Current Measurement System (CMS)
A new level of efficiency and availability

Power and productivity
for a better world™

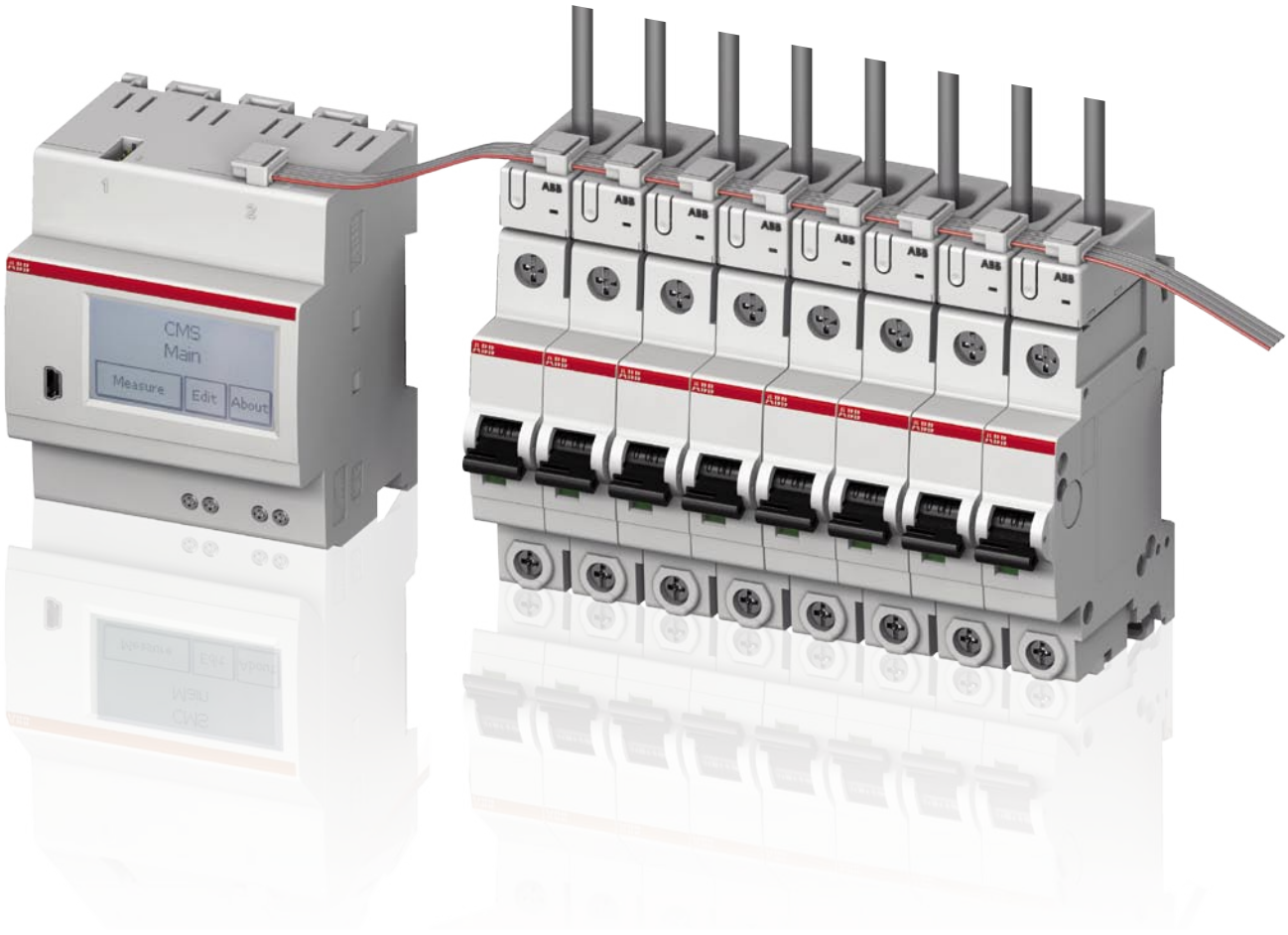
CMS – Current Measurement System
A system full of benefits

Current measurement in power distribution units has never been so compact and perfectly integrated. It is finally possible to monitor the individual circuits of an installation.

Measuring current close to electrical loads creates a completely new level of transparency. The CMS sets the standard both in transparency and in user-friendliness. Installation is very simple and the intuitive way you can navigate through the menus ensures that commissioning is genuinely rapid.

Integration in perfection

It is invaluable but often underestimated: **perfect integration in power distribution units**. The CMS adjusts to the existing installation architecture like no other system. There are no tangled cables, no additional housings and no additional DIN rail requirements. This allows you to have a perfect overview of the installation at all times – and see all the options for expansion and modification over the long term.



Minimal space requirements

Small, smaller, CMS – it is an enourmous challenge to locate more compact current sensors.

Installation is easy

The sensors are mounted in a few easy steps. The connection technology can be installed without special tools and there is no longer any need for expensive conventional cabling.

User-friendly commissioning

Configuration is easy: The intuitive navigation concept allows the system to be set up on the touch screen. Within minutes, it is ready to start measuring.

A sensor for all types of current

Whether it is DC, AC or mixed current: CMS sensors record everything – and that within a huge measurement range of up to 80A.

Always upgradeable and expandable

The system can be expanded or modified at any time thanks to its flexible and modular design. Sensors can be installed one-by-one at a later date.

Maximum reliability

The contact-free measurement method means that potential errors are prevented from the outset.

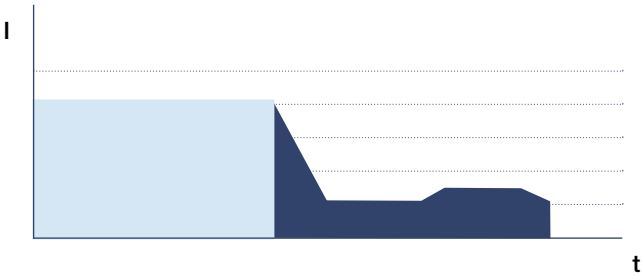
Trust is good – testing is better
Current measurement increases availability

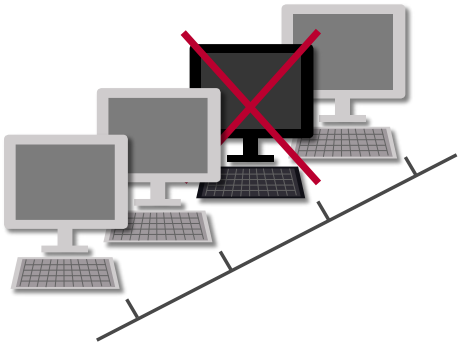
The CMS is the perfect solution for areas where high system availability is required. This includes industrial facilities, banks, insurance companies or public buildings such as hospitals or airports, which depend heavily on their electronic systems operating smoothly. Failures here lead to major financial losses.

In the area of renewable energy technology, the sensors can also help to ensure that systems run smoothly, for example, by monitoring string-level current in solar power systems or testing generators in wind turbines and hydroelectric power plants. The CMS offers the perfect services in numerous industries.

Early detection of deviations

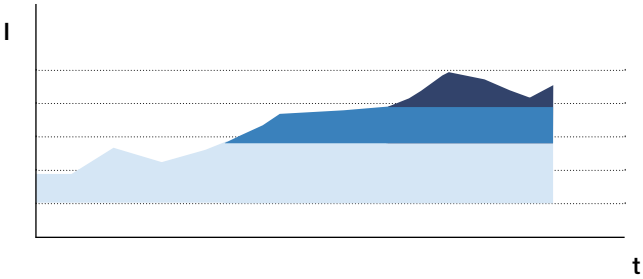
The CMS measures currents directly in the final circuit and can therefore ensure the error-free operation of a system: continual measurement in the final circuit detects potential hazards, like failures, power drops or other abnormal behaviour, before major damage is caused.





Overload warning system

Constant measurement of current flow in overcurrent protection devices can monitor whether a cable is loaded beyond its nominal current range. Tripping can be prevented before it is too late.

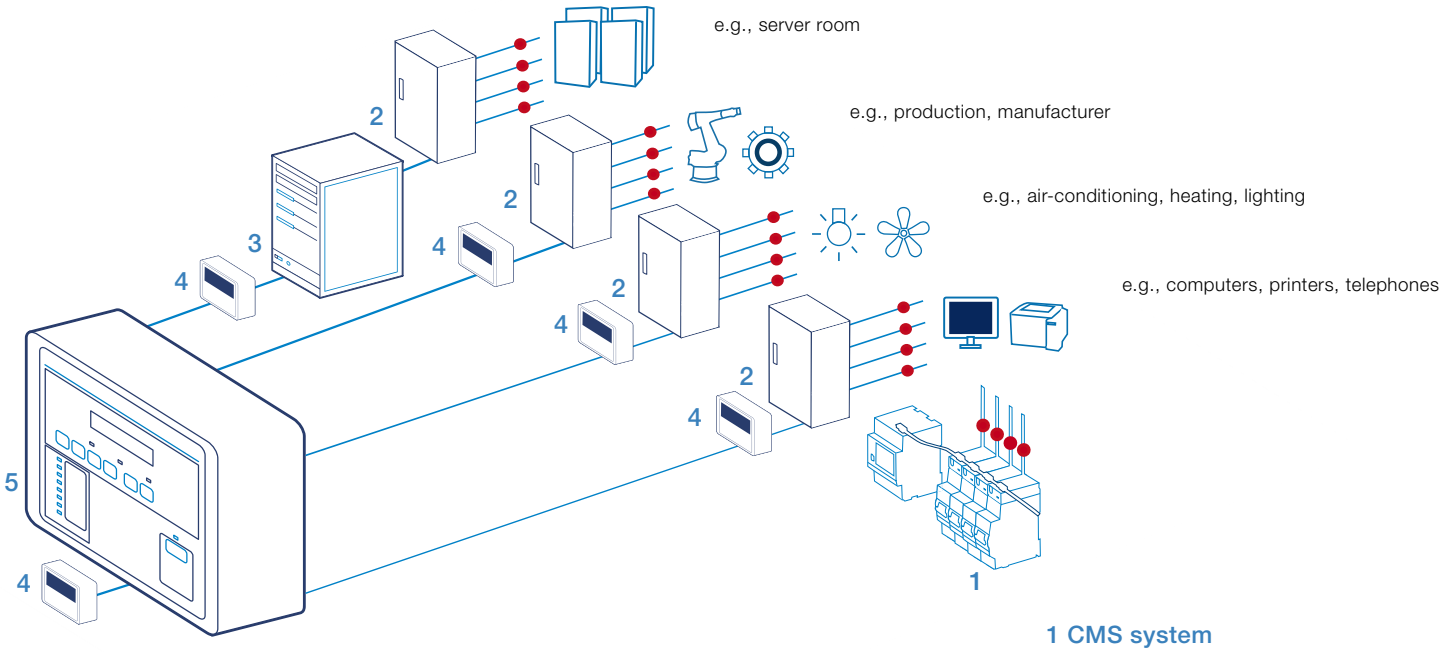


Increase transparency
Measure to reduce costs

Public buildings and industrial facilities have electric meters that measure area by area – and they do this in a very blanket way. However, in order to be able to make accurate assessments about where the real energy guzzlers are in the building, you need to take a closer look at power consumption.

This is where the CMS offers an uncomplicated yet highly efficient solution: it measures the current in the individual final circuits. These measurement results allow you to precisely trace energy flows and triangulate where electricity consumption is too high. This helps you to use energy more efficiently.

Maximum transparency in a building with current measurement in the final circuit



1 CMS system
(● measurement points)
2 Sub-distributors
3 UPS
4 Electric meters
5 Main distributors

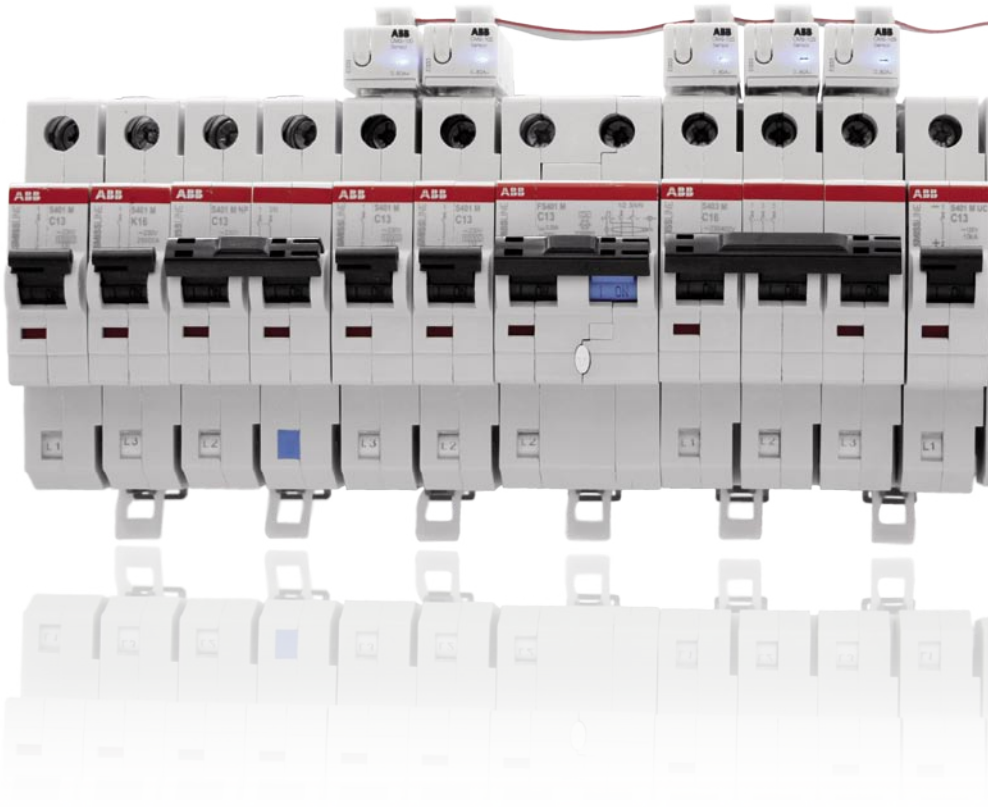
CMS – sophisticated in every detail
The system at a glance

The quality of a current measurement system is determined by the perfect interaction and strength of all of its individual parts. This is where the CMS system from ABB sets the bar high: whether in compact size, technology, measurement results, user-friendliness or flexibility – every component and feature of the CMS is optimised perfectly for practical application and function.

The sensors are the most important part of the system and their compact size is impressive. **The sensors** can be easily installed anywhere and they do not cause any problems during installation or commissioning.

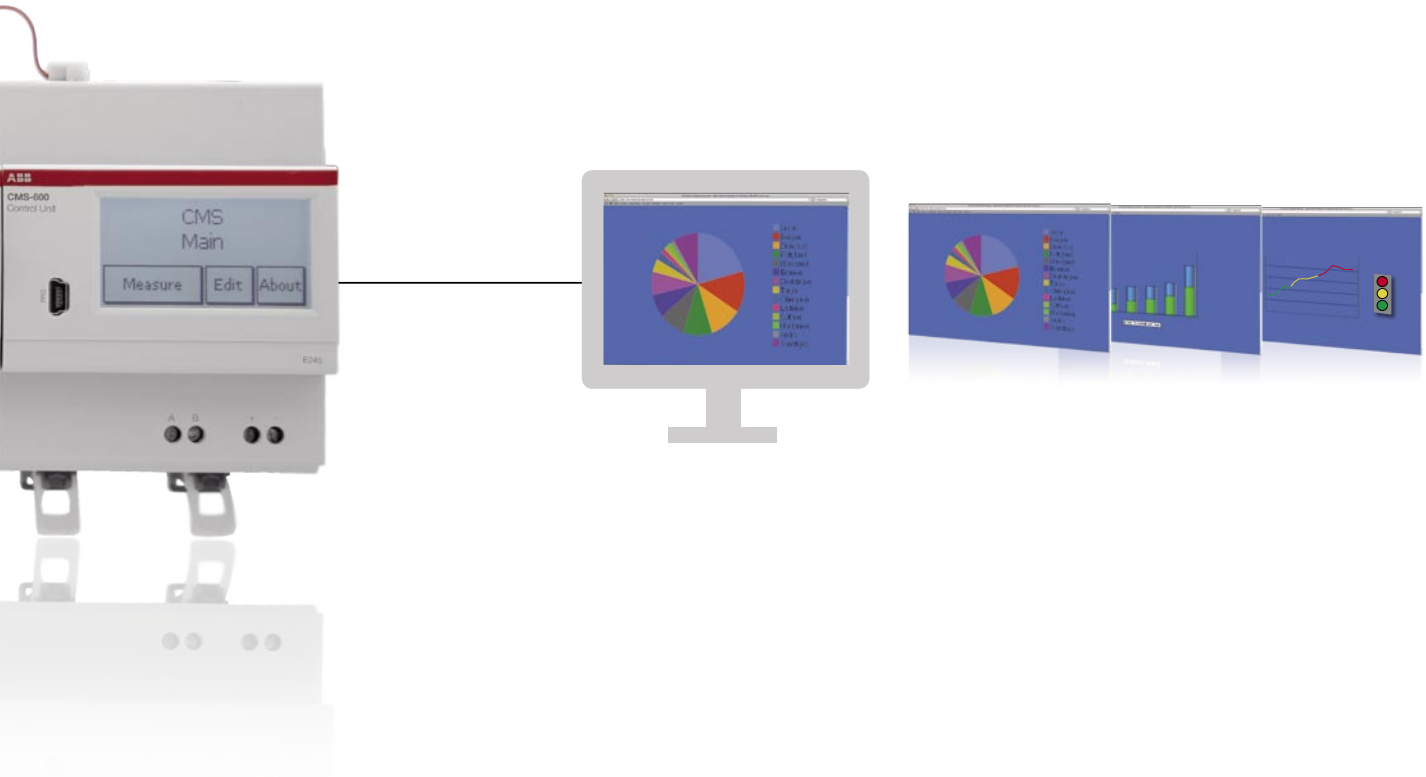
All of the sensors communicate with the control unit over the same connection. This does away with the confusing, star-shaped cabling, which is often required for analogue measuring transformers. It also saves time during installation and creates a lot of space in the power distribution unit.

The next important element of the CMS is the control unit, whose touch screen makes it easy and intuitive to use. This device processes all measurement data, shows measurement values and prepares them for individualised processing.



It is also very easy to **initialise the sensors**. You can assign the desired identifiers to the individual sensors with a few clicks in the control unit. The entire commissioning process only takes a few minutes. Just after you can use all of the measurement functions and show them on the display of the control unit.

You can remotely query **measurement data via a Modbus** interface (RS-485/Modbus RTU). The possibilities for further measurement value transmission and processing are nearly infinite.

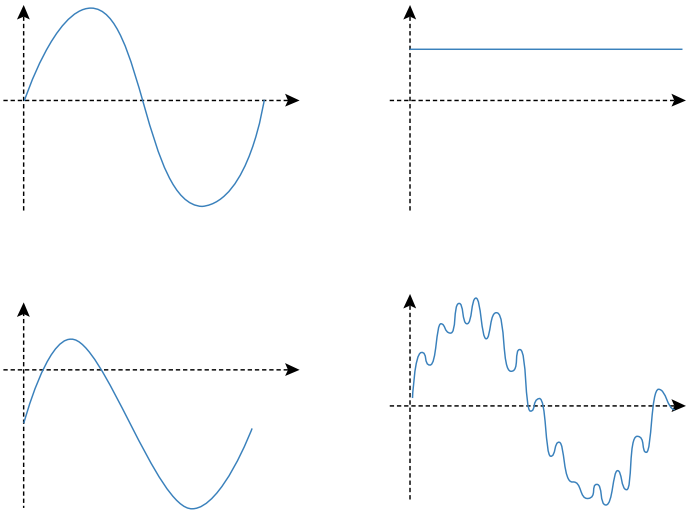


The sensors – the heart of the CMS
Top performance and only 18-mm wide

No space wasted here: everything is built into an 18-mm wide unit to enable exact and effective measurements. This means that CMS sensors are among the most compact and high-performance sensors on the market.

Small size, huge performance: Whether AC, DC or mixed current, CMS sensors capture all types of current within a measurement range of 0–80 A (TRMS). Even upper sidebands in the signal trace are captured.

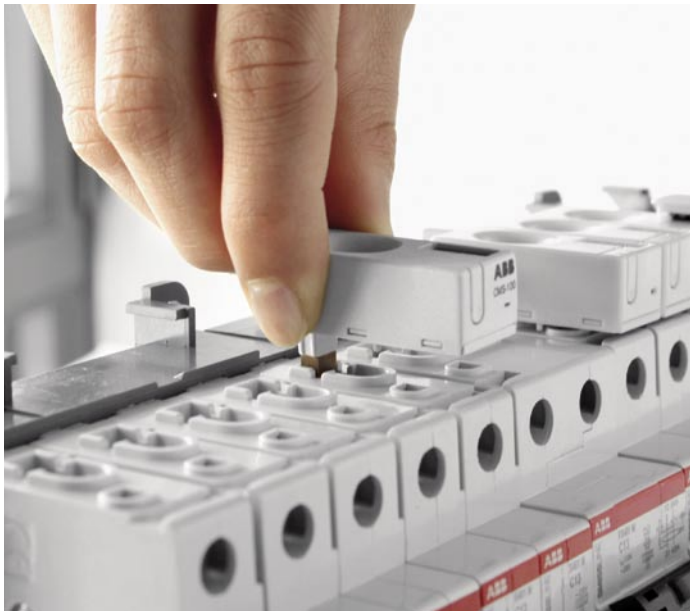
Every sensor has its own signal processing microprocessor, meaning measurement data is transmitted digitally via the bus interface to the control unit. This reduces cable leads into the distribution units and maximises the security of the transmitted mesurement values. Disruptions like those for analogue data are finally a thing of the past.



It just fits
Integrating sensors

CMS sensors are rapidly mounted on ABB low-voltage protection devices. Thanks to the sophisticated design, you have a perfect, compact and clearly arranged unit in the power distribution unit.

The **CMS-100PS** (80 A), **CMS-101PS** (40 A) and **CMS-102PS** (20 A) are designed for ABB pro M compact and SMISSLINE devices with twin terminals. The sensor only needs to be plugged into the rear terminal connection.



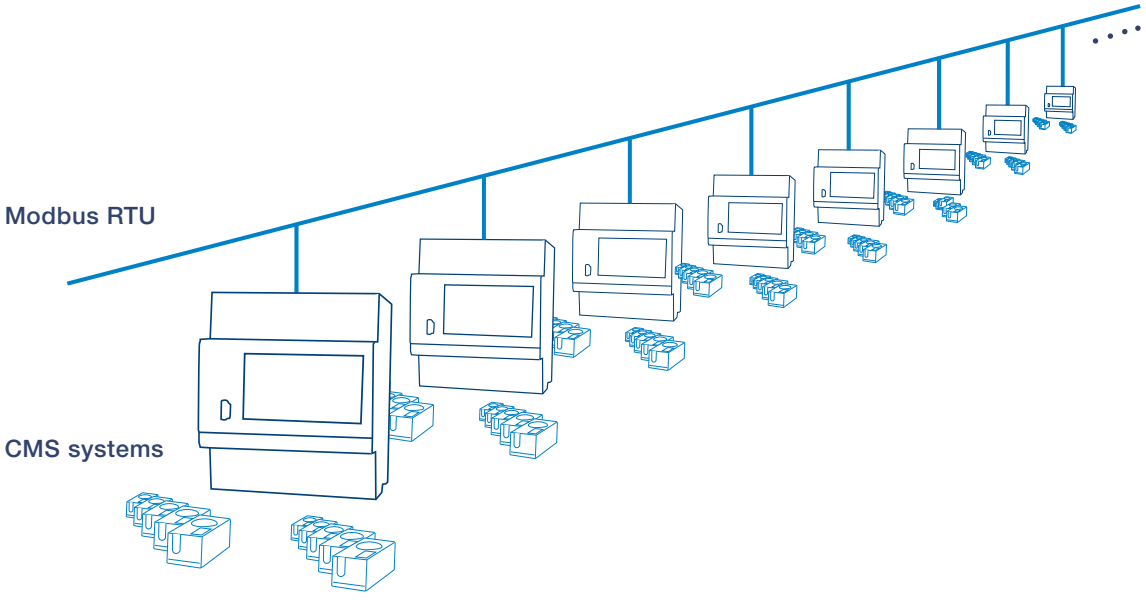
Compatible devices for the CMS-100PS series

	MCB	RCBO	RCCB
pro M compact			
	S200	F200	DS201
SMISSLINE TP			
	S400	F400	FS400

The control unit – the information centre
Measure and operate smarter

The control unit (CMS-600) is a user-friendly interface and is the centre for powering and managing the CMS system.

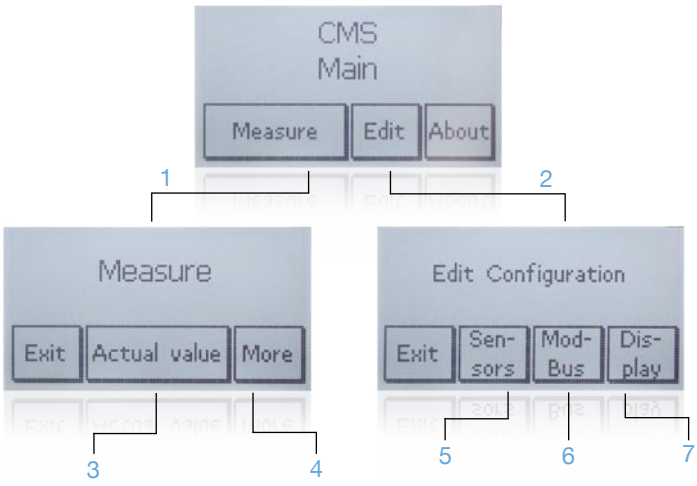
Up to 2 x 32 sensors can be connected to each control unit. 247 identifiers can be set on the device. Thereby it is possible to aquire thousands of measurement points over one bus line. This means the CMS is predestined for use as a highly-efficient measurement system, even in very large, extensively networked installations.



Straightforward operation
Reach your goal quickly by touch

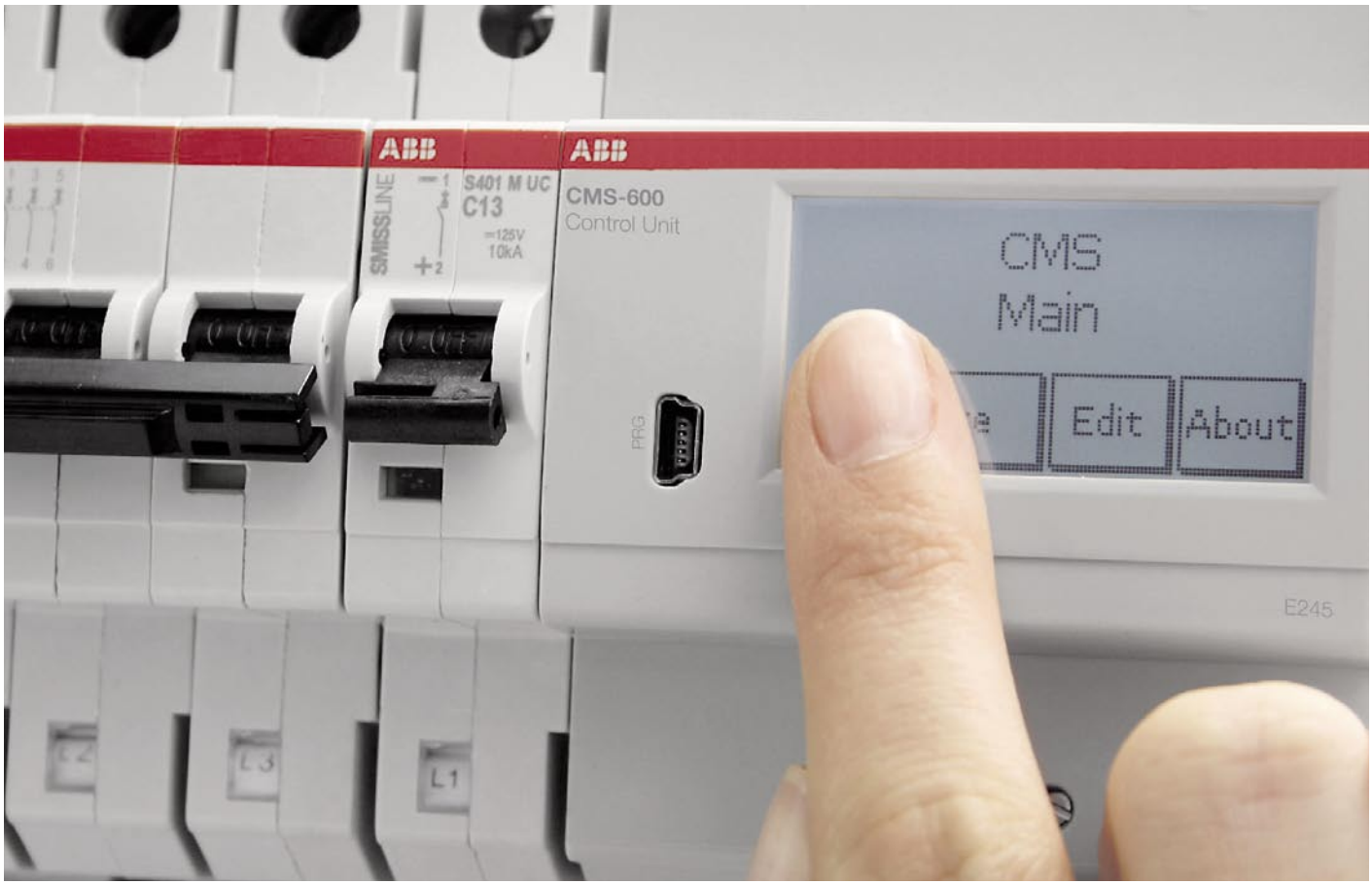
The control unit's touch screen is easy to operate. Even the most advanced technology is not worth much if it is too complicated to use.

Special attention was paid to create an intuitive concept for operations when the menu navigation for the CMS was designed. It is very impressive how few clicks it takes to reach the functions and menus that you want – or how fast you can get back to the starting point, if necessary. Complex user training is not necessary, either for initialisation and for later operational use. This saves a lot of time, effort, and not least, money.



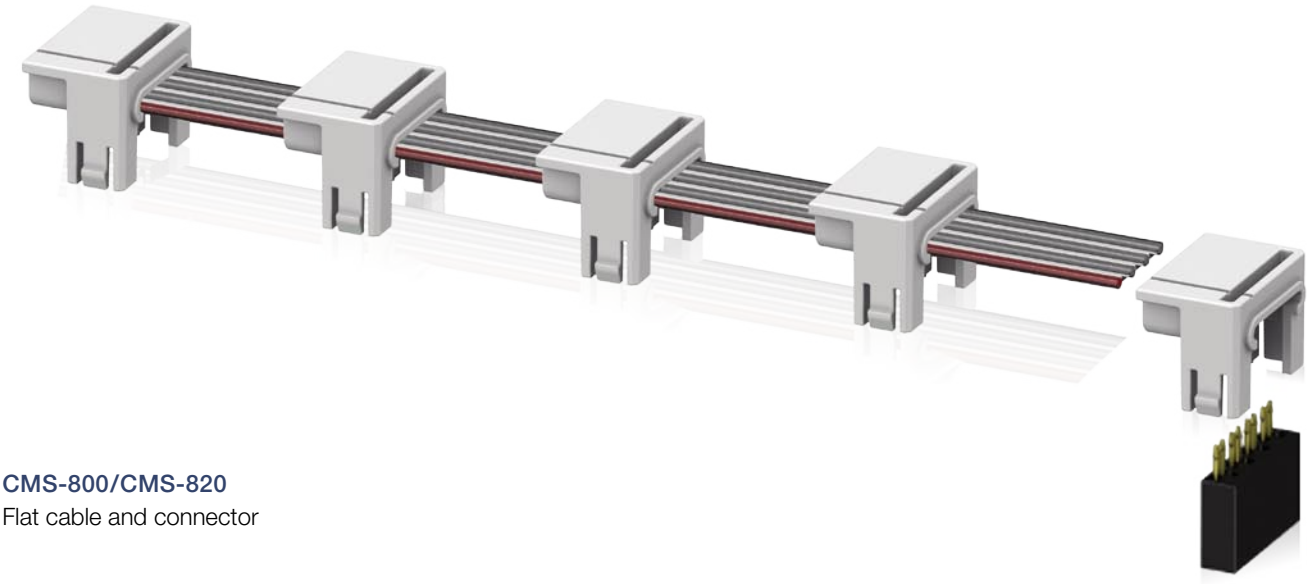
Crystal clear menu navigation

1 Measurement
2 Configuration
3 Display current measurement values
4 Display of max, min and hold values
5 Initialisation/parameterisation of sensors
6 Modbus configuration
7 Display settings



Installation is a minor matter
The connection technology

Easy cable assembly: to create a bus connection to the sensors, you do not need any additional tools. The insulation displacement connectors can be connected by applying a small amount of pressure to the flat cable. Quick, easy and reliable.



CMS-800/CMS-820
Flat cable and connector

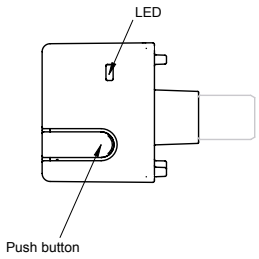
Technical specifications

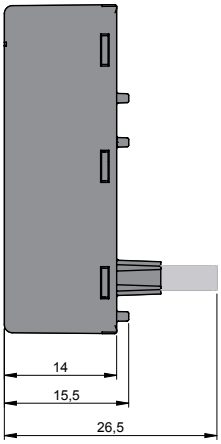
Sensors	CMS-100PS	CMS-101PS	CMS-102PS
Measurement range	0 .. 80A	0 .. 40A	0 .. 20A
Measurement method	TRMS, AC 50/60Hz, DC	TRMS, AC 50/60Hz, DC	TRMS, AC 50/60Hz, DC
Crest factor of distorted wave forms	≤ 1.5	≤ 3	≤ 6
AC Accuracy (T_A = +25°C)	≤ ±0.5%	≤ ±0.5%	≤ ±0.5%
AC Temperature coefficient	≤ ±0.036%/K	≤ ±0.036%/K	≤ ±0.036%/K
DC Accuracy (T_A = +25°C)	≤ ±0.7%	≤ ±1.0%	≤ ±1.7%
DC Temperature coefficient	≤ ±0.047%/K	≤ ±0.059%/K	≤ ±0.084%/K
Resolution	10mA	10mA	10mA
Sampling rate internal	5 kHz	5 kHz	5 kHz
Settling time (±1%)	typ. 0.25sec	typ. 0.25sec	typ. 0.25sec
Cable feed through	10mm Ø	10mm Ø	10mm Ø
Insulation Voltage	690V AC / 1500V DC	690V AC / 1500V DC	690V AC / 1500V DC
Weight	12g	12g	12g
Dimensions W x H x D	17.4mm x 15.5mm x 41.0mm (1TE)	17.4mm x 15.5mm x 41.0mm (1TE)	17.4mm x 15.5mm x 41.0mm (1TE)

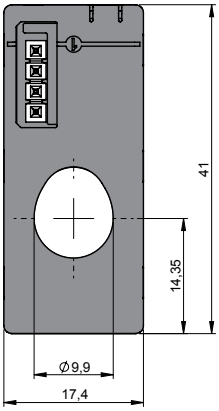
Control Unit	CMS-600
Supply voltage	24V DC (±10%)
Power dissipation	min. 0.4W; max. 24W (with 64 sensors)
Interface	RS485 2-wire
Protocol	Modbus RTU
Data rate	2400 .. 115‘200 Baud
Data refresh time	< 1sec for 64 sensors‘ results
Insulation Voltage	400V AC
Screw-type terminals	0.5 .. 2.5mm², max. 0.6 Nm
Mounting	DIN-rail 35 mm acc. DIN 50022 or SMISSLINE TP busbar system
Weight	153g
Dimensions W x H x D	71.8mm x 87.0mm x 64.9mm (4TE)

General Data	Sensors and Control Unit
Operating temperature	-25°C .. +70°C
Storage temperature	-40°C .. +85°C
Electrostatic discharge (ESD)	IEC/EN 61000-4-2
Electromagnetic compatibility (EMC)	IEC/EN 61000-4-3, -4-4, -4-5, -4-6, -6-3, -6.4

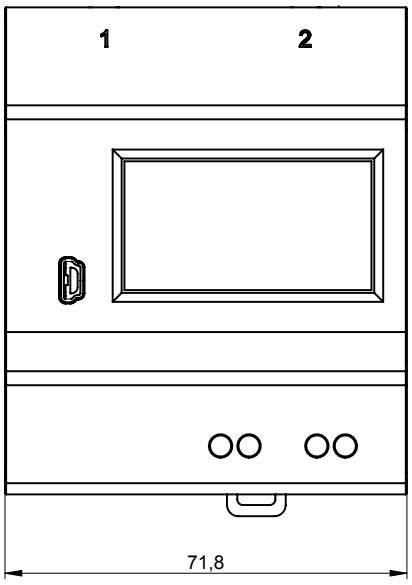
Dimension drawings

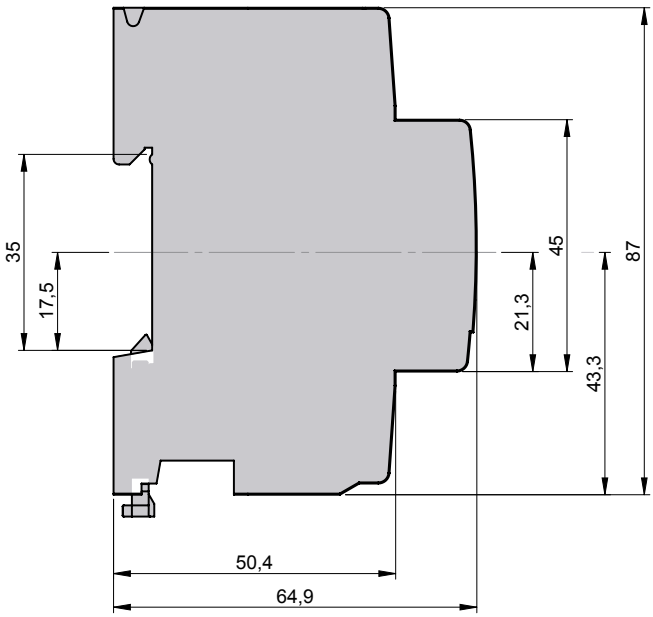






Sensor (CMS-100PS)





Control Unit (CMS-600)

Ordering information

Sensors 18 mm for pro M compact and SMISSLINE

Description	Type designation	ABB number	EAN number	Weight in g	VPE
80 A TRMS	CMS-100PS	2CCA880100R0001	7612271419202	12	1
40 A TRMS	CMS-101PS	2CCA880101R0001	7612271419219	12	1
20 A TRMS	CMS-102PS	2CCA880102R0001	7612271419226	12	1

Control Unit

Description	Type designation	ABB number	EAN number	Weight in g	VPE
Modbus RTU	CMS-600	2CCA880000R0001	7612271418700	153	1

Accessories

Description	Type designation	ABB Nummer	EAN number	Weight in g	VPE
Flat cable 2 m	CMS-800	2CCA880148R0001	7612271419233	17	1
Connector set 35 pc.	CMS-820	2CCA880145R0001	7612271419240	24	1

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