



# impulse

The Murrelektronik Customer Magazine

## BEST PRACTICE

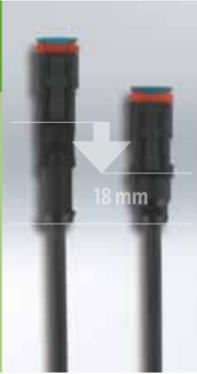
Cube67: A flexible customized installation concept



➔ Read more on Page 04

## DEUTSCH CONNECTORS

Very short and very practical



➔ Read more on Page 07

## MODLINK MSDD

Linking power and data in one compact block



➔ Read more on Page 07

## EDITORIAL



Dear Customer,

Think about the clothes you are wearing right now. The machine that made the shirt you're wearing may have seen more of the world than you have. It was probably designed in Germany, made with metal from China, which was turned into components in Poland, partially assembled in Belgium, and sent to Georgia to produce products for the United States.

Murrelektronik is proud to be a part of this international manufacturing industry. We are one of the top suppliers of decentralized automation technology to over 20,000 customers in the machine building industry worldwide. Our solutions have three clear advantages: they free up space in control cabinets, reduce installation costs and increase machine run time.

Murrelektronik has established local production and warehousing facilities in the United States, Europe and Asia to provide global support to our customers with local manufacturing. We enable our customers to buy market-specific products produced with global quality standards that are delivered from a warehouse near them.

In 2015, we strengthened our alliance between Germany and the United States by opening a combined R&D and production facility in Atlanta, Georgia. We are excited to offer customized connectivity solutions specifically tailored to the needs of our North American customers. Our commitment extends further with our R&D team who are actively working on software development for our products within the Ethernet/IP protocol. This will increase the competitive advantage for both our customers and their customers.

This year, the United States is the partner country at Hannover Messe. Our attendance there, and the show's focus on these two industrial leaders, points to the bright future of both our countries.

Stay connected!

Markus Schyboll  
Chief Executive Officer



## SMART AUTOMATION by Murrelektronik

As machines and systems become more intensively networked, creating transparency across the entire product life cycle becomes a key challenge for the future. The 'smart factory' concept offers great opportunities. At Murrelektronik we are pursuing this path with our customers. Our products and solutions are aligned with our 'Smart Automation by Murrelektronik' principle and form the basis of revolutionary installation concepts.

We supply modern components equipped with innovative functions and high-performance interfaces to enhance production modularization and flexibility. We always focus on our customers' needs: reliable user-friendly installation, straightforward commissioning (ease of use), reducing downtimes, end-to-end controlling in the field...

## SMART AUTOMATION BY MURRELEKTRONIK

Practical examples from the Murrelektronik world include predictive maintenance products and solutions. Products reaching the end of their life cycle can be replaced just-in-time, avoiding downtime. Devices aren't exchanged too early which makes the most of the device's service life: the device's life cycle has been used to the limit.

A fascinating research project involves the development of intelligent cables using smart core technology. They indicate when a

cable has completed 80 percent of its typical number of bending cycles. Then it is time to replace it during a regularly scheduled service interval. Several parameters are monitored at the same time in our supplies: interior temperature, load situation during operation, number of start processes and component service life. Here too, warnings are issued at the right time so the part can be replaced during the next routine maintenance, with no unplanned stoppages.

A particularly smart feature is the IODD on board integrated in the MVK Metal and Impact fieldbuses to quickly set-up of IO-Link devices. The data required for the sensors and actuators is directly embedded in the GSDML file. Slaves can be easily connected and operated – plug & play at its finest!



### JOINT RESEARCH DEVELOPMENT PROJECT FOR CABLES EQUIPPED WITH SMARTCORE TECHNOLOGY

## INTELLIGENT CORDSETS WARN YOU IN ADVANCE



**Unplanned downtimes are a disaster for factories. Defective cordsets in drag chains and robot tube packages are one of the main causes of these malfunctions.**

A broken wire – it's no more than that, but difficult to detect – can cause considerable costs that were not anticipated. At worst, it may be the case of a loose contact. Sometimes the signal is interrupted, at other times not. How are you supposed to find the error?

As part of a joint research project, Murrelektronik is currently developing new sensor lines that let you know when they are about to fail due to a feature called 'SmartCore Technology' that now makes cables and cordsets intelligent!

Sent over the existing diagnostics input already featured in many Murrelektronik IO modules, service employees receive a predictive message warning them that the cable has reached around 80 percent of its maximum service life.

The vulnerable cable can be replaced during the next regular maintenance routine – avoiding an unforeseen failure. Now maintenance engineers don't need to guess when to replace cables or replace good cables 'just in case'.

Depending on the measuring procedure, other sources of danger like over-temperature, overexpansion, overtightening, snapping or crushing are detected and a warning is also given. Today, cables and cordsets, essential components of almost all machines and plants, are now smarter than ever.

*SmartCore is a joint development project between Nexans, Leuze Electronic and Murrelektronik.*

### MODLINK VARIO SQUARE

## INSTALLATION AS EASY AS CLOSING THE HANDLE



**Connecting machine components is easier now with the Modlink Vario Square, Murrelektronik's practical media coupler in rectangular format. Connect and disconnect pneumatic, fluid and power, also under pressure, reliably and without a drip.**

The media coupler is ideal especially in machines and plants where connections between components and controls cabinets, machine components, or tools are subject to frequent switching. The user-friendly Modlink Vario Square quick-locking system is also cost-efficient. The handle, which is also used to bundle cables, can be locked in five different positions – whatever is needed for the application.

Modlink Vario Square has space for eight slots, which can be used for pneumatics, fluid and power as required. It's a module that enables modular machines and installations. Murrelektronik offers all the accessories with various pinning and encoded M12 lines. Thanks to solid metal housing, the Modlink Vario Square is ready for rugged industrial conditions.



## IO-LINK BY MURRELEKTRONIK

# EASY TO USE

**Fast integration, short commissioning times, yet maximum flexibility – Murrelektronik IO-Link MVK Metal and Impact67 fieldbuses take you there directly. They are ideal for easily integrating IO-Link devices into installation solutions.**

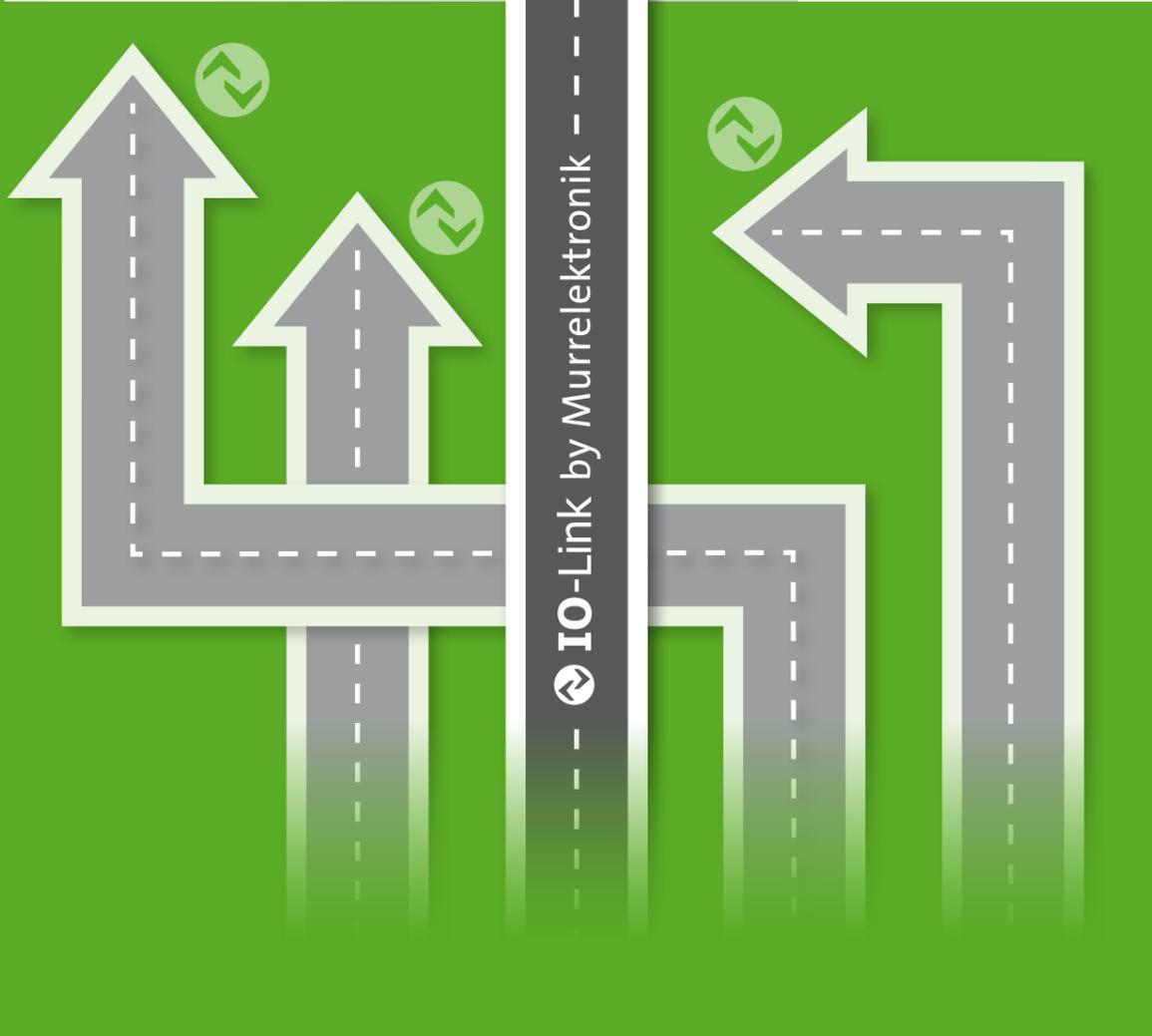
Why is integration so easy? The main idea is called **'IODD on Board'** an advanced technology by Murrelektronik. The sensor and actuator data stored in the IODD (IO Device Description) are directly incorporated into the GSDML files of the Murrelektronik MVK Metal and Impact67 fieldbus modules. If devices (e.g. IO-Link sensors or valve

terminals) are connected, you can access this data directly and very conveniently via your PLC software tools, with no need for manual parameter setting or special tools.

This, of course, greatly simplifies matters, as to date every new IO-Link device had to be integrated into the software individually, a time-consuming process. In fact, it could become very tedious, as the same steps had to be completed for each new device. This is now past history, and once created, configurations can be duplicated over copy & paste. This is a major benefit for manufacturers of series machinery.

However, the new freely configurable modules offer great advantages for non-standard machinery as well: the Murrelektronik **auto-configuration mode** makes speedy commissioning a reality. Setting parameters for digital inputs/outputs is eliminated; the channels act according to the control system commands.

However, if the emphasis is on maximum flexibility, opt for **expert mode**: values can be freely set individually with the help of Murrelektronik IO-Link device tool. One of the tool benefits is that individual values are not only displayed in hexadecimal form, but are also converted into the format of your choice for easy capture.



Series machinery manufacturers benefit because once they've created configurations, they can copy & paste them any amount of times to other systems and machine controls.

Jörg Krautter | Vice President Automation

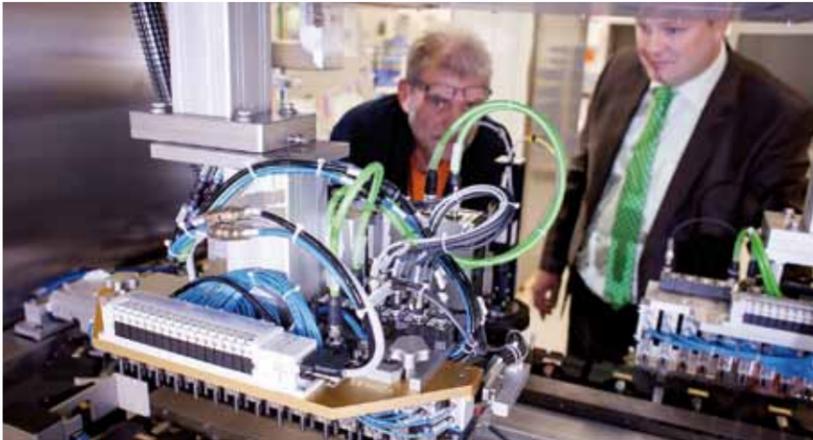
Expert mode allows maximum scope for flexibility: we can freely set every single value over our IO-Link device tool.

Bernd Waser | Head of R&D



## CUBE67 IN USE AT SORTIMAT HANDLING SYSTEMS

# A TAILORED INSTALLATION CONCEPT



**Limited space in the cabinet and on the machine, a desire to shorten installation times and a goal to maximize system availability – these are the challenges the sortimat Handling Systems electrical engineers are facing when designing their systems. With Murrelektronik’s Cube system they have found the appropriate installation concept for their handling machines. It’s modularity and flexibility during installation allows a system to be customized to meet a variety of requirements.**

Sortimat, located in southern Germany, is a leading manufacturer of industrial handling machines for a range of different applications. They produce systems that pack, stack and palletize small parts like tubes or blister packs into bigger units. Because these systems work very precisely, quickly and reliably they are often used in medical technology applications. sortimat Handling Systems customers are either pharmaceutical companies or production line manufacturers that work specifically in the pharmaceutical industry. The handling systems are produced in series production, but additional customer-specific requirements have to be met.

To develop decentralized installation solutions, sortimat Handling Systems works hand in hand with Murrelektronik and ultimately decided to use a Cube system on their machines. For the cabinet, they chose the space saving Cube20 fieldbus module to use in combination with a Cube67 fieldbus system on the machine. This cutting edge installation allowed sortimat Handling Systems to replaced conventional single wire connections in their machines and take a big step forward in technology.

There were several deciding factors that made sortimat’s electrical engineers choose a Cube67 decentralized installation solution. The most important being limited space in and on the machines. Here Cube67 modules offer an advantage: the modules are multifunctional. The M8 or M12 ports can be configured as either inputs or outputs, depending on the installation requirements. This saves space and lowers costs especially when compared to an installation solution with two dedicated input and output modules. Also, by using a Cube67 valve module, valve clusters can be quickly integrated into the system, without requiring additional fieldbus connections. Plus, the single-cable-technology – Cube67 system cable transfers both data and power – reduces the space required in the cable ducts and simplifies installation.

The sortimat Handling Systems for trays and pallets are interchangeable with different gripping tools that have a short setup time

during change out. Cube67’s “Machine Option Management (MOM)” is a big plus in a situation like this because it makes sure the machine starts operating immediately after a tool change. “MOM” enables hardware and software configuration based on a standardized maximum configuration. While the system is operating, only those components that are activated are used for the specific application. This prevents unscheduled downtime. The comprehensive diagnostic options that are built into Cube67 via the control (indicator at the HMI) as well as in the field (LED at the affected port) allow for quick troubleshooting.

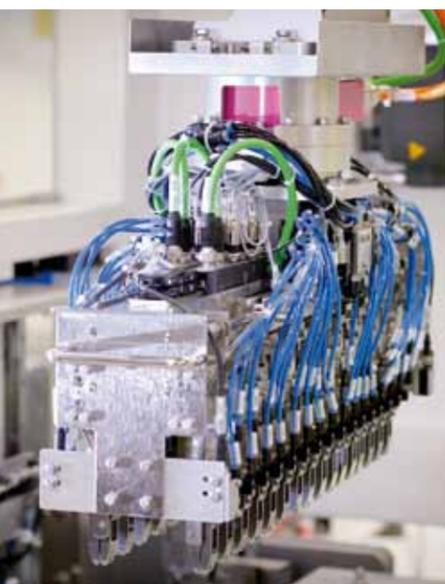
Another plus for using a Cube system is the wide variety of modules available. No matter the requirements, a Murrelektronik standard component can be easily found and a solution can be implemented. By using Cube solution from Murrelektronik, sortimat Handling Systems can respond to changing market requirements with a reliable, high quality product.

## ERDRICH USES MB CAP ULTRA 24/40

# PREVENTING SYSTEM DOWNTIME

**Voltage fluctuations can cause serious problems. At Erdrich Umformtechnik, a metal forming manufacturer, a mains failure caused considerable production outages including a failure on a lathe control. As a result, Erdrich now uses Murrelektronik’s MB Cap Ultra 24/40 buffer module. The MB Cap Ultra 24/40 bridges voltage drops efficiently and it pays for itself with the first downtime that is avoided.**

Erdrich produces pistons used in the disc brakes of cars. To make a piston, a 3 mm sheet of metal is uncoiled from a drum and is deep drawn through 13 stages. It is turned into length, the beading is rolled and then the surface is processed. The components are grinded and the surfaces chemically treated. The parts receive a final cleaning, they are measured and a leak test is performed. This is a complex process that has to be coordinated perfectly.



## EMPARRO67

# POWER SUPPLY IN THE FIELD

A DECENTRALIZED INSTALLATION OF A 24 V DC POWER SUPPLY SAVES PRECIOUS CABINET

Machine and system drives are often placed far from a control cabinet even though they require high inrush currents. Murrelektronik's Emparro67 power supply is the right solution for these applications. It allows you to move the power supply into the field while still supplying direct current drives with its Power Boost function and an integrated current limiter.

This is an example of how this works in practice: A Murrelektronik customer designed a supply network for direct current drives of a feeding system. It was a comprehensive system with a central cabinet that did not use terminal boxes. The electrical engineers preferred a design with a decentralized power supply to save cabinet space, as they were familiar with a competitor's IP67 power supply. However, this unit couldn't handle the high inrush currents of the direct current drives.

By looking at Murrelektronik's Emparro67 they were able to make their design concept a reality. It is IP67 rated and can be installed close to the DC drives. Because the compact and rugged metal housing is fully potted the components are protected from mechanical stress as well as damage from dirt, humidity and cooling lubricants. Because the connections of the power supply are all on one side the unit could be easily installed directly under the machine. Voltage conversion (from 230 V AC to 24 V DC) now happens close to the load, keeping power loss low thereby lowering energy costs especially as compared to the centralized supply design.

Emparro67 also supplies the current required to start the high inductive loads of the DC drives. It's power boost function (supplying a nominal current of 150 percent for up to four seconds) without the risk of voltage drops is a key factor. While it's integrated current



**APPROVED FOR THE NORTH AMERICAN MARKET**

Emparro67 has UL-approval (UL-508-listed) which makes it an option for companies that export machines or system to North America.

limiting fuse provides additional protection. During standard operation, Emparro67 supplies a constant current of approximately 9 A.

Manuel Senk, Murrelektronik product manager, is pleased with the success of this project. He says, "Our goal is a decentralized power supply, away from the central cabinet. Emparro67 is a key tool to help our customers to reach this goal. They can use smaller cabinets and the power supply is always next to the load where it is required."



The power grid at the manufacturing facility often has voltage fluctuations. In the past, this caused a CNC lathe control, which is part of the production line, to fail. As a result, the PLC lost its data and production stopped. It would take almost an hour and a half to get the lathe running again and it took as much as ten hours to restart the complete production line. As you can see, the mains' fluctuations and resulting system outages increased costs dramatically.

Therefore, Erdrich's engineers decided to integrate Murrelektronik's MB Cap Ultra 24/40 buffer module into their power supply system. This module reliably buffers outages of up to 3.6 seconds with a current of 40 A. External power grid fluctuations no longer effect the lathe's operation and the risk of a control failure, with all of its negative effects, is eliminated. Incorporating the buffer module into the existing power supply system turned out to be easy. The MB Cap Ultra, with its high buffer capacity, does not require you to define the buffered and unbuffered

areas of a machine. Instead the complete installation is buffered with very little planning and engineering effort. Another plus are the ultra capacitors, in which MB Cap Ultra stores the energy, which are designed to be maintenance-free for life.

After successfully completing the first machine's testing phase, the maintenance engineers at Erdrich made the decision to install buffer module in more machines. This is a small investment that makes a huge difference given the extremely high cost of a system outage. The cost of an MB Cap Ultra is recouped when the first production interruption is prevented.



## MASI POWER24

# MAXIMIZING THE SYNERGY EFFECT

USING EXISTING 24 V DC STANDARD POWER SUPPLY UNITS AND REDUCING COSTS



**MASI is Murrelektronik's AS-interface series for cost-effectively connecting system and machine I/O signals to higher-level control systems, for instance in machine tool building or warehouse and logistics systems. MASI installations offer outstanding flexibility because they are not bound to rigid topologies.**

In the past, AS-interface installations needed a special 30.5 V DC power supply unit. On installations with a minor number of inputs and outputs and line lengths of up to 50 meters, an additional power supply unit is a huge portion of the costs. Now, the new Murrelektronik MASI Power24 gateways are designed for precisely this kind of application.

They allow the use of standard power supply units with an output voltage of 24 V. Normally, there is one in the control cabinet anyway to power the electronic components. This is an excellent synergy effect and directly saves costs, as well as space in the controls cabinet and additional assembly and installation effort.

On larger scale installations with line lengths of more than 50 meters the MASI Power24 gateway can of course also be run with a 30.5 V DC power supply unit, with no need to change topology or gateway.

The new MASI Power24 gateways act as interfaces in higher-level field bus systems. Murrelektronik supplies Power24

gateways for PROFIBUS, PROFINET and Ethernet/IP. Data decoupling required by the AS-interface is already integrated into the gateway.

The masters work with the AS-interface specification 3.0 (M4 master) and offer advanced functions and extensive diagnostics options. Slaves to specification 2.0 or 2.1 can also be integrated, as the system offers full downward compatibility.

An integrated web server facilitates commissioning, parameter setting and diagnosis on gateways for PROFINET and Ethernet/IP. Users can access the diagnosis and parameter-setting display over a laptop, tablet PC or smartphone. The application can be easily supported in the machine via remote control, thus speeding up commissioning and troubleshooting.

Installations with MASI68 components provide additional benefits! The individual components are connected by unshielded 4-core M12 lines (A-coded) for comparatively low connection costs. In addition, a large number of digital and analog I/O modules is available. Since standard power supply units can also be used in many applications, systems can be efficiently decentralized while maintaining maximum flexibility.

## M23 CONNECTORS

# EASY AND SEALED SERVO MOTOR CONNECTIONS

**Murrelektronik offers high quality, pre-wired M23 connectors for servo motor connections. They are fully sealed, shock and vibration resistant, can be easily mounted and are tamper-proof.**

For decades, Murrelektronik has produced high quality M8 and M12 cordsets for sensors and actuators. This experience has served as the basis for the development and production of M23 connectors for servo controllers and servo motors. The time when motor connection cables

had to be wired from many individual components is now a thing of the past.

When using Murrelektronik's pre-wired M23 cables with either an orange (power cables) or green (signal cables) jacket, you can be sure these cordsets ensure excellent connections. The integrated anti-vibration lock guarantees secure connections even under challenging conditions, without requiring retightening or additional wiring efforts. The practical hex thread on the connector used in conjunction with the appropriate torque wrench further simplifies installation and maintenance.

Murrelektronik is pleased to announce an expansion of the M23 connector line up with the introduction of 8-pole models. They are designed to supply the most powerful drives and servo motors.

All Murrelektronik M23 connectors feature 360° shielding that ensures very low interference emission. The coding arrow on the housing is a practical installation aid. A conduit retainer along



with high-quality Siemens cable and a high quality overmold that prevents contamination when exposed to oil in industrial applications are important, additional important benefits of our M23 cables.

The cables are available in 10 cm increments with a minimum order quantity of one piece.

### TOP QUALITY CABLES

- Flame-retardant, halogen-free, resistant to oil and chemicals
- VDE, CSA and UL approved
- Temperature Range: -35°C to +70°C
- Bending Cycles: 5 million
- Acceleration: 50 m/s<sup>2</sup>
- Bend Radius: 7 × outer diameter
- Corresponding to MC800+

## DEUTSCH CONNECTORS



### TAILOR-MADE CABLES

DEUTSCH® connectors are available with your choice of open-ended wires or as a connection cable with a DEUTSCH® connector, Junior Timer, M12 or valve connector on the other end. Lengths from 0.2 up to 1.5 m are available in 30cm steps, while longer cables (up to 100m) are available in 50cm steps. All are available for order in single pieces.

## VERY SHORT AND VERY PRACTICAL

Murrelektronik's newly redesigned 2-pole DEUTSCH® connector (MDC06-2S) is a very compact connector – its only 18 mm long when plugged in. This new connector makes it easier than ever to make your connections, even in a confined space.

Murrelektronik's DEUTSCH® connector is pre-wired, molded and 100% electrically tested. There is no work to be done in the field, which saves time and reduces the risk of wiring errors. It's UV and oil resistant PUR jacket means there are no extra steps to be taken to protect the wires while the molded connection keeps water and dirt from the internal wiring. Another feature is the strain relief that reduces the risk of a failure because of a wire break.

Finally, connector head is equipped with a connection for attaching a conduit retainer. These features all combine to make Murrelektronik's fully molded DEUTSCH® connector an excellent solution for both mobile hydraulics and truck building.

Murrelektronik's DEUTSCH® connector is also available with an integrated LED. The .75mm<sup>2</sup> wire cross section prevents large voltage drops, even with long cables. The connector models with suppression are suitable for vehicle voltages ranging from 12 and 24 V while the connectors without suppression are suitable for vehicle voltages for up to 230 V. The Murrelektronik Deutsch connectors are IPIP68/66K rated and are able to withstand both shock and vibration.

## MODLINK MSDD

### A VERY COMPACT SOLUTION

WITH MODLINK MSDD, POWER AND DATA CABINET CONNECTIONS ARE MADE WITHIN A SINGLE, COMPACT FRAME

Murrelektronik's Modlink MSDD programming ports provide convenient access to the controls when diagnostic or service work is necessary. They allow you to keep the cabinet doors closed so the components inside continue to operate within the specified protection class. They also make sure the components in your cabinet remain unaffected by environmental elements.

Modlink MSDD is a modular system based on a standard frame (single and double) with many different inserts to plug in. There are over 100,000

#### ➤ PRACTICAL TIP:

Murrelektronik has many combinations of frames and inserts that have been set up as sets. They can be ordered with one part number saving a lot of administrative work and time.

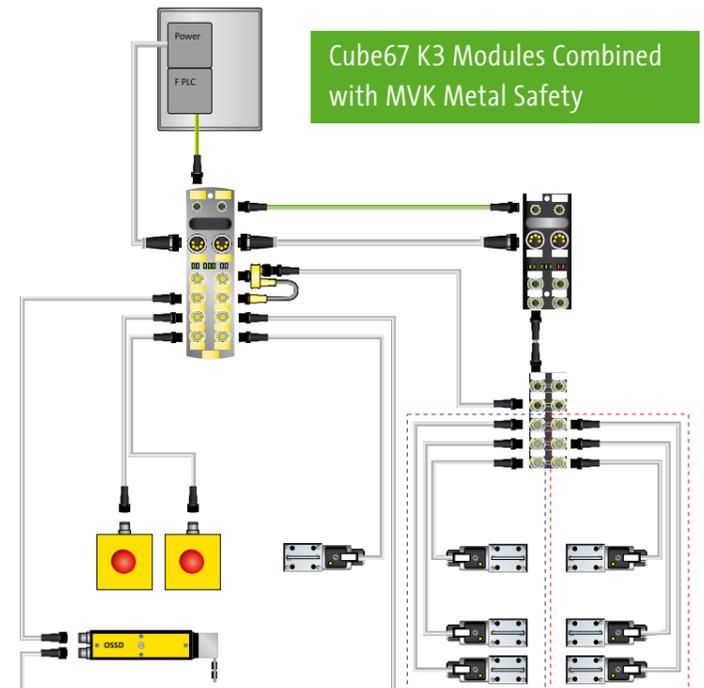
Bastian Baier | Senior Product Manager Interface

possible combination options so finding the solution you need is almost guaranteed. Because the mounting dimensions are the same no matter which combination is used, a design engineer's job is made easier and export oriented companies are in the position to react to country-specific requirements quickly and easily. The housing does not have to be reworked; they just install the country specific insert. Modlink MSDD is a tried and tested solution, well engineered to the smallest detail.

The single frame inserts that provide space for both an outlet and a data connector make for a compact solution. They come with built in shielding to increase EMC protection and prevent interference that increases the data quality, an essential factor in secure communications.



## SIGNIFICANTLY INCREASE THE NUMBER OF SAFE OUTPUTS



Cube67 K3 Modules Combined with MVK Metal Safety

Safety technology is a major topic in the automation industry: Excellent protection for man and machine is the highest priority. Now it's possible to easily increase in the number of safe outputs within a system by using Murrelektronik's combined solution: the modular Cube67 fieldbus system and the safe fieldbus module MVK Metal Safety. This saves space in the cabinet, because safety relays are no longer necessary.

If there is an emergency on the shop floor – for example a guard door has been opened or someone has activated a light curtain – outputs have to be switched off immediately. Combining safety relays with K3 fieldbus modules is an easy method to achieve safe outputs. This is a practical solution for smaller applications with basic requirements.

In order to design an installation solution based on Cube67 that meets the highest safety requirements, a combination of the compact and safe fieldbus module MVK Metal Safety with Cube67 K3 modules is an excellent solution. With the safe outputs of MVK Metal Safety – controlled by a PROFINET/PROFIsafe controller – it is possible to create up to 12 safe outputs on the K3 module. They are split into two safety circuits, each with three ports that have dual functions. This multiplies the number of safe outputs and is a simple and efficient method to increase the competitiveness of your machines and systems.

## MIRO OPTOCOUPLER – POWERFUL ALL-ROUNDER

Murrelektronik presents a new universal optocoupler with outstanding qualities: it combines high switching current of up to 6A with a high switching frequency of up to 500 Hz, with no need for any secondary-side auxiliary power.

Optocouplers operate without mechanical wearing components, they have an exceptionally long service life, no bounce times, they are shock- and vibration-proof and emit no switching noise. The new universal optocoupler is an all-rounder, perfect for a variety of applications.

If you already have a control cabinet with Murrelektronik modules, the relay modules connected to them can be easily replaced by the optocoupler module easily during regular maintenance work. The plug base wiring can remain the same. At a width of only 6.2 mm, plug bases can be arranged in a series; they don't take up very much space in the controls cabinet.



## THE EMPARRO SYSTEM

# PREMIUM POWER



**Murrelektronik's Emparro system guarantees premium energy supply solutions for machines and systems. It consists of efficient switching power supplies, reliable buffer modules and effective filters.**

Seamless diagnostics over signal contacts allows the system to communicate the to the control system via diagnostics. If downtimes or power failures occur, these faults can be easily pinpointed and fixed quickly.

The Emparro system components work perfectly with one another because they were developed to perform together down to the last detail and jointly tested. Compatibility is not a problem for the Emparro system.

### **Emparro – Space-saving power supplies that are powerful and provide maximum availability**

Murrelektronik's Emparro power supplies, available in single- and three-phase version, are remarkably reliable. Built with only premium components, the device has a high MTBF value of up to 1,000,000 hours. High efficiency of up to 95 percent also plays a role in the system's long service life.

Integrated power reserves enable Emparro power supplies to be exceptionally powerful. They feature boost functions that effortlessly switching larger loads. The Power Boost function provides up to 150 percent power for up to five seconds, the Hyper Boost function up to as much as 400 percent for 20 ms.

In addition, the power supplies take up the minimum amount of space in

the controls cabinet. They've been designed very compactly, saving valuable and expensive space in the cabinet. Integrated protection devices also minimize planning and installation work.

The highlight of the Emparro 3~ 40 A version is a predictive maintenance function. It notifies the user when it is best to replace the power supply unit. Not too early, because long service life is important, but not too late either, in order to avoid expensive downtimes and long troubleshooting periods.

### **Emparro Cap – Buffer modules for maximum system availability**

Emparro Cap buffer modules ensure system stability. They safeguard industrial processes and act as a reliable stopgap when grid power failures occur. Time-consuming and costly downtimes during production processes are thus avoided. The buffer module covers grid fluctuations and power cuts of up to one second, even at peak 20 A load. Buffer modules often already pay for themselves the

first time they avoid a production downtime.

### **Emparro MEF – Avoid of electromagnetic interference**

Emparro MEF filters, with integrated overvoltage limiting, ensure maximum EMC reliability in the Emparro system. These one-stage filters ensure that even the most stringent EMC standards for power supply systems are exceeded by far. They prevent any electromagnetic interference as well as any negative impact on machines and plants. The filters are bi-directional, from the external grid to the power supply system and vice-versa. They form a key component of the 'Zero Emission Concept', according to which electromagnetic interference is virtually excluded.

## WORLDWIDE PRESENCE NEW SINGAPORE BRANCH

Murrelektronik is strengthening its presence in South East Asia. Murrelektronik's newly opened Singapore branch will bring the company closer to customers in Singapore, Thailand and Malaysia especially, but also in other countries in the region.

The local Murrelektronik team provides customer care, technical support and runs a local warehouse to reduce lead times. Logistics (warehouse and airport), packaging technology, the semiconductor industry, and oil and gas production are particularly exciting sectors for Murrelektronik in South East Asia. Nils Rosenberg, managing director of Murrelektronik Singapore remarks: "We aim to act as Murrelektronik's technology ambassador in this region and offer customers maximum availability and reliability."



## PARK AND GO

**Announcing the winner of the Murrelektronik Vespa!** In future Florian Nobis from KLAUS Multiparking, Aitrach near Memmingen, Germany, can enjoy whizzing around on his bright green Vespa, commuting to work or on trips to nearby Allgäu. His visit to Murrelektronik's booth at the SPS IPC Drives in Nürnberg was well worth it in every respect. Besides interesting information, he won the big prize! Murrelektronik Sales Manager Wolfgang Dötsch (Southern Germany Region) and sales rep Michael Zick handed the vehicle over to Florian Nobis, warmly congratulating the winner and wishing him safe journeys!

Coincidentally: KLAUS Multiparking is the leading provider of two-story and automated parking systems. The company focuses on space-saving car parking solutions and helps make it easier to find a parking place. A problem Florian Nobis is no longer likely to encounter with his Vespa...

More about KLAUS Multiparking at [www.multiparking.com](http://www.multiparking.com)

## SPRINGTIME IN A GLASS!

As winter's cold gives way to the warmth of spring celebrate the change in seasons with Murrphy's favorite green smoothie.

# MURRELEKTRONIK SMOOTHIE



- 50 g (2 oz) spinach
- 200 g (7 oz) pineapple
- 2 tbsp. almond butter
- 1 glass mineral water
- Sprinkle of nutmeg
- Sweetener, if you like

Making the smoothie is really simple! Place all of the ingredients in a blender and blend on high until fully mixed. Pour into a glass. Finish it off with some sugar to taste and sprinkle a bit of nutmeg on top. Murrphy's favorite smoothie is full of vitamins, healthy and very tasty!