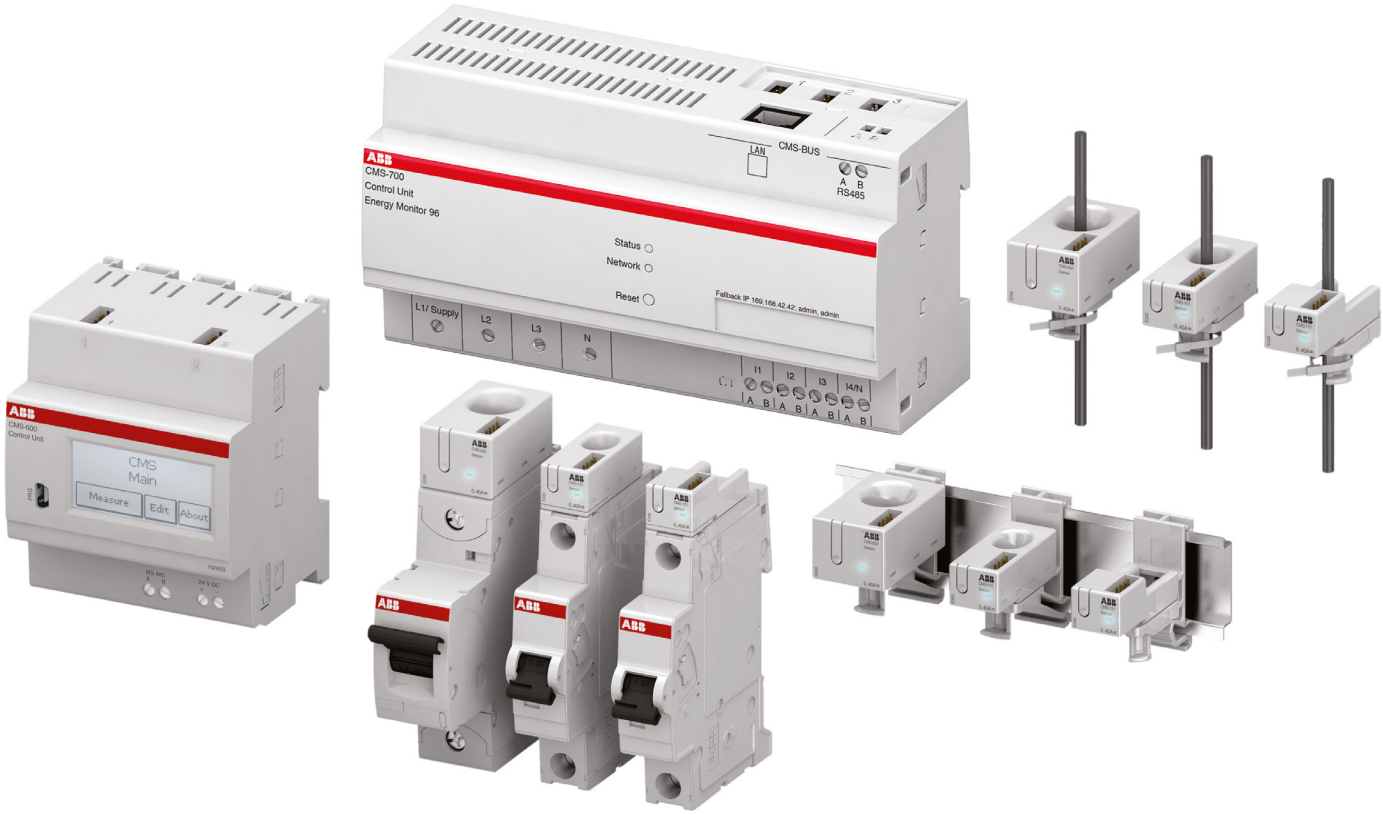
US CATALOG

# Circuit Monitoring System (CMS)

## A new level of efficiency and availability



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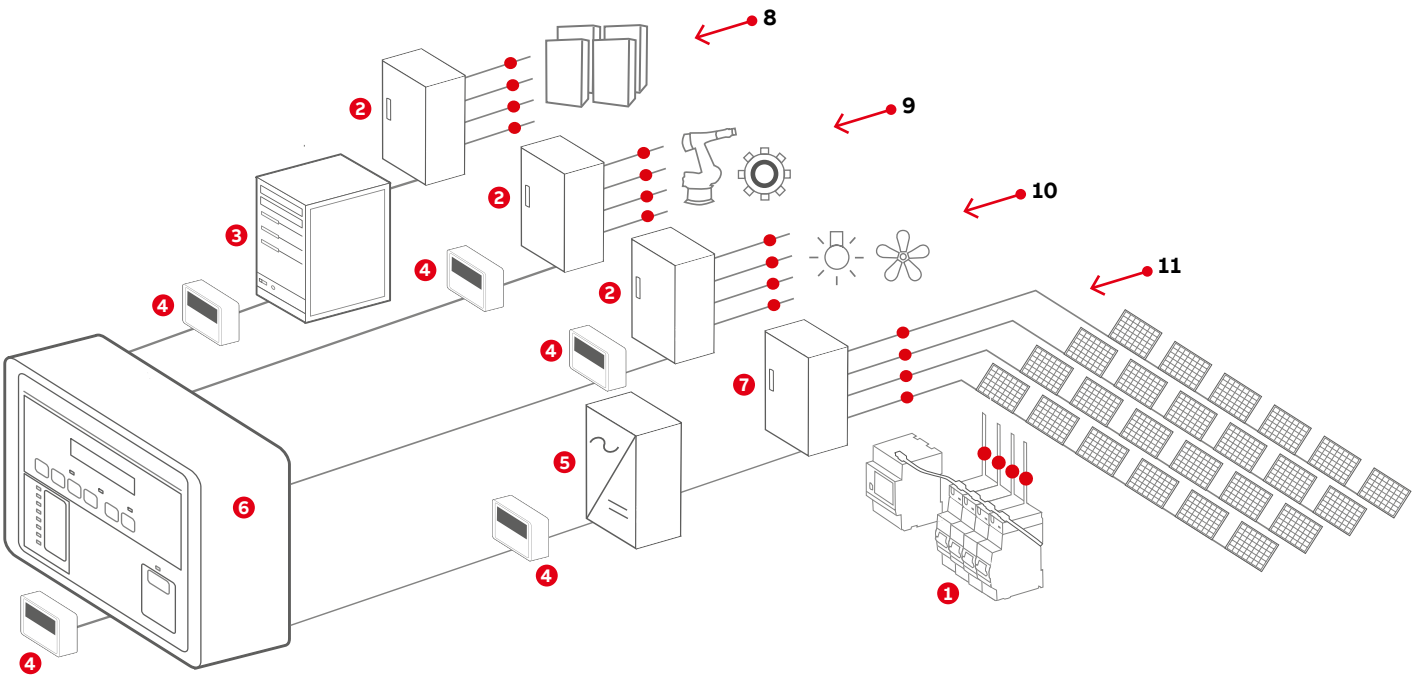
Circuit Monitoring Systems (CMS) are multi-channel measurement systems for branch monitoring of electrical installations. Each system consists of a control unit and sensors with different measurement ranges and mounting possibilities. The systems can be installed easily within control cabinets and power distribution units. Due to the unique compact size, the system is also ideal as a retrofit solution for existing installations. Great importance has been placed on ease of use, high accuracy and a wide measurement range (up to 160 A).




• **Measurement points**

# CMS – Circuit Monitoring Systems

## A system full of benefits

**Minimal space requirements**
All that is required for effective measuring has been placed on the smallest of spaces.

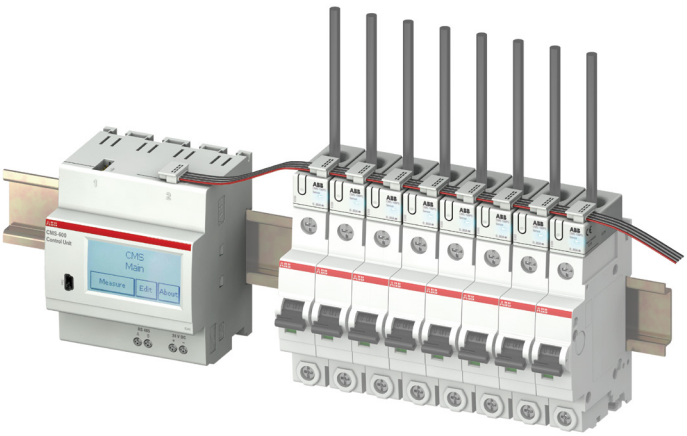
**Easy installation**
The sensors are mounted in a few easy steps. The connection technology can be made without special tools. There is no longer any need for expensive conventional cabling.

**Expandable and easily retrofitted**
The system can be easily expanded or modified at any time due to its flexibility and modular design. Industrial sensors can be installed at a later date. New split core sensors are also available for retrofits.

**User-friendly commissioning**
Configuration is easy. The intuitive navigation layout 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**
Regardless of current, DC, AC or mixed, CMS sensors use a wide measurement range up to 160 A. New split core sensors up to 80 A are now available, making retrofit installations hassle-free, saving time and money.

**Maximum reliability**
The contact free measurement method and fixed ribbon cable ensures maximum system reliability.

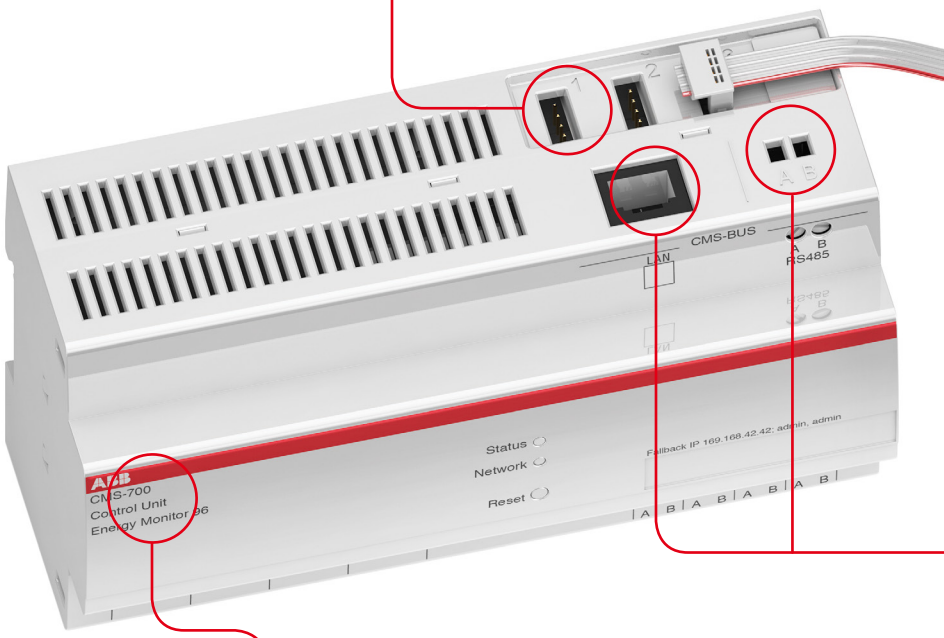


## CMS – thought through right down to the last detail

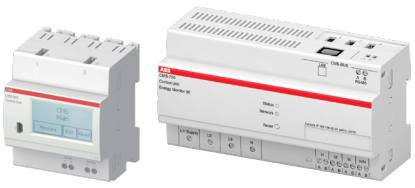
System overview

The quality of a Circuit Monitoring System is dependent on the strengths of the individual components and how well they interact. ABB's CMS sets the bar particularly high. Regardless of whether we're talking compactness, technology, measurement results, user friendliness or flexibility, every component and every feature of this CMS has been fully optimized in terms of practicality and functionality.

**CMS bus interface**
A bus interface allows up to 32 sensors to be connected to the Control Unit ports. Maximum of 96 sensors via 3 ports on the CMS-700.




**Example illustration**
Control Unit CMS-700 in combination with CMS open-core sensors

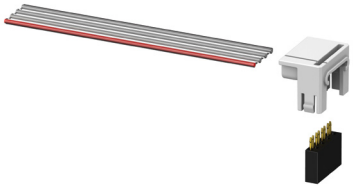


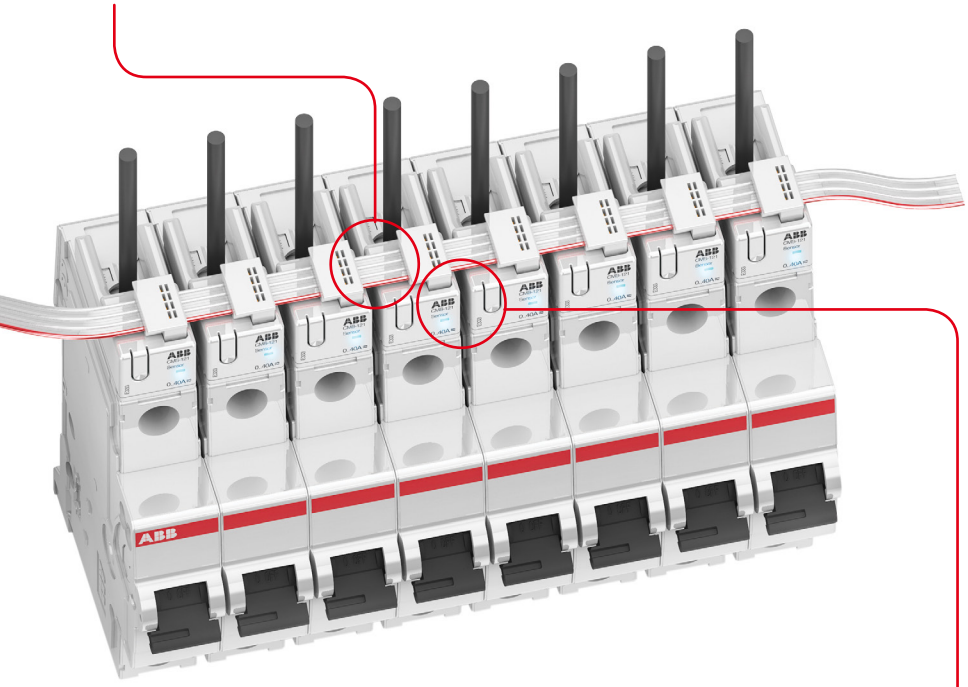
CMS-600 CMS-700

**Control Units**
The Control Unit is a kind of computing and communication center that, depending on the equipment connected to it, evaluates the different data picked up by the sensors and makes it available via the built-in interfaces.

You have a choice of two different units depending on your applications: CMS-600 and CMS-700.

**Connection technology**
Connecting the sensors to the Control Unit is extremely simple and requires no special tools. All sensors are connected to the Control Unit by means of a flexible flat cable and insulation displacement connectors. The positioning of sensors is fully customizable so that they sit exactly where a measurement is required.





**Serial interfaces**
Depending on the unit, numerous interfaces and protocols are available to ensure smooth network implementation: RS485 (Modbus RTU), LAN (TCP/IP and Modbus TCP)

Thanks to the built-in web server, an internet browser or a free Android or iOS app can be used to visualize the values measured. What's more, the measured values can also be exported to CSV files.

**Sensors**
The CMS sensors form the heart of the system and they can be mounted anywhere without any problem. Initializing the sensors is also child's play, with the desired identifier being assigned to each individual sensor via the Control Unit in just a few simple steps. The entire configuration and commissioning procedure takes just a matter of minutes. All measurement functions are available immediately following initialization.

# The sensors – the heart of the CMS

## Top performance with minimal footprint

01 Solid-core sensor
02 Open-core sensor
03 Digital measurement values
04 AC current
05 DC current
06 Mixed current

No space wasted here. Everything is built into an 18 or 25 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 read all types of current up to 160 A (TRMS). Even upper sidebands in the signal trace are captured.

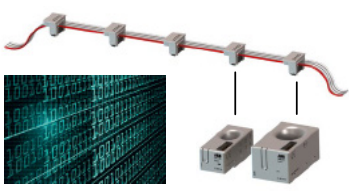
Every sensor has its own signal microprocessor, meaning measurement data is transmitted digitally via the CMS-Bus interface to the control unit. This reduces the number of cables in the distribution units and maximizes the security of the transmitted measurement values. Disruptions like those of analog data are finally a thing of the past.

01 02

**Sensor designs**
Our CMS sensors are available as a solid-core or open-core design. The solid-core units feature an enclosed structure and AC measurement accuracy* of ≤ ± 0.5 %, and are therefore suitable for all applications in which maximum-precision measurement is crucial.

Thanks to their U shape, the open-core sensors can be retrofitted to existing installations with total ease without having to disconnect the cabling or shut down the equipment. With AC accuracy* of ≤ ±1.0 %, they can be used in a multitude of applications without any problem.

* All accuracy specifications refer to the relevant full scale value and apply to 25 °C.



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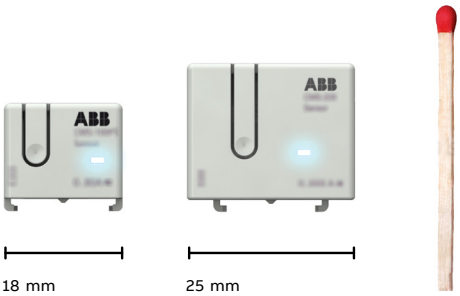


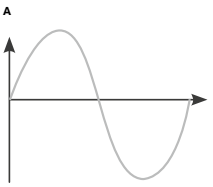


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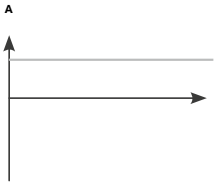


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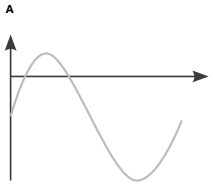


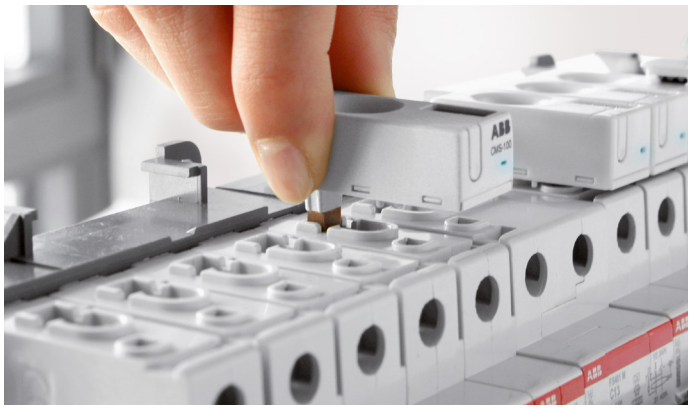

06

## Integrate however you want

Thanks to multiple mounting options

Depending on the application, choose between up to four different mounting options to make integrating the CMS sensors in your installation as simple and as uncomplicated as possible.

### Special sensors for ABB installation devices

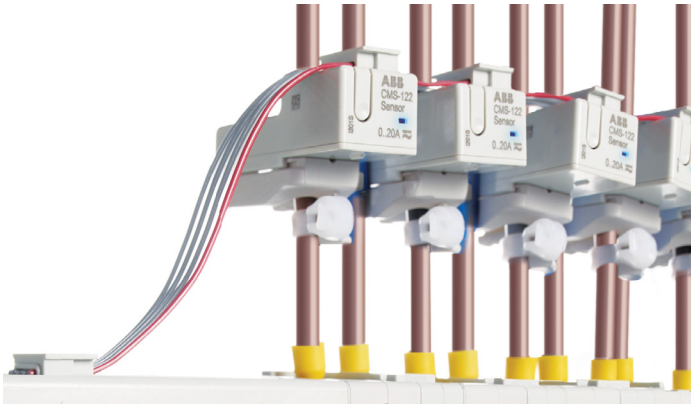


System pro M, SMISSLINE installation CMS-120PS and CMS-100PS series sensors can be mounted on all ABB installation devices with twin terminals.


Installation on S800 installation devices CMS-100S8 and CMS-200S8 series sensors can be mounted on all S800 high performance circuit breakers with cage terminals.

### Universal use sensors design

Mounting on a DIN rail CMS-120DR, CMS-100DR, and CMS-200DR series sensors can be mounted on all DIN rails with the aid of a DIN rail mounting.




Cable tie mounting If space is at a real premium, CMS-120CA, CMS-100CA, and CMS-200CA series sensors can be secured directly to the cable(s) to be measured by means of cable ties.

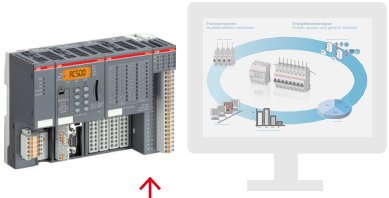
## CMS-600 system

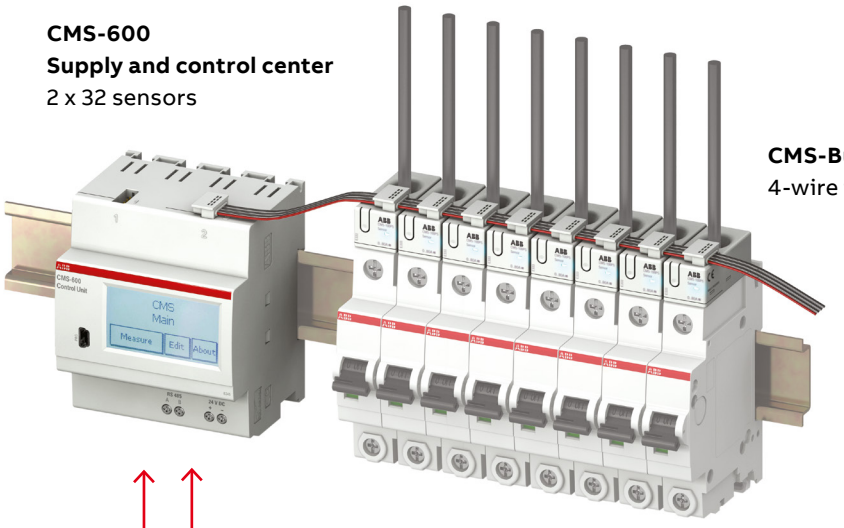
Overview, applications, and markets

The CMS-600 system offers the possibility to measure AC and DC currents up to 64 individual lines. For quick and easy use, the device has been equipped with an illuminated touch display. Special attention was paid to the menu navigation to create an intuitive system. It only takes a few clicks to reach the functions you want, or you can quickly return to your starting point. Complex user training is not necessary for initialization or operational use. The measured data can be accessed remotely by using a 2-wire RS-485 interface.

**Overview**

**PC/PLC for processing and visualization of the measurement values**






**CMS-600**
**Supply and control center**
2 x 32 sensors

**CMS-Bus**
4-wire flat cable

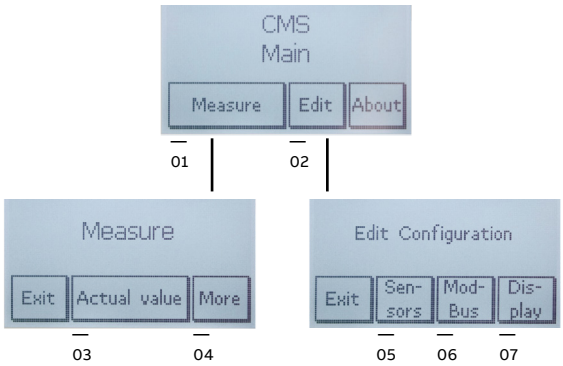
**Modbus RTU**
RS485 (2-wire)

**24VDC**

# CMS-600 system

## Overview, applications, and markets

—
01 Measurement
—
02 Configuration
—
03 Display current measurement values
—
04 Display of max, min and hold values
—
05 Initialization/ parameterization of sensors
—
06 Modbus configuration
—
07 Display settings
—
08 Critical power: e.g. Data centers, industry, hospitals
—
09 Commercial buildings: e.g. Offices, airports, hotels, universities, museums
—
10 Photovoltaic: Industrial solar plants


It is possible to connect up to 247 slave CMS Control Units to one Modbus RTU network. Therefore, it is possible to aquire thousands of measurement points over one bus. This means the CMS can be used as a highly-efficient measurement system, even in very large electrical installations.

### Applications

**Early warning system (predictive maintenance) to increase the availability of critical loads**

The continuous current monitoring of line protection devices enables the user to detect an overloaded line before it comes to an interruption. Controlling individual circuits provides information as to whether loads are in the desired operating mode. Furthermore, the CMS-600 can be used to detect unbalanced phases before this leads to the breakdown of the neutral conductor.

**Consumption analysis to save and assign costs**

You can't improve what you can't measure. To use electricity efficiently, first it must be clear where and how it is used. Branch monitoring with the CMS delivers the maximum transparency of the consumptions.

If multiple parties share a building, the square meter share is often used as a factor in billing. The summation of the currents of the respective branch circuits represents a much more accurate and fairer breakdown factor for the costs.

### Markets

—
08

—
09

—
10

# Control Unit CMS-700

Professional energy monitoring from open-plan offices to industrial plants

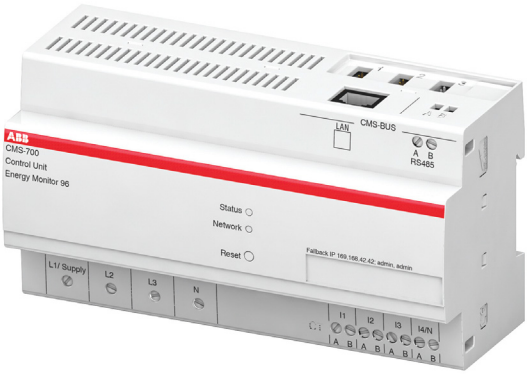
01 Energy monitoring using the CMS-700 web server interface

## The Control Unit CMS-700 is the universal measuring instrument for metering performance and energy.

With the CMS-700, you can measure the incoming 3 phase and neutral voltage and current for active power, reactive power, apparent power, power factor and harmonics. You can also measure the AC and DC currents in the individual branch circuits via up to 3 x 32 sensors and in the process capture the energy and output data (load-side active and reactive power) of up to 96 sensors simultaneously.

Up to 246 different devices can be addressed when identifying the CMS-700 via Modbus RTU. If the CMS-700 is operated by means of Modbus TCP and SNMP, addressing is performed via an assigned IP address and is therefore open and independent of the operator of the LAN.

The Control Unit CMS-700 has been developed specifically to meet the requirements of critical power applications, such as those of data centers. In addition, however, professional energy monitoring is becoming ever more important when it comes to identifying savings potentials in buildings such as office buildings.




**Greater convenience during parameterization and visualization thanks to a built-in web server**
The Control Unit CMS-700 stands out thanks to its built-in web server that offers easy access not only to the measured data but also to the system parameters. The two interfaces – LAN (TCP/IP or Modbus TCP) and RS485 (Modbus RTU) – guarantee straightforward integration into any IT infrastructure. What's more, the data can be read out by means of an SNMP protocol.

# Tangible value added for you

## ABB circuit monitoring pays off two-fold


**Early warning system (predictive maintenance) for increasing the availability of critical consumers**
Continuous monitoring of the current flow at the circuit breaker makes it possible to detect overloaded lines before they lead to a service interruption. Apart from this, monitoring individual circuits indicates whether the loads are in the desired operating mode or not. In this way, system deviations can be ascertained instantaneously. What's more, the CMS can be used to detect unbalanced loads before they result in failure of the neutral conductor and consequently load failure.



**Cost analysis to reduce and assign energy costs**
The cost of energy will rise continuously. In order to cut costs, you first have to know where they arise. The Control Unit helps illustrate and analyze the instantaneous energy consumption levels. Furthermore, the calculated active energy can be used to roughly allocate the costs at the output level.

## Installation flexibility

With versatile mounting options

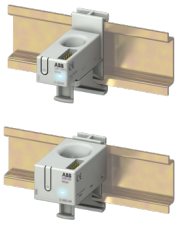
**Sensors for ABB installation devices**
**CMS-100PS series:**
These sensors can be installed on all ABB devices with twin terminals. This type of connection can specifically be found on pro M compact and SMISSLINE devices.

**CMS-100S8 / CMS-200S8 series:**
These sensors can be mounted to all S800 devices with cage terminals.

**Universally usable sensors**
**CMS-100DR / CMS-200DR series:**
For mounting on DIN rail.

**CMS-100CA / CMS-200CA series:**
With limited space in the PDU, this sensor can be mounted directly on the cable of the circuit to be measured.

**Mounting types**

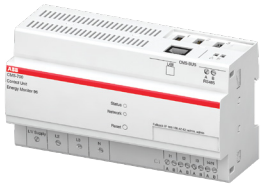
| |  |  |  |  |
|---|---|---|---|---|
| | **pro M compact & SMISSLINE (PS)** | **S800 (S8)** | **DIN-Rail (DR)** | **Cable tie (CA)** |
| | for all ABB MCBs, RCDs, RCBOs with twin terminals[1] | for all ABB S800 devices with cage terminals | universal use | universal use |

**Sensor types**

| **Open core** | | | | |
|---|---|---|---|---|
| |  | |  |  |
| **18 mm** | | | | |
| (80 A) | CMS-120PS | | CMS-120DR | CMS-120CA |
| (40 A) | CMS-121PS | | CMS-121DR | CMS-121CA |
| (20 A) | CMS-122PS | | CMS-122DR | CMS-122CA |
| **Closed core** | | | | |
| |  |  |  |  |
| **18 mm** | | | | |
| (80 A) | CMS-100PS | CMS-100S8 | CMS-100DR | CMS-100CA |
| (40 A) | CMS-101PS | CMS-101S8 | CMS-101DR | CMS-101CA |
| (20 A) | CMS-102PS | CMS-102S8 | CMS-102DR | CMS-102CA |
| | |  |  |  |
| **25 mm** | | | | |
| (160 A) | | CMS-200S8 | CMS-200DR | CMS-200CA |
| (80 A) | | CMS-201S8 | CMS-201DR | CMS-201CA |
| (40 A) | | CMS-202S8 | CMS-202DR | CMS-202CA |

[1] Not for use with UL489 MCBs

# Comparison of the CMS Control Units. The right unit for every task.



| Characteristics | Control Unit CMS-600 | Control Unit CMS-700 |
|---|---|---|
| **CMS sensors** | | |
| Sensors | 64 (2x32) | 96 (3x32) |
| **Measured values** | | |
| Power supply | | ● |
| Current | ● | ● |
| Power | | ● |
| Energy | | ● |
| Built-in power pack | | ● |
| Power factor | | ● |
| **Interfaces** | | |
| RS485 | ● | ● |
| LAN | | ● |
| WiFi | | |
| **Protocols** | | |
| Modbus RTU | ● | ● |
| Modbus TCP | | ● |
| SNMP | | ● |
| **Visualization** | | |
| Built-in web server | | ● |
| App | | |
| Touch display | ● | |
| CSV data export | | ● |
| **Approvals** | | |
| IEC 61010-1 | ● | ● |
| UL 508/ CSA C22.2 No. 14 | ● | ● |

# CMS – Circuit Monitoring System

## Ordering information

### Control unit

| Product | Product name | Description | Catalog number |
|---|---|---|---|
|  | CMS-600 | Modbus RTU (24VDC) | CMS-600 |
|  | CMS-700 | Modbus RTU | CMS-700 |

### Sensors

| Product | Product name | Description | Catalog number |
|---|---|---|---|
| | | **Open Core** | |
| | | **Sensors 18 mm for pro M compact & SMISSLINE installation devices with twin terminals** | |
|  | CMS-120PS | 80 A | CMS-120PS |
| | | 40 A | CMS-121PS |
| | | 20 A | CMS-122PS |
|  | CMS-120DR | **Sensors 18 mm for DIN-Rail mounting (universal use)** | |
| | | 80 A | CMS-120DR |
| | | 40 A | CMS-121DR |
| | | 20 A | CMS-122DR |
|  | CMS-120CA | **Sensors 18 mm for cable mounting (universal use)** | |
| | | 80 A | CMS-120CA |
| | | 40 A | CMS-121CA |
| | | 20 A | CMS-122CA |
|  | CMS-100PS | **Closed Core** | |
| | | **Sensors 18 mm for pro M compact & SMISSLINE installation devices with twin terminals** | |
| | | 80 A | CMS-100PS |
| | | 40 A | CMS-101PS |
| | | 20 A | CMS-102PS |
|  | CMS-100S8 | **Sensors 18 mm for S800 installation devices with cage terminals** | |
| | | 80 A | CMS-100S8 |
| | | 40 A | CMS-101S8 |
| | | 20 A | CMS-102S8 |
|  | CMS-100DR | **Sensors 18 mm for DIN-Rail mounting (universal use)** | |
| | | 80 A | CMS-100DR |
| | | 40 A | CMS-101DR |
| | | 20 A | CMS-102DR |
|  | CMS-100CA | **Sensors 18 mm for cable mounting (universal use)** | |
| | | 80 A | CMS-100CA |
| | | 40 A | CMS-101CA |
| | | 20 A | CMS-102CA |
|  | CMS-200S8 | **Sensors 25 mm for S800 installation devices with cage terminals** | |
| | | 160 A | CMS-200S8 |
| | | 80 A | CMS-201S8 |
| | | 40 A | CMS-202S8 |
|  | CMS-200DR | **Sensors 25 mm for DIN-Rail mounting (universal use)** | |
| | | 160 A | CMS-200DR |
| | | 80 A | CMS-201DR |
| | | 40 A | CMS-202DR |
|  | CMS-200CA | **Sensors 25 mm for cable mounting (universal use)** | |
| | | 160 A | CMS-200CA |
| | | 80 A | CMS-201CA |
| | | 40 A | CMS-202CA |

### Accessories

| Description | Catalog number |
|---|---|
| Flat cable 2 m | CMS-800 |
| Flat cable 5 m | CMS-802 |
| Flat cable 10 m | CMS-803 |
| Flat cable 30 m | CMS-805 |
| Connector set | CMS-820 |

# CMS – Circuit Monitoring System

## Technical specifications

### CMS-600 Control Unit (Modbus RTU)

CMS-600

| | | |
|---|---|---|
| Supply voltage | [VDC] | 24 (±10 %) |
| Power consumption | [W] | max. 24 W (with 64 sensors) |
| Interface | | RS485 2-wire |
| Protocol | | Modbus RTU |
| Data rate | [Baud] | 2400 … 115 200 |
| Data refresh time | | ≤ 1 sec with max 64 sensors |
| Insulation voltage | [VAC] | 400 |
| Screw-type terminals | | 0.5 … 2.5 mm², max 0.6 Nm |
| Mounting | | DIN-rail 35 mm acc. DIN50022 or SMISSLINE TP busbar system |
| Dimension | [mm] | 71.8 x 87.0 x 64.9 (4 DIN modules) |
| Operating temperature | [°C] | –25 .. + 70 |
| Storage temperature | [°C] | –40 .. + 85 |
| Standards | | DIN EN 61010-1, UL508 |

### Control Unit CMS-700

CMS-700

| | | |
|---|---|---|
| Supply voltage | [VAC] | 80 – 277 (L1-N, +5%) |
| Frequency | [Hz] | 50 / 60 |
| Power input (L1-N) | [W] | 5 … 40 (dep. on number of sensors) |
| Power input, current transformer, secondary side | [VA] | Current circuit <2 (per phase) |
| Voltage measurement range | [VAC] | 80 – 277 (L1, L2, L3-N) |
| Measurement range, current transformer, secondary side | [A] | nominal: 5<br>max.: 6 |
| Harmonic component | [Hz] | up to 2000 |
| Data rate of Modbus RTU | [Baud] | RS485 2-wire, 2400 … 115 200 |
| Refresh time | | ≤1 sec with max. 96 sensors |
| LAN | [Mbit/s] | 100 |
| Conductor cross-section | [mm²] | 0.5 … 2.5 |
| Mounting method | | 35 mm DIN rail (DIN 50022) |
| Degree of protection | | IP20 |
| Dimensions | [mm] | 160.0 x 87.0 x 64.9 (9 WM) |
| Operating temperature | [°C] | - 25 … +60 |
| Bearing temperature | [°C] | - 40 … +85 |
| Standards | | IEC61010-1<br>UL 508/ CSA C22.2 No. 14 |
| **Main circuit accuracy** | | |
| Voltage | | ± 1 % |
| Current | | ± 1 % |
| Harmonic component | | 1 % |
| Active power | | ± 2 % |
| Apparent power | | ± 2 % |
| Reactive power | | ± 2 % |
| Power factor | | ± 0.2 % |

# CMS – Circuit Monitoring System

## Technical specifications

**Open core sensors 18mm**

| Product | Type | | CMS-120xx | CMS-121xx | CMS-122xx |
|---|---|---|---|---|---|
| | Measurement range | [A] | 80 | 40 | 20 |
| | Measurement values | | | | TRMS, AC 50 / 60 Hz, DC |
|  | Crest factor of distorted wave forms | | ≤ 1.5 | ≤ 3 | ≤ 6 |
| CMS-120PS | AC Accuracy (TA = +25 °C)[1] | | | | ≤ ± 1 % |
| | AC Temperature coefficient[1] | | | | ≤ ± 0.04 % |
| | DC Accuracy (TA = +25 °C)[1] | | ≤ ± 1.2 % | ≤ ± 1.4 % | ≤ ± 1.8 % |
|  | DC Temperature coefficient[1] | | ≤ ± 0.14 % | ≤ ± 0.24 % | ≤ ± 0.44 % |
| | Resolution | [A] | | | 0.01 |
| | Sampling rate internal | [Hz] | | | 5000 |
| CMS-120DR | Settling time (±1 %) | [sec] | | | typ. 0.34 |
| | Cable feed through | [mm] | | | 9.5 |
| | Insulation voltage | | | | 690 AC /1500 DC |
|  | Operating/storage temperature | [°C] | | | – 25 ... +70 / – 40 ... + 85 |
| | Standards | | | | DIN EN 61010-1, UL508 |
| CMS-120CA | **Overall dimensions** | | | | |
| | CMS-120PS series | [mm] | | | 17.4 x 41.0 x 26.5 |
| | CMS-120CA series | [mm] | | | 17.4 x 41.0 x 29.0 |
| | CMS-120DR series | [mm] | | | 17.4 x 51.5 x 43.2 |

[1] of full range

**Closed core sensors 18 mm**

| Product | Type | | CMS-100xx | CMS-101xx | CMS-102xx |
|---|---|---|---|---|---|
|  | Measurement range | [A] | 80 | 40 | 20 |
| | Measurement values | | TRMS, AC 50/60 Hz, DC | TRMS, AC 50/60 Hz, DC | TRMS, AC 50/60 Hz, DC |
| CMS-100PS | Crest factor of distorted wave forms | | ≤ 1.5 | ≤ 3 | ≤ 6 |
| | AC Accuracy (TA = +25 °C)* | | ≤ ± 0.5 % | ≤ ± 0.5 % | ≤ ± 0.5 % |
|  | AC Temperature coefficient* | | ≤ ± 0.036 % | ≤ ± 0.036 % | ≤ ± 0.036 % |
| | DC Accuracy (TA = +25 °C)* | | ≤ ± 0.7 % | ≤ ± 1.0 % | ≤ ± 1.7 % |
| | DC Temperature coefficient* | | ≤ ± 0.047 % | ≤ ± 0.059 % | ≤ ± 0.084 % |
| CMS-100S8 | Resolution | [A] | 0.01 | 0.01 | 0.01 |
| | Sampling rate internal | [Hz] | 5000 | 5000 | 5000 |
|  | Settling time (±1 %) | [sec] | typ. 0.25 | typ. 0.25 | typ. 0.25 |
| | Cable feed through | [mm] | 10 | 10 | 10 |
| | Insulation voltage | [V] | 690 VAC/1500 VDC | 690 VAC/1500 VDC | 690 VAC/1500 VDC |
| | Operating temperature | [°C] | –25 .. + 70 | –25 .. + 70 | –25 .. + 70 |
| CMS-100DR | Storage temperature | [°C] | –40 .. + 85 | –40 .. + 85 | –40 .. + 85 |
| | Standards | | DIN EN 61010-1, UL508 | DIN EN 61010-1, UL508 | DIN EN 61010-1, UL508 |
|  | **Overall dimensions** | | | | |
| | CMS-100PS series | [mm] | 17.4 x 41.0 x 26.5 | 17.4 x 41.0 x 26.5 | 17.4 x 41.0 x 26.5 |
| | CMS-100S8 series | [mm] | 26.5 x 45.5 x 31.8 | 26.5 x 45.5 x 31.8 | 26.5 x 45.5 x 31.8 |
| | CMS-100DR series | [mm] | 17.4 x 51.5 x 43.2 | 17.4 x 51.5 x 43.2 | 17.4 x 51.5 x 43.2 |
| CMS-100CA | CMS-100CA series | [mm] | 17.4 x 41.0 x 29.0 | 17.4 x 41.0 x 29.0 | 17.4 x 41.0 x 29.0 |

# CMS – Circuit Monitoring System

## Technical specifications

**Closed core sensors 25 mm**

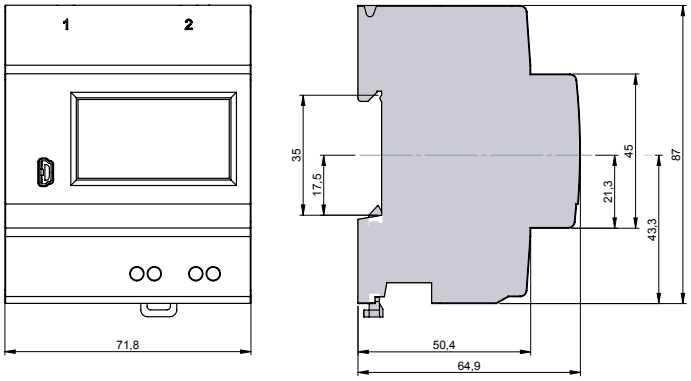
| Product | Type | | CMS-200xx | CMS-201xx | CMS-202xx |
|---|---|---|---|---|---|
| | Measurement range | [A] | 160 | 80 | 40 |
| | Measurement values | | TRMS, AC 50/60 Hz, DC | TRMS, AC 50/60 Hz, DC | TRMS, AC 50/60 Hz, DC |
| | Crest factor of distorted wave forms | | ≤ 1.5 | ≤ 3 | ≤ 6 |
|  CMS-200S8 | AC Accuracy (TA = +25 °C)* | | ≤ ± 0.5 % | ≤ ± 0.5 % | ≤ ± 0.5 % |
| | AC Temperature coefficient* | | ≤ ± 0.036 % | ≤ ± 0.036 % | ≤ ± 0.036 % |
| | DC Accuracy (TA = +25 °C)* | | ≤ ± 0.7 % | ≤ ± 1.0 % | ≤ ± 1.7 % |
| | DC Temperature coefficient* | | ≤ ± 0.047 % | ≤ ± 0.059 % | ≤ ± 0.084 % |
|  CMS-200DR | Resolution | [A] | 0.01 | 0.01 | 0.01 |
| | Sampling rate internal | [Hz] | 5000 | 5000 | 5000 |
| | Settling time (±1 %) | [sec] | typ. 0.25 | typ. 0.25 | typ. 0.25 |
| | Cable feed through | [mm] | 15 | 15 | 15 |
| | Insulation voltage | [V] | 690 VAC/1500 VDC | 690 VAC/1500 VDC | 690 VAC/1500 VDC |
|  CMS-200CA | Operating temperature | [°C] | –25 .. + 70 | –25 .. + 70 | –25 .. + 70 |
| | Storage temperature | [°C] | –40 .. + 85 | –40 .. + 85 | –40 .. + 85 |
| | Standards | | DIN EN 61010-1, UL508 | DIN EN 61010-1, UL508 | DIN EN 61010-1, UL508 |
| | Overall dimensions | | | | |
| | CMS-200S8 series | [mm] | 26.5 x 43.0 x 38.5 | 26.5 x 43.0 x 38.5 | 26.5 x 43.0 x 38.5 |
| | CMS-200DR series | [mm] | 25.4 x 43.0 x 43.2 | 25.4 x 43.0 x 43.2 | 25.4 x 43.0 x 43.2 |
| | CMS-200CA series | [mm] | 25.4 x 43.0 x 35.7 | 25.4 x 43.0 x 35.7 | 25.4 x 43.0 x 35.7 |

[1] of full range

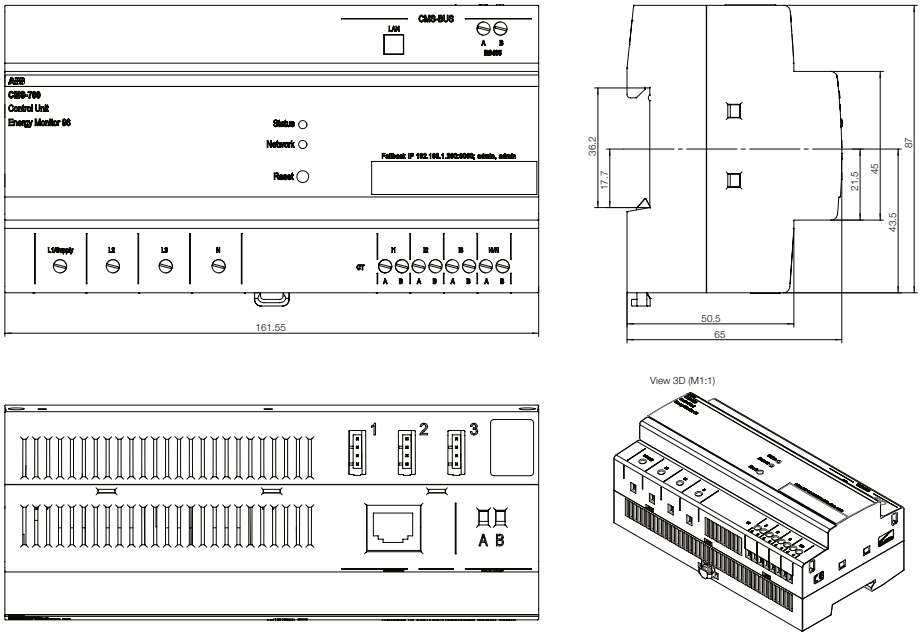
# CMS - Circuit Monitoring System

## Approximate dimensions - control units

### Control Unit (CMS-600)




### CMS-700

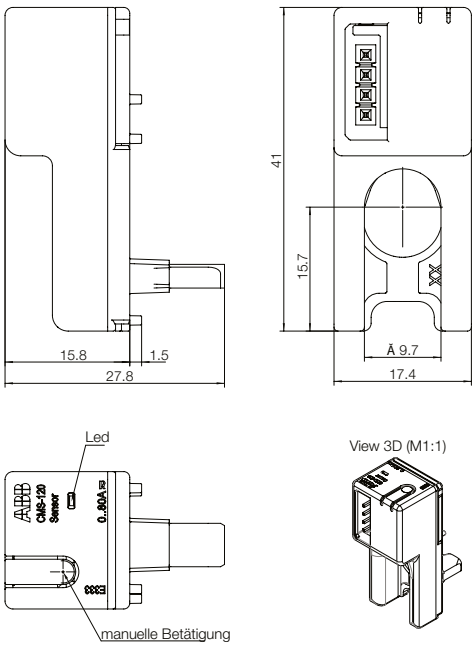



Dimensions in (mm)

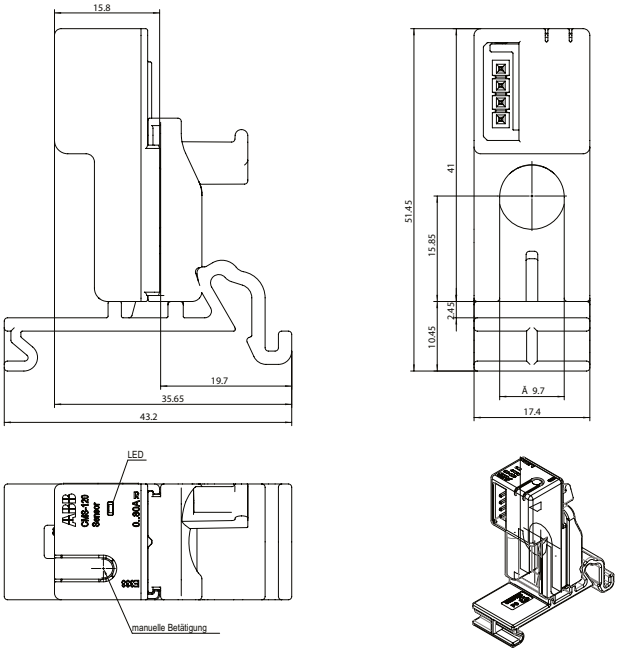
# CMS - Circuit Monitoring System

## Approximate dimensions - sensors

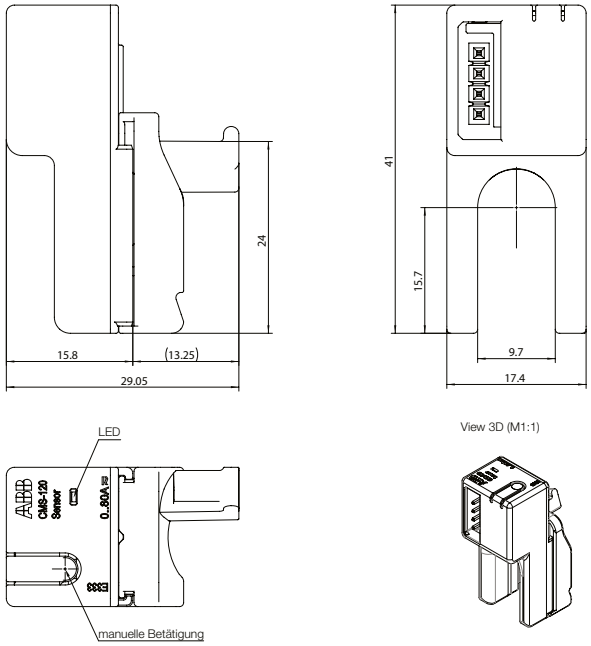
### CMS-120PS series




### CMS-120DR series




### CMS-120CA series

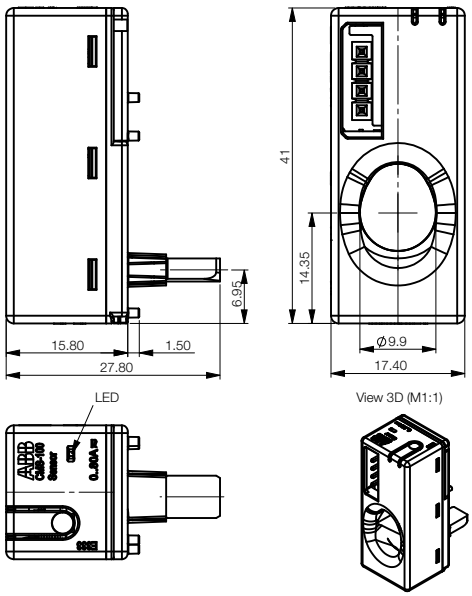



Dimensions in (mm)

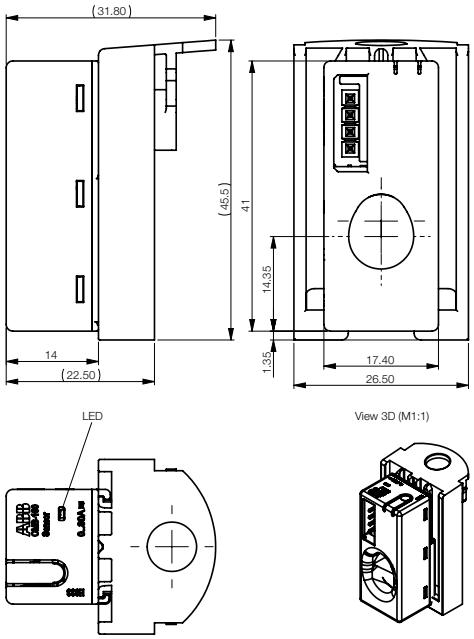
# CMS - Circuit Monitoring System

## Approximate dimensions - sensors

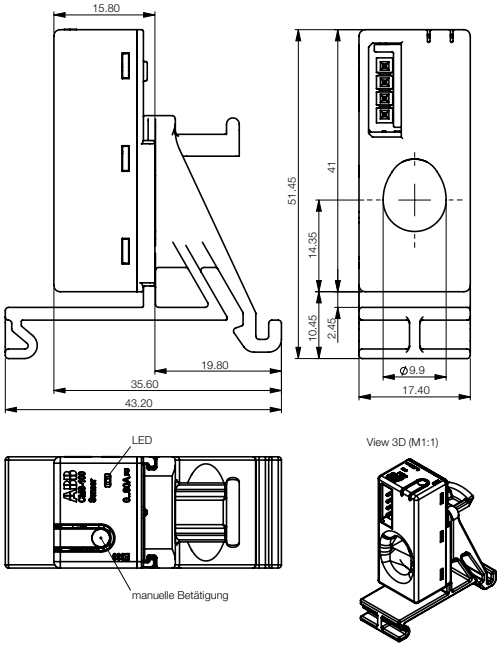
### CMS-100PS series



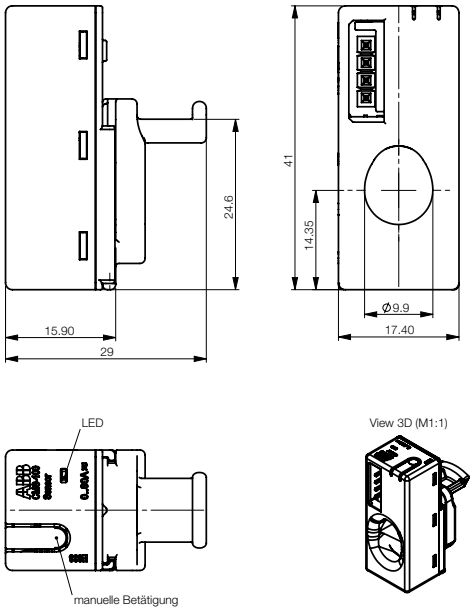

### CMS-100S8 series




### CMS-100DR series




### CMS-100CA series

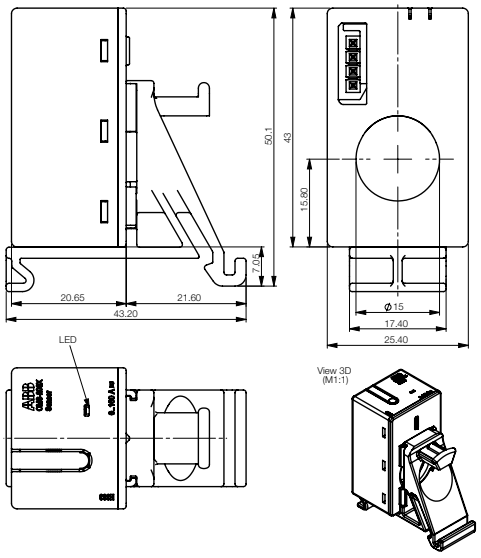



Dimensions in (mm)

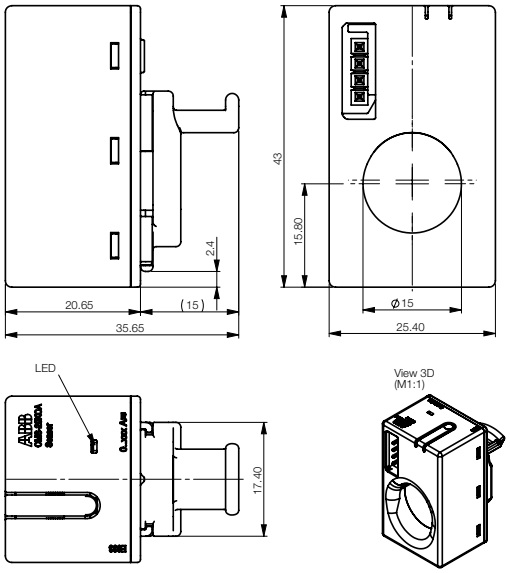
# CMS - Circuit Monitoring System

## Approximate dimensions - sensors

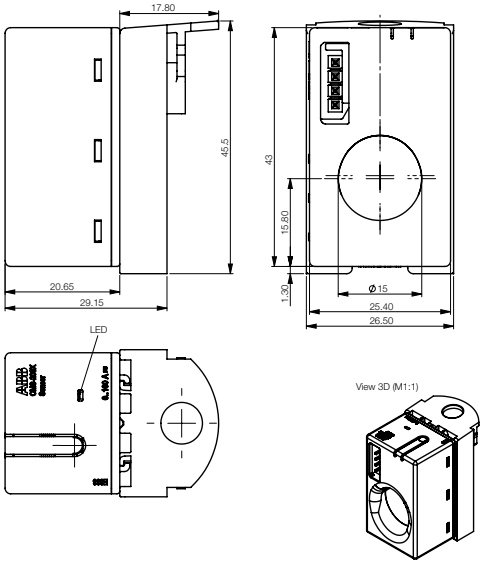
### CMS-200DR series




### CMS-200CA series




### CMS-200S8 series




Dimensions in (mm)

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