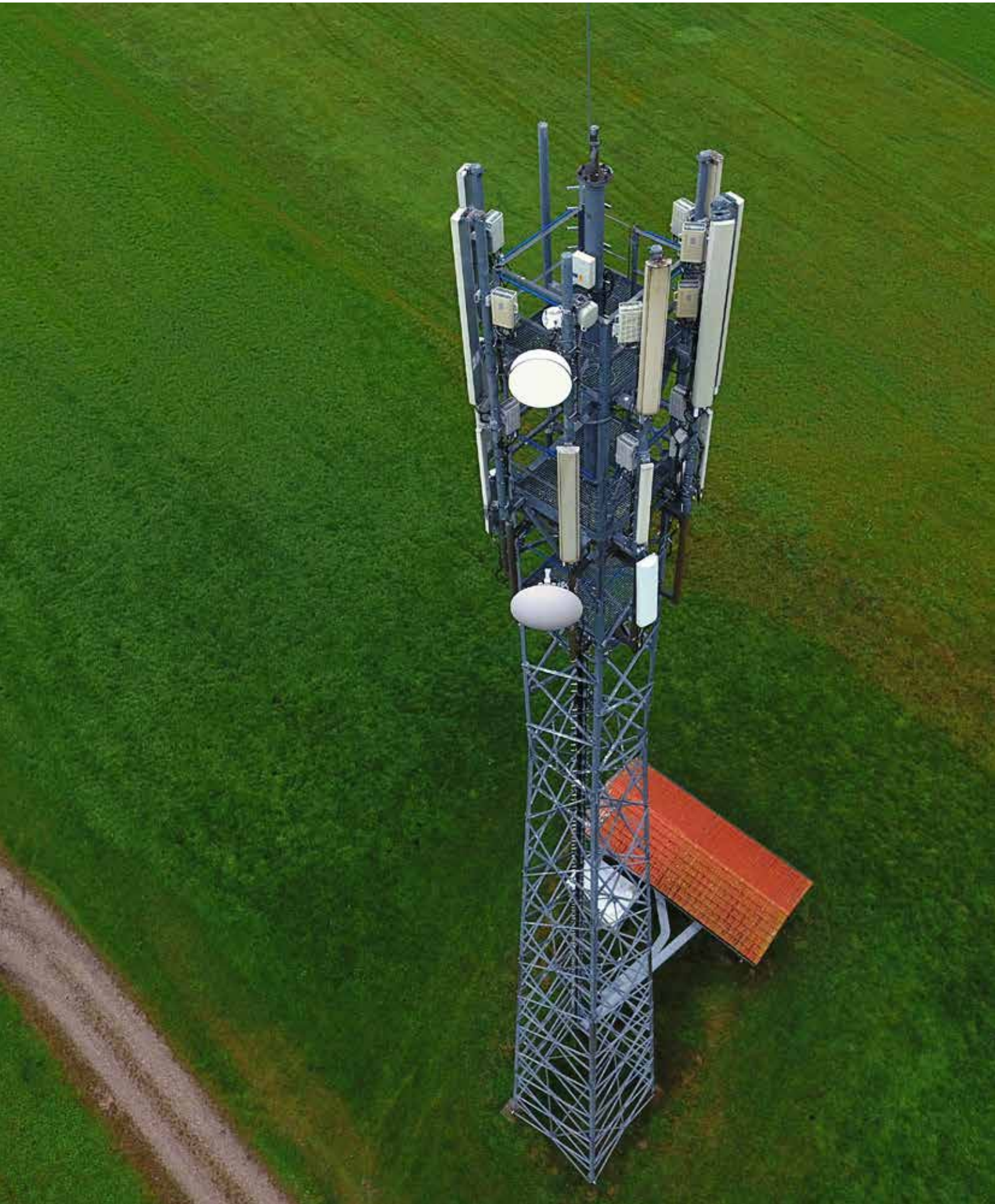
Product Overview

- Fiber Loop
- Inspection and Cleaning Kit
- Test Laser
- Reel Cleaner
- Click Cleaner

Test and Measurement Equipment

The Rosenberger test and measurement equipment is designed for site solutions

Fiber Loop

The Rosenberger Fiber Loop is designed for use in harsh environment.

This robust and handy loop adaptor supports measurement of single mode or multimode signals on site or within the lab. It supports LC Duplex, RDC male or female interfaces. The uni-directional Loop Adaptor helps to detect wrong fiber assignment and cross / uncross failures.
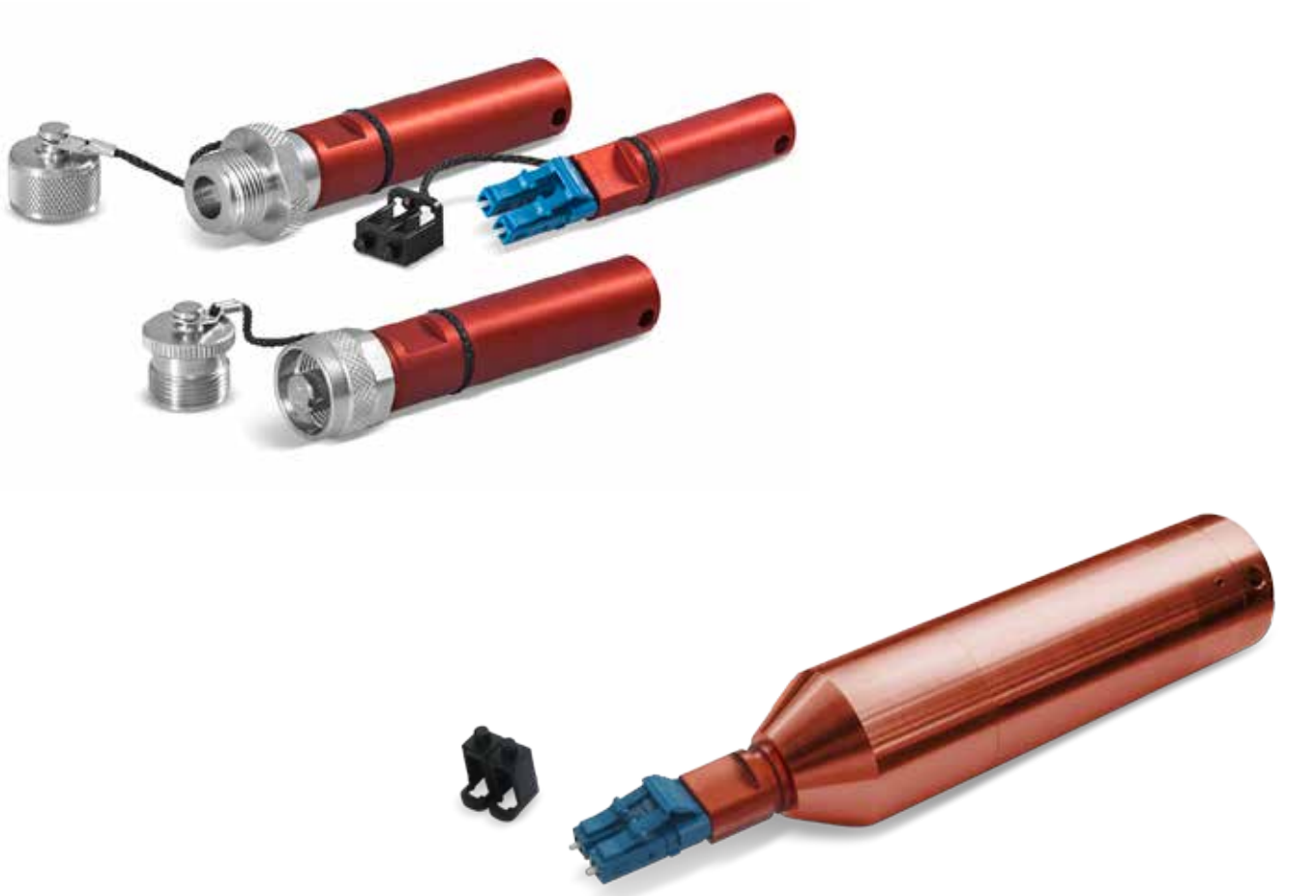
Loop adaptor

Fiber Loop

Rosenberger No.			
single mode G.657A - 9/125		multi mode OM 2 - 50/125	
98LCS120-L00	Loop-adaptor LCD-2F9µ	98LCS130-L00	Loop-adaptor LCD-2F50µ
98RDCK120-00	Loop-adaptor RDCK-2F9µ	98RDCK130-00	Loop-adaptor RDCK-2F50µ
98RDCS120-00	Loop-adaptor RDCS-2F9µ	98RDCS130-00	Loop-adaptor RDCS-2F50µ
98LCIS120-L00	LC unidirectional Loop LCD-2F9µ		

Inspection and Cleaning Kit

The kit includes all materials and tools for visual inspection and cleaning of FO connectors and adaptors. The main component is a video backpanel microscope. It is available with a hand-held monitor or with a USB interface, alternatively. The USB version needs a laptop or PC with USB 2.0 port.
That version comprises an additional feature compared to the monitor version: The pictures can be saved for documentation.
Microscope adaptors for Ø 1.25 mm and Ø 2.5 mm standard ferrules are included, additonal adaptions to all frequently used connector types are available as accessory.

A large variety of adaptors enables inspection of all standard connectors with the video microscope. Connectors can also be inspected through panel mounted couplers.
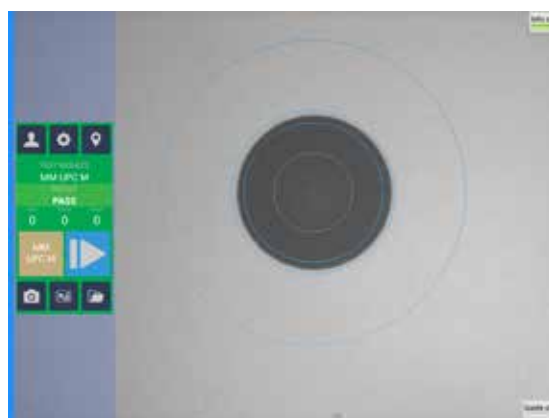
The software delivered with the USB microscope allows to analyze the pictures in an automated way. Scratches and contaminations are marked in different colours and enable a reliable examination of ferrule endfaces. This ensures an inspection in conformity with IEC 61300-3-35.

Inspection and Cleaning Kits

Rosenberger No.	Description
SLTK001-000	Cleaning kit with video-mic. , light source and Insertion Loss measurement
98W018-000	Cleaning kit with USB microscope
SLTK001-000/53	Power Source
SLTK001-000/51	Power Meter for MM fibers
SLTK001-000/52	Power Meter for SM fibers
SLTK001-000/57	Adapter Power Meter Ø 1.25mm

Test Laser EV-3

Laser light source for defect location, fiber identification and testing of connectors, single mode and multi mode.

Test Laser

Rosenberger No.	Description
SLTK001-000/50	Test laser EV-3 for ferrules with Ø 1.25 mm and Ø 2.5 mm

Reel Cleaner

Cleaning device with a dry textile ribbon for all FO connectors with the exception of MT-RJ male (with pins).

- One textile reel included
- Up to 400 cleanings per reel

Reel Cleaner

Rosenberger No.	Description
98W013-000	Reel cleaner
98W013-001	Replacement reel

Click Cleaner

Handy cleaning tool for ferrule endfaces of
FO connectors.

- Simple release of the cleaning mechanism by
  pushing the tool holder
- Unmating of the connector not necessary –
  cleaning through the adaptor is available
- Extendable nozzle for cleaning connectors,
  being difficult accessible

Click Cleaner

Rosenberger No.	Description
98W005-000	Click cleaner, for ferrules Ø 1.25 mm
98W006-000	Click cleaner, for ferrules Ø 2.5 mm
98W007-000	Click cleaner, for RDC connectors
98W012-000	MTP® / MPO cleaner

MTP® is a registered trademark of US Conec Ltd.

Number Codes – Cable Assemblies Jumper

SLJ	12	S	P -	60	M	64	R -	5 m -	0
									Successive Number
								Length in feet (ft) or meters (m)*	
								*metric lengths shorter than 10 meters with one decimal lace, point as delimiter	
							Connector Type / Gender Side 2		
							M male straight		
							H male straight, hand screw (only series 64)		
							Q male straight, quick lock (only series 64)		
							F female straight		
							R male right angle		
							X male right angle, hand screw (only series 64)		
							Y male right angle, quick lock (only series 64)		
						Connector Series Side 2 (higher number)			
						53 N			
						60 7-16			
						64 4.3-10			
						65 4.1-9.5			
					Connector Type / Gender Side 1				
					M male straight				
					H male straight, hand screw (only series 64)				
					Q male straight, quick lock (only series 64)				
					F female straight				
					R male right angle				
					X male right angle, hand screw (only series 64)				
					Y male right angle, quick lock (only series 64)				
				Connector Series Side 1 (lower number)					
				53 N					
				60 7-16					
				64 4.3-10					
				65 4.1-9.5					
			Cable Jacket						
			P PE						
			F FRNC						
		Cable Type							
		R flexible, ring corrugation							
		S super flexible, spiral corrugation							
	Cable Size								
	14 1/4"								
	38 3/8"								
	12 1/2"								
Rosenberger Jumper									

Rosenberger No.

Acronym directory

BBU
Base Band Unit

FO
Fiber Optic

FTTA
Fiber-to-the-Antenna

ODF
Optical Distribution Frame

OSL
Open-Short-Load

RDC
Rosenberger Duplex Connector

RFE
Rosenberger Fiber Enclosure

RRH
Remote Radio Head

RJB
Rosenbeger Jumper Boot

Website

For more information, refer to our website:
www.rosenberger.com/siso

Rosenberger Site Solutions e-mail Newsletter

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