



Vision Application Solutions

 **MURR**
ELEKTRONIK
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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.



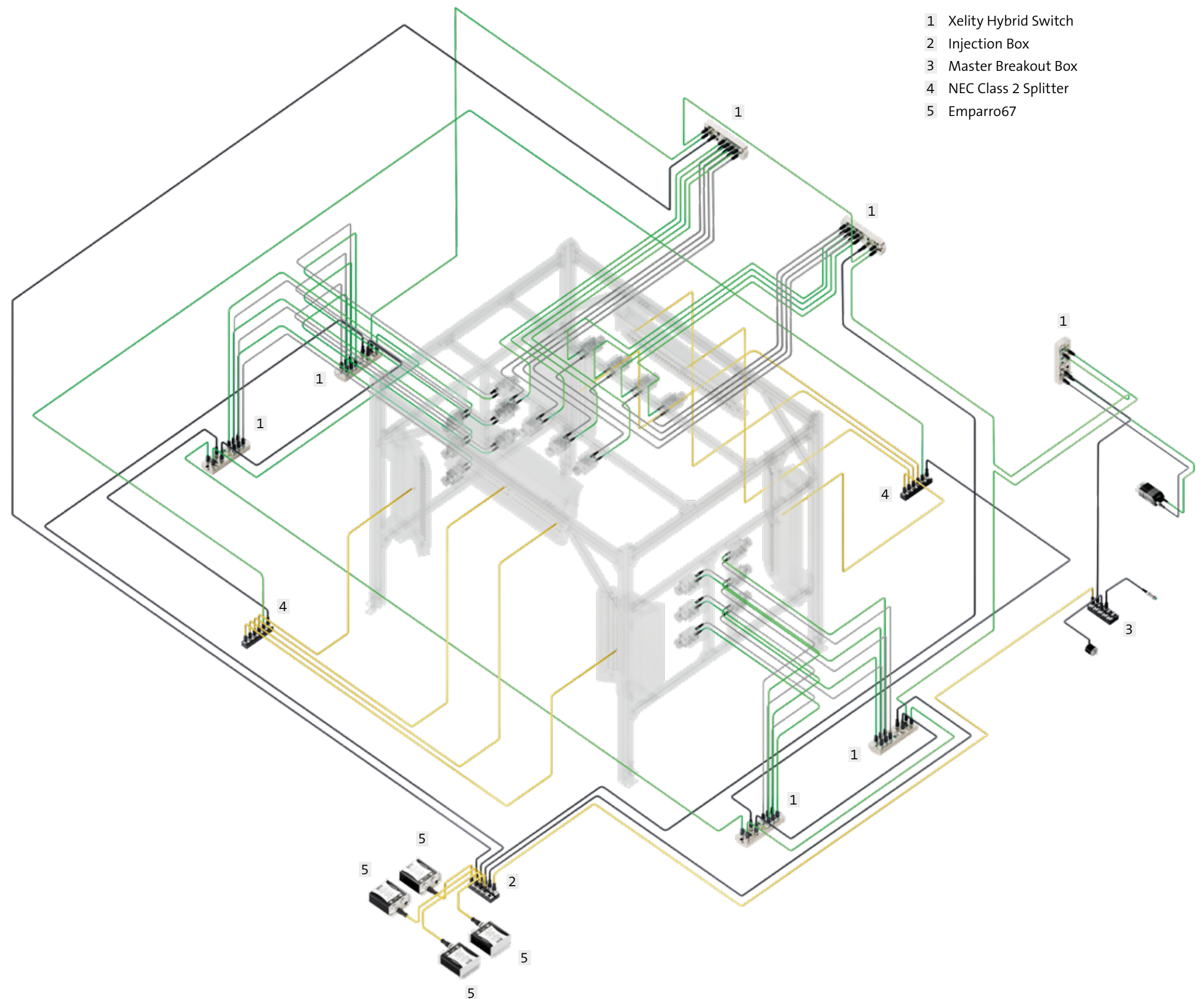
Ethernet, Power & IO Topology Example

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

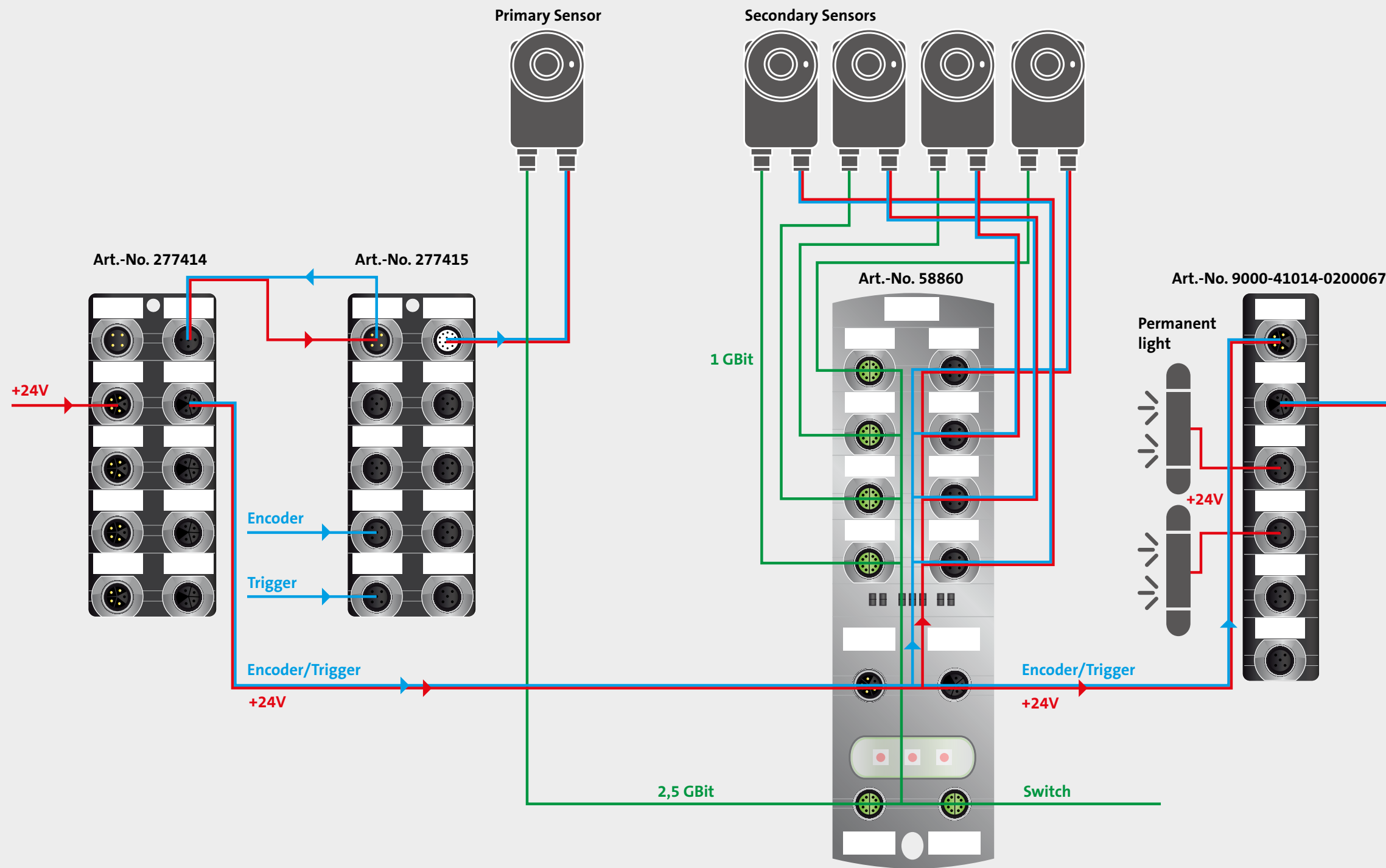
With the installation of Murrelektronik's Xelity Hybrid Switch, control cabinets are simplified and data can be managed closer to the source. X-coded M12 ports for each vision sensor (with transmission rates up to 1 Gbit/s) ensure high-resolution image processing. To accommodate daisy-chaining of our 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 24V.



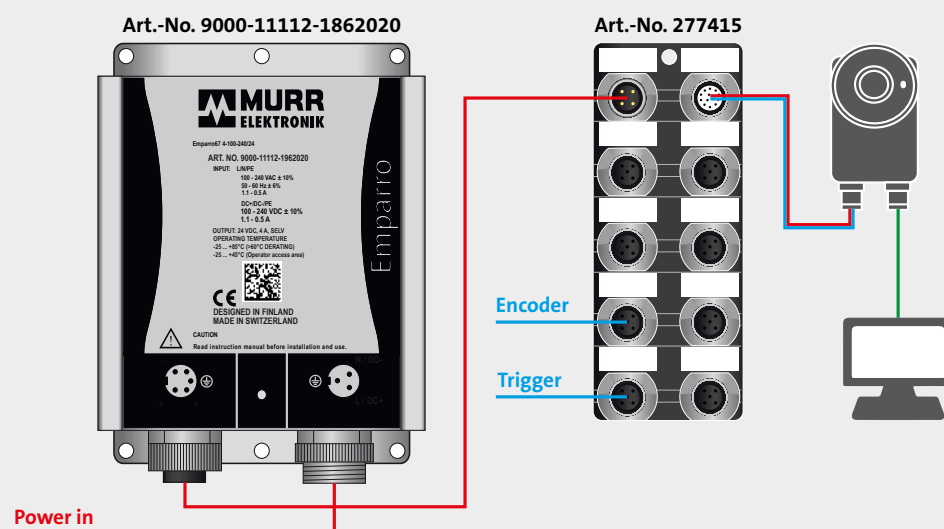
Single camera application

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.



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

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

Robust housing

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

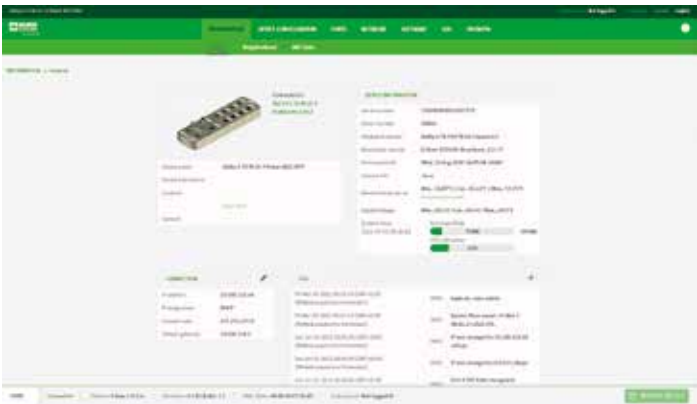


Plug and Play

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

No additional software needed

- Simple and fast configuration with the integrated web server



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.

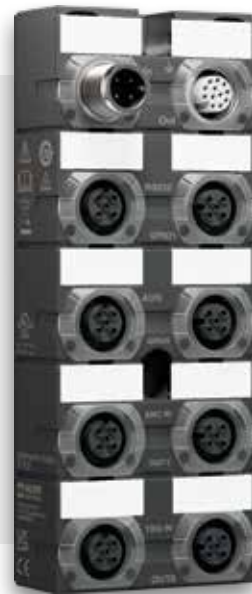
As its name implies, the Master Breakout Box is connected directly to a master vision sensor or a standalone vision sensor with a 12-pole cordset. This 12-pole connection brings 24 V to the vision sensor. The same connection also carries IO and/or serial data back and forth.

In an application that uses both a Master Breakout Box and a 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 IO ports.

At a glance

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



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

- 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.

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



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.



At a glance

- IP67 rated
- Up to 94.2 % efficient
- Integrated input fuse
- MTBF of 960,000 hours
- multiple variants available





Everything from a single source: connection technology from Murrelektronik

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.



Our Quality Promise

Murrelektronik Connectors are 100 % tested

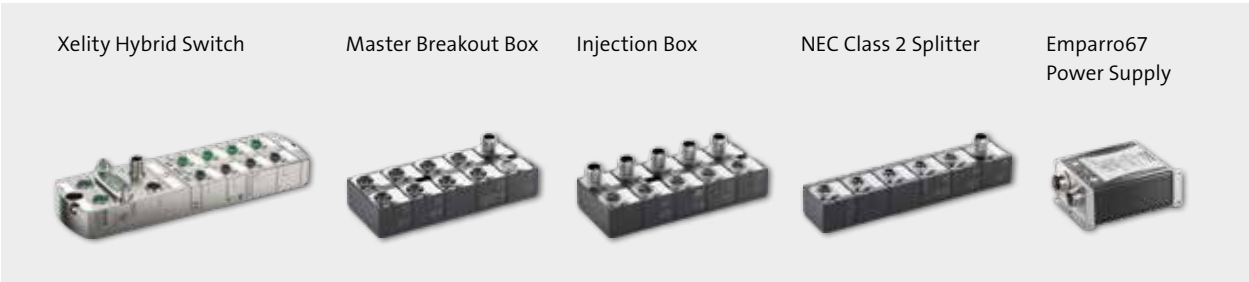
We put our pre-assembled connectors through their paces before sending them to our customers. We perform high-voltage, cross-wire and short circuit testing on each piece. In this way, we ensure that our customers always receive first-class connectors.

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



	Art.-No.
Xelity Hybrid Switch	58860
Master Breakout Box PNP	277415
Master Breakout Box NPN	277416
Injection Box	277414
NEC Class 2 Splitter	9000-41014-0200067
Emparro67 Power Supply 1-phase, 4A, 7/8" 5-pole	9000-11112-1962020
Emparro67 Power Supply 1-phase, 8A, 7/8" 5-pole	9000-11112-2062020
Emparro67 Power Supply 1-phase, 3.8A, 7/8" 4-pole, NEC Class 2	9000-11112-1862020
Emparro67 Hybrid, L-kodiert	85688

Accessories



	Art.-No.
M12, L-coded; field-wireable, female	7000-P4421-0000000
MOSA M12, X-coded; field-wireable, male	7000-21101-0000000
M12; field-wireable, male	7000-12721-0000000
M12; Torque wrench set SW 13	7000-99102-0000000
M12; Torque wrench set SW 18	7000-99099-0000000
7/8"; Torque wrench set SW 22	7000-99104-0000000
7/8"; Torque wrench set SW 24	7000-99105-0000000
Adapter M12 female, X-coded 0° / RJ45 male 0° Gigabit	7000-51531-0000000

Plug connectors

yyyy = cable length
Other cable types (material type and color) on request.

7000 –

51001

Design

790

Cable type

0300

Cable length

Cable length (yyyy): 1.5 m (0150); 3.0 m (0300); 5.0 m (0500); 7.5 m (0750); 10 m (1000) and many other lengths

Our standard

Valid for X-coded



Signals		Art.-No.
M12, A-coded; male straight / female angled	4-pole, shielded	7490-40517-290yyyy
M12, A-coded; male straight / female straight	4-pole, shielded	7490-40507-290yyyy
M12, A-coded; male straight / female straight	12-pole, shielded	7490-X0093-446yyyy

Data		Art.-No.
M12, X-coded; male straight / male straight	8-pole, shielded	7000-51001-790yyyy
M12, X-coded; male straight / male angled, 225°	8-pole, shielded	7000-51016-790yyyy
M12, X-coded; male straight / male angled, 180°	8-pole, shielded	7000-51012-790yyyy
M12, X-coded; male straight / male angled, 135°	8-pole, shielded	7000-51013-790yyyy
M12, X-coded; male straight / male angled, 315°	8-pole, shielded	7000-51014-790yyyy
M12, X-coded; male angled / male angled, 180°	8-pole, shielded	7000-51022-790yyyy
M12, X-coded; male angled, 180° / male angled, 180°	8-pole, shielded	7000-51023-790yyyy
M12, X-coded; male angled / male angled, 135°	8-pole, shielded	7000-51024-790yyyy
M12, X-coded; male angled / male angled, 315°	8-pole, shielded	7000-51025-790yyyy
M12, X-coded; male angled, 180° / RJ45, male straight	8-pole, shielded	7000-51202-790yyyy
M12, X-coded; male angled 135° / RJ45, male straight	8-pole, shielded	7000-51203-790yyyy
M12, X-coded; male angled 315° / RJ45, male straight	8-pole, shielded	7000-51204-790yyyy

Power		Art.-No.
M12 Power, L-coded; male straight / female straight	4-pole	7000-P4141-P07yyyy
M12, A-coded; male straight / female straight	4-pole	7000-40021-014yyyy
M12 Power, L-coded; female straight / 7/8", male straight	5-pole	7000-P4541-P04yyyy
M12, A-coded; female straight / 7/8", male straight	4-pole	7700-A4M02-150yyyy



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

