CONNECTIONS 42

090.6621

R&M
Convincing cabling solutions

Setting Standards in Terms of Quality and Security

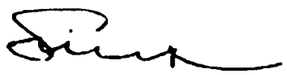
We want your data to get wherever you want it to go at any time without any problems. For almost 50 years now, R&M has been making its contribution to that goal as a manufacturer of the most secure connection and distribution technology. Our Corporate Movie clearly demonstrates this promise. The jury of the Corporate Movie & TV Awards in Cannes liked it too and awarded our film the Silver Dolphin (see page 34). The film tells the story of the eventful journey of two data packages that eventually get to R&M on their search for the best possible cabling.

The best possible cabling… Today that means a lot more than high quality and zero-error production. And that is what R&M is all about. Today, a cabling system must above all be profitable; it has to be able to be used more flexibly than ever before and ensure power reserves for data volumes that are increasing at a dramatic rate. We fulfill these ambitious requirements on the one hand with the Cat. 6_A system (see the Focus report starting on page 4) and on the other with our fiber optic solutions and the R&M*foxs* system. Our world record (see the report on page 31) is impressive proof of the level we are operating at in fiber optics.

Anyone who wants to install and use top-quality fiber optic cabling efficiently, needs fast, flexible and cost-efficient solutions. Our response to this customer requirement is modularity. The modular principle of R&M solutions is particularly clear when it comes to the Optical Distribution Frame (ODF) and the Venus family (pages 11 and 13). Our consistent modularity enables fast, regional and customer-specific configurations. The modular principle simplifies the entire planning, logistics and installation procedure. This means that wherever you are you can create a perfect network faster and more simply than ever before. Which gets us back to where we started: perfect communication, secure data transfer, and success for you, our customers.


050.2140

When football fans' hearts start racing on June 8, 2012, because the UEFA EURO 2012 is on, R&M will be there live! Not only the Donbass-Arena in Ukraine, but also the stadia in Charkow, Breslau and Danzig, as well as the National Stadium in Warsaw that holds 58 000 spectators, were equipped with an R&M solution (see pages 8/9). Work had to progress fast to meet the deadlines set by UEFA for completion – a task that we, together with our partners, passed with flying colors. And while we are on the subject, probably the best league in the world, the "Primera Division" in Spain, relies on R&M expertise: In April 2011, the Spanish professional football league decided to renew its control and security networks in all 40 stadia of the associated clubs. All the stadia in Spain's top league are now equipped with control networks and security systems from R&M!



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Contents

Cover picture: Modern workplaces require a scalable infrastructure for the applications of today and tomorrow.

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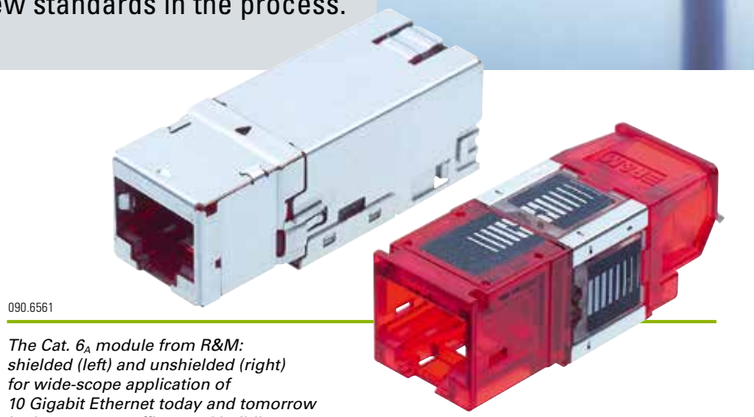
Cat. 6_A – the Trend in Office Cabling

A new generation of copper cabling. If you are planning a network today, you start off with Cat. 6_A and 10 Gigabit Ethernet. Many data centers are already at that stage. But now 10GbE is beginning to seep into structured cabling systems and thus into the office LAN. And the shielded and unshielded Cat. 6_A systems from R&M are setting new standards in the process.

The Cat. 6_A generation is going in the right direction. Sales of the innovative high-performance module from R&M tripled in 2011. More and more planners, installation engineers and users are choosing the most powerful RJ45 solution of all times. Cat. 6_A – with a subscript A in accordance with ISO/IEC 11801 – is the key to more operational reliability in data networks and new top performance such as 10 Gigabit Ethernet (10GbE). For more information, take a look at the articles in CONNECTIONS No. 37 through 42 (pages 24/25 of this edition).

The active component market is also beginning to take off. The industry is talking about the "second wave" of 10 Gigabit Ethernet. The controllers in the server adapters and switches have now attained acceptable performance statistics and today are working on less energy. With the youngest generation of 10GBase-T PHYs, the EMC stability has improved dramatically. Today, chips are mass-produced. The sales figures have reached the critical point. And that means the prices for 10GbE ports have started to drop.



The Cat. 6_A module from R&M: shielded (left) and unshielded (right) for wide-scope application of 10 Gigabit Ethernet today and tomorrow in data centers, offices and buildings.

10GBASE-T is the leader among the technologies that support 10GbE. Easy-to-operate, backward-compatible RJ45 connectors and tried and tested, structured twisted-pair copper cabling are paving the way to full-scale implementation of 10GbE. A survey by the American market research company Light-Counting LLC says that the increase in the number of 10GBASE-T installations will explode from 2014. The sale of adapters or ports, they claim, is likely to increase by a massive 233 % a year in the future.

Boom for 10GbE

So anyone now considering changing generation from 1 Gigabit Ethernet to 10 Gigabit Ethernet and from Cat. 6 to Cat. 6_A /Class E_A does not need to worry about using exotic technology. On the contrary. Cat. 6_A can be used on a very wide scale. This technology will be available all over and long term. The trend is absolutely clear.

Cat. 6_A will start to come out of the data centers. 10GbE and the corresponding cabling will soon reach the floor distributor and the workstation. For planners, installation engineers and network operators, the question of how to manage this change of generation in the most economic, simple and safe way will become increasingly important.

They have to find products with which they can cover the high performance demands of a data center in exactly the same way as the long lifecycles of cabling systems. In the case of office and building cabling systems, the operational life can be more than 15 years. During this time, it is highly likely that new applications will be added and that the data volume will continue to increase in the office world. Which means that cabling in offices has to be just as efficient as it is today in data centers. A few other criteria have to be taken into consideration during planning, such as the decision as to whether to choose a shielded or unshielded system.

> Anyone now considering changing generation does not need to worry about using exotic technology – on the contrary!

The Cat. 6_A ISO system from R&M is a modular cabling program for the 10-Gigabit age that can be used everywhere. The unshielded variant Cat. 6_A UTP completes the system. This means that all installation requirements are already fulfilled, not only today but also in the future.

Security thanks to headroom

There is plenty of performance headroom with the Cat. 6_A system from R&M. The reason: a standard-setting quality and innovation leap in termination and connection technique.

Crosstalk (ANEXT, AFEXT) is without doubt the biggest hurdle. With high-frequency and correspondingly sensitive data transmission such as 10GbE, cables, wire pairs and connections have to be particularly protected from these electromagnetic influences from the outside. Shielded Cat. 6_A cabling fulfills these requirements automatically or rather "by design" – providing the production and installation quality match.

In the case of unshielded Cat. 6_A cabling, on the other hand, the individual components have to fulfill higher technical

requirements to be able to repel the influences of crosstalk. The new Cat. 6_A UTP system from R&M already ensures these requirements. In the channel, it is convincing with its exceptionally large signal/noise ratio that also offers safe headroom for future high-performance applications.

The new Cat. 6_A UTP system from R&M is convincing in the channel with its exceptionally large signal/noise ratio that also offers safe headroom for future high-performance applications.

Together with the system components from R&M – patch panel, connection module, patch, CP and installation cords – you can be sure of installing a future-proof network, whether shielded or unshielded.

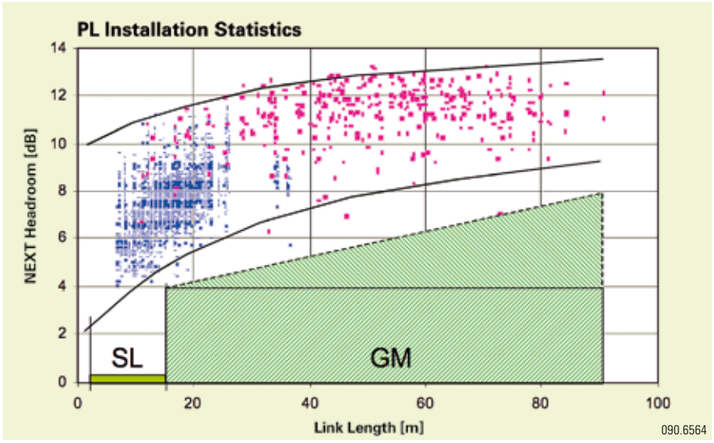
Simple assembly – short links

If you take a detailed look at the components, there are other features that are worthy of consideration, as is the case with the Cat. 6_A module. The major hurdle in a connection module is the near-end crosstalk (NEXT). The R&M solution has plenty of headroom on this score too. All component requirements of the ISO/IEC 11801 Ed. 2.2 (2010) and the IEC 60603-7-41/51 are exceeded.

With the pyramid and the central shield cross in the wiring block, the module has unique wire pair shielding. In the wiring procedure, in-built precision blades cut each wire to exactly the same length. This automatically ensures consistent impedance of the pairs. The NEXT performance of the module no longer depends on a manual worker or on assembly. The sophisticated IDC technology from R&M ensures stable contacting long term that is corrosion- and vibration-proof.

The NEXT headroom of the Cat. 6_A connection module from R&M is so large that it is no problem to undercut the standard lengths for the permanent link and channel. Even in short links from two meters in length, transmission quality remains stable. When cabling with Cat. 6_A modules from R&M, a lot of cable reserve becomes superfluous. Planners will no doubt readily opt for a possibility of planning shorter cabling paths in data centers, but also in floor distributors and special building and office situations.

You have a free choice of cable – the insulation displacement terminations accommodate it with wire and stranded cable and diameters of AWG 26 through AWG 22. Cord deposit and tension relief on the back of the module create a stable junction. If the cables have to be moved at a later data, which can often happen in assembly, this no longer has any effect on the impedance quality of the connection.

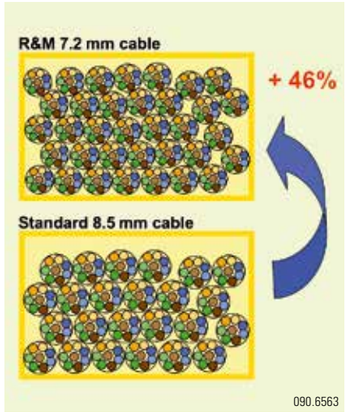


The figure shows measured values of a large field installation. The excellent performance allows the definition of a headroom area (GM, guaranteed margin) or the realization of shorter links than stipulated in the standard (SL, short link).

High density with panel and cable

R&M is also setting new standards with the 19" HD panel for 48 ports on one height unit. Disconnecting elements avoid crosstalk between the connection modules. Even when using the unshielded Cat. 6_A modules, the HD panel offers exceptional headroom in crosstalk.

It doubles the connection density in comparison to conventional 24-port standard panels. You need less space for distributors or can accommodate more units in one rack. Naturally, the Cat. 6_A solution is backward-compatible with the established patch panels and most outlets from the tried and tested modular R&M*freenet* program. Planners find the perfect combination for every building situation.



More space: Installation cables of the Cat. 6_A UTP system from R&M are considerably finer than comparable standard products. You can accommodate 46% more cable in a typical duct.

The installation cables of the Cat. 6_A UTP system are considerably finer than comparable standard products. They have a diameter of 7.2 mm; 8.5 mm is usually customary in the trade. That represents a saving on space of 28% for structured cabling systems. Or you can accommodate 46% more cable in a typical duct. Building planners and interior designers thus have greater leeway when it comes to design. Data centers enjoy more space for the air flow of the air-conditioning. The energy needed for the fans is reduced.

Safely and flexibly into the future

If we take a look at the complete installation with permanent link and channel in accordance with Class E_A or ISO 11801, the progress in terms of quality and development becomes even clearer. Links of 15 to 90 meters, that were planned and installed by certified R&M partners, usually demonstrate a large headroom of 8dB.

The generous signal/noise ratio lends the overall performance of a Cat. 6_A cabling system stability and operational reliability long term. Network operators thus gain freedom and flexibility. In the future, they will be able to support powerful applications reliably in data centers as well as in buildings and offices.

To be able to fulfill the performance demands today and in the coming 15 years, you should generally ensure the implementation of the top specifications for the use of 10GbE and the widest application possibilities. In terms of copper cabling this means shielded or unshielded RJ45/Cat. 6_A components or Class E_A channel in accordance with ISO 11801 represent the most effective and profitable solution long term.

If you then use the best-quality products on this basis, the desired performance headroom will remain available long term from the data center to the office workstation. And then the investment was worth it. ■

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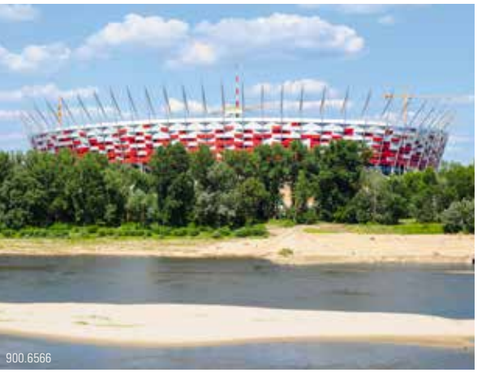
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R&M Qualified
for European Football Championship

The selection of Poland and Ukraine to host the UEFA European Football Championship EURO 2012 brought with it the difficult task of building an appropriate infrastructure, particularly the modern stadia required for the tournament. Representatives of leading European football nations will soon come to Poland and Ukraine to determine the dominant country in this sport. To meet the deadlines required by UEFA, the scope of work had to be intensified.

For Poland, the most prestigious facility built specially for UEFA EURO 2012 was the National Stadium in Warsaw. It was designed in accordance with the strictest requirements of UEFA, which assigned it the highest "Elite" category. It is the largest building of its kind in Poland and has cost nearly two billion PLN (560 million CHF). It can accommodate over 58 thousand spectators. The stands include about 900 seats for the media, more than 4.5 thousand for special guests, 106 for disabled people and more than 800 seats in the VIP boxes. The National Stadium, built in the basin of the old football stadium, has a capacity of over one million m^3.

Within this space, under the pitch, there is a huge, two-level garage for approximately 1800 cars. The changing rooms, conference rooms and utility rooms are situated under the stadium stands over an area of more than 130 thousand m^2. The design of the stadium roof is particularly intereseting. In addition to the covered stands for supporters, it is also possible to cover the entire stadium and pitch. The key element here is the 100-ton torus suspended 40 meters above the pitch. Its center features a kind of garage for the drop-down roof. A rotary mechanism, powered by 60 engines and mounted on the fixed part of the roof, is able to completely retract the 12 thousand m^2 roof in less than quarter of an hour. Rainwater from the roof is drained by a specially designed system and stored on the lower floors to supply toilets and can also be used to water the green areas around the stadium. As in basketball, there are four large screens, each measuring 54 m^2, installed at the bottom of the torus. These are visible to the supporters seated in all four stands of the stadium.

The National Stadium in Warsaw will soon become the scene of one of the biggest sporting events in the world. Only the most sophisticated telecommunication technology can handle the challenges posed by the EURO 2012. The IT infrastructure had to be designed to meet all requirements and allow people everywhere to enjoy the undisturbed beauty of football by the very best Europe has to offer. Very strict selection criteria were used when choosing the individual providers of IT systems. This rule also applied to the manufacturers of the passive infrastructure. They had to choose a system that would not only provide top-quality transmission parameters but would also be flexible and functional as far as the future development of the network and its handling were concerned. A very important issue was to meet the environmental conditions prevailing at the stadium. Much of the cabling is located outside which means solutions need to be resistant to a whole range of difficult working conditions. Finally the R&M*freenet* system by Reichle & De-Massari was chosen: This was the system that best met the tough design requirements. The experience of the manufacturer was a very significant issue, particularly the company's experience in the cabling of sports venues. Three Swiss stadia wired in R&M technology, in Zurich, Basel and Bern, were given top marks before the EURO 2008 in Austria and Switzerland. R&M technology is also being deployed at the stadia in Kharkov, Wroclaw and Gdansk, the other hosts of the European Championships in 2012.

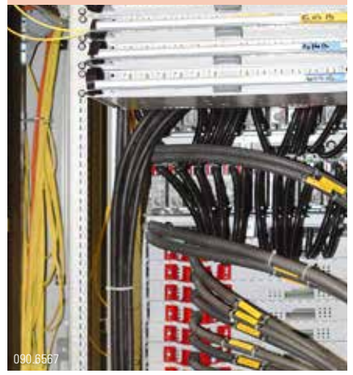
The backbone of the National Stadium network was based primarily on single-mode, 72-fiber optic cables – category OS2. In order to ensure full redundancy, a double ring was designed. This was led through separate routes to minimize the risk of failure. The rings link four data centers that support the entire stadium IT services. They have also been duplicated for maximum reliability.

> Top-quality products, system flexibility and readiness for the challenges of tomorrow are the main reasons for the success of R&M solutions that are used in the most modern stadia all over the world.

Wherever the distance was below 100 meters, IT infrastructure was wired by copper Cat. 6 Real10 cables supporting 10 Gbit/s applications. Points located further away from the distribution points, such as cameras, screens, some access points, cash points and control systems, are connected via duplex fiber optic connectors terminated with SCRJ/APC connectors. These connectors are characterized not only by top performance but are also able to ensure environmental protection up to IP67 level, which in terms of the stadium was crucial. Top-quality products, system flexibility, ease of use and readiness for the challenges of tomorrow are the main reasons for the success of Reichle & De-Massari solutions that are used in the most modern stadia all over the world. Experience gained during the previous tournament, when R&M achieved all objectives (fiber optic networks transmitted over two petabytes of data), also ensures a sense of optimism today on the eve of another great festival for football fans across Europe. ■

THE R&M SOLUTION

- **Copper cables Cat. 6 Real10, 450 km**
- **FO cables, OS2, 150 km**
- **Copper patch panels, Global 3U, 34 pcs**
- **Copper patch panels, Global 2U, 14 pcs**
- **Fiber modules 6xSCRJ/APC, 168 pcs**
- **Unirack patch panels 12xSCRJ/APC, 358 pcs**
- **Unirack patch panels 18xSCRJ/APC, 58 pcs**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FM45 Makes Space at the Outlet

090.6182

You sometimes have to think outside the box, or in this case around the corner, to find a better solution. The result is the angled FM45/u. Users gain 40 percent more space at the outlet thanks to the rectangular housing.

The FM45 by R&M has written history. When it was launched, it was the first industry-standard, field-terminated RJ45 connector that can be wired without tools featuring gigabit performance. Because it is so flexible to use and easy to mount, thousands of installation engineers use the FM45 every day in industry, building, office and residential cabling.

But they are often faced with a challenge: The space for a linearly constructed connector is not sufficient. Things can get a bit tight in distribution cabinets, conduits and floor tanks. The space in front of outlets is often very limited. That was no problem for R&M. We simply made the FM45 angled.

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The new, angled FM45/u reduces the amount of space required at ports of all kinds by 40 percent. It is available in the wiring configurations TIA 568A and TIA 568 B as an unshielded gigabit connector and can accommodate solid and stranded wires of AWG 23-26. R&M is happy to provide other versions on request. A particularly sturdy, print-free wire guide is incorporated in the connector body. This ensures stable signal transmission between the wiring block and plug-in contacts. The lamella strain relief on the housing provides additional protection from mechanical strain for the cable.

The design of the angled housing allows positioning at 90° steps in all four directions. This means cables can be routed with particular flexibility in a user-friendly manner. The exit direction can be changed at any time because the FM45 remains particularly adaptable, user-friendly and can be rewired even in this angled design.

The six assembly steps are intuitive: Strip the cable. Place the wires in the connection block according to their colors. Cut off any excess cable, snap in the wiring cover to ensure the wires are contacted in the IDC connections.

090.6201

Push the housing up. Tighten the lock nut. And your connection is sorted.

The product lends itself to many applications: office premises, surveillance cameras including the sturdiest Power over Ethernet requirements, VoiP, WiFi antennae, house connection boxes and home cabling. The angled FM45/u connector is the ideal solution whenever space is at a premium. ■

090.6168

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Extension to the ODF Range

In the R&M*foxs* range for fiber optic networks, there is a new solution for consolidating and expanding passive infrastructures in next to no time: the splitter inserts for the Optical Distribution Frame.

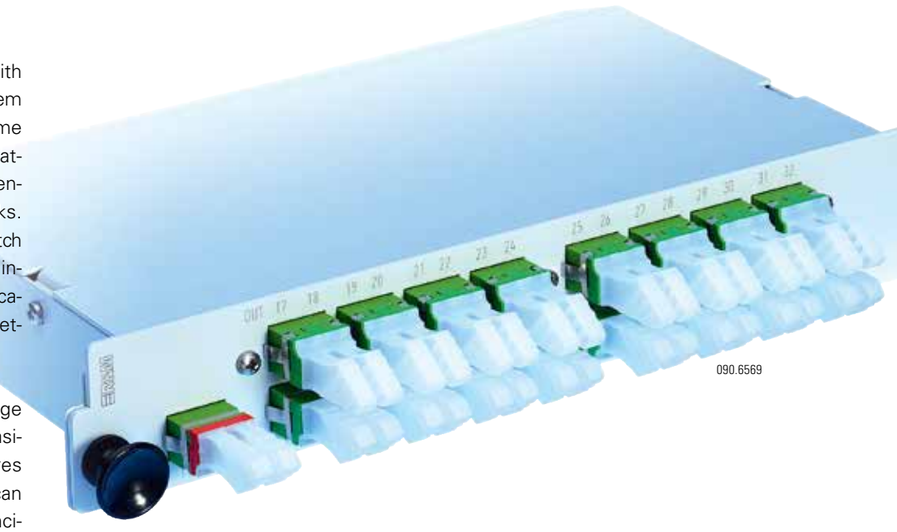
The further extension of fiber optic networks is the order of the day. No other terrestrial access technology offers comparable transmission capacities and reserves. The challenge lies in providing fiber optic connections everywhere for both private and commercial customers. What is more, customers need easy-to-scale fiber optic distributor solutions that not only provide the required connection technology but also efficiently support fiber and subscriber management.

R&M's Optical Distribution Frame with the Single Circuit Management System (ODF SCM) has proved itself over time as a flexible, modular distributor platform for Fiber to the Home, data centers and metropolitan area networks. With the PatchModule for pure patch concepts and the CombiModule for integrated splice/patch breakout applications, the ODF supports all typical network architectures.

Now, R&M has extended the range with splitter inserts: These make it easier to extend passive infrastructures more economically. The new inserts can be used in both module variants. Incidentally, together with the PatchModule and CombiModule, the inserts can also be used in street cabinets and delivery points.

The splitter inserts are available in sizes from 1 to 3U with split ratios of 4 x 1:4 to 1 x 1:64. Up to 12 splitter inserts fit into a PatchModule. LC, SC or E-2000™* connectors can be used in the splitter inserts.

R&M's modular principle also applies to the splitter inserts. They can be equipped and scaled individually to fit in with the network operator's plans and conditions on site. Pre-terminated, factory-tested units reduce the time and effort involved in assembly.



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Users certainly benefit from the performance characteristics of the SCM family. Stress-free fiber routing in a 40 mm bending radius that is guaranteed even with high packing density, ensures stable network performance long term. R&M's fast assembly technology simplifies setup, retrofitting and configuration changes. The clearly structured SCM fiber and subscriber management simplifies and accelerates maintenance work. ■

** E-2000™, manufactured under license from Diamond SA, Losone.*

090.5789

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090.6570

R&M Carries Out End-To-End Cabling System for Viacom18 in India

For its new location in Mumbai, Viacom18 required a cabling solution that could deliver high performance consistently and was future-proof so as to make it simple to migrate to 10G, when necessary.

Viacom18 is a joint venture between Viacom Inc. and the Network18 Group. Viacom, a leading global entertainment company, comprises brands such as MTV, VH1, Nickelodeon and Paramount Pictures; whereas the Network18 Group has media properties across television, motion pictures and a range of digital media through brands like CNBC TV18, CNN-IBN, IBN7 etc. With such a diverse portfolio of offerings, Viacom18 prides itself on being on the cutting edge of technology in the creation and delivery of high-quality content.

> With its diverse portfolio of offerings, Viacom18 prides itself on being on the cutting edge of technology in the creation and delivery of high-quality content.

Convincing quality

Having used R&M's cabling solutions for a smaller project earlier, Viacom18 was convinced of the quality of R&M's products and was keen on using the company again in its new world-class facility in Mumbai. The solution deployed was R&M's Real10 Cat. 6 solution that enables tool-free installation while ensuring high performance and efficiency. Furthermore, all this could be delivered with the universal RJ45 platform. This meant that there was greater flexibility compared to the proprietary platforms being offered by competitors.

An important technical aspect that had to be taken into consideration was that the hub room and the lift room across all floors shared a common wall. But the project site was also close to the airport. This meant that any likely electromagnetic interference (EMI) that might occur due to both these factors had to be eliminated to prevent degradation or loss of data. Therefore, R&M offered its shielded Real10 connection modules and shielded cables. In addition to the shielded solution, R&M's Cat. 6 UTP cabling system, components for voice, as well as the security system with color coding and patch cord locks were deployed in the seating area and other sections of the office.

High expectations fulfilled

Given the performance that its high-end applications demand, Viacom18's team was excited that the network cabling deployed met the expectations, both in terms of the technical proficiency and in terms of hassle-free installation. "We chose R&M as we were convinced of the company's product quality and conformity to industry standards. Its security system with patch cord locks and color coding really simplified the management of our network," said Mr. Sajesh Sreejayan, IT Manager at Viacom18 Media.

R&M's superior product features and greater system flexibility along with excellent support from the project's installer EMS Networks led to the on-time completion of this truly successful project. ■

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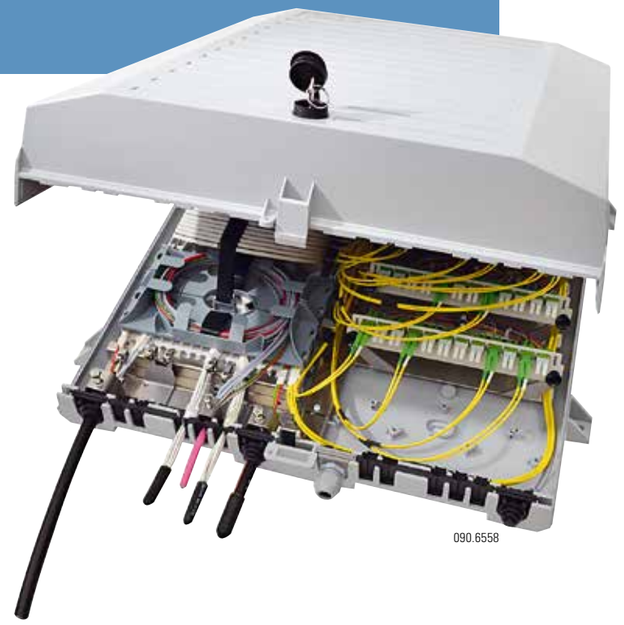

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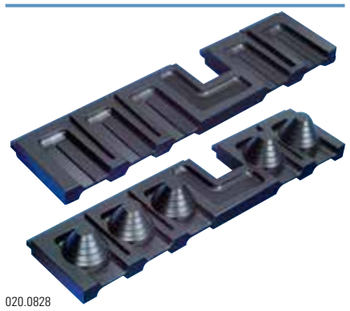
Venus Box in XXL Format

There has been a new addition to the Venus product family. New to the range is the large Venus FXXL for FTTH projects. With the integrated Single Circuit Management System (SCM), network operators can for example connect up to 72 subscribers to the fiber optic network.

Fiber to the Home (FTTH) makes big demands of building entry points. This is where it is decided whether you can react quickly and profitably to changes and installation requirements and what will lead to competitive edge in the end customer business. With the Venus FXXL SCM, FTTH providers can be even more flexible when it comes to planning building connections.

Both R&M's fiber optic expertise and users' field experience were incorporated in the development of the new Venus Box. The result: a multifunctional distributor solution which ensures the efficient establishment of even larger delivery points indoors and out – regardless of topology and cable types, flexible to upgrade, according to the situation, and easy to install thanks to virtually tool-free fast assembly technology.

Dropwire insert IP43 and cable insert IP54



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With vital statistics of 50 x 60 x 21 cm (width x height x depth), the Venus FXXL SCM provides space for 864 splice connections on two SCM carrier trays. As is standard with the R&M*foxs* system, you equip the box to suit your requirements with SE, SC and splitter trays from the SCM system family. This means, for example, that 72 fibers can be separated via SC subscriber trays. The overlength reserve is completely integrated.

In the combination solution, an SCM carrier tray and four patch inserts have been packed into the box. This makes it possible to install up to 96 LC, SC or E-2000™* connectors. With high-density LC Duplex, you can even obtain a packing density of 192 connectors. A bending radius of 40 mm that is gentle on the fiber is ensured in every case. Even loop installations are possible. Both faces, top and bottom, feature recesses for four main cable inlets and ten cable outlets. The sturdy, climate-stable ASA plastic housing fulfills the requirements of the dust and moisture protection index IP43 when using drop-wire inserts. When used outdoors, protection index IP54 is guaranteed.

The modular Single Circuit Management System from R&M ensures clear, uniform subscriber management. It covers all levels of the network from central offices to building entry points. The advantages of SCM include simple planning, assembly and maintenance, flexible use and long-term investment security. ■

** E-2000™, manufactured under license from Diamond SA, Losone.*

090.5789

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R&M Connects ABB's Egyptian Branches

Latest project implementation in Egypt leads to long-standing R&M and ABB collaboration

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090.6572

When ABB Egypt decided to upgrade its network infrastructure for the offices in its four branches, the company opted for Swiss quality and chose R&M as supplier, knowing that R&M would deliver the reliable network performance ABB was looking for. The project is the latest in a series of successful installations for R&M in Egypt.

ABB had specific requirements such as enhanced network performance and transmission speeds that can be scaled to handle current as well as future demands on the network.

The Swiss-Swedish multinational ABB is one of the largest engineering companies and conglomerates in the world, and also the global leader in power and automation technologies. The company has been in Egypt since 1926 and opened its first local manufacturing facility in 1979. With several branches in Cairo and Alexandria, regional engineering departments, as well as its own training center, ABB Egypt performs diverse activities in manufacturing, engineering, and services.

ABB had specific requirements for its recent network infrastructure revamp project such as enhanced network performance and transmission speeds that can be scaled to handle current as well as future demands on the network. High security and zero-downtime reliability were other important criteria to be achieved. R&M fulfilled all demands and was chosen as supplier for its innovative copper and fiber solutions.

R&M's local sales team recommended its innovative Real10 Cat. 6 shielded solution combined with fiber (OM3) for the end-to-end network upgrade. The team designed a solution to connect ABB Egypt's office branches in El Nozha, El Obour, Tenth of Ramadan City and Heliopolis. R&M's implementation partner El Salam for Engineering Equipment (QUIP), an Egyptian systems integrator and a certified R&M installer, realized the project. The installation began in January and was completed just in time in less than two months. R&M's implementation partner QUIP offered high-quality project support and answered customer questions quickly and actively.

THE R&M SOLUTION
- **Real10 Cat. 6 shielded**
- **FO OM3**

WHY R&M?
- **Performance**
- **Scalability**
- **End-to-end solution**
- **Local support**

"We are pleased to be strengthening the collaboration. This is the result of successful project performance with ABB in Egypt which we hope to continue regionally."

Alfred Tharwat,
Sales Area Manager R&M Middle East & Africa

R&M's Cat. 6 shielded solution provides 360° shielding around the cable module and complete protection from interference caused by neighboring modules. The shielding contributes to enhanced security for data transfer as well as higher performance. Real10 Cat. 6 shielded cabling is expandable to accommodate future faster transmission speeds. The end-to-end solution is compliant with the recently ratified Class E_A standard for 10 Gigabit Ethernet.

Real10 Cat. 6 also guarantees loss-free and highly available data transmission. Fiber OM3 was recommended by R&M to connect the network backbone to complete the end-to-end solution.

Effat Ahmed, QUIP Managing Director, noted: "Collaborating with R&M in this major project, we were working to meet ABB's requirements in terms of implementing R&M's forward-looking modular product line. The progress in this project was fast and the installation process was therefore easy."

Alfred Tharwat, Sales Area Manager Africa, R&M Middle East & Africa, noted: "R&M proves its leadership in the region by consistently providing innovative best-in-class solutions from a portfolio of over 5500 copper and fiber products. We're confident our breakthrough Cat. 6 shielded solution delivers optimized faultless performance for ABB's branches over the lifetime of the network."

"Additionally, we are pleased to be strengthening the collaboration between our two companies. This is the result of successful project performance with ABB in Egypt which we hope to continue regionally. We will strive to continue to deliver the strong local support clients such as ABB value," concluded Tharwat. ■

090.6618

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090.6161

HD Panel Becomes a Platform

The ultra-compact HD Panel is now becoming a multifunctional HD platform for 10, 40 and 100 Gigabit Ethernet. The high-density solution is soon to feature cassette modules. A further quantum leap for data centers.

R&M is continuing to promote the concentration of cabling infrastructure and is doing everything in its power to ensure that data center operators can make greater and more efficient use of the often limited space they have at their disposal. The next step: The HD Panel launched one year ago is gradually becoming an HD platform.

From the very beginning, the 48-port/1U patch panel could accommodate any Cat. 6_A copper modules and LC fiber optic adapters. MPO/MTP® multifiber connectors can also be used with the HD Panel allowing the connection of up to 1152 fibers (with 48 x 24 MPO/MTP®) on one height unit.

R&M has now developed the cassette solution consisting of new module holders for the FiberModule and the MPO Module. This means it is possible to integrate both FO trays into the HD Panel. The module holders protect the fibers and ensure transmission performance with radius guards. The FiberModule also offers the option of slice cabling. FO can still also be combined with copper cabling on the same platform. The module holders are due to be launched soon. This concept supports the direct combination of the high-density platform with pre-terminated VARIO*line* cables as well as MPO/MTP® trunk cables.

For data centers this means that all 10Gbit switch ports can be replicated on one single height unit. Migration to 40/100 Gigabit Ethernet can be taken care of using a panel already installed. All you have to do is replace the cassettes with adapters. This platform concept facilitates MAC processes and supports users over several technology generations. ■


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090.6575

Peak Performance for Future Peak Performers

More than 7000 apprentices and 1000 trained professionals from over 60 professions are trained every year at the gibb (the commercial/industrial vocational college of Bern) by about 600 trainers. The gibb sets great store by the top level of its teaching. Which is why, when it came to choosing the right solution for the two new networks, the college opted for quality leader R&M.


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The project team members at a glance, incl. Jürg Gerber (R&M), second from right. Not shown in the picture: Head Project Manager Gerhard Gort.

Due to the increasing number of trainees, the infrastructures of the old "Viktoria School House" were no longer adequate. By order of the AGG (Bern Canton Office for Land and Buildings), a new building was added in 2011 to the premises dating back to 1939. The new building is now home to rooms for specialist teaching, the media center, staffroom and administrative offices. It may be a new building, but it fits in perfectly with the old one. The core of the complex is the central atrium. When it was built to train 2116 trainees, the old building was considered something of an avant-garde milestone. Which is why it was no surprise that no fewer than 25 architects took part in the architecture competition to decide who would design the new building: a competition that was ultimately won by Graber Pulver Architekten.

Challenging planning

The electrical planning was the brief assigned to BERING AG in Bern. They had to realize two parallel networks, one for the administration and one for teaching purposes. The two networks are operated by different IT services. As the rooms are used twice a day – for trainees during the day and further training in the evening – great flexibility for the users had to be guaranteed. The aim was to connect every workplace up to the IT system. One challenge was that the rooms have to be able to be reorganized flexibly and thus do not have fixed seating arrangements. Every room has 36 network connections for the trainees and the trainer as well as one computer, two LCD projectors and a document camera. WLANs are not desired in public buildings – on the one hand due to radiation and, on the other, due to bandwidth and security criteria. On busy days, up to 800 trainees can be in the building. The cellar also houses a large lab for various disciplines of related professions.

The planning was very complex and many options were investigated. Due to the immense amount of cable in the floor conduits, a pure 10GB copper solution was impossible. Ultimately it was decided to work vertically with fiber optics using 51 switches to get as close to the rooms as possible and then connect up to the workplaces with copper. The infrastructures in the old and new building were completely different – in the old building, there was very little space available and there were no floor conduits. These subsequently had to be milled into the floor. Lots of changes were made during the course of the planning that were all part of a very complicated process. The call for tenders was actually made in 2008. Head Project Manager of BERING AG, Gerhard Gort, and Deputy Project Manager André Nyfeler, were looking for a reliable partner that could actually make an active contribution during the planning phase and offer flexible delivery to cope with the deadlines in the strict timeframe of the realization phase. Voice services were realized in the standard manner.

THE R&M SOLUTION

- **19" 2U and 3U global racks**
- **19" splice box**
- **19" racks 42U 2000 x 800 x 1000 mm main wire center and floor wire center**
- **19" racks 15U for the teaching rooms**
- **19" racks 24U for the teaching rooms**
- **Real 10 Cat. 6**
- **Patch cord Cat. 6**
- **RJ45 voice outlet**
- **1U-SpliceBox-3-lcd-p-pc-m-om3**

> "The connections to the switches were realized with short patch cords. That is very installation friendly."
>
> Jürg Schweingruber, gibb Informatik

Flexible realization

All electrical installation was carried out by Elektro Burkhalter AG, Bern. The company employees 135 people in the Bern area. The patch cords in the teaching rooms were laid by the gibb trainees. The first deliveries took place in March 2011; the building was opened on August 15, 2011.

Beat Ramseier, from the IT administration at gibb: "We still had a construction site here two weeks before the new semester was scheduled to begin. But things were wrapped up pretty quickly in the end."

Markus Gautschi, Project Manager at Elektro Burkhalter AG: "The project went really well with R&M. Jürg Gerber was always on hand to give us fantastic support." The installation engineers found the project quite chaotic because other service providers had various manpower bottlenecks. "We kept having to straighten things out."

The completion date had been fixed well in advance, but the fine tuning was something that had to remain flexible and be planned along the way. Jean-Luc Metthez, Construction Supervisor for Burkhalter: "The work that was carried out was great – the timing challenging. As we had lots of other contracts to complete at the same time and lots of employees were on vacation over the summer months, I kept having to resort to using temps!" When asked about quality assurance with so many different people and suppliers, Metthez commented in a matter-of-fact way: "That's my job. It's all about keeping a tight rein!"

Head Project Manager Roger Bühler explained that a lot of projects today make it necessary to lay cables too early in construction. "While the electrics are being installed, there are lots of other workers on the construction site. That increases the chances of cabling being damaged after installation. It's often the case that the active components have to be installed early too, when there is still a lot of dust on the construction site. That can mean expensive cleaning later!" ■

Vocational colleges for (further) training play an important role in Switzerland's successful dual vocational training system. See separate article at www.connections.rdm.com


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090.6579

A Latest-Generation ODF System for Nasertic

For over 30 years, Nasertic has been providing telecom services as well as taking care of engineering and control tasks for the local government of Navarre.

nasertic

Since September 2010, Nasertic has been busy planning and implementing an extension to the broadband network backbone for the entire public sector of the autonomous region. For this purpose, the company required a solution for the FO terminations from the inter-urban backbone to the planned communication nodes. In May 2011 a decision was made to implement R&M*foxs* both due to its performance figures and to the fact that R&M is well known for its FO systems for the telecommunications sector. "Due to the top quality, performance and reliability, we decided to implement the latest-generation R&M system when extending the nine new Optical Distribution Frames (ODF)," say Jesús Izal, Javier Vélez Miñano and Iosu Errea Ederra, the engineers responsible for maintaining and operating networks, infrastructure and television at Nasertic.

"The SCM-ODFs are the core of the extended FO infrastructure. The state network of the government of Navarre is pursuing its policy of merging all public institutions with this extension."

The core requirements made of R&M by Nasertic: top ODF solution with high packing density, simple assembly and perfect quality.

The core requirements for Nasertic in this project were a top ODF solution with high packing density, simple assembly, high-quality components and pre-terminated front plates.

R&M did an absolutely brilliant job. Work could be started on the release and the capillarization of the network (connection to the different government buildings, schools, hospitals, ministries, weather stations etc.) before the final touches were made to the backbone.

Thanks to the frames of the R&M*foxs* ODF system, up to 576 splice connections are available per main distributor frame and up to 288 splice connections per patch module with a controlled minimum curve radius of 40 mm. Further advantages of the solution are controlled tracing of the patch cords without mechanical strain and integrated front assembly, splice connections in the formats E200, LC and SC, aluminum frames and PC-ABS (LSZH). The future assignment of 1152 fibers in patch modules and 2304 fibers cable to cable using the blow-in procedure is already prepared.


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The perfectly executed work and the top quality of the products created a high level of trust. And a possible basis for future projects and extensions. ■


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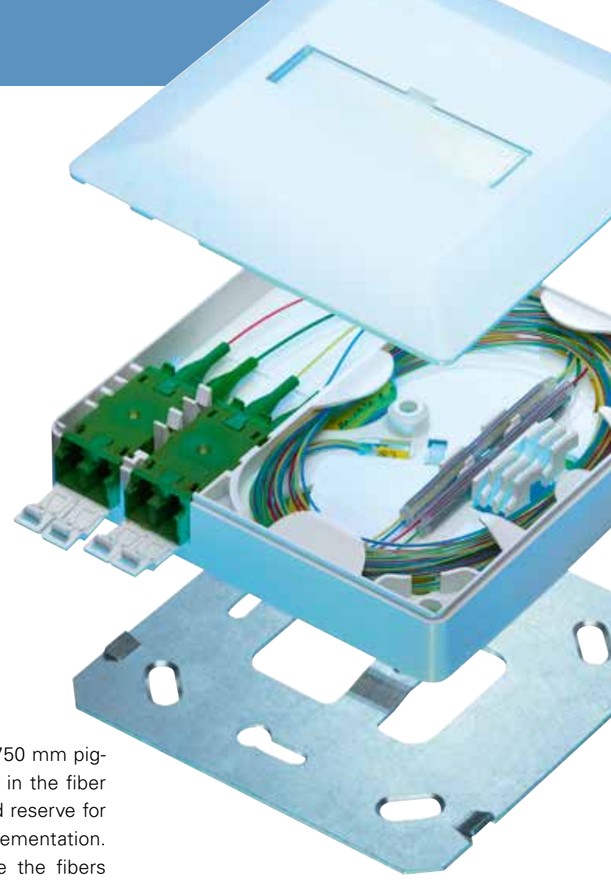
Getting FTTH Safely

Getting Fiber to the Home (FTTH) more quickly, more simply and more safely – with the new FiberOutlet from R&M. It extends the family of optical outlets for wall mounting and provides unrivaled cable reserves.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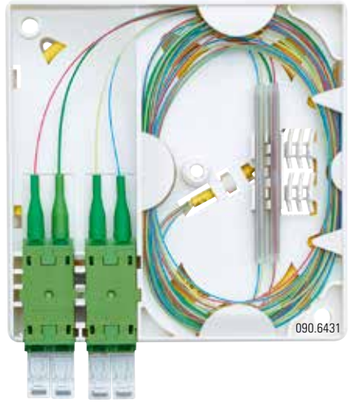
R&M has developed the FiberOutlet specifically for use in ambitious FTTH projects. The new solution can accommodate two LC-Duplex, SC or E-2000™* adapters including laser protection as well as a captive dust cover. Its two-chamber system consists of the spacious fiber storage area and the splice or adapter area. The cable can be transferred from the storage area to the splice area in one easy move. R&M focused primarily on the ease of installation with the new FiberOutlet so that installations would be easy even for people new to the fiber optic world.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Up to 1000 mm cable or 750 mm pigtail reserve can be stored in the fiber storage area – an unrivaled reserve for long-term fiber optic implementation. Hold-down plates stabilize the fibers and protect them from mechanical influences. The 15 mm bending radius is guaranteed in every case.

The outlet also makes it possible to insert cable from four sides giving you plenty of choice on site about where to position it. Snap-in technology makes wall mounting faster to complete.

All three optical outlets – the FO Mini-Outlet, the new FiberOutlet and the HybridOutlet – are flat and feature a slim-line, elegant design. This makes them perfect for installation in all kinds of locations: apartments, hotels, offices and business premises. With a footprint of 88 x 88 mm, they also fit a standard outlet box. For new buildings and particularly for renovations of old buildings, the R&M Residential Cabling program has a number of adaptable installation scenarios.

Optical outlets for future broadband supply open up a whole new range of possibilities for subscribers. Immense upload and download speeds are available immediately from the router or home network. Network operators and their media partners can thus offer new services and tap new sales potential. Property gains in value. Building engineers, installation engineers, architects and interior designers can implement futuristic scenarios. ■

** E-2000™, manufactured under license from Diamond SA, Losone.*


090.6338

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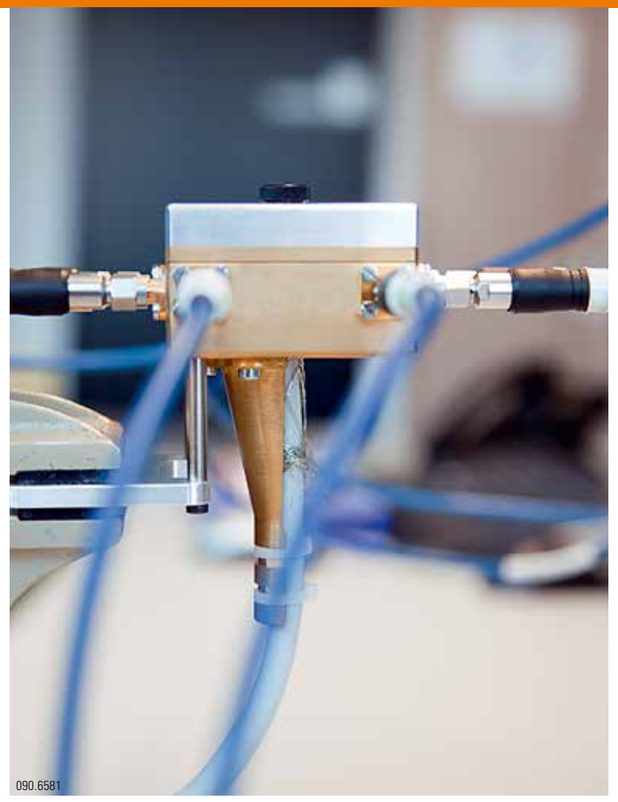
Measuring without Baluns – the Better Way to Measure

Baluns or balance-to-unbalance transformers make Ethernet signals accessible for measuring purposes. But at the same time they also limit the frequency range and have other undesirable characteristics. R&M gets round these limitations by implementing balunless test methods.



Test adaptations for balunless measuring at R&M.

LAN copper cabling consists of symmetric and earth-free wire pairs. Conventional measuring instruments, however, have asymmetrical inputs and outputs: One wire is connected to the chassis ground or ground. Baluns (balance-to-unbalance transformers) have been used for years now to generate or measure Ethernet-compliant, differential signals. These baluns convert symmetrical signals to asymmetrical ones and vice versa. On the asymmetrical side, only one port is required instead of two which means you can now save on expensive measuring instruments.

However, the higher the frequencies to be transmitted and measured become, the more trouble the limited frequency range causes and the more obvious other interfering influences on the baluns become. Attempts are being made to get round this problem. Modern measuring instruments offer a way of doing this: the differential measuring method. This involves the device under test being directly connected to the measuring leads without baluns. To do so, however, you must have special top-quality test adaptations that enable a high-frequency-capable transition between the measuring cable and the device under test.

Differential measuring method

When measuring with baluns with their physical conversion to ground-related signals, the scattering parameters* are available directly. This is not the case with the differential measuring method. Physically, however, ground-related signals are also measured in the differential method. But these then have to be converted to differential signals, although luckily there is a clear relation between single-ended and differential scattering parameters. The measuring methodology with the required test adaptations has already been specified for connectors up to 1000 MHz in IEC 60512-28-100. As yet, there is no standard for measuring cables although the standardization committees are currently evaluating suitable measuring methods up to approx. 2500 MHz.

> The balunless measuring method has the major advantage that asymmetrical interference is effectively measured at the same time.

Asymmetrical parameter free of charge

In addition to its great precision, the balunless measuring method has another major advantage: Asymmetrical interference (TCL**, TCTL***) is effectively measured at the same time free of charge whereas to date complex additional measurements, that in fact were still not terribly accurate, had to be carried out on the balun using common-mode sampling. This is of particular interest when measuring cables that often demonstrate asymmetrical interference and are thus responsible for failure.

R&M has been using balunless measuring technology with proprietary test adaptations – in particular for cables – up to 8000 MHz since the end of 2009. For more details, take a look at the R&M white paper "Re-embedded – new test procedure not just for Cat. 6_A components," section 3.4. ■

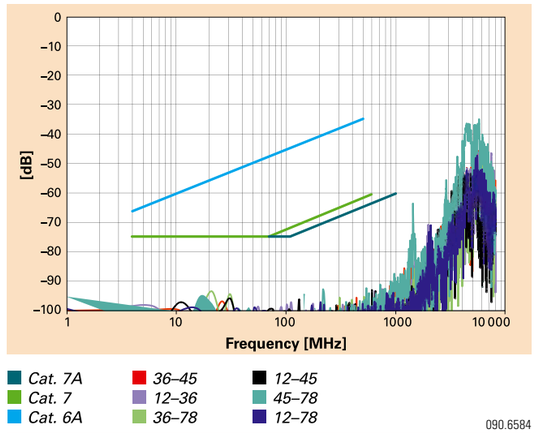
**The determination of scattering parameters or S-parameters is an elegant method of describing the properties of linear network components such as wire pairs or connectors.*

***TCL, Transverse Conversion Loss, loss of the common mode part converted into differential voltage at the close end of the same line.*

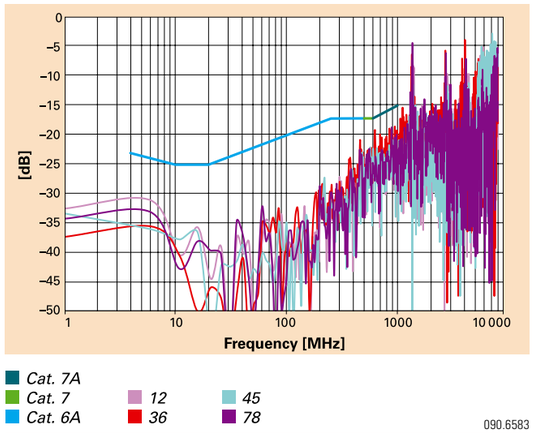
****TCTL, Transverse Conversion Transfer Loss, loss of the common mode part converted into differential voltage at the far end of the same line.*

Download R&M white paper:
www.rdm.com > Service > Downloads > White Papers

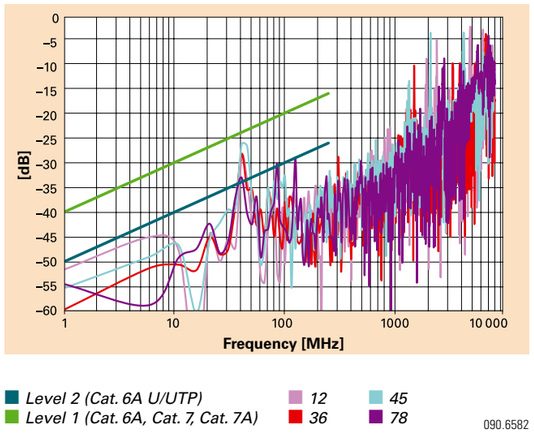
NEXT Magnitude
Balunless NEXT measuring up to 8000 MHz on a twisted pair cable optimized up to 1200 MHz.



Return Loss Magnitude
Balunless measuring of return loss (RL) up to 8000 MHz on the same cable.



TCL Magnitude
TCL measuring up to 8000 MHz on the same cable. The balunless measuring method returns this asymmetrical result with great precision and without any additional measurements.



Dominik Schweizer
Lead Technologist RF Design
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The Secret of the Pyramid

Just plug in the patch cord and you've got your link. As long as data transmission works, no one really thinks about what goes on in a connection module. But interference can easily happen with high data transmission rates. The best protection you can have is to ensure shielding that is as interruption-free as possible. The Cat. 6_A module from R&M is treading new ground in this area too.


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What sounds like the title of a novel for teenagers actually explains the latest innovation in shielding of RJ45 connection modules. How does R&M succeed in attaining shielding in the Cat. 6_A ISO connection module that is twice as good as what the IEC standards require? The secret lies in the pyramid of the wiring block and in the bayonet contact for the cable screen. These components ensure high shielding quality when using S/FTP cables and the shielded variant of the R&M Cat. 6_A module. For the very first time in an RJ45 connection module, not only the external braided shielding, but also all four individual foils of the pair shielding are contacted.

For end users, it is important to have data transmission that is as interference-free as possible. But every connection in a link is a potential danger as the shield continuity is interrupted. This is where transition loss can occur, and where electromagnetic fields and reflections have a better chance of "attack". The individual wires or conductors are open for a few millimeters in the contact area between the connection module and the connector and are only protected by the shielding. With a number of construction measures, R&M has succeeded in integrating reliable, continuous 360° shielding in the connection module.

Multi-layer shield contacting

The newly integrated metal pyramid and the shield cross ensure fully adequate pair shielding of the wires and consistent NEXT performance in the wiring part.

When the wiring part and the jack part come together, the foil shields of the four wire pairs move separately onto the metal sides of the pyramid. In the wiring procedure, they are firmly pressed on and a direct contact is created between the connection module and the four pair shieldings of the cable. Interfering signals on the pair shields of the cable are thus diverted directly and do not have to take a detour via the braided shield of the cable. This is unique on the market in this form and improves the shielding considerably in combination with pair insulated cables.

The external shield, the wire netting under the cable jacket, also has its counterpart in the Cat. 6_A module: the bayonet contact. The small, semicircular metal contact on the back of the connection module slides under the cable jacket during assembly. It contacts directly at the braided screen and ensures a continuation of the shielding over the metal cover of the module to the front surround for the connector.

The contact penetrates the cable so deeply for contacting that it contacts every single wire of the overall shield at least once as a result of the characteristics of the braid. Each of the wires of the braided screen, arranged 360° around the cable, is thus connected with the connection module shield. This is important to ensure the highest possible shielding.

The tin-coated surface of the contact avoids an electrochemical potential difference between the contact areas as the surface of the braided shields in the cable is also usually tin-coated. This means corrosion is prevented from the very beginning. Shielding remains stable long term.

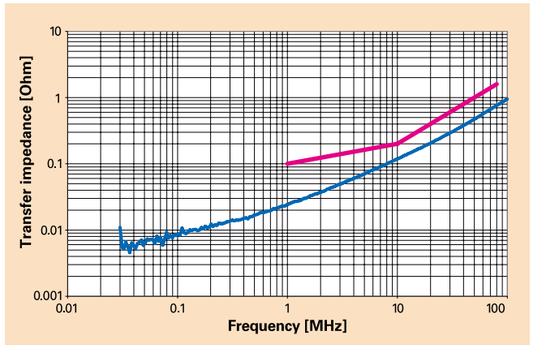
Stable solution

Another important point: tension relief. In the R&M solution, the cable ties and the side panels of the tension relief are directly adjacent to the cable jacket. This ensures high resistance to external mechanical loads. Tension relief and shield contacting are isolated from one another. With solutions in which the braided screen is rolled up and jammed into the tension relief to contact it, this is not the case. This directly exposes the shield contacting to the mechanical loads during installation and maintenance work.

Summary

Particularly with fast applications such as 10 Gigabit Ethernet, sensitive signals must be protected comprehensively to avoid bit errors. In terms of shielding, the Cat. 6_A connection module is certainly setting new standards. R&M has created the best-quality and most efficient RJ45 connection module for twisted-pair copper cabling and once again proved its expertise in shielding solutions. The Cat. 6_A module considerably exceeds the requirements of the international standards (ISO/IEC 11801 and IEC 60603-7-51) and opens up new dimensions in terms of reliability for high-speed data transmission. ■

Transfer impedance of the Cat. 6_A ISO connection module from R&M (blue line) in comparison to the limit as stipulated in IEC 60603-7-51 (pink). The logarithmic scale shows that the R&M product remains 50% under the recommended values and thus offers shielding twice as effective as stipulated. Graphic: R&M



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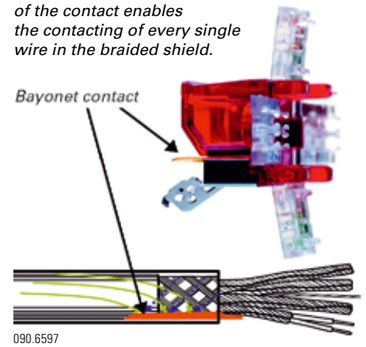
Transfer impedance

Transfer impedance is used to evaluate the shielding of cabling systems. Transfer impedance is a metrologically calculated measure of the quality of the shielding. It is defined as the "ratio of the voltage across the shield of the disturbed system to the current of the interfering system". The magnitude and frequency response of the transfer impedance mainly depend on the structure of the shielding. The smaller the transfer impedance, the better the shielding. A high level of shielding is required to protect against interference and be able to use the full capacity of a cabling system.

The penetration depth of the contact enables the contacting of every single wire in the braided shield.



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R&M – Playing in Spain's Primera Division

R&M technology is playing an instrumental role in the renewal of the control and security networks in the stadia of Spain's professional football league.

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Action from the El Campo Stadium – Rayo Vallecano against Racing Santander
Photo: Pablo Lanza Postigo


090.6600

Logo of Sporting Gijón on the El Molino Stadium

In April 2011, the Spanish professional football league (LFP), the umbrella organization of the clubs of the Primera and Secunda Division, decided to renew its control and security networks in all 40 stadia of the associated clubs. The future is all about integration. All the stadia in Spain's top leagues are to be equipped with control networks and security systems from R&M.

The call for tenders required a complete solution with copper and fiber optics with a 25-year warranty. "Modern data networks guarantee the permanent connection of all systems in the stadia. The integration of numerous functions means an incredible load. And that's why the networks have to work reliably," explains Paulo Campos, Managing Director of R&M Iberia & Latin America. We suggested a security system with color coding, connection security, IP54 protection for the remote control of the building installations as well as the peripheral installations in the stadia including traffic surveillance and an option of wiring RJ45 on the top hat rail (DRM45). All working steps, from the ticket offices to the administrative offices, from the press rooms to the bench, as well as the connections of the terminals using identical standard interfaces normally have between two and four RJ45 connectors. This allows the simple and direct connection of PCs, printers, telephones, sensors, monitors, cameras and wireless LAN antennae to the network.

The LFP decided to install the solution proposed by R&M Account Manager Raúl Villarroel in all stadia: "We were impressed by the proposal that featured specific football stadium solutions, in particular R&M's security and coding possibilities. And of course the 25-year-warranty also played a part in our decision."

Every network in the 40 stadia consists of a double redundant ring topology in fiber optic G652D between the control center and the secondary distributors that in turn are connected with the individual security and control installations via a copper infrastructure. In every stadium there will be around 2000 m of FO lines, 6 patch panels for fiber optics and around 250 Cat. 6 UTP connectors.

The project is due to be completed by 2013. To ensure that the installation engineers chosen by the LFP can carry out the work in the required timeframe, the official R&M representative Atlas Comunicaciones has undertaken to always have at least enough material in stock to equip one entire stadium.

WHY R&M?

- **Complete solution in copper and FO with 25-year warranty**
- **Comprehensive color coding**
- **Connection security**
- **IP54 protection and option of RJ45 on the top hat rail DIN (DRM45)**

THE R&M SOLUTION

- **Monomode LT cable with 8 and 12 wires**
- **LC connectors for assembling outdoors (OS2 PC)**
- **Fibereasy 12 x LCduz**
- **Cat. 6 complete system – copper**
- **DRM45**
- **IP54 weather protection**
- **FM45**
- **Security system level 1**
- **Patch guard RJ45**

To date, three out of forty stadia have undergone the retrofitting to the total satisfaction of the LFP: José Rico Perez, home to Hércules Alicante, El Campo, home to Rayo Vallecano, and El Molino, home to Sporting Gijón. The installations were carried out by experienced companies such as J. Mallorquin, Ikusi and Powernet.

> "The LFP had confidence in R&M from the very beginning because every interruption of the network can lead to a considerable loss of image and earnings."
>
> Paulo Campos,
> Managing Director of R&M Iberia & Latin America

The technological convergence opens up new and interesting possibilities for the hosting of sporting and other events in the multifunctional stadia. "The LFP had confidence in R&M from the very beginning because every interruption of the network can lead to a considerable loss of image and earnings. It is understandable that FIFA makes such high demands," says Paulo Campos. The clear aim of R&M is an installation that is 100 % secure. This is why a quality check was developed to monitor the entire process from production through to installation and maintenance, and to support planning, delivery and security levels 1 and 2. ■


090.6619

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Fiber Optics – a Clear Strategy into the Future

Alexander Huber is a pioneer. He founded the consulting agency "click to move" in Switzerland. The agency's mission is to professionally accompany towns and communities on the long road into the fiber optic age – a challenging task that Huber pursues with patience and a clear strategy. In an interview with R&M, he talks about his experiences that could well help a number of communities in the decision-making process.

R&M: Mr Huber, what do you find so interesting about Fiber to the Home (FTTH)?
Alexander Huber: FTTH is quite simply going to be a really big topic in the near future. But we generally talk about fiber optic networks. FTTH refers to the networks the providers are aiming for. But the municipalities (or communities) are interested in fiber optic networks that can offer a much larger range of benefits.

How do you convince municipalities to invest in a fiber optic network?
For us, it is very important to be able to sensitize the people responsible at the beginning of a potential project. We often find that the municipalities can't see the wood for the trees because the topic is such a complex one. That is why we first of all ask about the needs within a municipality. The most important argument is that the time will come when every location needs new media. Which means that today's infrastructures are going to have to be replaced at some point. We ask the communities straight out about the roles they want to play.

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> The most important argument is that the time will come when every location needs new media.

The standard of living improves with fiber optic networks. Is that an argument?
Well, making a location as attractive as possible is of course very important for municipalities. The existing networks do actually cover current needs, but what will the future bring? You have to show them what we are likely to be facing! I'm thinking of the networking of institutions, infotainment, security, "smart meters" for the energy sector. These are all sound arguments that convince the towns: "Yes, we need high-performing media for the future."

How exactly does a development and planning phase work? Who are your contacts?
The requirements of every town and community vary considerably. That is why we have to work differently according to each individual case. So far, we have been able to work in eleven different municipalities. When we started out, I would never have believed the differences in their needs. For us, it is important, first of all, to talk to those with political responsibility and arouse their interest. The key figures, decision makers and opinion leaders of a community certainly have to be involved. Then you have a broad, strategic agreement. Everyone involved quickly realizes that they can be successful if they work together. Once you have got that far, a project is easier to implement.

> The rural areas are going to have the same needs as the towns in the future.

Should communities wait until the major network operators start laying FO lines? Or should they invest now themselves?
The providers are pushing the subject at the moment – not just here in Switzerland. They are investing in FO networks in large towns and conurbations. But you also have to consider rural areas. They are going to have the same needs as the towns in the future. If you could expect a faster return on investment, we would have 1000 investors wanting to build FO networks. But that is not the case. This is where we see the advantage of communities and public works. They are not investors who have to be promised returns within four or five years.

At some point after the planning phase, FO networks are realized. Who decides which products are chosen?
We of course influence these decisions, but remain neutral. In particular, we make sure that the fiber optic systems are future-proof.

In other words, you recommend solutions that can be constructed modularly and extended flexibly so that people can plan long term and scale step-by-step.
Absolutely! And I hope I'm going to get a 15-year warranty from you now that says that your products can be obtained as long as… no sorry, just kidding. Flexibility is of course an extremely important point for proceeding according to requirements. We make realization plans for 15 to 20 years with the communities. Naturally flexibility and modular extension possibilities are of extreme importance.

Installation engineers are important partners when constructing local FO networks. What do they expect?
I can give you direct feedback from the Limmatfeld project near Zurich (see CONNECTIONS No. 41). The installation engineers expect the FO systems to be designed on a modular basis and be as simple as possible to deal with. They expect the manufacturer to be capable of optimizing products, continuing to develop them and of adapting them to suit their specific needs.

What experience have you made with R&M products?
The installation companies really like your products. I myself can confirm that working with R&M is a pleasure. We get planning aid, product documentation etc. We can even influence certain development steps.

All that confirms our desire to offer top-quality fiber optic solutions that can quickly be adapted to the conditions of a particular project. – Mr Huber, thank you for giving us your time for this interview. ■

click to move

www.clicktomove.ch

The entire interview is available as a complete text version and as a video cast at:
www.connections.rdm.com


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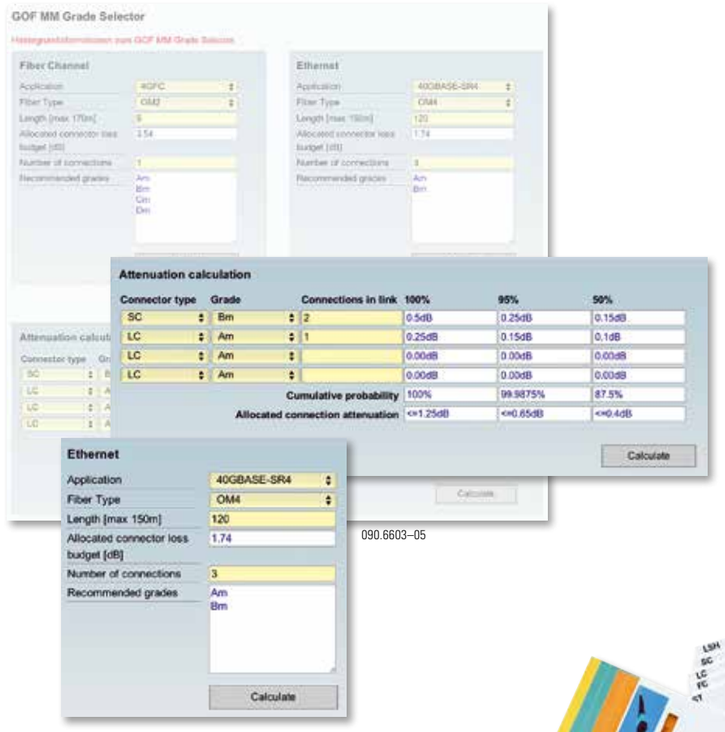

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FO Pocket Guide Helps in Installing

The new FO Pocket Guide – the size of an iPhone – summarizes the most important technical information and parameters of FO cabling on just a few pages.

The practical reference work contains all information an installation engineer needs when working on the customer's premises; from the color coding of the fibers through fiber data such as the refractive index, attenuation/km etc. to the available classes of the relevant connector. ■

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R&M Grade Selector Helps in Planning

If you are planning optical networks, you must pay particular attention to calculating the tolerable signal loss. This is the total connector loss and optical attenuation in the optical fiber, both of which have to be determined precisely. This is the only way to ensure that the network can ultimately provide the desired power.

The new R&M GOF MM Grade Selector enables planners to execute these calculations at the click of a mouse.

Once you have selected the desired application (Fiber Channel or Ethernet), select the fiber type and add the required transmission length. The R&M Grade Selector then calculates the resulting connector loss budget and recommends the necessary connector quality grades to the user.

Please get in touch with our experts for more extensive calculations with "Monte Carlo" or the static method of calculation. ■

The tool can be found online at www.rdm.com > Service > Planning Tools.


090.6334

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Record-Breaking Demonstration

It is possible to increase performance in fiber optics. This is something R&M demonstrated recently at a conference of experts in Zurich – with an error-free 40 Gigabit Ethernet data transmission over 550 meters of multimode cabling with nine MPO/MTP® connectors.

Investing in the next generation of ultra-fast data transmission means fewer limits. But the IEEE 802.3ba standard for 40 Gigabit Ethernet (40GBASE-SR4) envisages a transmission path of at most 150 meters and permits a maximum of 1 dB connector loss. This of course means that the quality of the MPO/MPT® connectors is of central importance.

As a leader in quality, R&M wants to offer more. This is why we have defined considerably stricter standards for our 40 GbE solution. The result: The performance exceeds the parameters defined by the standard manifold. It also facilitates migration from 10 to 40/100 GbE within existing infrastructures. Data centers therefore do not need to worry as they plan their future.

R&M proved its point at the latest specialist "It's NOT the Network" conference that was held in the Swiss TV station SF sports studio. Over a period of six hours, R&M showed experts entirely error-free data transmission over 550-meter long OM4 FO cabling into which we had incorporated nine MPO/MTP® connectors. This was a successful simulation of a realistic data center infrastructure.

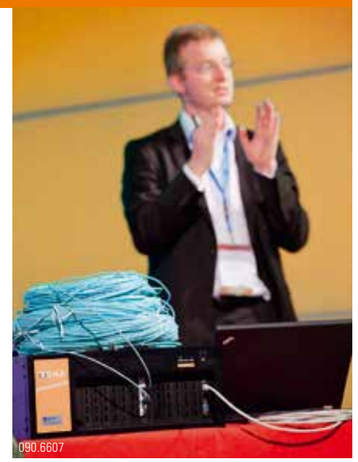
The connectors used in the test are manufactured by R&M at its plant in Wetzikon, Switzerland. The decisive thing is the surface finishing of the fiber ends and the quality control. R&M checks and refines the faces of the individual fibers in the connector in the nano sector. This is how we can achieve transmission quality that greatly exceeds all parameters defined in the standard.

R&M ran the test together with Reflex Photonis Inc. from Sunnyvale, California, and Xena Networks from Copenhagen. Reflex Photonics provided the opto-electronics for the transmission of the light signals with its 40GBASESR4 transceiver module. Xena Networks provided the measuring equipment with its 100 Gigabit Ethernet tester.

"The excellent quality of the production process at R&M, combined with the top performance of the CFP modules from Reflex, clears the way for wide implementation of 40/100 Gigabit Ethernet in data centers," said Robert Coenen, Vice President of Sales and Marketing at Reflex Photonics.

> "That was a truly convincing performance and proof of the finishing quality of top-flight cabling solutions from R&M."
>
> Jacob Nielsen, CEO Xena Networks

Armin Diethelm, CEO of Emitec AG from Rotkreuz and organizer of the specialist conference, confirmed this: "In this demonstration, R&M impressively showed just what you can achieve with Swiss finishing in fiber optic cabling systems thanks to the ultra-precise processing of standard components." The result is also of economic benefit to users: They can plan more connectors in the future, design high-performance data centers more flexibly and do without some expensive, energy-consuming active devices. ■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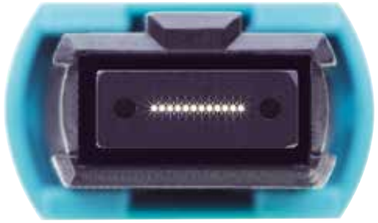
MPO connectors with 12 fibers for a top-speed FO route: Dr. Thomas Wellinger from R&M set a world record in the SF sports studio.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R&M Extends its Work to El Gouna

R&M participates in landmark university cabling project on the Red Sea

R&M recently recorded another success in Egypt, with the completion of its latest project in El Gouna for the Technical University of Berlin. The school itself is considered to be a breakthrough in the Egyptian education sector and now has some of the most modern network infrastructure in the country.

El Gouna, a unique red sea leisure destination and Orascom development project, is one of the most popular living destinations in Egypt. Now a new university is being built there which is part of the Technical University (TU) of Berlin. TU Berlin chose to establish a satellite campus in Egypt to act as a scientific and academic field office. The university aims to offer German education provided by TU Berlin at the campus in El Gouna.

THE R&M SOLUTION
- **Cat. 6_A components**
- **Cat. 7 cables**

WHY R&M?
- **Performance**
- **Pre- and post-sales support**
- **25-year warranty**
- **Swiss quality**

State-of-the-art network infrastructure

TU Berlin's El Gouna campus construction is a multiyear multiphase project. R&M, however, has completed its role in customizing a state-of-the-art network infrastructure utilizing its most innovative cabling products, Cat. 6_A and Cat. 7 cables. Cat. 7 cables were chosen as it is the standard for Ethernet and other inter-connect technologies.

R&M recommended an end-to-end cabling solution with these breakthrough components in order to match the needs of the university and technical labs. Cat. 7 also has the advantage for TU Berlin that it can be made to be backward-compatible with Cat. 6_A and is suitable for multiple applications. Overall, 1400 ports were installed, with R&M partner Channel Computer Service responsible for handling the project in terms of design, consultancy, local support and delivery.

R&M also offered a QPP (Qualified Partner Program) to El Gouna's Telecom team as part of their after-sales support and to increase El Gouna staff's expertise. The training centered on how to install and request the warranty. Now local El Gouna Telecom support staff will be able to better manage all aspects of the network on site. This is consistent with R&M's reputation for providing professional advice and designing customized solutions prior to installation, coupled with a unique warranty program.

Alfred Tharwat, Sales Area Manager Africa, R&M Middle East & Africa, commented by saying, "We are proud we had this opportunity to work on such a landmark project as the TU Berlin. Our partner was highly committed over the project and the client Orascom appreciated our after-sales support through the QPP training."

Sameh Kamel, El Gouna Communication Manager noted, "Choosing the right cabling components was a critical decision for us as it is the foundation for our network. R&M and their Swiss quality modular solutions were an obvious choice as they offered all the requirements we sought. Additionally their QPP training for our staff was extremely beneficial."

Jean-Pierre Labry, Managing Director R&M Middle East & Africa, concluded, "We're continuing our success record in Egypt with this breakthrough project, in line with our reputation of providing our clients, speed, quality, and reliability." ■


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Strategic Extension in Bulgaria

To be able to keep pace with the rapidly increasing demand for fiber optic solutions as well as increase competitive edge, R&M remains totally committed to extending this field of activity. The company deliberately chose to extend its production network with an FO production facility in Bulgaria as this would be strategically important in the euro zone. The facility recently started operation, producing fiber optic products in line with Swiss quality standards.

The strategic extension of R&M sites in the euro zone has taken a decisive step forward. The Logistics and Production Center in Sofia is a further extension to R&M's international production network. At the end of 2011, R&M purchased a property close to the center of Sofia that met all requirements. The three-story building offers 10 000 square meters of usable space including an underground parking lot as well as space for further growth.

Within just a few weeks, the industrial premises were converted and newly set up so operation could start in February. R&M thus now has a highly efficient production location with a fully equipped production area in Bulgaria. In the future, core products of the fiber optic range, such as pigtails and patch cords, will be made here and standard solutions assembled. In fact entire fiber optic platforms are due to be developed, produced and on request adapted to suit customers' requirements in the new facility.

The new plant will allow R&M to better meet the rapidly growing demand for fiber optic products under favorable conditions. Production in the euro zone and the favorable price/performance ratio in Bulgaria offer key competitive edge, something that is consolidated by the strong local ties enjoyed by the R&M MO Bulgaria.

The exemplary expertise of the Bulgarian employees is also one of the location's advantages. At R&M headquarters in Switzerland, they completed special training modules to familiarize themselves with what R&M expects in terms of quality in FO production. At home, they are helped and supported by experts from Switzerland. This enables R&M to produce goods in Sofia that satisfy the standards expected in Switzerland.

The production network is managed by Swiss headquarters. Wetzikon is still the main innovation and technology location where quality standards are defined. This makes the individual plants capable of further developing the production processes, extending the range and adapting products to suit regional and customer-specific requirements.

R&M Bulgaria is now also located in the new building. The modern, representative building is used as a local customer center and valuable synergy effects can be put to good use. Customers can follow the production processes on site and judge the level of Quality Assurance for themselves. ■


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CORPORATE

Jury in Cannes awards a Silver Dolphin to emotional corporate film.

Silver Dolphin for Corporate Film

R&M corporate film wins award in Cannes

R&M produced one of the best corporate films of the year 2011. It certainly convinced the panel of judges at the Cannes Corporate Media & TV Awards. They selected this submission as the winner of the Silver Dolphin, the second prize for excellent international corporate films. R&M made the film in collaboration with Seed Audio-Visual Communication AG, a Zurich-based specialist in this area. Producer Felix Courvoisier and director Christian Rösch accepted the award in Cannes. The film won out over a field of about 410 competitors from across the globe, taking second place right behind the current corporate image videos of Ricola and Porsche.

The corporate film from R&M is entitled 'ehlermeldung (i.e. the German word for "error message" with the first letter missing) and surprises audiences with its unconventional story. Two data packets slip out of a rack in a data center in India. One is cool, in tip-top condition. The other is in terrible shape because it was sent over inferior cabling. What constitutes a good journey for data packets and what expectations do they have of connectors and cables? The two bytes want to find this out for themselves and set off on an entertaining voyage of discovery that ultimately takes them to the R&M Cube in Wetzikon. The dialogues present the arguments for high-quality cabling technology against this backdrop and explain the manufacturing principles at R&M. By the end of the film, the two data packets are confirmed fans of R&M. ■

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Go to: www.rdm.com/en/co/about-us/company-movie.aspx

For more information go to www.rdm.com and www.cannescorporate.com

SUCCESS

Cabling Solution for Abu Dhabi Motors

R&M recently realized a project by supplying Abu Dhabi Motors, the exclusive importer for BMW, Rolls-Royce and Mini Cooper, with an end-to-end enterprise cabling solution, ensuring them speed, quality, and reliability.

The largest dealership in the region and part of United Al Saqer Group is known for its sophisticated design and high-tech standards. Recognizing the importance of using high-quality cabling, Abu Dhabi Motors sought out tier one vendors, such as R&M, for its network infrastructure project. The company also required maximized performance and solutions compliant to the latest industry standards and beyond. R&M's Middle East sales team met Abu Dhabi Motors' requirements by designing a customized cabling solution and showing high levels of dedication and commitment throughout the process.

Osama Abushaban, Head of the ICT Department for United Al Saqer Group, praised R&M's performance by saying: "Given Abu Dhabi Motors' high-tech standards, it was imperative we obtain the highest levels of performance from our new network. R&M went the extra mile to recommend the optimized solution of its modular and customizable copper and fiber range, giving us not only maximum performance now but going forward in planning future network requirements."

R&M was commissioned to provide the network cabling infrastructure for their renovation as well as for the new Abu Dhabi Motors building premises. The project was also crucial as Abu Dhabi Motors connected more than 15 branches to the United Al Saqer Group's headquarters building. ■

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For more information on this project go to: www.connections/rdm.com

LAST WORD

Authentic Cute Knut

Last year I took a trip to Berlin with my son. And one of the things we had decided to do while we were there was to go to Berlin Zoo. In particular to see the famous polar bear, Knut. A massive crowd was a sure sign that we were approaching the enclosure now home to one of the world's most famous bears. A bear that at the tender age of four had his own website and that had been visited by more than ten million people in an exceedingly short period of time. And if you actually google "Knut", you end up with more than 50 million hits, which has certainly got to be a record for a bear.

Why the great interest in a bear?
You have to have seen him to understand why. He had you under his spell in next to no time. A bear's thick fur stops it losing heat from inside its body. But when you looked at Knut, that's not what you saw. He had so much warmth streaming from him, thanks to his looks and behavior, that he made every visitor feel good. He was just totally natural and did what he felt like doing. And he was different from other trained animals or animals that have spent a long time in a zoo environment. Animal researchers have called his behavior disturbed because he put his tongue out up to three hundred times a day, often at the visitors. Four days after our visit, Knut was dead – he drowned after suffering a seizure caused by inflammation of the brain.

Peer pressure or a bear's life?
A lot of people today don't seem to be able to withstand peer pressure. They all wear the same fashionable outfits and labels at school. Later, they try to imitate role models from the movies, TV series or the music business and to copy their line managers at work as they think this will improve their chances of promotion. And then they even try to correct what they see as surface weaknesses by resorting to plastic surgery and face-lifts.

Primarily people should focus on their own qualities and inner values. Luckily, we can decide for ourselves whether to lead our own life or alternatively one determined by others. ■

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