

Overall solutions for tomorrow's energy and data infrastructure

OBO BETTERMANN and Reichle & De-Massari

A partnership with added value for electrical and data infrastructures

EGS Device systems



 **R&M**

Convincing cabling solutions


BETTERMANN

Equipped for the future: OBO BETTERMANN and Reichle & De-Massari

OBO BETTERMANN: A success story from Menden, Germany

OBO BETTERMANN offers perfect solutions for all electrical installation applications. True to the motto "By professionals, for professionals", the Group offers a range comprising some 30,000 products for the specialised trades and crafts, as well as large-scale objects in industrial and plant construction. There are 2,000 employees worldwide working on practical, user-friendly solutions for the following sectors:



VBS

Use our connection and fastening systems to make sure you have a good connection and a safe hold. The range spans cable junction boxes and flush-mounted or hollow wall sockets through to fastening and installation material.



TBS

Even small surges can put electronic devices and systems out of action instantaneously. OBO offers a broad range of surge protectors and lightning protection systems for the German and international markets.



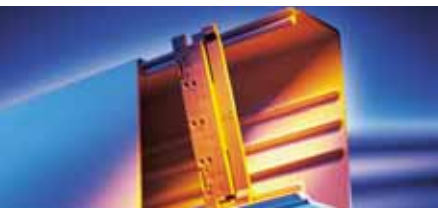
KTS

Carrying energy. The broad OBO range combines cable support systems for practically every field of application. The installation and duct systems, including those for special applications, include a complete, practical assortment of accessories.



BSS

Protecting life. Safeguarding values. Fire protection is one of the most challenging and important tasks for the realisation of construction projects. OBO offers practical, easy-installation fire protection systems that are approved to DIN 4102.



LFS

The cable routing systems handle any installation situation. Whether skirting duct or media column, OBO offers a comprehensive product range and a host of accessories.



EGS

Intelligent, elegant building system technology. The EGS systems and OBO BUS offer maximum convenience coupled with ease-of-handling. Combine safety, economy and flexibility for retrospective changes of use.



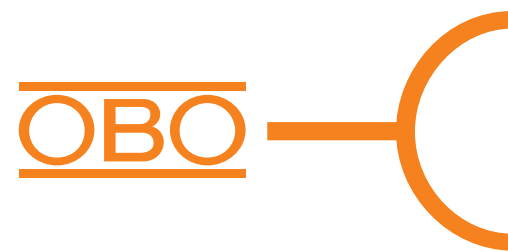
UFS

Underfloor systems enable safe, convenient access to power, internal and external data and communication networks, telephone and ISDN connections. OBO supplies a range of different ducts and floor-flush connection sockets.



"Integrated solutions for energy and data technology are becoming increasingly important for our customers. R&M is the ideal partner to help us square up to this challenge."

Andreas Bettermann
Managing Partner OBO



Your skilled partner for tomorrow's energy and data infrastructure

R&M: A success story from Switzerland

Reichle & De-Massari has more than 40 years' experience in the development and manufacture of passive cabling solutions for communication networks. Backed by outstanding products, the company has earned the reputation of quality leader. R&M solutions are setting benchmarks for safe voice, data and image communication. The core expertise lies in connection and distribution technology for copper and fibre-optic cable networks. This is the basis on which R&M offers winning cabling solutions for four different sectors:



"When it comes to data technology, our customers still see us as a system supplier. In OBO, we have now found the perfect complement for the energy sector."

Martin Reichle
CEO Reichle & De-Massari

Enterprise Cabling

Enterprise Cabling comprises cabling in buildings and offices for data, voice, building automation and data power integration.

Carrier Cabling

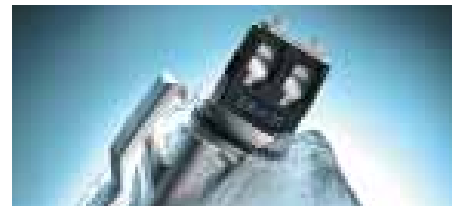
In this sector, R&M services the numerous WAN and MAN operators, national and international telecom companies, city carriers, construction companies and providers. The focus is very much on modular overall solutions for inside and outside plant applications.

Industrial Cabling

In Industrial Cabling, R&M develops solutions to meet the extremely stringent requirements placed on connection and distribution technology in the industrial environment and outdoor sector.

Residential Cabling

In Residential Cabling, R&M supplies convenient solutions for cabling private dwellings in a multimedia age. The secure basis for fast Internet surfing, video on demand or home connections to the company's proprietary network.



Infrastructure in motion

Changing economic conditions and new business models throws the working world into a state of real flux. This places a whole new set of demands on the office of the future. Permanent room structures are being superseded, optimised variability is a must. Office areas are being flexibly adapted to team size, reorganisations are the order of the day and relocation is becoming commonplace. Of course, this also affects the infrastructure in workplace development. Power supply and data networks are more mutually dependent. This has far-reaching consequences on how these infrastructures are planned, installed and operated. Overarching thinking and acting are gathering importance. OBO and R&M are entering into a partnership that will meet the challenges of these changes. Together, we will launch on the market a seamless, integrated solution for energy and data technology.

Modul 45 from OBO with R&M data technology

The perfect combination

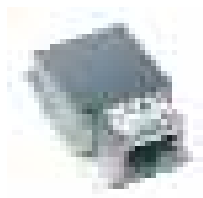
Change is becoming the order of the day

Modern offices are seeing a merging of networks. OBO solutions enable you to easily integrate highly sensitive PC electronics and communication devices into the standard switch installation. The coherent system that emerges is elegant, too – because the data technology is harmonised with the Standard, Dialog, Aura and Modul 45 ranges. Maximum safety is guaranteed by OBO's surge protection systems. They protect highly-sensitive, high-tech modules against voltage peaks. Cat. 5e connection modules of the R&M freenet cabling system are suitable for both voice and data applications. Cat. 5 connection modules are suitable for transmission frequencies of up to 100 MHz. Cat. 6 connection modules of the R&M freenet cabling system are suitable for voice, as well as fast data applications. Cat. 6 connection modules are suitable for transmission frequencies of up to 250 MHz. LWL connection modules can also be integrated. Everything fits into the system and can be altered as and when needed.

**Connection module
Cat. 5e, unscreened**



**Connection module
Cat. 5e, screened**



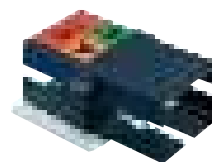
**Connection module
Cat. 6, unscreened**



**Connection module
Cat. 6, screened**



**LWL
coupling**



Flexible

No matter which connection modules you install: they all fit into the data technology module. Guaranteed by the standard size of the slide-in plate on the underside of the module.

Future-proof

If the system is retrospectively changed, only the connection modules need to be replaced, the base carrier remains the same.

Warranty

Assuming a construction using all components from R&M, we provide a 5-year warranty for products, a 20-year warranty for the system and a life-long warranty for the applications.

Eliminate integrity vulnerability in local networks

Complete solutions from just one source

Data loss can threaten your very existence

More than 40 per cent of companies that suffer a total data loss never recover. Some 29 per cent have to close their operations within two years of the crash. These catastrophes are very often caused by cabling infrastructures.

Network protection is the key to existence

You cannot afford for your network to fail! As planner, engineer or the individual responsible for IT and data cabling, you know how important a reliable and protected infrastructure is to existence. Every second company puts damage caused by a one-hour network interruption to as much as 50,000 US dollars. In sensitive areas, losses amount to 90,000 US dollars per hour.

The late effects of prolonged outages in data and communication networks often reach dramatic heights. Sensitive reactions are shown up in stockbroking and payment transactions, energy provision, telecommunication, health, transport and traffic, as well as large manufacturing operations.

The human factor and the minor causes

It's the simple, unspectacular connection faults and human shortcomings that cause the most network malfunctions and data loss. Some unauthorized person mistakenly or negligently pulls a plug, manipulates a cable connection or attaches a plug cable to the wrong socket. The damage is done.

Independent studies show that only seven per cent of data loss is caused by viruses, with 44 per cent being down to hardware faults and 32 per cent to human error.

Other studies show that 59 per cent of network problems are the direct cause of the physical infrastructure and the connections.

More network protection

- Mechanical and colour coding prevents incorrect network connections
- Lock mechanism enables authorised plugging and unplugging

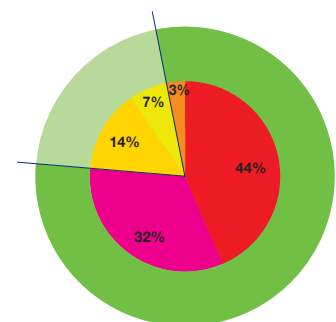
More flexibility

- Suitable for RJ45 copper and SC-RJ fibre components
- Simple upgrading and retrofitting thanks to R&M Smart-holes

Convenience

- Tool-free installation
- Retrospective installation

Causes of data loss and network malfunction



- Hardware
- Software

Faults that OBO and R&M are able to reduce

- Incorrect manipulations **32%**
- Hardware and software faults **44%**
- Diverse, extreme influences, EMC, etc. **3%**

Faults that OBO and R&M are unable to reduce

- Viruses **7%**
- Software faults **14%**

The right product for every protection requirement

3-level protection system reduces data loss

The route to more protection

Eliminating integrity vulnerability around connectors is vital. Choose the R&M protection system for preventing network interruptions, errors, manipulations and other frequent error sources with a unique, simple yet intelligent solution.

The R&M protection system is set apart by its modularity and flexibility. It is based on Smartholes, which are integrated as standard into R&M platforms for copper and fibre-glass connectors. Plugs and switch fields therefore come prepared for the protection installation.

Performance characteristics

- Innovative products for three different protection requirements
- Replaceability thanks to R&M modularity
- Protection products can be installed without tools
- All protection products can be retrospectively mounted to the R&M cabling system

1



• Protection level 1

Visual coding:

Visual coding reduces the risk of confusion and supports the correct connection to the copper and fibreglass plug cable.

2



• Protection level 2

Mechanical and visual coding:

Mechanical and visual coding doubles protection. Incorrect insertion is impossible. The risk of confusion is eliminated.

3



• Protection level 3

Mechanical and visual coding + wearing:

Lock mechanisms intelligently prevent unauthorised manipulation. Connections can only be removed or made by trained, authorised individuals.

Convenient installation

Network protection is becoming increasingly important and a key factor for the future of entire organisations. Independent studies confirm that over 70% of network faults and crashes are down to incorrect cabling infrastructure and deliberate manipulation of the connection cables. Even when a passive cabling system is being evaluated, it is important to remember that the protection aspects can be integrally supported and implemented. The R&M protection system satisfies the diverse requirements and needs of the user.

Protection level 1 Visual colour-coding

The colour codes support correct cable connection. They can be simply attached to the connection cable and to the connection points (plugs, switching fields). If network applications change, any codes already fitted are easy to change for different colours without tools.

Performance characteristics

- Simple, highly-visible identification of the network service to be transferred
- Interchangeable and reusable colour codes
- Field for individual inscription
- Direct retrofitting possible (sockets and switching fields with R&M Smartholes)
- Tool-free installation
- Halogen-free material

Protection level 2 Mechanical/visual insertion protection

“Data Save Lock”, the patented, mechanical/visual coding function, guarantees mechanical insertion protection. This therefore prevents a connection cable being attached to the wrong point from the outset. Undefined network states are avoided and sensitive network cards are safeguarded from destruction. Accidentally connecting an Ethernet workstation, for example, to the socket assigned for telephony is thus prevented.

Performance characteristics

- Protection from electrical damage and network failure through incorrectly connected devices
- Mechanical and optical coding options
- Eight different coding options
- Tool-free installation at plugs, switching fields and sockets
- Direct retrofitting possible (sockets and switching fields with R&M Smartholes)
- Integrated anti-kink device for plug cable
- Halogen-free material
- Patented

Protection level 3a Mechanical extraction/insertion protection

The protective collar Plug Guard can only be released using a suitable key. This prevents connection cables from being removed accidentally. Only trained and authorised individuals are able to release these connections again. A special signal-coloured Safe Clip can be attached to the connection cable, which also prevents inadvertent removal. Safe Clip even protects connection cables on the active equipment side.

Protection level 3b Just three steps to terminate your patch cable

Patch Guard is installed by just a few operations and without tools:

1. Push the components on the patch cable together. Snap the bottom section onto plug and anti-kink device like a collar.
2. Engage the top section and lock mechanism with the bottom section and slide below the plug release lever.
3. Attach the colour clips, these support patching without confusion. Once engaged, Patch Guard is locked onto the plug and now complete. Plug and release lever remain locked. Patch Guard may only be opened by authorised persons with a key.



New structures for office and industry

The right product for every environment



The new dimension of Local Area Networks

We can no longer imagine office and administration, development, marketing or distribution without computer networks. LAN (Local Area Network), Ethernet and Internet protocols are the information and communication carriers.

But this is no longer enough. Nowadays, data networks must reach deep into production and connect it with the office world so that special services can be realised, automation can be advanced and management and manufacturing processes can be better controlled.

Driven by the trend towards seamless integration and by the need for a host of information to be constantly available, an industrial Ethernet is developing to become a new application-neutral and cost-efficient medium. It creates additional rationalisation and automation potential and simplifies programming, maintenance and much more.

STAR Real10

The best in copper cabling. A real 10 gigabit Ethernet over 100 m of horizontal cabling: high-grade screened, Cat. 6 electrical components with all-out quality. Features for industrial applications: gold contacts, tin-plated IDCs, patented screened contacting, integrated strain relief, capacitive and inductive compensation. The 360° screening around each module prevents cross-talk on adjacent lines, thus contributing to optimised operational reliability.



Systems are merging

Machines are going online. Production halls and manufacturing facilities must be on the data network. Organisations need realtime information from warehouse, logistics and processes. Control and communication, traditional bus systems and a universal Ethernet are merging. New structures between office and factory are emerging, and have to meet the most stringent of requirements.

The great challenge:

extreme environmental conditions

Extreme environmental conditions will prevail wherever you use an industrial Ethernet. Dust and moisture, oils, chemicals, gases, temperature fluctuations, electromagnetic interference, shock and vibrations are all enemies of LAN connections.

Open standards, uniform technologies, high performance, transparency, bandwidth, enhanced realtime capability and future options make the Ethernet network protocol and associated cabling infrastructure indispensable for industry. Yet the components, especially the plugs, must be able to achieve more. Having the established transmission properties is not enough. Tough industrial environments call for absolute protection, reliability, durability and quality. Industrial cabling development has come on in leaps and bounds. R&M already offers solutions that companies need to be able to network entire sites via an Ethernet – whether production lines in manufacturing halls or large-area, outdoor plants.



Photo: BMW AG / By: Martin Klindtworth

The range of solutions spans

- from consulting and individual development for machinery and plant constructors
- to training for planners and engineers
- through to innovative, modular, application-neutral systems for passive copper and fibreglass cabling technology.

The extensive warranty, quality and service will also win you over. R&M offers planners and users of an industrial Ethernet added value from the word go.



SC-RJ

The smallest in its class, this plug moves fibre-optic cabling a huge step forward. The SC-RJ supports all types of fibre: GOF, PCF and POF. Built in the Small Form factor design, the SC-RJ can be preconfigured and is set apart by its outstanding damping properties. The installation dimensions conform to the RJ45 cutout.



Hat-rail mounting

The DRM45 enables data technology to be installed on 35 mm DIN hat rails with just one operation: simply clip in. Screened or unshielded copper modules and fibre-optic connection modules are also conveniently integrated. Interchangeable at any time. R&M protection system components are also ideal for retrofitting.



Splash Line

R&M solutions offer protection against critical environmental influences to IP 54. Splash Line also enables RJ45 connector systems to be retrospectively sealed with rubber flanges and grommets. Water, oil, dust and air pollutants can no longer harm a network connection.

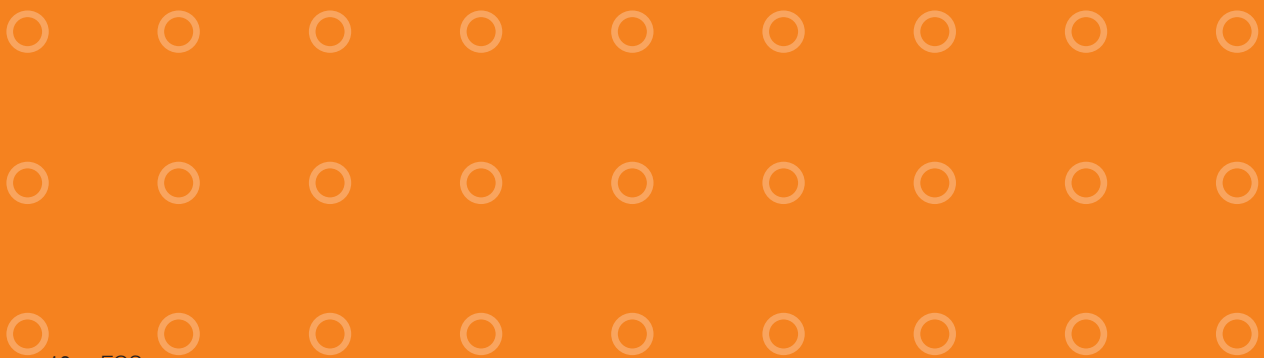


RJ45 IP67 for Cat. 5e and/or Cat. 6

RJ45, the IP67-protected plug for Cat. 5e and/or Cat. 6 with all-round screening offers power reserves for copper cabling with large bandwidths used in tough industrial environments. Other features: gold contacts, tin-plated IDCs, automatic screened contacting with integrated strain relief, capacitive and inductive compensation.

Offering what belongs together all at once

From just one source



Data meets power

The ability to quickly modify working environments to new needs and conditions hinges on having brand new office concepts. As the backbone of any modern office, the telephone, data and electrical infrastructure is gaining importance. In future, the cable infrastructure in false floors, suspended ceilings, telescopic columns and skirting ducts will form the technical basis for achieving the required flexibility at the workplace. In addition, infrastructures based on modular grids that are simple to expand are falling under increasing consideration. This means maximum flexibility with minimum costs for the company when it comes to relocating, reorganising or changing the use of office areas.

1

Deskbox

The attractive Deskbox can be configured individually with data and communication connections, as well as sockets and switches. Different times, different concepts. Everything in offices today appears different to how we imagined. If only we had known beforehand. Working environments must be swiftly adaptable to meet changing needs and conditions. Temporary workstations must be quick to set up and the technology flexible for room conversions and changes of use. High-level protection is also required for data transmission and energy supply. And last but not least is appearance – above all at the final metres to the workstation, where technology becomes an element of interior design.

4

Bus box and bus distributor

Handy box, quickly installed. Convenience and flexibility. Enabled by Cable Outlet in building technology, too. To meet the requirements of this diverse field of application, OBO developed the Bus Outlet. Position the handy box anywhere along the cable route. The printed board in the Outlet provides three contacts: for the 4-pole bus cable and two outlets. The non-interrupted bus connection and outlet contacting is via IDC and Easylock – no tools involved.

7

R&M protection

Minor cause, major effect: if network plugs are accidentally pulled out or inserted incorrectly, entire organisations or production plants can be temporarily brought to a standstill. Some 70 per cent of all network problems are the result of such avoidable errors. The three-level R&M protection system can change all that. Colour and mechanical coding prevents confusion. Insertion and extraction protection with lockable collars and authorisation solution increase operational reliability and guarantee optimised network availability. These safety solutions can be retrofitted to R&M connection modules and/or patch cables without tools.

2

GEK Rapid 45 duct

Modern room concepts have to be flexible. In an era characterised by constant change, the electrical installation must also exhibit optimised flexibility. Alterations have to be possible at any time, without major effort. The EGS series Modul 45 proves that such a functionality doesn't have to mean compromising on looks. OBO's module technology guarantees optimised flexibility. Whether socket, antenna, network, surge protection module or telephone: everything fits into the system and can be modified as and when needed.

5

CAT 5 and LWL coupling

No matter which connection modules you install: they all fit into the same data technology module. If the system is retrospectively changed, only the connection modules need to be replaced, the base carrier remains the same. It won't be possible to consider data and energy technology as separate entities for much longer. Future-proof concepts call for overarching planning and coordinated installation – not least with a view to protecting against physical injury, damage to property and guaranteeing function maintenance.

8

SC-RJ

The smallest in the SC Duplex class, the SC-RJ plug supports all fibre types, GOF, PCF and POF, hence moves fibre-optic cabling one huge step forward. It offers device suppliers and system integrators a plug-in system that suits every requirement. Built in the Small Form factor design, the SC-RJ can be pre-configured and is set apart by its outstanding dampening properties. The installation dimensions conform to the RJ45 cutout, enabling easy and space-saving integration into existing platforms.

3

Cable Outlet

Nowadays, power cables are installed without interruption over an entire room or floor. An OBO round Cable Outlet is placed wherever connections are needed for consumers, lights, sockets, etc. Cable Outlet makes installation faster, more simple and more flexible than ever before. In just 40 seconds, you've set a tap on the power cable. Just a few operations are needed to make the connections with OBO's IDC technology and the Easylock system – no tools required. Today's efficient installation technology.

6

Connection module

Optimised transmission properties and all-out quality set R&M Cat. 6 products apart. Features for industrial applications: gold contacts, tin-plated IDCs, patented screened contacting, integrated strain relief, capacitive and inductive compensation, 360° screening.

9

FM45

The FM45 offers boundless freedom and flexibility for cabling in factories and buildings. This is a universal RJ45 plug with 8-pole connection and Cat. 5e performance that can be installed without tools and pre-configured and which is suitable for screened and unscreened cables of up to 8 mm diameter, wire and braid. The FM45 can be preconfigured *in situ* in less than a minute. IDC technology that is suitable for industrial applications saves the wires having to be stripped. It offers safe, repeatable, vibration and corrosion-proof connection. The FM45 is supplied to IP20 or IP67 as required.

**Conducting electricity.
Routing data.
Controlling energy.**

EGS

LFS

BSS

KTS

TBS

VBS

UFS

VBS Connection and fastening systems

- Junction box systems
- Flush-mounted and hollow wall systems
- Clamped systems
- Screw-in systems
- Fastening systems
- Flange clamp systems
- Rail systems
- Screw-in and knock-in systems

TBS Transient voltage and lightning protection systems

- Surge protection systems
- Equipotential bonding systems
- Lightning protection systems
- Earthing systems

KTS Cable support systems

- Mounting systems
- Rail systems
- Cable tray systems
- Mesh cable tray systems
- Cable ladder systems
- Wide span systems
- Vertical ladder systems
- Luminaire support systems
- Modular systems
- Stainless steel systems
- Function maintenance and MLAR systems

BSS Fire protection systems

- Cable routing duct systems
- Fire protection duct systems
- Function maintenance systems
- MLAR systems

LFS Cable routing systems

- Cable routing duct systems
- Skirting duct systems
- Wiring duct systems
- Dado duct systems
- Dado covers and accessories
- Media columns

EGS Device systems

- Basic elements
- Electronic devices
- OBO BUS system
- Radio systems
- Standard range
- Dialog range
- Aura range
- Modul 45 range
- Compacta range
- Hospital technology
- Surface-mounted range
- Wet room range
- Cast aluminium range
- Computer engineering

UFS Underfloor systems

- Underfloor systems screed-covered
- Duct systems in-screed, flush with floor surface
- Cavity and false-floor systems
- Device installation systems



Convincing cabling solutions

Reichle & De-Massari GmbH
Weismüllerstrasse 31 · 60314 Frankfurt, Germany
Tel. +49 (0)69 420 008 0 · Fax. +49 (0)69 420 858 60
www.rdm.com



OBO BETTERMANN GmbH & Co. KG
P.O. Box 1120 · 58694 Menden, Germany
Tel. +49 (0)23 73/89-0
Fax +49 (0)23 73/89-238
E-mail: info@obo.de
www.obo-bettermann.com