



# impulse

Murrelektronik Customer Magazine

## EXACT12

Even More Flexibility:  
Exact12 Now With M12  
Connection



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## MVK METAL SAFETY

Optimum Protection for  
Man and Machine



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## MODLINK MSDD

One System with Over  
4,000 Options



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## EDITORIAL



Dear Customer,

Information on incoming orders means important, key economic figures for Murrelektronik. During the past months, these figures have risen continuously and are consecutively very high. This is proof that business in the automation industry is not only going well, but brilliantly.

We at Murrelektronik are well prepared for this upward trend. We designed our organization in a very customer-oriented way to meet your requirements and demands reliably and in a timely manner. For example, we produce connectors in the exact length you require, starting from a minimum quantity of one piece. This is unique in the market!

In order to ensure our current growth, we are investing. For example - as you will read in this Impulse edition - we have an expansion project at our Stollberg plant. We are increasing the capacities, creating more production space and optimizing the logistics procedures. These steps make sure that we are well positioned for the future. And you, our customers, are the ones who will benefit from these investments.

You also profit from our wide product ranges. Did you know that we are experts in working together with you to develop the perfect installation solutions for your machines and plants? Our unique CONNECTIVITY approach enables us to achieve these results - and our comprehensive component range is one of our strengths. Read more about how our CONNECTIVITY approach can help you in this issue of Impulse. Enjoy!

Stay connected and we'll keep in touch!

Stefan Grotzke

## CONNECTIVITY

# THE BACKBONE OF YOUR MACHINE AND PLANT INSTALLATION

### DECREASE YOUR BUDGET WHILE INCREASING YOUR COMPETITIVE ADVANTAGE

Murrelektronik is CONNECTIVITY. That means optimum machine and plant installations, saving time and money. We supply everything you need for this: first class products, intelligent concepts and excellent service. Based on these success factors, we work together with you to develop tailor-made solutions for your electrical installations. After all, they will become the back bone of your machine. From the initial planning up to the system support, we monitor the processes and costs. These are the benefits of our installation solutions: CONNECTIVITY increases the cost-effectiveness of your machines and plants and gives you the competitive advantage. ▶



**connect+ivity**<sup>®</sup>  
by Murrelektronik

Every day, our CONNECTIVITY experts are out in the field. They advise our customers directly on-site with the latest applications. From our experiences, we know that through a dialog with you, we develop the best ideas and solutions which result in successful projects. We are open to new ideas, have the courage to forge new paths and consistently implement proven concepts. For example, we won't pick a field-bus protocol until we know which system is the best choice for you. Regarding actuators and sensors, we work with products from all manufacturers while implementing of our unique component range: We can choose from over 30,000 of our patented products that have been created for innovative, clever installations. And you can trust that our products fit together perfectly down to the smallest detail. Compatibility problems? No chance.

An important aspect of the CONNECTIVITY approach is taking the entire project into consideration, from conception through maintenance. Because there are so many correlations between the various cost pools, we analyze the complete process starting from machine and system planning on to purchasing, logistics, production, assembly and setup, through to follow-up processes like service and diagnostics. This allows us to maintain costs and achieve synergetic effects to make your systems successful.

Here's an example to see how our CONNECTIVITY approach works:

Many systems are designed with a comprehensive actuator and sensor configuration. In this case, implementing Murrelektronik's CONNECTIVITY installation solution is ideal! It is designed consistently with your needs in mind and saves you money.

Although upfront costs may remain the same, once the system is in place, the synergetic effects will be significant. No longer do you have to buy a huge supply of small parts, now just a few innovative, Murrelektronik components are enough. This slims down your ordering and warehousing processes and will facilitate your inventory. CONNECTIVITY not only speeds up installation but it also reduces maintenance. Many time-consuming jobs are now done quickly and with fewer components.

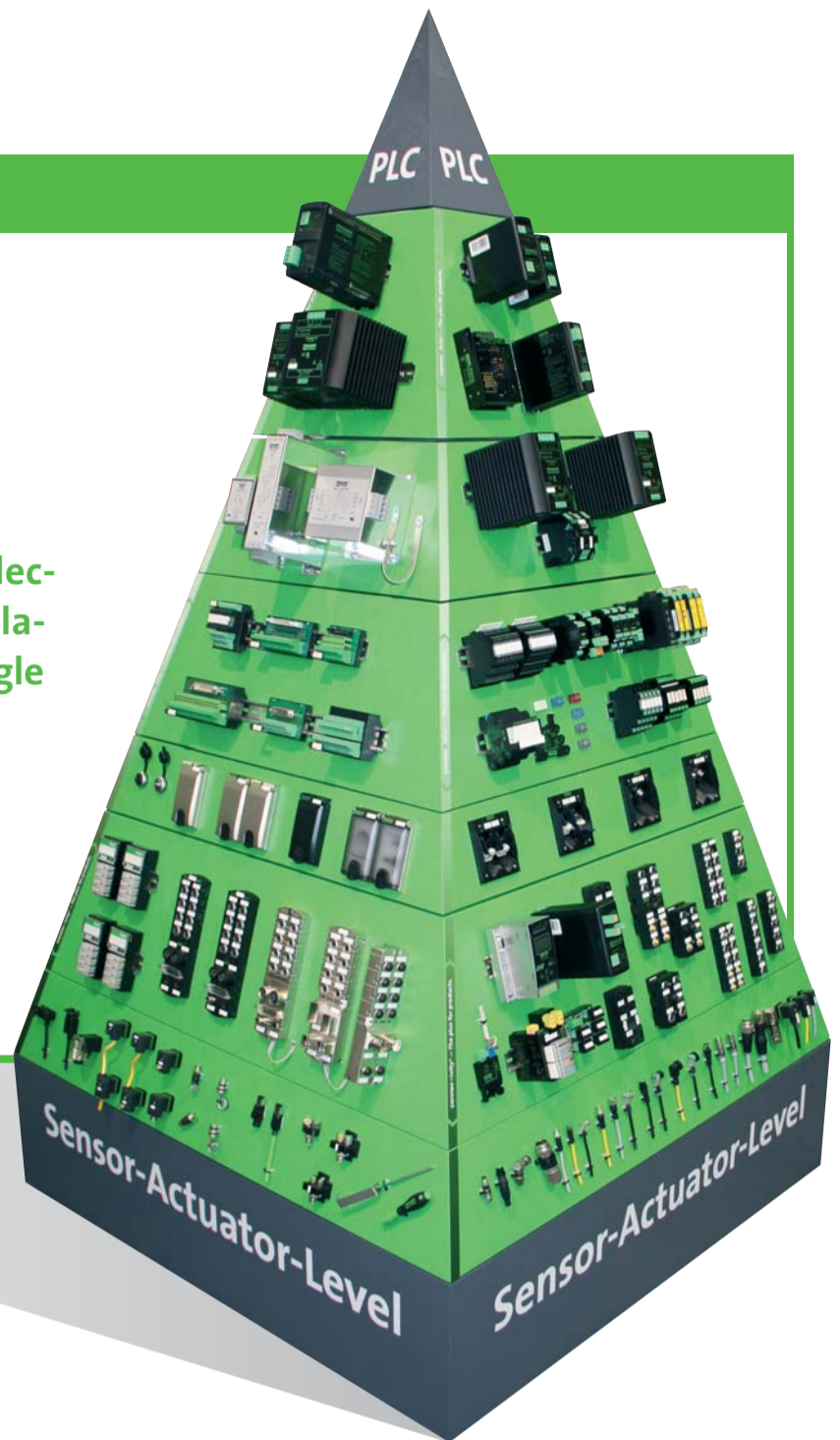
And once the system is operating, our installation solutions will offer you many diagnostic options. You will no longer have to look for errors, you'll just find them! In the past, maintenance technicians had to spend a lot of time finding the causes of downtime. But with the CONNECTIVITY concept, now the errors are conveniently shown on the diagnostic PC and the problem can be fixed quickly. This is real cost effectiveness that runs throughout the whole process. And CONNECTIVITY by Murrelektronik makes it possible.

CONNECTIVITY is the difference you have been looking for. It will give you the competitive edge you need. And because CONNECTIVITY is so popular, we have expanded our team so we look forward to collaborating with you faster, more comprehensively and more efficiently!

CONNECTIVITY APPROACH

**connec+ivity**<sup>®</sup>  
by Murrelektronik

**CONNECTIVITY optimizes your electrical machine and system installations consistently and from a single source. Murrelektronik will give you a competitive advantage by guaranteeing high process reliability and lower total costs.**



EXACT12

**NEW: FEATURING AN M12 CONNECTION!**

The distribution boxes from Murrelektronik's Exact family are completely housed with PUR material. This ensures extremely high resistance to shock and vibration. Following the Exact8, the Exact12 is now also available with M12 connection. This makes it easy to connect the homerun cable fast and securely.

The new model with an M12 connection offers the flexibility of a pluggable solution that is still as sealed as a distribution box with a molded homerun cable. Exact12 with M12 connection can be used flexibly – for example as a separation for transport.

Various models with M12 connection are provided for different applications. The connection has eight or 12 poles. The four or eight ports of the Exact12 are also

MURRELEKTRONIK RECOMMENDS: AUDIBLY SEALED!

Make use of Murrelektronik's torque wrench. This tool ensures consistent quality for all connections. The principle is simple: Just turn until you hear the click. The torque wrench helps you connect even with fully equipped distribution boxes. Another plus: Sore fingers are a thing of the past!

## MASI68

# THE FUTURE OF AS-INTERFACE IS ROUND!

Now AS-Interface solutions can be used in harsh industrial environments thanks to compact MASI68 modules combined with robust round cables. This is very appealing for electrical engineers because they can connect actuators and sensors in a very efficient manner even under extreme conditions.

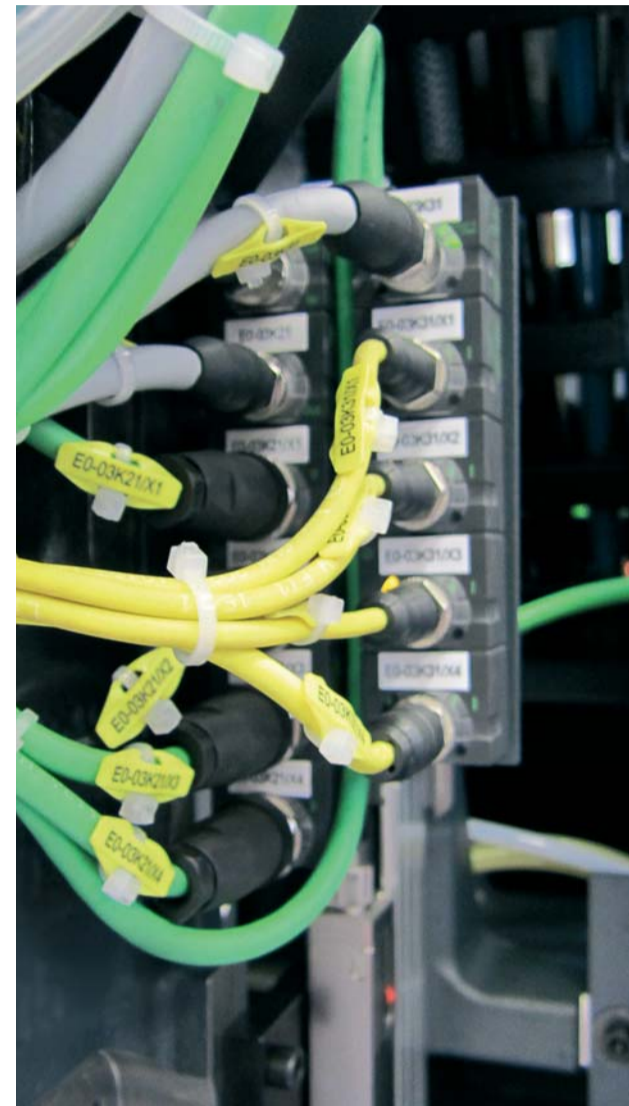
Using MASI68 in various applications in machine and plant construction is an excellent alternative to AS-Interface modules with profile cable connection. MASI68 modules are very compact and can be easily mounted even in installations in confined space. The single modules are connected with industrially proven M12 round cables. This guarantees sealed connections and enables simple mounting!

You can create segment lengths of up to 100 meters in the field with the round cables. These round cables are impressive when used in C-tracks! They have a high number of bending cycles which enables their long lifetime.

Round cables and flat cables can be easily combined in many applications, for example in the materials-handling industry. And combined systems are easy to expand at any position. Detailed tailor-made installations can be created and, at the same time, it is a very cost-effective solution.

Murrelektronik's MASI68 product range is very wide. Modules are supplied with four or eight ports, for connecting M12 as well as M8 cables. They are available as input and output modules and also in combined versions. Two input modules have a separate supply voltage (24 V DC) so they support the AS-Interface power supply and decouple the AS-Interface sensor supply. This eliminates conducted interferences. The K3 modules are very special components that are designed for applications in safety circuits.

Murrelektronik's MASI68 expansion modules are unique. They feature an integrated distributor function that simplifies installation concepts with AS-Interface. Now you can save money by using fewer installation materials such as branches and distributors. A good example is the MASI68 component for measuring temperature. Up to four temperature values can be precisely measured with this module. If a comprehensive installation requires temperatures from one or more positions, additional expansion modules can be easily connected with round cables. Temperature-related expansions of machine elements in machining centers can now be exactly detected and in the next step compensated. This significantly improves the accuracy of processing.



### COST-EFFECTIVE, COMPATIBLE, SEALED

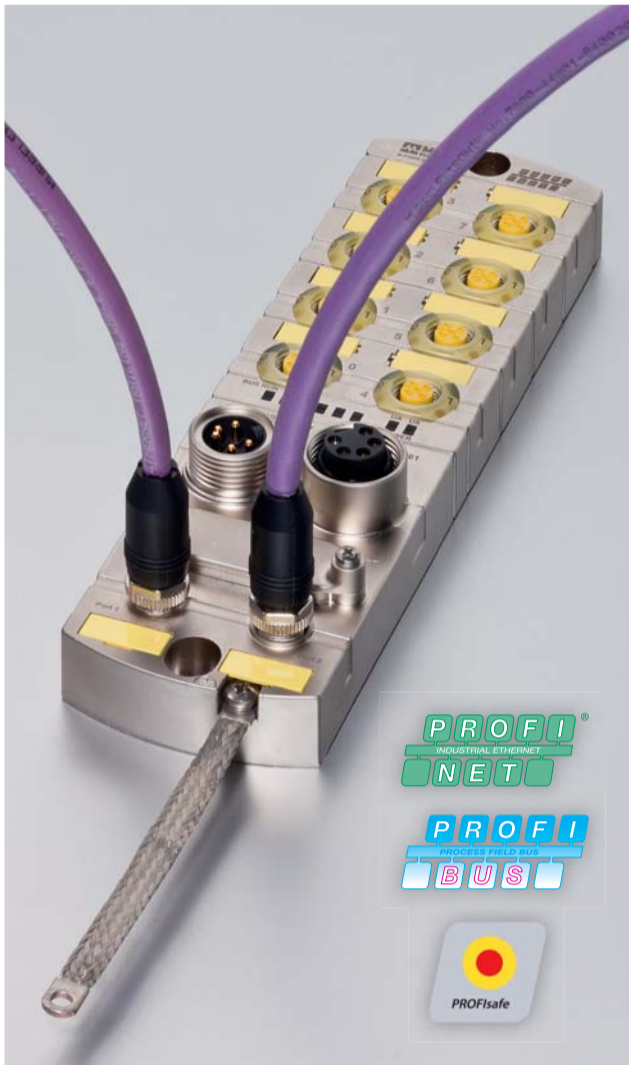
- Compact design saves space
- More safety, even during strong vibrations
- Two color signals
- Assembly compatible with other manufacturer's products

designed as M12 connection (with four or five pins). One or two signals per port can be transferred via gold plated contacts. All distribution boxes feature white (pin 4) and yellow (pin 2) LEDs. The LED for supply voltage is green. These status and supply voltage indicators are clearly visible and offer a quick overview, facilitating the job for service technicians. This emphasizes Murrelektronik's principle: „Don't look for errors, find them!"

Distribution boxes from the Exact series are very resistant to normal emulsions and oils. This makes the boxes perfectly suitable for many indoor applications.

Murrelektronik offers a wide range of cables for M12 connections. The cables can be individually configured for individual applications, for example in specific lengths.

Other connection variations of Exact12 include a molded homerun cable, pluggable caps and M23 connections. Now the M12 model completes the range!

**MVK METAL SAFETY**


## SAFE FIELDBUS SOLUTIONS UP TO SIL 3 AND PL e

### THE INNOVATIVE SOLUTION FOR ACTIVE SAFETY TECHNOLOGY!

Safety technology is a major topic in the automation industry. After all, men and machines have to be regularly protected from injury and damage. Murrelektronik offers innovative solutions for active safety technology! With MVK Metal Safety, the safe fieldbus module, you achieve the highest safety standards: SIL 3 and Performance Level e.

With MVK Metal Safety, Murrelektronik now offers active safety technology. This rugged fieldbus module generates safe inputs and outputs in combination with a safe control (F-PLC). Using the fieldbus protocols PROFINET/PROFIsafe or PROFIBUS/PROFIsafe ensures that safety-related data is transferred reliably. MVK metal Safety makes it possible that the complete system fulfills the highest safety standards.

The most important feature: Murrelektronik's new fieldbus modules enable installations with Safety Integrity Level 3 (according to IED 61508 and IEC 62061) and Performance Level e (according to EN ISO 13849-1).

The fully potted MVK Metal Safety modules are suitable for applications in harsh industrial environments, thanks to IP67 protection and a high resistance to media and vibrations. Moreover, the module features comprehensive diagnostic options.

**AUSTRALIA**

## WE'VE GOT THE RIGHT TWIST



Iron ore is shipped out of Adelaide, Australia's metropolis port, especially fast with a Rotainer - a new convenient and cost-effective transportation solution. The same applies to Rotainer's control system: The experts at Petcha Group Pty. Ltd. connect the system with distribution boxes and cables from Murrelektronik. This provides significant installation benefits.

Iron ore mining is an important industry in Australia. IMX Resources is a company that operates mines and excavates ore. The ore is then transported to the port of

Adelaide on freight trains and then loaded into bulk cargo vessels. This process has to be carried out very quickly because it's expensive for the ships to stay in the harbor. IMX Resources relies on a Rotainer system from Ammesa to achieve the highest output possible. The company specializes in the design and development of machines and systems that transport heavy loads. These systems are located, for example, in mines, loading stations or in ports. Using a Rotainer makes it possible to rotate huge shipping containers 360 degrees which ensures very effective loading.

Petcha Group Pty. Ltd. was asked to design an electronic control system for the Rotainer system. The company specializes in developing monitoring, test and control systems for the industrial and mining industries. Petcha Group's engineers designed a very innovative control system for the Rotainer that works perfectly. They needed a simple, efficient and robust solution to connect the individual components. They needed an installation concept that operates reliably even in harsh environments.

They selected distribution boxes and cables from Murrelektronik (represented in Australia by SICK Pty. Ltd.). Mr Peter Bourke, CEO of Petcha Group, explains this decision: "Murrelektronik was able to provide us with the entire scope of our connectivity requirements. We use M12 distribution boxes with a robust metal housing and pre-wired M12 connectors." This pluggable solution is perfect for applications in harsh environments and "it simplified the installation and setup process enormously," said Mr. Bourke. This helped complete the project not only on time but also within the budget!

## BRAKE RECTIFIERS

# MORE CONTROL OVER MECHANICAL SPRING APPLIED BRAKES

They can be seen everywhere in large logistics centers: mechanical spring applied brakes that stop asynchronous motors. They are used in conveyor belt motors, in stacker cranes or in vertical conveyors. Controlling these brakes takes a lot of time and effort. Now Murrelektronik's active brake rectifier makes this task easier! It's used to control mechanical spring applied brakes easily.

A leading supplier of logistics centers performed a market analysis in which they discovered that about 80% of all AC drives are equipped with mechanical brakes. This is a huge market! Electromechanical brakes vary in size, braking torque and the way they are electrically controlled. Brakes with control voltages of 24, 103, 180, 205 and 215 V DC are available on the market. Furthermore, the analysis showed that between 80% and 90% of the brakes are operated with a nominal voltage of about 200 V DC. What stands out is that all brakes are controlled by DC voltage and not by AC voltage because DC voltage enables faster switching times.

The conventional method of controlling DC brakes requires a relatively complicated electrical system with a rectifier at the heart of this system. Usually the rectifier is installed in the field: on the motor or on the brake and it's controlled from the cabinet with auxiliary contacts. The contactor, on the other hand, is directly controlled by a PLC output or indirectly through an optocoupler or a coupling relay. Additionally, this requires suppression modules to attenuate the voltage pulses that occur during switch off. These modules are either located in the control cabinet or – even better – directly on the brake.

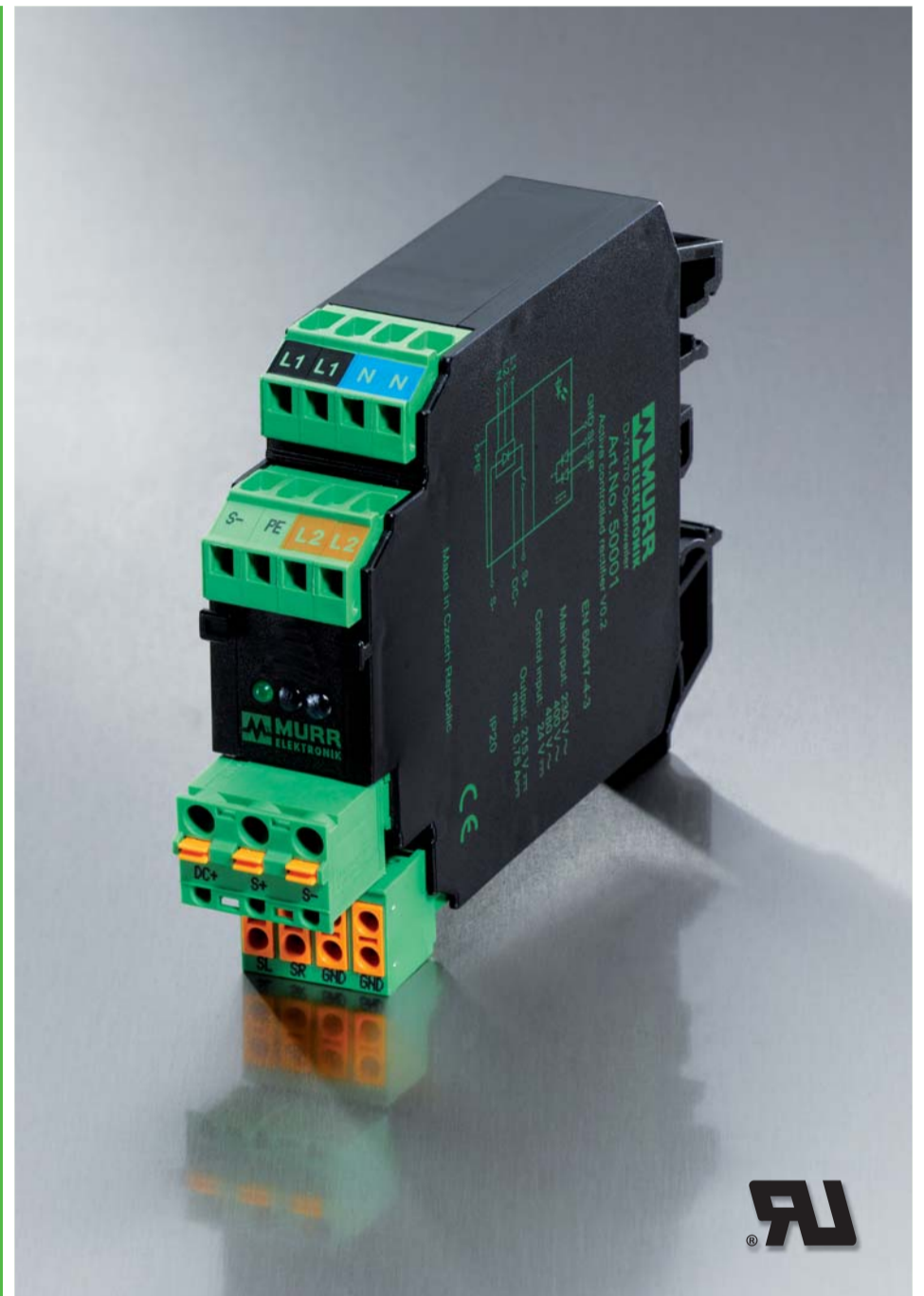
This means the one solution requires five different components: the rectifier, the contactor, the auxiliary contact, the optocoupler or the coupling relay and the suppression module. And then someone has to wire all these individual components. All this costs money, takes time-consuming efforts and requires a lot of valuable space in control cabinets! Not to mention the high costs for warehousing such a large number of components.

The perfect solution would be a compact component for the control cabinet that integrates all parts into one. Murrelektronik has the answer: our active brake rectifier (art. no. 50001) meets these requirements and was made to control DC brakes.

This compact cabinet component requires only 22.5 mm on the DIN rail. All terminals are

### MURRELEKTRONIK RECOMMENDS:

Now have direct suppression on the load! This dampens unwanted voltage pulses directly at the source. With this solution, the pulses will not use long connection cables as „antenna“ to create signal interferences. Create stable machine conditions with suppression modules from Murrelektronik's wide product range!



designed with spring clamp technology, which makes them vibration resistant and maintenance free. The electronic components are also ready for fast wiring. You can directly control an integrated rectifier (one-way and bridge rectification) with the 24 V DC signal of a PLC output which saves an optocoupler or a coupling relay. The current switching state of the active brake rectifier is clearly shown by a status LED.

Murrelektronik's cabinet component covers wide input voltage range from 230 and 400 up to 480 V AC which makes it suitable for worldwide use. The cURus approval opens the door for applications in Canada and in the USA.

Depending on the input voltage, the module's output voltage is between 180 and 215 V DC. This covers the ideal range for DC brakes. With a maximum output current of 0.75 A, the active

brake rectifier is suitable for brakes with power up to 160 W. Because the output voltage is switched on the DC side, the shortest possible brake application times are guaranteed. Integrated suppression ensures stable conditions and increases the lifetime of the active brake rectifier.

## TREE UNMANAGED SWITCHES

# MAXIMUM FLEXIBILITY WITH UP TO 8 PORTS

NOW WITH US



### HIGHLIGHTS

- Compact housing
- Autocrossing
- Redundant supply voltage
- Overload and short-circuit protection
- 10/100Mbit (Autonegotiation)
- Automatic half or full-duplex detection
- Wide temperature range

The compact Tree switches series can combine up to eight Ethernet terminal devices and integrate them economically into a network. Murrelektronik has broadened this product range: Two new models are available in a robust metal housing with six or eight ports and one new model is available with plastic housing and six ports. All of the new additions are UL approved!

This certification makes the switches suitable for applications in the USA and in Canada. This is a very important feature especially for export-oriented companies. The switches with metal housing offer an additional benefit: They are suitable for a very wide temperature range – from -10 up

to +70° C. All Murrelektronik switches feature the same fast data transfer rates. RJ45 ports support transfer rates of 10 or 100 Mbit/s. The transfers are automatically detected via an auto-negotiation function.

Murrelektronik's switches are suitable for Fast Ethernet and of course for networks with lower transfer rates. Thanks to an autocrossing capacity, the interfaces detect which cables are connected. This avoids wiring errors. A redundantly structured power supply ensures reliable operations. The biggest advantage of the unmanaged switches is that they do not have to be configured – completely different devices can be connected without any problems! Thanks to the Plug & Work technology, the switches can be quickly and conveniently installed.

Murrelektronik's switches are suitable for DIN rail mounting. Featuring a width of only 22.5 mm (with 4 ports) or 45 mm (with 8 ports), they don't require much space. LEDs allow easy visual control for data rates and operating conditions.

## M12 FLANGE PLUG CONNECTORS

# WIDE RANGE OF SOLUTIONS FOR YOUR APPLICATIONS

Murrelektronik's range of M12 flange plug connectors is comprehensive and offers solutions for all different kinds of applications. One highlight are the food & beverage models, made of V4A stainless steel – their hygienic design makes cleaning very easy.

Murrelektronik's M12 flange plug connectors are available as male and female with different pole numbers, ranging from 4- to 12-poles. There are also flange plug connectors for front and rear panel installation. Models with B- and D-coding can be used in fieldbus applications.

The stainless steel versions are especially appealing for applications with exposure to aggressive, corrosive media. The materials include V2A stainless steel (1.4305) or, for the food & beverage industry, V4A stainless steel (1.4404). A hygienic design for food & beverage connectors is very important to Murrelektronik. This means that the



flange plug connectors do not have any sharp edges or indentations where unwanted germs can stay. Instead they feature curved edges that can be easily and thoroughly cleaned.

A special characteristic of Murrelektronik's flange connectors is the molded polypropylene wires in the metal housing. They guarantee high protection from short-circuits. An integrated over-rotation protection ensures easy assembly.

**All models are available with cables in three standard lengths: 20, 50 and 100 cm.**

## MODLINK MSDD

# ONE SYSTEM = 4,000+ OPTIONS!



Connecting external devices to the controls is often a difficult and inconvenient job. Simple exchanges aren't possible because there are many different interfaces with varying forms and sizes. Murrelektronik's Modlink MSDD front panel interfaces provide a solution to this problem.

Efficient and optimum production processes require control software that is continually updated to the process conditions. To do this, usually laptops or diagnostic equipment have to be connected to the machines. Ideally, a direct connection to the closed housing with the right coupling would make services and set-ups much easier. However, reality is different. The controls are often not easy to get to and sometimes even connected to live components. These inconveniences can make it necessary to disconnect the complete system from the mains for safety reasons. If it is absolutely necessary to make changes during operation, the technicians have to improvise with floating wiring. Incorrect wiring or the lack of suitable cables complicates work and makes it a time-consuming job. Also, the different dimensions of the interfaces are a serious problem for the technician.

It is also very difficult to find reliable shielding concepts for these installations. Consistent shielding, however, is very important to protect the electronics in the housing from EMC interferences. The high requirements regarding interference immunity do not allow any inadequate solutions. Moreover, the interfaces must be designed to prevent dirt or humidity from getting into the cabinet while the machines are cleaned. Failures in the intelligent electronics caused by dirt can result in expensive system downtime. Investments into a high enough protection class will pay off in the long run.

With Modlink MSDD front panel interfaces, Murrelektronik offers a system that eliminates all these problems. The modular system is based on standard frames and enables flexible use of all

international outlets and common data interfaces (for example SUB-D, RJ45, USB and many more). No matter which of the over 130 different inserts you select, the dimensions of the frames are always the same which is an excellent feature for the technician. Murrelektronik's system offers over 4,000 combination options! Now, export-oriented companies can react flexibly to country-specific requirements without having to rework the housing. The high, IP65 level of protection guarantees that the front panel interfaces are suitable even for applications in harsh environments.

The frames for the interfaces are available in single and double versions, made from plastic or entirely from metal. The inserts are simply snapped in and connected. Cables are plugged in on both sides; Inconvenient and time-consuming soldering and wiring efforts are no longer needed. And what if unique connections have to be integrated into the system? Murrelektronik provides blind plates that can be tailored to these special requirements. The data connector inserts are completely shielded with an EMC shielding plate. This guarantees a 100% protection from EMC. And in special cases, ground straps can be additionally connected to the rear terminals to discharge interferences.

Hans-Peter Marquart is the head of the electrical engineering department of **Berthold Hermle AG**, a big machine tool builder from Gosheim in Baden-Württemberg, Germany. He explains how Modlink MSDD front panel interfaces are used at his company: "We install the interfaces on the side panel of our cabinets. When the installation requires service work, we use a safety outlet. Of course, this outlet can also be used by the customers. We also implement an RJ45 Ethernet socket so that our end customers can link their machines." This facilitates the central administration of the machines' programs through the means of an internal network. For installing control updates, Hermle uses the USB interface from the MSDD system.

Krones AG, located in Neutraubling, Bavaria, also uses Modlink MSDD front panel interfaces. Roland Kerscher, standardization research & development team leader, describes the application: "We install MSDD in control cabinets and in machine housings, which gives access to the controls. We use the outlet for the laptop's power supply, with the USB port we create access to visualizations and with the RJ45 port we integrate the machines into the network." **Krones** uses Modlink MSDD because it allows the cabinet doors to remain closed. This is a very handy and important feature, explains Kerscher: "In our customer's breweries, there is a lot of steam and the humidity is high. Therefore, our control cabinets are operated with air handling units. When the cabinet doors are opened, dirt and, worst of all, humid air will inevitably enter. The components in the cabinet will steam up, causing condensation. This damages the parts and can bring the whole cabinet to a standstill. By using Modlink MSDD we avoid this problem."

Big suppliers of control cabinets and connector systems are becoming more and more aware of the demand for such interface solutions. They are beginning to include MSDD product versions in their range. Thanks to this standardization, customers can now order control cabinets with a matching cutout for Modlink MSDD, no matter which country the machine is headed to.

 STOLLBERG

# MURRELEKTRONIK INVESTS IN PRODUCTION AND LOGISTICS CENTER



**Groundbreaking ceremony** (from left): Tino Fritsche from the planning company C & E, Caroline Hafner-Pinnel, Norbert Michalke, Jochen Breßmer, Jürgen Zeltwanger and Stefan Grotzke from Murrelektronik, and Marcel Schmidt, the mayor of Stollberg

Murrelektronik celebrated the groundbreaking ceremony for the expansion project at our plant in Stollberg. A two story extension will be built onto the existing production plant. This will create more room for production facilities and logistics. Due to the high demand for connectors, the plant has been constantly operating at the capacity limit.

Since 1993, Murrelektronik has been manufacturing in Saxony, Germany. At the moment, 330 employees, 90 of which were hired in the past year, are producing over one million connectors per month. „The number of incoming orders has reached a record high: this is twice as much as in 2009“, says Norbert Michalke, plant manager. At the moment, we are producing around the clock in order to meet the high number of incoming orders.

With this new extension, we want to increase the long-term capacities and return to a two shift schedule. With an area of about 4,000 m<sup>2</sup> (which is about 20,000 m<sup>3</sup> of enclosed space) we will have an area available that is almost twice as large as before. In addition to expanding the production site, about 600 m<sup>2</sup> will be used as a high-bay warehouse with space for 1,400 pallets.



The ground has officially been broken for this new project. The employees in Stollberg had a big party and people from our headquarters in Oppenweiler came to Saxony to join! With this extension, Murrelektronik is making an investment of about € 3.2m and an additional € 1.3m will be used for purchasing machines and equipment, for example racking systems and tools. The building is scheduled to be finished in March, 2012.

## MURRPHY

### EPISODE 18

### MURRPHY TIDIES UP!

Or: Space Saving Installation Solutions with Cube67+

