Powerful and economical installation solutions for vision applications

Murrelektronik’s modular plug & play solutions allow you to get your vision system up and running quickly. The decentralized installation of Ethernet, power & IO significantly cuts planning and installation effort since control cabinets can be smaller and cable routes shortened. In use, the detailed diagnostics in our solutions reduce your equipment downtime if a fault occurs in the system.

The Next Level of Decentralization

As end users seek more modular automation equipment, we see a clear trend towards decentralized installation concepts. Components and functions are being moved from the control cabinet to the field. There will be far fewer cabinets in the future and ones that remain will be significantly smaller in size. Everyone will benefit from a reduction of cabling and costs as well as faster fault detection. At Murrelektronik, we have decades of experience designing decentralized installation concepts. Take advantage of our expertise!

On the following pages, the advantages of Murrelektronik’s solutions are demonstrated using a range of logistics applications. This same level of expertise can be applied to a variety of industries.
Each vision system component plays a critical role and the quality of connections is extremely important. In this example, a common trigger signal is sent from an external device, through a master vision sensor and across the system via a Master Breakout Box and Injection Box for precise timing.

**Guaranteed Data Performance**

With the installation of Murrelektronik’s Xelity Hybrid Switch, control cabinets are simplified and data can be managed closer to the source. X-coded M12 ports for each vision sensor (with transmission rates up to 1 Gbit/s) ensure high-resolution image processing. To accommodate daisy-chaining of our switches and to carry data back to the controller, our switches also have two X-coded M12 ports which are capable of transmission rates up to 2.5 Gbit/s. Finally, in addition to network access, each Xelity Hybrid Switch carries four 24 V circuits to power the vision sensors.

Murrelektronik’s system approach is designed with interoperability in mind. Not only does this ease your inventory management, but it allows for you to grow or evolve your system when application requirements change.
Circuit Diagram

This diagram demonstrates the paths of Ethernet, power & IO in a system using Murrelektronik’s components. Notice that the trigger and encoder signals are carried through the same power daisy-chain cable as the 24 V.
**Single camera application**

Standalone vision sensor applications, like a presentation scanner, can also benefit from a Murrelektronik power supply and a Master Breakout Box. These components are incredibly easy to install because they only require a standard AC power outlet and a PC to plug into.

For these applications, we offer a version of our Emparro67 that already has an NEC Class 2 circuit inside. The Master Breakout Box carries this power to the vision sensor as well as any corresponding IO.

**Application Examples**

- Hospital lanes
- Human packing stations
Xelity Hybrid Switch

Murrelektronik’s Xelity Hybrid Switch ensures that data communication functions flawlessly. With this module, you can connect up to four vision sensors using four X-coded M12 ports and supply them with the necessary power & IO via four A-coded M12 ports. Two additional X-coded M12 ports can be used for forwarding data to other switches, a controller or PC.

Xelity Hybrid Switch are protected by metal housings which are rated up to IP67. They are supplied with power via L-coded M12 which can be daisy-chained to other switches or modules nearby.

Robust housing
- Robust metal housing with full potting
- IP67 Rated
- Vibration and shock resistant

Plug and Play
- Four A-coded M12 ports carry 24 V as well as trigger and encoder signals for each secondary vision sensor
- NEC Class 2 circuits

Real-time data processing
- Four X-coded M12 ports (with transmission rates up to 1 Gbit/s) for direct connection to vision sensors
- Two X-coded M12 ports (with transmission rates up to 2.5 Gbit/s) for daisy-chaining of the switches and for carrying the combined data back to a controller or PC

No additional software needed
- Simple and fast configuration with the integrated web server

Maximum performance guaranteed
- Two L-coded M12 ports carry up to 16 A of power as well as trigger and encoder signals
- Multiple switches can be daisy-chained
Master Breakout Box

The single common component of every system is Murrelektronik’s Master Breakout Box. It collects and distributes a variety of signals across a system. Combining important functions in this module has several advantages: simplified cabling, fast installation, LED diagnostics and space reduction.

As its name implies, the Master Breakout Box is connected directly to a master vision sensor or a standalone vision sensor with a 12-pole cordset. This 12-pole connection brings 24 V to the vision sensor. The same connection also carries I/O and/or serial data back and forth.

In an application that uses both a Master Breakout Box and an Injection Box, the A-coded connection between the two modules carries 24 V in one direction and trigger/encoder signals in the other direction.

Below the top two ports are eight A-coded ports which are wired independently to specific pins in either of the top two ports. For example, there is capability for RS232 serial communication, auxiliary power, encoder input, trigger input, two outputs and two general purpose I/O ports.

Injection Box

Murrelektronik’s Injection Box is the starting point of every power daisy-chain in a vision system.

The trigger and encoder signals, from the Injection Box, are injected into the power daisy-chains at this module.

Up to four 24 V supplies can power the Injection Box and each line will be sent out in a power daisy-chain that carries the trigger and encoder signals along with it.

At a glance

- All of the functions of the 12-pole connection are broken out into individual ports
- Send trigger/encoder signals to an Injection Box for injection into power daisy-chains
- Plug & play with common M12s
- Dedicated status LED for each signal

At a glance

- Up to four power supplies in
- Up to four power daisy-chains, including trigger/encoder signals, out
- Dedicated status LED for each port
**NEC Class 2 Splitter**

For applications that need more access to power, Murrelektronik offers the NEC Class 2 Splitter. Most often used for powering external lights, this module has four A-coded M12 ports, which each have NEC Class 2 circuits.

The NEC Class 2 Splitter is protected by an IP67 housing and it is supplied by a familiar L-coded power daisy-chain so it can installed in the same areas as a Xelity Hybrid Switch.

From the L-coded supply, the trigger and encoder signals are removed before flowing out of the A-coded ports as 24 V and common.

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**Emparro67**

Murrelektronik’s Emparro67 power supplies are designed to endure fluctuations in environmental conditions outside of the control cabinet.

Power loss is kept to a minimum because the voltage is converted from AC to 24 V DC closer to the load.

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**At a glance**

- Supply external lights with 24 V, NEC Class 2 power
- Daisy-chain in line with Xelity Hybrid Switch through L-coded ports

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**At a glance**

- IP67 rated
- Up to 94.2 % efficient
- Integrated input fuse
- MTBF of 960,000 hours
- multiple variants available
If you want to transmit data, signals or power, we have the right solution for you. Murrelektronik’s connector program offers maximum variety and stands for first-class quality: Every single connector is 100 % tested!

Many of our connectors are available from stock or they are produced within 48 h after receipt of order – even if the order is for just one piece. Thanks to an almost limitless variety of cable types, colors and connection designs for a wide range of applications, our solutions can be configured to your requirements.

**Signals**

We offer M8 and M12 circular connectors as well as pre-assembled valve connectors with appropriate cable lengths. LEDs and protective circuits are often integrated. Practical accessories, such as adapters, T-couplers and the torque wrench (for tight connections, guaranteed), are important additions.

**Data**

Murrelektronik offers a wide variety of data cables with all of the commonly used connectors including M8, M12 and RJ45. Our shielding concept encompasses 360° protection so that data transmission cannot be impaired by electromagnetic influences.

**Power**

Murrelektronik’s power connectors bring energy to machines and systems. The M12 Power is extremely compact and powerful. The standard connection technology of the MQ15-X-Power enables rapid assembly, while the M23 is the established standard solution for connecting servo motors.

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Our Quality Promise

Murrelektronik Connectors are 100 % tested

We put our pre-assembled connectors through their paces before sending them to our customers. We perform high-voltage, cross-wire and short circuit testing on each piece. In this way, we ensure that our customers always receive first-class connectors.

We are also 100 % quality-conscious in our pre and post production processes. This starts with an incoming goods inspection, on numerous specifications, and ends with a final production inspection before the connectors ship. All of this gives us, and our customers, the knowledge that connectors from Murrelektronik work – 100 %!
Ordering information

### Modules

<table>
<thead>
<tr>
<th>Module</th>
<th>Art.-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xelity Hybrid Switch</td>
<td></td>
</tr>
<tr>
<td>Master Breakout Box</td>
<td></td>
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<tr>
<td>Injection Box</td>
<td></td>
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<tr>
<td>NEC Class 2 Splitter</td>
<td></td>
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</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Art.-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>M12 Female, Field-wireable</td>
<td>7000-P4421-00000</td>
</tr>
<tr>
<td>M12 Male, Field-wireable</td>
<td>7000-21251-00000</td>
</tr>
<tr>
<td>M12 Torque wrench</td>
<td>7000-99939-00000</td>
</tr>
<tr>
<td>Adaptor M12 Female / RJ45 Male</td>
<td>7000-51531-00000</td>
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### Plug Connectors

<table>
<thead>
<tr>
<th>Design</th>
<th>Cable type</th>
<th>Cable length</th>
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<tbody>
<tr>
<td>yyyy</td>
<td>yyyy</td>
<td>yyyy</td>
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</table>

- **M12 Power, straight Male/Female**
- **M12, straight Male/Female**
- **M12, angled Male/Female**
- **7/8", straight Male**
- **RJ45, straight Male**

### Data

<table>
<thead>
<tr>
<th>Art.-No.</th>
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<tbody>
<tr>
<td>M12, A coded, male straight / female angled</td>
<td>64 pole, shielded</td>
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<tr>
<td>M12, A coded, male straight / female straight</td>
<td>6 pole, shielded</td>
</tr>
<tr>
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<td>6 pole, shielded</td>
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### Power

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</table>

**Valid for X-coded**

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**Note:**
For more detailed specifications and ordering information, please refer to the full document or manufacturer's catalog. This summary provides a general overview of the products and their configurations available.
The information contained herein has been compiled with the utmost care.
Liability for the correctness, completeness and topicality of the information
is restricted to gross negligence.

Our company embraces social responsibility in all aspects of our business
activities. Our brochures are printed using environmentally friendly
production techniques and products.