CAMILLE BAUER

POWER MEASUREMENT IN ELECTRICAL SYSTEMS

BUILT-IN DEVICES FOR MEASUREMENT IN POWER SYSTEMS

SIRAX MONITOR LINE

SIRAX BM1200 ▪ SIRAX BM1400 ▪ SIRAX BM1450 ▪ SIRAX BT5700
SIRAX MM1200 ▪ SIRAX MM1400

Built-in devices for measurement in power systems

Camille Bauer Metrawatt offers a broad spectrum of high-quality measuring instruments for all tasks within electrical power systems.
With the built-in units of the SIRAX monitor series, we complement our SINEAX high-performance measuring transducers thus completing our portfolio.
They have the basic functionalities of a transmitter at a very good price / performance ratio and are used as cost-effective standard solutions for the acquisition of measurement values in the single-phase or three-phase power network.

The device series is divided into the categories Basic Monitor (BM) and Multifunctional Monitor (MM). The distinguishing features can be found in the display, operating and measuring range of the devices.
The SIRAX monitor series is designed for universal use in electrical distribution networks, automation technology and industrial equipment and machinery.

SIMPLE AND CLEAR

Compact and robust housing

Easy assembly and commissioning

Simple device operation thanks to intuitive menu guidance

Clear display of the measured data via large LCD, LED or TFT displays

Easy switching of measured values via push button

Comprehensive design

COMMUNICATIVE

Varied monitoring functions

RS485 (Modbus RTU) or Ethernet (Modbus TCP) interface

Software for configuration

Integration as a standard object into the SMARTCOLLECT software

FLEXIBLE

Universal measuring inputs

Configurable analog and digital measurement outputs

Easy on-site parameterization by push button or configuration software

Access authorization / password protection

OVERVIEW SIRAX MONITOR SERIES

	BM1200	BM1400	BM1450
	1-phasenetwork 2-wire 3-phasenetwork 3-/4-wire unbalanced load	3-phasenetwork 3-/4-wire unbalanced load	DC energy measurement 4 channels / external shunt
MEASURING INPUT			
Nominal voltage	63.5 / 133 / 239 V_{LN} 100 ... 480 V_{LL} (110 / 230 / 415 V_{LL})	57.7...277 V_{LN} 100 ... 480 V_{LL} (110 / 415 V_{LL})	10...60 VDC / 61...200 VDC / 201...1000 VDC
Nominal current	1 or 5 A	1 or 5 A	1 ... 20 KA
Shunt adjustment range	–	–	50...150 mV
Frequency range	45 ... 50/60 ... 65 Hz	45 ... 50/60 ... 66 Hz	45 ... 50/60 ... 65 Hz
POWER SUPPLY	60 ... 300 V AC/DC –	100 ... 250 V AC/DC –	60 ... 300 V AC/DC –
ACCURACY			
Voltage / current	±0,5 % / ±0,5 %	±0,5 % / ±0,5 %	±0,5 % / ±0,5 %
Power / reactive power	±0,5 % / ±1,0 %	±0,5 % / ±0,5 %	±0,5 %
power factor	±3,0 %	±3,0 %	
THD voltage, current	±2,0 %	±1,0 %	
Active / reactive / apparent energy	Class 1,0 / Class 1,0 / Class 2	Class 0.5 / Class 2	Class 1
SAFETY			
Insulation	Double	Double	Double
Pollution degree	2	2	2
Overvoltage category	300 V CAT III	300 V CAT III	1000V CAT II / 600 V CAT III
Protection rating	Front IP50, housing IP20	Front IP50, housing IP20	Front IP50, housing IP20
OUTPUTS	Puls 4000 Imp/kWh –	Analog 2 x 4...20 mA 1 relay (1NO / 1NC)	– 4 relay (1NO / 1NC)
METERS			
Active and reactive energy meter	Import and Export	Import and Export	Import and Export
Operating hours counter	For one consumer and the device itself	For one consumer and the device itself	For one consumer and the device itself
COMMUNICATION	RS485 (Modbus RTU) –	RS485 (Modbus RTU) Ethernet (Modbus TCP)	RS485 (Modbus RTU) –
MECHANICAL PROPERTIES			
Display Measurement display number	LCD display, 1 line, 4 digits, 3 measurements	LED display, 3 line, 4 digits 3 measurements	LED display, 4 line, 8 digits, 4 measurements
Housing material	LEXAN 940 (polycarbonate)	LEXAN 940 (polycarbonate)	LEXAN 940 (polycarbonate)
Flammability class	V-0 acc. to UL94, self-extinguishing, non-dripping, free of halogen	V-0 acc. to UL94, self-extinguishing, non-dripping, free of halogen	V-0 acc. to UL94, self-extinguishing, non-dripping, free of halogen
Relative humidity	0 ... 90 % (without condensation)	0 ... 90 % (without condensation)	0 ... 90 % (without condensation)
Operating temperature	-10 ... +55 °C	-10 ... +55 °C	-10 ... +55 °C
Mounting / installation position	Panel mounting / any	Panel mounting / any	Panel mounting / any
Connection	1 x < 4.0 mm^2 oder 2 x 1.5 mm^2	1 x < 4.0 mm^2 oder 2 x 1.5 mm^2	1 x < 4.0 mm^2 oder 2 x 1.5 mm^2
Weight	approx. 320 g	approx. 620 g	approx. 620 g
Dimensions [W x H x D]	96 X 96 X 35/55 mm	96 x 96 x 80 mm	96 x 96 x 80 mm

MM1200	MM1400	BT5700
3-phasenetwork 3-/4-wire unbalanced load	3-phasenetwork 3-/4-wire unbalanced load	3-phasenetwork 3-/4-wire unbalanced load
57.7...277 V_{LN} 100 ... 480 V_{LL} (440 V_{LL}) 1 or 5 A – 45 ... 50/60 ... 66 Hz	57.7...288 V_{LN} 100 ... 500 V_{LL} (500 V_{LL}) 1 or 5 A – 45 ... 50/60 ... 66 Hz	63.5 V_{LN} 100 ... 692.8 kV_{LL} (440 V_{LL}) 1 or 5 A – 45 ... 50/60 ... 65 Hz
100 ... 250 V AC/DC –	60 ... 300 V AC/DC –	100 ... 250 V AC/DC 12 ... 48 V AC/DC
±0,5 % / ±0,5 % ±0,5 % / ±0,5 % ±3,0 % ±1,0 % Class 0,5 / Class 0,5 / Class 2	±0,2 % / ±0,2 % ±0,2 % / ±0,2 % ±2,0 % ±1,0 % Class 0,5S / Class 0,5S / Class 2,0	±0,5 % / ±0,5 % ±0,5 % / ±0,5 % ±1,0 % – Class 0.5 / Class 2
Double 2 300 V CAT III Front IP50, housing IP20	Double 2 300 V CAT III Front IP50, housing IP20	Double 2 300 V CAT III Housing IP20
Analog 2 x 4...20 mA 1 relay (1NO / 1NC)	Puls 4000 Imp/kWh 2 relay (1NO / 1NC)	– –
Import and Export For one consumer and the device itself	Import and Export For one consumer and the device itself	Import and Export –
RS485 (Modbus RTU) Ethernet (Modbus TCP)	RS485 (Modbus RTU) Ethernet (Modbus TCP)	RS485 (Modbus RTU) –
TFT touch screen, digital and graphical 3 measurements and graphs LEXAN 940 (polycarbonate) V-0 acc. to UL94, self-extinguishing, non-dripping, free of halogen 0 ... 90 % (without condensation) -10 ... +55 °C Panel mounting / any 1 x < 4.0 mm^2 oder 2 x 1.5 mm^2 approx. 620 g 96 x 96 x 80 mm	TFT touch screen, digital and graphical 3 measurements and graphs LEXAN 940 (polycarbonate) V-0 acc. to UL94, self-extinguishing, non-dripping, free of halogen 0 ... 90 % (without condensation) -10 ... +55 °C Panel mounting / any 1 x < 4.0 mm^2 oder 2 x 1.5 mm^2 approx. 620 g 96 x 96 x 80 mm	LCD display, 2 line, 13 digits 2 measurements LEXAN 940 (polycarbonate) V-0 acc. to UL94, self-extinguishing, non-dripping, free of halogen 0 ... 90 % (without condensation) **-5 ... +60°C** DIN rail mounting / any 1 x < 4.0 mm^2 oder 2 x 1.5 mm^2 approx. 620 g 96 x 96 x 117 mm

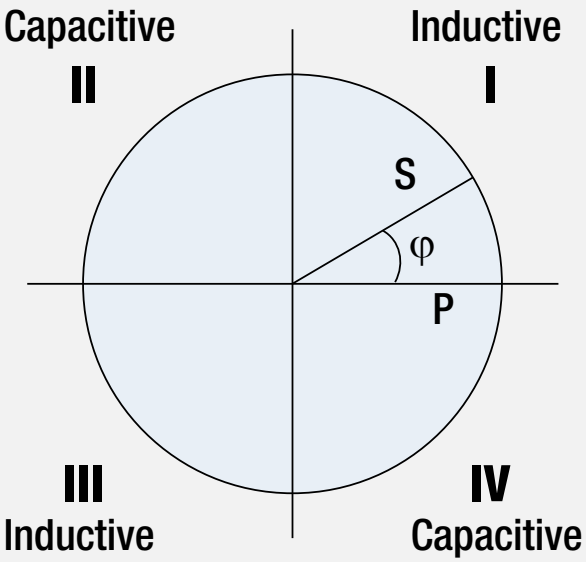
MEASURED VALUES

The measured values listed below are a selection of options for the individual device variants. It should be taken into consideration that not every device version can measure the same measured values.

MEASURED VALUE GROUP	APPLICATION
INSTANTANEOUS VALUES	
U, I, F, P, Q, S, PF, LF, QF ...	Transparent monitoring of present system state
Angle between voltage phasors	Fault detection, connection check, sense of rotation check
Min/max of instantaneous values	Determination of grid variable variance with time reference
EXTENDED REACTIVE POWER ANALYSIS	
Total reactive power, fundamental frequency, harmonics, cosφ	Reactive power compensation and verification of specified power factor
HARMONICS ANALYSIS	
Total harmonics content THD U/I	Evaluation of the thermic load of equipment
Individual harmonics U/I up to 50th	Analysis of system perturbation and consumer structure
ENERGY BALANCE ANALYSIS	
Meters for Import/Export of active / blind energy and active / apparent power	Determination of energy consumption, preparation of (internal) energy billing
OPERATING HOURS	
Run hour of the device	Monitoring of service and maintenance intervals of equipments
On hour of the device	
Number of interruptions	

IMPORT / EXPORT / INDUCTIVE / CAPACITIVE

The device variants SIRAX MM1200 and SIRAX MM140 provide information for all of the four quadrants. Depending on whether the measured system is considered from a generator or consumer perspective, the interpretation of the quadrants changes: The energy formed from active power in Quadrants I+IV can then be regarded, e.g., as supplied or demanded active energy. The energy level is clockwise.



VISUALISATION

CLEAR REPRESENTATION OF MEASURED VALUES

Depending on the device variant, different displays are available. The measured values can be displayed directly on-site via the LCD display, LED display or TFT display

- Display of input and output parameters
- High-contrast display with backlit for good reading of measurement values
- Clear and unambiguous display of measured data
- Graphical representation of vector diagram, curve and bar graphs possible with TFT display
- Simple navigation via two push buttons

SIMPLE ON-SITE PROGRAMMING OF MEASURED VALUES

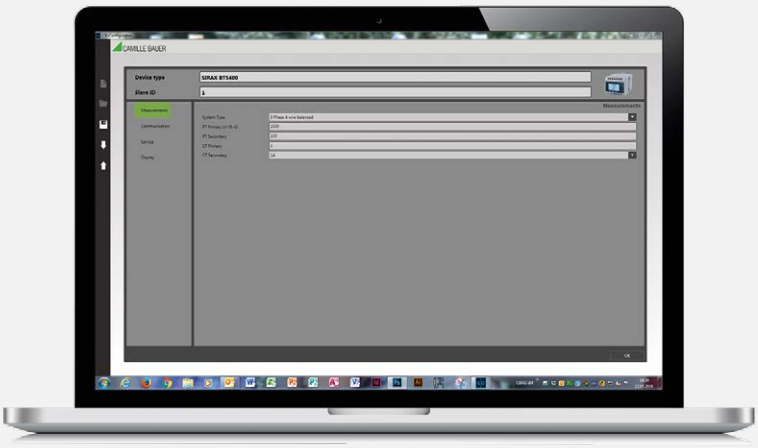
The following parameters can be set directly on site by means of the display and two push buttons.

- Network configuration
- Values of current and voltage transformers
- Input and output parameters
- Communication parameter Modbus RTU
- Password protection

ADDITIONAL PROGRAMMING OF MEASURED VALUES VIA CB-CONFIGURATOR SOFTWARE

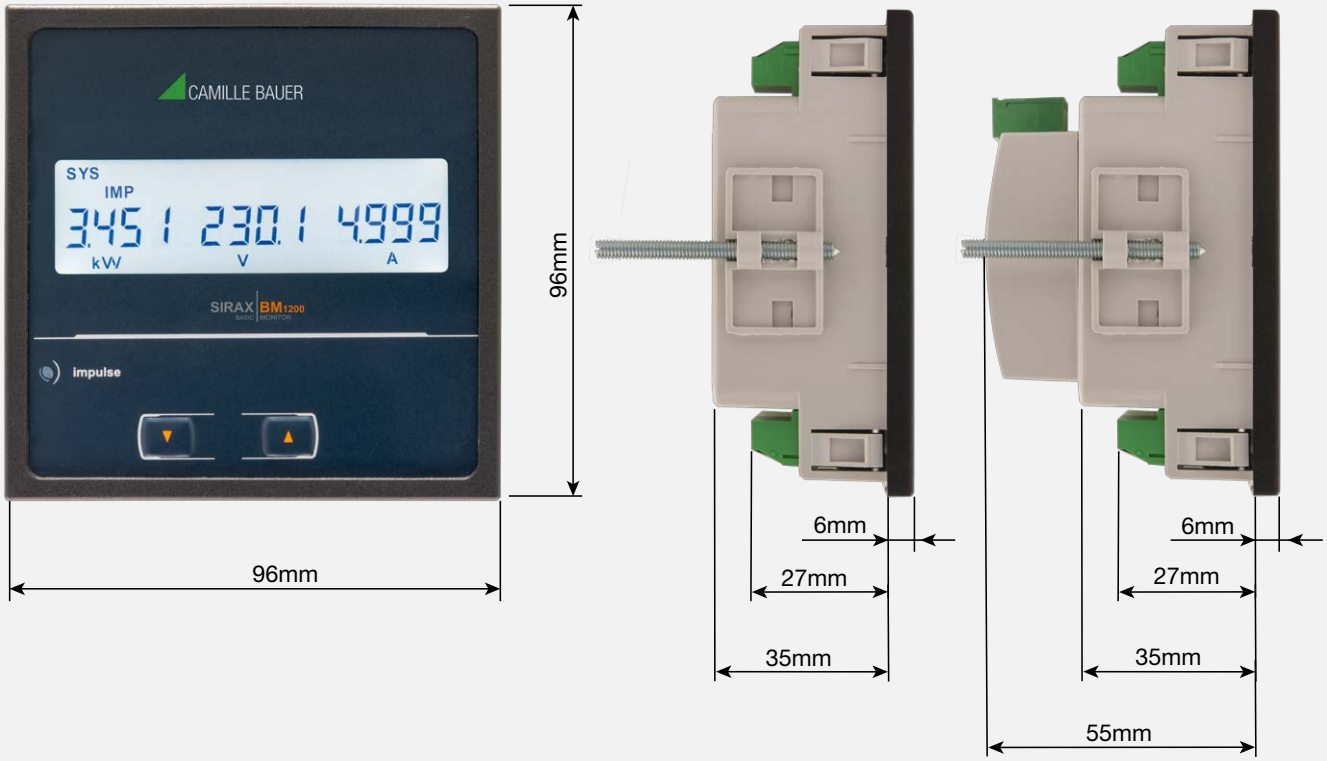
Via RS485 (Modbus RTU) interface and the CB-Configurator software the measured values may be programmed even more easily.

- Devices may be selected directly in the software
- Setting of input and output parameters
- Offline parameterization of measured values
- Loading and storage of configuration
- Upload of predefined configurations to several devices at the same time
- Password protection

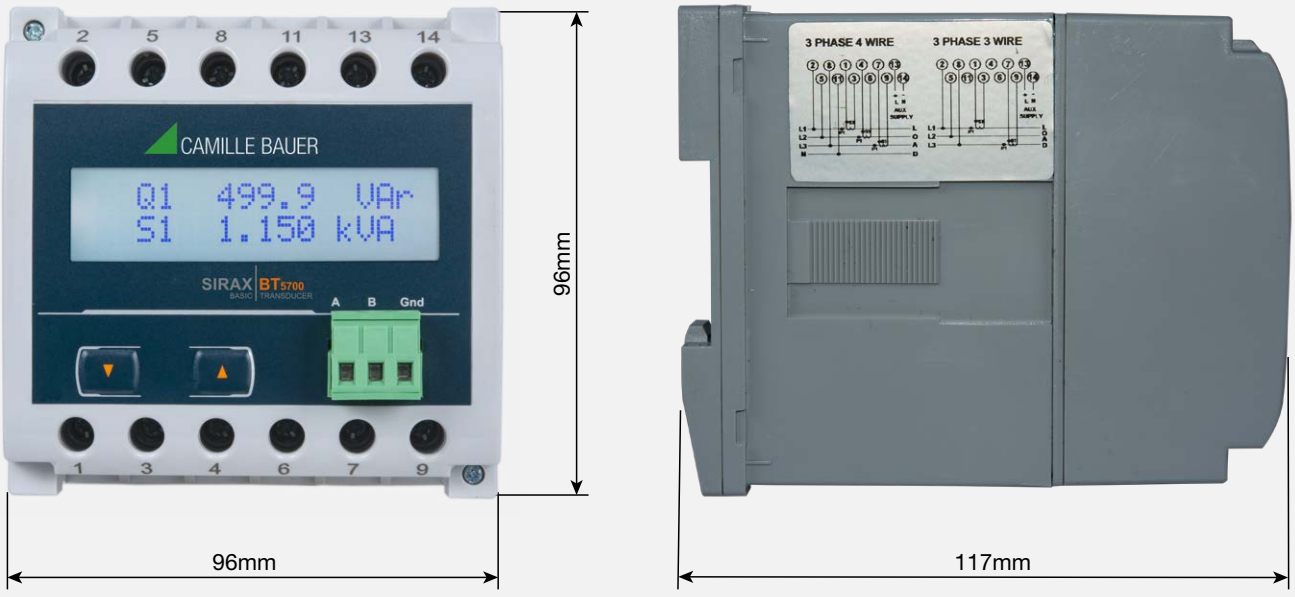


DIMENSIONS

SIRAX BM1200



SIRAX BT5700



SIRAX BM1400 AND BM1450

SIRAX MM1200 AND MM1400

ORDER CODE

SIRAX BM1200

ARTICLE-NO.	DESCRIPTION	NETWORK	VOLTAGE	CURRENT	POWER SUPPLY	OUTPUT
174 962	**SIRAX BM1200**	3PH	415VL-L	5A/1A	60…300V AC/DC	–
174 970	**SIRAX BM1200**	3PH	415VL-L	5A/1A	60…300V AC/DC	RS485

SIRAX BT5700

ARTICLE-NO.	DESCRIPTION	NETWORK	VOLTAGE	CURRENT	POWER SUPPLY	OUTPUT
175 134	**SIRAX BT5700**	3PH	440VL-L	5A/1A	100…250V AC/DC	RS485
175 275	**SIRAX BT5700**	3PH	440VL-L	5A/1A	12…48V AC/DC	RS485

BESTELLCODE

SIRAX BM1400

ARTICLE-NO.	DESCRIPTION	NETWORK	VOLTAGE	CURRENT	POWER SUPPLY	OUTPUT
176 695	**SIRAX BM1400**	3PH	110VL-L	5A/1A	100…250V AC/DC	–
176 702	**SIRAX BM1400**	3PH	110VL-L	5A/1A	100…250V AC/DC	RS485, 1 Relais, 2x4...20 mA analog
176 710	**SIRAX BM1400**	3PH	110VL-L	5A/1A	100…250V AC/DC	Ethernet
174 988	**SIRAX BM1400**	3PH	440VL-L	5A/1A	100…250V AC/DC	–
174 996	**SIRAX BM1400**	3PH	440VL-L	5A/1A	100…250V AC/DC	RS485, 1 Relais, 2x4...20 mA analog
175 001	**SIRAX BM1400**	3PH	440VL-L	5A/1A	100…250V AC/DC	Ethernet

SIRAX BM1450

ARTICLE-NO.	DESCRIPTION	NETWORK	VOLTAGE	CURRENT	POWER SUPPLY	OUTPUT
177 065	**SIRAX BM1450**	4	10...60 VDC	50...150 mA	60…300V AC/DC	RS485, 4 Relais
177 073	**SIRAX BM1450**	4	61...200 VDC	50...150 mA	60…300V AC/DC	RS485, 4 Relais
177 081	**SIRAX BM1450**	4	201...1000 VDC	50...150 mA	60…300V AC/DC	RS485, 4 Relais

SIRAX MM1200

ARTICLE-NO.	DESCRIPTION	NETWORK	VOLTAGE	CURRENT	POWER SUPPLY	OUTPUT
175 019	**SIRAX MM1200 / DE**	3PH	440VL-L	5A/1A	100…250V AC/DC	–
175 027	**SIRAX MM1200 / EN**	3PH	440VL-L	5A/1A	100…250V AC/DC	–
175 035	**SIRAX MM1200 / ES**	3PH	440VL-L	5A/1A	100…250V AC/DC	–
175 043	**SIRAX MM1200 / FR**	3PH	440VL-L	5A/1A	100…250V AC/DC	–
175 051	**SIRAX MM1200 / DE**	3PH	440VL-L	5A/1A	100…250V AC/DC	RS485, 1 Relais, 2x4...20 mA analog
175 069	**SIRAX MM1200 / EN**	3PH	440VL-L	5A/1A	100…250V AC/DC	RS485, 1 Relais, 2x4...20 mA analog
175 077	**SIRAX MM1200 / ES**	3PH	440VL-L	5A/1A	100…250V AC/DC	RS485, 1 Relais, 2x4...20 mA analog
175 085	**SIRAX MM1200 / FR**	3PH	440VL-L	5A/1A	100…250V AC/DC	RS485, 1 Relais, 2x4...20 mA analog
177 099	**SIRAX MM1200 / DE**	3PH	440VL-L	5A/1A	100…250V AC/DC	Ethernet
177 106	**SIRAX MM1200 / EN**	3PH	440VL-L	5A/1A	100…250V AC/DC	Ethernet

SIRAX MM1400

ARTICLE-NO.	DESCRIPTION	NETWORK	VOLTAGE	CURRENT	POWER SUPPLY	OUTPUT
175 093	**SIRAX MM1400 / DE**	3PH	500VL-L	5A/1A	60…300V AC/DC	RS485
175 100	**SIRAX MM1400 / EN**	3PH	500VL-L	5A/1A	60…300V AC/DC	RS485
175 118	**SIRAX MM1400 / ES**	3PH	500VL-L	5A/1A	60…300V AC/DC	RS485
175 126	**SIRAX MM1400 / FR**	3PH	500VL-L	5A/1A	60…300V AC/DC	RS485
177 114	**SIRAX MM1400 / DE**	3PH	500VL-L	5A/1A	60…300V AC/DC	RS485, 2 Relais
177 122	**SIRAX MM1400 / EN**	3PH	500VL-L	5A/1A	60…300V AC/DC	RS485, 2 Relais
177 130	**SIRAX MM1400 / DE**	3PH	500VL-L	5A/1A	60…300V AC/DC	Ethernet
177 148	**SIRAX MM1400 / EN**	3PH	500VL-L	5A/1A	60…300V AC/DC	Ethernet

SMARTCOLLECT

SMARTCOLLECT is a data management software which can acquire measured data in an easy manner and store the same in an open SQL database. This software offers basic functionalities for data analysis and for easy energy monitoring as well as the easy preparation and disposal of reports.

Providing a mature graphic user interface, the SMARTCOLLECT software is clearly structured and easily operated.

SMARTCOLLECT is modularly designed and permits supplementing modules or functions at any time.

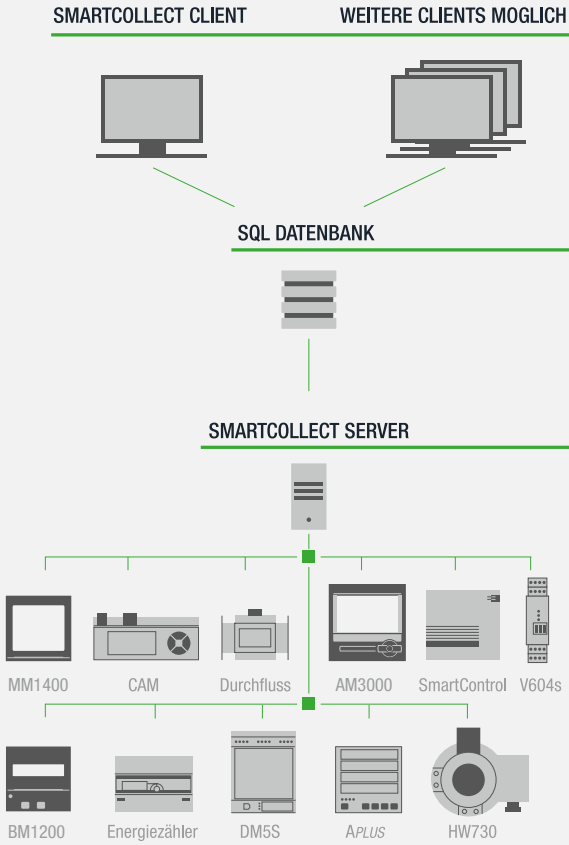
CUSTOMER BENEFITS

- Easy data communication via Modbus RTU / TCP, ECL and SmartControl-Direct
- Connection also via OPC
- Devices of Camille Bauer and Gossen Metrawatt are already predefined and selectable in the software
- Open for the devices of all manufacturers
- Data is stored in an open SQL database
- Modular cost / performance model – basic version may be extended at any time

MODULAR DESIGN

COMPONENTS

The SMARTCOLLECT data management software consists of the following components:



SMARTCOLLECT CLIENT

Graphic visualisation of queried data

Export via Excel file

User interface to define the data sources to be read out as well as error and warning messages via email.

SMARTCOLLECT DATABASE

SQL database

Contains the collected data

Open and unencrypted

SMARTCOLLECT SERVER

Collects and configures data from active sources and channels and writes the same directly into the central database.

SMARTCOLLECT software components may be installed on an individual system or on several servers or computers.

GMC INSTRUMENTS

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