

Industrial automation and connectivity

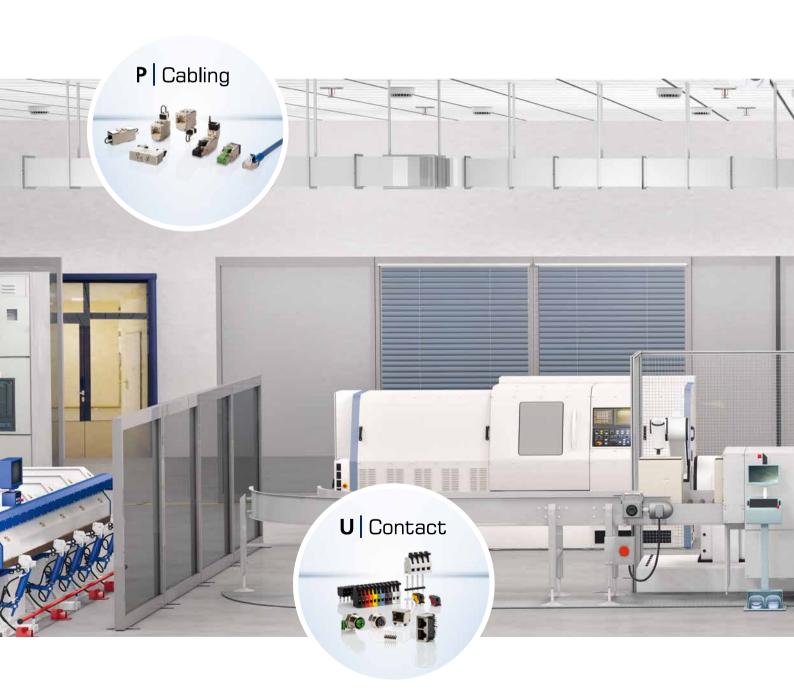
METZ CONNECT Highlights at a glance



METZ CONNECT -

YOUR partner for company-wide networking

The METZ CONNECT Group stands for high quality contact technology and connection elements in the electrotechnical and electronic area. Around the world, our products guarantee safe and reliable connections for smooth information flow – from the circuit board to the infrastructure environment.



P | Cabling

Cabling solutions for networks

Copper, fiber optic and WLAN components for structured network cabling

U Contact

Connection technology

Circuit board connection technology for connecting devices and controls in building and industrial automation

C | Logline

Intelligent system components

Intelligent system and switch cabinet components for building and process automation



Our competencies

Quality and the commitment to Germany as a production location are of utmost importance to METZ CONNECT. In addition to highly qualified specialists, the secret of success lies in a high level of vertical integration, which extends from the company's own stamping shop and plastics production to the production of operating resources and tools, as well as special machine construction and the company's own laboratory.

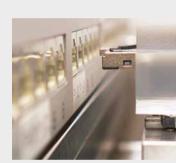
CONSULTING AND CONCEPTION



PRODUCT DEVELOPMENT



LABOR



SPECIAL MACHINE CONSTRUCTION



PLASTIC INJECTION MOLDING



METAL STAMPING





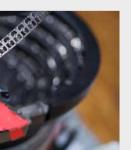
SOFTWARE + ELECTRONIC



TOOL AND MOLD MAKING



MOUNTING





FIBER OPTIC MANUFACTURE



PCB connection technology

METZ CONNECT has been successfully manufacturing and selling terminal blocks for circuit boards for decades. The portfolio includes products for signal and data streams and moderate control currents.

From a single supplier – whether developed in partnership, whether in Design-In with existing or modified products or even catalog products – you will find we have your circuit board connection technology.



Screw type terminal blocks

Screw type terminal blocks, a connection technology tested and proved millions of times, are based on a metal terminal body, which is installed in an insulator. The stripped wire is clamped and contacted directly or indirectly with a screw. An integrated wire protection or lift system protects the wire when being clamped. The screw

type terminal blocks are suitable for solid wires and stranded conductors with ferrules, and depending on the design, for connection cross-sections from 0.08 - 4 mm². Screw type terminal blocks allow two conductors to be connected in a terminal body and are characterized by good contact quality with low heating.

Individualization options

> Color

> Solder variants

> Printing

> Pin lengths



Spring clamp terminal blocks

The product range comprises terminal blocks based on a spring clamp connection. A spring clamp connection is an electrical connection, which is achieved by clamping a single stripped wire using a spring. It is suitable for sol-

id wires and stranded conductors with a nominal cross-section of 0.08-2.5 mm² and allows direct clamping without having to pretreat the wire, direct clamping with shrink splice and indirect clamping via ferrule or terminal pin.

Individualization options

> Color

> Solder variants

> Printing

> Pin lengths

Portfolio

- > Spring clamp terminal blocks
- > Ethernet terminal blocks
- > Screw type terminal blocks
- > M12

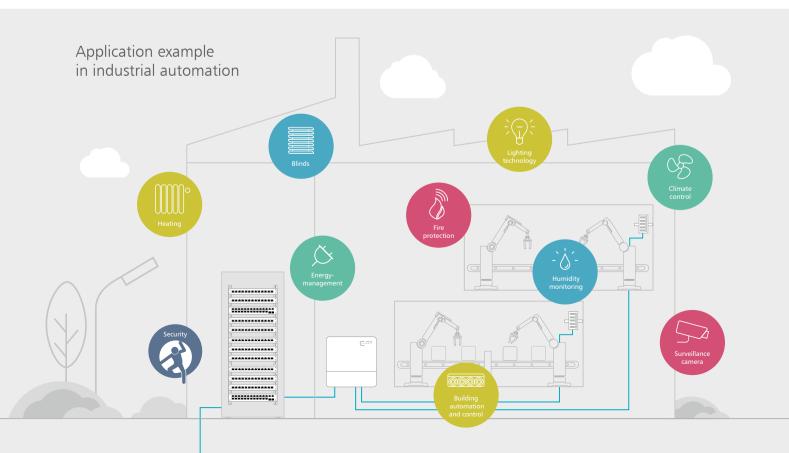
> Insulation displacement terminal blocks



PCB connection technology M12

The M12 connector is an industrial connector used in the field level and in Industrial Ethernet. It is a circular connector with metric thread, which has been developed in several variants and codings for different protection classes. Fully shielded, EMC-compliant versions are available for applications in electrically sensitive environments. Here, the contact carrier is surrounded by a metallic shielding sleeve, which is connected to the cable shield on the one hand

and to the locking screw on the other. This ensures that the shield connection is routed to the device housing via the connector. In addition, another feature is the high mechanical strength and resistance to mechanical influences and vibrations. The connectors of this product series with metric 12 mm thread are used today worldwide in the field of automation and sensor technology. They are used for the transmission of data, signals and field buses.



Ethernet terminal blocks

Circuit board terminal blocks instead of connectors are of interest for permanently installed devices that do not need a frequent plug/removable connection and are typically installed permanently in one location. Examples are sensors, lights, and

IP cameras, etc. Circuit board terminal blocks are and increasingly will be a beneficial alternative to the standard Ethernet connectors and connection technologies.

Ethernet terminal block solutions

In principle, corresponding mechanical requirements, data transfer rates, and PoE power supply are needed for different applications. There are also corresponding connectors.

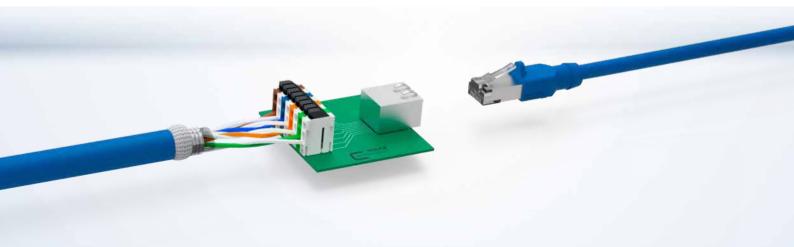
DESCRIPTION	PROPERTIES	CABLE STRUCTURE
Gigabit Ethernet	4 pairs; 8 wires; 1/10 GBit/s PoE*; PoE+*; 4PPoE* (up to 90 W); up to 100 m	
Fast Ethernet & Industrial Ethernet	2 pairs; 4 wires; 10/100 MBit/s PoE* (15,4 W); PoE+* (30 W); up to 100 m	66
SPE Single Pair Ethernet	1 pair; 2 wires; 10/100/1000 MBit/s Power over Data Line (60 W); up to 1.000 m	(88)

^{*}Switching states are to be changed for load-free systems

Benefits

- > easy handling, color coding
- > assembly-friendly, without special tools
- > pluggable or permanently soldered
- > board cover of cable cross-sections
- > different designs

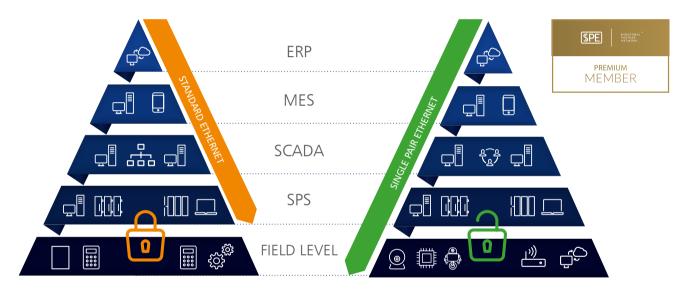
- > ideal for compact devices with tight space conditions
- > cost-effective solutions
- > fewer components
- > data transfer properties for up to 10 GBit/s Ethernet
- > single, double or four-pair Ethernet
- > PoE, PoE+, 4PPoE, PoDL and more*
- > hybrid system for Ethernet and power supply possible
- > ideal for Ethernet APL
- > SPE ready for up to 1,000 m (AWG 16)



Single Pair Ethernet – SPE

For some time now, companies like METZ CONNECT have been working with transmission and cabling technologies such as the IoT and IIoT networks of today and tomorrow. As fiber glass, 5G and WLAN transmission media become increasingly widespread, the justified question arises about what is gong to happen with twisted-pair network cabling. The good news here is that new applications are being created with Ethernet interfaces as a result of the further development of Ethernet

transmission technology and PoE power supply of up to 90 W at present. In addition, an increased need for standardized, lean transmission technology is developing, both in respect of the transmission protocol as in respect of hardware, connectors and cabling – ideally right to the field level directly to the sensors and actuators. Single Pair Ethernet (SPE), a suitable solution for this, is in the starting blocks.



Benefits of SPE

- > Universal Ethernet communication to the field level
- > Sensors and actuators become part of the IT infrastructure
- > Simpler implementation and operation
- > Reduced weight and space, up to 50 %
- > 10-times longer range, up to 1,000 m
- *Switching states are to be changed for load-free systems

- > With TSN (Time Sensitive Network(ing)), a perfect infrastructure for IoT and IIoT
- > Data and power via one medium
- > Data transfer currently up to 1 GBit/s
- > PoDL Power over Data Line with up to 50 W*

Solutions from METZ CONNECT



SPE terminal blocks



SPE connectors according to IEC 63171-1 for building automation



SPE connectors according to IEC 63171-6 for industry and process automation

Connection technology M12

The product family connection technology M12, consisting of X-, D-, and A-coded female connectors for PC boards, plugs for field assembly, cable assemblies, and panel feed through adapters for electrical cabinets, and also jacks for field assembly: M12 X-coded / D-coded with or without flange.



M12 printed circuit board jacks/inserts

The M12 connector is an industrial connector used in the field level and in Industrial Ethernet. It is a circular connector with metric thread, which has been developed in several variants and codings for different protection classes. Fully shielded, EMC-compliant versions are available for applications in electrically sensitive environments. Here, the contact carrier is surrounded by a metallic shielding sleeve, which is connected to the cable shield on the one hand, and to the locking screw on the other. This ensures the shield connection is routed to the device housing via the connector. In addition, another feature is the high mechanical strength and resistance to mechanical influences and vibrations.

> Coding: A-, D-, X-coded > Number of poles: 2, 3, 4, 5, 8



Connectors and jacks for network cabling M12

For the communication of devices in harsh environments, METZ CONNECT offers different versions of M12 circular connectors for data communication. These include M12 circular connectors with D-coding for two-pair twisted pair connections as well as X-coding for four-pair twisted pair connections. With a transmission rate of 100 MBit/s, the four-pole connector with D-coding is suitable for common data transmission rates in the field of Industrial Ethernet. For higher data transmission rates (e.g. Gigabit Ethernet), the eight-pole M12 connectors with X-coding can be used, as these ensure a data transmission rate up into the Gigabit range. The robust M12 connectors have a very high mechanical and electrical strength and are resistant to dirt and moisture (IP67) when mated. Safe and reliable contacting and error-free data transmission is guaranteed.

- > Coding: D-, X-coded
- > Type:
 - Jacks (with and without flange)
 - Connector



M12 Industrial Ethernet Connection cables, D- and X-coded

Shielded M12 Industrial Ethernet connection cables for safe and industrial data transmission in automation and fieldbus technology. Suitable data transmission in automation and fieldbus technology. Different cable types for increased mechanical stresses such as abrasion, bending, vibration, drag chain operation and torsion, in various performance classes Cat.5 (100 MBit/s), Cat.6_A (10 GBit/s) with D- and X-coded connectors.

Cable types

- > AWG 22/19 PUR 5_e
- > AWG 22/7 PUR 5_e
- > AWG 24/7 PUR 6_△
- > AWG 26/19 PUR 5_e
- > AWG 26/19 PUR 6₄
- > AWG 26/7 PUR 6_A

Interfaces

- > M12 jack
- > M12 connector
- > M12 connector angled
- > RJ45 connector
- > Free line end



M12 sensor / actuator connection cables, A-coded

M12 sensor/actuator connection cables with molded M12 A-coded connectors meet the typical requirements of the automation industry. The sensor connectors are available in different designs as well as with various numbers of poles. The diverse range of sensor connectors is supplemented with 360° shielded and unshielded variants, among others. All connection cables are available in PUR and PVC cable quality.

Cable types

- > PUR shielded / unshielded
 - 4, 5, 8 poles
- > PVC shielded / unshielded
- 4, 5, 8 poles

Interfaces

- > M12 jack
- > M12 jack angled
- > M12 connector
- > M12 connector angled
- > Free line end



You can create your line quickly and easily online via the configurator. Here you get all part numbers as well as technical information.

www.metz-connect.com/configurator-m12

IP protected solutions

For RJ45 and fiber optic connectors, METZ CONNECT offers IP protected empty housings for wall/surface mounting or as freely laid cable couplings and flanges as housing wall feed-throughs in the industrial variants V1, V4, V5, V6 and V14.



www.metz-connect.com

The technology brand **STEADYTEC**® stands for pioneering connection technology in the field of data, energy and signal transmission. Created by the industry's top three companies, it provides the foundation for reliable, user-oriented and standard-compliant solutions, both in the office as well as in the harsh environment of industry.

Pursuant to the fit-for-all principle, you simply select the required housing and the desired material! You can choose between plastic and metal. Same colour point = possible combination



MCO IP69k – protective housing for DNT outdoor applications



Digital networking | The demand for outdoor cabling solutions is growing unabated. This is due to modern network and IP interface technologies, which are essential for digitization.

These will enable the networking and deployment of surveillance cameras, sensors and digital traffic signs, as well as wireless access points.

METZ CONNECT Outdoor | Our MCO IP69k protective enclosures provide reliable protection for your permanent outdoor connections. They are not only completely dustproof and waterproof, but also resistant to ozone, UV radiation and salt water. Furthermore, they withstand high temperatures, strong vibrations

and high-pressure jet cleaning, providing reliable protection against external interference. The flexible and easy-to-install solutions have been specially designed to accommodate and protect field-assembled cables, pre-assembled patch cables and fiber optic (FO) connections.





Flexible & reliable | Our universally applicable protective housings for outdoor applications are available in three different versions, and cover all conceivable applications in practice. The three variants of the protective housings have been specially designed for free installation, as well as for wall, DIN rail, quick and pole mounting. In addition, we also offer a solution

for wall or housing feed-through. Thanks to the adapter plates included in the delivery contents, countless combinations are possible with various modules, plug-in connectors, and cable connectors, regardless of whether it is a matter of accommodating and protecting field-assembled cables or pre-assembled patch cables and fiber optic (FO) connections.

*DNT = Data Network Technology

Solutions from METZ CONNECT







The advantages



- > universally and flexibly applicable for MC module, Keystone and fiber optic components
- > completely dust- and waterproof
- > resistant against ozone, UV-radiation and salt water
- > resistant to high pressure cleaning, high temperatures and strong vibrations
- > tested according to IP69k, IP67 and IP66
- > suitable for cable sheath diameters from 4,5 to 15 mm



Industrial cable

The world of office and industrial cabling is growing ever closer together. While Ethernet as a standard for data and voice transmission used to be common only in office environments, it is now increasingly used for industrial applications as well. This is because the features and simplicity of Ethernet/IP are based on its ability to combine real-time performance with the resilience and security of conventional bus solutions. Here, however, the network encounters interference factors that can have a considerable influence on the transmission quality. Especially at the connection points, the risk of interference from vibrations, dirt and moisture is very high.

In this product area of METZ CONNECT, users can choose from a wide range of different copper and fiber optic data cables with IP67-protected connectors. Both the individual components for on-site installation and industrially manufactured copper and fiber optic patch cables are available. For 100% reliable connections in the control cabinet, floor distributor, machine distributor or Ethernet device.

Application in industry

Our high-quality cables are always used where high-speed data transmission of up to 10 GBit/s in harsh environments is required. Here, the industrial cables with IP-protected connectors show their advantages in terms of mechanical, chemical

and climatic resilience. In addition to voice and data communication, our solutions are suitable for remote power supply of various end devices via Power over Ethernet.

Fiber optic industrial cables IP67 | IP20



Copper industrial cables IP67 | IP20



Configurators

High vertical range of manufacture in the fiber optic & copper manufacturing facility

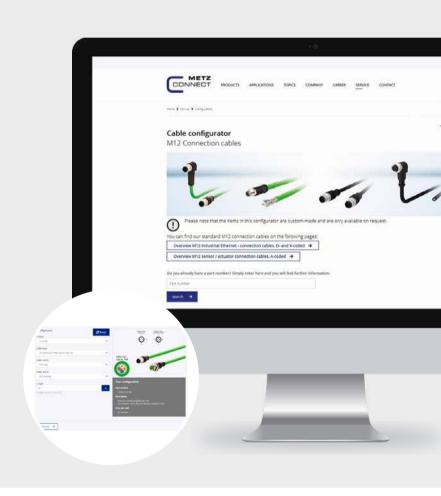
The METZ CONNECT cable configurator is always kept up to date and regularly expanded with new functions and product variants.

If your specific cable request cannot be implemented in the cable configurator, please contact us. Due to the high vertical range of manufacture of our own fiberglass factory, your special cable specifications can be individually addressed.

For further information, product information sheets are available for the cable configurator products, which describe all product specifics in great detail. This includes information on the actual structure of the pre-assembled installation cables (VIK), the different variants of our cable dividers and the corresponding part number.

In addition to mechanical data and performance values of the individual components, dimensions and packaging types are also discussed. In addition, fanout protection variants used and notes on cable fastening options are explained in detail.

Of course, the METZ CONNECT specific optical parameters such as insertion loss and return loss are also mentioned in the product information.





Other cable lengths on request, and via our cable configurator: www.metz-connect.com/configurator

Cabling solutions for networks

Highly specialized, internationally standardized and powerful network solutions in copper and fiber optic technology convince with convenient installation, maximum quality and highest system capability across all relevant performance classes.





Data network technology for the industrial environment

Highly specialized, internationally standardized, and powerful network solutions in copper and fiber optic technology impress with convenient installation, maximum quality, and the highest system capability across all relevant performance classes. They are used in structured building and industrial cabling as well as in data centers. The increasing demand for data transmission volumes requires ever greater performance and continuity of data networks. IT technologies can be found in many application areas in buildings, data centers and industrial plants.

Copper cabling

RJ45 plugs and sockets

The portfolio with RJ, USB, M12, coax and FO connectors for cabling systems offers a wide range of plugs and sockets in various performance and protection classes for copper and FO connections.

- > 10/100 MBit, 10 GBit and 25 GBit Ethernet systems
- > simple mounting without special tools
- > robust zinc diecast casing
- > suitable for PROFINET, EtherNet/IP, EtherCAT, etc., Remote Powering (PoE, PoE plus and 4PPoE) and HDBaseT, AV over IP, SAT-IP, and much more







Patch panels and patch cords

For the distribution of structured cabling, we offer patch panels, module or subracks with suitable accessories for copper and fiber optic connections in modular or compact design in different performance classes, height units with different numbers of ports.

Patch panels:

- > for copper and fiber glass connections
- > modular or compact design
- > Cat.5, 5e, 6, 6_△
- DCCS Data Center Compact Solutions for up to 48 ports in one sovereign unit

Patch cords:

- > Ethernet Cat.6_A up to 10 GBit Ethernet
- > ten colors, 0.5 m to 30 m long





Subscriber connections – Terminal casing for copper and fiber glass plug connections

- > Wall outlets
- > Surface-mounted distributors
- > Top-hat rail adapters
- > Consolidation points
- > Under-floor systems







IP67 protective casing for plugs and sockets

For RJ45 and fiber optic connectors, we offer IP-protected. Empty housings for wall/surface mounting or as a freely laid cable coupling and flanges as a housing wall bushing in the industrial variants V1, V4, V5, V6 and V14.

- > IP67 degree of protection
- > Resistant metal and plastic casing





M12

M12 circular connectors X-, D- and A-coded for Industrial Ethernet

The M12 connection technology product family consists of X-, D- and A-coded PCB sockets and inserts, field-terminable connectors, cable assemblies, and control cabinet bushings as well as field-terminable M12 X-coded / D-coded sockets with or without flange.

- > D-coded:
 - Cat.5 for 100 MBit Ethernet
 - X-coded:
 - Cat.6_A for 10 GBit Ethernet
 - A-coded:
 - Sensor actuator, connection technology
- > IP67 when plugged in
- > 360° shielding
- > Connecting two and four-pair data cables, AWG 22-26
- > Mounting without special tools
- > Very robust: vibration-proof and shock-resistant (IEC 61076-2-101/-109)
- > Board jacks, terminal and connection cables, field plugs and sockets as well as switch cabinet feed-throughs













Fiber optic cabling

Plugs, jacks and couplings for network cabling

For fiber optic transmission, we offer connection technology in different performance classes for singlemode and multimode connections in protection classes IP20 and IP67. Distributors are available in various sizes.

- > OpDAT FASTTM field assembly connector kits for SM and MM
- > OpDAT MPO/MTP® Cable assemblies
- > OpDAT REGpro
- > OpDAT Consolidation point











Industry automation

With METZ CONNECT from the field level with sensors and actuators to the data center





System components for control cabinet – applications

Technical networks and security solutions in buildings and industrial plants are becoming increasingly intelligent. They offer the possibility of integrating internal and external processes in such a way that they can be efficiently controlled and monitored. METZ CONNECT has very good solutions for this. With the C|Logline product group, METZ CONNECT offers universal, system-capable and intelligent network components for future-proof building automation, maximum protection, and optimal process control. The advantages: The powerful components shorten, for example, the installation time, reduce the energy, create transparency, or make it possible to solve several tasks with only one device.

Measuring and monitoring relays

The METZ CONNECT monitoring relays are used for the protection of man and machine as well as for the control of electrical processes depending on electrical or physical variables.

- > Current monitor for universal use
- > Phase monitor for protecting against destruction/damage to system parts
- > Phase sequence relays for monitoring the rotating field
- > Asymmetry relay for safe detection of a phase failure
- > Multifunctional three-phase monitor
- > Level relay for fill level monitoring



Interface modules

The METZ CONNECT interface modules form the separation between the logic level and the load level in control and automation technology.

- > Universally usable coupling components
- > Sensor and actuator interface modules as optocouplers, power distributors, diode modules, signal modules, threshold switches, analog data encoders, analog-digital converters and as potential separators
- > Powerful and compact, pluggable 14-pole industry relays





Time relay

A time relay is a special type of relay, with which switch-on or switch-off delays can be achieved, for example, in control and automation technology. The product spectrum offers time relays with multiple functions and adjustable time ranges, as well as relays with specific functions such as switch-on delay, switch-off delay, impulse-on delay, flashing, timing and star-and-delta relays.



Energy controlling

For energy and consumption monitoring as well as data monitoring in buildings, as well as in industrial plants and systems, Linux-based, high-performance data loggers are used. The multi-protocol capability of the data logger is made possible by the many connections and interfaces (TCP/IP, BACnet/IP, Modbus TCP, Modbus RTU, M-Bus, SO-Impulse, digital and analog inputs and outputs) and supports you, for example, in your tasks in energy management systems according to DIN EN ISO 50001 to increase energy efficiency by integrating the MSR and HVAC technology to the building management system.







Energy-Controlling

The EWIO₂-M (Ethernet Web I/O 2nd Generation Bus) is a high-M-performance data logger for recording energy and consumption, as well as data monitoring in buildings, industrial plants, and systems. The many connections and interfaces enable the multi-protocol capability of the Smart Metering Gateway. It supports you in your activities in energy management systems according to DIN EN ISO 50001 to increase energy efficiency by integrating the MSR and HVAC technology to the building management system. With the EWIO₂-M, you unify functions of energy monitoring, building and industrial automation in one device.

The system's parameterization, configuration, and commissioning are performed using an intuitive web interface with a platform-independent web browser. Different meters, such as electricity, water, gas, heat, or other media, can be connected and read out at the M-Bus and Modbus RTU interface. The integrated digital and analog inputs and outputs of the EWIO₂-M are designed to connect sensors and actuators for different tasks in building or industrial automation. Visualizations and small control tasks can be created with the integrated graphical software tool Node-RED.



- > Simple, fast cabling with jumper plug
- > Connection of expansion/function modules



> 1 x Modbus RTU interfaces for 32 subscribers



> Push buttons and LED's for manual operation and display



> Controller with ARM Cortex-A7 Dual Core Processor 1GHz, 512 MB RAM and 4 GB Flash





> Multi-I/O with 24 digital and analog inputs and outputs



> 2-port Ethernet switch with daisy chain function



- Compact design for installation in an electrical installation distributor with 45 mm cap dimension
- > Minimum space requirement in the control cabinet 125 mm width (7HP)



> integrated graphical programming/ visualization tool





> Easy to install and maintain with hardware management, electronics detachable from connection unit

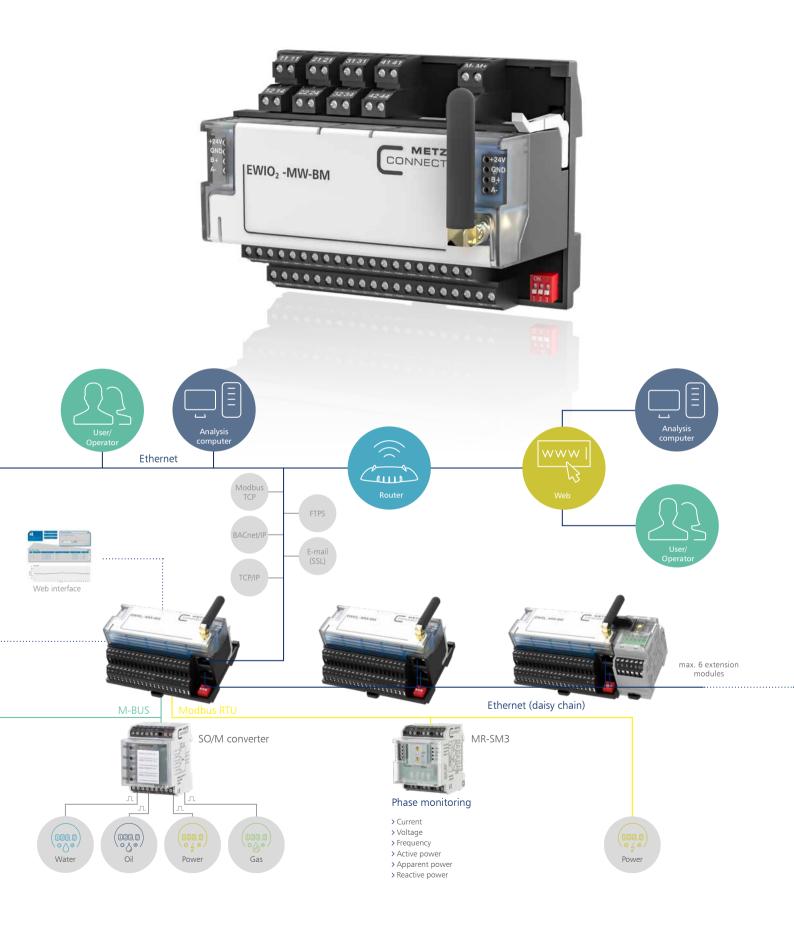


> WLAN interface for configuration and connection to a WLAN network (operating modes: Infrastructure and Ad-hoc)



- > M-BUS interface with integrated level converter for 80 M-Bus loads
- > Readout of M-Bus meters (parameterizable readout interval)





Router/Gateways

for Network Connection of Fieldbus Components

In many building automation projects, customers require a consistent connection of all automation components within the building to a structured network cabling.

Benefits of our Solution

- > Recording and analysis of data
- > Galvanic 3-way isolation (RS485 Ethernet supply)
- > Integrated web server
- > Simple configuration via web interface
- > Easy device search
- > Fast connection via jumper plug technology
- > Connection of 32 slaves per line max.
- > Ethernet available everywhere in the building
- > Virtually no restrictions on line lengths
- > Technology and manufacturer-independent use





Modbus Gateway MR-GW

Fieldbus components, such as temperature sensors or measuring, usually have a Modbus RTU interface, which are integrated into the automation level by means of a Modbus TCP controller. The use of a controller is over-dimensioned in many application cases and complex programming, and expensive hardware. The optimal solution is the use of a Modbus gateway. With its function as a protocol converter, the Modbus gateway enables

easy integration of Modbus RTU replica into a Modbus TCP network. The METZ CONNECT Modbus Gateway MR-GW helps to integrate Modbus RTU devices into a Modbus TCP network and provides a very easy and cost effective way to communicate Modbus TCP clients with one or more Modbus RTU replica.

BACnet IP-Router

The BMT-RTR is a compact multi-network router that provides routing between BACnet/IP, BACnet Ethernet and BACnet MS/TP networks. 32 BACnet MS/TP devices can be operated on the router, allowing BACnet objects to be transferred between the BACnet/IP and BACnet MS/TP networks at will. The BMT-RTR router can be operated as BACnet/IP to BACnet MS/TP or BACnet Ethernet (ISO 8802-3) to BACnet MS/TP router.

The BACnet router can be accessed in an IP network via the integrated web server. Device configuration and parameterization of the two interfaces (Ethernet /RS485) is done via the user-friendly web interface or the software tool "MC-Search Utility". In addition, the router has a recording tool for troubleshooting and analysis of the transmitted data.



BACnet IP-Router

We look forward to meeting you!







We realize ideas

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