Measuring & monitoring systems
Solutions for smart machines, factories & grids

Version 2025

Weidmüller

Measuring & monitoring systems

Hardware	Introduction	
	Energy Meter	
	Energy Analyser	
	Energy Logger	
	Current transformer	
	A comprehensive automation portfolio	
Software	Energy management software	
	A comprehensive software portfolio	
Applications	Applications in practice	
Appendix	**Service and support**	
	Index	Index Type / Index Order No. Addresses worldwide

Hardware

Energy Meter – BasicLine
Page B.2

- Measurement of the basic electrical signals of an AC system
- Direct current measurement up to 100 A
- IEC 62053-21

Energy Meter – ValueLine
Page B.14

- Detailed measurement of energy consumption
- Voltage, current, power and energy visible at a glance
- High scalability

Energy Analyser
Page C.2

- Integrated residual current monitoring
- Measurement according to common standards EN 50160, IEEE 519 or IEC 61000-2-4
- DIN rail devices for basic requirements

Energy Logger
Page D.2

- Integrated temperature measurement
- Integrated Modbus interface
- Data memory up to 32 MB

Current Transformers
Page E.2

- Galvanically isolate primary and secondary circuit from each other
- Measuring in different measuring environments

Rogowski-Coil
Page E.20

- Universal measuring and monitoring solution
- Easy configuration & status request
- DIN mounting possible

Comprehensive automation portfolio

u-remote – I/O Systeme IP20
Page F.6

- Modular I/O system
- Protection class IP20
- Various modules & fieldbus couplers

u-control – Controls and edge devices
Page F.20

- **M3000 / M4000:** Multicore technology for independent installation of multiple run-time systems
- M3000 with two CPU cores & M4000 with 4 CPU cores
- **u-control WL2000:** Web-based // HTML5, dual-core CPU, 512 MB RAM, with integrated software

IoT-Gateways
Page F.28

- Flexible IoT integration
- Many PLC protocols are supported

u-view – Touch Panels
Page F.32

- Resitive & Multi-Touch
- Sizes 4.3“, 7“ and 10.1“ available
- Different case types / different designs

Software

ecoExplorer go
Page G.4

- Collect and display measurement data
- Simple commissioning
- Quick insight for efficient energy management

ResMa®
Page G.6

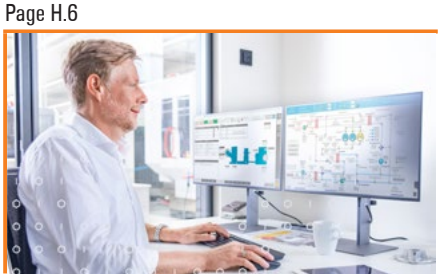
- ResMa® Basic
  Analyze data – Plan optimizations
- ResMa® Packages
  ResMa® Energy
  ResMa® Production
  ResMa®Regression Analysis
  ResMa® Recipe Management
  ResMa® Import

Comprehensive software portfolio

PROCON-WEB Embedded Systems
Page H.2

- Portable and easily configurable HMI and IIoT solution
- High performance with low resource requirements
- Compatible with devices featuring OPC-UA server, Modbus interface, Codesys PLCs, and u-OS PLCs
- Dynamic web interface

PROCON-WEB SCADA
Page H.6



- Easy creation of modern user interfaces
- Dynamic web interface
- User and rights management
- Ideal for control systems or complex digitalization tasks

Data analysis and automated machine learning
Page H.10

- ModelBuilder
  From Data to Model

u-link
Page H.16

- Secure remote access and remote diagnostics
- Condition monitoring and status reporting
- Individual system management
- Low configuration effort

Service and support

Service connects – worldwide
Page V.2

- Service connects – worldwide
- Engineering services and customised products
- easyConnect – Your Industrial Service Platform
- Support Center
- Additional support services
- Weidmüller Configurator

Digital ordering options
Page V.10

Purchasing made easy:
- Weidmüller eShop
- OCI interface
- EDI interface

Introduction

Introduction	Industrial IoT with measuring and monitoring systems	A.2
	Total Energy Monitoring	A.4
	Efficient solutions for the energy transition	A.6

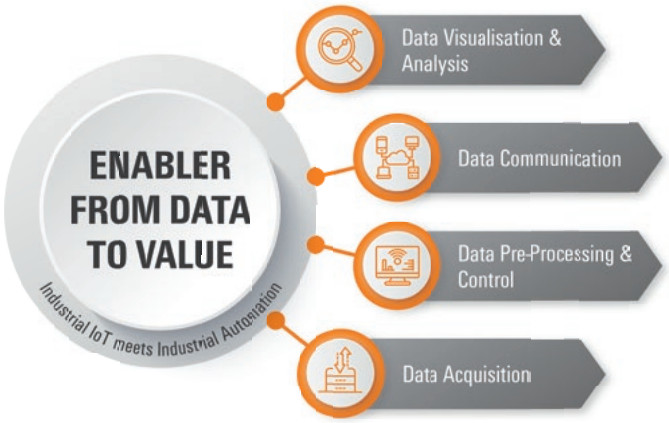
Industrial IoT with measuring and monitoring systems

The way to Industrial IoT does not have to be complicated. No matter whether access to valuable data is required or if new, data-related services are to be generated, Weidmüller offers components and services for easy access to the Industrial IoT.

With the comprehensive, future-oriented and coordinated IoT-capable portfolio, the path to the Industrial IoT can be a successful one – „enabler from data to value" – both for greenfield and brownfield applications. The solutions from the areas of data acquisition, data pre-processing and data communication form the infrastructure on which the logical linking and evaluation of the collected information – the data analysis – is based.
One thing is clear: digitalisation is not an end in itself. The added value is exploited in the specific use case, whether this is the collection of process data, energy management, ensuring availability with condition monitoring or deploying service technicians more efficiently thanks to remote maintenance. And last but not least, new business models can be created by using artificial intelligence without having to be a data scientist – Weidmüller is designing the digital transformation both with and for the user: it's simple and efficient.

Industrial Internet of Things (IIoT) is increasingly permeating the production

- **Interconnection of 15 billion communication-capable machines**
- **Components of the advancing automation and digitalization process**
- **Predictive Maintenance and Energy Monitoring**



Industrial IoT, Data Acquisition & Energy Management
Product Portfolio

Holistic Offering for Industrial Data Acquisition

Software Solutions
- ResMa® – Resource Manager
- u-create visu / PROCON WEB

Data Analysis & Business Logic

Communication
- IoT Gateway
- PROCON-CONNECT

Data Communication

Automation
- u-control and I/O modules
- HMI
- Engineering tools

Data Preprocessing

Measurement
- Energy Meter and Analyser
- Transformers
- Rogowski System

Data Acquisition

Engineering & Services

Services
- Measuring concepts
- Application engineering
- Data services

Target Applications

Industrial IoT with measuring and monitoring systems

Energy Monitoring & Management	• Manufacturing companies that want to improve energy efficiency (ISO 50001 – EN 16247-1) • Customers with trouble in grid quality as well as electromagnetic compatibility • Improvement of plant availability by measuring residual currents
Factory Data Acquisition	• Companies that want to improve and monitor their production (processes) as well as their manufacturing environment • Customers with need of condition monitoring or live visualization of production • Automation and integration of different silo applications from different suppliers
Machine Data Acquisition	• Machine builders that want to monitor their machines in the field • Machine integrators willing to improve their maintenance contract and offer new services for their end customers • Data acquisition of different machine types with various PLCs

Maximum energy efficiency and plant availability

Tap new potential with Total Energy Monitoring

Total Energy Monitoring is Weidmüller's holistic modular system for measuring and monitoring the power supply network. Entire manufacturing energy networks can be continuously monitored and analysed in detail – even remotely.

Effectively maximise energy efficiency and plant availability

Climate change and dwindling resources are global megatrends that are increasingly influencing corporate action. It also holds true that if you reduce energy costs, you increase profitability. In addition, high plant availability is playing an increasingly prominent role for ensuring efficient production processes. These factors require a specific package of measurements that is individually tailored for each company.

With Total Energy Monitoring, Weidmüller has developed an equally comprehensive and flexible product range for individual solutions: hardware, software and consultancy services are tailored to fulfil the purpose of the customer-specific Energy Management solution. The concept supports also the international ISO 50001 directive and makes projects easier to plan and realise.

Seamless portfolio for plants of all sizes

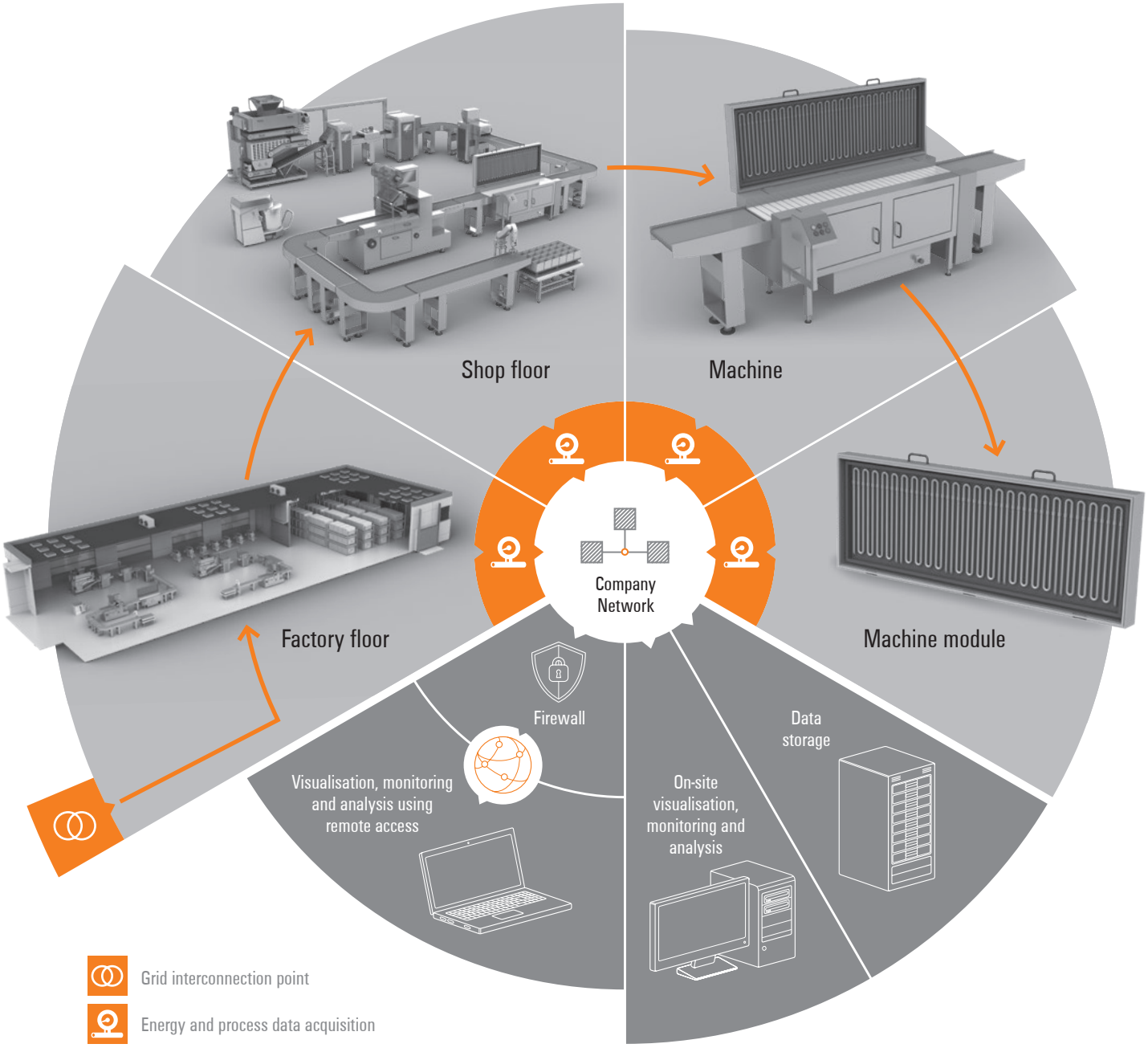
Achieve full transparency of your manufacturing energy consumption. Manufacturing energy networks can be fully monitored and analysed from the interconnection point and sub-distribution all the way down to the individual machine modules. You gain a better understanding of the process and more control over your energy costs and machine processes.

The Weidmüller solution supports this optimisation process with software and hardware components which can be used flexibly. They are highly compatible, even when used in collaboration with already installed energy measurement systems and can be easily adjusted to individual application requirements. In short, you can always rely on a seamless production portfolio with optimum quality for all levels of production. The improved availability and efficiency of your entire plant will quickly become noticeable.

GERMAN INNOVATION AWARD '18 WINNER

Expertise and awards

Weidmüller has a long tradition of energy efficiency. During the time between receiving our first award, the ASU Environmental Prize in 1990, and the German Innovation Award in 2018, we have enjoyed decades of pioneering work and development. An outstanding example of accurate energy monitoring is our production location in Detmold, which was awarded the title of a climate protection company in 2013. Implemented with our proprietary components, the hardware in combination with the specialised software provides the best prerequisites for successful energy monitoring.



Total Energy Monitoring for all four levels of production

The Total Energy Monitoring concept ensures consistency from interconnection points in the factory, down the production lines and individual machines and into the heart of the machine processes.

The solution allows you to monitor current and energy measurement data as well as other process data relevant for energy monitoring within your entire concept, such as flow rates, temperatures or pressures. Transferring the measurement data to a central data server allows for immediate access and prompt evaluation using the ResMa® software.

In addition the flexible remote maintenance solution u-link is available which provides the ability to communicate from remote into the machine module level.

Pioneering energy solutions
Efficient solutions for the energy transition

Smart Industrial Connectivity: Electrification, automation, digitalisation, electrical connectivity, electromobility and renewable energies - markets in which Weidmüller is at home. Throughout its 170-year history, Weidmüller has been a pioneer in innovative products, supporting and promoting technological and social change. Sustainability is taking on an increasingly relevant role in this context. We support the change with our products and solutions for the energy transition. This applies in particular to our high-performance components for energy measurement and energy monitoring systems.

Power generation

Wind energy

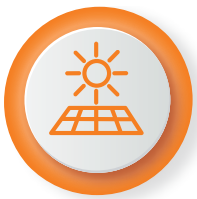
Maximum performance and availability of wind turbines

With many years of industry experience, Weidmüller is the expert for condition monitoring, digitalisation, lighting and connectivity for the wind industry. In addition to control cabinet components, we offer solutions for condition monitoring of rotor blades and screw connections, complete LED systems for the tower, nacelle and hub, as well as customised housing solutions. Further information can be found on our website **www.weidmueller.com/wind**

Photovoltaics

Efficient installation and operation of photovoltaics

Weidmüller offers a wide range of combiner boxes, monitoring solutions and components for ground-mounted photovoltaic systems and rooftop systems to meet your individual requirements: Benefit from our many years of experience in the photovoltaic industry, the know-how of our experts and our global network. Further information can be found on our website **www.weidmueller.com/pv-solutions**



Power transmission and energy storage

Energy storage systems

Solutions and products for battery energy storage systems (BESS))

The storage of renewable energy contributes significantly to the optimal use of this future-oriented energy source. With our industrial connectivity and digitalisation solutions, we offer an extensive range of solutions for energy storage systems. Be it for battery management, power back-up, connectivity or Ethernet communication. Further information can be found on our website **www.weidmueller.com/energy-storage**

Hydrogen

Unleash the power of hydrogen with us

From energy production to storage to consumption: the production and efficient use of hydrogen is a multi-layered process requiring the close interlinking and coordination of a large number of technical components. As a specialist in Smart Industrial Connectivity, Weidmüller supports its customers around the world with products, solutions and services. We offer specific solutions to support the expansion of the hydrogen industry, including our condition monitoring system for electrolyser stacks. Further information can be found on our website **www.weidmueller.com/hydrogen**

DC Microgrids

The use of direct current technology in industrial plants makes an important contribution to the energy transition and will become the new standard in the years to come. This is because a DC-based microgrid achieves not only a much higher level of energy efficiency, but also greater grid quality and security of supply. As a pioneer in the research and development of DC technology, we already offer an extensive range of DC ready solutions and components. Further information can be found on our website **www.weidmueller.com/dc-microgrids**

Energy utilisation

e-mobility

Charge for the change: Charging infrastructure for a sustainable future

Electric vehicles play a key role in the energy transition. Weidmüller offers practical solutions for the implementation of charging infrastructure for the private and commercial sector. Our AC SMART wallbox family allows easy, app-controlled charging and can be connected to inverters and backend systems. Our SMARTcharge load management system prevents peak loads when there are several charging points. Our charging cables, accessories and components complete our portfolio for a simple electrical installation. Further information can be found on our website **www.weidmueller.com/e-mobility**

Energy Meter

Energy Meter	Introduction BasicLine	B.2
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	Selection table	B.16
	Energy Meter – ValueLine	B.18

Accurate, reliable and cost-effective energy measurement

Universal meters with direct display in a modern design

BasicLine is the measuring device portfolio for the cost-effective acquisition of basic electrical parameters in low-voltage power networks.

The devices will measure and display all the fundamental electrical parameters in a LCD. The portfolio includes devices for one- or three-phase measurement. It is mounted on a DIN rail or in the front panel. Several current measurement versions are available: either for 1A/5A current transformers or for direct current measurement up to 100A. Depending on the version, the measuring devices have an integrated Ethernet or RS485 interface.

Your special advantages:

- Simple and reliable measurement of the basic electrical parameters of an AC system.
- In addition to measurement via current transformers, direct current measurement up to 100A is also possible.
- Bi-directional measurement for kW and kWh.
- Complies to the requirement of class 1 active energy measurement and conforms to IEC 62053-21 standards.

MID certified

Simple and reliable measurement
Simple and reliable measurement of the basic electrical parameters of an AC system.

Direct measurement up to 100A
In addition to measurement via 1A/ 5A current transformers, direct current measurement up to 100A is also possible.

Bi-directional measuring for kW and kWh
Bi-directional energy meter for energy and power measurement.

Precise and reliable consumption measurement

Our certified MID counters for billing

Discover our high-quality energy meters with MID approval! The MID is a European directive that defines specific requirements for measuring instruments. It guarantees the accuracy and reliability of measurements – especially for electricity, gas and water. Our MID-compliant instruments fulfil the highest quality standards and are ideal for reliable billing. Trust in the clear rules of the MID and choose our tested energy meters!

Additional features of MID-certified energy meters:

- Measuring instruments with MID approval fulfil the legal requirements for use in the billing of energy consumption. This offers legal security for both the operator of the measuring instruments and the end consumer.
- Measuring devices with MID certification meet high quality standards. They provide reliable measurement results and create trust among users.
- The MID creates clear rules for the European market. Manufacturers and consumers benefit from uniform guidelines.Vorgaben.

DC-Microgrids

DC current for sustainable applications with DC infrastructure

Climate change, carbon neutrality and electromobility are topics not only affect us not only in our private lives, but also as Weidmüller.

DC current is used in solar systems, for energy storage in batteries, for charging electric cars and other applications. Many challenges also arise from a production perspective.
In this regard, DC technology is seen as having great potential for the future. The focus here lies, in particular, on the use of DC voltage to supply energy to industrial plants, for example to optimise energy efficiency in production, but also to ensure grid quality and security of supply – an important step towards climate-neutral production.

Our solutions also include DC energy counters for measuring DC current and DC current consumption.

For further information, technical specifications or additional services, please visit our website:
www.weidmueller.com/dc-microgrids

Potentials of industrial DC power distribution

Energy efficiency
Lower conversion and transport losses, use of recuperation, direct use of renewable energy sources as well as peak power reduction through the use of suitable storage systems.

Grid stability
No need for additional investments for grid filtering and compensation, support for existing grids and prevention and reduction of production losses due to grid disturbances.

Resource efficiency
Reduction of copper consumption for cables and lower equipment costs and space savings through the elimination of power electronics.

Industrial smart DC grid
Infrastructure for intelligent control of energy flows, offering advantages in energy purchasing and support for modular machine concepts.

Selection table





Type	EM110-RTU-2P	EM111-RTU-2P	EM120-RTU-2P	EM122-RTU-2P	EM220-RTU-4DI2DO
Order No.	7760051002	7760051001	7760051004	7760051003	7760051005
Type of mounting	DIN rail	DIN rail	DIN rail	DIN rail	Front panel mounting
Display	LCD	LCD	LCD	LCD	LCD round diagram
MID approvals	–	–	–	–	–
Technical Characteristics					
Measuring range, Voltage L-N, AC (without transducer)	176...276 V	176...276 V	138...276 V	138...276 V	50...345 V
Measuring range, Voltage L-L, AC (without transducer)			240...480 V	240...480 V	50...600 V
Overvoltage category	CAT II	CAT II	CAT III	CAT III	CAT III
Power supply voltage	176...276 V	176...276 V	85...275 V AC	138...276 V	75...270 V
Two wire	•	•	–	–	–
Three wire	–	–	•	•	•
Four wire	–	–	•	•	•
Measurement accuracy for active energy (kWh, .../5 A)	Class 1	Class 1	Class 0.5	Class 1	Class 0.5
Measuring accuracy for voltage	0.20%	0.20%	0.20%	0.20%	0.20%
Measuring accuracy for current	0.25%	0.20%	0.25%	0.25%	0.25%
Number of digital inputs	–	–	–	–	4
Number of digital outputs	–	–	–	–	2
Number of pulse outputs	2	2	2	2	
Current measurement channel	1	1	3	3	3
Measurement of current without current transformers	–	up to 45 A	–	up to 100 A	–
Interfaces					
RS485	•	•	•	•	•
Protocols					
Modbus RTU	•	•	•	•	•
Modbus-Gateway	–	–	–	–	–

EM220-RTU-4DI2DO-GW	EM111-RTU-2P-MID	EM120-RTU-2P-MID	EM122-RTU-2P-MID
7760051006	3099190000	3099200000	3099210000
Front panel mounting	DIN rail	DIN rail	DIN rail
LCD round diagram	LCD	LCD	LCD
-	MID	MID	MID
50...345 V	176...276 V	138...276 V	138...276 V
50...600 V		240...480 V	240...480 V
CAT III	CAT II	CAT III	CAT III
75...270 V	176...276 V	85...275 V AC	138...276 V
-	•	-	-
•	-	•	•
•	-	•	•
Class 0.5	Class 1	Class 0.5	Class 1
0.20%	0.20%	0.20%	0.20%
0.25%	0.20%	0.25%	0.25%
4	-	-	-
2	-	-	-
	2	2	2
3	1	3	3
-	up to 45 A	-	up to 100 A
•	•	•	•
•	•	•	•
•	-	-	-

Energy meters for DIN rail mounting

EM110-RTU-2P

EM111-RTU-2P

Technical data

	EM110-RTU-2P	EM111-RTU-2P
Measurement range, voltage L-N, AC	176...276 V	176...276 V
Measurement range, voltage L-L, AC		
Surge voltage category	II	II
Voltage supply		
Three-wire system	No	No
Four-wire system	No	No
Measuring accuracy for voltage	0.5 %	0.5 %
Measuring accuracy for current	0.5 %	0.5 %
Measurement accuracy for active energy (kWh, /5 A)	Class 1 (IEC 62053-21), Class B (EN 50470-3)	Class 1 (IEC 62053-21), Class B (EN 50470-3)
Number of digital inputs	0	0
Number of digital outputs	0	0
Number of pulse outputs	2	2
Current-measuring channels	1	1
Max. current	5000 A	45 A
Interface	RS485	RS485
Protocol	Modbus RTU	Modbus RTU
Note		

Ordering data

	Type	Qty.	Order No.
Note	EM110-RTU-2P	1	**7760051002**

Type	Qty.	Order No.
EM111-RTU-2P	1	**7760051001**

Energy meters for DIN rail mounting

EM120-RTU-2P

EM122-RTU-2P

Technical data

	EM120-RTU-2P	EM122-RTU-2P
Measurement range, voltage L-N, AC	138...276 V	176...276 V
Measurement range, voltage L-L, AC	240...480 V	240...480 V
Surge voltage category	III	III
Voltage supply	85...275 V AC	
Three-wire system	Yes	Yes
Four-wire system	Yes	Yes
Measuring accuracy for voltage	0.5 %	0.5 %
Measuring accuracy for current	0.5 %	0.5 %
Measurement accuracy for active energy (kWh, /5 A)	Class 0.5	Class 0.5
Number of digital inputs	0	0
Number of digital outputs	0	0
Number of pulse outputs	2	2
Current-measuring channels	3	3
Max. current	5000 A	100 A
Interface	RS485	RS485
Protocol	Modbus RTU	Modbus RTU
Note		

Ordering data

Type	Qty.	Order No.
EM120-RTU-2P	1	7760051004

Note

Type	Qty.	Order No.
EM122-RTU-2P	1	7760051003

Energy meters for front panel mounting

EM220-RTU-4DI2DO

EM220-RTU-4DI2DO-GW

Technical data

Measurement range, voltage L-N, AC	50...345 V	50...345 V
Measurement range, voltage L-L, AC	50...600 V	50...600 V
Surge voltage category	III	III
Voltage supply	75...270 V AC, 100...380 V DC	75...270 V AC, 100...380 V DC
Three-wire system	Yes	Yes
Four-wire system	Yes	Yes
Measuring accuracy for voltage	0.5 %	0.5 %
Measuring accuracy for current	0.5 %	0.5 %
Measurement accuracy for active energy (kWh, /5 A)	Class 0.5S (IEC 62053-22), Class 0.5 (IEC 61557-12)	Class 0.5S (IEC 62053-22), Class 0.5 (IEC 61557-12)
Number of digital inputs	4	4
Number of digital outputs	2	2
Number of pulse outputs		
Current-measuring channels	3	3
Interface	RS485	RS485, Ethernet
Protocol	Modbus RTU	Modbus RTU, Modbus/TCP (Port 502), Modbus-Gateway
Note		

Ordering data

	Type	Qty.	Order No.
	EM220-RTU-4DI2DO	1	**7760051005**
Note			

	Type	Qty.	Order No.
	EM220-RTU-4DI2DO-GW	1	**7760051006**

Accessories

	Qty.	Order No.
EM220 BRACKET	1	**3068970000**

	Qty.	Order No.
EM220 BRACKET	1	**3068970000**

Note

Energy meters MID

EM111-RTU-2P-MID

EM120-RTU-2P-MID

Technical data

Measurement range, voltage L-N, AC	176...276 V	3 x 230 V
Measurement range, voltage L-L, AC		400 V
Surge voltage category		III
Voltage supply		
Three-wire system	No	Yes
Four-wire system	No	Yes
Measuring accuracy for voltage	0.5 %	0.5 %
Measuring accuracy for current	0.5 %	0.5 %
Measurement accuracy for active energy (kWh, /5 A)		
Number of digital inputs	0	0
Number of digital outputs	0	0
Number of pulse outputs	2	2
Current-measuring channels	1	3
Max. current	45 A	5000 A
Interface	RS485	RS485
Protocol	Modbus RTU	Modbus RTU
Note		

Ordering data

Type	**Qty.**	**Order No.**	
EM111-RTU-2P-MID	1	**3099190000**	
Note			

Type	**Qty.**	**Order No.**
EM120-RTU-2P-MID	1	**3099200000**

Energy meters MID

EM122-RTU-2P-MID

Technical data

Measurement range, voltage L-N, AC	3 x 230 V
Measurement range, voltage L-L, AC	400 V
Surge voltage category	III
Voltage supply	
Three-wire system	Yes
Four-wire system	Yes
Measuring accuracy for voltage	0.5 %
Measuring accuracy for current	0.5 %
Measurement accuracy for active energy (kWh, /5 A)	
Number of digital inputs	0
Number of digital outputs	0
Number of pulse outputs	2
Current-measuring channels	3
Max. current	100 A
Interface	RS485
Protocol	Modbus RTU
Note	

Ordering data

Type	**Qty.**	**Order No.**
EM122-RTU-2P-MID	1	**3099210000**

Note

Measuring energy consumption of production plants in detail

Weidmüller energy measuring devices make energy efficiency transparent

Energy networks of industrial plants are complex. Our ValueLine energy meters make it possible to divide them into manageable areas for convenient analysis of consumption and other energy parameters. Many companies want to conserve energy sources, use energy more efficiently and maximize the availability of energy networks.

This not only shows a sense of responsibility but is also recommended for economic reasons. Weidmüller energy measuring devices can do much more than just measure the consumption of electrical energy. Among other things, they are also suitable for determining basic parameters for energy quality or for analyzing the currents of all conductors individually and differentially - like our Energy Meter 750.

This gives you a quick overview of how the electrical energy in your production facility is doing. This applies both in terms of efficient use as well as quality, stability and availability.

But not every measuring device is suitable for every application. You can select the adequate measuring device for each of your plant components from our comprehensive, modular device portfolio.

Measurement data at a glance
In devices with integrated display, the essential measurement data such as voltage, current, power and energy can be conveniently read off immediately

High scalability
Thanks to the extensive range of energy measuring devices, you can divide the energy networks of your production sites as precisely as you like and carry out detailed measurements per area

Selection table

Type	EM D370-CBM	EM D650	EM 520		EM 535	
			24	230	24	230
Order No.	2540830000	2425490000	2500860000	2500880000	3008100000	3008130000
Type of mounting	DIN rail	DIN rail	Front panel mounting		Front panel mounting	
Display	LCD	LCD	LCD		LCD	
Technical Characteristics						
Measuring range, Voltage L-N, AC (without transducer)	277 V	277 V	277 V		277 V	
Measuring range, Voltage L-L, AC (without transducer)	480 V	480 V	480 V		480 V	
Overvoltage category	300 V CAT III	300 V CAT III	300 V CAT III		300 V CAT III	
Power supply voltage	-	95 - 240 V AC; 135 - 340 V DC	24 - 90 V AC; 24 - 90 V DC	90 - 277 V AC; 90 - 250 V DC	24 - 90 V AC; 24 - 90 V DC	90 - 277 V AC; 90 - 250 V DC
Three wire	-	•	•		•	
Four wire	•	•	•		•	
Sampling frequency 50/60 Hz	5.4 kHz	20 kHz	21.33 / 25.6 kHz		21.33 / 25.6 kH	
Measurement points per second	5.400	20.000	21.330 / 25.600		21.330 / 25.600	
Measurement results per second	5	5	5		5	
Measuring accuracy for voltage	0.20%	0.20%	0.20%		0.20%	
Measuring accuracy for current	0.20%	0.25%	0.20%		0.20%	
Number of digital inputs	-	2	-		-	
Number of digital outputs	-	2	2		-	
Number of pulse outputs	-	2	2		-	
Current measurement channel	3	4	3		3	
Temperature input	-	1	-		-	
Memory size	4 MB Flash	4 MB Flash	-		-	
Number of memory values	160 k	156 k	-		-	
Interfaces						
RS232	-	•	-		-	
RS485	•	•	•		-	
USB	-	-	-		-	
Profibus DP	-	-	-		-	
Ethernet	-	-	-		•	
Webserver / E-Mail	-	-	-		-	
Protocols						
Modbus RTU	•	•	•		-	
Modbus-Gateway	-	-	-		-	
Profibus DP V0	-	-	-		-	
Modbus TCP/IP, Modbus RTU over Ethernet, SNMP	-	-	-		•	
BACnet (optional)	-	-	-		-	
Profinet	-	-	-		-	




	EM 610		EM 610 PB		EM 750		EM 700 PN	
	24	230	24	230	24	230	24	230
	2540920000	2540850000	2540860000	2540870000	2540900000	2540910000	2500870000	2500890000
	Front panel mounting		Front panel mounting		Front panel mounting		Front panel mounting	
	LCD		LCD		LCD			
	277 V		277 V		277 V		277 V	
	480 V		480 V		480 V		480 V	
	300 V CAT III		300 V CAT III		300 V CAT III		300 V CAT III	
	24 – 90 V AC; 24 – 90 V DC	90 – 277 V AC; 90 – 250 V DC	24 – 90 V AC; 24 – 90 V DC	90 – 277 V AC; 90 – 250 V DC	24 – 90 V AC; 24 – 90 V DC	90 – 277 V AC; 90 – 250 V DC	24 – 90 V AC; 24 – 90 V DC	90 – 277 V AC; 90 – 250 V DC
	•		•		•		•	
	•		•		•		•	
	21.33 / 25.6 kHz		21.33 / 25.6 kHz		21.33 / 25.6 kHz		21.33 / 25.6 kHz	
	21.330 / 25.600		21.330 / 25.600		21.330 / 25.600		21.330 / 25.600	
	5		5		5		5	
	0.20%		0.20%		0.20%		0.20%	
	0.20%		0.20%		0.20%		0.20%	
	4		4		3		3	
	6		6		5		5	
	6		6		5		5	
	4		4		4+2		4+2	
	–		–		2		2	
	256 MB		256 MB		256 MB		–	
	10.000 k		10.000 k		10.000 k		–	
	–		–		–		–	
	•		•		•		•	
	•		•		–		–	
	–		•		–		–	
	–		–		•		•	
	–		–		• / •		• / –	
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	–		–		•		•	
	–		–		•		–	
	–		–		–		•	

Energy meters for DIN rail mounting

Energy Meter 370-CBM

Technical data

Measurement range, voltage L-N, AC	277 V
Measurement range, voltage L-L, AC	480 V
Surge voltage category	300 V CAT III
Voltage supply	
Three-wire system	No
Four-wire system	Yes
Quadrants	4
Sampling frequency 50/60 Hz	5.4 kHz
Continuous measurements	Yes
Effective value from the period (50/60 Hz)	10 / 12
Measurement result per second	5 ms
Residual current measuring	No
Harmonics, per order / voltage	1.-25., odd
Harmonics, per order / current	1.-25., odd
Unbalanced	No
Positive, negative and zero system	Yes
Measuring accuracy for voltage	0.2 %
Measuring accuracy for current	0.2 %
Measurement accuracy for active energy (kWh, /5 A)	Class 0.5S
Number of digital inputs	0
Number of digital outputs	0
Number of pulse outputs	
Current-measuring channels	3
Temperature input	No
Memory; minimum and maximum values	Yes
Memory size	4 MB
Interface	RS485: 9,6 – 115,2 kbps
Protocol	Modbus RTU
Note	

Ordering data

Type	Qty.	Order No.
ENERGY METER D370-CBM	1	**2540830000**

Note

Energy meters for front panel mounting

Energy Meter 520-24

Energy Meter 520-230

Technical data

	Energy Meter 520-24	Energy Meter 520-230
Measurement range, voltage L-N, AC	277 V	277 V
Measurement range, voltage L-L, AC	480 V	480 V
Surge voltage category	300 V CAT III	300 V CAT III
Voltage supply	24 - 90 V AC (50/60 Hz), 24 - 90 V DC	90 - 277 V AC (50/60 Hz), 90 - 250 V DC
Three-wire system	Yes	Yes
Four-wire system	Yes	Yes
Quadrants	4	4
Sampling frequency 50/60 Hz	25.6 kHz	25.6 kHz
Continuous measurements	Yes	Yes
Effective value from the period (50/60 Hz)	10 / 12	10 / 12
Measurement result per second	5 ms	5 ms
Residual current measuring	No	No
Harmonics, per order / voltage	1.-40.	1.-40.
Harmonics, per order / current	1.-40.	1.-40.
Unbalanced	No	No
Positive, negative and zero system	Yes	Yes
Measuring accuracy for voltage	0.2 %	0.2 %
Measuring accuracy for current	0.2 %	0.2 %
Measurement accuracy for active energy (kWh, /5 A)	Class 0.5S	Class 0.5S
Number of digital inputs	0	0
Number of digital outputs	2	2
Number of pulse outputs	2	2
Current-measuring channels	3	3
Temperature input	No	No
Memory; minimum and maximum values	Yes	Yes
Memory size		
Interface	RS485: 9,6 – 115,2 kbps	RS485: 9,6 – 115,2 kbps
Protocol	Modbus RTU	Modbus RTU
Note		

Ordering data

	Type	Qty.	Order No.
	ENERGY METER 520-24	1	**2500860000**
Note			

	Type	Qty.	Order No.
	ENERGY METER 520-230	1	**2500880000**

Accessories

	Qty.	Order No.
DIN rail adapters		
Seal		
Fixing clamps		
ENERGY METER BRACKET S2	1	**2433070000**
ENERGY METER SEAL L96-2	1	**2495610000**
ENERGY METER FIXING SET	1	**2433030000**

	Qty.	Order No.
ENERGY METER BRACKET S2	1	**2433070000**
ENERGY METER SEAL L96-2	1	**2495610000**
ENERGY METER FIXING SET	1	**2433030000**

Note

Energy meters for front panel mounting

Energy Meter 535-24

Energy Meter 535-230

Technical data

	Energy Meter 535-24	Energy Meter 535-230
Measurement range, voltage L-N, AC	277 V	277 V
Measurement range, voltage L-L, AC	480 V	480 V
Surge voltage category	300 V CAT III	300 V CAT III
Voltage supply	24 - 90 V DC, 24 - 90 V AC (50/60 Hz)	90 - 277 V AC (50/60 Hz), 90 - 250 V DC
Three-wire system	Yes	Yes
Four-wire system	Yes	Yes
Quadrants	4	4
Sampling frequency 50/60 Hz	25.6 kHz	25.6 kHz
Continuous measurements	Yes	Yes
Effective value from the period (50/60 Hz)	10 / 12	10 / 12
Measurement result per second	5 ms	5 ms
Residual current measuring	No	No
Harmonics, per order / voltage	1.-40.	1.-40.
Harmonics, per order / current	1.-40.	1.-40.
Unbalanced	No	No
Positive, negative and zero system	Yes	Yes
Measuring accuracy for voltage	0.2 %	0.2 %
Measuring accuracy for current	0.2 %	0.2 %
Measurement accuracy for active energy (kWh, /5 A)	Class 0.5S	Class 0.5S
Number of digital inputs	0	0
Number of digital outputs	0	0
Number of pulse outputs		
Current-measuring channels	3	3
Temperature input	No	No
Memory; minimum and maximum values	Yes	Yes
Memory size		
Interface	Ethernet	Ethernet
Protocol	Modbus/TCP, Modbus RTU over Ethernet	Modbus RTU over Ethernet, Modbus/TCP
Note		

Ordering data

	Type	Qty.	Order No.
Note	ENERGY METER 535-24	1	**3008100000**

	Type	Qty.	Order No.
	ENERGY METER 535-230	1	**3008130000**

Accessories

	Qty.	Order No.
DIN rail adapters	ENERGY METER BRACKET L1	1	**2433060000**
Seal	ENERGY METER SEAL L96-2	1	**2495610000**
Fixing clamps	ENERGY METER FIXING SET	1	**2433030000**

	Qty.	Order No.
ENERGY METER BRACKET L1	1	**2433060000**
ENERGY METER SEAL L96-2	1	**2495610000**
ENERGY METER FIXING SET	1	**2433030000**

Note

Energy meters for front panel mounting

Energy Meter 610-24

Energy Meter 610-230

Technical data

	Energy Meter 610-24	Energy Meter 610-230
Measurement range, voltage L-N, AC	277 V	277 V
Measurement range, voltage L-L, AC	480 V	480 V
Surge voltage category	300 V CAT III	300 V CAT III
Voltage supply	24 - 90 V AC (50/60 Hz), 24 - 90 V DC	90 - 277 V AC (50/60 Hz), 90 - 250 V DC
Three-wire system	Yes	Yes
Four-wire system	Yes	Yes
Quadrants	4	4
Sampling frequency 50/60 Hz	25.6 kHz	25.6 kHz
Continuous measurements	Yes	Yes
Effective value from the period (50/60 Hz)	10 / 12	10 / 12
Measurement result per second	5 ms	5 ms
Residual current measuring	No	No
Harmonics, per order / voltage	1.-40.	1.-40.
Harmonics, per order / current	1.-40.	1.-40.
Unbalanced	No	No
Positive, negative and zero system	Yes	Yes
Measuring accuracy for voltage	0.2 %	0.2 %
Measuring accuracy for current	0.2 %	0.2 %
Measurement accuracy for active energy (kWh, /5 A)	Class 0.5S	Class 0.5S
Number of digital inputs	4	4
Number of digital outputs	6	6
Number of pulse outputs	6	6
Current-measuring channels	4	4
Temperature input	No	No
Memory; minimum and maximum values	Yes	Yes
Memory size	256 MB	256 MB
Interface	RS485: 9,6 – 115,2 kbps, USB	RS485: 9,6 – 115,2 kbps, USB
Protocol	Modbus RTU	Modbus RTU
Note		

Ordering data

	Type	Qty.	Order No.
	ENERGY METER 610-24	1	**2540920000**
Note			

	Type	Qty.	Order No.
	ENERGY METER 610-230	1	**2540850000**

Accessories

		Qty.	Order No.
DIN rail adapters	ENERGY METER BRACKET L1	1	**2433060000**
Seal	ENERGY METER SEAL L96-2	1	**2495610000**
Fixing clamps	ENERGY METER FIXING SET	1	**2433030000**

	Qty.	Order No.
ENERGY METER BRACKET L1	1	**2433060000**
ENERGY METER SEAL L96-2	1	**2495610000**
ENERGY METER FIXING SET	1	**2433030000**

Note

Energy meters for front panel mounting

Energy Meter 610 PB-24

Energy Meter 610 PB-230

Technical data

Measurement range, voltage L-N, AC	277 V	277 V
Measurement range, voltage L-L, AC	480 V	480 V
Surge voltage category	300 V CAT III	300 V CAT III
Voltage supply	24 - 90 V AC (50/60 Hz), 24 - 90 V DC	90 - 277 V AC (50/60 Hz), 90 - 250 V DC
Three-wire system	Yes	Yes
Four-wire system	Yes	Yes
Quadrants	4	4
Sampling frequency 50/60 Hz	25.6 kHz	25.6 kHz
Continuous measurements	Yes	Yes
Effective value from the period (50/60 Hz)	10 / 12	10 / 12
Measurement result per second	5 ms	5 ms
Residual current measuring	No	No
Harmonics, per order / voltage	1.-40.	1.-40.
Harmonics, per order / current	1.-40.	1.-40.
Unbalanced	No	No
Positive, negative and zero system	Yes	Yes
Measuring accuracy for voltage	0.2 %	0.2 %
Measuring accuracy for current	0.2 %	0.2 %
Measurement accuracy for active energy (kWh, /5 A)	Class 0.5S	Class 0.5S
Number of digital inputs	4	4
Number of digital outputs	6	6
Number of pulse outputs	6	6
Current-measuring channels	4	4
Temperature input	No	No
Memory; minimum and maximum values	Yes	Yes
Memory size	256 MB	256 MB
Interface	RS485: 9,6 – 115,2 kbps, Profibus DP, USB	RS485: 9,6 – 115,2 kbps, Profibus DP, USB
Protocol	Modbus RTU, Profibus DP V0	Modbus RTU, Profibus DP V0
Note		

Ordering data

Type	Qty.	Order No.
ENERGY METER 610-PB-24	1	**2540860000**

Note

Type	Qty.	Order No.
ENERGY METER 610-PB-230	1	**2540870000**

Accessories

	Qty.	Order No.
DIN rail adapters		
ENERGY METER BRACKET L1	1	**2433060000**
Seal		
ENERGY METER SEAL L96-2	1	**2495610000**
Fixing clamps		
ENERGY METER FIXING SET	1	**2433030000**

	Qty.	Order No.
ENERGY METER BRACKET L1	1	**2433060000**
ENERGY METER SEAL L96-2	1	**2495610000**
ENERGY METER FIXING SET	1	**2433030000**

Note

Energy meters for front panel mounting

Energy Meter 700 PN-24

Energy Meter 700 PN-230

Technical data

	Energy Meter 700 PN-24	Energy Meter 700 PN-230
Measurement range, voltage L-N, AC	277 V	277 V
Measurement range, voltage L-L, AC	480 V	480 V
Surge voltage category	300 V CAT III	300 V CAT III
Voltage supply	24 - 90 V AC (50/60 Hz), 24 - 90 V DC	90 - 277 V AC (50/60 Hz), 90 - 250 V DC
Three-wire system	Yes	Yes
Four-wire system	Yes	Yes
Quadrants	4	4
Sampling frequency 50/60 Hz	25.6 kHz	25.6 kHz
Continuous measurements	Yes	Yes
Effective value from the period (50/60 Hz)	10 / 12	10 / 12
Measurement result per second	5 ms	5 ms
Residual current measuring	Yes	Yes
Harmonics, per order / voltage	1.-40.	1.-40.
Harmonics, per order / current	1.-40.	1.-40.
Unbalanced	No	No
Positive, negative and zero system	Yes	Yes
Measuring accuracy for voltage	0.2 %	0.2 %
Measuring accuracy for current	0.2 %	0.2 %
Measurement accuracy for active energy (kWh, /5 A)	Class 0.5S	Class 0.5S
Number of digital inputs	3	3
Number of digital outputs	5	5
Number of pulse outputs	5	5
Current-measuring channels	4 + 2	4 + 2
Temperature input	Yes	Yes
Memory; minimum and maximum values	Yes	Yes
Memory size		
Interface	RS485: 9,6 – 115,2 kbps, Ethernet, Web server	RS485: 9,6 – 115,2 kbps, Ethernet, Web server
Protocol	PROFINET, Modbus RTU, Modbus TCP/IP, Modbus RTU over Ethernet, SNMP	PROFINET, Modbus RTU, Modbus TCP/IP, Modbus RTU over Ethernet, SNMP
Note		

Ordering data

Type	Qty.	Order No.
ENERGY METER 700-PN-24	1	**2500870000**

Note

Type	Qty.	Order No.
ENERGY METER 700-PN-230	1	**2500890000**

Accessories

	Qty.	Order No.
DIN rail adapters		
ENERGY METER BRACKET L1	1	**2433060000**
Seal		
ENERGY METER SEAL L96-2	1	**2495610000**
Fixing clamps		
ENERGY METER FIXING SET	1	**2433030000**

	Qty.	Order No.
ENERGY METER BRACKET L1	1	**2433060000**
ENERGY METER SEAL L96-2	1	**2495610000**
ENERGY METER FIXING SET	1	**2433030000**

Note

Energy meters for front panel mounting

Energy Meter 750-24

Energy Meter 750-230

Technical data

	Energy Meter 750-24	Energy Meter 750-230
Measurement range, voltage L-N, AC	277 V	277 V
Measurement range, voltage L-L, AC	480 V	480 V
Surge voltage category	300 V CAT III	300 V CAT III
Voltage supply	24 - 90 V AC (50/60 Hz), 24 - 90 V DC	90 - 277 V AC (50/60 Hz), 90 - 250 V DC
Three-wire system	Yes	Yes
Four-wire system	Yes	Yes
Quadrants	4	4
Sampling frequency 50/60 Hz	25.6 kHz	25.6 kHz
Continuous measurements	Yes	Yes
Effective value from the period (50/60 Hz)	10 / 12	10 / 12
Measurement result per second	5 ms	5 ms
Residual current measuring	Yes	Yes
Harmonics, per order / voltage	1.-40.	1.-40.
Harmonics, per order / current	1.-40.	1.-40.
Unbalanced	No	No
Positive, negative and zero system	Yes	Yes
Measuring accuracy for voltage	0.2 %	0.2 %
Measuring accuracy for current	0.2 %	0.2 %
Measurement accuracy for active energy (kWh, /5 A)	Class 0.5S	Class 0.5S
Number of digital inputs	3	3
Number of digital outputs	5	5
Number of pulse outputs	5	5
Current-measuring channels	4 + 2	4 + 2
Temperature input	Yes	Yes
Memory; minimum and maximum values	Yes	Yes
Memory size	256 MB	256 MB
Interface	RS485: 9,6 – 115,2 kbps, Ethernet, Web server/e-mail	RS485: 9,6 – 115,2 kbps, Ethernet, Web server/e-mail
Protocol	Modbus RTU, Modbus-Gateway, Modbus TCP/IP, Modbus RTU over Ethernet, SNMP, BACnet (optional)	Modbus RTU, Modbus-Gateway, Modbus TCP/IP, Modbus RTU over Ethernet, SNMP, BACnet (optional)
Note		

Ordering data

Type	Qty.	Order No.
ENERGY METER 750-24	1	**2540900000**

Note

Type	Qty.	Order No.
ENERGY METER 750-230	1	**2540910000**

Accessories

	Qty.	Order No.
DIN rail adapters		
ENERGY METER BRACKET L1	1	**2433060000**
Seal		
ENERGY METER SEAL L96-2	1	**2495610000**
Fixing clamps		
ENERGY METER FIXING SET	1	**2433030000**

	Qty.	Order No.
ENERGY METER BRACKET L1	1	**2433060000**
ENERGY METER SEAL L96-2	1	**2495610000**
ENERGY METER FIXING SET	1	**2433030000**

Note

Energy Analyser

Energy Analyser	Introduction	C.2
	Selection table	C.4
	Energieanalysegeräte	C.5

Holistic analysis of the quality of electrical supply networks

Energy analyser for transparency and improved plant availability

Integrated monitoring of residual current
The built-in residual current measurement highlights creeping increases in residual current before fuses or residual current detectors switch off the section of the system. This maximizes operating times.

Large, clear display
The large QVGA colour display on the device clearly visualises all measurement parameters and allows convenient adjustment of the system parameters.

Top-hat rail devices for simple requirements
For less comprehensive measurements, we offer the Energy Analyser D550, a very small device for installation on standard DIN rails.

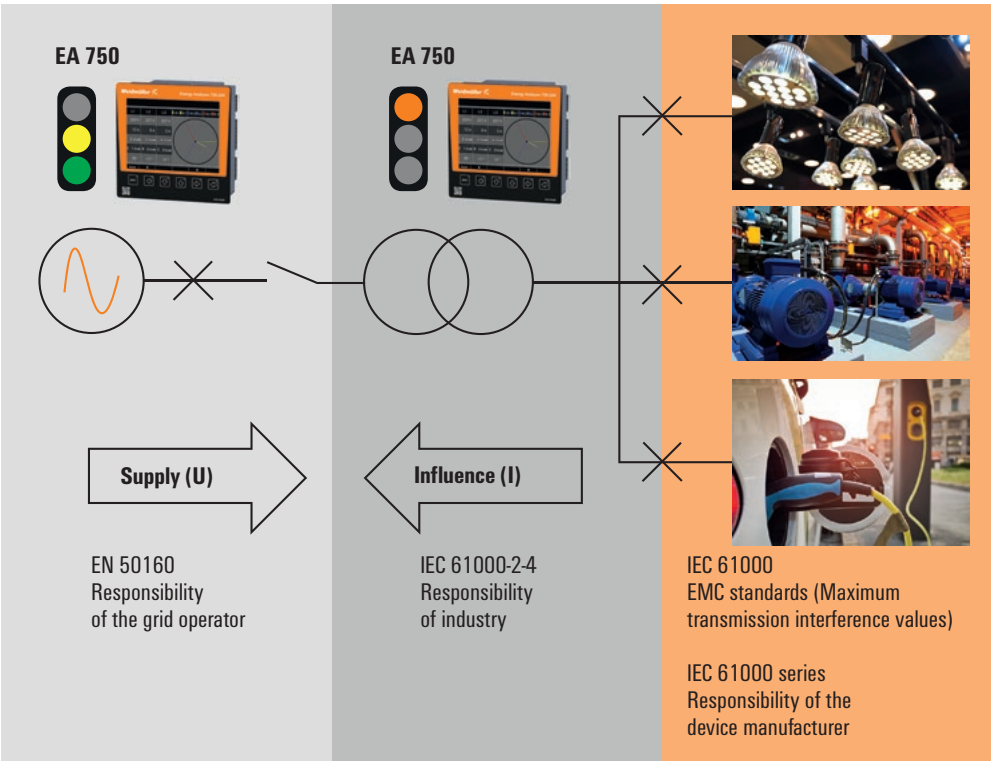
The quality of the electrical network is an important parameter for the effectiveness and availability of industrial plants and production facilities. The Energy Analyser 750 is the first step towards increased added value and is particularly suitable for monitoring power quality according to common standards such as EN 50160, IEEE 519 or IEC 61000-2-4.

An increasing number of non-linear consumers and plant components are being used in production facilities. They have an impact on, for example, network frequency, phase shift and the amplitude of phases. This influences the quality of the electrical energy and thus the uptime of the plant. The new Energy Analyser 750 measures all quality parameters of the electrical supply network, from the symmetry to transients and many other parameters besides.

With the Energy Analyser 750, you can carry out comprehensive checks on the quality of the electrical energy in your production facility and initiate optimization steps to maximize the effectiveness and availability of your plant. Important events can be recorded as required.

Continuously monitoring voltage quality

Standard-compliant measurements with the Energy Analyser 750



Power quality – standards and guidelines

Within Europe, EN 50160 is the standard for describing the quality of an electrical power supply. The standard mainly describes the characteristics of the supply voltage at the point of supply to the customer in public low and medium voltage networks under normal operating conditions. EN 50160 applies to the grid voltage, i.e. the voltage measured at the point of connection with the grid. A voltage distortion in the public grid distorts the voltage in the industrial grid, and should therefore be monitored continuously.

The IEC 61000-2-4 standard defines numerical thresholds for industrial and non-public electricity distribution systems with nominal voltages of up to 35 kV. The IEC 61000-2-4 standard should apply to the quality of the voltage at the point of supply to the consumer. That is why it serves as the basis for many product and machinery design standards.

It defines the immunity levels for voltage distortions that machinery and systems in industrial enterprises need to be able to withstand.
If the level is exceeded, this may result in outages that the machinery or system supplier is not liable for. Monitoring in accordance with IEC 61000-2-4 is therefore advisable. New standards such as EN 50600-2-2 for electrical systems in data processing centres also require voltage quality in accordance with EN 50160 and IEC 61000-2-4.

The Energy Analyser 750 facilitates the comprehensive monitoring of specific parameters of voltage quality, and supports compliance with all required standards.

Selection table

Type	EA D550		EA 550		EA 750	
	24	230	24	230	24	230
Order No.	2425510000	2489780000	2602580000	2425500000	2534160000	2534130000
Type of mounting	DIN rail		Front panel mounting		Front panel mounting	
Display	LCD		Graphic		Colour graphic	
Technical Characteristics						
Measuring range, Voltage L-N, AC (without transducer)	277 V		417 V		347 V	
Measuring range, Voltage L-L, AC (without transducer)	480 V		720 V (3 wire 600 V)		600 V	
Overvoltage category	300 V CAT III		600 V CAT III		600 V CAT III	
Power supply voltage	20 - 50 V AC; 20 - 70 V DC	95 - 240 V AC; 135 - 340 V DC	48 - 110 V AC, 24 - 150 V DC	95 - 240 V AC; 80 - 300 V DC	48 - 110 V AC; 24 - 150 V DC	95 - 240 V AC; 80 - 300 V DC
Three wire	•		•		•	
Four wire	•		•		•	
Sampling frequency 50/60 Hz	20 kHz		20 kHz		25.6 kHz	
Measurement points per second	20,000		20,000		25,600	
Measurement results per second	5		5		5	
Measuring accuracy for voltage	0.20 %		0.10 %		0.10 %	
Measuring accuracy for current	0.25 %		0.20 %		0.10 %	
Number of digital inputs	2		2		2	
Number of digital outputs	2		2		2	
Number of pulse outputs	2		2		2	
Current measurement channel	4		4+2		4+2	
Temperature input	1		1		1	
Memory size	128 MB		256 MB		256 MB	
Number of memory values	5.000 k		10.000 k		10.000 k	
Interfaces						
RS232	•		-		-	
RS485	•		•		•	
Profibus DP	-		•		•	
M-Bus	-				-	
Ethernet	•		•		•	
Webserver / E-Mail	• / •		• / •		• / •	
Protocols						
Modbus RTU	•		•		•	
Modbus-Gateway	•		•		•	
Profibus DP V0	-		•		•	
Modbus TCP/IP, Modbus RTU over Ethernet, SNMP	•		•		•	
BACnet (optional)	•		•		•	

Energy analysis instruments

Energy Analyser D550-24

Energy Analyser D550-230

Technical data

	Energy Analyser D550-24	Energy Analyser D550-230
Measurement range, voltage L-N, AC	277 V	277 V
Measurement range, voltage L-L, AC	480 V	480 V
Surge voltage category	300 V CAT III	300 V CAT III
Voltage supply	20 ... 50 V AC ±10%, 20 ... 70 V DC ±10%	95 - 240 V AC, 135 - 340 V DC
Three-wire system	Yes	Yes
Four-wire system	Yes	Yes
Quadrants	4	4
Sampling frequency 50/60 Hz	20 kHz	20 kHz
Continuous measurements	Yes	Yes
Effective value from the period (50/60 Hz)	10 / 12	10 / 12
Measurement result per second	5 ms	5 ms
Residual current measuring	No	No
Harmonics, per order / voltage	1.-40.	1.-40.
Harmonics, per order / current	1.-40.	1.-40.
Unbalanced	Yes	Yes
Positive, negative and zero system	Yes	Yes
Measuring accuracy for voltage	0.2 %	0.2 %
Measuring accuracy for current	0.25 %	0.25 %
Measurement accuracy for active energy (kWh, /5 A)	Class 0.5S	Class 0.5S
Number of digital inputs	2	2
Number of digital outputs	2	2
Number of pulse outputs	2	2
Current-measuring channels	4	4
Temperature input	Yes	Yes
Memory; minimum and maximum values	Yes	Yes
Memory size	128 MB	128 MB
Interface	RS232: 9.6 – 115.2 kbps, RS485: 9.6 – 921.6 kbps, Ethernet, Web server/e-mail	RS232: 9.6 – 115.2 kbps, RS485: 9.6 – 921.6 kbps, Ethernet, Web server/e-mail
Protocol	Modbus RTU, Modbus-Gateway, Modbus TCP/IP, Modbus RTU over Ethernet, SNMP, BACnet (optional)	Modbus RTU, Modbus-Gateway, Modbus TCP/IP, Modbus RTU over Ethernet, SNMP, BACnet (optional)
Note		

Ordering data

Type	Qty.	Order No.
ENERGY ANALYSER D550-24	1	**2489780000**

Note

Type	Qty.	Order No.
ENERGY ANALYSER D550	1	**2425510000**

Accessories

Type	Qty.	Order No.

Type	Qty.	Order No.

Note

Energy analysis instruments

Energy Analyser 550-24

Energy Analyser 550-230

Technical data

	Energy Analyser 550-24	Energy Analyser 550-230
Measurement range, voltage L-N, AC	417 V	417 V
Measurement range, voltage L-L, AC	720 V	720 V
Surge voltage category	600 V CAT III	600 V CAT III
Voltage supply	48...110 V AC, 24...150 V DC	95 - 240 V AC, 80 - 300 V DC
Three-wire system	Yes	Yes
Four-wire system	Yes	Yes
Quadrants	4	4
Sampling frequency 50/60 Hz	20 kHz	20 kHz
Continuous measurements	Yes	Yes
Effective value from the period (50/60 Hz)	10 / 12	10 / 12
Measurement result per second	5 ms	5 ms
Residual current measuring	Yes	Yes
Harmonics, per order / voltage	1.-63.	1.-63.
Harmonics, per order / current	1.-63.	1.-63.
Unbalanced	Yes	Yes
Positive, negative and zero system	Yes	Yes
Measuring accuracy for voltage	0.1 %	0.1 %
Measuring accuracy for current	0.2 %	0.2 %
Measurement accuracy for active energy (kWh, /5 A)	Class 0.2S	Class 0.2S
Number of digital inputs	2	2
Number of digital outputs	2	2
Number of pulse outputs	2	2
Current-measuring channels	4 + 2	4 + 2
Temperature input	Yes	Yes
Memory; minimum and maximum values	Yes	Yes
Memory size	256 MB	256 MB
Interface	RS485: 9.6 – 921.6 kbps, Profibus DP, Ethernet, Web server/e-mail	RS485: 9.6 – 921.6 kbps, Profibus DP, Ethernet, Web server/e-mail
Protocol	Modbus RTU, Modbus-Gateway, Modbus TCP/IP, Modbus RTU over Ethernet, SNMP, Profibus DP V0, BACnet (optional)	Modbus RTU, Modbus-Gateway, Modbus TCP/IP, Modbus RTU over Ethernet, SNMP, Profibus DP V0, BACnet (optional)
Note		

Ordering data

Type	Qty.	Order No.
ENERGY ANALYSER 550-24	1	**2602580000**

Type	Qty.	Order No.
ENERGY ANALYSER 550	1	**2425500000**

Note

Accessories

	Qty.	Order No.
DIN rail adapters ENERGY METER BRACKET B1	1	**2433040000**
Seal ENERGY METER SEAL L144	1	**2495630000**

	Qty.	Order No.
ENERGY METER BRACKET B1	1	**2433040000**
ENERGY METER SEAL L144	1	**2495630000**

Note

Energy analysis instruments

Energy Analyser 750-24

Energy Analyser 750-230

Technical data

	Energy Analyser 750-24	Energy Analyser 750-230
Measurement range, voltage L-N, AC	347 V	347 V
Measurement range, voltage L-L, AC	600 V	600 V
Surge voltage category	600 V CAT III	600 V CAT III
Voltage supply	48...110 V AC, 24...150 V DC	95 - 240 V AC, 80 - 300 V DC
Three-wire system	Yes	Yes
Four-wire system	Yes	Yes
Quadrants	4	4
Sampling frequency 50/60 Hz	25.6 kHz	25.6 kHz
Continuous measurements	Yes	Yes
Effective value from the period (50/60 Hz)	10 / 12	10 / 12
Measurement result per second	5 ms	5 ms
Residual current measuring	Yes	Yes
Harmonics, per order / voltage	1.-63.	1.-63.
Harmonics, per order / current	1.-63.	1.-63.
Unbalanced	Yes	Yes
Positive, negative and zero system	Yes	Yes
Measuring accuracy for voltage	0.1 %	0.1 %
Measuring accuracy for current	0.1 %	0.1 %
Measurement accuracy for active energy (kWh, /5 A)	Class 0.2S	Class 0.2S
Number of digital inputs	2	2
Number of digital outputs	2	2
Number of pulse outputs	2	2
Current-measuring channels	4 + 2	4 + 2
Temperature input	Yes	Yes
Memory; minimum and maximum values	Yes	Yes
Memory size	256 MB	256 MB
Interface	RS485: 9.6 – 921.6 kbps, Profibus DP, Ethernet, Web server/e-mail	RS485: 9.6 – 921.6 kbps, Ethernet, Profibus DP, Web server/e-mail
Protocol	Modbus RTU, Modbus-Gateway, Modbus TCP/IP, Modbus RTU over Ethernet, SNMP, Profibus DP V0, BACnet (optional)	Modbus RTU, Modbus-Gateway, Modbus TCP/IP, Modbus RTU over Ethernet, SNMP, Profibus DP V0, BACnet (optional)
Note		

Ordering data

Type	Qty.	Order No.
ENERGY ANALYSER 750-24	1	2534160000

Note

Type	Qty.	Order No.
ENERGY ANALYSER 750-230	1	2534130000

Accessories

	Qty.	Order No.
DIN rail adapters		
ENERGY METER BRACKET B1	1	2433040000
Seal		
ENERGY METER SEAL L144	1	2495630000

	Qty.	Order No.
ENERGY METER BRACKET B1	1	2433040000
ENERGY METER SEAL L144	1	2495630000

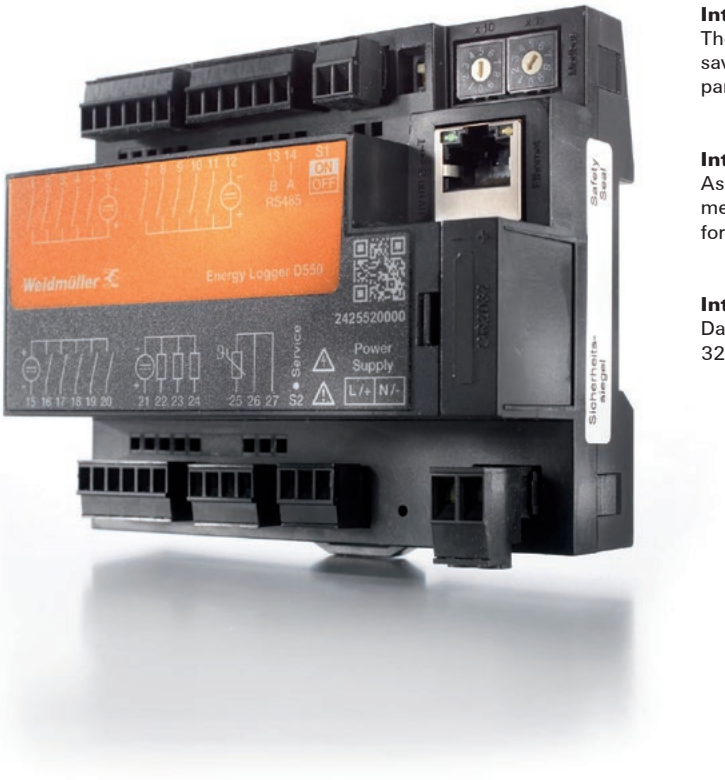
Note

Energy Logger

Energy Logger	Introduction	D.2
	Energy Logger	D.3

Provide measurement data efficiently and conveniently

Our energy logger collects consumption and process data



Integrated temperature measurement
The Energy Logger D550 has an input for temperature measurement. This saves costs in setting up an infrastructure for the measurement of process parameters

Integrated ModBus interface
As well as the consumption data of simple measuring devices, measurement values from devices with a ModBus interface can also be forwarded over a network.

Integrated data memory
Data can be saved long-term in the device's built-in 32 MB memory.

As well as the consumption of electrical energy, the consumption of, for example, compressed air, water and gas can also be optimised. Energy Logger D550 enables the provision of cross-plant measurement data in the network.

Measuring devices with a simple S0 interface are widespread. But they cannot transfer measured values direct into the internal network. Therefore, a gateway is required for each measuring device. The Energy Logger D550 can collect and save impulse signals from up to 15 measurement devices and forwards them via a LAN interface.

This particularly compact Energy Logger D550 is the costeffective solution to simplify and accelerate the collecting and forwarding of consumption and process data.

Energy Logger

Energy Logger D550

Technical data

Surge voltage category	300 V CAT III
Voltage supply	20 - 250 V AC, 20 - 300 V DC20 - 300 V DC
Operating-hours counter	Yes
Number of digital inputs	15
Number of digital outputs	3
Memory size	32 MB
Software	ecoExplorer go®
Interfaces	
Interface	RS485: 9,6 – 115,2 kbps, Ethernet
Protocol	
Protocol	Modbus RTU, Modbus-Gateway, Modbus TCP/IP, Modbus RTU over Ethernet, SNMP
Note	

Ordering data

Type	Qty.	Order No.
ENERGY LOGGER D550	1	**2425520000**

Note

Accessories

	Qty.	Order No.
ENERGY LOGGER S0 MODULE	1	**2446170000**

S0 module 1.3 kOhm

Note

Current transformer

Current transformer	Introduction	E.2
	Cable-type current transformer	E.4
	Mini current transformer	E.11
	Plug-on current transformer	E.12
	Difference current transformer (Residual Current Monitoring, RCM)	E.16
	Rogowski current transformer system	E.20
	Instrument transformer wiring	E.23

Compatibility for different measurement environments
Current transformers from Weidmüller

Current transformers are mainly used where currents cannot be measured directly. They are special forms of transformers which translate the primary current into a (usually) smaller, standardized secondary current of a certain accuracy (class) and galvanically separate the primary and secondary circuits. The physically induced saturation phenomenon of the core material additionally ensures protection of the secondary circuit against excessive currents.

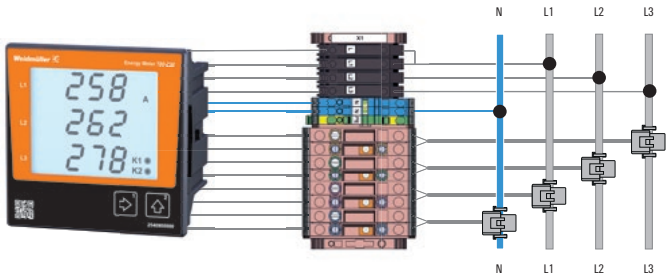
A basic distinction can be made between single-conductor current transformers and wound current transformers.
The most common representative of the single-conductor current transformers is the clip-on current transformer. This is plugged onto the current-carrying conductor and thus forms a transformer with a primary winding or with secondary windings corresponding to the respective transmission ratio.

Proper selection of the primary rated current is important for measurement accuracy. A ratio directly above the measured or defined current (In) is recommended - for example:
In = 1.154 A, selected transformer ratio = 1.250/5.

The rated current can also be defined based on the following considerations:

- Transformer rated current multiplied by approximately 1.1 (next transformer size)
- Fuse rated current (transformer rated current) of the measured system part (LV, UV)
- Actual rated current multiplied by 1.2 (recommended if the actual current is significantly lower than the transformer rating or the fuse rating)

Overdimensioning of the current transformer must be avoided, otherwise the measurement accuracy will drop considerably in some cases for relatively small currents (based on the primary rated current).



Overview of current converters

Type Technical information	Plug-on current transformer ValueLine	 BasicLine	Rod current transformer
Application	New systems		New systems
Coil	Closed		Closed
Installation	Round cable, copper busbar, terminal rail, mounting plate		Round cable (insulated)
Primary current	60 A...2,500 A	40 A ...300 A	32 A...64 A
Secondary current	5 A	1A	1 A
Accuracy class	0.5 oder 1	3.1 oder 0.5	1
Ambient temperature	–5...+50 °C	-5 °C...+40 °C	–5...+50 °C
Standards	EN 61869-2		IEC 61869-2

Rated current

The rated or formerly nominal current is the value of the value of the primary and secondary current indicated on the rating plate and secondary current (primary rated current, secondary rated current) for which the current transformer is rated. Standardized rated currents are - except for classes 0.2 S and 0.5 S - 10, 12.5, 15, 20, 25, 30, 40, 50, 60 and 75 A and their decimal multiples and parts thereof. Standardized secondary currents are 1 and 5 A.

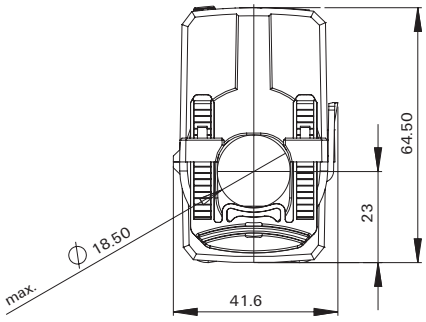
Translation ratio

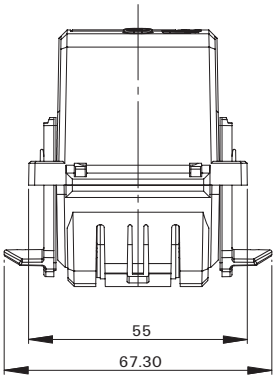
The rated ratio is the ratio of the primary rated current to the secondary rated current and is indicated as an unabbreviated fraction on the rating plate. Most commonly, x / 5 A transformers are used, because most measuring instruments have the higher accuracy class at 5 A. For technical and above all economic reasons, x /1 A converters are recommended for long measuring cable lengths. The line losses are only 4 percent for 1 A converters compared to 5 A converters. However, the measuring devices here often have the lower measuring accuracy.

Split-core current transformer	RCM current transformers	System with Rogowski coil and analysis unit
Retrofitting	New systems/Retrofitting	Retrofitting
Detachable	Closed/Detachable	Detachable with bayonet joint
Round cable (insulated), copper busbar	Round cable, copper busbar	Round cable, copper busbar
50 A...5,000 A	18 A...25 A	5,000 A
1 A or 5 A	0.0417 A	1 A
0.5; 1 or 3		0.5/0.5
–5...+55 °C	-10 °C...+70 °C	–40...+80 °C
EN 61869-2	EN 61869-2	IEC 61010 / EN 61869-2

Cable-type current transformer

The KCMA series cable-type current transformer is mainly used for retrofitting in existing systems. Due to its compact design with dimensions of 41.6 mm x 64.5 mm x 68 mm, it is especially suited for installation in hard-to-reach places or use in locations with restricted dimensional freedom. The KCMA-18 registers primary currents of 50 A to 250 A and transforms these into up to 5 A on the secondary side. To install the transformer, the locking mechanism is opened, the transformer is positioned around the primary conductor and is then closed again with an audible click. Once the secondary cables are successfully connected, the measuring apparatus is immediately ready for operation.



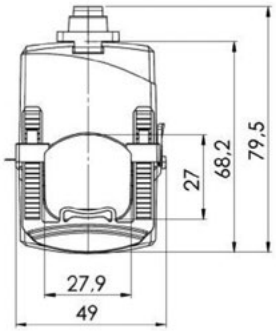


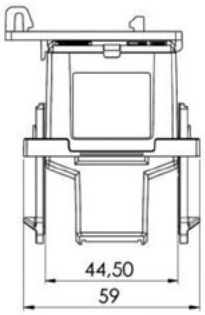
Ordering data

Order No.	Type	Primary current	Secondary current max.	Tolerance class	Load	Round conductor	Qty.
1482020000	KCMA-18-50-1A-1VA-3	50 A	1 A	3	1 VA	18.50 mm	1
2420780000	KCMA-18-75-1A-1VA-3	75 A	1 A	3	1 VA	18.50 mm	1
1482010000	KCMA-18-100-1A-1,25VA-3	100 A	1 A	3	1.25 VA	18.50 mm	1
2752980000	KCMA-18-125-1A-1,5VA-3	125 A	1 A	3	1.5 VA	18.50 mm	1
2420770000	KCMA-18-150-1A-2VA-3	150 A	1 A	3	2 VA	18.50 mm	1
2420760000	KCMA-18-200-1A-3VA-3	200 A	1 A	3	3 VA	18.50 mm	1
2420750000	KCMA-18-250-1A-4VA-3	250 A	1 A	3	4 VA	18.50 mm	1
2752990000	KCMA-18-100-1A-0.3VA-1	100 A	1 A	1	0.3 VA	18.50 mm	1
2753000000	KCMA-18-125-1A-0.5VA-1	125 A	1 A	1	0.5 VA	18.50 mm	1
2753010000	KCMA-18-150-1A-1VA-1	150 A	1 A	1	1 VA	18.50 mm	1
2753020000	KCMA-18-200-1A-1.5VA-1	200 A	1 A	1	1.5 VA	18.50 mm	1
1482000000	KCMA-18-250-1A-1,5VA-1	250 A	1 A	1	1.5 VA	18.50 mm	1
2753030000	KCMA-18-150-5A-1VA-1	150 A	5 A	1	1 VA	18.50 mm	1
2753040000	KCMA-18-200-5A-1,5VA-1	200 A	5 A	1	1.5 VA	18.50 mm	1
2753050000	KCMA-18-250-5A-1VA-0.5	250 A	5 A	0,5	1 VA	18.50 mm	1
Note							

Cable-type current transformer

The KCMA-28 series cable-type current transformer is mainly used for retrofitting in existing systems. Due to its compact design with dimensions of 49 mm x 59 mm x 79.5 mm, it is especially suited for installation in hard-to-reach places or use in locations with restricted dimensional freedom. The KCMA-28 registers primary currents of 200 A to 500 A and transforms these into up to 5 A on the secondary side. To install the transformer, the locking mechanism is opened, the transformer is positioned around the primary conductor and is then closed again with an audible click. Once the secondary cables are successfully connected, the measuring apparatus is immediately ready for operation.



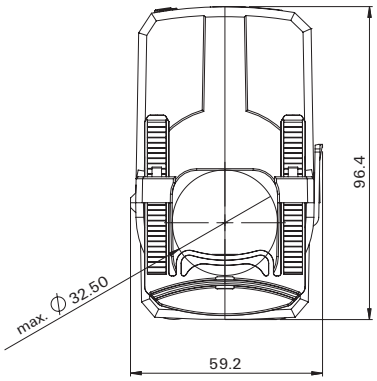


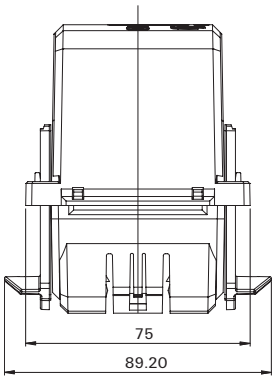
Ordering data

Order No.	Type	Primary current	Secondary current max.	Tolerance class	Load	Round conductor	Qty.
2753060000	KCMA-28-200-1A-0.3VA-1	200 A	1 A	1	0.3 VA	27.00 mm	1
2753070000	KCMA-28-250-1A-1VA-1	250 A	1 A	1	1 VA	27.00 mm	1
2753080000	KCMA-28-300-1A-1.5VA-1	300 A	1 A	1	1.5 VA	27.00 mm	1
2753090000	KCMA-28-400-1A-2.5VA-1	400 A	1 A	1	2.5 VA	27.00 mm	1
2753100000	KCMA-28-500-1A-1VA-0.5	500 A	1 A	0,5	1 VA	27.00 mm	1
2753110000	KCMA-28-250-5A-1VA-1	250 A	5 A	1	1 VA	27.00 mm	1
2753120000	KCMA-28-300-5A-1.5VA-1	300 A	5 A	1	1.5 VA	27.00 mm	1
2753130000	KCMA-28-400-5A-2.5VA-1	400 A	5 A	1	2.5 VA	27.00 mm	1
2753140000	KCMA-28-500-5A-3VA-1	500 A	5 A	1	3 VA	27.00 mm	1
Note							

Cable-type current transformer

The KCMA-32 series cable-type current transformer is mainly used for retrofitting in existing systems. Due to its compact design with dimensions of 59.2 mm x 96.4 mm x 90 mm, it is especially suited for installation in hard-to-reach places or use in locations with restricted dimensional freedom. The KCMA-32 registers primary currents of 400 A to 600 A and transforms these into up to 5 A on the secondary side. To install the transformer, the locking mechanism is opened, the transformer is positioned around the primary conductor and is then closed again with an audible click. Once the secondary cables are successfully connected, the measuring apparatus is immediately ready for operation.



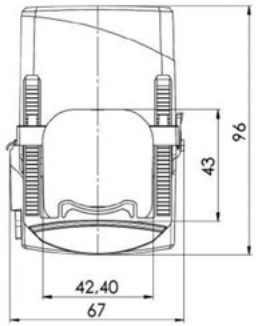


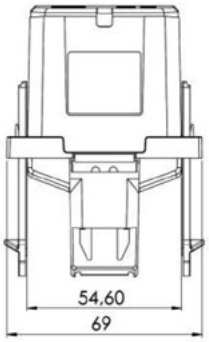
Ordering data

Order No.	Type	Primary current	Secondary current max.	Tolerance class	Load
1481990000	KCMA-32-400-1A-5VA-1	400 A	1 A	1	5 VA
1481980000	KCMA-32-600-1A-5VA-1	600 A	1 A	1	5 VA
2420730000	KCMA-32-400-5A-5VA-1	400 A	5 A	1	5 VA
2420740000	KCMA-32-500-5A-5VA-1	500 A	5 A	1	5 VA
2420720000	KCMA-32-600-5A-5VA-1	600 A	5 A	1	5 VA
Note					

Cable-type current transformer

The KCMA-42 series cable-type current transformer is mainly used for retrofitting in existing systems. As a result of its compact design with dimensions of 72.2 mm x 120.6 mm x 98.1 mm, it is especially suited for installation in hard-to-reach places or use in locations with restricted dimensional freedom. The KCMA-42 registers primary currents of 250 A to 1000 A and transforms these into up to 5 A on the secondary side. To install the transformer, the locking mechanism is opened, the transformer is positioned around the primary conductor and is then closed again with an audible click. Once the secondary cables are successfully connected, the measuring apparatus is immediately ready for operation.



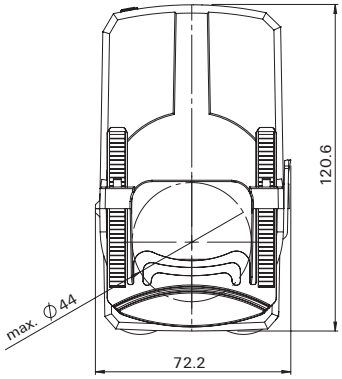


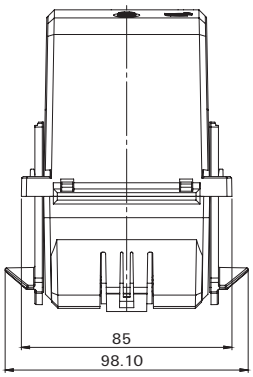
Ordering data

Order No.	Type	Primary current	Secondary current max.	Tolerance class	Load	Round conductor	Qty.
2753150000	KCMA-42-250-1A-2.5VA-1	250 A	1 A	1	2.5 VA	42.00 mm	1
2753160000	KCMA-42-300-1A-2.5VA-1	300 A	1 A	1	2.5 VA	42.00 mm	1
2753170000	KCMA-42-400-1A-2.5VA-0.5	400 A	1 A	0,5	2.5 VA	42.00 mm	1
2753180000	KCMA-42-500-1A-2.5VA-0.5	500 A	1 A	0,5	2.5 VA	42.00 mm	1
2753190000	KCMA-42-600-1A-2.5VA-0.5	600 A	1 A	0,5	2.5 VA	42.00 mm	1
2753200000	KCMA-42-750-1A-2.5VA-0.5	750 A	1 A	0,5	2.5 VA	42.00 mm	1
2753210000	KCMA-42-800-1A-2.5VA-0.5	800 A	1 A	0,5	2.5 VA	42.00 mm	1
2753220000	KCMA-42-1000-1A-2.5VA-0.5	1000 A	1 A	0,5	2.5 VA	42.00 mm	1
2753230000	KCMA-42-300-5A-2.5VA-1	300 A	5 A	1	2.5 VA	42.00 mm	1
2753240000	KCMA-42-400-5A-5VA-1	400 A	5 A	1	5 VA	42.00 mm	1
2753250000	KCMA-42-500-5A-5VA-1	500 A	5 A	1	5 VA	42.00 mm	1
2753260000	KCMA-42-600-5A-2.5VA-0.5	600 A	5 A	0,5	2.5 VA	42.00 mm	1
2753270000	KCMA-42-750-5A-2.5VA-0.5	750 A	5 A	0,5	2.5 VA	42.00 mm	1
2753280000	KCMA-42-800-5A-2.5VA-0.5	800 A	5 A	0,5	2.5 VA	42.00 mm	1
2753290000	KCMA-42-1000-5A-2.5VA-0.5	1000 A	5 A	0,5	2.5 VA	42.00 mm	1
Note							

Cable-type current transformer

The KCMA-44 series cable-type current transformer is mainly used for retrofitting in existing systems. As a result of its compact design with dimensions of 72.2 mm x 120.6 mm x 98 mm, it is especially suited for installation in hard-to-reach places or use in locations with restricted dimensional freedom. The KCMA-44 registers primary currents of 750 A to 1000 A and transforms these into up to 5 A on the secondary side. To install the transformer, the locking mechanism is opened, the transformer is positioned around the primary conductor and is then closed again with an audible click. Once the secondary cables are successfully connected, the measuring apparatus is immediately ready for operation.



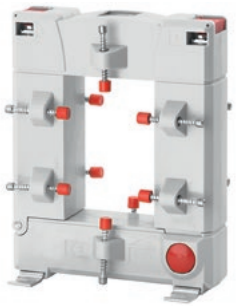


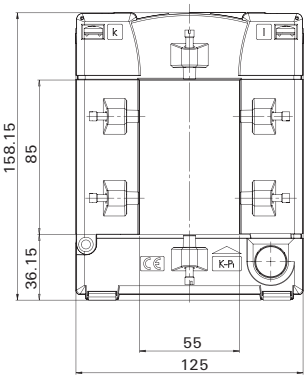
Ordering data

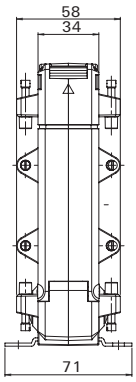
Order No.	Type	Primary current	Secondary current max.
2420710000	KCMA-44-750-5A-5VA-1	750 A	5 A
2437370000	KCMA-44-800-5A-5VA-1	800 A	5 A
2437400000	KCMA-44-1000-5A-5VA-1	1000 A	5 A
Note			

Cable-type current transformer

The KCMA-5 series cable-type current transformer with its separable measuring core allows it to be retrofitted in existing systems without disconnecting the primary conductor. Thanks to the practical integrated interlock system, the transformer can be positioned around the primary conductor and then closed again with an audible click. The KCMA-5 registers primary currents of 250 A to 1000 A and transforms these into currents of up to 5 A on the secondary side.





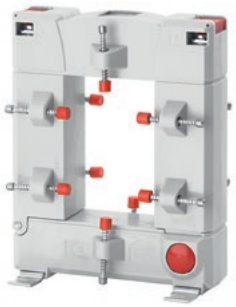


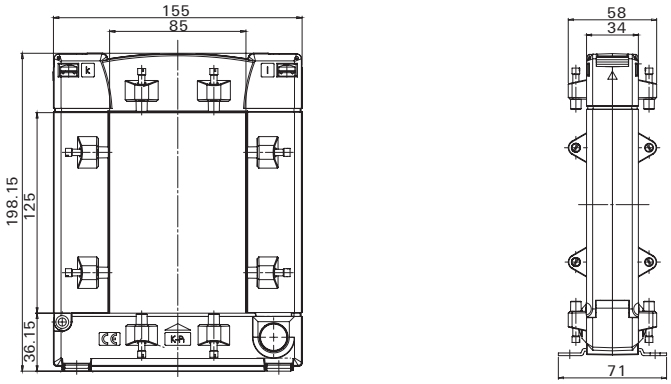
Ordering data

Order No.	Type	Primary current	Secondary current max.	Tolerance class	Load
2753360000	KCMA 5-250-5A-1.5VA-1	250 A	5 A	1	1.5 VA
2753370000	KCMA 5-400-5A-1VA-0.5	400 A	5 A	0,5	1 VA
2753380000	KCMA 5-500-5A-2.5VA-0.5	500 A	5 A	0,5	2.5 VA
2753390000	KCMA 5-600-5A-2.5VA-0.5	600 A	5 A	0,5	2.5 VA
2753400000	KCMA 5-1000-5A-5VA-0.5	1000 A	5 A	0,5	5 VA
Note					

Cable-type current transformer

The KCMA-8 series cable-type current transformer with its separable measuring core allows it to be retrofitted in existing systems without disconnecting the primary conductor. Thanks to the practical integrated interlock system, the transformer can be positioned around the primary conductor and then closed again with an audible click. The KCMA-8 registers primary currents of 250 A to 5000 A and transforms these into currents of up to 5 A on the secondary side.





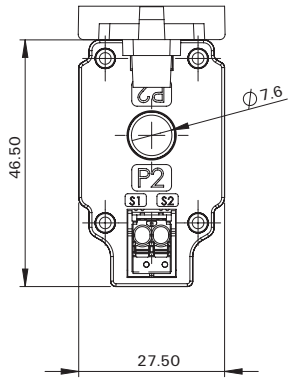
Ordering data

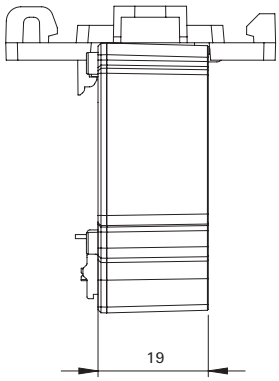
Order No.	Type	Primary current	Secondary current max.	Tolerance class	Load	Round conductor	Rail	Qty.
2728090000	KCMA-8-250-5A-1.5VA1	250 A	5 A	1	1.5 VA	80.00 mm	80 x 120 mm	1
2728100000	KCMA-8-500-5A-5VA1	500 A	5 A	1	5 VA	80.00 mm	80 x 120 mm	1
2728110000	KCMA-8-750-5A-2VA1	750 A	5 A	1	2 VA	80.00 mm	80 x 120 mm	1
2728130000	KCMA-8-1000-5A-10VA1	1000 A	5 A	1	10 VA	80.00 mm	80 x 120 mm	1
2728140000	KCMA-8-1200-5A-10VA1	1200 A	5 A	1	10 VA	80.00 mm	80 x 120 mm	1
2728150000	KCMA-8-1500-5A-15VA1	1500 A	5 A	1	15 VA	80.00 mm	80 x 120 mm	1
2728160000	KCMA-8-2000-5A-15VA1	2000 A	5 A	1	15 VA	80.00 mm	80 x 120 mm	1
2728170000	KCMA-8-2500-5A-15VA1	2500 A	5 A	1	15 VA	80.00 mm	80 x 120 mm	1
2728180000	KCMA-8-3000-5A-15VA1	3000 A	5 A	1	15 VA	80.00 mm	80 x 120 mm	1
2728190000	KCMA-8-4000-5A-15VA1	4000 A	5 A	1	15 VA	80.00 mm	80 x 120 mm	1
2728210000	KCMA-8-5000-5A-15VA1	5000 A	5 A	1	15 VA	80.00 mm	80 x 120 mm	1
2753410000	KCMA-8-600-5A-2.5VA-0.5	600 A	5 A	0,5	2.5 VA	80.00 mm	80 x 120 mm	1
2753420000	KCMA-8-800-5A-2.5VA-0.5	800 A	5 A	0,5	2.5 VA	80.00 mm	80 x 120 mm	1
2753430000	KCMA-8-1000-5A-5VA-0.5	1000 A	5 A	0,5	5 VA	80.00 mm	80 x 120 mm	1
2753450000	KCMA-8-1200-5A-5VA-0.5	1200 A	5 A	0,5	5 VA	80.00 mm	80 x 120 mm	1

Note

Mini current transformer

The CMA-CTM 7 series mini current transformer is an inductive current transformer designed according to the transformer principle for circular primary conductors. The CMA-CTM 7 series current transformers are maintenance-free and are designed for primary currents of 32 A to 64 A. These are transformed into a current of up to 1 A on the secondary side.





Ordering data

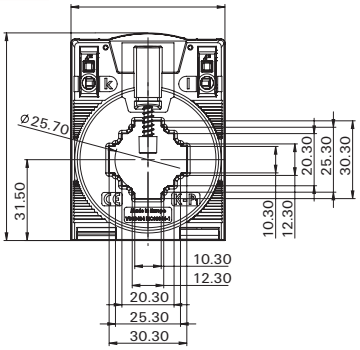
Order No.	Type	Primary current	Secondary current max.
2525150000	CMA-CTM-7-32-1A-0.2VA-1	32 A	1 A
2556030000	CMA-CTM-7-50-1A-0.4VA-1	50 A	1 A
2556010000	CMA-CTM-7-64-1A-0.5VA-1	64 A	1 A
Note			

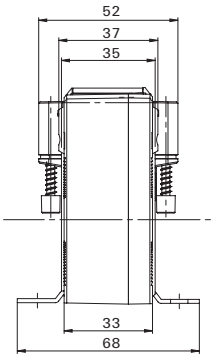
Plug-on current transformer

Plug-on current transformer – ValueLine

The current transformers in our ValueLine can detect primary currents in the range from 60 A to 2,500 A and convert them into currents of up to 5 A on the secondary side. The transformers are equipped with a maintenance-free cage clamp terminal and are particularly suitable for mounting on busbars and on cables of new installations. These transformers have UL approval.

CMA-31

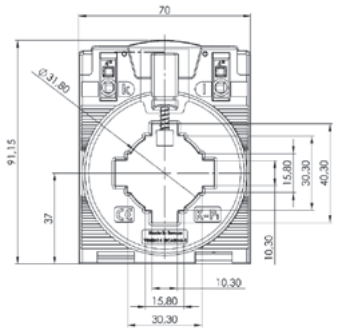


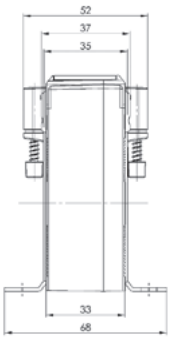


Ordering data

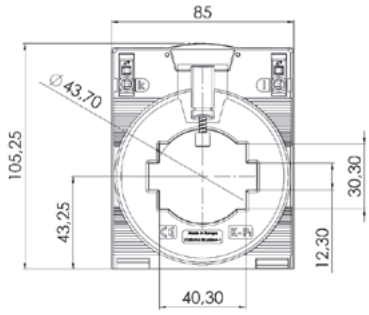
Order No.	Type	Primary current	Secondary current max.	Tolerance class	Load	Round conductor	Rail	Qty.
2421380000	CMA-31-60-5A-1,25VA-1	60 A	5 A	1	1.25 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
1482040000	CMA-31-75-5A-2,5VA-1	75 A	5 A	1	2.5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
1482030000	CMA-31-100-5A-2,5VA-1	100 A	5 A	1	2.5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
2420960000	CMA-31-150-5A-5VA-1	150 A	5 A	1	5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
2420950000	CMA-31-200-5A-5VA-1	200 A	5 A	1	5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
2420940000	CMA-31-250-5A-5VA-1	250 A	5 A	1	5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
2420920000	CMA-31-400-5A-5VA-1	400 A	5 A	1	5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
2420910000	CMA-31-500-5A-5VA-1	500 A	5 A	1	5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
2420900000	CMA-31-600-5A-5VA-1	600 A	5 A	1	5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
2420890000	CMA-31-750-5A-5VA-1	750 A	5 A	1	5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
2680150000	CMA-41-1000-5A-5VA-1	1000 A	5 A			31.00 mm	30 x 15 mm, 40 x 10 mm	1
2680160000	CMA-51-1250-5A-5VA-1	1250 A	5 A	1	5 VA	43.00 mm	40 x 30 mm, 50 x 12 mm	1
2680170000	CMA-61-1500-5A-5VA-1	1500 A	5 A	1	5 VA	43.00 mm	50 x 30 mm, 63 x 10 mm	1
2680180000	CMA-81-2000-5A-10VA-1	2000 A	5 A	1	10 VA	54.00 mm	80 x 10 mm, 60 x 30 mm	1
2680190000	CMA-101-2500-5A-10VA-1	2500 A	5 A	1	10 VA	70.00 mm	100 x 10 mm, 80 x 30 mm	1
2680200000	CMA-31-125-5A-2,5VA-0,5	125 A	5 A	0,5	2.5 VA	25.70 mm	30 x 10 mm, 25 x 12 mm, 20 x 20 mm	1
2421030000	CMA-31-150-5A-2,5VA-0,5	150 A	5 A	0,5	2.5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
2421020000	CMA-31-200-5A-2,5VA-0,5	200 A	5 A	0,5	2.5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
1482050000	CMA-31-250-5A-5VA-0,5	250 A	5 A	0,5	5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
2420990000	CMA-31-300-5A-5VA-0,5	300 A	5 A	0,5	5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
2420980000	CMA-31-400-5A-5VA-0,5	400 A	5 A	0,5	5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
1482070000	CMA-31-500-5A-5VA-0,5	500 A	5 A	0,5	5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
2420970000	CMA-31-600-5A-5VA-0,5	600 A	5 A	0,5	5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
1482080000	CMA-31-750-5A-5VA-0,5	750 A	5 A	0,5	5 VA	25.70 mm	20 x 20 mm, 25 x 12 mm, 30 x 10 mm	1
2680210000	CMA-41-1000-5A-5VA-0,5	1000 A	5 A			31.00 mm	30 x 15 mm, 40 x 10 mm	1
2680220000	CMA-51-1250-5A-5VA-0,5	1250 A	5 A			43.00 mm	50 x 12 mm, 40 x 30 mm	1
2680230000	CMA-61-1500-5A-5VA-0,5	1500 A	5 A			43.00 mm	50 x 30 mm, 63 x 10 mm	1
2680240000	CMA-81-2000-5A-10VA-0,5	2000 A	5 A			54.00 mm	60 x 30 mm, 80 x 10 mm	1
2680250000	CMA-101-2500-5A-10VA-0,5	2500 A	5 A	0,5	10 VA	70.00 mm	100 x 10 mm, 80 x 30 mm	1
Note	For additional articles and information, refer to eshop.weidmueller.com							

CMA-41

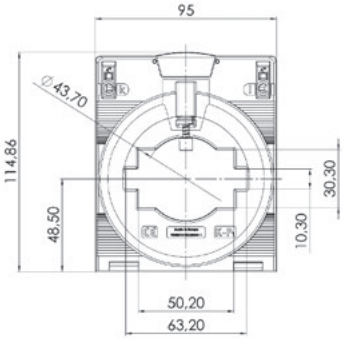




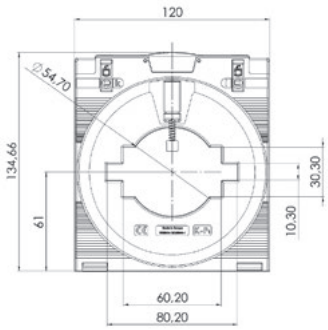
CMA-51



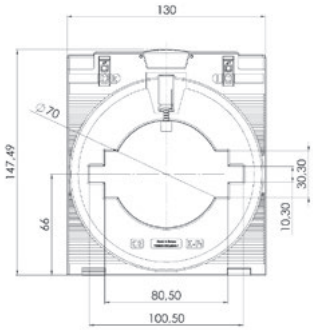
CMA-61



CMA-81



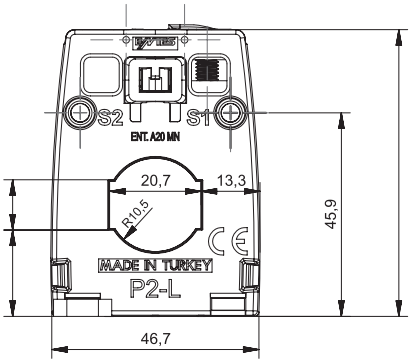
CMA-101

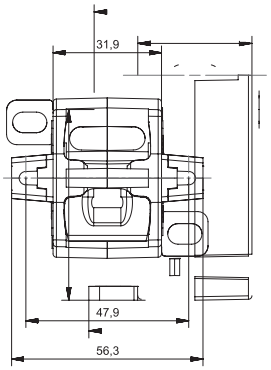


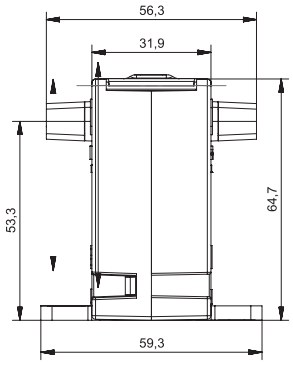
Plug-on current transformer

Plug-on current transformer – BasicLine

The BasicLine current transformers can detect primary currents in the range from 40 A to 300 A and convert them into a current of up to 1 A on the secondary side. These BasicLine current transformers are also suitable for mounting on busbars and on cables of new installations. This portfolio of current transformer has an excellent cost/performance ratio.







Ordering data

Order No.	Type	Primary current	Secondary current max.	Tolerance class	Load	Round conductor	Rail	Qty.
3008140000	CMA-A20-40-1A-3-1VA	40 A	1 A	3	1 VA	10.50 mm	20 x 10 mm	1
3008200000	CMA-A20-50-1A-3-1VA	50 A	1 A	3	1 VA	10.50 mm	20 x 10 mm	1
3008210000	CMA-A20-60-1A-1-1VA	60 A	1 A	1	1 VA	10.50 mm	20 x 10 mm	1
3008220000	CMA-A20-75-1A-1-1,5VA	75 A	1 A	1	1.5 VA	10.50 mm	20 x 10 mm	1
3008230000	CMA-A20-100-1A-1-2,5VA	100 A	1 A	1	2.5 VA	10.50 mm	20 x 10 mm	1
3008240000	CMA-A20-125-1A-0,5-2,5VA	125 A	1 A	0,5	2.5 VA	10.50 mm	20 x 10 mm	1
3008250000	CMA-A20-150-1A-0,5-2,5VA	150 A	1 A	0,5	2.5 VA	10.50 mm	20 x 10 mm	1
3008260000	CMA-A20-200-1A-0,5-5VA	200 A	1 A	0,5	5 VA	10.50 mm	20 x 10 mm	1
3008270000	CMA-A30-250-1A-0,5-5VA	250 A	1 A	0,5	5 VA	20.00 mm	30 x 10 mm	1
3008280000	CMA-A30-300-1A-0,5-5VA	300 A	1 A	0,5	5 VA	20.00 mm	30 x 10 mm	1
Note	For additional articles and information, refer to eshop.weidmueller.com							

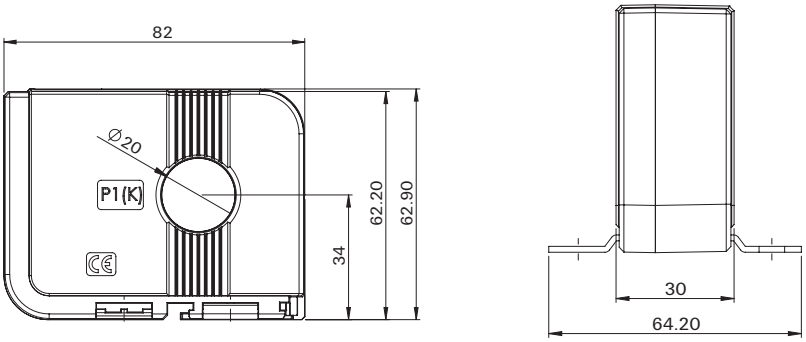
Difference current transformer (Residual Current Monitoring, RCM)

The current transformers of the CMA-RCM series are current transformers for RCM measurement on circular primary conductors. Current transformers of this series are maintenance-free and designed for the detection of residual currents of 25 A. For example, these converters are compatible with our Energy Meter EM 750.

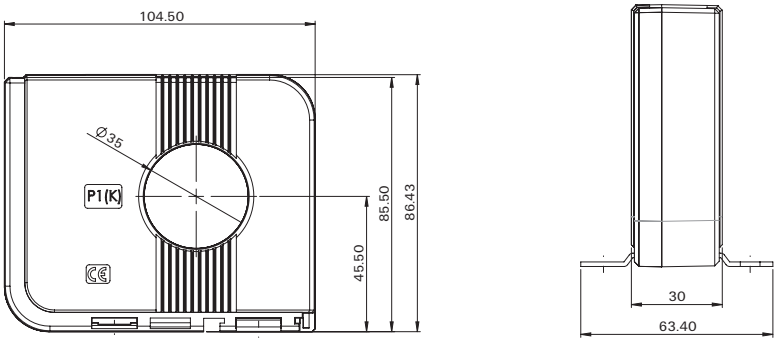
Ordering data

Order No.	Type	Primary current	Round conductor
2603420000	CMA-RCM-DACT-20	25 A	20.00 mm
2603430000	CMA-RCM-DACT-35	25 A	35.00 mm
2603440000	CMA-RCM-DACT-60	25 A	60.00 mm
2603450000	CMA-RCM-DACT-120	25 A	120.00 mm
Note			

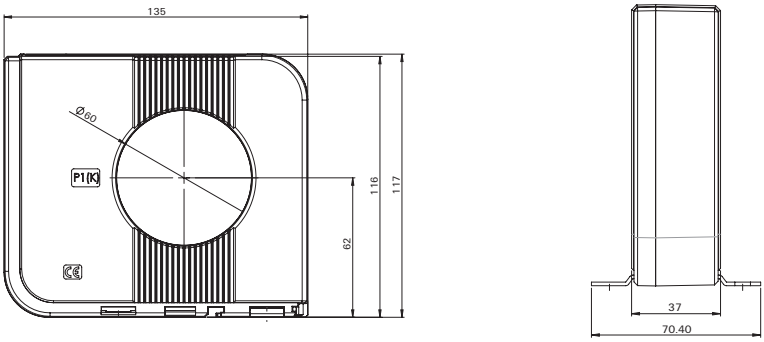
CMA-RCM-DACT-20



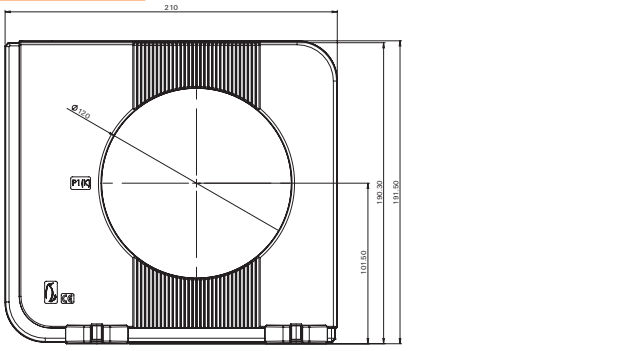
CMA-RCM-DACT-35



CMA-RCM-DACT-60

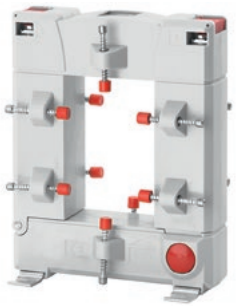


CMA-RCM-DACT-120



Difference current transformer (Residual Current Monitoring, RCM)

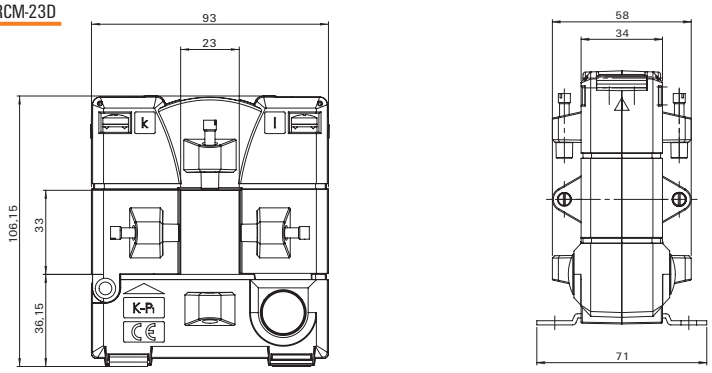
The KCMA-RCM series cable conversion current transformer is mainly used to retrofit an RCM measurement into existing systems. The KCMA-RCM measures residual currents of up to 25 A. During installation, the locking mechanism of the transformer is opened, the transformer is placed around the primary conductor and audibly re-engaged. After successful connection of the secondary conductors, the measurement setup is immediately ready for operation. For example, these converters are compatible with our Energy Meter EM 750.



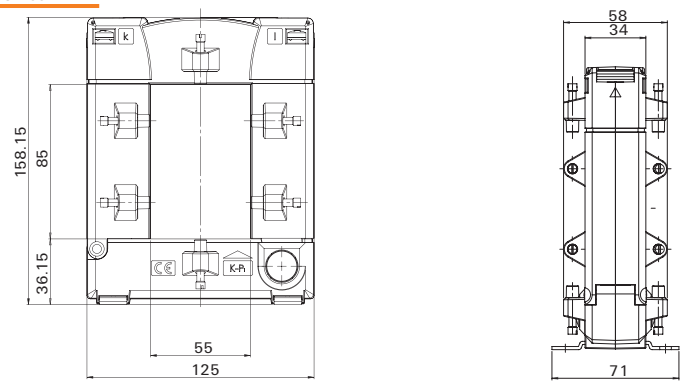
Ordering data

Order No.	Type	Primary current	Round conductor
2656270000	KCMA-RCM-23D	18 A	20.00 mm
2656280000	KCMA-RCM-58D	18 A	50.00 mm
2656290000	KCMA-RCM-812D	18 A	80.00 mm
Note			

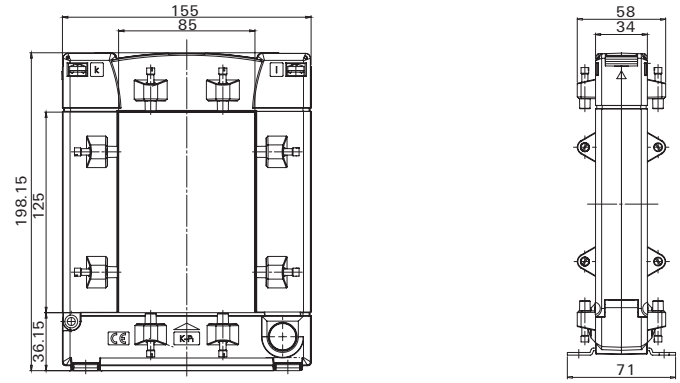
KCMA-RCM-23D



KCMA-RCM-58D



KCMA-RCM-812D



Measure energy consumption easily, safely and flexibly

Rogowski current transformer system for easy retrofitting

Growing environmental requirements are forcing companies to make the energy consumption of their existing machinery and equipment transparent. Rogowski coils are used for reliable measurement of AC currents and can be quickly and easily integrated into existing environments.

In addition to conventional current transformers, Rogowski coils can also be used for current measurement. Due to the lack of an iron core, non-linear influences of the iron core are eliminated. Rogowski coils can be easily applied and removed without breaking the circuit, i.e. without major installation work.
In contrast to current transformers, high short-circuit currents in the power distribution do not cause high losses in Rogowski coils. There can also be no saturation or remanence effects that are detrimental to the measurement. Likewise, no dangerous voltages can be generated in open circuit operation.

Our Rogowski coils can be integrated either on busbars or power cables. They are available
for three diameters between 70 and 175 mm. Their output signal is fed to a measuring transducer. This measures alternating currents or a voltage signal and can - depending on the version - output a standardized standard signal (1 A) or a signal selectable from four V or mA ranges. Twelve values between 100 A and 5,000 A can be selected for the input measuring range.

Your special advantage:

- Evaluation unit for Rogowski coils
- Linearity error below 0.1%
- 12 different current ranges from 100 to 5000A selectable
- Selection of different outputs (RCMC-5000-A0-P only):
  4 true RMS outputs: 0-20 mA, 4-20 mA, 0-5 V & 010 V
  and 2 instantaneous voltage outputs: 0-225 mV and
  0-333 mV or 1 A output

Universally applicable
Combined with our Rogowski coils, it offers a universal measurement and monitoring solution

Simple configuration and status query
Configuration possible by 2 buttons on the device. Additional LEDs indicate the status of the device

Retrofittable
DIN mounting allows easy retrofit within the control cabinet

Rogowski-System

Ordering data

Order No.	Type	Diameter	Cable length	Primary current	Qty.
Rogowski coils					
2593370000	RCMA-B22-D70-1.5	70 mm	1.5 m	5000 A	1
2593340000	RCMA-B22-D70-4.5	70 mm	4.5 m	5000 A	1
2831090000	RCMA-B22-D70-6.0	70 mm	6 m	5000 A	1
2593380000	RCMA-B22-D125-1.5	125 mm	1.5 m	5000 A	1
2593350000	RCMA-B22-D125-4.5	125 mm	4.5 m	5000 A	1
2831100000	RCMA-B22-D125-6.0	125 mm	6 m	5000 A	1
2593390000	RCMA-B22-D175-1.5	175 mm	1.5 m	5000 A	1
2593360000	RCMA-B22-D175-4.5	175 mm	4.5 m	5000 A	1
2831110000	RCMA-B22-D175-6.0	175 mm	6 m	5000 A	1
2865880000	RCMA-B22-D300-6.0	300 mm	6 m	5000 A	1
Note					

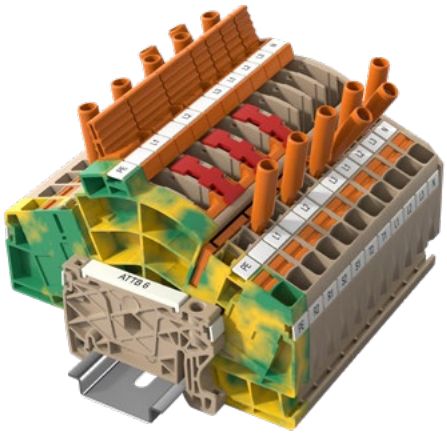
Ordering data

Order No. Transmitter	Type	Output current	Input measurement range
2593400000	RCMC-5000-1A-P	0...1 A AC	
2593410000	RCMC-5000-AO-P	0...20 mA, 4...20 mA	100 A, 200 A, 300 A, 400 A, 500 A, 600 A, 800 A, 1000 A, 1500 A, 2000 A, 4000 A, 5000 A
Note			

Efficient implementation of testing and measurement switchgear

Current and voltage transformer wiring solutions

When installing power monitoring components, a simple defective connection can result in the destruction of current transformers or voltage converters. Our specially developed test-disconnect terminal blocks are a safe way of solving this problem. Easy to use and available with different connection technologies, they facilitate error-free and convenient wiring. This guarantees the protection of your transformers and measuring devices and ensures safe, precise work. The modular concept of our terminal blocks for transformer switchgears also saves space in the cabinet.



Avoiding errors through ease of use

Our test terminal blocks with tried-and-tested screw connection technology allow a large number of switching tasks to be overcome clearly and cost-effectively. The screws for the wire connection can only be accessed once the current transformer's short-circuit slider has been activated. This enhances safety as it prevents the accidental short-circuiting or opening of the converter circuit. Our pre-installed LST EM-BLOCK makes it easier to connect and short the current transformers, and is suitable for up to four phases.

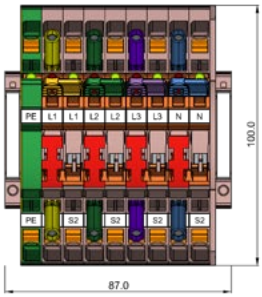
Ordering data

Type	Order No.
EM CONNECTOR CURRENT ATTB	8000100996
EM CONNECTOR VOLTAGE ATTB	8000100997

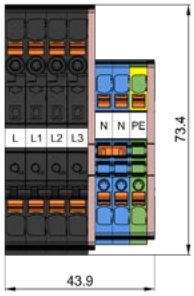
Technical data

	EM CONNECTOR VOLTAGE ATTB	EM CONNECTOR CURRENT ATTB
Connectable current transformers	4	4
Fuses for measurement voltage	3 phases	No
Fuse for supply voltage	Yes	No
Neutral conductor connection	2	No
PE connection	Yes	No
Markers	Yes	Yes

EM CONNECTOR CURRENT ATTB



EM CONNECTOR VOLTAGE ATTB



A comprehensive automation portfolio

A comprehensive automation portfolio	Introduction	F.2
	u-remote – I/O Systeme IP20	F.4
	u-control – Controls and edge devices	F.20
	IoT-Gateways	F.28
	u-view – Touch Panels	F.32

The easy way into Industrial IoT and automation

With our integrated and future-oriented portfolio
Build on openness

Innovative Industrial IoT and automation applications create significant added value for our customers. The added value is mainly generated by software. Whether energy management, remote maintenance, predictive maintenance, asset management or classic anomaly detection – all use cases are based on a similar mode of operation: data is collected in the field, pre-processed at the machine (edge), converted into control commands and communicated to a central location (cloud or on-premise system). There, software visualizes and analyses the data and converts it into added value. **From data to value.**

This is how it works in a wide variety of industrial segments: From mechanical engineering, renewable energies and shipbuilding to smart agriculture. As an **enabler,** we offer you, our diverse customers, a comprehensive and universal **modular system** in the field of Industrial IoT and automation. We cover all data levels „from data to value" with our **hardware, software, cloud applications and associated services.** Depending on the combination and parameterisation/ configuration of the individual components, different systems are created to suit your application.

Scalability plays a central role for us, as it gives you maximum flexibility and the ability to map applications of varying complexity. **Everything can, nothing must – from individual components to fully vertically integrated systems.** Our top priority is to make it **as easy as possible** for you. Easy access to our digital services is just one example of this. With our Industrial Service Platform easyConnect, we make this possible throughout the entire life cycle.

We also focus on openness in terms of partnerships, technologies and products. We believe in open source and de facto standards. In many of our industrial IoT and automation projects, we connect ecosystems with each other through open communication interfaces, for example, thus creating future security and the greatest possible flexibility for you. Our open software platform for industrial IoT and automation u-OS is a concrete example of this.

The potential around Industry 4.0 is huge. By combining Industrial IoT and automation, we enable you **to tap into individual fields of application easily, efficiently, and consistently** and move step by step towards Industry 4.0.

Seamless data communication in a wide range of applications – secure, flexible, future-orientated

Industrial Ethernet components from Weidmüller are the ideal choice for future-proof, high-performance data communication in industrial automation. Our solutions connect Ethernet-enabled devices reliably and flexibly and support a wide range of topologies and protocols to adapt perfectly to any industrial application.
As a partner for first-class network infrastructures in plant and mechanical engineering, we offer you a broad portfolio: High-quality switches, scalable security routers, media converters, Power-over-Ethernet switches, high-performance Wi-Fi devices and flexible serial/Ethernet converters ensure smooth processes and maximum efficiency. Our extensive range of RJ45 and fibre optic connectors and cables rounds off the product range and ensures that with Weidmüller you get a solution that will meet the highest demands tomorrow.
Count on Weidmüller and make your Industrial Ethernet infrastructure fit for the future!

Further information can be found on our website:
www.weidmueller.com/ieportfolio

Optimum power supply for automation technology

The switch-mode power supplies feature a high efficiency, compact dimensions and minimal heat generation. They are an excellent and reliable solution for providing power in all automation applications – safely providing 24 V DC voltage. The different product series are optimised for the automation industry: they feature Ex approvals for the processing industry, a flat shape perfect for distribution tasks within buildings and provide decentralised control voltages. All-purpose usage: with a wide range of AC/DC inputs, single-, double- or three-phase versions and a wide temperature range. Additional performance increases are possible using simple parallel connection. Weidmüller switch-mode power supplies are reliable usable for all applications because of their high efficiency and their resistance to both short circuits and overloads.
Weidmüller offers a system of one- and three-phase switchmode power supplies especially for the PROtop family.

Further information can be found on our website:
www.weidmueller.com/powermanagement

Isolating amplifiers

Isolating amplifiers and measuring transducer are important components in modern industry. They play a decisive role in safe signal transmission and conversion, particularly due to their ability to provide galvanic isolation and EMC filtering. These measures protect systems from voltage peaks and at the same time ensure reliable signal quality. Whether in the process industry or in mechanical engineering - our solutions guarantee efficiency and safety in sensitive applications.
With a wide range of input signals, functions and signal outputs, such as 4-20 mA active/passive or 0-10 V, our measuring transducers offer maximum flexibility and can be easily integrated into existing systems.

Further information can be found on our website:
www.weidmueller.com/asc

Achieving maximum efficiency in the control cabinet

With great savings potential and optimum system performance

u-remote from Weidmüller is the reliable interface between field bus and field level in automation. The modular system is based on various components: a fieldbus coupler, up to 64 I/O modules, optional power-feed modules and a wealth of accessories, such as markers and terminating elements.

The fieldbus coupler is the central link between the various field bus standards and the u-remote system bus. At the same time, up to 64 I/O modules are supplied via its integrated power contacts. The well-engineered technology of the connection system enables 2 x 10 A to be supplied for the input and output modules and the system voltage to be fully supplied through the fieldbus coupler. Every fieldbus coupler provides direct access to the u-remote system via a web server without additional software having to be installed. This means that the system can be parameterised and its configuration checked. Inputs and outputs can also be checked or influenced. The connection may take the form of an Ethernet-based field bus or micro USB. The u-remote fieldbus couplers are integrated in the standard simple manner. The corresponding development environments of the control systems and the device description files available online, e.g. GSD, ESD, EDS or XML, can be used to easily perform the necessary settings.

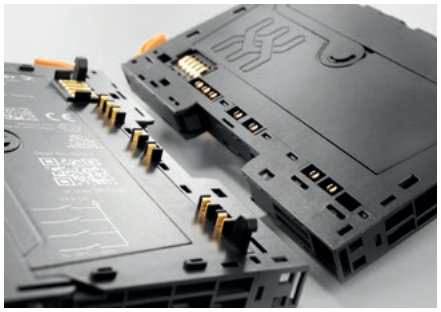
The modularly structured I/O modules are unique in that they allow the sensor and actuator wiring to be designed in both a robust and plug-in manner. This allows the electronics to be replaced at any time even with permanent wiring. This achieves an invaluable time saving, in terms of both wiring inaccessible cabinets and rapidly replacing sensors. Thanks to the PUSH IN technology for up to 1.5 mm², in their narrowest form of 11.5 mm, the modularly structured u-remote I/O modules can be used for all sensor and actuator connections with a very high connection density. A clear status and diagnosis display on the connection also ensures rapid and precise checks for individual sensors and actuators.

Why waste space?
Design your cabinets one size smaller: u-remote, with the highest connection density on a module, offers you the most slender module width and a far lower space requirement for power-feed modules – an unrivaled channel density and extremely flexible design options.

Simply plug and go
The plug-in connection level allows sensors and actuators to be connected with pre-assembled cables. This means improved time benefits, better handling, and minimises the number of mistakes in system wiring.

Diagnostics, even without a control connection
u-remote simplifies machine commissioning section-by-section and accelerates maintenance work with its integrated web server. Thanks to the high performance diagnostic tool, you can simulate the functionality of inputs and outputs prior to control connection.
You can conduct plain text error analyses using any standard browser – whether you're working on-site or remotely.

Intelligently separated
u-remote separates the supply for inputs and outputs using two 10 A current paths which are able to withstand high loads. High productivity translates into fewer power-feed modules and therefore more space and less planning.



ModbusTCP fieldbus coupler
Web server tool, two RJ45 Ports, 10/100 Mbit/s

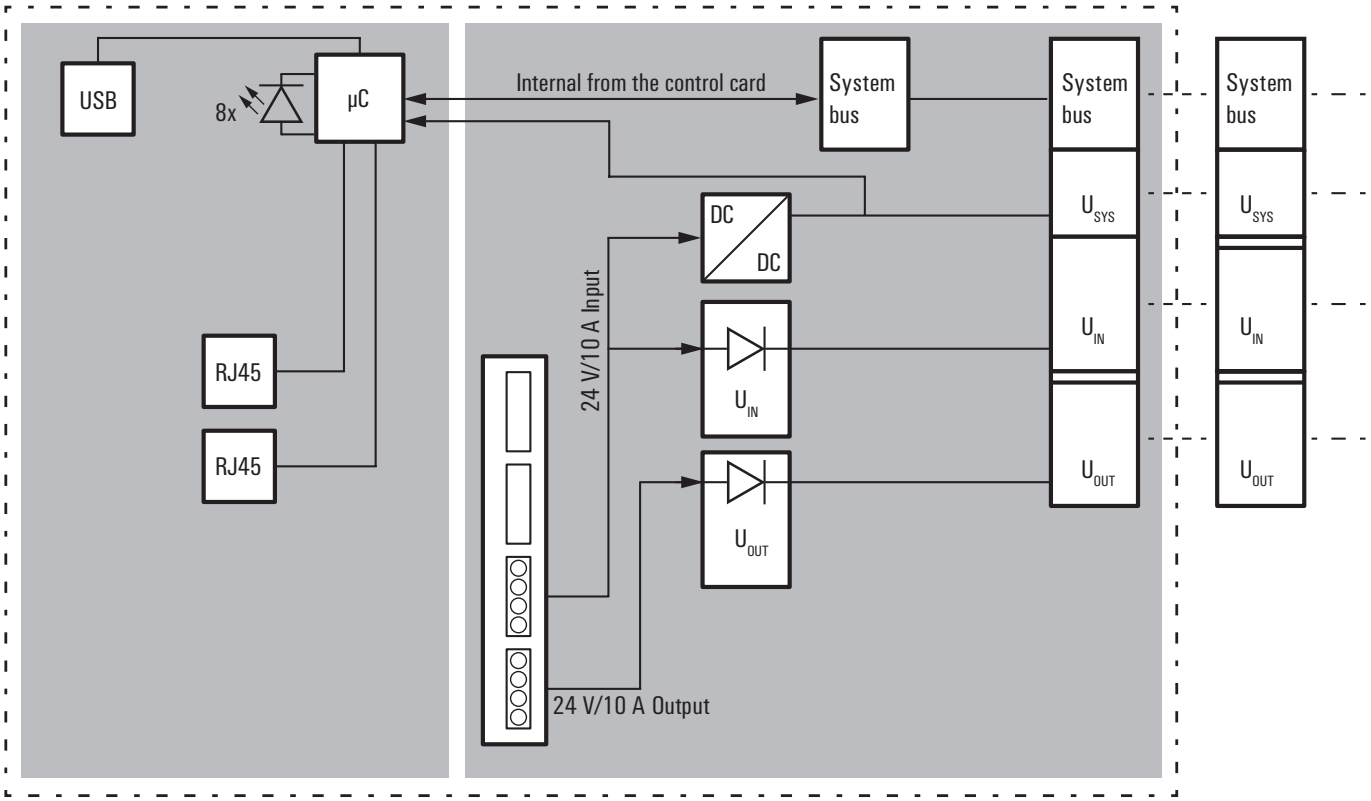
ModbusTCP

System safety around the globe is provided by the ModbusTCP version, which is stated in IEC 61158 as an Industrial Ethernet Standard. The UR20-FBC-MOD-TCP-V2 from Weidmüller is a fieldbus coupler designed in accordance with IEC 61158. With options for connecting up to 64 u-remote participants, it serves as the head module for the u-remote system bus.

The coupler can be activated with a system-independent web server application via the USB service interface or the Ethernet ports. All information, such as diagnoses, status values and parameters, can therefore be read out. All connected inputs can also be simulated or outputs set. The system's initial power supply is already integrated in the fieldbus coupler. Power is supplied via two 4-pin connectors, separated into the input and output current paths.

Since the ModbusTCP products from Weidmüller make full use of all the latest technological possibilities, such as diagnosis options, they actively support your application in the most important tasks – from engineering and commissioning to fault diagnosis.

Block diagram Modbus TCP fieldbus coupler



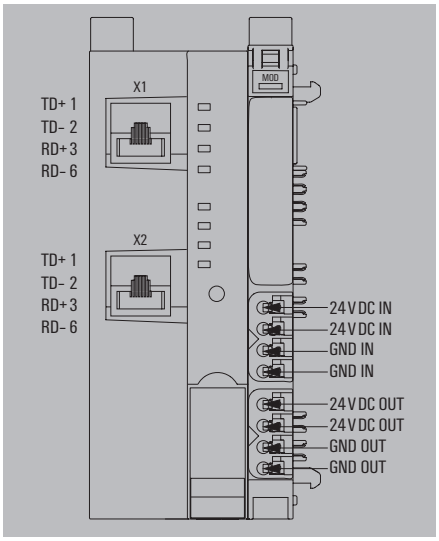
ModbusTCP

- 2 x 10 A current path
- Web server
- System supply for 64 I/O modules
- Temperature range: -20... +60 °C
- Dual LAN mode
- Various Modbus services

UR20-FBC-MOD-TCP-V2

Technical data

System data	
Connection type	2x RJ45 plug-in connectors
Field bus protocol	Modbus/TCP
Process data	1 kByte
Parameter data	1024 Byte
Diagnostic data	1024 Byte
max. number of modules	64
Configuration interface	Micro USB 2.0
Transmission rate of field bus, max.	100 Mbit/s
Transmission speed of system bus, max.	48 Mbit/s
Supply	
Supply voltage for inputs	24 V DC +20 %/ -15 %
Supply voltage for outputs	24 V DC +20 %/ -15 %
Feed current for I_{IN} (input current path) , max.	10 A
Feed current for I_{OUT} (output current path) , max.	10 A
Current consumption I_{IN} (power segment of the field bus coupler), typ.	112 mA
General data	
Weight	223 g
Dimensions H x W x D	120 mm / 52 mm / 76 mm
Note	



Ordering data

Module variants		
Fieldbus coupler, ModbusTCP		
Note		

Type	Qty.	Order No.
UR20-FBC-MOD-TCP-V2	1	**2476450000**
A termination kit (UR20-EBK-ACC) is included in the coupler package		

Accessories

	Type	**Qty.**	**Order No.**
Termination kit	UR20-EBK-ACC	5	**1346610000**
Swivel marker	UR20-SM-ACC	20	**1339920000**
Connection marker for pusher custom printing	PM 2.7/2.6 MC SDR	192	**1323700000**
Connection marker for pusher neutral	PM 2.7/2.6 MC NE WS	960	**1323710000**
Module marker for custom printing	DEK 5/8-11.5 MC SDR	100	**1341610000**
Module marker for neutral	DEK 5/8-11.5 MC NE WS	500	**1341630000**
Thermotransfer version (Material: Polyester)	THM UR20 GE	1	**1429910000**
Thermotransfer version (material: polyester)	THM UR20 WS	1	**1429420000**
Paper version for Laserprinter	ESO UR20 DIN A4 WS	10	**1429430000**
USB cable (USB A to Micro USB)	IE-USB-A-MICRO-1.8M	1	**1487980000**
Replacement parts			
Plug-in connector unit	UR20-PK-2476450000-SP	5	**2485280000**
Note	1 roll = 1000 labels = 1 Qty. 1 sheet = 60 labels = 1 unit		

ModbusTCP fieldbus coupler ECO

Web server tool, two RJ45 Ports, 100 Mbit/s

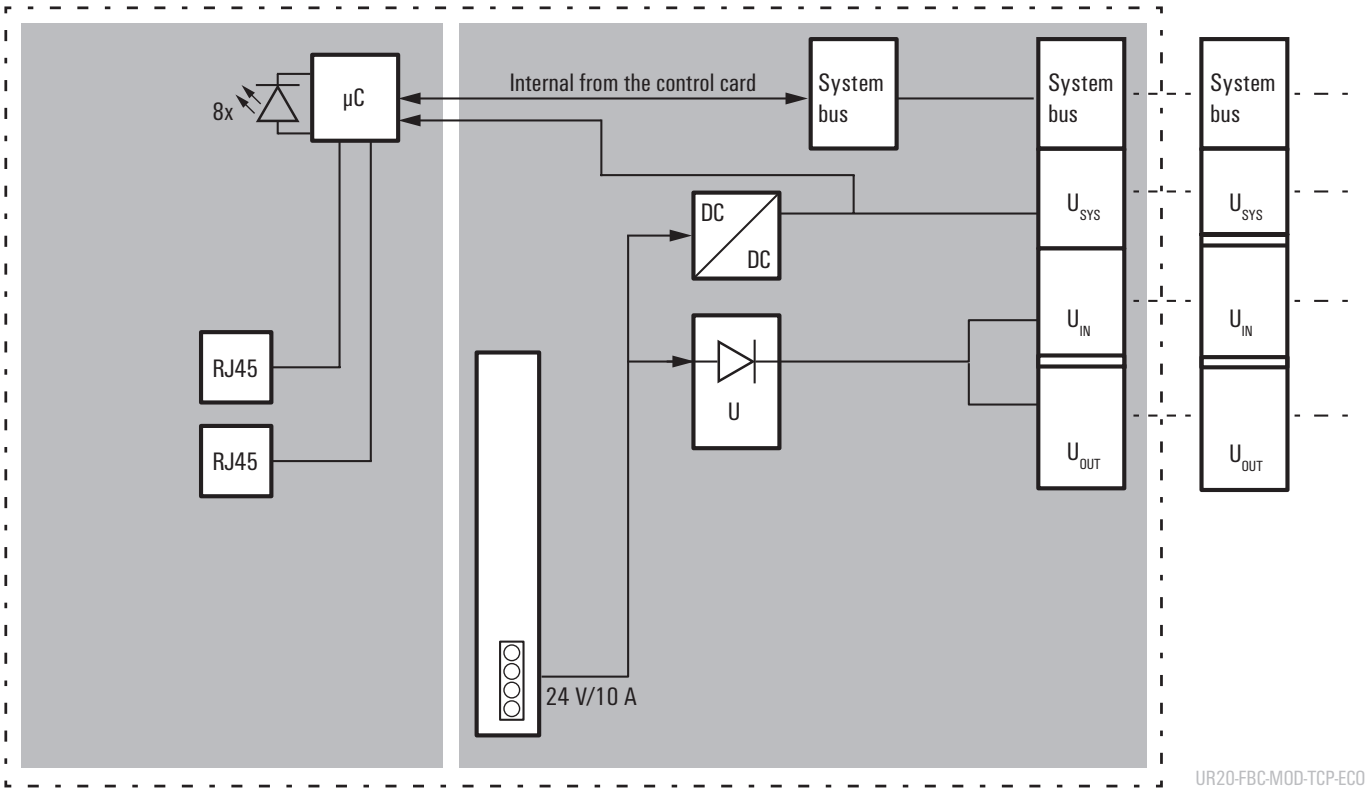
ModbusTCP

System safety around the globe is provided by the Modbus TCP version, which is stated in IEC 61158 as an Industrial Ethernet Standard. The UR20-FBC-MOD-TCP-ECO from Weidmüller is a fieldbus coupler designed in accordance with IEC 61158. With options for connecting up to 16 u-remote participants, it serves as the head module for the u-remote system bus.

The coupler can be activated with a system-independent web server application via the Ethernet ports. All information, such as diagnoses, status values and parameters, can therefore be read out. All connected inputs can also be simulated or outputs set. The initial system power supply is already integrated in the fieldbus coupler.

ModbusTCP products from Weidmüller fully exploit all the possibilities of the technology standard, e.g. through diagnostic options. In this way, they actively support your application in the most important tasks – from engineering and commissioning to fault diagnosis.

Block diagram Modbus TCP fieldbus coupler ECO



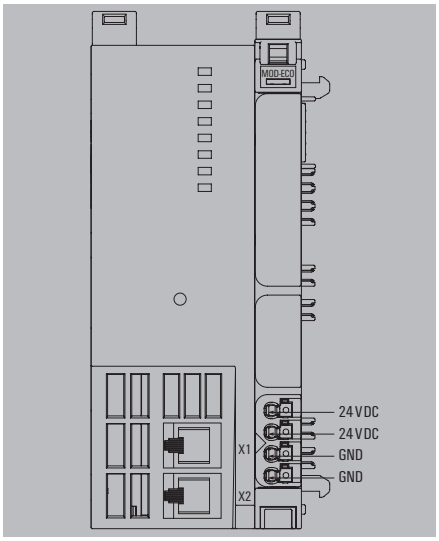
ModbusTCP ECO

- 10 A current paths
- Web server via ethernet
- System supply of 16 I/O modules
- Temperature range 0... +50 °C
- Various Modbus services

UR20-FBC-MOD-TCP-ECO

Technical data

System data	
Connection type	2x RJ45 plug-in connectors
Field bus protocol	Modbus/TCP
Process data	1 kByte
Parameter data	1 kByte
Diagnostic data	1 kByte
max. number of modules	16
Transmission rate of field bus, max.	100 Mbit/s
Transmission speed of system bus, max.	48 Mbit/s
Supply	
Voltage supply	24 V DC +20 %/ -15 %, via the system bus
Feed current for I_{IN} (input current path) , max.	10 A
Current consumption I_{IN} (power segment of the field bus coupler), typ.	80 mA
General data	
Weight	247 g
Dimensions H x W x D	120 mm / 52 mm / 76 mm
Note	



Ordering data

Module variants	Type	Qty.	Order No.
Fieldbus coupler, ModbusTCP	UR20-FBC-MOD-TCP-ECO	1	**2659700000**
Note	A termination kit (UR20-EBK-ACC) is included in the coupler package.		

Accessories

	Type	Qty.	Order No.
Termination kit	UR20-EBK-ACC	5	**1346610000**
Swievel marker	UR20-SM-ACC	20	**1339920000**
Connection marker for pusher custom printing	PM 2.7/2.6 MC SDR	192	**1323700000**
Connection marker for pusher neutral	PM 2.7/2.6 MC NE WS	960	**1323710000**
Module marker for custom printing	DEK 5/8-11.5 MC SDR	100	**1341610000**
Module marker for neutral	DEK 5/8-11.5 MC NE WS	500	**1341630000**
Thermotransfer version (Material: Polyester)	THM UR20 GE	1	**1429910000**
Thermotransfer version (material: polyester)	THM UR20 WS	1	**1429420000**
Paper version for Laserprinter	ESO UR20 DIN A4 WS	10	**1429430000**
Replacement parts			
Plug-in connector unit	UR20-PK-2659700000-SP	5	**2702610000**
Note	1 roll = 1000 labels = 1 Qty. 1 sheet = 60 labels = 1 unit		

Digital input modules

P- or N-switching, Reverse polarity protection, up to 3-wire+FE

Digital input modules from Weidmüller are available in different versions and are used primarily to receive binary control signals from sensors, transmitters, switches or proximity switches. Thanks to their flexible design, they will satisfy your need for well coordinated project planning with reserve potential.

All modules are available with 4, 8 or 16 inputs and comply fully with IEC 61131-2. The digital input modules are available as P- or N-switching variant. The digital inputs are for Type 1 and Type 3 sensors in accordance with the standard. With a maximum input frequency of up to 1 kHz, they are used in many different applications. The variant for PLC interface units enables rapid cabling to the proven Weidmüller interface sub-assemblies using system cables. This ensures rapid incorporation into your overall system. Two modules with a timestamp function are able to capture binary signals and to provide a timestamp in 1 µs resolution. Further solutions are possible with the module UR20-4DI-2W-230V-AC which works with accurant current up to 230 V as an input signal.

The module electronics supply the connected sensors from the input current path (U_{IN}).

UR20-4DI-P

UR20-4DI-P-3W

UR20-8DI-P-2W

UR20-8DI-P-3W

UR20-8DI-P-3W-HD

UR20-16DI-P

UR20-16DI-P-PLC-INT

UR20-2DI-P-TS

UR20-4DI-P-TS

UR20-4DI-N

UR20-8DI-N-3W

UR20-16DI-N

UR20-16DI-N-PLC-INT

UR20-4DI-2W-230V-AC

UR20-8DI-ISO-2W

Analogue input modules

Input parameters can be set for current or voltage, up to 3-wire+FE, Accuracy 0.1% FSR

The analogue input modules can detect up to 2, 4 or 8 analogue sensors with +/-10 V, +/-5 V, 0...10 V, 0...5 V, 2...10 V, 1...5 V, 0...20 mA or 4...20 mA. Variations are available in 12 and 16 bit resolution per channel. Sensors in a 2-wire, 3-wire or 3-wire connection + FE can be connected to each plug-in connector. The measurement range is defined using parametrisation. A status LED is assigned to each channel. The inputs are protected against voltage surges and overcurrent. The module electronics supply the connected sensors from the input current path I_{IN} (The "ISO" module is an exception: the module has no auxiliary voltage outputs. Connected sensors must be supplied with power from external sources).

"DIAG" module: the module provides individual channel diagnosis with channel-related fault messages.

"DIF" module: the input channels are differential inputs with a common-mode voltage range of +/-30 V.

"HART" module: the module can be used as a HART master, with each channel using a dedicated HART modem. HART devices can be connected to each channel in single connection (point-to-point, P2P) or multiple connection (multidrop).

UR20-2AI-UI-16

UR20-4AI-UI-12

UR20-4AI-UI-16

UR20-2AI-UI-16-DIAG

UR20-4AI-UI-16-DIAG

UR20-4AI-UI-ISO-16-DIAG

UR20-4AI-UI-16-HD

UR20-4AI-UI-16-DIAG-HD

UR20-8AI-I-16-HD

UR20-8AI-I-16-DIAG-HD

UR20-8AI-I-PLC-INT

UR20-4AI-UI-DIF-16-DIAG

UR20-4AI-UI-DIF-32-DIAG

UR20-4AI-I-HART-16-DIAG

UR20-4AI-I-HART-ISO-16

Strain gauge module

2-channel module for u-remote load cell analysis

The UR20-2AI-SG-24-DIAG strain gauge module is an analogue input module designed for the connection of force sensors that use strain gauges. In this way, weights, torques or vibrations can be precisely recorded. The module can be calibrated via parametrisation. The web server can be used to calibrate the module with password protection, and the calibration settings are then documented.

The tare function can be triggered individually for each channel via a digital input or via software. Several sensors can be connected in parallel to each of the two channels in a 4- or 6-wire connection, as long as their input impedance is within the permissible sensor load. The resolution per channel is 24 bits with an accuracy of 0.01% of full scale. A status LED is assigned to each channel. The module electronic supplies the connected sensors from a potential electrogalvanised from the input current path (I_{IN}). The inputs are protected against voltage surges and overcurrent.

The u-remote strain gauge module enables the parallel analysis of measurement data from up to four load cells on a single channel.

UR20-2AI-SG-24-DIAG

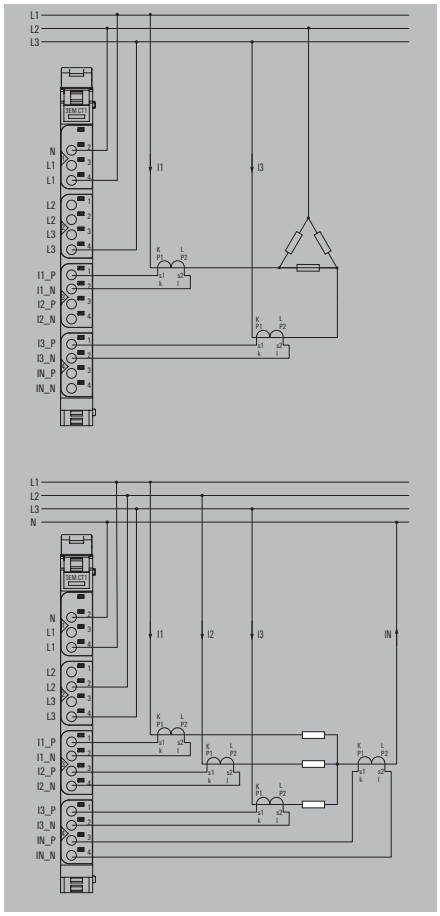
3EM-400V-AC-CT1A

- 1-phase power measurement for 1 A converter (with or without transformer)
- 16 bit resolution
- 32 bit resolution for energy meters
- Power-/ reactiv power measurement
- Energy meter Active / reactive
- Power factor
- Frequency measurement 45 ... 65 Hz
- Analysis of 43 harmonics

UR20-3EM-400V-AC-CT1A

Technical data

System data	
Interface	u-remote system bus
Transmission speed of system bus, max.	192 Mbit
Galvanic isolation	500 V DC between the current paths
Supply	
Voltage supply	24 V DC +20 %/ -15 %, via the system bus, 24V DC +20 %/-15 % (according to IEC 61131), 24V DC +30%/-25% (according to DNV GL)
Current consumption I_{IN} (power segment of the field bus coupler), typ.	8 mA
Current consumption I_{IN} (the respective power segment)	<35 mA
Analogue inputs	
Number	3 voltage inputs / 4 current inputs
Rated voltage	300 V eff AC (L-N), 520 V eff AC (L-L), according to table I.1 of IEC 61010-1:2010/AMD1:2016/COR1:2019
Resolution	16 bit per channel (internal 24 bit), 32 bit for energy counter
Sampling rate of current measurement	Sigma Delta ADC with 1.024 MHz (bandwidth of interest from 40 Hz to 3.3 kHz)
Frequency of the supply system	45...65 Hz
Analysis of harmonic	up to 43rd
Power rating	0...1 A AC
Insulation	reinforced insulation
Category for voltage measurements	CAT III (according to IEC 61010-1), CAT II (according to IEC 61010-1) for installations with rated voltage to earth > 300 V
Measurement method	High Resolution Delta Sigma (current measurement in outer conductor)
Measurement accuracy	0.25% in relation to final value (U / I), 0.5% for the calculated values, 0.75% for harmonics
Connectable converter ratios	1:1
Input impedance voltage	1.881 MΩ
Input impedance current (differential)	40 mΩ
General data	
Weight	91 g
Dimensions H x W x D	120 mm / 11.5 mm / 76 mm
Note	



Ordering data

Module variants	Qty.	Order No.
Power measurement module, 3 channels		
UR20-3EM-400V-AC-CT1A	1	**2920830000**
Note		

Accessories

	Qty.	Order No.
Coding elements	100	**1483050000**
Termination kit	5	**1346610000**
Swivel marker	20	**1339920000**
Connection marker for pusher custom printing	192	**1323700000**
Connection marker for pusher neutral	960	**1323710000**
Module marker for custom printing	100	**1341610000**
Module marker for neutral	500	**1341630000**
Thermotransfer version (Material: Polyester)	1	**1429910000**
Thermotransfer version (material: polyester)	1	**1429420000**
Paper version for Laserprinter	10	**1429430000**
Replacement parts		
Electronic module	1	**3052120000**
Basic module	5	**1350930000**
Plug-in connector unit	5	**3052170000**
Note		

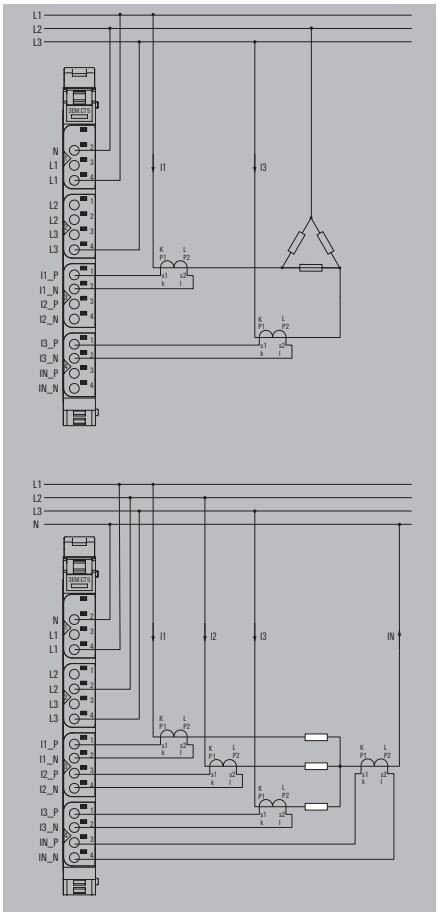
3EM-400V-AC-CT5A

- 1-phase power measurement for 5 A converter (with or without transformer)
- 16 bit resolution
- 32 bit resolution for energy meters
- Power-/ reactiv power measurement
- Energy meter Active / reactive
- Power factor
- Frequency measurement 45 ... 65 Hz
- Analysis of 43 harmonics

UR20-3EM-400V-AC-CT5A

Technical data

System data	
Interface	u-remote system bus
Transmission speed of system bus, max.	192 Mbit
Galvanic isolation	500 V DC between the current paths
Supply	
Voltage supply	24 V DC +20 %/ -15 %, via the system bus, 24V DC +20 %/-15 % (according to IEC 61131), 24V DC +30%/-25% (according to DNV GL)
Current consumption I_{IN} (power segment of the field bus coupler), typ.	8 mA
Current consumption I_{IN} (the respective power segment)	<35 mA
Analogue inputs	
Number	3 voltage inputs / 4 current inputs
Rated voltage	300 V eff AC (L-N), 520 V eff AC (L-L), according to table I.1 of IEC 61010-1:2010/AMD1:2016/COR1:2019
Resolution	16 bit per channel (internal 24 bit), 32 bit for energy counter
Sampling rate of current measurement	Sigma Delta ADC with 1.024 MHz (bandwidth of interest from 40 Hz to 3.3 kHz)
Frequency of the supply system	45...65 Hz
Analysis of harmonic	up to 43rd
Power rating	0...5 A AC
Insulation	reinforced insulation
Category for voltage measurements	CAT III (according to IEC 61010-1), CAT II (according to IEC 61010-1) for installations with rated voltage to earth > 300 V
Measurement method	High Resolution Delta Sigma (current measurement in outer conductor)
Measurement accuracy	0.25% in relation to final value (U / I), 0.5% for the calculated values, 0.75% for harmonics
Connectable converter ratios	5:5
Input impedance voltage	1.881 MΩ
Input impedance current (differential)	5 mΩ
General data	
Weight	91 g
Dimensions H x W x D	120 mm / 11.5 mm / 76 mm
Note	



Ordering data

Module variants	Qty.	Order No.
Power measurement module, 3 channels		
Note		
UR20-3EM-400V-AC-CT5A	1	**2920840000**

Accessories

	Qty.	Order No.
Coding elements	100	**1483050000**
Termination kit	5	**1346610000**
Swivel marker	20	**1339920000**
Connection marker for pusher custom printing	192	**1323700000**
Connection marker for pusher neutral	960	**1323710000**
Module marker for custom printing	100	**1341610000**
Module marker for neutral	500	**1341630000**
Thermotransfer version (Material: Polyester)	1	**1429910000**
Thermotransfer version (material: polyester)	1	**1429420000**
Paper version for Laserprinter	10	**1429430000**
Replacement parts		
Electronic module	1	**3052130000**
Basic module	5	**1350930000**
Plug-in connector unit	5	**3052180000**
Note		

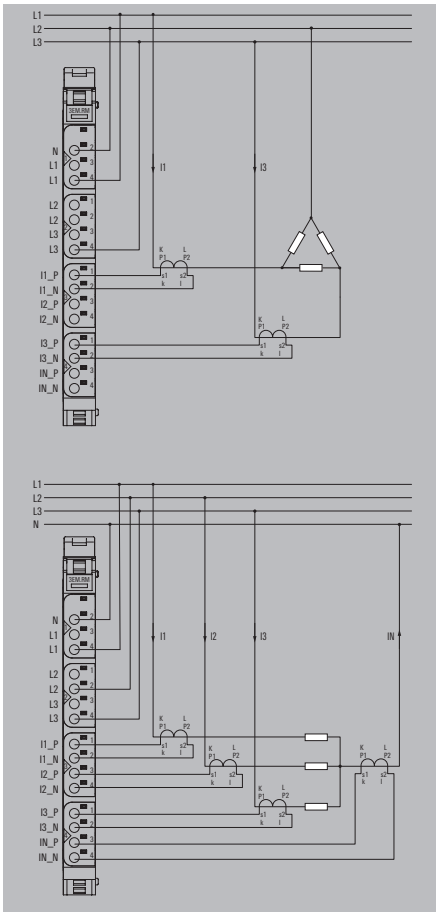
3EM-400V-AC-RC

- 1-phase power measurement for Rogowski coils
- 16 bit resolution
- 32 bit resolution for energy meters
- Power-/ reactiv power measurement
- Energy meter Active / reactive
- Power factor
- Frequency measurement 45 ... 65 Hz
- Analysis of 43 harmonics

UR20-3EM-400V-AC-RC

Technical data

System data	
Interface	u-remote system bus
Transmission speed of system bus, max.	192 Mbit
Galvanic isolation	500 V DC between the current paths
Supply	
Voltage supply	24 V DC +20 %/ -15 %, via the system bus, 24V DC +20 %/-15 % (according to IEC 61131), 24V DC +30%/-25% (according to DNV GL)
Current consumption I_{IN} (power segment of the field bus coupler), typ.	8 mA
Current consumption I_{IN} (the respective power segment)	<35 mA
Analogue inputs	
Number	3 voltage inputs / 4 current inputs
Rated voltage	300 V_{eff} AC (L–N), 520 Veff AC (L–L), according to table I.1 of IEC 61010-1:2010/AMD1:2016/COR1:2019
Resolution	16 bit per channel (internal 24 bit), 32 bit for energy counter
Sampling rate of current measurement	Sigma Delta ADC with 1.024 MHz (bandwidth of interest from 40 Hz to 3.3 kHz)
Frequency of the supply system	45...65 Hz
Analysis of harmonic	up to 43rd
Power rating	112.5 mV_{eff} / 1 Aeff (50 Hz), 135 mV_{eff} / 1 A_{eff} (60 Hz)
Insulation	reinforced insulation
Category for voltage measurements	CAT III (according to IEC 61010-1), CAT II (according to IEC 61010-1) for installations with rated voltage to earth > 300 V
Measurement method	Converter / Current transformer / Voltage transformer
Measurement accuracy	0.25% in relation to final value (U / I), 0.5% for the calculated values, 0.75% for harmonics
Input impedance voltage	1.881 MΩ
General data	
Weight	91 g
Dimensions H x W x D	120 mm / 11.5 mm / 76 mm



Note

Ordering data

Module variants	Qty.	Order No.
Power measurement module, 3 channels		
UR20-3EM-400V-AC-RC	1	**2920850000**

Note

Accessories

	Type	Qty.	Order No.
Coding elements	KOSM BHZ5.00	100	**1483050000**
Termination kit	UR20-EBK-ACC	5	**1346610000**
Swivel marker	UR20-SM-ACC	20	**1339920000**
Connection marker for pusher custom printing	PM 2.7/2.6 MC SDR	192	**1323700000**
Connection marker for pusher neutral	PM 2.7/2.6 MC NE WS	960	**1323710000**
Module marker for custom printing	DEK 5/8-11.5 MC SDR	100	**1341610000**
Module marker for neutral	DEK 5/8-11.5 MC NE WS	500	**1341630000**
Thermotransfer version (Material: Polyester)	THM UR20 GE	1	**1429910000**
Thermotransfer version (material: polyester)	THM UR20 WS	1	**1429420000**
Paper version for Laserprinter	ESO UR20 DIN A4 WS	10	**1429430000**
Replacement parts			
Electronic module	UR20-EM-2920850000-SP		**3052140000**
Basic module	UR20-BM-SP	5	**1350930000**
Plug-in connector unit	UR20-PK-2920850000-SP		**3052190000**

Note

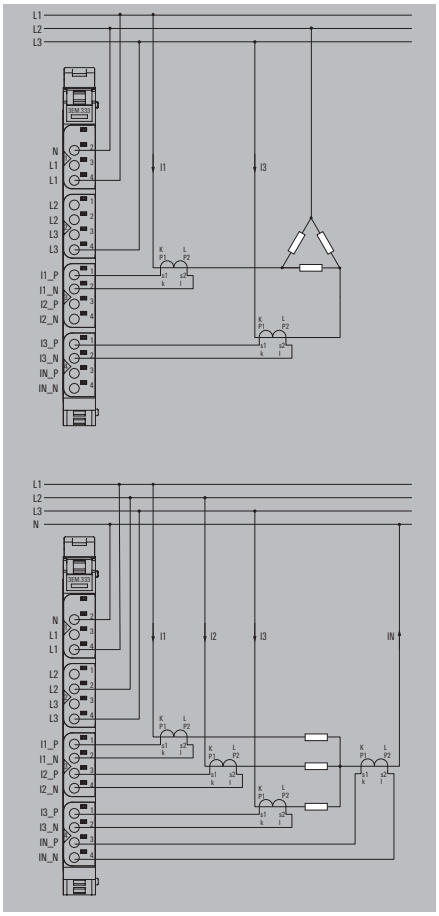
3EM-400V-AC-333MV

- 1-phase power measurement for current transformers with 333 mV output
- 16 bit resolution
- 32 bit resolution for energy meters
- Power-/ reactiv power measurement
- Energy meter Active / reactive
- Power factor
- Frequency measurement 45 ... 65 Hz
- Analysis of 43 harmonics

UR20-3EM-400V-AC-333MV

Technical data

System data	
Interface	u-remote system bus
Transmission speed of system bus, max.	192 Mbit
Galvanic isolation	500 V DC between the current paths
Supply	
Voltage supply	24 V DC +20 %/ -15 %, via the system bus, 24V DC +20 %/-15 % (according to IEC 61131), 24V DC +30%/-25% (according to DNV GL)
Current consumption I_{IN} (power segment of the field bus coupler), typ.	8 mA
Current consumption I_{IN} (the respective power segment)	<35 mA
Analogue inputs	
Number	3
Rated voltage	300 V_{eff} AC (L–N), 520 Veff AC (L–L), according to table I.1 of IEC 61010-1:2010/AMD1:2016/COR1:2019
Resolution	16 bit per channel (internal 24 bit), 32 bit for energy counter
Sampling rate of current measurement	Sigma Delta ADC with 1.024 MHz (bandwidth of interest from 40 Hz to 3.3 kHz)
Frequency of the supply system	45...65 Hz
Analysis of harmonic	up to 43rd
Power rating	333 mV_{eff} / 1 A_{eff}
Insulation	reinforced insulation
Category for voltage measurements	CAT III (according to IEC 61010-1), CAT II (according to IEC 61010-1) for installations with rated voltage to earth > 300 V
Measurement method	Converter / Current transformer / Voltage transformer
Measurement accuracy	0.25% in relation to final value (U / I), 0.5% for the calculated values, 0.75% for harmonics
Input impedance voltage	1.881 MΩ
General data	
Weight	91 g
Dimensions H x W x D	120 mm / 11.5 mm / 76 mm
Note	



Ordering data

Module variants	Qty.	Order No.
Power measurement module, 3 channels		
UR20-3EM-400V-AC-333MV	1	**2920860000**
Note		

Accessories

	Qty.	Order No.
Coding elements	100	**1483050000**
Termination kit	5	**1346610000**
Swivel marker	20	**1339920000**
Connection marker for pusher custom printing	192	**1323700000**
Connection marker for pusher neutral	960	**1323710000**
Module marker for custom printing	100	**1341610000**
Module marker for neutral	500	**1341630000**
Thermotransfer version (Material: Polyester)	1	**1429910000**
Thermotransfer version (material: polyester)	1	**1429420000**
Paper version for Laserprinter	10	**1429430000**
Replacement parts		
Electronic module		**3052200000**
Basic module	5	**1350930000**
Plug-in connector unit		**3052210000**
Note		

Combining OT and IT to perfection

Modular controllers for industrial automation and IoT applications

In the context of automation, more and more physical devices are being integrated into networks. This promotes the trend towards convergence of IT and OT systems. The new modular control systems u-control M3000 and M4000 point the way to the future.

M3000 or M4000 – which controller is right for you?
With u-control M3000, automation solutions can be perfectly integrated into the IoT integration. The powerful controller also serves as an edge device for information in the network and can be expanded by connecting function modules – ideal for automation and Industrial IoT applications. u-control M4000 also offers two additional CPU cores, four Ethernet interfaces and more RAM, NV-RAM and flash memory for complex edge computing in automation.

Approvals:

Planned approvals:


PLC and edge device in one device
MultiCore technology
u-OS inside
2 Ethernet interfaces
4 Ethernet interfaces
Optional extension with additional interfaces (field buses, Wifi, GSM)
Simple option for connecting additional function modules

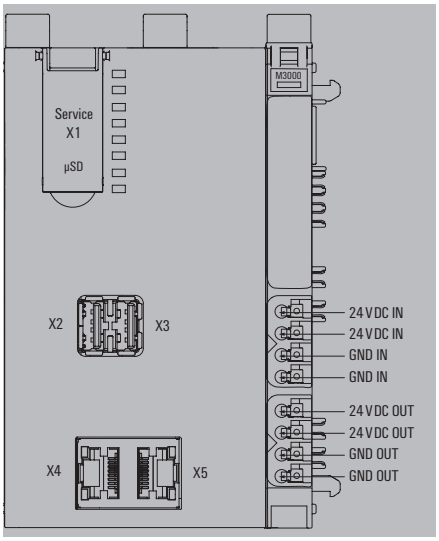
UC20-M3000

- Controller for automation and IoT applications
- u-OS integrated
- System supply for 64 u-remote I/O modules
- Additional interface for function modules that can be bayed on the left
- Dual-core CPU, 1.2 GHz
- 2 x 10 A current path

UC20-M3000

Technical data

System data	
Connection type	PUSH IN
max. number of modules	64
Configuration interface	USB-C (3.1), MicroSD CARD
Processor	Dual Core ARM Cortex A53, 1200 MHz
Memory (Flash)	16 GB
Real-time clock	Battery buffered
Engineering tool	u-OS
Supply	
Supply voltage for inputs	24 V DC +20 %/ -15 %
Supply voltage for outputs	24 V DC +20 %/ -15 %
Feed current for I_{IN} (input current path) , max.	10 A
Feed current for I_{OUT} (output current path) , max.	10 A
Current consumption I_{IN} (power segment of the field bus coupler), typ.	116 mA
General data	
Weight	588 g
Dimensions H x W x D	120 mm / 80 mm / 101 mm
Note	



Ordering data

Module variants	Qty.	Order No.
UC20-M3000	1	**2839150000**
Note	A termination kit (UC20-EBK-ACC) is included in the controller package.	

Accessories

	Type	Qty.	Order No.
Swievel marker	UR20-SM-ACC	20	**1339920000**
Connection marker for pusher custom printing	PM 2.7/2.6 MC SDR	192	**1323700000**
Connection marker for pusher neutral	PM 2.7/2.6 MC NE WS	960	**1323710000**
Module marker for custom printing	DEK 5/8-11.5 MC SDR	100	**1341610000**
Module marker for neutral	DEK 5/8-11.5 MC NE WS	500	**1341630000**
Thermotransfer version (Material: Polyester)	THM UR20 GE	1	**1429910000**
Thermotransfer version (material: polyester)	THM UR20 WS	1	**1429420000**
Paper version for Laserprinter	ESO UR20 DIN A4 WS	10	**1429430000**
USB cable (USB A to Micro USB)	IE-USB-A-MICRO-1.8M	1	**1487980000**
Replacement parts			
Plug-in connector unit	UR20-PK-2839150000-SP	5	**2884000000**
Control accessories			
SD Memory Card	SD-CARD	1	**2684400000**
Note	u-link licences: See catalogue 9 - Industrial Ethernet in chapter E, PROCON-WEB licences: See chapter G		

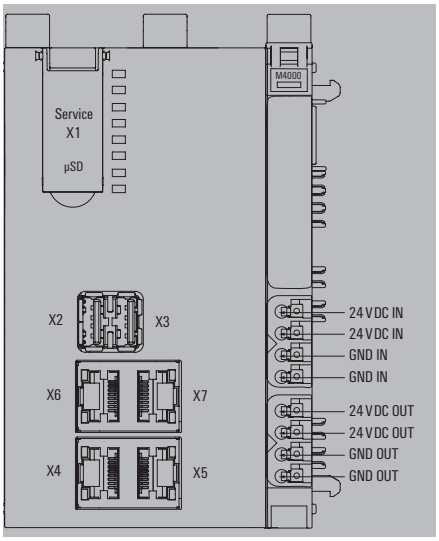
UC20-M3000

- Controller for automation and IoT applications
- u-OS integrated
- System supply for 64 u-remote I/O modules
- Additional interface for function modules that can be bayed on the left
- Quad-Core CPU, 1.2 GHz
- 2 x 10 A current path

UC20-M4000

Technical data

System data	
Connection type	PUSH IN
max. number of modules	64
Configuration interface	USB-C (3.1), MicroSD CARD
Processor	Quad Core ARM Cortex A53, 1200 MHz
Memory (Flash)	16 GB
Real-time clock	Battery buffered
Engineering tool	u-OS
Supply	
Supply voltage for inputs	24 V DC +20 %/ -15 %
Supply voltage for outputs	24 V DC +20 %/ -15 %
Feed current for I_{IN} (input current path) , max.	10 A
Feed current for I_{OUT} (output current path) , max.	10 A
Current consumption I_{IN} (power segment of the field bus coupler), typ.	116 mA
General data	
Weight	604 g
Dimensions H x W x D	120 mm / 80 mm / 101 mm
Note	



Ordering data

Module variants	Qty.	Order No.
UC20-M4000	1	**2839160000**
Note	A termination kit (UC20-EBK-ACC) is included in the controller package.	

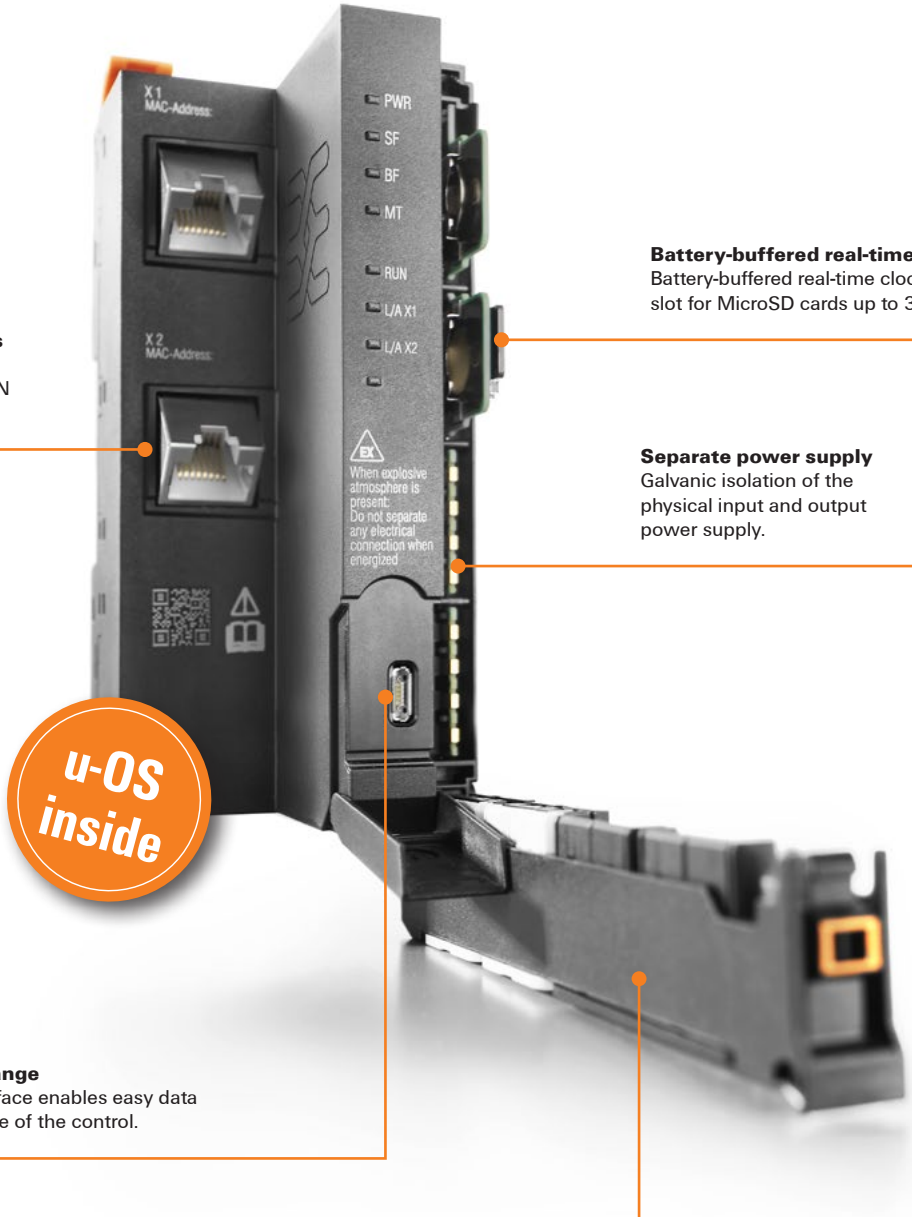
Accessories

	Type	Qty.	Order No.
Swievel marker	UR20-SM-ACC	20	**1339920000**
Connection marker for pusher custom printing	PM 2.7/2.6 MC SDR	192	**1323700000**
Connection marker for pusher neutral	PM 2.7/2.6 MC NE WS	960	**1323710000**
Module marker for custom printing	DEK 5/8-11.5 MC SDR	100	**1341610000**
Module marker for neutral	DEK 5/8-11.5 MC NE WS	500	**1341630000**
Thermotransfer version (Material: Polyester)	THM UR20 GE	1	**1429910000**
Thermotransfer version (material: polyester)	THM UR20 WS	1	**1429420000**
Paper version for Laserprinter	ESO UR20 DIN A4 WS	10	**1429430000**
USB cable (USB A to Micro USB)	IE-USB-A-MICRO-1.8M	1	**1487980000**
Replacement parts			
Plug-in connector unit	UR20-PK-2839160000-SP	5	**2883990000**
Control accessories			
SD Memory Card	SD-CARD	1	**2684400000**
Note	u-link licences: See catalogue 9 - Industrial Ethernet in chapter E, PROCON-WEB licences: See chapter G		

Flexible automation of applications
u-control WL2000 for compact and cost-optimised control

The u-control WL2000 controller is based on the compact design of the u-remote fieldbus coupler – for even greater space saving and maximum flexibility when it comes to the implementation of individual automation solutions. It is compatible with the u-remote range and allows for direct connection of I/O modules. Combined with our open u-OS operating system, it can be utilised for its entire range of applications, and offers an excellent level of customisation. For further information on u-OS, read chapter E.

The u-control WL2000 is equipped with an Ethernet-based fieldbus and one or optionally two TCP/IP interfaces. The controller also has an optional CAN interface. In addition, communication via the Modbus TCP protocol or OPC-UA is also possible over our u-OS operating system and Codesys. u-control WL2000 also has a Dual-Core ARM A9 processor and a USB service interface. In addition to the battery-buffered real-time clock, there is also a plug-in station for a microSD card with up to 32 GB of storage space for your projects.



Versatile connection options
Fitted with a fieldbus and TCP/IP interface, plus an optional CAN interface.

Battery-buffered real-time clock
Battery-buffered real-time clock and slot for MicroSD cards up to 32 GB.

Separate power supply
Galvanic isolation of the physical input and output power supply.

Simple data exchange
The micro USB interface enables easy data exchange and service of the control.

Input & output current
3 separate current paths for system bus, as well as input current and output current path.

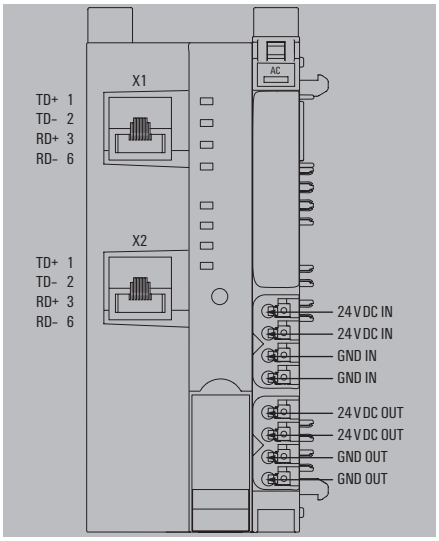
UC20-WL2000-AC

- Controller for automation and IoT applications
- Engineering tool u-create web
- System supply of 64 I/O modules
- Dual-Core CPU, 624 MHz
- 2 x 5 A current path

UC20-WL2000-AC

Technical data

System data	
Connection type	2 x RJ45 plug-in connectors
max. number of modules	64
Configuration interface	Micro USB 2.0
Processor	Dual Core ARM Cortex A9, 624 MHz, 512 Mbyte RAM
Memory (Flash)	8 GB, 32 GB via microSD
Real-time clock	Battery buffered
Engineering tool	u-create web, u-OS
Supply	
Supply voltage for inputs	24 V DC +20 %/ -15 %
Supply voltage for outputs	24 V DC +20 %/ -15 %
Feed current for I_{IN} (input current path) , max.	5 A
Feed current for I_{OUT} (output current path) , max.	5 A
Current consumption I_{IN} (power segment of the field bus coupler), typ.	116 mA
General data	
Weight	232 g
Dimensions H x W x D	120 mm / 52 mm / 76 mm
Note	



Ordering data

Module variants	Qty.	Order No.
Automation controller (Web engineering)	1	**1334950000**
Note		
A termination kit (UC20-EBK-ACC) is included in the controller package.		

Accessories

Type	Qty.	Order No.
Swivel marker	20	**1339920000**
Connection marker for pusher custom printing	192	**1323700000**
Connection marker for pusher neutral	960	**1323710000**
Module marker for custom printing	100	**1341610000**
Module marker for neutral	500	**1341630000**
Thermotransfer version (Material: Polyester)	1	**1429910000**
Thermotransfer version (material: polyester)	1	**1429420000**
Paper version for Laserprinter	10	**1429430000**
USB cable (USB A to Micro USB)	1	**1487980000**
Replacement parts		
Plug-in connector unit	5	**2605360000**
Control accessories		
SD Memory Card	1	**2684400000**
Battery for real-time clock	1	**2684410000**
Note		
u-link licences: See catalogue 9 - Industrial Ethernet in chapter E, PROCON-WEB licences: See chapter G		

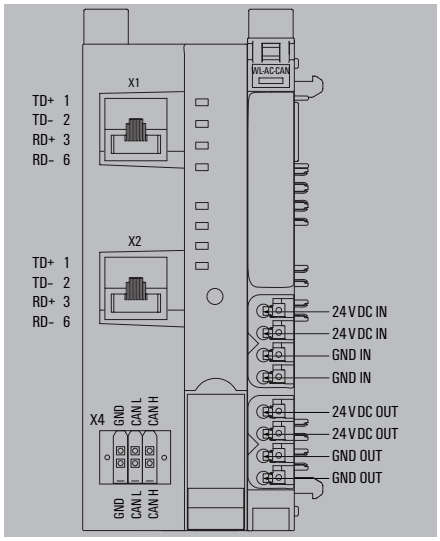
UC20-WL2000-AC-CAN

- Controller for automation and IoT applications
- Engineering tool u-create web
- System supply of 64 I/O modules
- Dual-Core CPU, 624 MHz
- 2 x 5 A current path
- CAN Interface

UC20-WL2000-AC-CAN

Technical data

System data	
Connection type	2 x RJ45 plug-in connectors
max. number of modules	64
Configuration interface	Micro USB 2.0
Processor	Dual Core ARM Cortex A9, 624 MHz, 512 Mbyte RAM
Memory (Flash)	8 GB, 32 GB via microSD
Real-time clock	Battery buffered
Engineering tool	u-create web, u-OS
Supply	
Supply voltage for inputs	24 V DC +20 %/ -15 %
Supply voltage for outputs	24 V DC +20 %/ -15 %
Feed current for I_{IN} (input current path) , max.	5 A
Feed current for I_{OUT} (output current path) , max.	5 A
Current consumption I_{IN} (power segment of the field bus coupler), typ.	116 mA
General data	
Weight	232 g
Dimensions H x W x D	120 mm / 52 mm / 76 mm
Note	



Ordering data

Module variants		
Automation controller (Web engineering)		
Note		

Type	Qty.	Order No.
UC20-WL2000-AC-CAN	1	**2928020000**
A termination kit (UC20-EBK-ACC) is included in the controller package.		

Accessories

Swivel marker		
Connection marker for pusher custom printing		
Connection marker for pusher neutral		
Module marker for custom printing		
Module marker for neutral		
Thermotransfer version (Material: Polyester)		
Thermotransfer version (material: polyester)		
Paper version for Laserprinter		
USB cable (USB A to Micro USB)		
Replacement parts		
Plug-in connector unit		
Control accessories		
SD Memory Card		
Battery for real-time clock		
Note		

Type	Qty.	Order No.
UR20-SM-ACC	20	**1339920000**
PM 2.7/2.6 MC SDR	192	**1323700000**
PM 2.7/2.6 MC NE WS	960	**1323710000**
DEK 5/8-11.5 MC SDR	100	**1341610000**
DEK 5/8-11.5 MC NE WS	500	**1341630000**
THM UR20 GE	1	**1429910000**
THM UR20 WS	1	**1429420000**
ESO UR20 DIN A4 WS	10	**1429430000**
IE-USB-A-MICRO-1.8M	1	**1487980000**
UR20-PK-2928020000-SP	5	**2742900000**
SD-CARD	1	**2684400000**
BATTERY-CR1220-3V	1	**2684410000**
u-link licences: See catalogue 9 - Industrial Ethernet in chapter E, PROCON-WEB licences: See chapter G		

Integration of existing components into IoT networks
Complete application representation for the IoT gateway

The intelligent networking of machines and devices in the IoT opens up many possibilities and offers opportunities for new business models. IoT gateways enable the exchange of data between field devices and servers or cloud applications. The transmitted data can be used to deepen process knowledge, carry out optimisations or offer new services.

Also available in IP54

With our IoT gateway, you can collect machine data and gain access to your field devices and controls. Various protocols and interfaces are available for this purpose. The Weidmüller u-OS operating system is pre-installed on the IoT gateway. This means customers can choose to install a wide range of apps for data pre-processing. One option is Node-RED as a graphic development tool for IoT applications, which makes available a large community and an extensive selection of system interfaces, as well as pre-processing functions free of charge. Nodes are available to easyConnect, AWS or Google cloud to ensure a simple, configurable connection to these systems. A connection to Siemens Industrial Edge via the convenient App Manager within u-OS is also possible as another example. Last but not least, of course, integration into the u-link remote access service is available, for remote maintenance of systems from any location. For location-independent remote system maintenance, you can also integrate the gateway into the u-link remote access service.

Your special advantage:

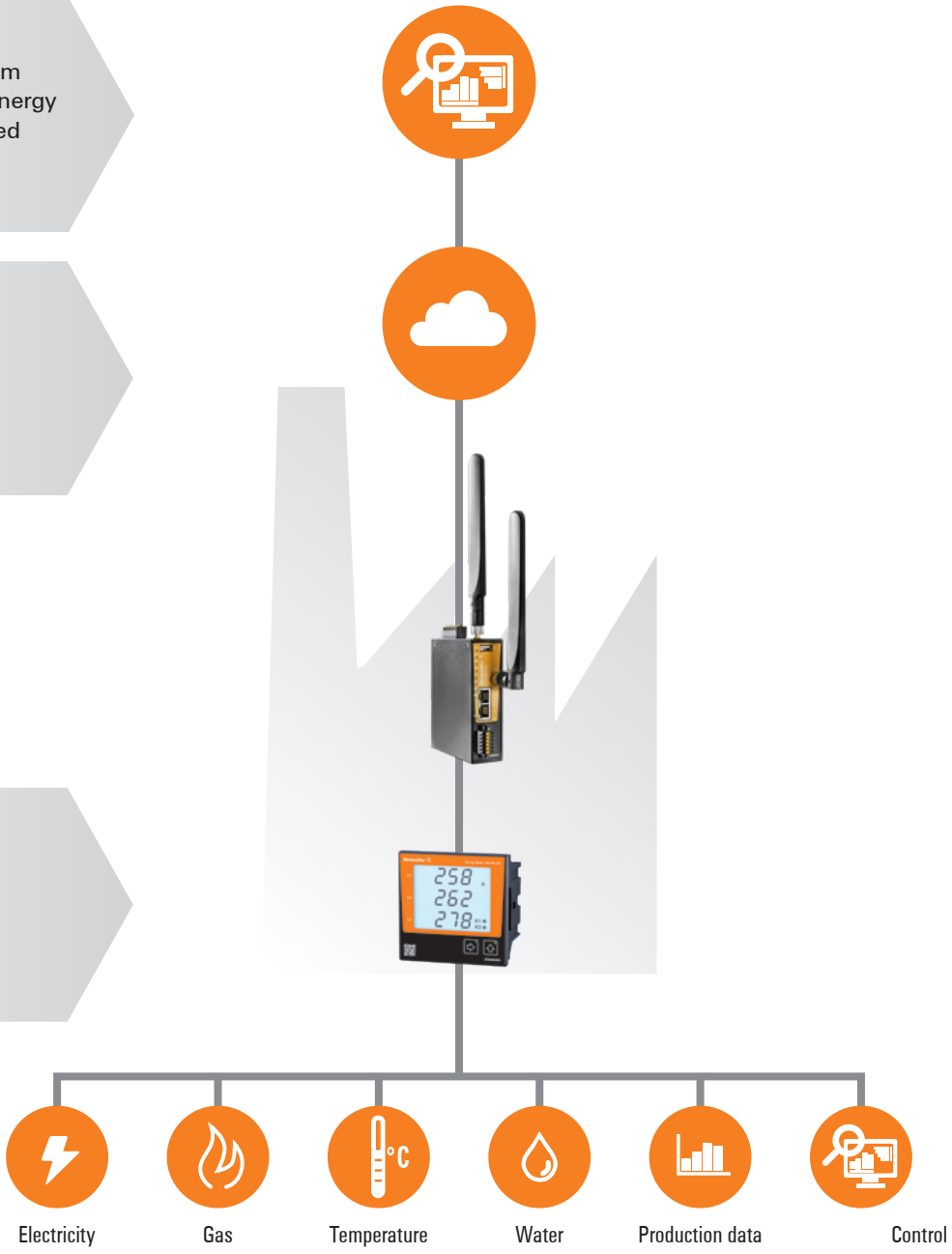
- Full flexibility via u-OS for your own and third party applications
  Simple installation of (software) containers and other apps through the App Manager
- Secure and cost-optimised use of cloud systems through pre-processing and storage
- Can also be used as a controller through Linux with PREEMPT-RT

Monitoring and analysis of the system status, e.g. with regard to the total energy consumption with a single web-based application

Transfer of system data to public cloud platforms

Use of a multifunctional measuring instrument with extensive interfaces

Collect data from a variety of field sensors and devices



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IoT-Gateways

- Enables machine data acquisition and provides access to field devices and PLC's via various protocols and interfaces
- Interfaces to your own IT systems as well as to common cloud systems
- Data traffic reduction through preprocessing on edge via the open IoT standard Node-RED
- Secure and easy remote maintenance with Weidmüller u-link remote access Service
- Integration of most common communication interfaces in small design
- D1Open programming platform Node-RED with strong community support

Technical data

Interfaces	
Digital outputs	1x, 19.2 - 28 V high; max. 1 A
Digital inputs	2x, >10 V high , <3.6 V low; max. 30 V DC
Ethernet ports	2
RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Serial port	1x RS232/RS485
USB port	1x USB 2.0 (Type A; max. 500 mA)
System data	
Real-time clock	Capacity buffered (max. 5 days)
Processor	Dual Core ARM Cortex A9, 600 MHz
Memory (Flash)	4 GB
Memory (RAM)	1 GB, DDR3
VPN functionality	
u-link	OpenVPN-based remote access service via the Weidmüller u-link cloud
Technical data	
Housing main material	Metal
Speed	Fast Ethernet
Protection degree	IP20
Type of mounting	DIN rail
Dimensions H x W x D	125 / 35 / 105 mm
Net weight	412 g
Environmental conditions	
Operating temperature	-20 °C...60 °C
Humidity	5 to 95 % (non-condensing)
Power supply	
Voltage supply	24 V DC
Voltage supply range	19.2...28VDC
Current consumption	0.24A @ 24V
Reverse polarity protection	Yes
Note	

Approvals	
EMC standards	EN 61000-6-3, EN 61000-6-2
Shock	according to IEC 60068-2-27
Vibration	according to IEC 60068-2-6
ROHS marking	J

Ordering data

Type	Qty.	Order No.
IOT-GW30	1	**2682620000**

Mobile phone antennas and connection cables can be found in Chapter I.

IoT-Gateways

- Enables machine data acquisition and provides access to field devices and PLC's via various protocols and interfaces
- Interfaces to your own IT systems as well as to common cloud systems
- Data traffic reduction through preprocessing on edge via the open IoT standard Node-RED
- Secure and easy remote maintenance with Weidmüller u-link remote access Service
- Integration of most common communication interfaces in small design
- D1Open programming platform Node-RED with strong community support

Technical data

Interfaces	
Connector for external antennas	2x SMA female
Number of SIM-Card slots	1
Digital outputs	1x, 19.2 - 28 V high; max. 1 A
Digital inputs	2x, >10 V high , <3.6 V low; max. 30 V DC
Ethernet ports	2
RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Serial port	1x RS232/RS485
SIM-Card slot type	Micro-SIM
USB port	1x USB 2.0 (Type A; max. 500 mA)
System data	
Real-time clock	Capacity buffered (max. 5 days)
Processor	Dual Core ARM Cortex A9, 600 MHz
Memory (Flash)	4 GB
Memory (RAM)	1 GB, DDR3
VPN functionality	
u-link	OpenVPN-based remote access service via the Weidmüller u-link cloud
Technical data	
Housing main material	Metal
Speed	Fast Ethernet
Protection degree	IP20
Type of mounting	DIN rail
Dimensions H x W x D	125 / 35 / 105 mm
Net weight	500 g
Environmental conditions	
Operating temperature	-20 °C...60 °C
Humidity	5 to 95 % (non-condensing)
Power supply	
Voltage supply	24 V DC
Voltage supply range	19.2...28VDC
Current consumption	0.24A @ 24V
Reverse polarity protection	Yes
Note	

Mobile radio interface	
Frequency band	LTE: 2100MHz (B1), 1800MHz (B3), 850MHz (B5), 2600MHz (B7), 900MHz (B8), 800MHz (B20), 2600MHz (B38), 2300MHz (B40), 2600MHz (B41), UMTS/WCDMA: 2100MHz (B1), 850MHz (B5), 900MHz (B8), GSM/GPRS/EDGE: 900MHz (B8), 1800MHz (B3)
Wireless module	LTE / HSPA+ multiband wireless module (4G / 3G / 2G) for fast wireless Internet access
LTE category	CAT 4
Download rate, max.	150
Upload rate, max.	50
Approvals	
EMC standards	EN 61000-6-3, EN 61000-6-2
Shock	according to IEC 60068-2-27
Vibration	according to IEC 60068-2-6
ROHS marking	J

Ordering data

Type	Qty.	Order No.
IOT-GW30-4G-EU	1	**2682630000**
IOT-GW30-4G-NA	1	**2682640000**

Mobile phone antennas and connection cables can be found in Chapter I.

Optimum visualisation and operation

u-view touch panels: brilliant pictures meet elegant, flat design

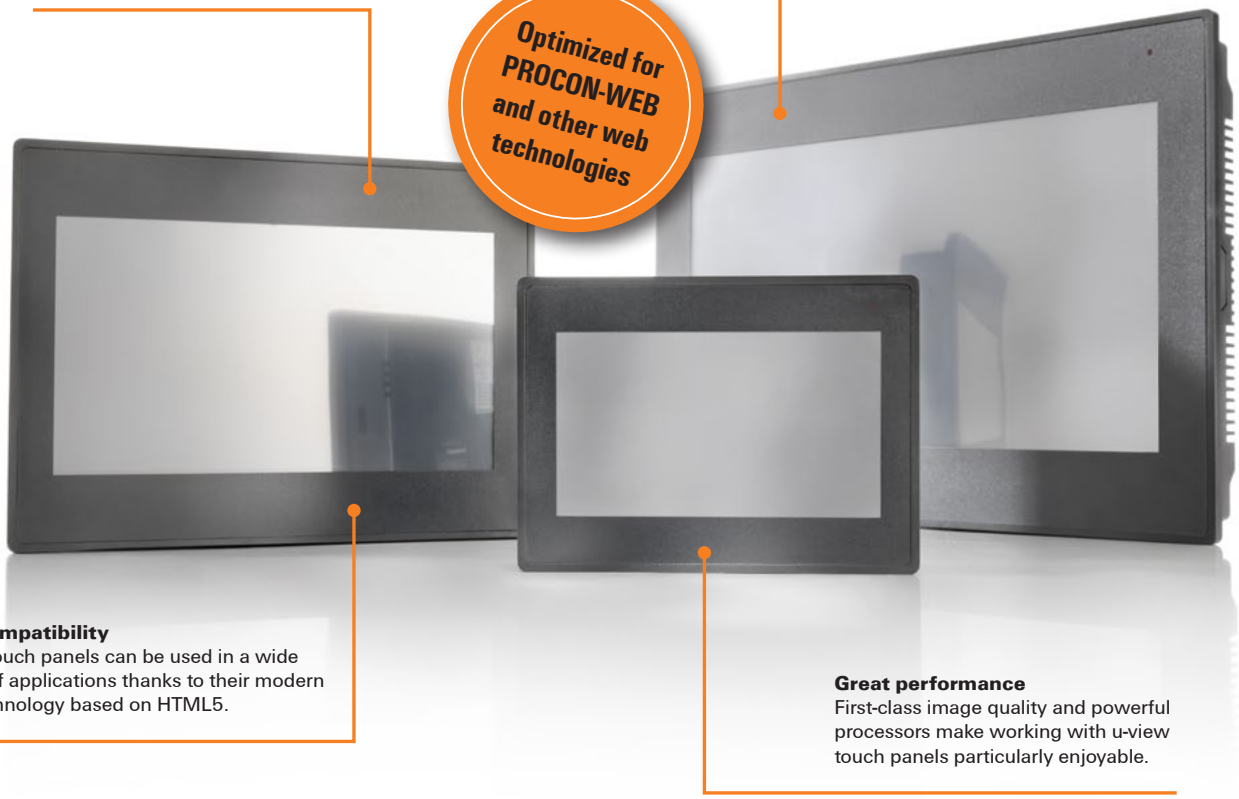
Comfortable touch panels simplify the monitoring and control of machines and systems. Web-based u-view HMIs from Weidmüller offer excellent image quality and can be used in an industrial environment without any restrictions.

The u-view series comprises zwei product lines:
- Eco Line (resistive web panels) in 4.3“, 7“ and 10.1“
- Advanced Line (capacitive web panels) in 7“, 10.1“, 15.6“ und 21.5“

All panels feature a particularly flat design, a robust aluminium housing and IP66 protection on the front. In addition, they also offer convenient configuration options for accessing different web servers via modern browsers. This makes them ideally suitable for future-oriented web applications, especially for web-based visualisation solutions with PROCON-WEB.

Comfortable configuration
u-view touch panels are quick and easy to configure and can therefore be set up intuitively.

Attractive design
All u-view touch panels come with particularly flat and space-saving housings.



High compatibility
u-view touch panels can be used in a wide variety of applications thanks to their modern web technology based on HTML5.

Great performance
First-class image quality and powerful processors make working with u-view touch panels particularly enjoyable.

u-view Eco or Advanced – Which product line best meets your needs?

Compared to the Eco Line, the Advanced Line offers significantly better connectivity with two independently usable Ethernet interfaces (10/100/1000 Mbit/s), two USB type A interfaces to connect external devices (like a mouse, keyboard or storage media), a high-precision capacitive multi-touch with gesture control and higher performance when displaying complex web content.

Energy management software

Energy management software	Introduction	G.2
	ecoExplorer go – configuration software	G.4
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Data processing for Energy Management and energy analytics
Weidmüller Energy Suite

Data processing is becoming increasingly important in an industrial context. We are your partner for all matters relating to software application matters, and will provide you with suitable software solutions as necessary. With our comprehensive expertise, we ensure a smooth interplay in digitalised industry – from the recording of data at the field level and distribution using our industrial ethernet components through to comprehensive data processing in the fields of industrial analytics and Energy Management.

Industrial software solutions need to have a large number of specific properties in order to provide the greatest possible benefit. We will advise you on the selection and application of your software with our broad expertise. The focus for us is on the following factors:

Availability
Our high standards of quality guarantee error-free data processing, a high level of availability and long-term benefit.

Security
With all of our projects for customers we tackle the growing danger of attacks from hackers with a particularly thought-out approach. In this way we ensure the greatest possible security before, during and after implementation.

Data storage
Our software solutions allow you to reliably store data within your own network without needing to rely on cloud-based services.

Scalability
The scalability of our software solutions makes it possible to adapt the growing demands of your company at any time.

User-friendliness
Well thought-out and practical operation in the field plays a particularly important role for us. We focus on operating concepts that are tailored precisely to the location of use, and promote efficiency and productivity.

Conveniently record and clearly display measurement data

ecoExplorer go simplifies parameterisation and visualisation

Quick commissioning
The user-friendly interface of ecoExplorer go allows quick connection and configuration of the measurement devices.

With the ecoExplorer go, you can easily create a commissioning report that can be used to carry out a connection check, thereby verifying the correct functioning of the devices.

Quick insight
For an efficient energy management, the further processing and evaluation of energy and measurement data for the power quality is of key importance. ecoExplorer go enables initial analysis of the energy grid.

Power quality report
With the ecoExplorer go and our EA750, you can monitor the voltage quality of the whole system, and with the report generator you can generate network quality reports according to PQ standards like EN 50160 or EN61000-2-4.

Hardware-Requirements	• CPU: x86_64 Dualcore, >= 2,0 GHz, >= 8 MB cache • Min. 8 GB Memory • Min. 16 GB free hard drive space (demand dependends on data retention)
Data storage	• Live visualisation of measurement data • Reading the device memory (if available) • Creation of CSV files
Fielddevice-Configuration	• Local backup of the field device configuration • Graphical configuration of Energy Meters / Energy Analysers • Management of the field device memory (when available)

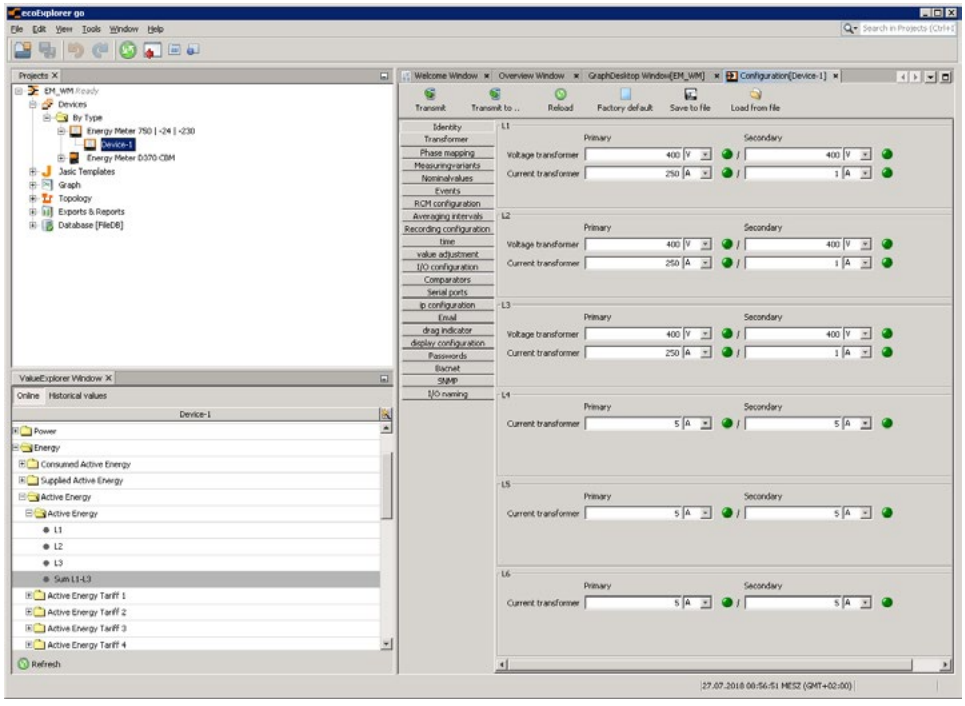
We reserve the right to make technical changes.

The visualisation of energy consumers is a central principle to make production sites more efficient.

Many of our energy measurement devices have a very simple user interface for reasons of clarity to allow the display and parameterisation of the measured data directly on the device. ecoExplorer go is a PC-based software which allows you to access your devices quicker and more simply and conveniently than before. Thanks to the intuitive user interface, users can configure the measurement devices quickly and easily and display the measured data clearly.

ecoExplorer go has been tailored to the use of measurement equipment in the energy sector. This guarantees that it provides optimum performance in practice.

You can find the download for the software ecoEcplorer go here: www.weidmueller.com/ecoexplorergo



ResMa® Software for process and energy optimization

Optimize your processes with the intelligent energy management that can be combined to Industrial IoT

The use of energy and resources is a cost factor that grows with increasing automation and is having an increasing impact on industrial production. By linking resource and energy management with Industrial IoT, we create the transparency needed to make your processes more sustainable and economical.

The resource and energy management software ResMa® combines the analysis of energy and process data with Industrial IoT platform solutions and offers an integrated system to merge and analyse comprehensive data centrally and to use the knowledge for the optimisation of processes or for new services.

The modular and preconfigured system variants for the standard ResMa® use cases enable the flexible and fast implmentation of your projects, whether in production, industry or distributed infrastructures. In addition, open interfaces allow simple and cost-effective integration into the existing IT environment. We enable you to make optimal use of your data, uncovering potential and increasing your productivity.

Your benefits at a glance

Recording of production data
The simple collection of data from different machines and systems enables the collection of production data. Thus, complex key figures can be calculated and plausibility can be configured to optimize production processes.

Reduction of costs
With our solutions, energy and process data become meaningful key figures. In this way, you not only reduce costs, but also optimize your processes, increase availability and reduce the use of resources.

Automatic reporting
For standardized reporting, individual energy reports or production-relevant evaluations can be sent automatically. In addition, the interactive documentation within the system supports the exchange of information between users.

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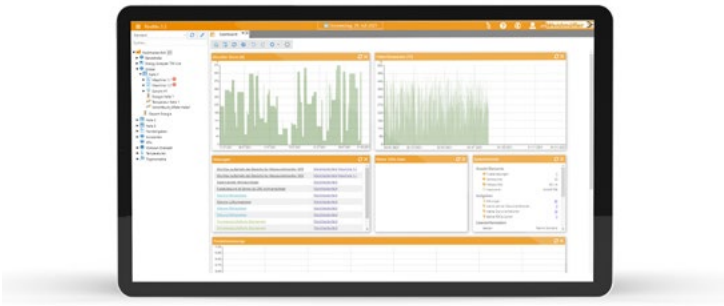
Real-time alerting
States, limit or set values are continuously monitored and show abnormalities in order to avoid downtimes and increase OEE. This information can be conveniently forwarded to users.

Simple system integration
Flexible integration of different measurement systems, industrial controllers or other data sources through communication drivers (like Modbus or OPC-UA) and open interfaces. Data exchange with ERP/MES systems or other databases is also easy to implement.

Certified acc. to ISO 50001
DIN EN ISO 50001 compliant energy management certified by the TÜV-Süd (German Technical Inspectorate) and listed at the BAFA. ResMa® allows for simple documentation of energy saving measures with subsequent monitoring and final analysis.

ResMa® offers comprehensive analysis options to identify energy and process-based potentials, document them and derive measures for optimization. Power and production data are collected and prepared in ResMa®. Display options like Sankey diagrams, comprehensive reports or options to compare time periods provide maximum transparency.



Transparency of production
Simple acquisition of all measured variables

- Electricity, gas, water, heat, air consumption
- Order-related quantities and material input
- Machine and equipment performance

ResMa® delivers comprehensive values for statistical analysis of all recorded measured variables, such as: Min, Max, Mean, Sum etc.

Simple and efficient process analysis
Detailed analysis via interactive,
adaptable charts for optimal display

- Generation of meaningful key figures including production parameters
- Specific analyses for energy usage and other production parameters

Less effort, more control
Automated evaluation

- Representation of energy flows via Sankey diagrams
- Use of mobile devices for fast notifications and status queries
- Central monitoring of all production halls or branches for cross-site benchmarking

ResMa® Basic
Evaluate data – plan optimizations

Basic package for the preparation, presentation and analysis of data from the production environment

- Identification of weak points and causes with fluctuating process quality
- Documentation of the entire consumption
- Efficient reporting through automated reports
- Simple operability with high functionality at the same time
- Adjustable dashboards for maximum transparency

Optionally extend your ResMa® Basic
Add-on Packages

Optionally expand your ResMa® Basic. The modular structure allows you to use special and extensive evaluations and analyses. Find the ideal addition to optimise your use case with the ResMa® energy management software and easily gain added value from your data.

ResMa® Energy Package
DIN EN ISO 50001 certified energy management system

- Continuous monitoring and optimisation of energy usage
- PDCA cycles and documentation functions
- Calculate meaningful energy KPIs and key data
- Automated reporting with custom reporting templates
- Transparent cost calculation with tariff integration

ResMa® Production Package
For a detailed analysis of machines and systems

- Increase process stability to reduce scrap and increase quality
- Reduce use of resources (material and power) to save costs
- Statistics on the causes of downtime as the basis for a cost analysis
- Increase availability and productivity to maximize profits
- Optimize productivity through cross-location benchmarking on the product level and on an order-specific basis

ResMa® Regression Analysis Package

Regression analyses for optimisation
and investment decisions

- Find dependencies in data via correlation analyses and thereby boost process understanding and transparency
- Determine the type and strength of dependencies as the basis for optimization and investment decisions
- Create regression models based on dependency findings
- Complete regression analyses based on created models for any time period
- Visualise the effects of optimisation measures on energy and processes

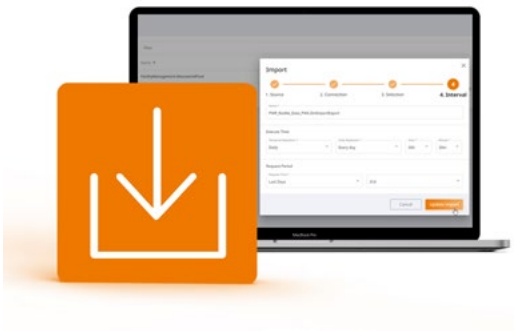
ResMa® Recipe Management Package

Documentation, representation and analysis
of recipes to improve quality

- Standardisation through the use and exchange of recipes
- Document concrete production processes
- Analyse warning and limit value violations
- Visualise unstable processes early on (connection to LiveValueCache)
- Integrate findings into newly developed recipe versions
- Increase production quality for the long-term

ResMa® Import Package

Facilitates imports from third-party systems
to evaluate all data in a single system



- Browse through external data sources (MS SQL, CSV)
- Map time series data on measurement points
- Configure import jobs
- Automatic cyclical execution
- Automate adoption of time series data from third-party systems

ResMa® Evaluation Kit

Test package with comprehensive functions

To get to know the versatile functions of ResMa®, our ResMa® Evaluation Kit provides a cost-effective introduction to recording and evaluating measured values. We would like to make it possible for everyone to use our ResMa® energy management software in the form of a test package in order to make energy management in companies of any size as efficient as possible.

Further information is available on our website:
http://wmqr.eu/ResMa-Evaluation-Kit

Your advantages

Short delivery times
Hardware and software test package available at short notice

More efficiency through transparency
Continuous monitoring, analysis and evaluation of your energy data

Individual introduction
You will receive an introduction to your individual project from our experts

ResMa® Basic & Add-on Packages
Order overview

The available functions of ResMa® are divided into different function packages, allowing you to customise configuration to suit your needs. We will be happy to advise you with the selection and demonstrate the corresponding scope of services of the extension packages.

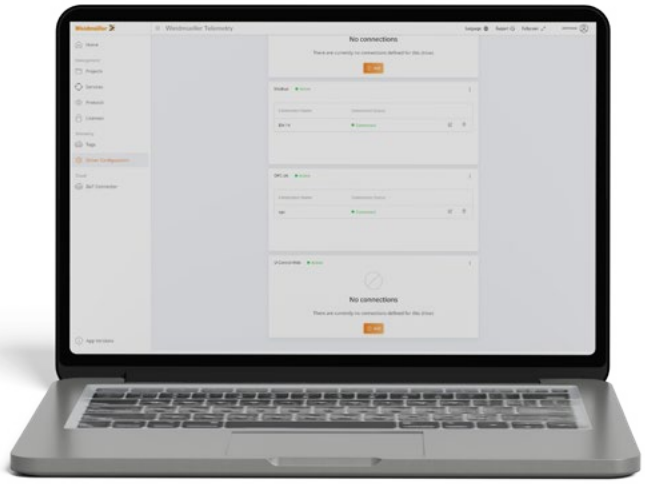
Type RESMA	Number of process variables, max.	Platform for runtime system	Order No.
RESMA-100	100	Windows	3036610000
RESMA-200	200	Windows	3036620000
RESMA-500	500	Windows	3036630000
RESMA-1000	1.000	Windows	3036640000
RESMA-3000	3.000	Windows	3036650000
RESMA-10000	10.000	Windows	3036660000
RESMA-100-ENMS	100	Windows	3036750000
RESMA-200-ENMS	200	Windows	3036760000
RESMA-500-ENMS	500	Windows	3036770000
RESMA-1000-ENMS	1.000	Windows	3036780000
RESMA-3000-ENMS	3.000	Windows	3036790000
RESMA-10000-ENMS	10.000	Windows	3036800000
RESMA-100-PROD	100	Windows	3036670000
RESMA-200-PROD	200	Windows	3036690000
RESMA-500-PROD	500	Windows	3036700000
RESMA-1000-PROD	1000	Windows	3118160000
RESMA-3000-PROD	3.000	Windows	3036720000
RESMA-10000-PROD	10.000	Windows	3036710000
RESMA-100-IMPORT	100	Windows	3029480000
RESMA-200-IMPORT	200	Windows	3029490000
RESMA-500-IMPORT	500	Windows	3029500000
RESMA-1000-IMPORT	1.000	Windows	3029510000
RESMA-3000-IMPORT	3.000	Windows	3029520000
RESMA-10000-IMPORT	10.000	Windows	3029530000
RESMA-100-REZEPTUR	100	Windows	3029540000
RESMA-200-REZEPTUR	200	Windows	3029550000
RESMA–500-REZEPTUR	500	Windows	3029560000
RESMA-1000–REZEPTUR	1000	Windows	3029570000
RESMA-3000–REZEPTUR	3000	Windows	3029580000
RESMA-10000–REZEPTUR	10000	Windows	3118170000
RESMA-100-REGRESSION	100	Windows	3118180000
RESMA-200-REGRESSION	200	Windows	3029610000
RESMA-500-REGRESSION	500	Windows	3029620000
RESMA-1000-REGRESSION	1000	Windows	3029630000
RESMA-3000-REGRESSION	3000	Windows	3029640000
RESMA-10000-REGRESSION	10000	Windows	3029650000
RESMA-MODBUS-CONNECTOR		Windows	2854870000
RESMA-PLC-CONNECTOR		Windows	2854120000
Basic Training			2938790000
Inbetriebnahme [Stunde]			2938840000
Installation Standard			2938810000
Project Coordination			2938820000
SLA Technical Support (PWEB/ResMa)			2938730000
SLA Update (ResMa)			3107540000

PROCON-Connect

Simple data acquisition, pre-processing and communication

Our PROCON-Connect enables the acquisition of machine data from different control systems and their further utilisation in the Weidmüller solutions ResMa and easyConnect, among others. It also allows local pre-processing and the use of machine data in other software systems through connectors and APIs, among other things.

The PROCON-Connect can be used for a wide range of data- and service-oriented Industrial IoT use cases. The connections to controllers, databases and the interfaces to other software solutions are conveniently configured in the browser. In addition to a comprehensive driver portfolio for connecting controllers, the PROCON-Connect uses industry-appropriate standards (such as InfluxDB or MQTT),



- Drivers with browsing function: OPC-UA, ModbusTCP/RTU, CODESYS®, AllenBradley and drivers for u-mation PLC
- Installation of u-OS App Manager or on industrial PCs via Docker container
- Parameterisation of controller connections, databases and cloud connections via browser

Platform-independent app

Simple installation under u-OS using the App Manager and on any hardware using Docker containers.

Open standards and interfaces

Communication drivers, database technologies, APIs and cloud interfaces of the PROCON-Connect are based on open standards (e.g. OPC-UA, InfluxDB or MQTT) and, in addition to our APIs, allow seamless integration into the IIoT infrastructure.

Intuitive web engineering

Our PROCON-Connect can be configured completely in the browser at run-time. It supports engineering with project import and export functionality as well as extensive feedback for the user.

Ordering data

Type	Number of process variables, max.	Number of devices	Platform for runtime system	Order No.
P-CON RUN			Windows, Linux, Docker Container	**3053900000**
P-CON DRV CODESYS			Windows, Linux, Docker Container	**3053910000**
P-CON DRV ALLENBRADLEY			Windows, Linux, Docker Container	**3053920000**
P-CON COM 50	50		Windows, Linux, Docker Container	**3053930000**
P-CON COM 100	100		Windows, Linux, Docker Container	**3053940000**
P-CON COM 250	250		Windows, Linux, Docker Container	**3053950000**
P-CON COM 500	500		Windows, Linux, Docker Container	**3053960000**
P-CON COM 1000	1000		Windows, Linux, Docker Container	**3053970000**
P-CON COM 2500	2500		Windows, Linux, Docker Container	**3053980000**
P-CON COM 5000	5000		Windows, Linux, Docker Container	**3053990000**
P-CON COM 10000	10000		Windows, Linux, Docker Container	**3054000000**

A comprehensive software portfolio

A comprehensive software portfolio	PROCON-WEB embedded System	H.2
	PROCON-WEB SCADA	H.6
	Industrial AI	H.10
	ModelBuilder	H.11
	edgeML – Easy and flexible ML integration into automation	H.12
	edgeML Runtime	H.14
	Engineering Software	H.15
	u-link Remote Access Service	H.16

Future-proof visualisations for Industrial IoT applications

PROCON-WEB Embedded Systems – the platform-independent HMI software

In modern Industrial IoT and automation applications, machine data must be available locally and in the cloud for all users. To ensure task-oriented provision and intuitive use, the relevant information needs to be collected and visually prepared.

PROCON-WEB Embedded Systems is a platform-independent visualisation solution ideally suited for use in modern Industrial IoT applications. Thanks to its low system requirements, it can be used on many different devices, and is also available on Weidmüller u-OS family controllers through the App Manager. The HMI is conveniently accessed via HTML5-compatible browsers and can therefore be accessed from a wide variety of end devices.

Your special advantage:

- Portable and easy-to-parametrise HMI and Industrial IoT solution
- High performance with low resource requirements
- Compatible with devices with OPC-UA server, Modbus interface, CODESYS® and u-Os PLCs
- Dynamic web interface with adaptive design and customisable control elements

Many visualisation features
Predefined control elements, user and rights management, multilingualism, data recording, recipe management, alarm and message processing, and many other features make PROCON-WEB Embedded Systems versatile.

Maximum flexibility
PROCON-WEB Embedded Systems can be used independently of hardware and operating system. Web-based visualisation, support for mobile devices, and open communication standards increase flexibility.

Efficient project planning
Project management is accelerated through features like a class-instance concept, structural support and automated project generation. Scripting and customisable control elements increase flexibility for complex requirements.

PROCON-WEB Embedded Systems – **Visualisation solutions for your Industrial IoT applications**

Ordering data

Type	Number of process variables, max.	Number of devices	Platform for runtime system	Order No.
PROCON-WEB Embedded Systems runtime licences				
PWEB-ES-RT-50/2	50	2	Windows, Linux, Docker Container	**2992900000**
PWEB-ES-RT-50/5	50	5	Windows, Linux, Docker Container	**2992910000**
PWEB-ES-RT-50/10	50	10	Windows, Linux, Docker Container	**2992890000**
PWEB-ES-RT-100/2	100	2	Windows, Linux, Docker Container	**2992810000**
PWEB-ES-RT-100/5	100	5	Windows, Linux, Docker Container	**2992820000**
PWEB-ES-RT-100/10	100	10	Windows, Linux, Docker Container	**2992800000**
PWEB-ES-RT-500/2	500	2	Windows, Linux, Docker Container	**2992930000**
PWEB-ES-RT-500/5	500	5	Windows, Linux, Docker Container	**2992940000**
PWEB-ES-RT-500/10	500	10	Windows, Linux, Docker Container	**2992920000**
PWEB-ES-RT-1000/2	1000	2	Windows, Linux, Docker Container	**2992840000**
PWEB-ES-RT-1000/5	1000	5	Windows, Linux, Docker Container	**2992850000**
PWEB-ES-RT-1000/10	1000	10	Windows, Linux, Docker Container	**2992830000**
PWEB-ES-RT-2000/2	2000	2	Windows, Linux, Docker Container	**2992870000**
PWEB-ES-RT-2000/5	2000	5	Windows, Linux, Docker Container	**2992880000**
PWEB-ES-RT-2000/10	2000	10	Windows, Linux, Docker Container	**2992860000**
PWEB-ES-RT-5000/2	5000	2	Windows, Linux, Docker Container	**2875320000**
PWEB-ES-RT-5000/5	5000	5	Windows, Linux, Docker Container	**2875330000**
PWEB-ES-RT-5000/10	5000	10	Windows, Linux, Docker Container	**2875340000**
PWEB-ES-DESIGNER-2000_FREE	2000			**3037270000**
PWEB-DESIGNER-PRO				**2857650000**
Basic Training				**2938790000**
Customer Specific Training				**2938800000**
SLA Technical Support				**2938730000**

H

Ordering data

Type	Number of process variables, max.	Number of devices	Platform for runtime system	Order No.
PROCON-WEB Embedded Systems runtime licences for u-OS				
U-OS-PWEB-ES-RT-250/1_free	250	1	u-OS	**2987740000**
U-OS-PWEB-ES-RT-250/2	250	2	u-OS	**3038630000**
U-OS-PWEB-ES-RT-500/2	500	2	u-OS	**2941960000**
U-OS-PWEB-ES-RT-500/5	500	5	u-OS	**2941970000**
U-OS-PWEB-ES-RT-1000/2	1000	2	u-OS	**2941980000**
U-OS-PWEB-ES-RT-1000/5	1000	5	u-OS	**2941990000**
U-OS-PWEB-ES-RT-2000/2	2000	2	u-OS	**2942000000**
U-OS-PWEB-ES-RT-2000/5	2000	5	u-OS	**2942010000**
U-OS-PWEB-ES-RT-5000/2	5000	2	u-OS	**2942020000**
U-OS-PWEB-ES-RT-5000/5	5000	5	u-OS	**2942030000**
U-OS-PWEB-ES-RT-10000/2	10000	2	u-OS	**2942040000**
U-OS-PWEB-ES-RT-10000/5	10000	5	u-OS	**2942050000**
PWEB-DESIGNER-PRO				**2857650000**
PWEB-ES-DESIGNER-2000_FREE				**3037270000**
Basic Training				**2938790000**
Customer Specific Training				**2938800000**
SLA Technical Support				**2938730000**

Operate machines and systems via browser interfaces

PROCON-WEB SCADA – the future-proof visualisation solution

Easily scalable and platform-independent HMI and SCADA solutions can be used flexibly and make relevant machine data available everywhere. They facilitate fault processing as well as data recording and management to support the control of complex processes.

PROCON-WEB SCADA as a Windows application for complex tasks simplifies the project planning of modern multi-touch-capable user interfaces for automation. The integrated web server enables the use of all HTML5-capable browsers without special plug-ins. The comprehensive portfolio of communication drivers facilitates the connection with all common control systems. Standardised open interfaces guarantee problem-free integration into any IT surroundings.

Your special advantage:

- Easy creation of modern user interfaces without knowledge of web technologies
- Dynamic web interface with adaptive design and customisable control elements
- User and rights management including geographical rights assignment
- Ideal for control technology or complex digitalisation tasks
- Expanded scope of functions for more efficient data processing

Future-proof solution
Intuitive user interfaces, the solutions are especially future-proof with the help of an adaptive UX design and the use of state-of-the-art web technologies.

Efficient project planning
The class-instance concept and automation objects with structure support accelerate project planning. Scripting and customisable control elements increase flexibility for special requirements.

Simple scalability
From simple HMI applications to complex SCADA applications, PROCON-WEB SCADA is scalable and flexible, and can be integrated into your IT environment through open standards and interfaces.

PROCON-WEB SCADA – **Visualisation solutions for your Industrial IoT applications**

Ordering data

Type SCADA runtime licences	Number of process variables, max.	Number of devices	Platform for runtime system	Order No.
PWEB-SCADA-RT-500/2	500	2	Windows	**2857420000**
PWEB-SCADA-RT-500/5	500	5	Windows	**2857430000**
PWEB-SCADA-RT-500/10	500	10	Windows	**2857470000**
PWEB-SCADA-RT-1000/2	1000	2	Windows	**2857480000**
PWEB-SCADA-RT-1000/5	1000	5	Windows	**2857520000**
PWEB-SCADA-RT-1000/10	1000	10	Windows	**2997580000**
PWEB-SCADA-RT-2000/2	2000	2	Windows	**2857540000**
PWEB-SCADA-RT-2000/5	2000	5	Windows	**2857550000**
PWEB-SCADA-RT-2000/10	2000	10	Windows	**2857560000**
PWEB-SCADA-RT-5000/2	5000	2	Windows	**2857570000**
PWEB-SCADA-RT-5000/5	5000	5	Windows	**2857580000**
PWEB-SCADA-RT-5000/10	5000	10	Windows	**2857600000**
PWEB-SCADA-RT-10000/2	10000	2	Windows	**2857610000**
PWEB-SCADA-RT-10000/5	10000	5	Windows	**2857620000**
PWEB-SCADA-RT-10000/10	10000	10	Windows	**2857630000**
PWEB-SCADA-RT-30000/2	30000	2	Windows	**2862170000**
PWEB-SCADA-RT-30000/5	30000	5	Windows	**2862180000**
PWEB-SCADA-RT-30000/10	30000	10	Windows	**2862190000**
PWEB-SCADA-RT-60000/2	60000	2	Windows	**2862200000**
PWEB-SCADA-RT-60000/5	60000	5	Windows	**2862210000**
PWEB-SCADA-RT-60000/10	60000	10	Windows	**2862220000**
PWEB-DESIGNER-PRO			Windows	**2857650000**
PWEB-ES-DESIGNER-2000_FREE			Windows	**3037270000**
Basic Training				**2938790000**
Customer Specific Training				**2938800000**
SLA Technical Support				**2938730000**

Industrial AI

The most important facts at a glance

Build and deploy end-to-end machine learning model solutions faster. You only need your domain knowledge.

With Industrial AI, you can easily use advanced analytic functions to optimise operations, improve product quality and enable new business models. As a machine or process expert, you can build and run machine learning models quickly and easily without expert knowledge in data science. As machine builder, the ModelBuilder enables you to transform your data and domain knowledge into ML models that add value to your business. In manufacturing environments, the models can be used in order to provide machine operators with real-time analysis and insight during operation, for example. The industrial AI product family consists of ModelBuilder and edgeML, which are used to create models, as well as edgeML Runtime for on-premise applications.

The benefits for you

Accelerated innovation
Leverage your existing machine data and domain knowledge and benefit directly from advanced analytics. Maintain sovereignty over your own data.

End-to-end solution
Build and continuously improve ML models with ModelBuilder.

Build customer relationships and new business models
Increase customer satisfaction with improved products and services. Get a better understanding of your customers' needs.

Ordering data ModelBuilder

Type	Number of users	License term	Order No.
MB-EC-1Y	3	365 days	**2864190000**
MB-MA-AZ-03	3	365 days	**2819870000**
MB-EC-TRIAL-3M	3	90 days	**2864180000**
MB-AZ-3-Trial	3	90 days	**2885120000**
Operations Basic			**2896870000**
MB-OPERATIONS PLUS			**2896860000**
SLA INDUSTRIAL AI			**3155670000**

ModelBuilder

From data to model in just a few steps

Feature of the ModelBuilder

The ModelBuilder is available as a cloud-based solution. On the basis of prepared data, the user is guided through the following essential building blocks of the tool:

- Import machine and process data and analyse examined
- Data using automatically generated quality criteria (such as missing words)
- Enrich data by creating custom features
- Set data into a context, for instance by determining anomalies and normal behaviour
- Selection of the machine learning model to be created possible (for instance a model to detect or classify anomalies)
- The tool then automates the model creation process, including feature engineering, required preprocessing and post processing operations
- Selection of the created models possible (for instance based on criteria like model performance or plausibility)

edgeML – Simple and flexible ML integration into automation

High flexibility: use hardware and OS agnostic ML models

edgeML makes it possible to integrate ML models into automation in a particularly easy and flexible way – regardless of the hardware. And this is completely independent of the hardware. This allows systems or processes to be monitored continuously and efficiently with machine learning.
With edgeML, machine or process experts can quickly and easily put ML models into practical use. The models can be conveniently managed and executed using the integrated web server. The model results provide detailed insight into the condition of the machine. This information can be used, for example, to optimise maintenance intervals and improve product quality. edgeML thus makes an important contribution to increasing production efficiency.

Simple integration on controllers

edgeML is available as an app for u-OS and can be conveniently installed via the App-Manager. In addition, edgeML is available for Docker and can also be installed as a Linux image on third-party hardware.

Intuitive operation of ML models

edgeML supports MLOps and can therefore be easily integrated into company processes. In addition, the runtime allows the models to be operated intuitively (e.g. through import and administration functions).

Supports ML models according to ONNX format

In addition to models created by the Weidmüller ModelBuilder, edgeML also allows the execution of ML models in the open ONNX standard.

Open platform (supports the ONNX format)

Intuitive import, parameterisation and commissioning of ML models on Edge devices

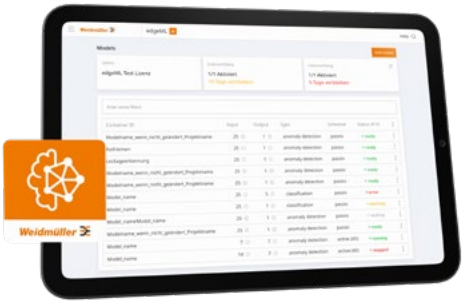
Hardware-independent deployment (docker containers)

edgeML Runtime

Machine and process managers who work on-premise use edgeML Runtime

Features of edgeML Runtime

- Quickly begin operation of ML models on edge devices – importing is simple and parameterisation is intuitive
- Deploy your application on any hardware via docker containers or on u-OS
- Trust in an open platform – we support the ONNX format and MLOps



Ordering data

Type edgeML	Number of models	Platform for runtime system	License term	Order-No.
EML-RT-S	3	Linux	unlimited	**2885080000**
EML-RT-M	5	Linux	unlimited	**2885090000**
EML-RT-L	10	Linux	unlimited	**2885110000**
EML-RT-XL		Linux	unlimited	**on request**
EML-RT-Trial	10	Linux	90 days	**3037000000**
SLA INDUSTRIAL AI				**3155670000**
U-OS-EML-RT-S	3	u-OS		**3036820000**
U-OS-EML-RT-M	5	u-OS		**3036830000**
U-OS-EML-RT-L	10	u-OS		**3036840000**
U-OS-EML-RT-XL		u-OS		**on request**
U-OS-EML-RT-Trial	10	u-OS	90 days	**3100520000**
SLA INDUSTRIAL AI				**3155670000**

Engineering Software

Just select your CODESYS® package and get in touch with your Weidmüller sales contact.

Current information is available on our website:
www.weidmueller.com/u-os-apps

U-OS-CODESYS-BASIC

For applications that solve simple and individual automation tasks.

Ordering data

Type	Code size	Max I/O	Order-No.
U-OS-CODESYS-BASIC-S	500 kB	64	**2924000000**
U-OS-CODESYS-BASIC-M	1 MB	128	**2924020000**
U-OS-CODESYS-BASIC-L	3 MB	256	**2924030000**

U-OS-CODESYS-STANDARD and U-OS-CODESYS-PERFORMANCE

For applications with more complex logic and an increased need for external communication.

Ordering data

Type	Code size	Max I/O	Order-No.
Standard			
U-OS-CODESYS-STANDARD-S	3 MB	512	**2924040000**
U-OS-CODESYS-STANDARD-M	8 MB	1.024	**2924050000**
U-OS-CODESYS-STANDARD-L	10 MB	2.048	**2924060000**
Performance			
U-OS-CODESYS-PERFORMANCE-M	12 MB	4.096	**2924070000**
U-OS-CODESYS-PERFORMANCE-L	18 MB	8.192	**2924080000**

Web-Visualisation

Ordering data

Type	Number of Tags	Order-No.
U-OS-CODESYS-VISU-M	2.048	**2924100000**
U-OS-CODESYS-VISU-L	4.096	**2924110000**
U-OS-CODESYS-VISU-XL	8.192	**2924120000**
U-OS-CODESYS-VISU-XXL	unlimited	**3012570000**

U-OS-CODESYS-COMMUNICATION

The CODESYS Communication M licence enables the use of the symbol configuration, the communication manager and the DataSource Manager.

Ordering data

Type	Number of Tags	Order-No.
U-OS-CODESYS-COMMUNICATION M	4.096	**2984440000**
U-OS-CODESYS-COMMUNICATION XXL	unlimited	**2924130000**
U-OS-CODESYS-REDUNDANCY		**2924090000**
U-OS-CODESYS-OPC-UA-XL		**3012600000**

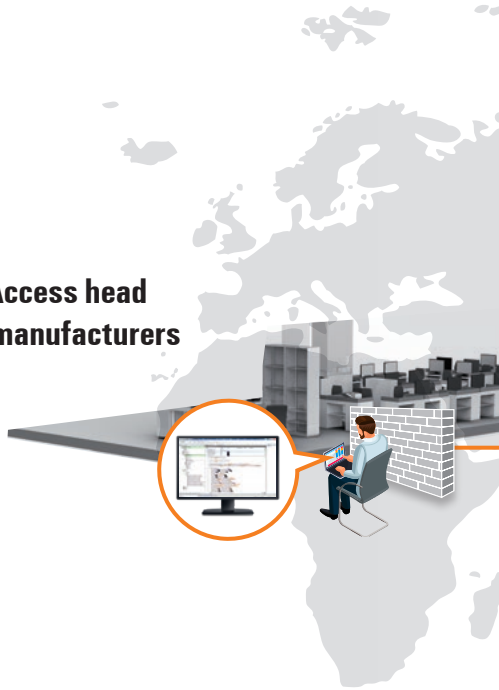
u-link Remote Access Service – one tool for all cases

Advanced functions for convenient remote access management

The remote maintenance of machines and systems is often complex and time-consuming. In addition, users also need a targeted and secure functional connection to the associated IT systems. For many users, these two challenges are a major obstacle to the worldwide connection of systems.

u-link guarantees quick and secure access to machinery and equipment while enabling the efficient management of production facilities, user clients, access rights or firmware versions. You choose: use u-link classic as a web-based portal application, or u-link on easyConect, our cloud-based industrial service platform.

The intuitive u-link web portal can be quickly and easily configured and adapted to specific processes without expert knowledge. Secured servers in Europe and the USA provide an online platform that ensures conformity between different IT systems when performing remote maintenance. easyConnect, in contrast, combines your entire Weidmüller service landscape at a single location. In addition to remote maintenance, realise your use cases easily, consistently and without any relevant prior knowledge, thanks to the perfect interaction of platform, devices and diverse software services. It is your intuitive, future-proof tool for your path to the Industrial IoT.



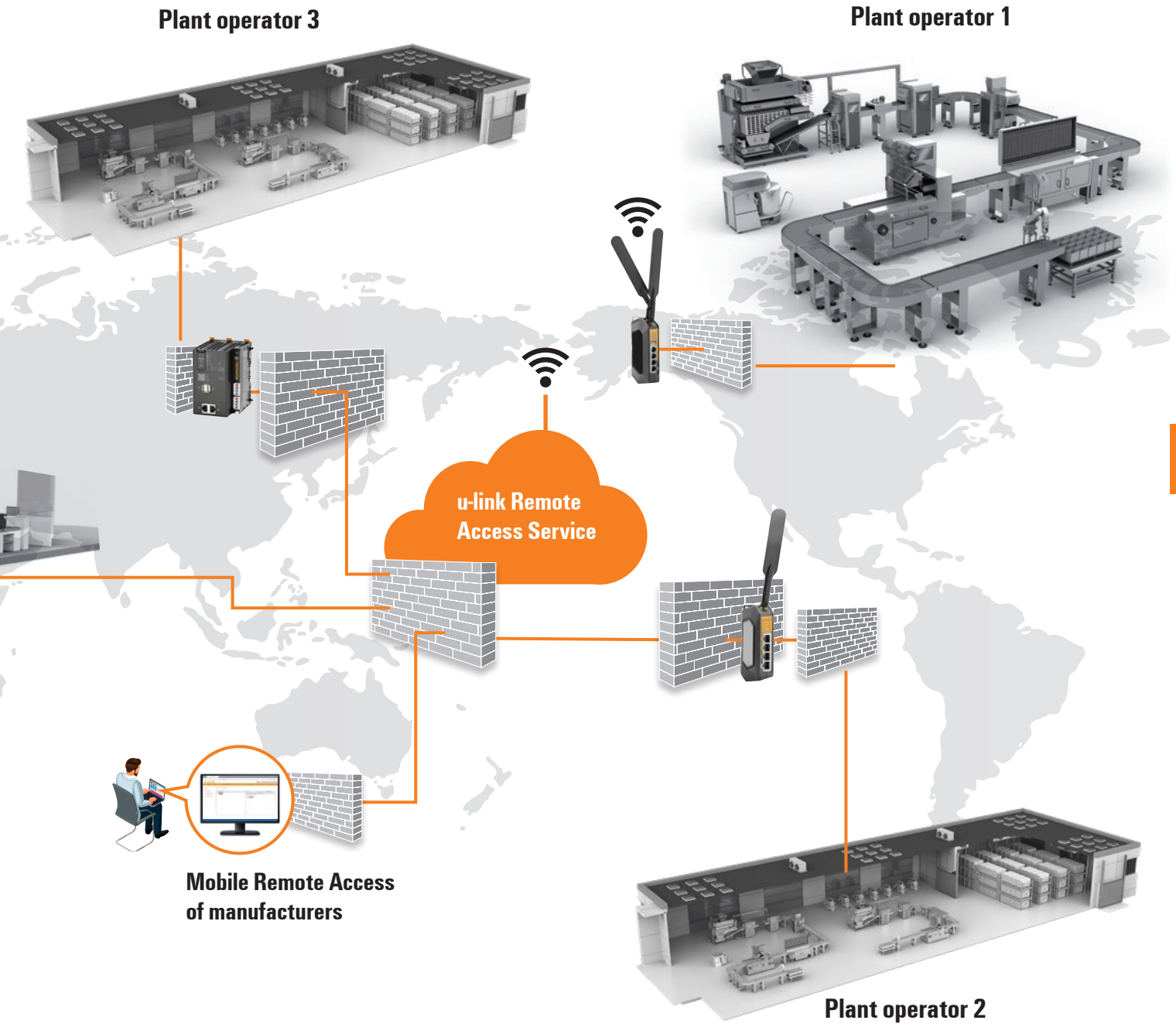
Individual system management
u-link can manage users and groups as well as their access rights according to individual specifications. These include group allocation and access permission to production facilities.

Low configuration effort
With the intuitive user interface and without specific IT knowledge, you can easily connect routers and clients to each other. With u-link, you can quickly establish a several systems network.

Secure remote access and remote diagnosis
Remote access to machines and systems is provided worldwide everywhere via secure VPN connection. The high availability of the servers grants secure access to your systems at all times.

Status monitoring and status message
Weidmüller Heartbeat can be used to report the availability of a router to u-link. It facilitates status monitoring and enables status messages from the installed router.

u-link.weidmueller.com


Plant operator 3
Plant operator 1
u-link Remote Access Service
Mobile Remote Access of manufacturers
Plant operator 2

Applications in practice

Applications in practice	Implement your own individual energy management system	I.2
	Intelligent energy management in practice	I.4
	edgeML – Easy and flexible ML integration into automation	I.6
	Modernise large power grids	I.8
	Reliable monitoring of grid quality	I.10
	Reliable residual current measurement	I.12

Implement your own individual Energy Management system

With our integrated expertise from a single source

Energy Management is a triad of recording all relevant energy consumption data, analysing the information obtained, and comprehensive consulting on possible saving potential. We at Weidmüller see the development of an Energy Management system as a holistic task which combines expert advice with intelligent hardware and software solutions to form a strong unit which is modular in design and therefore tailored to your requirements.

Integrated planning of the approach

Selection of suitable products, solutions and functions

Modular adaptation to your requirements

Hardware components
Extraction of exact measurement data for analysis

Use our comprehensive hardware portfolio of selected „Total Energy Monitoring" components for energy consumption measurement and monitoring, integrated analysis of the quality of electrical supply networks and for efficient, convenient provision of measurement data.

- Energy meters
- Energy analyser
- Energy loggers
- Measurement converter disconnector terminals
- Current transformers
- Power supply solutions
- Connection technology
- u-mation toolbox
- Industrial communication infrastructure
- Customer-specific Plug&Play solutions
- Rogowski coils

Simple, cost-effective integration into existing systems

Broad range of universal-fit connection solutions to connect existing hardware

Use of high-quality, tried and tested standard components

Well proven components that are tailored to each other from the Weidmüller standard range

Option of implementing tailored solutions

Customer-specific assembly and construction of components to meet individual requirements

Software and controlling
Determination of relevant indices for planning

The software modules of the Weidmüller Energy Suite meet your requirements, from the sensor level to the cloud. Parameterise our field devices using ecoExplorer go, digitise the data using the u-create data hub, conduct standardised analyses using the u-create ResMa® or forecast load peaks with the u-create energetics System. The perfect interaction between Weidmüller field devices and the components of the Weidmüller Energy Suite ensures the greatest possible predictability, even for complex requirements.

- Recording process and energy data
- Registering energy and raw materials prices
- Forecasting costly load peaks
- Cost centre analyses
- Long-term data archiving
- Database interfaces for MES/SCADA systems

Compact – IPC-based entry-level solution

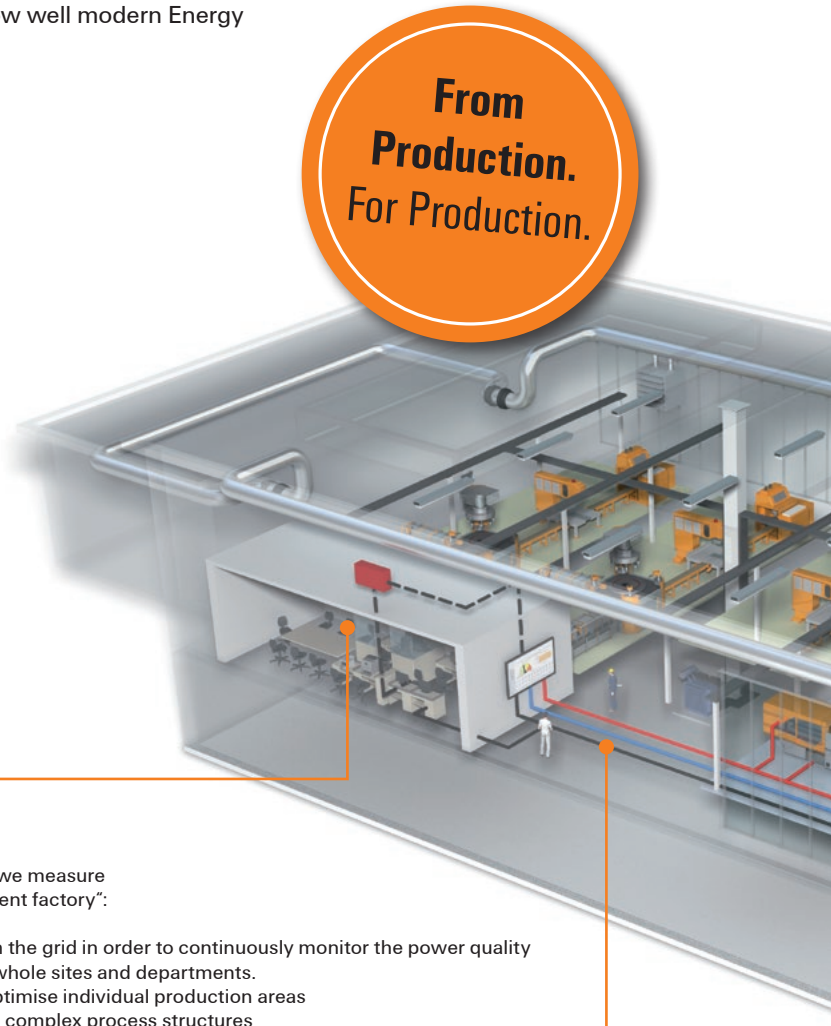
Record, automate and bundle measurement data on a central basis. Create transparency about energy media and draw up initial reports.

Server – Extensive scalable

Strong integration into your own infrastructure for extensive data collection. Ideal for cross-site Energy Management.

Intelligent energy management in practice
Insights into Weidmüller's „transparent factory"

Weidmüller has a long tradition of handling energy and resources responsibly. One perfect example for the practical implementation of our collective know-how and the effects which can be achieved is our production hall at the Detmold site. We can use specific examples to show interested customers how well modern Energy Management works in practice.



Anchoring Energy Management
All employees are given comprehensive training to increase awareness of conserving energy as a resource. Projects to optimise procurement, increase production efficiency, for new buildings and renovation and handling Energy Management tools are carried out in order to reduce energy consumption even further in future.

Transparency at every level
Depending on the degree of detail required, we measure Energy flows at all five levels in our „transparent factory":

- Measurement at the point of interface with the grid in order to continuously monitor the power quality
- Measurement at factory level to optimise whole sites and departments.
- Measurement at production line level to optimise individual production areas
- Measurement at machine level to optimise complex process structures
- Measurement at machine module level to optimise individual machine and plant elements

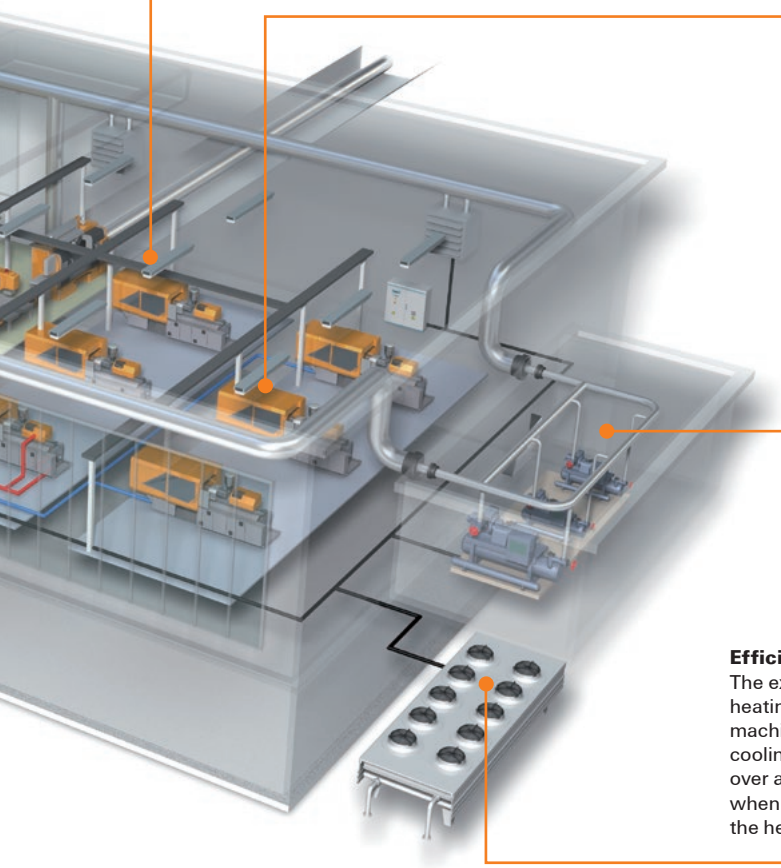
Production area	Employees in production	Annual CO_2 saving
6.600 m^2	155 people	approx. 1.665 t CO_2

Visit our „transparent factory" with its multi award-winning energy efficiency measures.

Arrange an appointment with your sales engineer

Needs-based lighting control
Reduction of basic lighting helps reduce the basic load. Where more light is required, lighting positioned as required provides optimum adapted lighting. The use of efficient control and lighting systems minimises the energy required further still.

Systematic minimisation of energy losses
Load-optimised main consumers guarantee optimum energy use with reduced energy peaks Systems in standby mode are switched off. This saves energy and helps reduce the basic and peak loads. Transformers are installed at the performance hotspots near the main consumers and fitted with efficient technology to avoid conversion losses. Distribution routes in the low voltage sector which are as short as possible also minimise conductor losses.



Efficient use of compressed air
Cascaded compressors are intelligently controlled to ensure the network pressure built up is only what is required. Cables are carefully routed, sealed and constantly checked to minimise cable losses. Employees are made aware of the most efficient use of compressed air to reduce the consumption of compressed air further still.

Efficient heating and cooling
The excess heat generated by processes is transferred to the heating system. The heat extraction reduces the burden on the machine cooling system. A free-cooler uses the ambient air for cooling with minimum use of electrical power and even takes over all cooling work in winter. The core processor heat created when generating compressed air is also used and fed back into the heating system.

Energy and process data acquisition - step by step

More than energy management: ResMa® helps to optimize right up to the process level

Good energy management is the result of the interaction between people and technology. Both sides contribute their expertise. This report outlines what to expect from a good system.

It is more important than ever to reduce a company's energy consumption and to increase efficiency with targeted measures. High energy costs and legal regulations require a targeted and structured approach.
According to company information, Weidmüller GTI's ResMa® energy management system helps to record and monitor energy flows and process data as well as evaluate and optimise efficiency. „The generation of meaningful EnPIs (KPIs) including production parameters and their monitoring using energy monitoring is the basis for the reduction of daily monitoring expenses", explains Weidmüller GTI in a press release.

Consumption overview

The consumption overview and the resulting energy balancing means that approaches can quickly be determined with the aim of expanding the measuring equipment or introducing concrete saving potential. These approaches are documented in the PDCA cycle and then reviewed.

Interactively adaptable charts help provide a detailed analysis; they allow for the optimal representation of correlations for every situation and can be saved for further editing, including by other colleagues. Customable reports balance energy and KPIs from production in a clearly arranged layout.

Energy management according to ISO 50001

With the ResMa® energy management system, Weidmüller GTI Software is offering a comprehensive software solution for energy management according to ISO 50001, The energy and resource manager allows manufacturing companies and other organisations to systematically and continually increase energy efficiency. The system supports all tasks for efficient and active energy management, refers to factors that can be influenced by the company and can be adapted to individual requirements. At the same time, the solution also includes the necessary support for the integration into existing automation technology, control technology or

building automation and for the connection of the company's IT systems. Customer-specific requirements regarding energy planning, peak-load optimisation or on-demand control can be tailored to the customer's needs by means of customised support.

User in Kronach

Horst Scholz GmbH in Kronach, Franconia, uses ResMa® for energy management in multiple production and administration buildings; the company specialises in the production of high-precision plastic parts for microtechnology and medical technology. Because some buildings already had energy meters, these were to be integrated into the system. Additional energy meters were connected via Modbus TCP based on the good network infrastructure that was already in place.

Modbus-TCP

The first step involved the company independently adding all of the meters in its first building to the system. Convinced by the simple connection, the company then equipped the newly constructed building with Modbus TCP-capable meters as well. In order to prevent data loss in the event of a network failure, ResMa®-Connect industrial PCs were used, which are set up close to the measurement technology and which cache the data.

„ResMa® allowed us to carry out the step-by-step development of our EnMS on our own and opened up potential for integrating extensive information from production", says Wolfgang Fehn, the management representative for quality and environment at Horst Scholz GmbH.

Process data recording

The third expansion stage has now been implemented, involving the recording of process data from automation technology. For this purpose, Scholz uses three ResMa® connectors and a direct network connection to the most important machines. This makes it possible to use extensive data from the production process directly for KPI development and the performance of analyses within ResMa®.

How can large-scale electricity grids be modernised successfully?
Support from Weidmüller with key component

If, for example, the electricity grids of a six-digit square kilometre area need to be renewed, this amounts to a costly infrastructure project. If the substations also need to be modernised and digitalised as part of a sub-project, the control cabinets need to be renewed in their entirety. Experts from Weidmüller support control cabinet builders who specialise in automation in power distribution.

Any control cabinet manufacturer that needs to find a partner whose components comply with regional and national approval regulations for monitoring power quality will find what they are looking for with Weidmüller. With its key product Energy Analyser D550, a multifunctional measuring device for monitoring voltage quality in accordance with IEC 61000-2-4 and EN 50160, among other things, Weidmüller even satisfies the most demanding requirements. Another advantage is the fact that as a major manufacturer, Weidmüller is geared towards being able to supply large quantities at short notice.

Cooperation from the very beginning

When replacing the control cabinets, it is crucial to ensure universal monitoring of the transformers. This is where the Energy Analyser can really show off its strengths. It measures various parameters of the network quality such as short-term interruptions, transients, starting currents, voltage fluctuations or harmonics caused by contamination. It transfers this data via a Modbus interface for evaluation. This provides the company with transparent information about current incidents and allows it to monitor the networks in real

time while guaranteeing and monitoring operation. When data is recorded and analysed, it is simultaneously entered into the Industrial IoT, giving the company the opportunity to fully exploit the opportunities offered by digitalisation.

Thanks to its decades of experience, Weidmüller can efficiently support and advise control cabinet builders from the very outset of a project. During a qualification phase for a recent project, Weidmüller initially provided samples so that the Analyser could be put through its paces. This convinced the control cabinet builder just as much as Weidmüller's commercial offer, and led them to include Weidmüller in the tender as a listed supplier. Together they were awarded the contract and were able to implement the project successfully. The project volume for Weidmüller ultimately amounted to a total of 1,400 units.

Overview - a real winner for Weidmüller

- Weidmüller has the right product with the necessary approvals and certifications for monitoring network quality
- Weidmüller provides support right from the start of the project, is on hand to assist in an advisory capacity and supervises the project consistently right through to implementation
- As a large manufacturer, Weidmüller is able to guarantee the delivery of the required high quantities.

Outlook

By providing worldwide support for major projects in the field of power engineering and power distribution, this opens up desirable target markets for Weidmüller. Its extensive portfolio for control cabinet building and power distribution provides control cabinet manufacturers with support on site and establishes Weidmüller in the local energy sector.

Reliable monitoring of grid quality

Certified as class A in accordance with IEC 61000-4-30

There is a direct correlation between the quality of the power supply and the lasting security of supply with no noticeable interruptions. Disruptions and damage are often caused by overvoltage and transients. In addition to a reliable supply, high-quality voltage (* point 2. in the figure) is crucial to the reliable operation of equipment with all of its electronic consumers, such as industrial control units or EDP facilities. The grid operator must keep the voltage and frequency as constant as possible, and is liable irrespective of culpability in the event of disruptions (* point 3. in the figure). Precise analysis and documentation using certified procedures are required in order to achieve the greatest possible transparency regarding energy consumption and voltage quality.

Looking for causes

Voltage quality is becoming relevant for an increasing number of providers and consumers – including in the field of renewable energies. More and more photovoltaic and wind power installations have been connected to the medium-voltage grid over the last decade (* point 1. in the figure). The grid operators are responsible for the operation of medium-voltage grids. They therefore have a significant interest in monitoring the quality of electricity at the point of connection with equipment.

Reliable monitoring and error detection

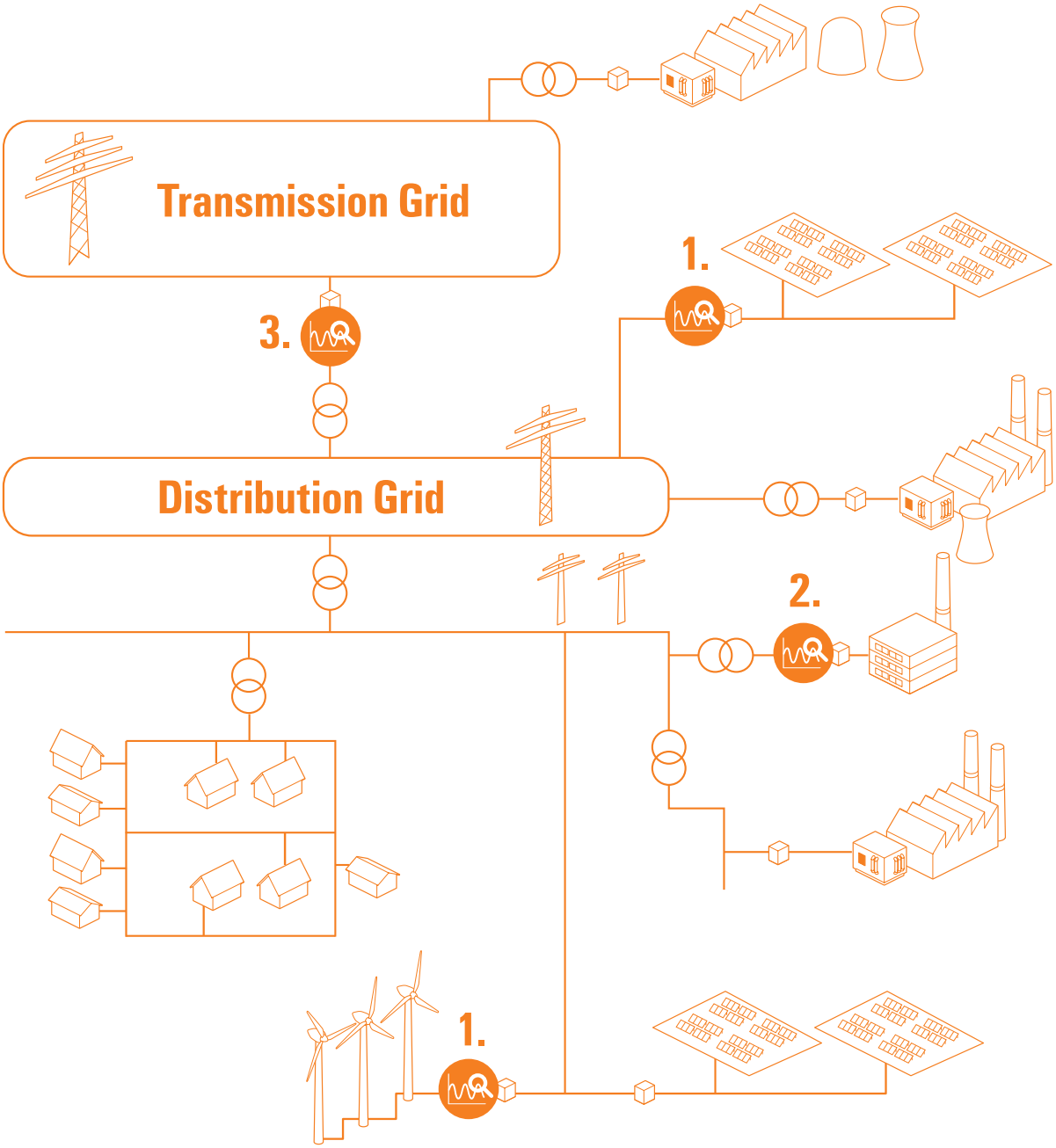
Weidmüller's product portfolio includes the Energy Analyser 750 power quality analyser for comprehensive monitoring. The capabilities it offers allow comprehensive error detection, because in addition to continuously recording consumption it also monitors residual currents. Overvoltage, asymmetries, transients, flicker and other disruption parameters are recorded and analysed. The Energy Analyser 750 complies with all common standards such as EN 50160, IEEE 519 and IEC 61000-2-4, and can be integrated into most communications architectures at low cost thanks to a variety of interfaces.

Generating relevant results

For monitoring it is advisable to use class-A energy analysis devices, which are connected alongside the charging meters. Only analysers that have been certified as class A ensure that the results are reliable, repeatable and comparable. Because regardless of whether you want to hold a "guilty party" to account for damages incurred or identify and remedy sources of disruption as a precaution, this always requires reliable and documented measurements that even stand up in court if necessary.

Detailed insights into equipment

The recording of power quality analysers, which Weidmüller has been selling for years, can also be helpful in this regard. Their extensive analyses and documentation provide a detailed insight into a system. In addition to voltage, frequency and curve shape they also record all forms of disruption. These could be flicker effects or brief voltage drops, which are typical for automated reclosure following electric arc short-circuits. Harmonics from non-linear consumers can also significantly impact the function of other devices. Unlike the basic oscillation in the three-phase system, all of the harmonics that are divisible by three in the neutral conductor reinforce each other instead of cancelling each other out. This can cause the current load on the neutral conductor to rise beyond permissible levels. Harmonics are typically mainly generated by frequency converters as well as surge voltages from switching operations.



1. Producer
2. Consumer
3. Grid operator

Reliable residual current measurement

Use of RCM (Residual Current Monitoring) measuring instruments

Residual currents caused by the failure of insulation can constitute a significant risk to safety in electrical systems. Using an appropriate protective concept it is possible to detect residual currents, eliminate insulation faults in good time and therefore ensure the availability of the system.

RCM stands for Residual Current Monitoring and means the monitoring of residual currents in electrical systems. This current is calculated as the sum of the currents of all conductors, apart from the protective earth (PE), which feed into the system. Residual currents are typically the result of insulation faults, leakage currents or EMC filter leakage currents for example.

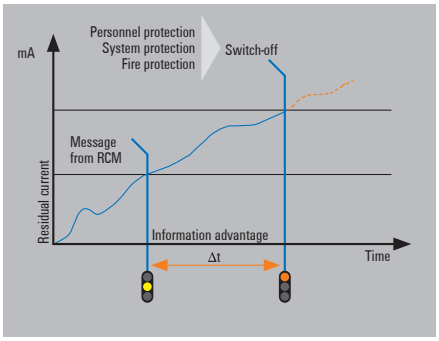


Fig.: Report prior to switching off - an aim of residual current monitoring

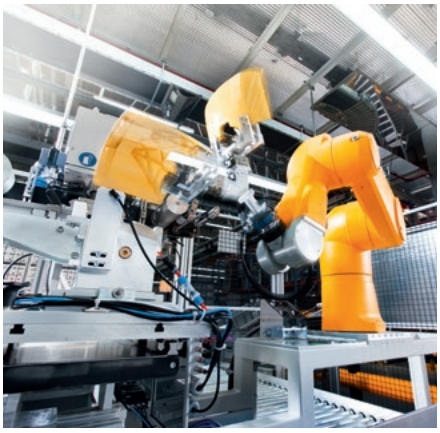
Whilst GFI devices (ground failt interrupter) switch off the power supply in the event of a certain residual current being exceeded, RCM measuring devices indicate the actual value, record the long-term development and report the exceeding of a critical value. This message can also be used in order to switch off the power supply via external switching devices (contactors, relays). Through the use of residual current measuring devices it is possible to detect and report residual currents in a timely manner. It is possible to initiate counter measures in good time, so that it is not necessary to switch the system off. This facilitates the implementation of measures in the event of slowly deteriorating insulation values or steadily rising residual currents – caused for example by ageing insulation – before the system is switched off.

Further errors that are detectable by a RCM measurement:

- Insulation faults of lines and electrical operating resources
- Residual currents from electrical loads
- Defective PP power capacitors for the PFC
- Defective components in switched mode power supplies, e.g. in computers
- Correctness of TNS systems (Terra Neutral Separate)
- Disclosure of impermissible PEN connections
- Avoidance of neutral conductor reverse currents to grounded equipment

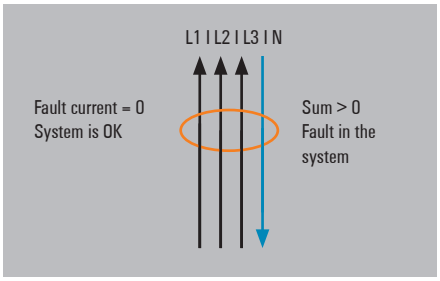
Residual current monitoring in conjunction with energy measurement in combined energy / RCM measuring devices in electrical systems constitutes a measure for fire protection and maintenance prevention. Down times and the associated costs are thereby reduced. Timely and preventative maintenance – facilitated through the information additionally gained from an RCM measuring device – also significantly enhances the efficiency and availability of a system.

Constant RCM monitoring is of particular significance in preventing unwanted surprises in ongoing operation, and provides consistent information regarding the actual status of the electrical system.



Fundamental measuring process with RCM

The functionality of RCM measuring devices is based on the differential current principle. This requires that all phases be guided through a residual current transformer at the measuring point (outlet to be protected), with the exception of the protective earth. If there is no failure in the system then the sum of all currents will be nil. If, however, residual current is flowing away to ground then the difference will result in the current at the residual current transformer being evaluated by the electronics in the RCM measuring device.



Typical applications

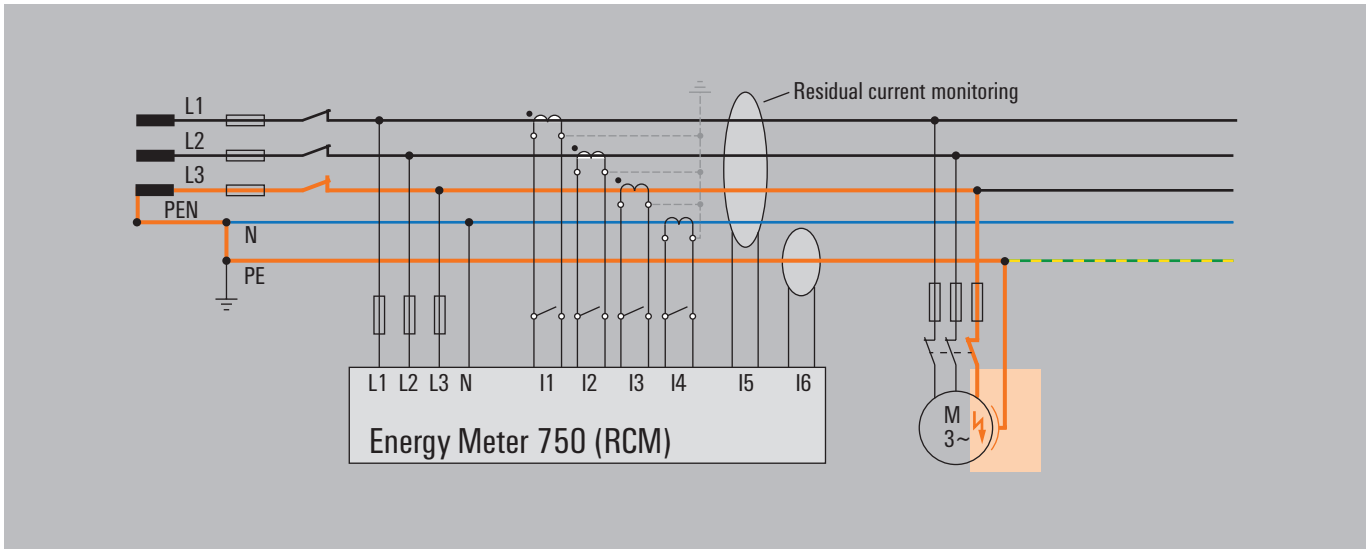
RCM measuring instruments are mainly used in systems where a high level of availability is required, such as:

- Data processing centres, production facilities, hospitals, telecommunications
- TN-S systems with strict EMC requirements
- Equipment at risk of fire
- Equipment in cleanroom conditions
- Research facilities, laboratory technology areas

Weidmüller combines Energy Management, grid quality and residual current monitoring in a single system, providing you with a holistic solution from medium voltage down to the individual circuit.

The following measuring instruments support RCM measurement:

- Energy Meter 700-PN
- Energy Meter 750
- Energy Analyser 550
- Energy Analyser 750



Service and support

Service and support	Service connects – worldwide	V.2
	Engineering services and customised products	V.3
	easyConnect – Your Industrial Service Platform	V.4
	Support Center	V.6
	Additional support services	V.7
	Weidmüller Configurator: intuitive, uncomplicated & fast digital engineering	V.8
	Your digital ordering options at Weidmüller	V.10

Our expertise for your requirements
Service connects – worldwide

Automation technology functions are becoming more complex in a globally-oriented world facing ambitious targets in terms of energy efficiency and smart production. We are your equal partners for the best connections in Industrial Connectivity.

Our personal support answers all questions reliably and expertly. During planning, installation or operation our service and support offer is your best companion.

In short: Weidmüller's global service combines our expertise with your requirements.

Your way to our service
www.weidmueller.com/service

Engineering services and customised products

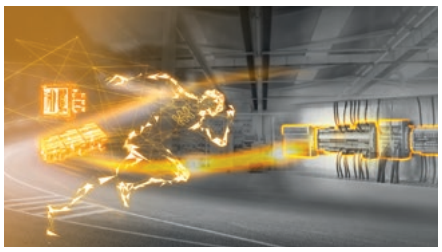
Automation engineering and connectivity consulting belongs to our services as well as assembly of engineered products. We also support the process from the idea to the product with our Weidmüller Configurator and the Configure-to-Order process.

Consulting and engineering
The challenge for you is reducing costs and increasing efficiency. This requires intelligent, individual solutions. Whether it is modified products, pre-fitted mounting rails or complete small cabinets – our application centres provide a highly qualified custom-made engineering and production service.

Connectivity Consulting
Increase your competitiveness - supported by our experts
Our drive is to optimise your competitiveness. That's why our team of experts supports you in significantly increasing your efficiency in electrical machine design and control cabinet construction. With proven products and services from the Weidmüller portfolio – and with the experience gained from over 300 projects worldwide.

Assembled terminal rails - Flexibly designed to suit your requirements
Your processes in panel building have to be fast, flexible and productive. This is the only way you can cut your costs and increase efficiency. Depending on the application in question, you will have different requirements with respect to the engineering service, delivery speed and flexibility to be provided.

Modified and assembled enclosures - Competitive advantages included
To compete internationally, your plants need to satisfy high standards of safety, quality and performance. The smart combination of consultation, application expertise and industry know-how is our key to finding a custom-fit solution for your application. Reduce costs and increase efficiency.



Fast Delivery Service - Your ideas deserve a quick realisation
Obtain offers 24/7 and within minutes, including directly orderable article numbers with our Fast Delivery Service. The Weidmüller Configurator (WMC) for planning and configuration is key for consistent processes. Dispatch your orders in 5 days. Assemble individual terminal strips and enclosures from batch size 1!

Your ticket to the world of digital service
easyConnect – Your Industrial Service Platform

Our cloud-based platform is your ticket to the world of digital services from Weidmüller, and the intuitive and future-proof tool for your way to the Industrial IoT. Realise your use cases easily, consistently and without any relevant prior knowledge, thanks to the perfect interaction of platform, devices and diverse software services.

As an open, modular and perfectly integrable system, the platform is your enabler for a wide range of use cases. Increase your efficiency and unleash your full innovation potential with easyConnect.

Interested in using easyConnect?
Learn how to get started with easyConnect step-by-step.

www.weidmueller.com/easyconnect

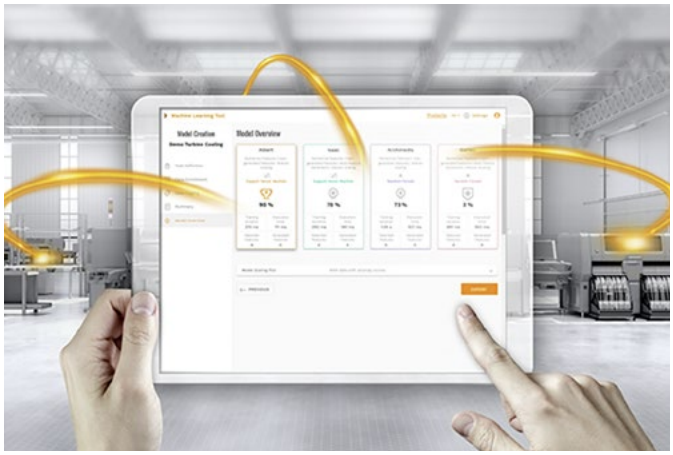
Why should you use easyConnect?

- You want to enter your digital transformation step-by-step?
- You want to make the step into Industrial IOT, but have no or little IT expertise?
- You want to use your digital data for smart & scalable services?
- You want to offer digital services (such as customised dashboard) to your customers?
- You want to improve your service offering and efficiency, e.g. through remote access?
- You feel Weidmüller's digital services are interesting, but you have „your cloud" already?

Weidmüller comes up with the solution: easyConnect, the new digitalisation platform. It bundles Weidmüller's digital services at one place in the cloud and connects them with various Weidmüller devices.

With easyConnect you start digitalising your application step-by-step without ballast in a secure way.

The following services are initially available on easyConnect:



Device management
Adding and managing cloud-connected devices is typically the first step in any Industrial IoT use case.

Asset management
The asset management service is a modelling tool that allows users to model their assets and processes and link them to relevant time series data.

Remote access (u-link)
u-link guarantees a quick and secure access to machines and plants while also allowing for efficient management.

Data visualisation
easyConnect data visualisation services enable users to view, monitor and display live and historical data.

AutoML
With Weidmüller Industrial AutoML, you can optimize operations, increase product quality and develop new business models by benefiting from advanced analytics.

Expand the possibilities of our products

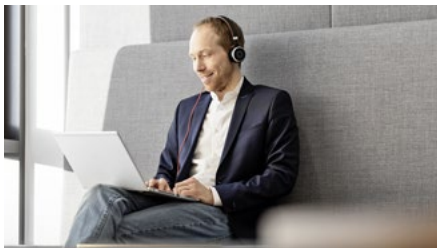
Our Support Center provides you with comprehensive, clear and personal assistance

Receive fast and intuitive support to get the most out of our products in your application. In our new Support Center you can search or navigate to the many application notes, product information, video tutorials or software downloads of our products.

- **Everything at a glance –** One central support hub, where all relevant information is available
- **Powerful search –** Provides filter functions for various types of information and products
- **Different views and navigations –** Content provided in views product information, engineering support or software downloads
- **More than 170,000 downloads –** Application notes, video tutorials, templates and examples, user documentation, engineering data, ...
- **Personal contact –** Direct access to your personal technical contact in your country

Explore the world of our new Support Center
support.weidmueller.com

Additional support services

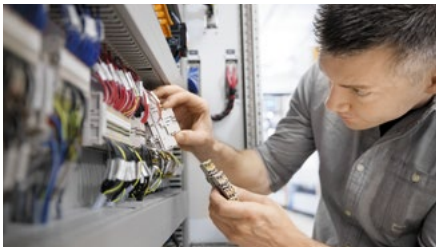


Training and Webinars
Stay tuned in a world that is accelerating. In our entertaining interactive webinars, we offer you the opportunity to learn about new products and technology topics and to interact with our experts.

Repairs and replacement parts
We offer repair and components for our Workplace Solutions as well as assistance for other Weidmüller products. Find out how our experts can help you with your repair request.

Security advisory board
Our Product Security Incident Response Team (PSIRT) continuously informs you about possible security-related vulnerabilities of our products.

Engineering data
For the quick integration of our products into your design, there are a lot of digital product data for engineering systems like EPLAN, Zuken E3.series, WSCAD and many others available for download.



Product change notifications
Technical modifications of our products always available online.

Technical product catalogues
Technical data for our entire program in Industrial Connectivity for download in PDF-format.

From the idea to the finished solution

Weidmüller Configurator: intuitive, uncomplicated & fast digital engineering

Digital engineering can be so easy – with the Weidmüller Configurator!

It´s a **free to use** software application to easily configure industrial solutions. It features more than **12,000 articles** from multiple product families including rail-mounted components, industrial and ex-certified enclosures, Heavy Duty Connectors, remote I/O-systems and PCB connectors.

Unleash the full power of digital engineering:

Our application wizards help you choose the right articles.
Place, mark or modify them to your needs and get your solution **visualized in 3D –** what you see is what you get!

Our promise: Speed up your solution planning process by up to 70%!

Your benefits:

- **Proven configuration designs in real 3D:** The plausibility and collision check with the complete digital documentation ensures that you can rely 100% on your configuration.
- **Seamless E-CAD Roundtrip:** Interfaces enable the simple exchange of product data between the WMC and all common engineering tools, such as Zuken E3 or EPLAN Electric P8.
- **Sample Service & Fast Delivery Service:** to support your design-in process, we offer a **3-day sample service** for many products. Inquire them directly online – for free!
  You want your solution right away? Our **Fast Delivery Service** guarantees delivery of individually assembled terminal strips or enclosures within a few days.

Get started online now!

The Weidmüller Configurator makes solution planning easy. Visit our website for more information, tutorials and download it for free:

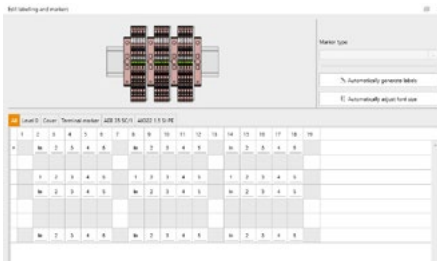
www.weidmueller.com/wmc

or register on **easyconnect.weidmueller.com**
and use it online.

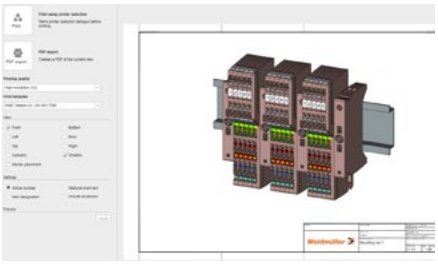
WMC

E3 series® ePLAN electric P8

Wizards:
Design complete applications within few clicks – even without detailed product knowledge – for signal wiring, load monitoring, instrument transformers, enclosures, remote I/O-systems and many more.



Assistants:
Finalize your solutions with supporting assistants to add cross-connectors, markers or colors and verify the faultlessness. Automatic modes save valuable time!



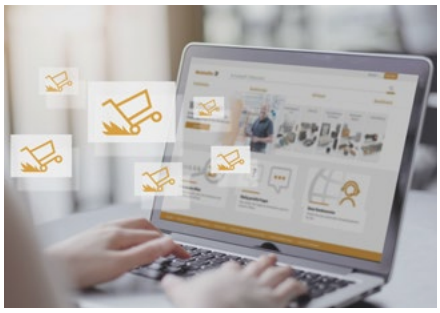
1-click documentation:
Get assembly drawings for production – only 1 click. Bill of material – only 1 click. The complete solution documentation including all component data sheets – you´re right, only 1 click!

Digital ordering options
Your digital ordering options at Weidmüller

Find and easily select the products you need, with convenient ordering: as your Partner in Industrial Connectivity, we know what counts in purchasing. That is why we offer you a variety of options for ordering products from us and optimising your purchasing processes to meet your individual requirements and your workflow. The choice is yours.

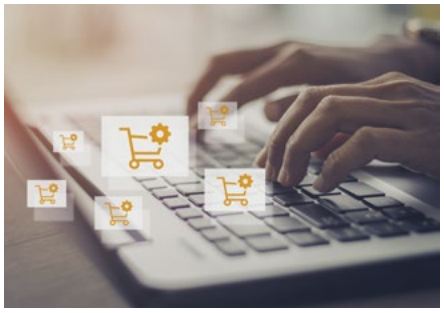
Order via the Weidmüller eShop

Our eShop offers you access to the complete Weidmüller product range around the clock – directly from a PC, tablet, or smartphone. The intuitive user guidance supports you as you select from over 50,000 products. Technical data, prices, and availabilities are available at any time. The shopping basket with check out function lets you place an order in seconds. Convenient additional functions like CSV upload, order history, reports, or custom order templates make your ordering processes even more efficient.



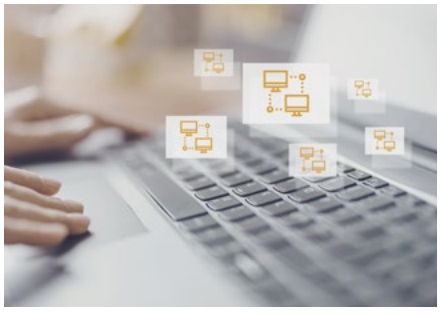
Order via the OCI interface

The Open Catalogue Interface (OCI) facilitates the exchange of data between your enterprise resource planning system and our eShop. This means that our eShop is integrated into your system via an OCI interface, so you have access to our complete product catalogue from your enterprise resource planning system. You can filter and select products, place them in your shopping basket and place direct orders without changing your software application. The open OCI standard is supported worldwide from a variety of software providers.



Order via the EDI interface

Our Electronic Data Interchange (EDI) also offers you the option of ordering our products directly from your enterprise resource planning system. All order data is transmitted automatically to our system and processed immediately. Orders, order confirmations, invoices, and delivery notices are transmitted lightning fast. This helps you make your purchasing processes even more efficient.



We will be glad to advise you on which solutions are suitable for you and how implementation is possible.
Get in touch with us
www.weidmueller.com/digital-order

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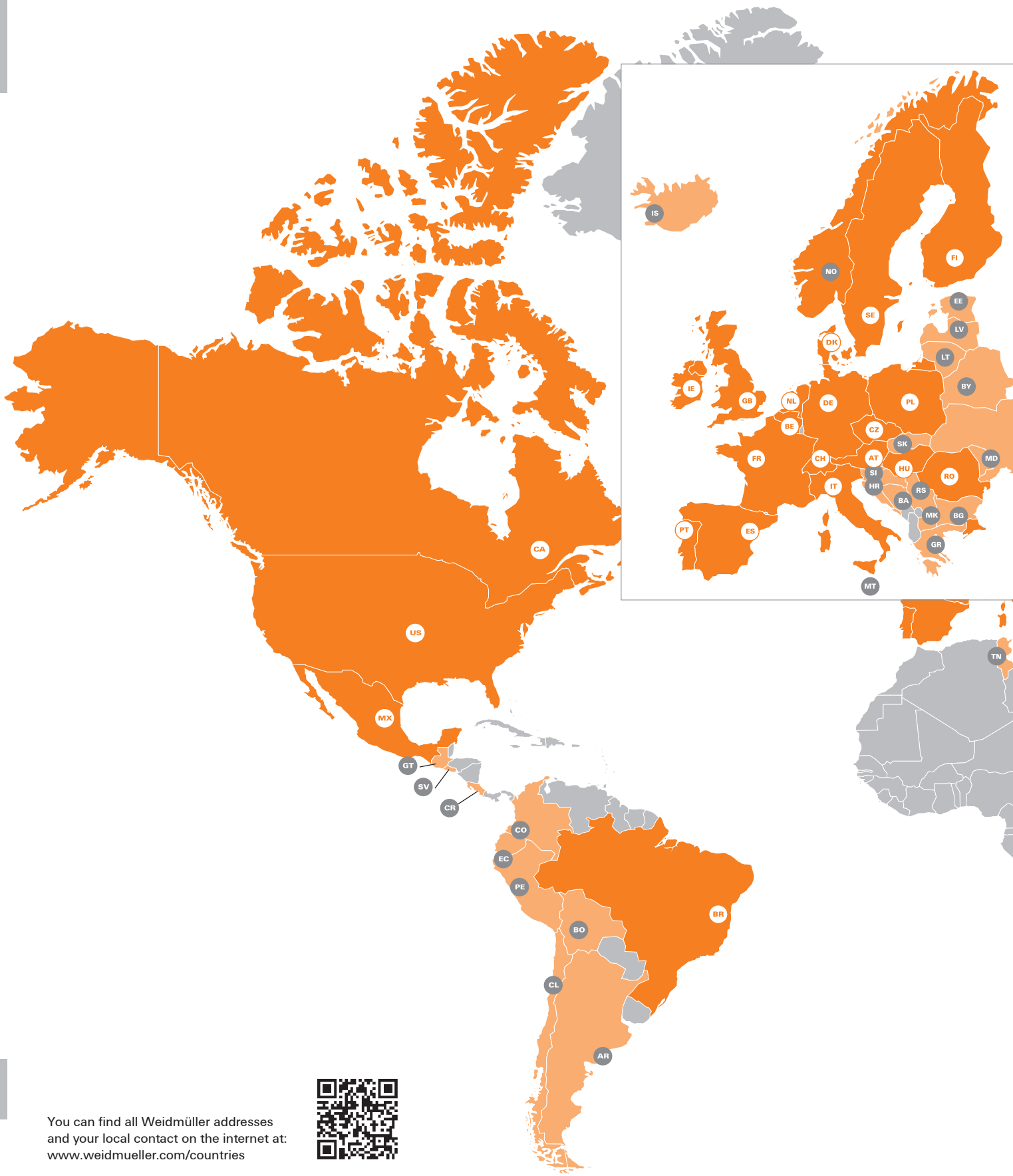

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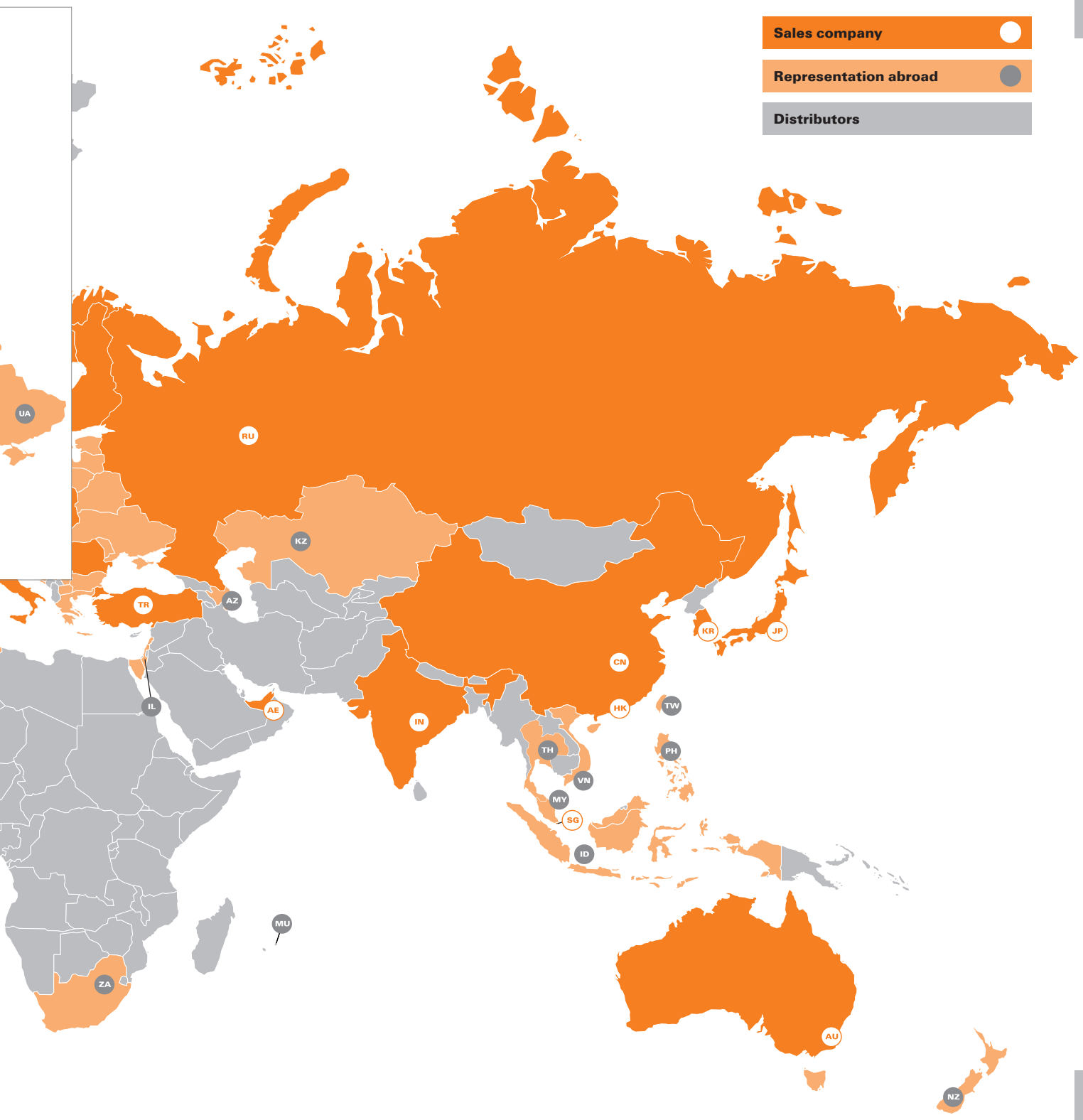
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As experienced experts we support our customers and partners around the world with products, solutions and services in the industrial environment of power, signal and data. We are at home in their industries and markets and know the technological challenges of tomorrow. We are therefore continuously developing innovative, sustainable and useful solutions for their individual needs. Together we set standards in Smart Industrial Connectivity.

Technical Guide

More detailed information on our measuring and monitoring systems is available on our website. In addition we offer a Technical Guide with comprehensive technical basic knowledge related to the subject of energy monitoring.

www.weidmueller.com/energymonitoring

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Bestellnummer: 3043800000/04/2025/SMD