

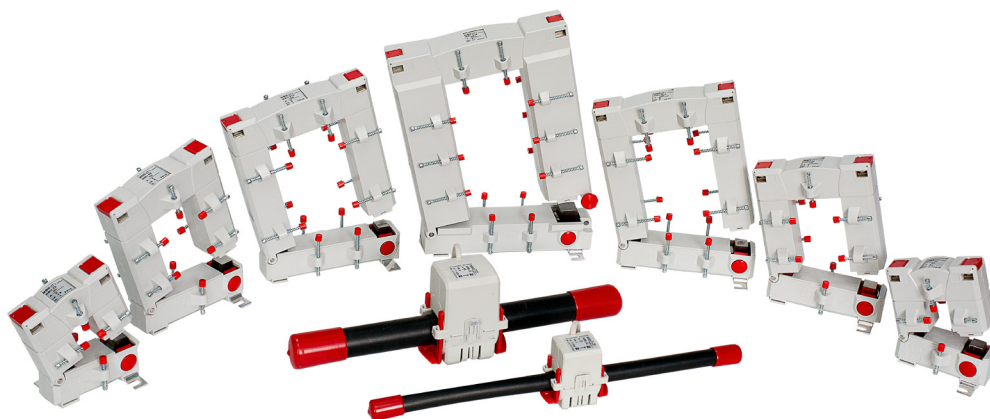


# Split-core current transformers

We make energy measurable and take care of your future



[www.mbs-ag.com](http://www.mbs-ag.com)



Independent, accredited testing station - Member laboratory of STL and LOVAG

## TYPE TEST REPORT

NO. 1469.2130168.0085

MBS AG  
Sulzbach Messwandler  
Eisbachstraße 51  
74429 Sulzbach-Laufen  
GERMANY

MBS AG  
Sulzbach Messwandler

Low-voltage current transformer (split-core current transformer)

KBR 32

13A 96545979, 13A 96545980 and 13A 96545981

Rated primary current	(I <sub>N</sub> )	600 A	RATED CHARACTERISTICS GIVEN BY THE CLIENT
Rated continuous thermal current	(I <sub>th</sub> )	1,2 x I <sub>N</sub>	
Rated secondary current	(I <sub>sc</sub> )	1 or 5 A	
Rated output		5 VA	
Accuracy class		1F55	
Rated dynamic current	(I <sub>dyn</sub> )	90 kA	
Rated short-time thermal current	(I <sub>th</sub> )	36 kA, 1 s	
Highest voltage for equipment	(U <sub>N</sub> )	0,72 kV	
Rated power-frequency withstand voltage		3 kV	
Rated lightning impulse withstand voltage		- kV	
Rated frequency	(f)	50 Hz	
Insulating material class		E	

IEC 61869-2: 2012-09

- Short-time current tests
- Temperature-rise test
- Test for accuracy
- Routine tests (dielectric tests)

01 to 25 February 2013

The rated characteristics related to the range of tests performed have been verified.  
The type tests have been PASSED.

Ronald Borchert  
Senior engineer  
Berlin, 07 August 2013

Dagmar Hauschild  
Test engineer in charge

IPH BERLIN  
Deutsche Akkreditierungsstelle  
D-PL 12307-01-01

Independent, accredited testing station - Member laboratory of STL and LOVAG

## TYPE TEST REPORT

NO. 1469.2130062.0009

MBS AG  
Sulzbach Messwandler  
Eisbachstraße 51  
74429 Sulzbach-Laufen  
GERMANY

MBS AG  
Sulzbach Messwandler

Low-voltage current transformer (split-core current transformer)

KBU 812

12/353549 and 12/353547

Rated primary current	(I <sub>N</sub> )	1500 A	RATED CHARACTERISTICS GIVEN BY THE CLIENT
Rated continuous thermal current	(I <sub>th</sub> )	1,0 x I <sub>N</sub>	
Rated secondary current	(I <sub>sc</sub> )	1 or 5 A	
Rated output		15 VA	
Accuracy class		1F510	
Rated dynamic current	(I <sub>dyn</sub> )	150 kA	
Rated short-time thermal current	(I <sub>th</sub> )	60 kA, 1 s	
Highest voltage for equipment	(U <sub>N</sub> )	0,72 kV	
Rated power-frequency withstand voltage		3 kV	
Rated lightning impulse withstand voltage		- kV	
Rated frequency	(f)	50 Hz	
Insulating material class		E	

IEC 61869-2: 2012-09

- Short-time current tests
- Temperature-rise test
- Test for accuracy
- Routine tests (dielectric tests)

04 January 2013

The rated characteristics related to the range of tests performed have been verified.  
The type tests have been PASSED.

Ronald Borchert  
Senior engineer  
07 March 2013

Dagmar Hauschild  
Test engineer in charge

IPH BERLIN  
Deutsche Akkreditierungsstelle  
D-PL 12307-01-01

## Type Approval Certificate

This is to certify that the undemoted product(s) has/have been tested in accordance with the relevant requirements of the GL Type Approval System.

Certificate No. 59 718 - 13 HH

Company MBS AG  
Eisbachstraße 51  
74429 Sulzbach-Laufen, GERMANY

Product Description Measuring current transformer

Type KBU23, KBU58, KBR18, KBR32, KBR44, KBU812, KBU816

Environmental Category C

Technical Data / Range of Application  
Highest voltage of equipment Um: 0,72kV  
Rated frequency: 50Hz  
Rated power-frequency withstand voltage: 3kV  
Class of insulation: E

Type: KBU23 KBU58  
Rated Primary current: 100 up to 400A 250A up to 1000A  
Rated Secondary current: 1 or 5A 1 or 5A  
Accuracy class: 1F510 1F515 or 1F510  
0,5F510 or 0,5F515 >400A  
Rated continuous thermal current: 1,0 x I<sub>N</sub> 1,0 x I<sub>N</sub>  
Rated short-time thermal current: 6 up to 24kA, 1sec 15 up to 40kA, 1sec  
Rated dynamic current: 15 up to 60kA 37,5 up to 100kA

Test Standard Guidelines for the Performance of Type Approvals Chapter 2, Edition 2012  
IEC 60044-1 (2003) IEC 61869-2 (2012)

Documents Test Report: IPH 1469.211423.0031, IPH 1469.2111215.0856  
IPH 1469.2121180.0591, IPH 1469.2121178.0552, IPH 1469.2130062.0009  
IPH 1469.2130168.0084, IPH 1469.2130168.0085, IPH 1469.211429.0067  
MBS-Typprüfprotokoll Baureihe KBR 18, KBR 44, KBU 816  
RMS Nr. 02-04/2013, RMS Nr.01-11/2012

Remarks None

Valid until 2018-01-04  
Page 1 of 2  
File No. LU.05  
Hamburg, 2013-07-31

Germanischer Lloyd  
This certificate is issued on the basis of "Guidelines for the Performance of Type Approvals Part 1, Procedure".

Arne Schaarmann  
Harald Hübner

IPH BERLIN  
Deutsche Akkreditierungsstelle  
D-PL 12307-01-01

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## TYPE TEST REPORT

NO. 1469.2111215.0856

MBS AG  
Sulzbach Messwandler  
Eisbachstraße 51  
74429 Sulzbach-Laufen  
GERMANY

MBS AG  
Sulzbach Messwandler

Low-voltage current transformer (split-core current transformer)

KBU 58

11/12995 and 11/13002

Rated primary current	(I <sub>N</sub> )	100 A	RATED CHARACTERISTICS GIVEN BY THE CLIENT
Rated secondary current	(I <sub>sc</sub> )	1 resp. 5 A	
Rated continuous thermal current	(I <sub>th</sub> )	1,0 x I <sub>N</sub>	
Rated output		1,25 VA	
Accuracy class		3F510	
Highest voltage for equipment	(U <sub>N</sub> )	0,72 kV	
Rated power-frequency withstand voltage		3 kV	
Rated lightning impulse withstand voltage		- kV	
Rated short-time thermal current	(I <sub>th</sub> )	15 kA, 1 s	
Rated dynamic current	(I <sub>dyn</sub> )	37,5 kA	
Rated frequency	(f)	50 Hz	
Insulating material class		E	

IEC 60044-1: 2003-02

- Short-time current tests
- Temperature-rise test
- Determination of errors
- Routine tests (dielectric tests)

09 to 13 January 2012

The rated characteristics related to the range of tests performed have been verified.  
The type tests have been PASSED.

Ronald Borchert  
Senior engineer  
Berlin, 11 May 2012

Dagmar Hauschild  
Test engineer in charge

IPH BERLIN  
Deutsche Akkreditierungsstelle  
D-PL 12307-01-01

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## TYPE TEST REPORT

NO. 1469.2121180.0591

MBS AG  
Sulzbach Messwandler  
Eisbachstraße 51  
74429 Sulzbach-Laufen  
GERMANY

MBS AG  
Sulzbach Messwandler

Low-voltage current transformer (split-core current transformer)

KBU 551 and 12/353554

Rated primary current	(I <sub>N</sub> )	100 A	RATED CHARACTERISTICS GIVEN BY THE CLIENT
Rated secondary current	(I <sub>sc</sub> )	1 resp. 5 A	
Rated continuous thermal current	(I <sub>th</sub> )	1,0 x I <sub>N</sub>	
Rated output		1,25 VA	
Accuracy class		3F510	
Highest voltage for equipment	(U <sub>N</sub> )	0,72 kV	
Rated power-frequency withstand voltage		3 kV	
Rated lightning impulse withstand voltage		- kV	
Rated short-time thermal current	(I <sub>th</sub> )	6 kA, 1 s	
Rated dynamic current	(I <sub>dyn</sub> )	15 kA	
Rated frequency	(f)	50 Hz	
Insulating material class		E	

IEC 61869-2: 2012-09

- Short-time current tests
- Temperature-rise test
- Test for accuracy
- Routine tests (dielectric tests)

20 September to 09 October 2012

The rated characteristics related to the range of tests performed have been verified.  
The tests have been PASSED.

Ronald Borchert  
Senior engineer  
Berlin, 31 October 2012

Dagmar Hauschild  
Test engineer in charge

IPH BERLIN  
Deutsche Akkreditierungsstelle  
D-PL 12307-01-01



## Split-core current transformer, type KBU

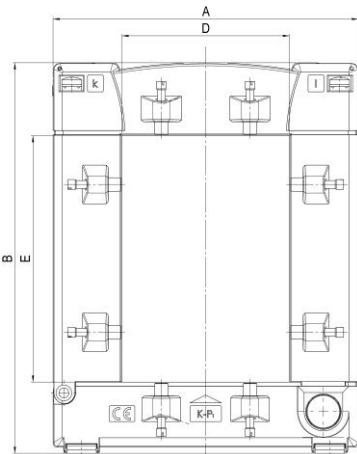


### Features / benefits

- Perfect for subsequent assembly into already existing installations
- Easy and safe mounting, due to hearable locking system
- Deliverable with secondary current 5 A / 1 A
- Deliverable also in accuracy class 0.5
- Four different construction types

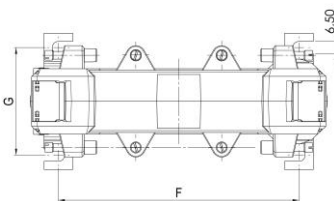
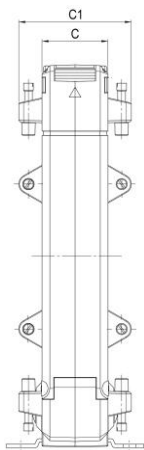
### General technical specifications

- Operating temperature:  $-5^{\circ}\text{C} < T < +40^{\circ}\text{C}$
- Storage temperature:  $-25^{\circ}\text{C} < T < +70^{\circ}\text{C}$
- Therm. nominal continuous rated current  $I_{cth}$ :  $1.0 \times I_N$
- Therm. nominal short-time current  $I_{th}$ :  $60 \times I_N$ , 1 sec.
- Max. operating voltage  $U_m$ : 0.72 kV
- Isolation test voltage: 3 kV,  $U_{eff}$ , 50 Hz, 1 min.
- Rated frequency: 50 Hz
- Isolation class: E
- Applicable technical standard: DIN EN 61869, part 1 + 2



### Dimensions

Type	A (width) [ mm ]	B (height) [ mm ]	C / C1 (depth) [ mm ]	D [ mm ]	E [ mm ]	F [ mm ]	G [ mm ]
KBU 23	93	106	34 / 58	23	33	64	56
KBU 58	125	158	34 / 58	55	85	96	56
KBU 812	155	198	34 / 58	85	125	126	56
KBU 816	195	243	64 / 79	85	165	156	62



## Order list KBU 23

Secondary current		5 A			1 A		
Primary current [ A ]	Burden [ VA ]	Accuracy class			Accuracy class		
		3	1	0.5	3	1	0.5
		Art.-no.	Art.-no.	Art.-no.	Art.-no.	Art.-no.	
100	1.25	80048			80248		
150	1.5	80030			80230		
200	2.5	80031			80231		
250	1.5		80044			80244	
300	3.75		80045			80245	
400	1			80037			80237
	5		80046			80246	

## Order list KBU 58

Secondary current		5 A		1 A	
Primary current [ A ]	Burden [ VA ]	Accuracy class		Accuracy class	
		1	0.5	1	0.5
		Art.-no.	Art.-no.	Art.-no.	Art.-no.
250	1.5	80061		80261	
300	2.5	80062		80262	
400	1		80038		80238
	2.5	80063		80263	
500	2.5		80054		80254
	5	80064		80264	
600	2.5		80055		80255
	5	80065		80265	
750	2.5		80056		80256
	5	80066		80266	
800	2.5		80057		80257
	7.5	80067		80267	
1000	5		80058		80258
	10	80068		80268	

## Order list KBU 812

Secondary current		5A		1A	
Primary current [ A ]	Burden [ VA ]	Accuracy class		Accuracy class	
		1	0.5	1	0.5
		Art.-no.	Art.-no.	Art.-no.	Art.-no.
250	1.5	80091		80291	
300	2.5	80092		80292	
400	2.5	80093		80293	
500	2.5		80074		80274
	5	80094		80294	
600	2.5		80075		80275
	5	80095		80295	
750	2.5		80076		80276
	2	80096		80296	
800	2.5		80077		80277
	7.5	80097		80297	
1000	5		80078		80278
	10	80098		80298	
1200	5		80079		80279
	10	80099		80299	
1250	7.5		80080		80280
	15	80100		80300	
1500	7.5		80081		80281
	15	80101		80301	

## Order list KBU 816

Secondary current		5A		1A	
Primary current [ A ]	Burden [ VA ]	Accuracy class		Accuracy class	
		1	0.5	1	0.5
		Art.-no.	Art.-no.	Art.-no.	Art.-no.
1000	10	80140	80110	80340	80310
	15	80141		80341	
1200	10	80142	80111	80342	80311
	15	80143		80343	
1500	10	80144	80112	80344	80312
	15	80145	80113	80345	80313
1600	10	80146	80114	80346	80314
	15	80147	80115	80347	80315
2000	10	80148	80116	80348	80316
	15	80149	80117	80349	80317
2500	10	80150	80119	80350	80319
	15	80151	80120	80351	80320
3000	15	80152	80122	80352	80322
	30	80153		80353	
4000	15	80154	80123	80354	80323
	30	80155	80124	80355	80324
5000	15	80156	80125	80356	80325
	30	80157	80126	80357	80326

## Split-core current transformer, type KBR



### Features / benefits

- Perfect for subsequent assembly into already existing installations
- Easy and safe mounting
- Due to the „click“-system even a one-hand mounting is possible
- Deliverable with secondary 5 A / 1 A or as a current sensor 0...333 mV (KBR 18; KBR 32 + KBR 44) or measuring transducer 4...20 mA DC (KBR 32 + KBR 44)
- In total 8 different construction types of series KBR
- UL-certification in preparation and sealable (KBR 18S; KBR 18L; KBR 28; KBR 42; KBR42L)

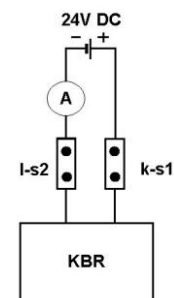
### General technical specifications

- Length of connection cable: (color coded)
  - Sec. 1A: 2.5 m, cross section 2x0.75 mm<sup>2</sup> (KBR 18; KBR 32; KBR 44)
  - 2.5 m, cross section 2x0.5 mm<sup>2</sup> (KBR 18S; KBR 18L; KBR 28; KBR 42; KBR 42L)
  - Sec. 5A: 0.5 m, cross section 2x1.5 mm<sup>2</sup> (KBR 18L; KBR 28; KBR 32; KBR 44; KBR 42; KBR 42L)
  - 0...333 mV: 2.5 m, cross section 2x0.75 mm<sup>2</sup> (KBR 18; KBR 32; KBR 44)
  - 4...20 mA: 2.5 m, cross section 2x0.75 mm<sup>2</sup> (KBR 32; KBR 44)
  - (Other lengths are possible on request)
- Operating temperature: -5°C < T < +50°C
- Storage temperature: -25°C < T < +70°C
- Therm. nominal continuous rated current I<sub>cth</sub>: 1.2 x I<sub>N</sub>
- Therm. nominal short-time current I<sub>th</sub>: 60 x I<sub>N</sub>, 1 sec.
- Max. operating voltage U<sub>m</sub>: 0.72 kV
- Isolation test voltage: 3 kV, U<sub>eff</sub>, 50 Hz, 1 min.
- Rated frequency: 50 Hz
- Isolation class: E
- Applicable technical standard: DIN EN 61869, part 1 + 2

### Technical characteristics for the KBR with output signal 4...20 mA:

- 2-wire connection, auxiliary power via output circuit
- Auxiliary power: 24 V DC ± 15 %, P<sub>V</sub> = max. 1 VA
- Load-independent DC current: Live-zero, 4...20 mA
- External resistance: max. 300 Ω
- Current limit under overload: < 30 mA
- Residual ripple of the output current: ≤ 1 % p.p.
- Response time: < 300 ms

### Wiring diagram of the KBR 32 + 44 (4...20 mA):



### Plug adaptor for measuring output 0 ... 333 mV for connection via „Quick Connect“ to the measuring unit MPR 3 and MPR 4:

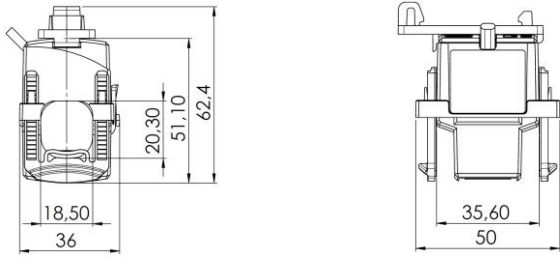


- Using this plug adaptor a quick and easy connection of three split-core current transformers with measuring output 0...333mV to the measuring unit MPR 3 is possible. Here the RJ45 input of the measuring unit is used.
  - Thanks to „Quick Connect“ you are able to setup a three-phase multifunctional power meter system in a jiffy.
  - The connection to the measuring unit MPR 4 can be done directly, without using the adaptor.
- Further information to the mentioned measuring units can be found on pages 11 and 12 of this brochure.
- Art.-no. of plug adaptor: RJ45-A

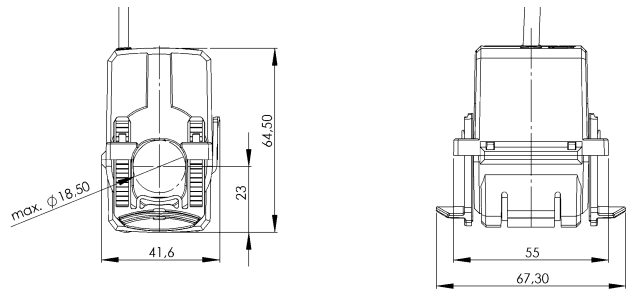


Dimension drawings:

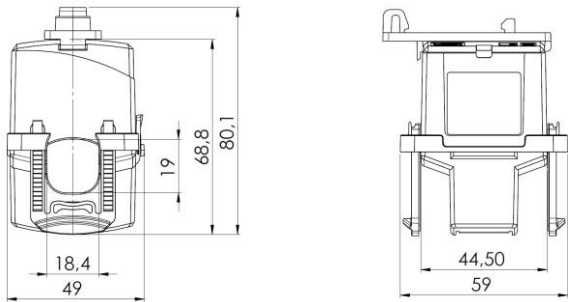
**KBR 18S**



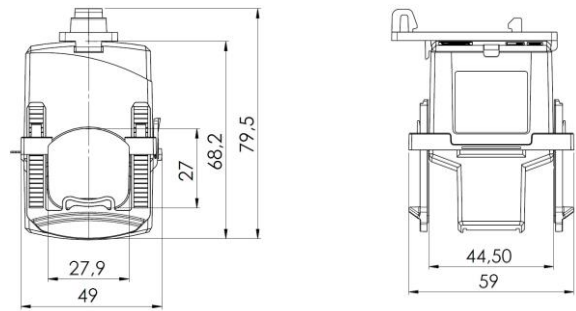
**KBR 18**



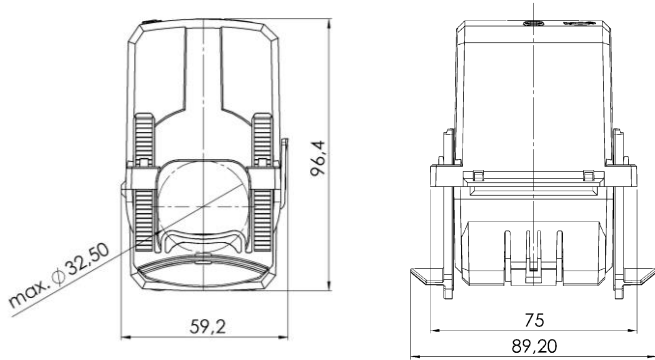
**KBR 18L**



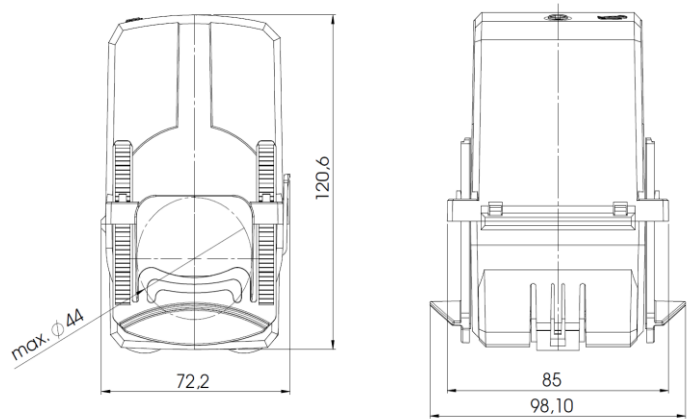
**KBR 28**



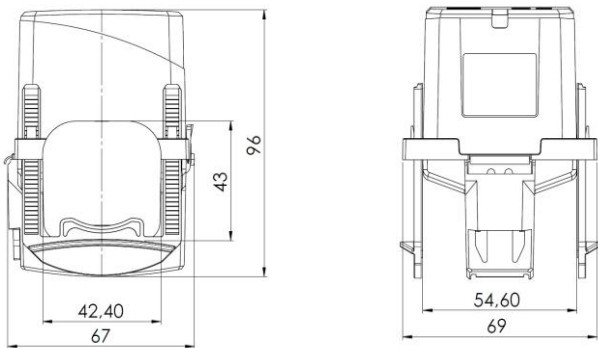
**KBR 32**



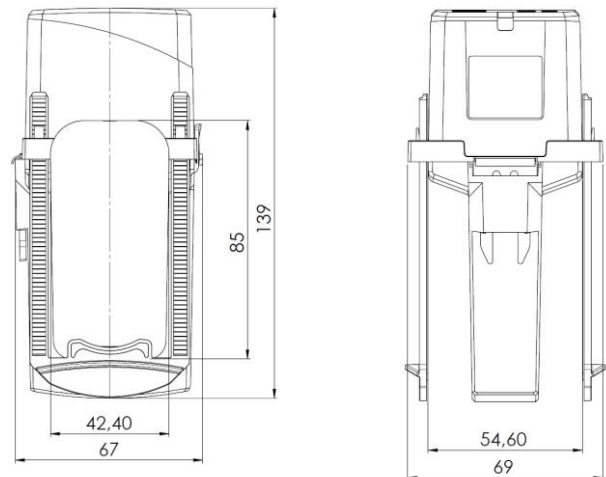
**KBR 44**



**KBR 42**



**KBR 42L**



## Order list KBR 18S

Secondary current		5 A		1 A	
Primary current [ A ]	Burden [ VA ]	Accuracy class		Accuracy class	
		3FS5	1FS5	3FS5	1FS5
		Art.-no.	Art.-no.	Art.-no.	Art.-no.
60	0.4			18S-0001	
75	0.5			18S-0002	
100	0.75			18S-0003	
125	0.75			18S-0004	
150	1			18S-0005	
200	0.4				18S-0006
	1.5			18S-0007	
250	0.5				18S-0008
	2			18S-0009	

Snap-on mounting for mounting on DIN rail: Art.-no.: 55016

## Order list KBR 18

Secondary current		5 A		1 A		Output	0...333 mV AC	4...20 mA DC
Primary current [ A ]	Burden [ VA ]	Accuracy class		Accuracy class		Primärstrom [ A ]	Accuracy class	Accuracy class
		3FS5	1FS5	3FS5	1FS5		1	1
		Art.-no.	Art.-no.	Art.-no.	Art.-no.		Art.-no.	Art.-no.
50	1			18-0001		50	18-1001	
75	1			18-0006		75	18-1006	
100	1.25			18-0011		100	18-1011	
125	1.5			18-0016		125	18-1016	
150	2			18-0021		150	18-1021	
200	1				18-0027	200	181026	
	3			18-0026				
250	1.5				18-0032	250	18-1031	
	4			18-0031				

## Order list KBR 18L

Secondary current		5 A		1 A	
Primary current [ A ]	Burden [ VA ]	Accuracy class		Accuracy class	
		1FS5	0.5FS10	1FS10	0.5FS10
		Art.-no.	Art.-no.	Art.-no.	Art.-no.
100	0.3			18L-0001	
125	0.5			18L-0002	
150	1	18L-5001		18L-0003	
200	0.2				18L-0004
	1.5	18L-5002		18L-0005	
250	0.5				18L-0006
	1		18L-5003		
	2	18L-5004			
	2.5			18L-0007*	

\* FS5

Snap-on mounting for mounting on DIN rail: Art.-no.: 55017



## Order list KBR 28

Secondary current		5 A		1 A	
Primary current [ A ]	Burden [ VA ]	Accuracy class		Accuracy class	
		1FS5	0.5FS5	1FS5	0.5FS10
		Art.-no.	Art.-no.	Art.-no.	Art.-no.
200	0.3			28-0001*	
250	1	28-5001		28-0002	
300	1.5	28-5002		28-0003	
400	0.5				28-0004
	2.5	28-5003		28-0005	
500	1		28-5004		28-0006
	3	28-5005		28-0007	

\* FS10

Snap-on mounting for mounting on DIN rail: Art.-no.: 55017

## Order list KBR 32

Secondary current		5 A		1 A		Output	0...333 mV AC	4...20 mA DC
Primary current [ A ]	Burden [ VA ]	Accuracy class		Accuracy class		Primary current [ A ]	Accuracy class	Accuracy class
		3FS5	1FS5	3FS5	1FS5		1	1
		Art.-no.	Art.-no.	Art.-no.	Art.-no.		Art.-no.	Art.-no.
100	1.5	32-5011				100	32-1011	32-2011
	2.5			32-0011				
125	2.5	32-5016				125	32-1016	32-2016
	3			32-0016				
150	3	32-5021		32-0021		150	32-1021	32-2021
200	3	32-5026				200	32-1026	32-2026
	5			32-0026				
250	3	32-5031				250	32-1031	32-2031
	5			32-0031				
300	2.5		32-5035			300	32-1034	32-2034
	5				32-0035			
400	5		32-5037		32-0037	400	32-1036	32-2036
500	5		32-5039		32-0039	500	32-1038	32-2038
600	5		32-5041		32-0041	600	32-1040	32-2040

## Order list KBR 42

Secondary current		5 A		1 A	
Primary current [ A ]	Burden [ VA ]	Accuracy class		Accuracy class	
		1FS5	0.5FS5	1FS5	0.5FS5
		Art.-no.	Art.-no.	Art.-no.	Art.-no.
250	2.5			42-0001	
300	2.5	42-5001		42-0002	
400	2.5				42-0003
	5	42-5002		42-0004	
500	2.5				42-0005
	5	42-5003		42-0006	
600	2.5		42-5004		42-0007*
	5	42-5005		42-0008	
750	2.5		42-5006*		42-0009*
	5	42-5007		42-0010	
800	2.5		42-5008*		42-0011*
	5	42-5009		42-0012	
1000	2.5		42-5010*		42-0013*
	5	42-5011		42-0014*	

\* FS10

## Order list KBR 42L

Secondary current		5 A		1 A	
Primary current [ A ]	Burden [ VA ]	Accuracy class		Accuracy class	
		1FS5	0.5FS5	1FS5	0.5FS5
		Art.-no.	Art.-no.	Art.-no.	Art.-no.
250	2.5			42L-0001	
300	2.5	42L-5001		42L-0002	
400	2.5				42L-0003
	5	42L-5002		42L-0004	
500	2.5				42L-0005
	5	42L-5003		42L-0006	
600	2.5		42L-5004		42L-0007*
	5	42L-5005		42L-0008	
750	2.5		42L-5006*		42L-0009*
	5	42L-5007		42L-0010	
800	2.5		42L-5008*		42L-0011*
	5	42L-5009		42L-0012	
1000	2.5		42L-5010*		42L-0013*
	5	42L-5011		42L-0014*	

\* FS10

## Order list KBR 44

Secondary current		5A	1A	Output	0...333 mV AC	4...20 mA DC
Primary current [ A ]	Burden [ VA ]	Accuracy class		Primary current [ A ]	Accuracy class	
		1FS5	1FS5		1	1
		Art.-no.	Art.-no.		Art.-no.	Art.-no.
250	1.5	44-5001		250	44-1001	44-2001
	2.5		44-0001			
300	2.5	44-5006	44-0006	300	44-1006	44-2006
400	5	44-5011	44-0011	400	44-1011	44-2011
500	5	44-5016	44-0016	500	44-1016	44-2016
600	5	44-5021	44-0021	600	44-1021	44-2021
750	5	44-5026	44-0026	750	44-1026	44-2026
800	5	44-5031	44-0031	800	44-1031	44-2031
1000	5	44-5036	44-0036	1000	44-1036	44-2036

## Multifunctional power measuring unit „MPR 3“ with innovative connection technology „Quick Connect“



### Features / benefits

- Simple wiring of the three single-phase current-transformer-set ASKDS or our split-core current transformers type KBR 18; KBR 32 or KBR 44 via plug adaptor using 330 mV voltage input for equivalent primary currents
- Replaces a variety of analogue measuring devices, along with significantly less wiring expenses
- Storage of minimum and maximum values allows monitoring and error analysis
- Due to a digital in- and output as well as a pulse output a connection to a power management system is possible
- Additionally this device has a Modbus-RTU interface (RS485)

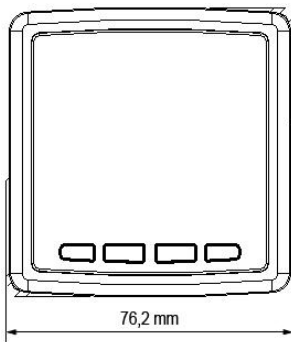
### Application

Energy is becoming more and more expensive and is thus a steadily growing cost factor.

In order to detect high-level power consumers, MBS AG has developed the multifunctional measuring unit MPR 3 (72x72 mm) and MPR 4 (96x96 mm) in combination with the three single-phase current-transformer-set ASKDS, which are especially designed for monitoring of 3- or 4-line networks in building technology.

Moreover our split-core current transformers type KBR 18; KBR 32 or KBR 44 can be connected with above mentioned measuring units (MPR 3 using a plug adaptor).

All relevant network data can be measured and displayed



### Measurements

The following measurements can be displayed with the multifunctional measuring unit MPR 3:

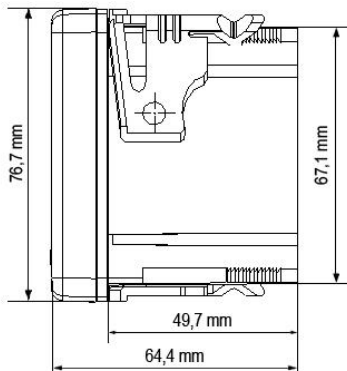
- The current values for voltage, current, frequency and power factor
- The real power, apparent power and reactive power for each phase and for the whole grid
- The minimum and maximum values for voltage, current, real power, reactive power and power factor for each phase and for the whole grid

Additionally integrated into the device is a 4-quadrant energy meter for the real and reactive energy, two operating hours counters and a rotary field direction display.

One of the operating hours counter can be reset manually.

The device is operated by using four buttons and the menu on the display.

All the outputs given above are galvanically isolated from the measurement inputs and the auxiliary voltage.



### Accessories

RJ45-connection cables

### Order list

Art.-no.	Pulse output	RS485 (Modbus-RTU)	Digital Input	Digital Output	Alarm	Event logs	Outage records	THD-I	THD-V
99-72001	•	•	1x	1x	•	•	•	•	•

### MBS AG

Eisbachstraße 51 · 74429 Sulzbach-Laufen  
Germany

Telefon: +49 7976 9851-0 · Telefax: +49 7976 9851-90  
E-Mail: info@mbs-ag.com · Web: www.mbs-ag.com

## Multifunctional power measuring unit „MPR 4“ with innovative connection technology „Quick Connect“



### Features / benefits

- Simple wiring of the three single-phase current-transformer-set ASKDS or our split-core current transformers type KBR 18; KBR 32 or KBR 44 via plug adaptor using 330 mV voltage input for equivalent primary currents
- Replaces a variety of analogue measuring devices, along with significantly less wiring expenses
- Storage of minimum and maximum values allows monitoring and error analysis
- Due to an integrated Modbus-RTU interface (RS485) a connection to a power management system is possible
- Optionally the device can be equipped with an output module, which has the following outputs: 2x digital input; 2x digital output; 2x analogue output; 2x switching output

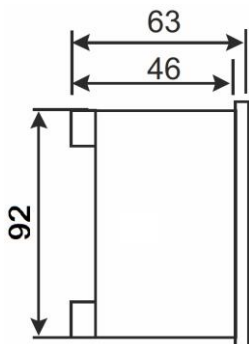
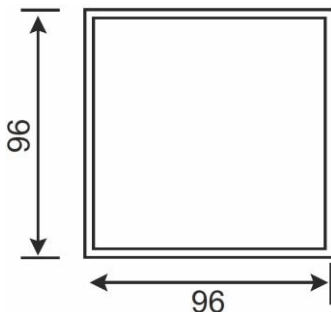
### Application

Energy is becoming more and more expensive and is thus a steadily growing cost factor.

In order to detect high-level power consumers, MBS AG has developed the multifunctional measuring unit MPR 3 (72x72 mm) and MPR 4 (96x96 mm) in combination with the three single-phase current-transformer-set ASKDS, which are especially designed for monitoring of 3- or 4-line networks in building technology.

Moreover our split-core current transformers type KBR 18; KBR 32 or KBR 44 can be connected with above mentioned measuring units (MPR 3 using a plug adaptor).

All relevant network data can be measured and displayed



### Measurements

The following measurements can be displayed with the multifunctional measuring unit MPR 4:

- The current values for voltage, current, frequency and power factor
- The real power, apparent power and reactive power for each phase and for the whole grid
- The minimum and maximum values for voltage, current, real power, reactive power and power factor for each phase and for the whole grid
- Optionally the THD-I and THD-V can be displayed.

Additionally integrated into the device is a 4-quadrant energy meter for the real and reactive energy, two operating hours counters and a rotary field direction display.

One of the operating hours counter can be reset manually.

The device is operated by using five buttons and the menu on the display.

All the outputs given above are galvanically isolated from the measurement inputs and the auxiliary voltage.

### Order list

Art.-no.	RS485 (Modbus-RTU)	Available output modules	Alarm	Event logs	Outage records	THD-I	THD-U
99-96003	•	2x Digital input; 2x Digital output; 2x Analogue output; 2x switching output	•	•	•	•	•



## You haven't found the right split-core current transformer?

You are looking for a split-core current transformer...

...with a better accuracy class, f.e. class 0.2 ?

...as a protection CT, f.e. in protection class 5P20 ?

...or a split-core CT with a bigger opening for your primary conductor ?

**Then our fully resin-hardened split-core current transformer type CTO is exactly the right decision!**



### Features / benefits

- Split-core current transformer suitable for measuring or protection purposes, depending on the design of the CT
- The modular design of this series allows a large number of varieties within the different CT sizes (please see next page for details about the different dimensions)
- Max. operating voltage: 0.72/3/- kV or 1.2/6/- kV; if the primary conductor is suitably insulated the CT can also be used above 0.72 kV or 1.2 kV
- Primary current range: 30 A ... 5000 A
- Secondary currents: 1 A, 2 A or 5 A
- Rated burden: 1.0 VA ... 30 VA
- Accuracy classes: 0.2S; 0.2; 0.5S; 0.5; 1; 3
- Over-current rated limiting factor for measuring cores: FS5 or FS10
- Protection classes: 5P / 10P / PX
- Over-current rated limiting factor for protection cores: 5, 10, 15, 20, 30, 60

### Dimensions

Inner diameter: max. 360 mm  
 Transformer width: 100 – 500 mm  
 Transformer depth: 60 – 300 mm

Please see next page for details about the different dimensions.

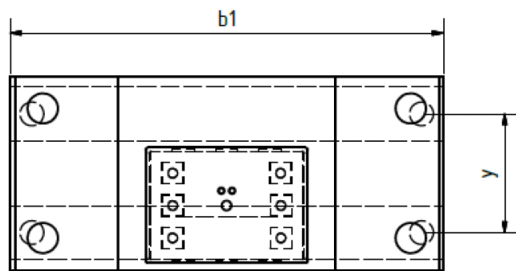
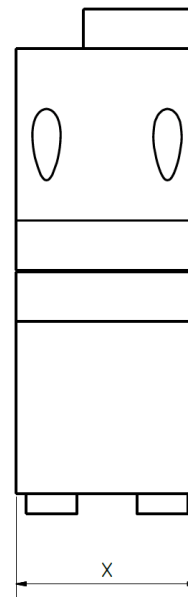
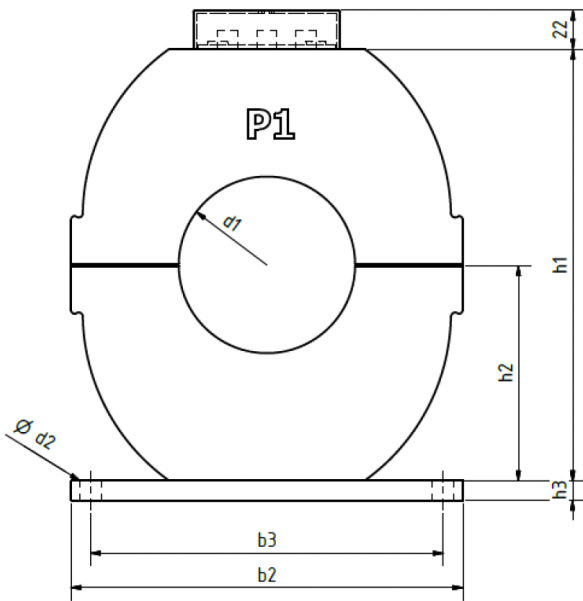
### General technical specifications

- Operating temperature:  $-5^{\circ}\text{C} < T < +40^{\circ}\text{C}$
- Storage temperature:  $-25^{\circ}\text{C} < T < +70^{\circ}\text{C}$
- Therm. nominal continuous current  $I_{\text{ctn}}$ :  $1.0 \times I_N$  or  $1.2 \times I_N$ , other values upon request
- Therm. nominal short-time current  $I_{\text{th}}$ : Min.  $100 \times I_N$ , 1 sec., other values upon request
- Max. Betriebsspannung  $U_m$ : 0,72 kV oder 1,2 kV
- Isolation test voltage: 3 kV,  $U_{\text{eff}}$ , 50 Hz, 1 min. or 6 kV,  $U_{\text{eff}}$ , 50 Hz, 1 min.
- Rated frequency: 50 Hz or 60 Hz, other values upon request
- Isolation class: E
- Applicable technical standard: DIN EN 61869, part 1 + 2

### Further information

- Measuring systems fully hardened with Polyurethane resin
- The current transformers type CTO are intended for subsequent installation in existing low-voltage switchgear. In addition, there are customers who use these current transformers in medium-voltage switchgears, if the primary conductor is suitably insulated.
- The two parts of the current transformer are held together by four screws with springs or spring clips on the sides, which ensures a permanent contact pressure.
- The secondary connection terminals are factory-fitted with M5 screws. A clear plastic cover serves as an touch protection.
- Protection type: Housing: IP54, Terminal cover: IP20
- Mounting of CT by means of a baseboard attached to the resin body
- Packaging unit: 1 Stk.
- Customs tariff number: 85043129

## Dimension drawings:



x*	y*
90	60 <sup>1)</sup>
120	90 <sup>1)</sup>
150	120
200	170
250	220
300	270

\* Dimension x + y depends on the type and number of measuring systems installed.

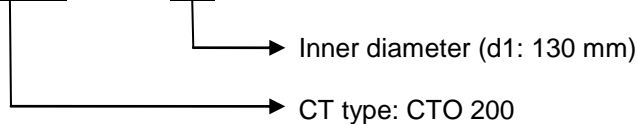
<sup>1)</sup> Different dimensions for CTO 100 and CTO 120:

When x = 90 mm: y = 105 mm

When x = 120 mm: y = 135 mm

## Determination of current transformer type:


Example: CTO 200 / 130



CT type	b1	b2	b3	max. d1	d2	h1	h2	h3	max. depth
CTO 100	100	100	60	50	6	120	60	3	max. 120 mm
CTO 120	120	120	70	65	6	135	67,5	3	max. 120 mm
CTO 135	135	150	120	90	9	150	75	10	max. 120 mm
CTO 150	150	150	120	110	9	170	85	10	max. 120 mm
CTO 170	170	170	150	110	11	185	92,5	10	max. 120 mm
CTO 200	200	200	180	140	11	200	100	10	max. 300 mm
CTO 250	250	250	230	160	11	290	145	10	max. 300 mm
CTO 300	300	300	280	210	11	340	170	10	max. 300 mm
CTO 350	350	350	330	270	11	390	195	10	max. 300 mm
CTO 500	500	500	440	400	11	500	250	10	max. 300 mm

## MBS – Wir machen Energie messbar

### MBS – We Make Energy Measurable



Auf dem Energieübertragungsweg zwischen Kraftwerk und Verbraucher ist an einer Vielzahl von Messstellen die korrekte Erfassung der Stromstärken notwendig. Dies erfolgt mit Hilfe von Stromwandlern. MBS produziert ein umfangreiches Sortiment an Niederspannungs- und Mittelspannungs-Stromwandlern für Mess- und Schutzzwecke.

*When transferring energy from power station to consumer, it is essential to ensure the correct collection of amperages at a multiplicity of measuring points. This is done by means of current transformers. MBS produces an extensive assortment of low- and medium voltage current transformers for measuring and protection purposes.*

## 10 Reasons for MBS

- ✓ Customer oriented solutions
- ✓ Individual consultancy
- ✓ Satisfied customers on all continents
- ✓ A product range in excess of 28,000 units
- ✓ Multiple of international licences and certificates, DIN EN ISO 9001:2000
- ✓ Supreme technical quality
- ✓ Official calibration of current transformers and measuring units
- ✓ Reliability
- ✓ Fast deliveries
- ✓ More than 35 years of success



- Current transformers for industry
- Current transformers for tariff
- Accessories for current transformers
- Medium-voltage CTs
- Bus bar insulators / -supports
- Shunts
- Voltage transformers
- All current sensors
- Measuring transducers
- Energy meters with or without MID approval
- Accessories for energy meters
- Panel board heaters, filter fans, roof fans and control units



MBS AG  
 Eisbachstraße 51 • 74429 Sulzbach-Laufen • Germany  
 Telefon: +49 7976 9851-0 • Telefax: +49 7976 9851-90  
 info@mbs-ag.com • www.mbs-ag.com