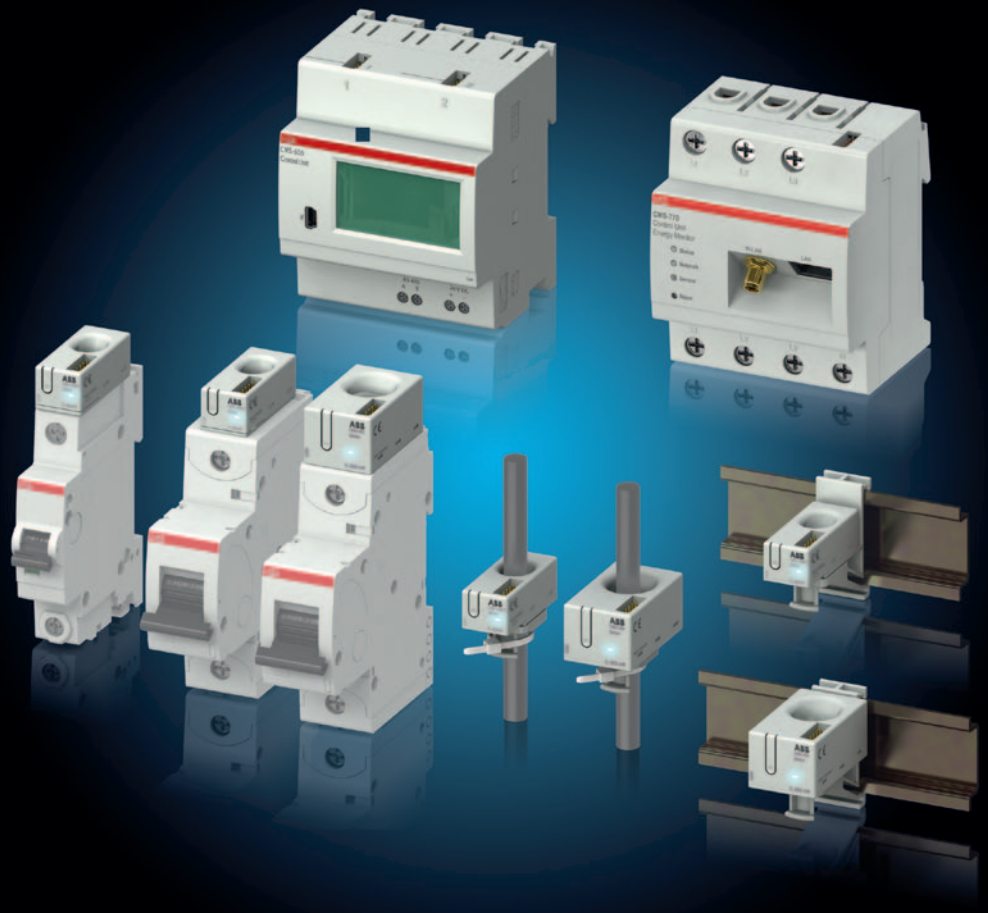
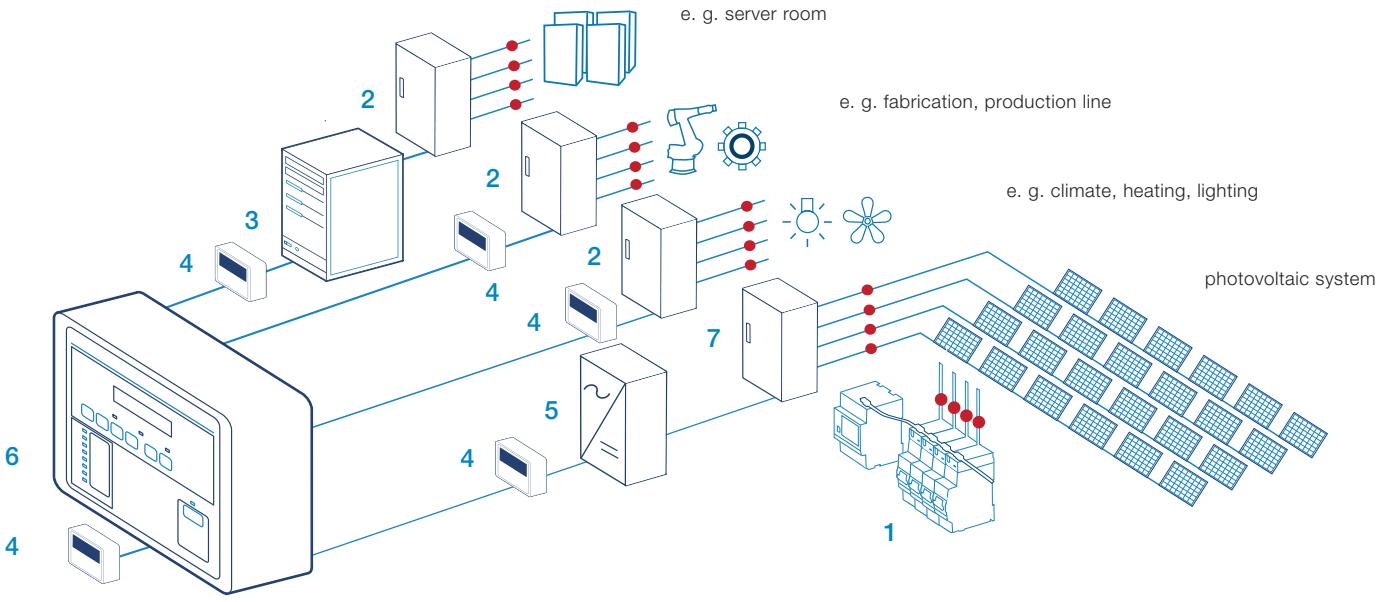


CMS – Circuit Monitoring Systems
Branch monitoring for electrical installations

Power and productivity
for a better world™

CMS – Circuit Monitoring Systems
Short description

Circuit Monitoring Systems (CMS) are multichannel 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 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 user-friendliness, high accuracy and a wide measurement range (up to 160 A).



1 CMS (● measurement points)
2 Subdistribution
3 UPS system
4 Energy meters
5 Power inverter
6 Main distribution
7 Combiner box

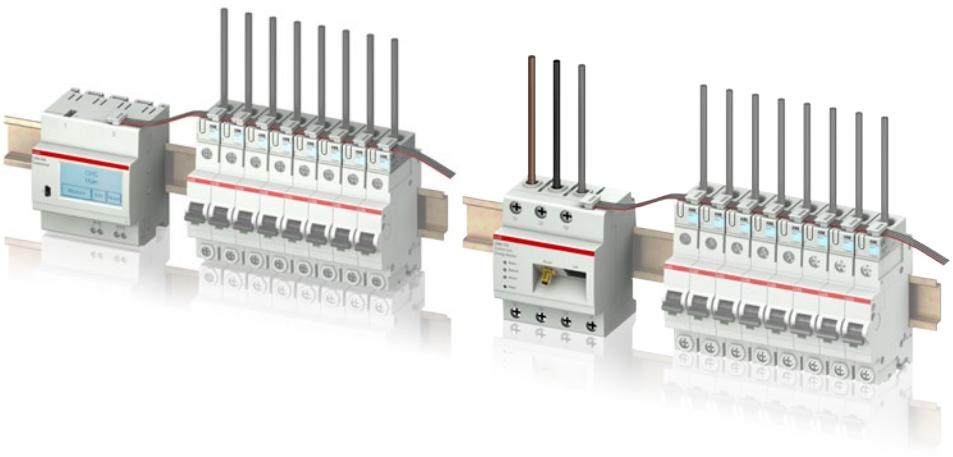
Minimal space requirements
All that is required for effective measuring has been placed on the smallest of spaces.

Maximum flexibility
Due to the full scalability the user can freely chose the amout of measurement points he needs. Sensors can even be installed one-by-one at a later date. The various mounting possibilities allow the use in every installation environment.

A sensor for all types of current
Whether it is DC, AC or mixed current: CMS sensors all types within a wide measurement range of up to 160 A.

Easy installation
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 layout allows the system to be set up on the touch screen. Within minutes, it is ready to start measuring.

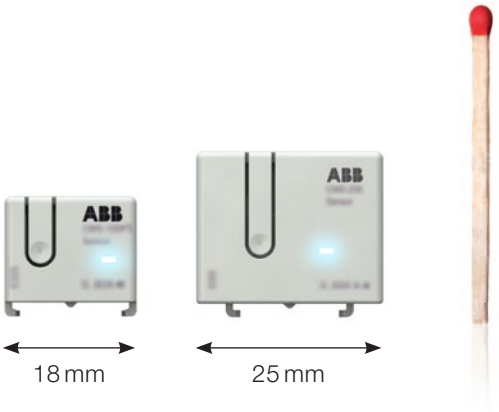


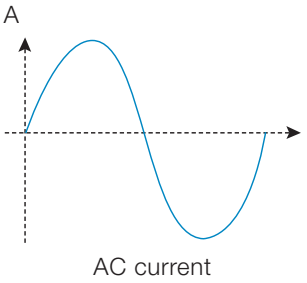
The sensors – the heart of the CMS
Top performance on minimal dimensions

No space wasted here: everything is built into an 18 or 25 mm wide unit to enable exact and effective measure-ments. This means that CMS sensors are among the most compact and high-performance sensors on the market.

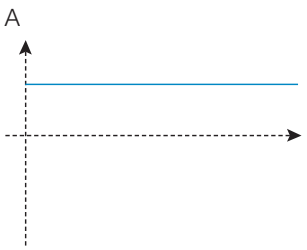
Small size, huge performance: Whether AC, DC or mixed current, CMS sensors read all types of current up to 160 A (TRMS). Even upper sidebands in the signal trace are captured.

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 into the distribution units and maximises the security of the transmitted measurement values. Disruptions like those for analogue data are finally a thing of the past.

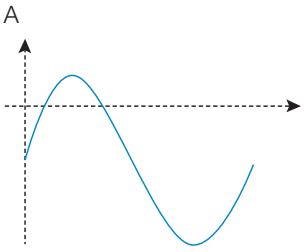




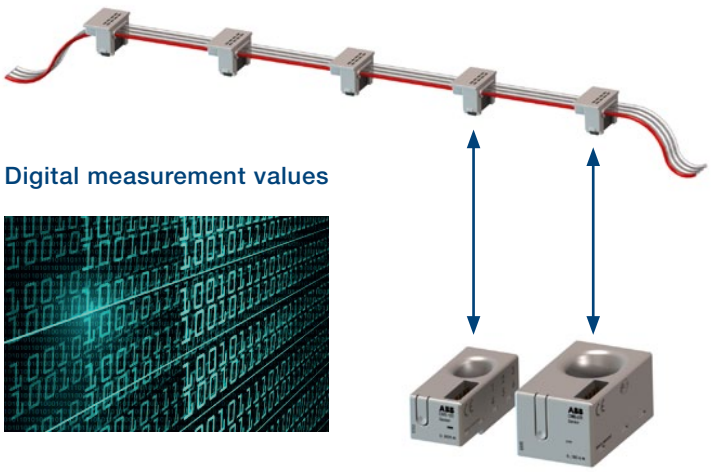
AC current



DC current



mixed current



Digital measurement values

Installation flexibility
By the versatile mounting options

To integrate the sensors within PDUs there are four different mounting variants available.

Sensors for ABB installation devices

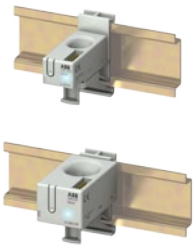
CMS-100PS series:
The sensors of this type can be installed on all ABB devices with twin terminals. Particularly this type of connection can be found on pro M compact and SMISSLINE devices.

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 the mounting on DIN rail.

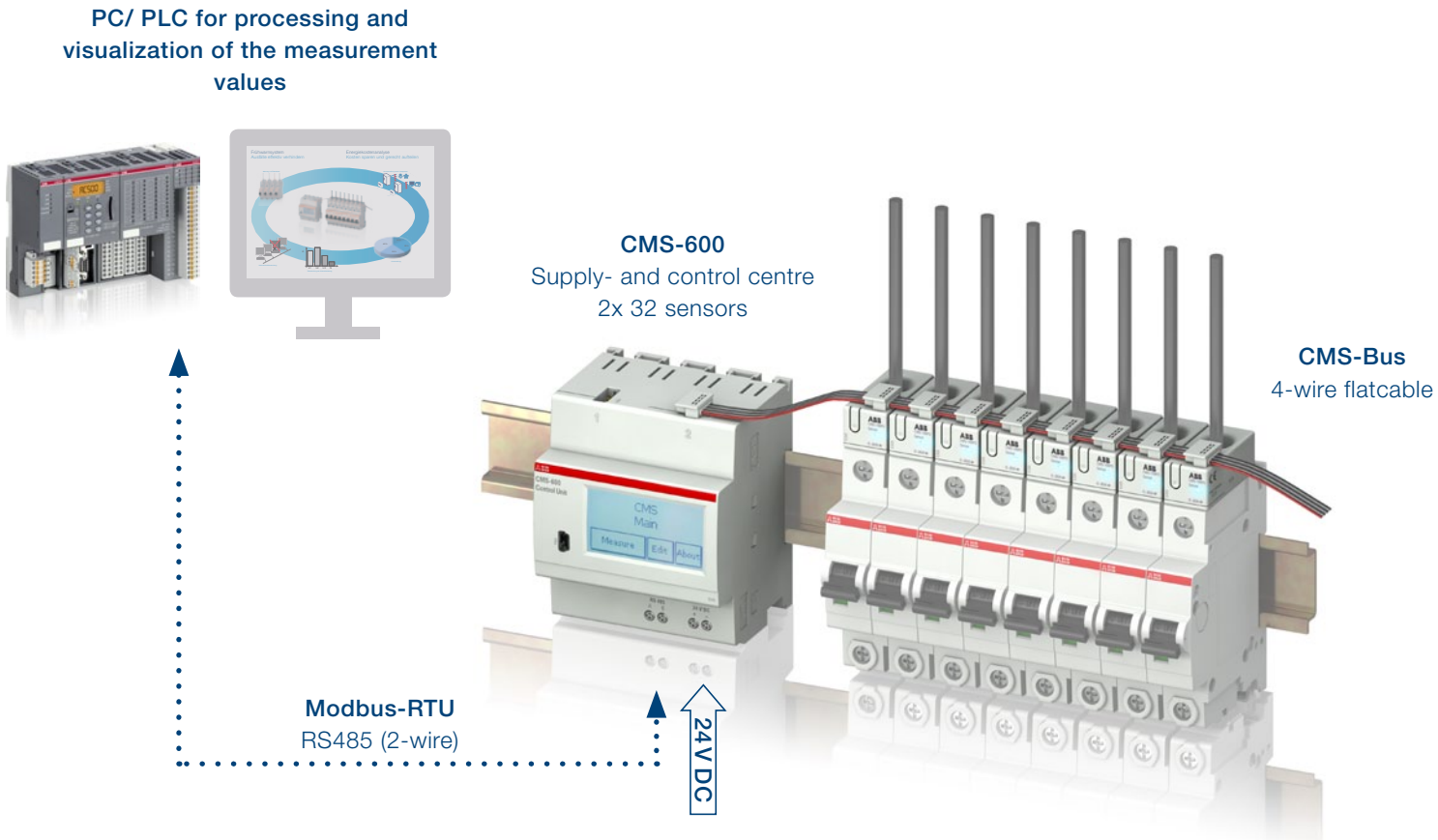
CMS-100CA / CMS-200CA series:
With limited space in the PDU, this sensor can be mounted directly on the cable of the circuit to be measured.

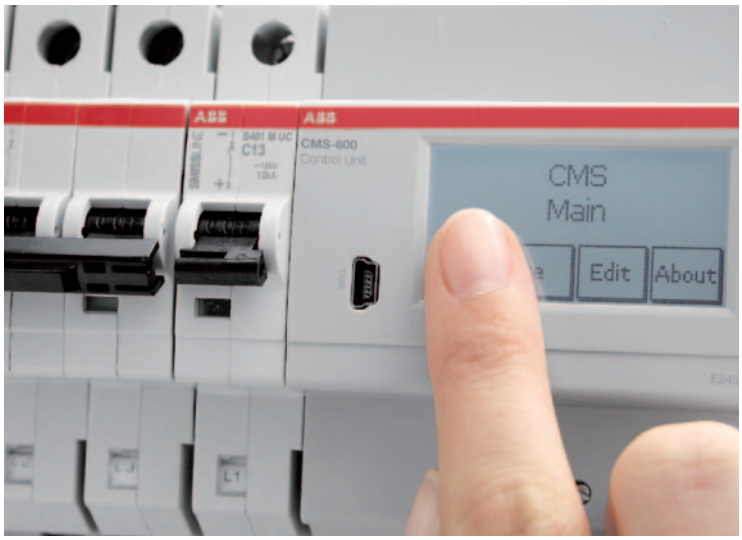
Mounting Sensor Type	**pro M compact & SMISSLINE** for all ABB MCBs, RCDs, RCBOs with twin terminals 	**S800** for all ABB S800 devices with cage terminals 	**DIN-Rail** universal use 	**Cable tie** universal use 
Sensors 18 mm **CMS-100xx (80 A)** **CMS-101xx (40 A)** **CMS-102xx (20 A)**	CMS-100PS CMS-101PS CMS-102PS 	CMS-100S8 CMS-101S8 CMS-102S8 	CMS-100DR CMS-101DR CMS-102DR 	CMS-100CA CMS-101CA CMS-102CA 
Sensors 25 mm **CMS-200xx (160 A)** **CMS-201xx (80 A)** **CMS-202xx (40 A)**		CMS-200S8 CMS-201S8 CMS-202S8 	CMS-200DR CMS-201DR CMS-202DR 	CMS-200CA CMS-201CA CMS-202CA 

CMS-600 System
Overview, applications, markets

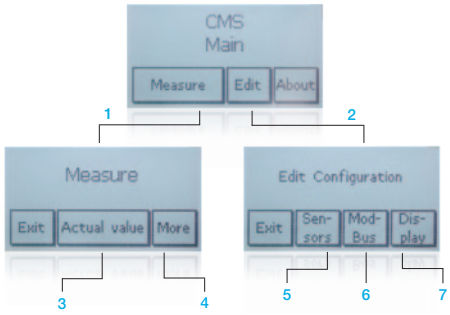
The CMS-600 system offers the possibility to measure AC and DC currents up to 64 individual lines. For a quick and easy use the device has been equipped with an illuminated touch display. Special attention was paid to the menu navigation in order to create an intuitive system. It only takes a few clicks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

Overview





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 can be used as a highly-efficient-measurement system, even in very large electrical installations.



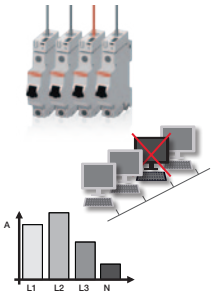
Intuitive menu navigation

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

Applications

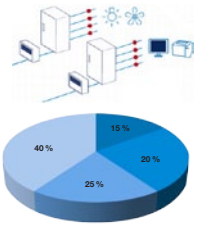
Early warning system (predictive maintenance) to increase the availability of critical loads

The continuous current monitoring of line protection devices enables the user to detect an overloaded line before it comes to an interruption. Also, controlling individual circuits provides information whether loads are in the desired operating mode. Futhermore, the CMS-600 can be used to detect unbalanced phases before these leads to the break-down of the neutral conductor.



Consumption analysis to save and assign costs

„You can't improve what you can't measure!" To use electricity efficiently, it must first be clear where and how it is used. Branch monitoring with the CMS delivers the maximum transparency of the consuptions.
If multiple parties share a building, there is often used the square meter share as a billing factor. The summation of the currents of the respective branch circuits represents a much more accurate and fairer breakdown factor for the costs.



Markets

Critical power: e.g. Datacentres, Industry, Hospitals

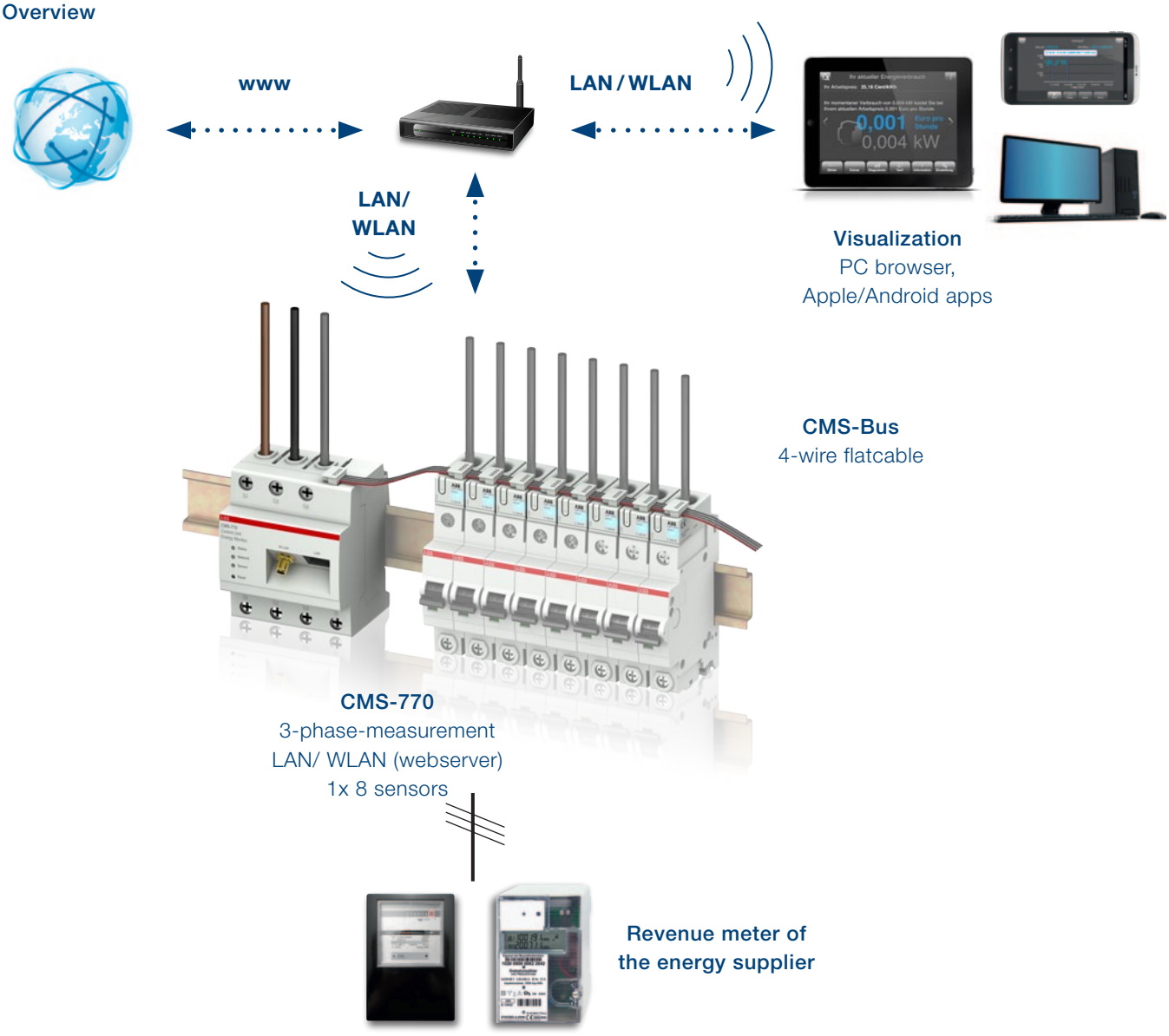
Commercial buildings: e.g. Offices, Airports, Hotels, Universities, Museums

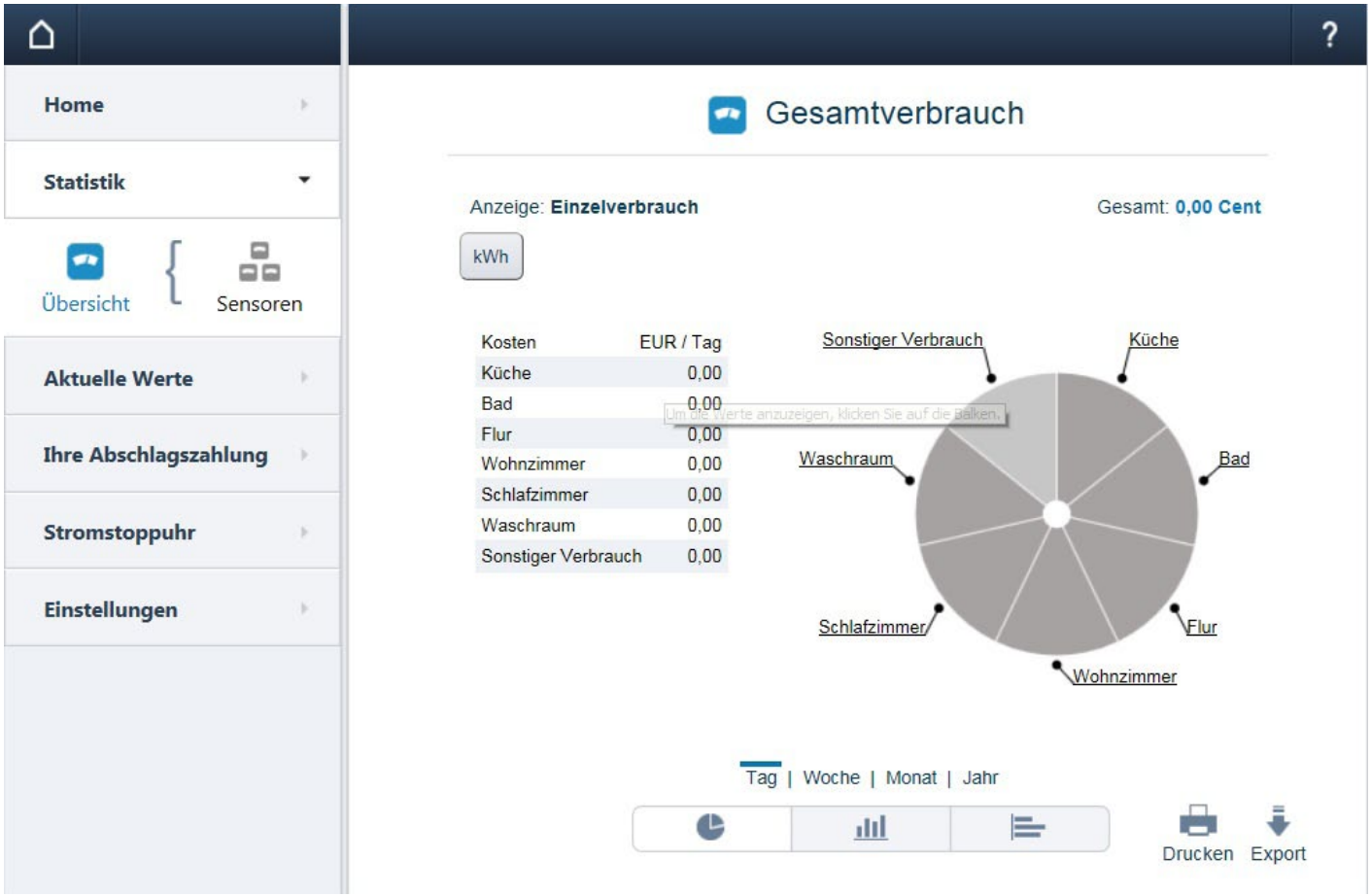
Photovoltaic: Industrial solar plants

CMS-770 System
Overview, applications, markets

The Control Unit „Energy Monitor“ is a three-phase measurement device to measure power and energy up to 63A per phase. Additionally, up to eight current sensors can be connected to the device in order to gather the power and energy data of individual branch circuits. The Energy Monitor offers a perfect integration within the existing building infrastructure. Depending on the environment the device can be connected via LAN or WLAN within a network.

Overview



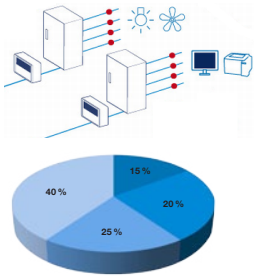


The measurement data is stored in the device and visualized by an integrated web-server. The visualization can be done via PC browser or by Android and iOS apps. If needed the user can also do a manual or automatic CSV data export.

Applications

Consumption analysis to save and allocate costs

The energy costs will raise continuously. To lower the costs it must be clear where they arise. The Energy monitor helps to represent and analize the consuptions. Furthermore the calculated active energy can be used to do a rough cost allocation at branch level.



Markets

Commercial buildings: e.g. Offices, Airports, Hotels, Universities, Museums

Residential buildings: Private houses or appartments

ABB measurement components
Increasing the availability and energy efficiency

ABB offers a complete measurement portfolio to increase the availability and energy efficiency of electrical plants. To capture all electrical measurement parameters such as currents, voltages, frequency, power factor (cos φ), active, reactive, apparent power and energy consumptions there is a variety of instruments available. The devices can operate individually or in combination. To process and visualize the measurement data there is a comprehensive PLC range available.

TCP/IP

AC 500 SPS

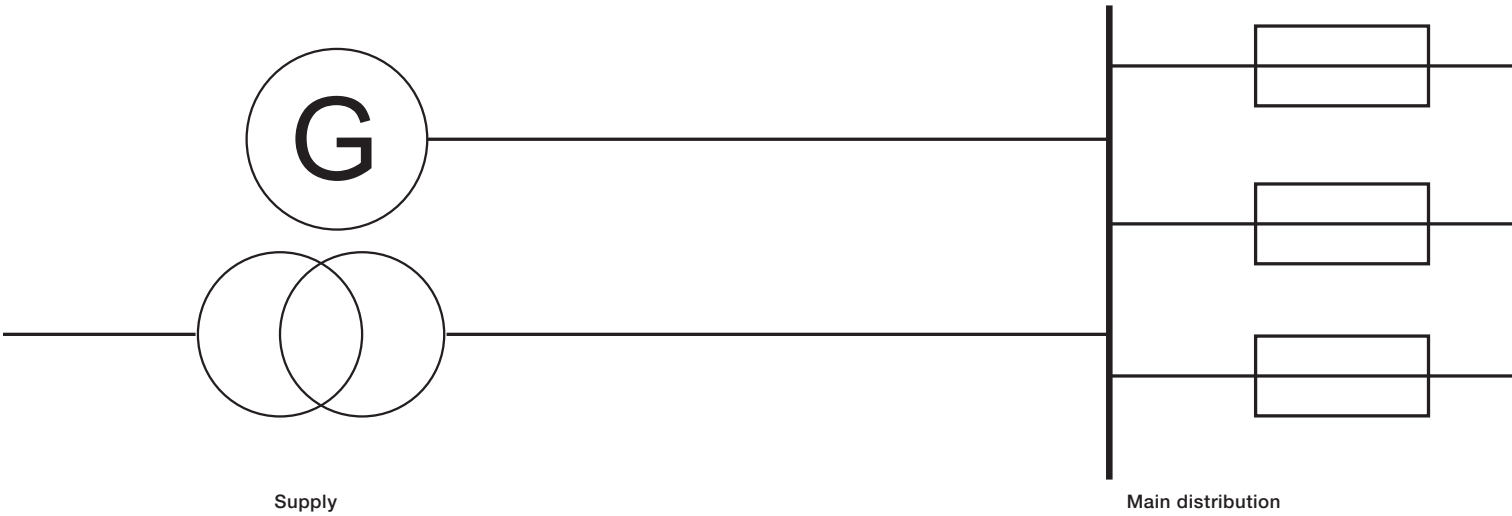
Modbus RTU

ANR-96
Analyzer

DMTME-72

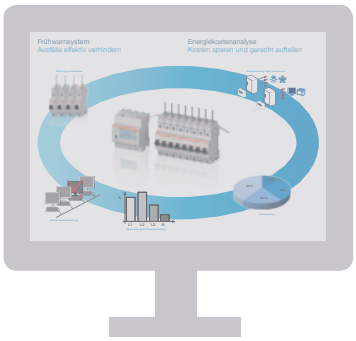
DMTME
Multimeter

M2M



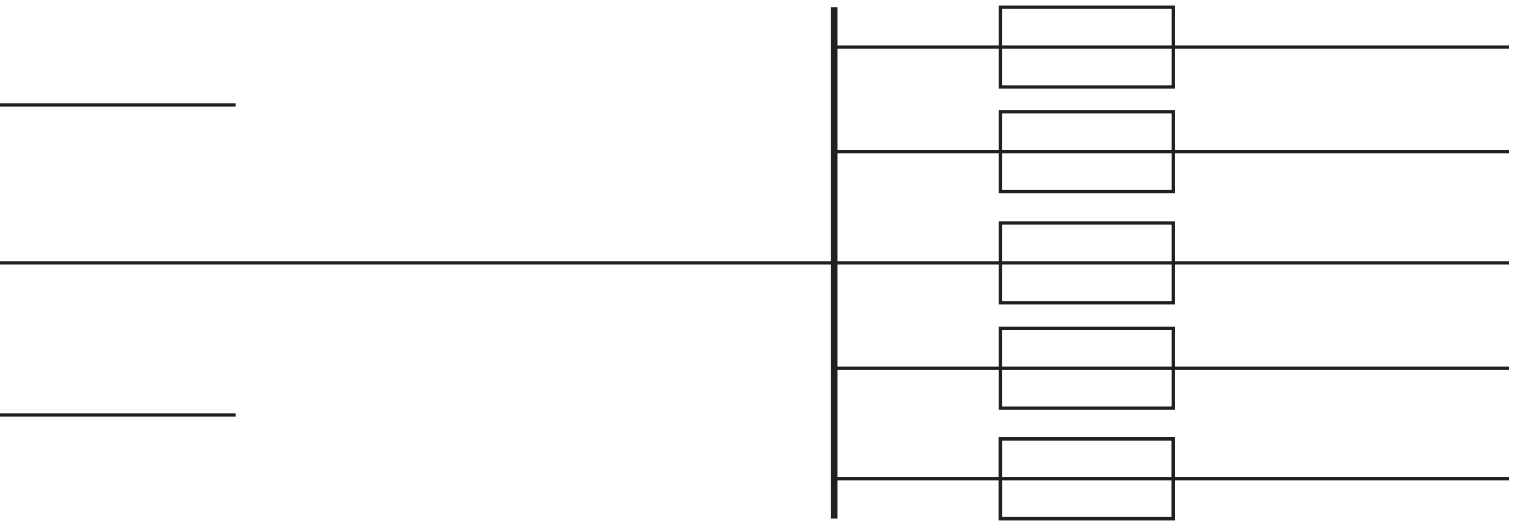
Supply

Main distribution



A series, B series
Energy meter

Circuit Monitoring Systems – CMS



Sub distribution

CMS – Current Measurement System
Technical specifications

CMS-100PS

CMS-100S8

CMS-100DR

CMS-100CA

Sensors 18 mm	
Type	
Measurement range	[A]
Measurement values	
Crest factor of disorted wave forms	
AC Accuracy (TA = +25 °C)*	
AC Temperature coefficient*	
DC Accuracy (TA = +25 °C)*	
DC Temperature coefficient)*	
Resolution	[A]
Sampling rate internal	[Hz]
Settling time (±1 %)	[sec]
Cable feed through	[mm]
Insulation Voltage	[V]
Operating temperature	[°C]
Storage temperature	[°C]
Standards	
Overall dimensions	
CMS-100PS series	[mm]
CMS-100S8 series	[mm]
CMS-100DR series	[mm]
CMS-100CA series	[mm]

CMS-200S8

CMS-200DR

CMS-200CA

Sensors 25 mm	
Type	
Measurement range	[A]
Measurement values	
Crest factor of disorted wave forms	
AC Accuracy (TA = +25 °C)*	
AC Temperature coefficient*	
DC Accuracy (TA = +25 °C)*	
DC Temperature coefficient)*	
Resolution	[A]
Sampling rate internal	[Hz]
Settling time (±1 %)	[sec]
Cable feed through	[mm]
Insulation Voltage	[V]
Operating temperature	[°C]
Storage temperature	[°C]
Standards	
Overall dimensions	
CMS-200S8 series	[mm]
CMS-200DR series	[mm]
CMS-200CA series	[mm]

* of full range

	CMS-100xx	CMS-101xx	CMS-102xx
	80	40	20
	TRMS, AC 50/60 Hz, DC	TRMS, AC 50/60 Hz, DC	TRMS, AC 50/60 Hz, DC
	≤ 1.5	≤ 3	≤ 6
	≤ ± 0.5 %	≤ ± 0.5 %	≤ ± 0.5 %
	≤ ± 0.036 %	≤ ± 0.036 %	≤ ± 0.036 %
	≤ ± 0.7 %	≤ ± 1.0 %	≤ ± 1.7 %
	≤ ± 0.047 %	≤ ± 0.059 %	≤ ± 0.084 %
	0.01	0.01	0.01
	5000	5000	5000
	typ. 0.25	typ. 0.25	typ. 0.25
	10	10	10
	690 VAC/1500 VDC	690 VAC/1500 VDC	690 VAC/1500 VDC
	–25 .. +70	–25 .. +70	–25 .. +70
	–40 .. +85	–40 .. +85	–40 .. +85
	DIN EN 61010-1	DIN EN 61010-1	DIN EN 61010-1
	17.4 x 41.0 x 26.5	17.4 x 41.0 x 26.5	17.4 x 41.0 x 26.5
	26.5 x 45.5 x 31.8	26.5 x 45.5 x 31.8	26.5 x 45.5 x 31.8
	17.4 x 51.5 x 43.2	17.4 x 51.5 x 43.2	17.4 x 51.5 x 43.2
	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-200xx	CMS-201xx	CMS-202xx
	160	80	40
	TRMS, AC 50/60 Hz, DC	TRMS, AC 50/60 Hz, DC	TRMS, AC 50/60 Hz, DC
	≤ 1.5	≤ 3	≤ 6
	≤ ± 0.5 %	≤ ± 0.5 %	≤ ± 0.5 %
	≤ ± 0.036 %	≤ ± 0.036 %	≤ ± 0.036 %
	≤ ± 0.7 %	≤ ± 1.0 %	≤ ± 1.7 %
	≤ ± 0.047 %	≤ ± 0.059 %	≤ ± 0.084 %
	0.01	0.01	0.01
	5000	5000	5000
	typ. 0.25	typ. 0.25	typ. 0.25
	15	15	15
	690 VAC/1500 VDC	690 VAC/1500 VDC	690 VAC/1500 VDC
	–25 .. +70	–25 .. +70	–25 .. +70
	–40 .. +85	–40 .. +85	–40 .. +85
	DIN EN 61010-1	DIN EN 61010-1	DIN EN 61010-1
	26.5 x 43.0 x 38.5	26.5 x 43.0 x 38.5	26.5 x 43.0 x 38.5
	25.4 x 43.0 x 43.2	25.4 x 43.0 x 43.2	25.4 x 43.0 x 43.2
	25.4 x 43.0 x 35.7	25.4 x 43.0 x 35.7	25.4 x 43.0 x 35.7

CMS – Current Measurement System
Technical specifications

CMS-600

CMS-600 Control Unit «Modbus RTU»		
Supply voltage	[VDC]	24 (±10 %)
Power consumption	[W]	4–24 (with up to 64 sensors)
Interface		RS485 2-wire
Protocol		Modbus RTU
Data rate	[Baud]	2400 .. 115 200
Data refresh time		≤ 1 sec for 64 sensors' results
Insulation Voltage	[VAC]	400
Screw-type terminals		0.5 .. 2.5 mm², max 0.6 Nm
Mounting		DIN-rail 35 mm acc. DIN50022 orSMISSLINE 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

CMS-770

CMS-770 Control Unit «Energy Monitor»		
Operating voltage	[VAC]	230 (± 10 %)
Frequency	[Hz]	50 (± 5 %)
Power consumption	[VA]	Voltage path < 0.01 (per phase) Current path < 2 (per phase)
Voltage measurement	[VAC]	230/400
Current measurement	[A]	63
Data refresh time		≤ 0.25 sec for up to 8 sensors
LAN	[Mbit/s]	100
WLAN	[Mbit/s]	150 (802.11n)
Cable cross section	[mm²]	1,0 .. 25,0
Mounting		DIN-rail 35 mm DIN50022
Safety class		IP2X
Operating temperature	[°C]	-25 .. 45
Storage temperature	[°C]	-25 .. 70
Dimensions	[mm]	70.0 x 85.0 x 54.8 (4 DIN modules)
Accuracy:		
Voltage		±1%
Current		± (1 % + 20 mA)
Active power		± (1 % + 5 W)
Apparent power		± (1 % + 7.5 VA)
Reactive power		± (1 % + 7.5 var)
Power factor		± 0.1 %

Circuit Monitoring System
Ordering information

Description	Bbn 7612271 EAN	Order details Type code	 Order code	Price 1 piece	Weight 1 piece kg	Pack unit pc.
Sensors 18 mm for pro M compact & SMISSLINE installation devices with twin terminals						
80 A	419202	CMS-100PS	2CCA880100R0001		0.012	1
40 A	419219	CMS-101PS	2CCA880101R0001		0.012	1
20 A	419226	CMS-102PS	2CCA880102R0001		0.012	1
Sensors 18 mm for S800 installation devices with cage terminals						
80 A	426552	CMS-100S8	2CCA880124R0001		0.014	1
40 A	426569	CMS-101S8	2CCA880125R0001		0.014	1
20 A	426576	CMS-102S8	2CCA880126R0001		0.014	1
Sensors 18 mm for DIN-Rail mounting (universal use)						
80 A	426583	CMS-100DR	2CCA880128R0001		0.015	1
40 A	426590	CMS-101DR	2CCA880129R0001		0.015	1
20 A	426606	CMS-102DR	2CCA880130R0001		0.015	1
Sensors 18 mm for cable mounting (universal use)						
80 A	426613	CMS-100CA	2CCA880107R0001		0.011	1
40 A	426620	CMS-101CA	2CCA880108R0001		0.011	1
20 A	426637	CMS-102CA	2CCA880109R0001		0.011	1
Sensors 25 mm for S800 installation devices with cage terminals						
160 A	426644	CMS-200S8	2CCA880136R0001		0.028	1
80 A	426651	CMS-201S8	2CCA880137R0001		0.028	1
40 A	426668	CMS-202S8	2CCA880138R0001		0.028	1
Sensors 25 mm for DIN-Rail mounting (universal use)						
160 A	426675	CMS-200DR	2CCA880132R0001		0.030	1
80 A	426682	CMS-201DR	2CCA880133R0001		0.030	1
40 A	426699	CMS-202DR	2CCA880134R0001		0.030	1
Sensors 25 mm for cable mounting (universal use)						
160 A	426705	CMS-200CA	2CCA880117R0001		0.026	1
80 A	426712	CMS-201CA	2CCA880118R0001		0.026	1
40 A	426729	CMS-202CA	2CCA880119R0001		0.026	1
Control Unit						
Modbus RTU	418700	CMS-600	2CCA880000R0001		0.153	1
Energy Monitor	441609	CMS-770	2CCA688307R0001		0.295	1
Accessories						
Flat cable 2 m	419233	CMS-800	2CCA880148R0001		0.017	1
Flat cable 3 m	424428	CMS-801	2CCA880149R0001		0.025	1
Connector set	419240	CMS-820	2CCA880145R0001		0.024	35
WLAN Antenna	442149	CMS-870	2CCA676620R0001		0.226	1

Kontakt

Belgium
ABB ELECTRO n.v.
Hoge Wei, 27
1930 Zaventem
Belgium
Telephone +32 (0) 27 18 63 11
Telefax +32 (0) 27 18 66 66

www.abb.be

Brasil
ABB Ltda
Av. dos Autonomistas, 1496
06020-902-Osasco-SP
Brasil
Telephone +55 (0) 80 00 14 91 11
Telefax +55 (11) 36 88 99 77

www.abb.com.br

Czech Republic
ABB s.r.o.
Herspická 13
61900 Brno
Czech Republic
Telephone +420 54 31 45 50 3
Telefax +420 54 32 43 48 9

www.abb.cz/elsynn

Denmark
ABB AS
Meterbuen 33
2740 Skovlunde
Denmark
Telephone +45 44 50 44 50
Telefax +45 44 50 44 60

www.abb.dk

Finland
ABB OY
Domestic Sales
Hiomotie 13
P.O. Box 184
00381 Helsinki
Finland
Telephone +358 10 22 20 00
Telefax +358 10 22 22 91 3

www.abb.fi

France
ABB Entrelec
Division Commercial France
300 rue des Prés Seigneurs
ZA La Boisse – BP 90145
01124 Montluel Cedex
France
Telephone +33 (0) 825 38 63 55
Telefax +33 (0) 825 87 09 26

www.abb.fr

Great Britain
ABB Limited
Tower Court
Foleshill Enterprise Park
Courtaulds Way
Conventry
CV6 5NX
England
Telephone +44 (0) 24 76 36 85 00
Telefax +44 (0) 24 76 36 44 99

www.abb.co.uk

Ireland
Asea Brown Boveri Ltd.
Belgrad Road, Tallaght
Dublin 24
Ireland
Telephone +35 31 40 57 30 0
Telefax +35 31 40 57 33 2

www.abb.com/lowvoltage

Italy
ABB SACE S.p.A.
Line Protection Devices
Viale dell'Industria, 18
20010 Vittuone (MI)
Italy
Telephone +39 02 90 34 1
Telefax: +39 02 90 34 76 09

www.abb.it

Netherland
ABB b.v.
Automation Products
George Hintzenweg 81
3068 AV Rotterdam
Postbus 301
3000 AH Rotterdam
Netherland
Telephone +31 (0) 10 40 78 91 1
Telefax +31 (0) 10 40 78 09 0

www.abb.nl

Norway
ABB AS
Jacob Borchsgt. 6
P.O. Box 797 Brakeroya
3002 Drammen
Norway
Telephone +47 32 24 80 00
Telefax +47 32 24 79 34

www.abb.no

Poland
ABB Sp. z o. o.
Automation Products
ul. Zeganska 1
04-713 Warszawa
Poland
Telephone +48 22 51 64 441
Telefax +48 22 51 64 444

www.abb.pl

P.R. China
ABB (China) Ltd
Universal Plaza, 10 Jiuxianqiao Lu
Chaoyang District
100016 Beijing
P.R. China
Telephone +86 10 8456 6688
Telefax +86 10 8456 9907

www.abb.com.cn

Russian Federation
ABB Industrial & Building Systems Ltd.
30/1, bld. 2 Obrucheva St.
117861 Moscow, Russia
Telephone +7 495 960 2200
Telefax +7 495 960 2220

www.abb.ru/ibs

Singapore
ABB Pte Ltd
2 Ayer Rajah Crescent
Singapore 139935
Main Tel +65 6776 5711
Main Fax +65 6778 0222

www.abb.com.sg

Spain
ABB Automation Products, S.A.
c/Torrent d'Olla, 220
08012 Barcelona
Spain
Telephone +34 93 48 42 10 4
Telefax +34 93 48 42 20 1

www.abb.es

Sweden
ABB Automation
Technologies Cewe Control
Motorgräd 20
72161 Västeras
Sweden
Telephone +46 (0) 21 32 07 00
Telefax +46 (0) 21 12 60 01

www.abb.se

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