

MBS Applications and References

	Panel board production	Industrial building control system	Energy supply organization	Machine building	Automation	Windsails installation	Galvanic/measuring technic	Ship building
Current Transformers for industrial application	●	●	●	●	●	●	●	●
Current Transformers for tariff applications	●	●	●	●	●	●	●	●
Bus bar isolators	●	●	●	●	●	●	●	●
Bus bar supports	●	●	●	●	●	●	●	●
Shunts voltage transformers	●	●	●	●	●	●	●	●
All current sensors	●	●	●	●	●	●	●	●
Measuring transducers	●	●	●	●	●	●	●	●
Energy meters	●	●	●	●	●	●	●	●
Industrial applications	●	●	●	●	●	●	●	●
Panel board heaters and control units	●	●	●	●	●	●	●	●

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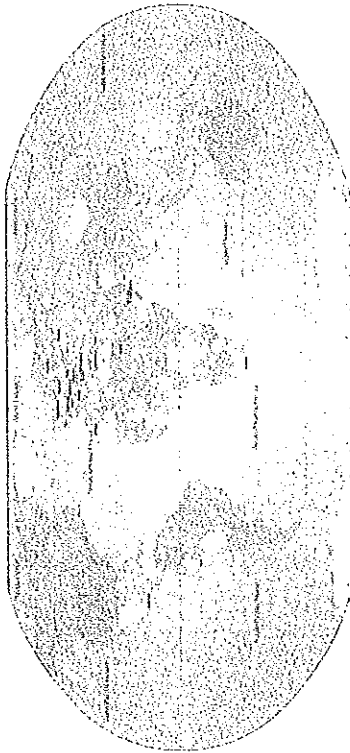
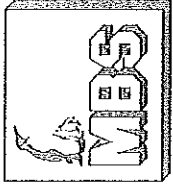
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MBS AG

MBS - Distribution Channels

Product Program



- 28.000 products are being exported
- Supplying to over 60 countries
- Over 6000 satisfied customers
- Low-voltage current transformers for industrial and tariff applications
- Accessories for low-voltage current transformers
- Custom made current transformers
- Bus bar isolators / supports
- Additional products
- Voltage transformers up to 1 kV
- Compensation current transformers for DC and AC
- Measuring transducer for all electrical variables
- Energy meters for industrial or tariff application (MID)
- Analog and digital panel meter
- Shunts
- Panel board heaters, filter- / roof fans and control units
- EURO Safety Appliance Testers
- Medium-voltage transformers up to 24 kV for industrial and tariff applications

MBS AG



РЕПУБЛИКА
БЪЛГАРИЯ

БЪЛГАРСКИ ИНСТИТУТ ПО МЕТРОЛОГИЯ

BULGARIAN INSTITUTE OF
METROLOGY

УДОСТОВЕРЕНИЕ
ЗА ОДОБРЕН ТИП СРЕДСТВО ЗА ИЗМЕРВАНЕ
Measuring Instrument Type-approval Certificate

№ 07.03.4721

Издадено на:
Issued to:

MBS Sulzbach Messwandler GmbH,
Германия

На основание на:
In Accordance with:

чл. 32, ал. 1 от Закона за измерванията (ДВ, бр. 46 от 2002 г.,
изм. бр. 88 от 2005 г., изм. и доп. бр. 95 от 2005 г.)

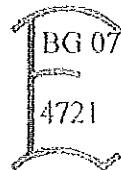
Относно:
In Respect of:

токов измервателен трансформатор,
тип EASK xxx.x (EASK xxx.x 2U)

Производител:
Manufacturer:

MBS Sulzbach Messwandler GmbH, Германия

Знак за одобрен тип:
Type Approval Mark:



Технически и метрологични
характеристики:
*Technical and metrological
characteristics:*

приложение, неразделна част от настоящото удостоверение
за одобрен тип средство за измерване

Срок на валидност:
Valid until:

22.03.2017 г.

Видева се в регистъра на
одобрените за използване
типове средства за
измерване под №:
Reference №:

4721

Дата на издаване на
удостоверението за одобрен
тип:
Date:

12.04.2007 г.

И. Д. ПРЕДСЕДАТЕЛ:



страница 1 от 3

Приложение към удостоверение за одобрен тип № 07.03.4721

Издадено на: MBS Sulzbach Messwandler GmbH, Германия

Относно: токов измервателен трансформатор, тип EASK xxx.x (EASK xxx.x 2U)

1. Описание на типа:

Токовете измервателни трансформатори за ниско напрежение тип EASK xxx.x (EASK xxx.x 2U) са предназначени за търговско измерване.

Трансформаторите са проходни с тороидален магнитопровод, без първична намотка. За първична намотка служи преминаващия през отвора на трансформатора кабел или шина. Корпусът на токовите трансформатори е изработен от пластмаса (поликарбонат) с високи механични, термични и електрически показатели, устойчива на възпламеняване. Клемите на вторичната намотка са никелирани и с пластмасови капачки е възможност за пломбиране. Токовите трансформатори могат да се монтират на тоководещите шини или на панел.

2. Технически и метрологични характеристики:

Наименование на Типа	EASK xxx.x (EASK xxx.x 2U)
Максимално работно напрежение	720 V
Първичен ток	от 50 A до 3 000 A
Вторичен ток	1 A или 5 A
Честота	50 Hz
Клас на точност	0,2; 0,2S (31,5); 0,5; 0,5S
Номинален термичен ток	$I_{th} = 60 I_n$
Номинален динамичен ток	$I_{din} = 2,5 I_{th}$
Коефициент на безопасност	FS 5 / FS 10

Приложение към удостоверение за одобрен тип № 07.03.4721

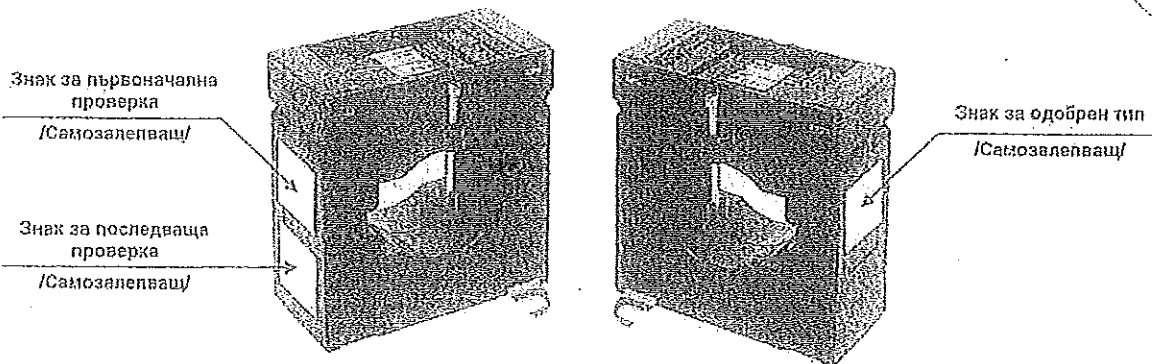
3. Означение на типа: EASK xxx.x (EASK xxx.x 2U)

Параметрите като клас на точност, първичен (вторичен) ток, предписано напрежение и други са посочени на табелката на трансформатора.

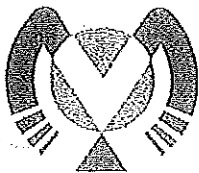
EASK	x	x	x.	x
			Дълбочина на шината, mm	
			Дебелина на шината, mm	
		Ширина на шината, mm		
Габаритен индекс				

2U – двуобхватен трансформатор

4. Схеми на местата за поставяне на знаците, удостоверяващи резултатите от контрола и места за пломбиране:



страница 3 от 3



БЪЛГАРСКИ ИНСТИТУТ ПО
МЕТРОЛОГИЯ

Главна дирекция МЕРКИ И ИЗМЕРВАТЕЛНИ УРЕДИ

ИУ 128/16 04. 07г.

ДО
MBS Sulzbach Messwandler GmbH,
Sulzbach – Laufen,
Eisbach strabe 51
Германия

ОТНОСНО: Одобряване на тип EASK xxx.x (EASK xxx.x 2U) на токов измервателен трансформатор

Уведомяваме Ви, че в регистъра на одобрените за използване типове средства за измерване под № 4721 е вписан **токов измервателен трансформатор тип EASK xxx.x (EASK xxx.x 2U)**, с метрологични характеристики съгласно Удостоверение № 07.03.4721.

Фирма – производител: MBS Sulzbach Messwandler GmbH, Германия

Срокът на валидност на одобряване на типа е: **22.03.2017 г.**

Измервателните трансформатори, монтирани към електромери – трифазни, използвани по предназначение за отчитане на електроенергия подлежат на задължителна първоначална и последващи проверки при мощности: до 10 MVA /включително/ - на 4 години; от 10 MVA до 60 MVA /включително/ - на 2 години; над 60 MVA - на 1 година.

Производителят на средството за измерване от одобрен тип се задължава да постави знак за одобрен тип в съответствие с чл. 35 от Закона за измерванията (ДВ, бр. 46 от 2002 г.).

ЗА ГЛ. ДИРЕКТОР:

[Своеручен подпис]
/инж./**Ю. Костадинов**/

[Своеручен подпис]
1040 София,
бул. "д-р. Б. М. Димитров" № 52Б
E-mail: metrolog1@abv.bg

[Своеручен подпис]
Телефон/Факс: 873 52 98



РЕПУБЛИКА
БЪЛГАРИЯ

БЪЛГАРСКИ ИНСТИТУТ ПО МЕТРОЛОГИЯ

BULGARIAN INSTITUTE OF
METROLOGY

ДОПЪЛНЕНИЕ № 07.08.4721.1

КЪМ УДОСТОВЕРЕНИЕ
ЗА ОДОБРЕН ТИП СРЕДСТВО ЗА ИЗМЕРВАНЕ № 07.03.4721
Measuring Instrument Type-approval Certificate-Revision 1

Издадено на производител: MBS Sulzbach Messwandler GmbH,
Issued to Manufacturer: Германия

На основание на: чл. 32, ал. 1 от Закона за измервателната (ДВ, бр. 46 от 2002 г.,
In Accordance with: изм. бр. 88 от 2005 г., изм. и доп. бр. 95 от 2005 г.)

Относно: токов измервателен трансформатор,
In Respect of: тип EASK xxx.x (EASK xxx.x 2U)

Технически и метрологични характеристики: приложение, неразделна част от настоящото удостоверение
Technical and metrological characteristics: за одобрен тип средство за измерване.

Срок на валидност: 22.03.2017 г.
Valid until:

Средството за измерване е вписано в регистъра на одобрените за използване типове средства за измерване под №: 4721
Reference №:

Дата на издаване на допълнението към удостоверението за одобрен тип: 29.08.2007 г.
Date:

ПРЕДСЕДАТЕЛ:
К. Катеринов

Приложение към Допълнение № 07.08.4721.1 към удостоверение № 07.03.4721

Издадено на производител: MBS Sulzbach Messwandler GmbH, Германия

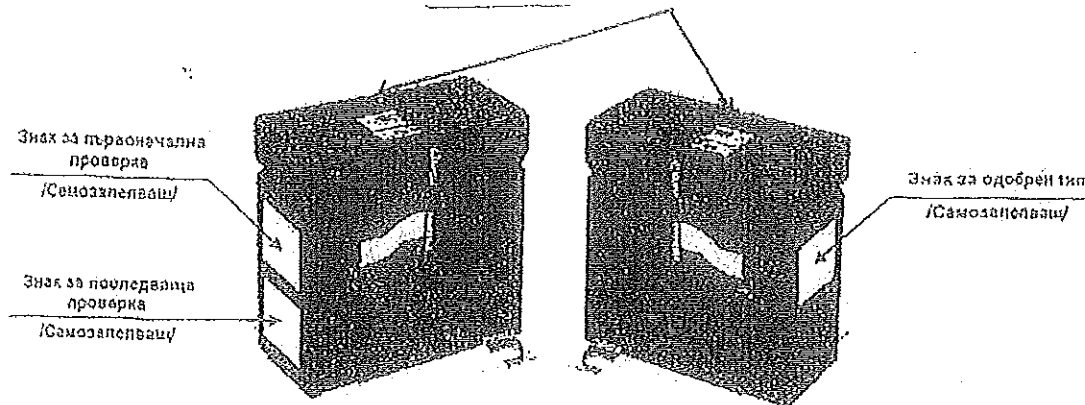
Относно: токов измервателен трансформатор, тип EASK xxx.x (EASK xxx.x 2U)

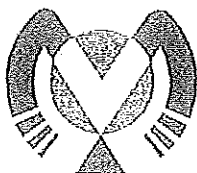
Описание на изменението:

Точка 4. "Схеми на местата за поставяне на знаците, удостоверяващи резултатите от контрола и места за plombиране". приема вида:

MBS
EASK 31.5
A 300-
5
VA 5
KI. 0,5s FS 5
Nr. 07/ 55340

Знак за одобрен тип,
вграден в табелката за данни





БЪЛГАРСКИ ИНСТИТУТ ПО
МЕТРОЛОГИЯ

Главна дирекция МЕРКИ И ИЗМЕРВАТЕЛНИ УРЕДИ

АУ. 588 / 24.09.07г.

ДО
MBS Sulzbach Messwandler GmbH,
Германия

ОТНОСНО: издаване на допълнение № 07.08.4721.1 към удостоверение № 07.03.4721 за одобрен тип на токов измервателен трансформатор, тип EASK xxx.x (EASK xxx.x 2U)

Уведомяваме Ви, че е издадено допълнение № 07.08.4721.1 към удостоверение № 07.03.4721 за одобрен и вписан под № 4721 в регистъра на одобрените за използване типове средства за измерване - **токов измервателен трансформатор, тип EASK xxx.x (EASK xxx.x 2U)**, с метрологични характеристики съгласно горепосоченото допълнение.

Фирма – производител: MBS Sulzbach Messwandler GmbH, Германия

Срокът на валидност на одобряване на типа е: **16.03.2017 г.**

Измервателните трансформатори, монтирани към електромери – трифазни, използвани по предназначение за отчитане на електроенергия подлежат на задължителна първоначална и последващи проверки при мощности: до 10 MVA /включително/ - на 4 години; от 10 MVA до 60 MVA /включително/ - на 2 години; над 60 MVA - на 1 година.

Производителят/вносителят на средството за измерване от одобрен тип се задължава да постави знак за одобрен тип в съответствие с чл. 35 от Закона за измерванията (ДВ, бр. 46 от 2002 г., изм. бр. 88 от 2005 г., изм. и доп. бр. 95 от 2005 г).

ГЛ. ДИРЕКТОР:

/инж. И. Мачулеков/



1040 София,
бул. "д-р Г. М. Димитров" № 52Б
E-mail: metrolog1@abv.bg

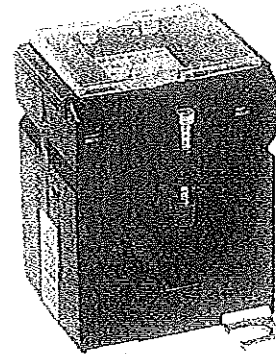
Телефон/Факс: 873 52 98



Product range >> Current transformers for tariffs

art. nr.: 9578

EASK 31.5 150/5A 5VA Cl.0.5s



Electrical Attributes:

Primary current:	150 A
Secondary current:	5 A
Burden:	5 VA
Class:	0,5s

Dimensions:

Bus bar 1:	30 x 10 mm
Bus bar 2:	2 x 20 x 10 mm
Round conductor:	28 mm
Width:	61 mm
Height:	78,5 mm
Depth:	68 mm

{Konformitätserklärung im Downloadbereich

g):
Weight: 0,510 kg

Technical details:

Therm. nominal continuous current I_{cth} :	$1,2 \times I_N$
Therm. nominal short-time current I_{th} :	$60 \times I_N, 1 \text{ sec.}$
Max. operating voltage U_m :	0.72 kV
Isolation test voltage:	3 kV, U_{eff} , 50 Hz, 1 min.
Nominal rated frequency:	50 Hz
Isolation class:	E

Further information:

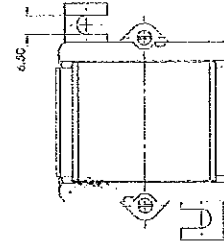
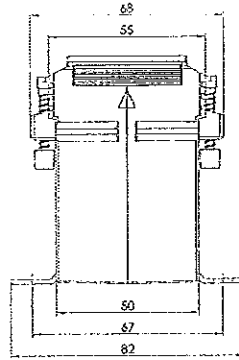
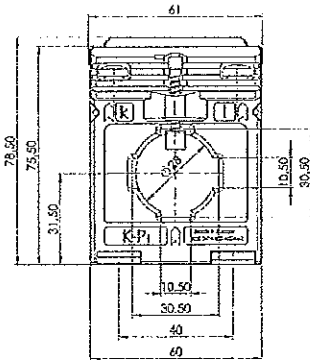
Over-current limiting factor:	See rating plate
Working temperature range:	-5°C < T < +40°C
Storage temperature range:	-25°C < T < +40°C
Unbreakable plastic housing made of black polycarbonate:	Flame resistant, ultrasonically welded
Nickel-plated secondary terminals with plus-minus nickel-plated screws:	M5x10mm
Secondary caps:	integrated
Package quantity:	1 pcs.
Custom tariff number:	85043129



MBS AG 'Sulzbach Messwandler'



Dimensions:



Contact:

MBS AG
Sulzbach Messwandler
Eisbachstraße 51
D-74429 Sulzbach-Laufen

Tel.: +49 7976 9851-0
Fax: +49 7976 9851-90
orders@mbs-ag.com



TÜV Süd
Bericht-Nr. 70003062



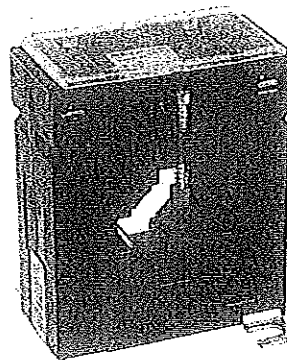
MBS AG 'Sulzbach Messwandler'



Product range >> Current transformers for tariffs

art. nr.: 13576

EASK 41.4 200/5A 5VA Cl.0.5s



Electrical Attributes:

Primary current: 200 A
 Secondary current: 5 A
 Burden: 5 VA
 Class: 0,5s

Dimensions:

Bus bar 1: 40 x 10 mm
 Bus bar 2: 2 x 30 x 5 mm
 Round conductor: 32 mm
 Width: 71 mm
 Height: 88,5 mm
 Depth: 58 mm

Technical details:

Therm. nominal continuous current I_{cth} : $1,2 \times I_N$
 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.
 Nominal rated frequency: 50 Hz
 Isolation class: E

{ Konformitätserklärung im Downloadbereich

g):
Weight: 0,500 kg

Further information:

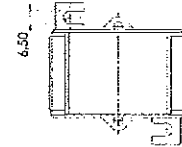
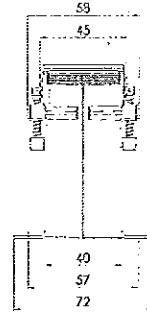
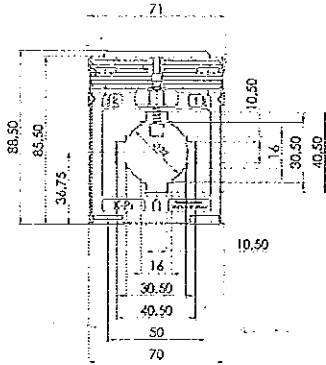
Over-current limiting factor:	See rating plate
Working temperature range:	-5°C < T < +40°C
Storage temperature range:	-25°C < T < +40°C
Unbreakable plastic housing made of black polycarbonate:	Flame resistant, ultrasonically welded
Nickel-plated secondary terminals with plus-minus nickel-plated screws:	M5x10mm
Secondary caps:	integrated
Package quantity:	1 pcs.
Custom tariff number:	85043129



MBS AG 'Sulzbach Messwandler'



Dimensions:



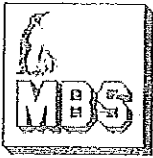
Contact:

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Tel.: +49 7976 9851-0
Fax: +49 7976 9851-90
orders@mbs-ag.com



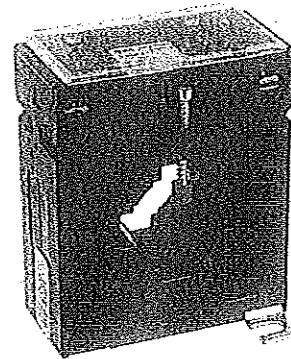
TÜV Süd
Bericht-Nr. 70003062



Product range >> Current transformers for tariffs

art. nr.: 13581

EASK 41.4 300/5A 5VA Cl.0.5s



Electrical Attributes:

Primary current:	300 A
Secondary current:	5 A
Burden:	5 VA
Class:	0,5s

Dimensions:

Bus bar 1:	40 x 10 mm
Bus bar 2:	2 x 30 x 5 mm
Round conductor:	32 mm
Width:	71 mm
Height:	88,5 mm
Depth:	58 mm

Technical details:

Therm. nominal continuous current $I_{cth}: 1,2 \times I_N$
 Therm. nominal short-time current $I_{th}: 60 \times I_N, 1 \text{ sec.}$
 Max. operating voltage $U_m: 0,72 \text{ kV}$
 Isolation test voltage: 3 kV, $U_{eff}, 50 \text{ Hz}, 1 \text{ min.}$
 Nominal rated frequency: 50 Hz
 Isolation class: E

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Weight: 0,410kg

Further information:

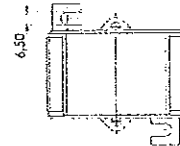
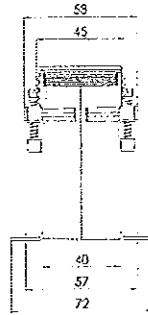
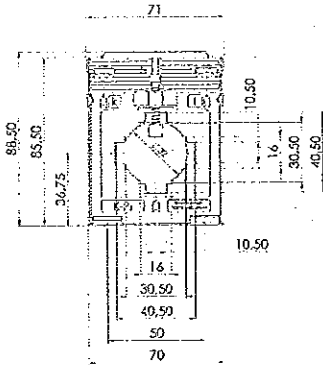
Over-current limiting factor:	See rating plate
Working temperature range:	-5°C < T < +40°C
Storage temperature range:	-25°C < T < +40°C
Unbreakable plastic housing made of black polycarbonate:	Flame resistant, ultrasonically welded
Nickel-plated secondary terminals with plus-minus nickel-plated screws:	M5x10mm
Secondary caps:	integrated
Package quantity:	1 pcs.
Custom tariff number:	85043129



MBS AG 'Sulzbach Messwandler'



Dimensions:



Contact:

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TÜV Süd
Bericht-Nr. 70003062





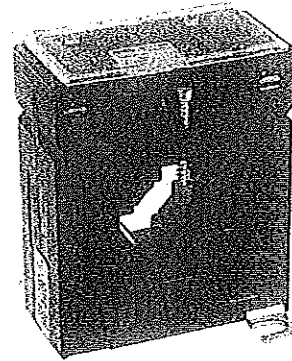
MBS AG 'Sulzbach Messwandler'



Product range >> Current transformers for tariffs

art. nr.: 13584

EASK 41.4 400/5A 5VA Cl.0.5s



Electrical Attributes:

Primary current: 400 A
 Secondary current: 5 A
 Burden: 5 VA
 Class: 0,5s

Dimensions:

Bus bar 1: 40 x 10 mm
 Bus bar 2: 2 x 30 x 5 mm
 Round conductor: 32 mm
 Width: 71 mm
 Height: 88,5 mm
 Depth: 58 mm

Technical details:

Therm. nominal continuous current I_{cth} : $1,2 \times I_N$
 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.
 Nominal rated frequency: 50 Hz
 Isolation class: E

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Weight: 0,460kg

Further information:

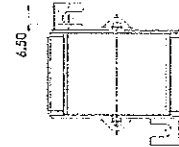
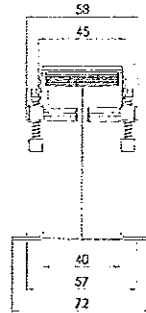
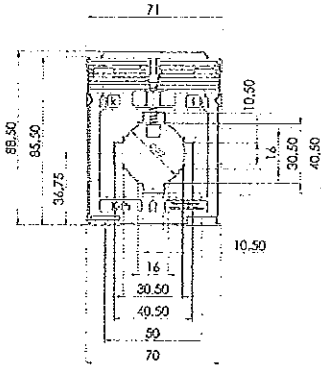
Over-current limiting factor: See rating plate
 Working temperature range: $-5^{\circ}\text{C} < T < +40^{\circ}\text{C}$
 Storage temperature range: $-25^{\circ}\text{C} < T < +40^{\circ}\text{C}$
 Unbreakable plastic housing made of black polycarbonate: Flame resistant, ultrasonically welded
 Nickel-plated secondary terminals with plus-minus nickel-plated screws: M5x10mm
 Secondary caps: integrated
 Package quantity: 1 pcs.
 Custom tariff number: 85043129



MBS AG 'Sulzbach Messwandler'



Dimensions:



Contact:

MBS AG
Sulzbach Messwandler
Eisbachstraße 51
D-74429 Sulzbach-Laufen

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Fax: +49 7976 9851-90
orders@mbs-ag.com



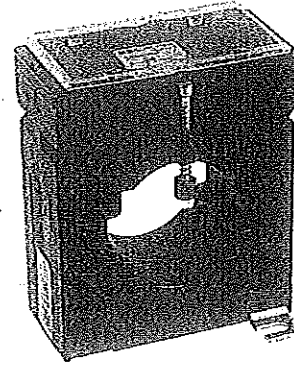
TÜV Süd
Bericht-Nr. 70003062



Product range >> Current transformers for tariffs

art. nr.: 16590

EASK 51.4 500/5A 5VA Cl.0.5s



Electrical Attributes:

Primary current:	500 A
Secondary current:	5 A
Burden:	5 VA
Class:	0,5s

Dimensions:

Bus bar 1:	50 x 12 mm
Bus bar 2:	2 x 40 x 10 mm
Round conductor:	44 mm
Width:	86 mm
Height:	101,5 mm
Depth:	58 mm

{Konformitätserklärung im Downloadbereich g):

Weight: 0,485 kg

Technical details:

Therm. nominal continuous current I_{cth} : $1,2 \times I_N$
 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.
 Nominal rated frequency: 50 Hz
 Isolation class: E

Further information:

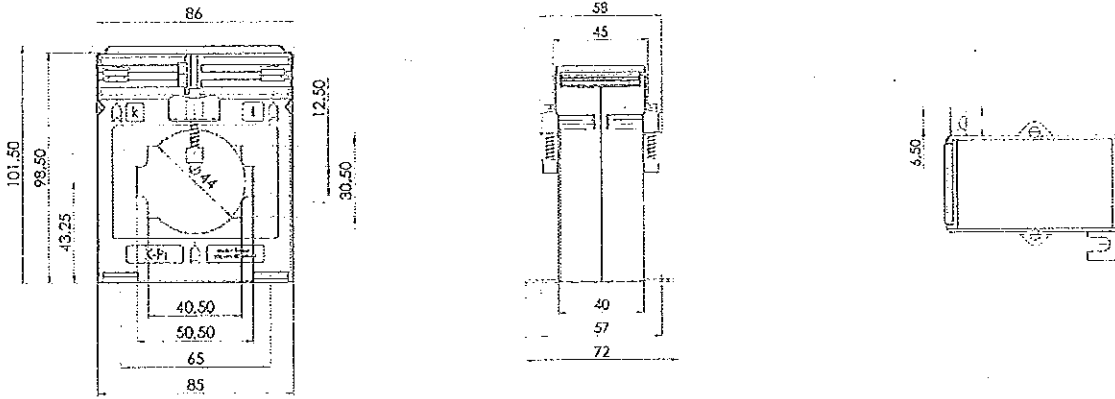
Over-current limiting factor:	See rating plate
Working temperature range:	-5°C < T < +40°C
Storage temperature range:	-25°C < T < +40°C
Unbreakable plastic housing made of black polycarbonate:	Flame resistant, ultrasonically welded
Nickel-plated secondary terminals with plus-minus nickel-plated screws:	M5x10mm
Secondary caps:	integrated
Package quantity:	1 pcs.
Custom tariff number:	85043129



MBS AG 'Sulzbach Messwandler'



Dimensions:



Contact:

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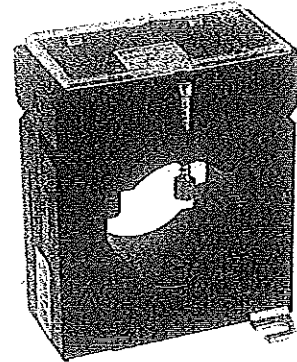
TÜV Süd
Bericht-Nr. 70003062



Product range >> Current transformers for tariffs

art. nr.: 16593

EASK 51.4 600/5A 5VA Cl.0.5s



Electrical Attributes:

Primary current: 600 A
 Secondary current: 5 A
 Burden: 5 VA
 Class: 0,5s

Dimensions:

Bus bar 1: 50 x 12 mm
 Bus bar 2: 2 x 40 x 10 mm
 Round conductor: 44 mm
 Width: 86 mm
 Height: 101,5 mm
 Depth: 58 mm

Technical details:

Therm. nominal continuous current I_{cth} : $1,2 \times I_N$
 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.
 Nominal rated frequency: 50 Hz
 Isolation class: E

{Konformitätserklärung im Downloadbereich
 g):

Weight: 0,460 kg

Further information:

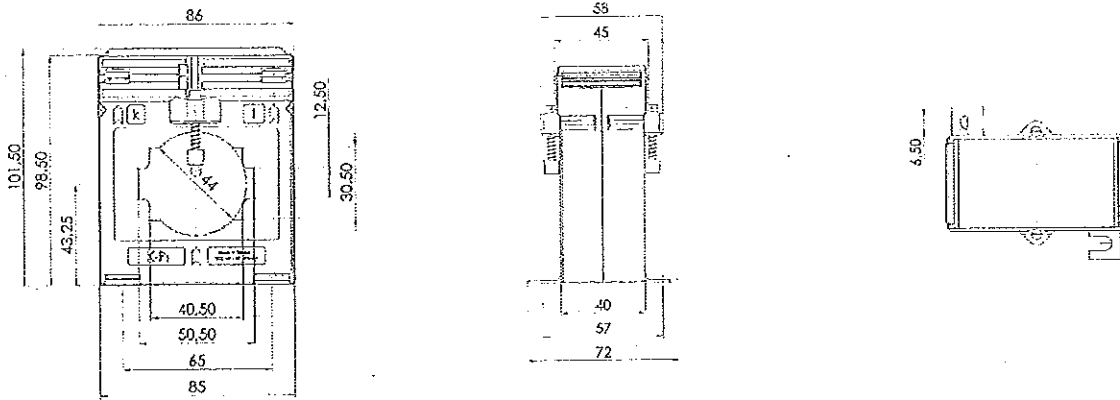
Over-current limiting factor: See rating plate
 Working temperature range: $-5^{\circ}\text{C} < T < +40^{\circ}\text{C}$
 Storage temperature range: $-25^{\circ}\text{C} < T < +40^{\circ}\text{C}$
 Unbreakable plastic housing made of black polycarbonate: Flame resistant, ultrasonically welded
 Nickel-plated secondary terminals with plus-minus M5x10mm
 nickel-plated screws:
 Secondary caps: integrated
 Package quantity: 1 pcs.
 Custom tariff number: 85043129



MBS AG 'Sulzbach Messwandler'



Dimensions:



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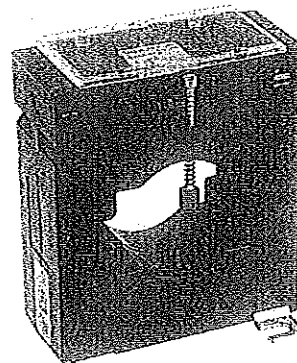
TÜV Süd
Bericht-Nr. 70003062



Product range >> Current transformers for tariffs

art. nr.: 19625

EASK 61.4 800/5A 5VA Cl.0.5s



Electrical Attributes:

Primary current:	800 A
Secondary current:	5 A
Burden:	5 VA
Class:	0,5s

Dimensions:

Bus bar 1:	60 x 10 mm
Bus bar 2:	2 x 50 x 10 mm
Round conductor:	44 mm
Width:	96 mm
Height:	108,5 mm
Depth:	58 mm

{Konformitätserklärung im Downloadbereich g):

Weight: 1kg

Technical details:

Therm. nominal continuous current I_{cth} : $1,2 \times I_N$
 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.
 Nominal rated frequency: 50 Hz
 Isolation class: E

Further information:

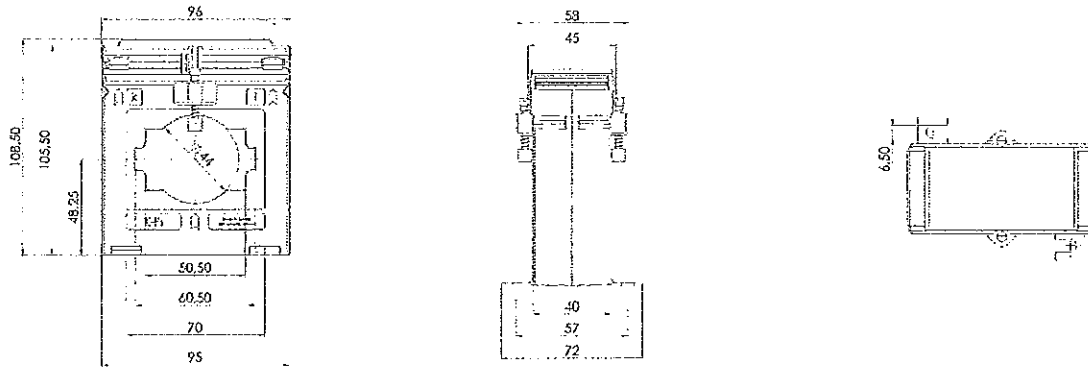
Over-current limiting factor:	See rating plate
Working temperature range:	-5°C < T < +40°C
Storage temperature range:	-25°C < T < +40°C
Unbreakable plastic housing made of black polycarbonate:	Flame resistant, ultrasonically welded
Nickel-plated secondary terminals with plus-minus nickel-plated screws:	M5x10mm
Secondary caps:	integrated
Package quantity:	1 pcs.
Custom tariff number:	85043129



MBS AG 'Sulzbach Messwandler'



Dimensions:



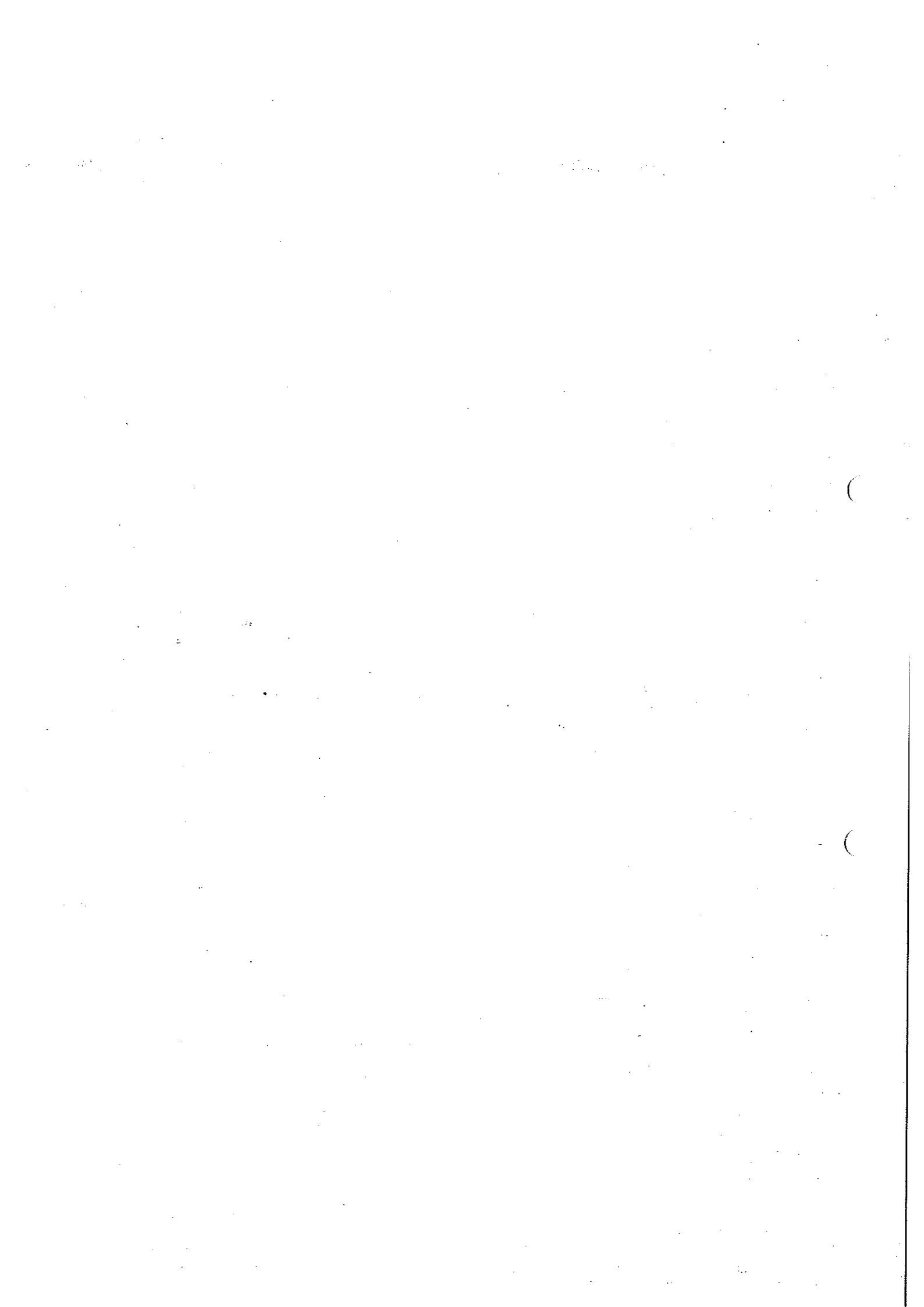
Contact:

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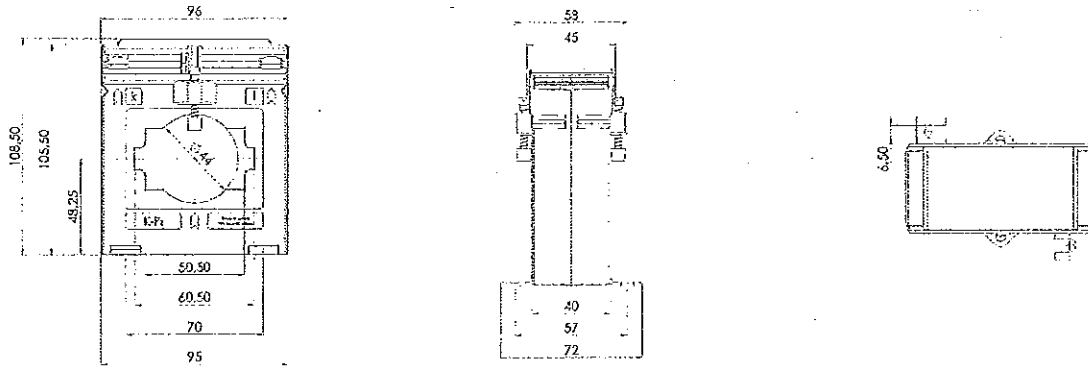


TÜV Süd
Bericht-Nr. 70003062





Dimensions:



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TÜV Süd
Bericht-Nr. 70003062



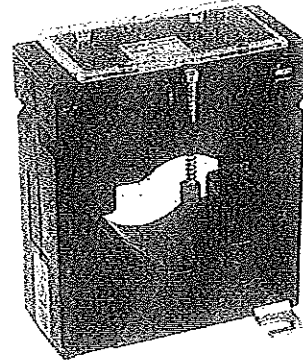
MBS AG 'Sulzbach Messwandler'



Product range >> Current transformers for tariffs

art. nr.: 19630

EASK 61.4 1200/5A 5VA Cl.0.5s



Electrical Attributes:

Primary current:	1200 A
Secondary current:	5 A
Burden:	5 VA
Class:	0,5s

Dimensions:

Bus bar 1:	60 x 10 mm
Bus bar 2:	2 x 50 x 10 mm
Round conductor:	44 mm
Width:	96 mm
Height:	108,5 mm
Depth:	58 mm

{Konformitätserklärung im Downloadbereich g):

Weight: 1 kg

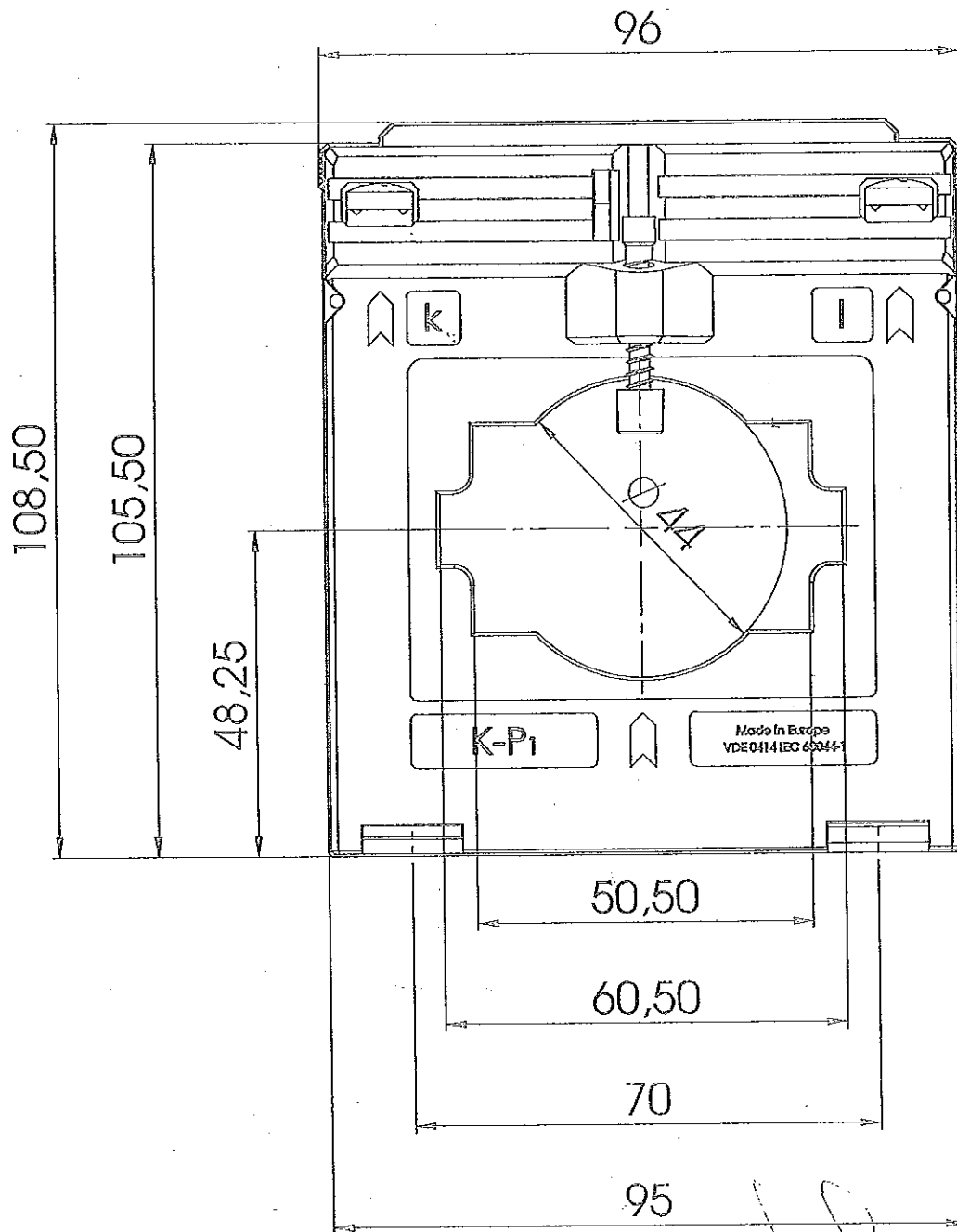
Technical details:

Therm. nominal continuous current I_{cth} : $1,2 \times I_N$
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.
Nominal rated frequency: 50 Hz
Isolation class: E

Further information:

Over-current limiting factor:	See rating plate
Working temperature range:	$-5^\circ\text{C} < T < +40^\circ\text{C}$
Storage temperature range:	$-25^\circ\text{C} < T < +40^\circ\text{C}$
Unbreakable plastic housing made of black polycarbonate:	Flame resistant, ultrasonically welded
Nickel-plated secondary terminals with plus-minus nickel-plated screws:	M5x10mm
Secondary caps:	integrated
Package quantity:	1 pcs.
Custom tariff number:	85043129

Размери EASK 6A, 4-800/5A, 1000/5A, 1200/5A

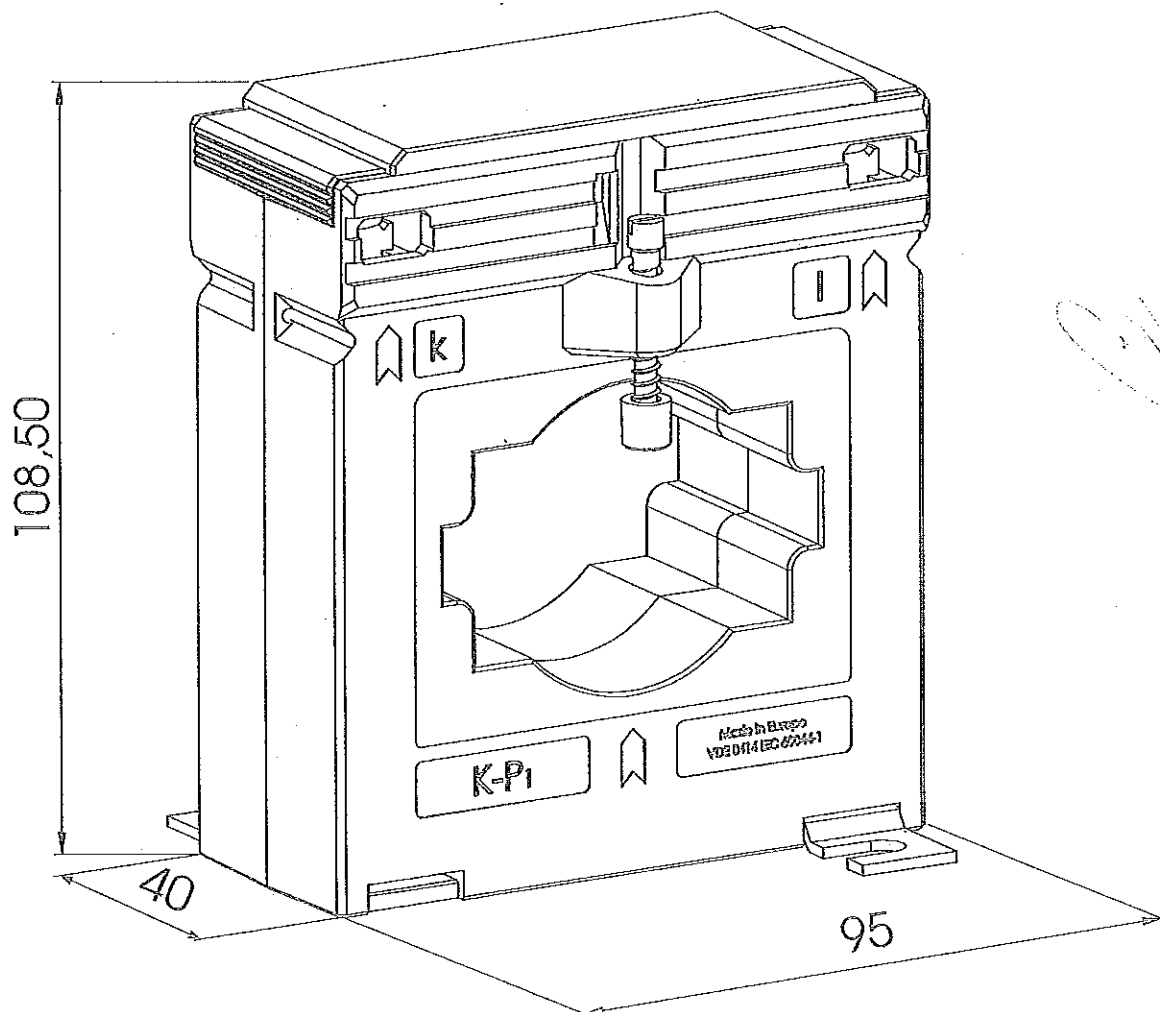


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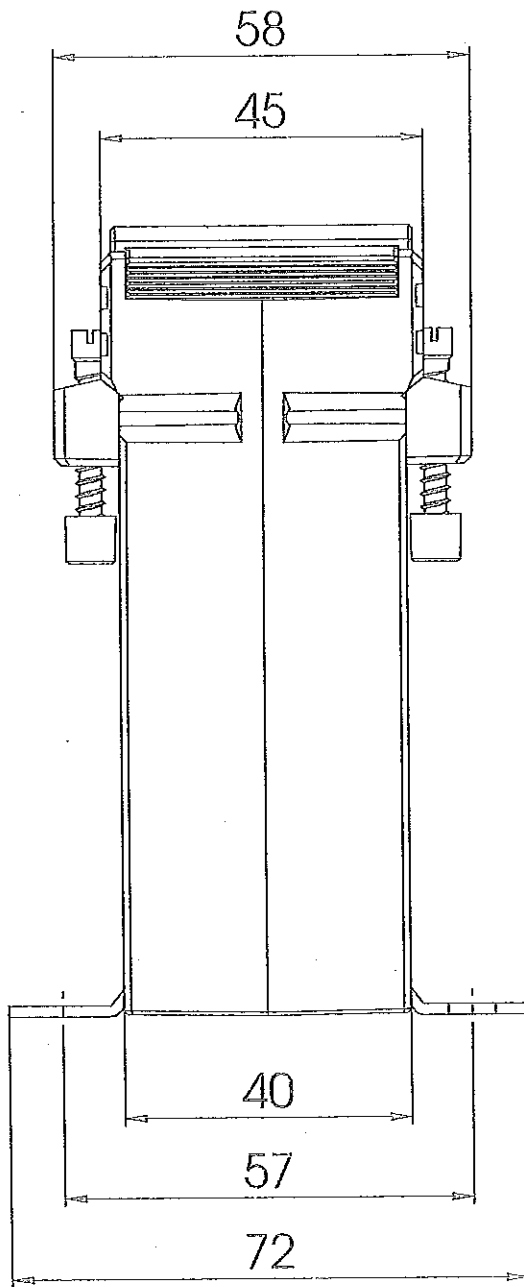
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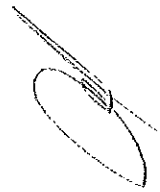
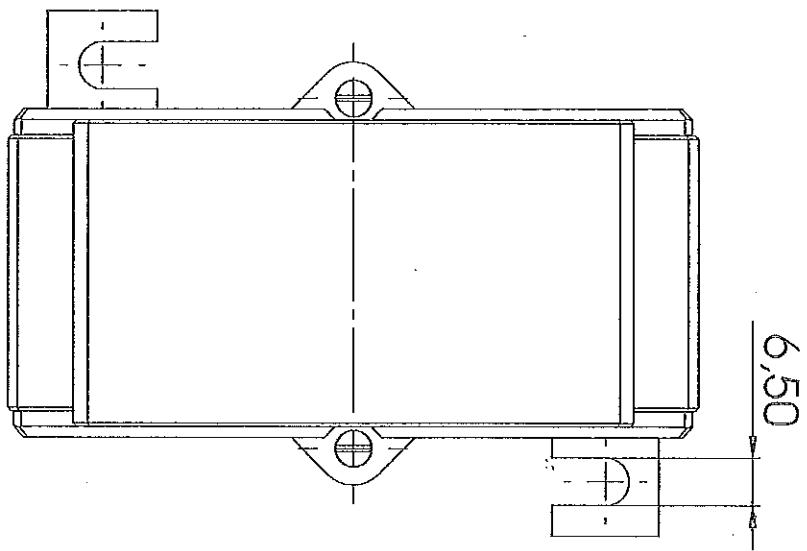


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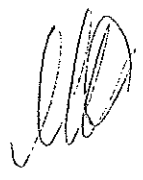
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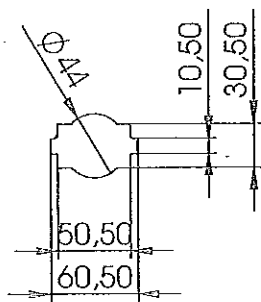
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PROJ. 100
Dwg. 100





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Type annotation of MBS current transformers

Our production comprises exclusively low voltage current transformers with a max. operating voltage up to 0.72 kV, acc. to DIN VDE 0414, part 1, DIN 42600 and DIN EN 60044/1, edition 12/2003 as well as the regulation VBG 4. For the DIN specification, the most recent information is at all times applicable.

Our delivery programme comprises:

Low voltage current transformers for industrial application

ASR	Tube current transformers , for primary nominal currents from 40 A up to 600 A, secondary nominal current 5A or 1 A, optional secondary change-over, available in classes 0.5 or 1, optional with CU-tube or snap-on mounting.
AS / ASK	Plug-in current transformer , for primary nominal currents from 30 A to 7,500 A, secondary nominal currents for 5 A or 1 A, optional dual or triple secondary change over, available in classes 0.2s, 0.5 and 1, without primary conductor, but with foot angle, isolator protection cap and bus bar mounting screws, alternatively with chrome-plated copper bus bar conforming to the bus bar window, inclusive of screws DIN 933 complete with nuts, U-discs and springs for the mounting onto bus bars or similar components.
ASG	Tube current transformer for primary nominal currents from 40 A up to 4,000 A, 5 A or 1 A, accuracy classes 0.2, 0.2s, 0.5, 0.5s and 1, with solid secondary connections, wire cross sections 2.5 / 4 / 6 mm ² , measuring system with PU-resin hardened. Tube current transformer for mounting into panel boards; nominal current ranges 50 A–1,250 A, available with up to 4 integrated measuring systems.
WSK	Wound current transformer for primary nominal currents from 1 A to 150 A, secondary nominal currents 5 A or 1 A, available in accuracy classes 0.5 and 1, with primary winding and primary connection terminals instead of a continuous bus bar.
KBU	Kabelumbau-Stromwandler , für Primär-Nennströme 100 A bis 5000 A, Sekundär-Nennstrom 5 A oder 1 A, in den Klassen 0,5 und 1, mit teilbarem Messsystem, ermöglichen die einfache, nachträgliche Installation in bereits vorhandene Anlagen, ohne zusätzlichen Montageaufwand. Zur Installation wird der Verriegelungsmechanismus des Wandlers geöffnet, dieser um den Primärleiter gelegt und wieder hörbar verrastet. Nach Anschluss der Sekundärleitungen ist die Messanordnung sofort betriebsbereit
KBR	Split-core current transformer for primary nominal currents from 50 A up to 600 A, secondary nominal current 1 A, optional with AC voltage output 0,333 V, in classes 3 and 1. For easy wiring all transformers are arranged with flexible fixed secondary connections 0.75 mm ² , 2.5 m.
KSU / SUSK	Summation current transformers for primary nominal currents 5 A up to 1A secondary nominal currents 5 A or 1 A, in classes 0.5 and 1. The numerals following the letter indicate the quantity of how many primary circuits can be connected. Up to 8 connections are possible.
NH	Current transformer for fuse rails for primary nominal currents 5 A to 1 A, optional secondary change over, class 3, secondary connections in access of 4 mm jacks for direct mounting onto the contact rail of low voltage high performance fuses, integrated in the NH-fuse set, available in sizes NH 1, NH 2 and NH 3.
SASR / SASK	Protection current transformers for primary currents 50 A up to 2,000 A, secondary nominal currents 5 A or 1 A, in protection classes 5P5, 10P5, 5P10 and 10P10.
ASRD / ASK(D) / WSKD / ASKD	Three-phase current transformer set , for primary nominal currents from 3 x 50 A up to 3 x 750 A, secondary nominal currents 5 A or 1 A, classes 0.5 and 1, optional in dual secondary change over.



CTB

Plug-in current transformer, UL/CSA-listed, screwless connection of the secondary connections with "cage clamps" for primary nominal currents from 50 A up to 2,500 A, secondary nominal currents 5 A or 1 A, accuracy classes 0.5 and 1, mounting accessories inclusive.

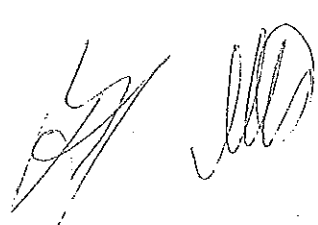
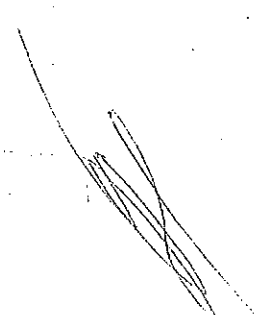
Custom-made units correspond in their construction form to the above mentioned technical norms.

Optimal solution for the application of tube and plug-in current transformers for low nominal currents.

Bushing type current transformer

With low measuring currents up to approximately 50 A it is possible to use a single-phase plug-in current transformer instead of the normally used wound current transformer. The prerequisite of course is, that the primary nominal current of the current transformer corresponds to an integral multiple of the measuring currents. The primary winding will in this case be threaded once or repeatedly through the primary conductor opening.

Primary transformer-nominal current A	Zahl der Durchführungen	Primary transformer-nominal current to be measured A
50	1	50
	2	25
	5	10
	10	5
100	1	100
	2	50
	4	25
	5	20
	10	10
	20	5
150	1	150
	2	75
	3	50
	5	30
	6	25
	10	15
	15	10



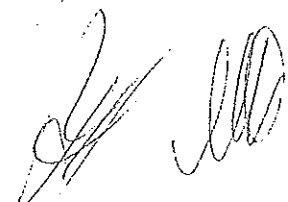
Low voltage current transformers for tariff application

- EASR** Tube current transformer for primary nominal currents from 100 A up to 600 A, secondary nominal current 5 A or 1 A, classes 0.2, 0.5, 0.5s, with type approval by PTB Braunschweig for tariff application.
- EAS / EASK** Plug-in current transformer for primary nominal currents from 50 A to 3,000 A, secondary nominal current 5 or 1 A, in classes 0.2, 0.5s and 0.5 with type approval for tariff application.
- EWSK** Wound current transformer for primary nominal currents from 25 A up to 150 A, secondary nominal currents 5 A or 1 A, classes 0.2, 0.2s and 0.5, with type approval for tariff applications, with primary winding and primary connection terminals instead of primary conductor opening.
- ESUSK** Summation current transformers for primary nominal currents 5 A, secondary nominal currents 5 A, in class 0.2 with type approval for tariff applications. The numerals following the letter indicate the quantity of how many primary circuits can be connected. Up to 8 connections are possible.
- EASK(D) / EWSKD / EASKD** Three-phase current transformer set, for primary nominal currents from 3 x 50 A up to 3 x 750 A, secondary nominal currents 5 A or 1 A, classes 0.2, 0.5s and 0.5, optional for dual secondary change over function with type approval for tariff applications, for space-saving installation in energy distribution. Current transformer set, mounted with primary connecting bus bars and integrated protection cover.

Foot note:

All current transformers for tariff applications have been tested at the Physikalisch-Technische Bundesanstalt Braunschweig PTB (national institute of natural and engineering science). The classification of the current transformers is visual on our name plate.

To differentiate between our current transformers we have arranged for the letter "E" to be set in front of all other references.





MBS Current Transformers Summarized

Page	Tube current transformer										Plug-in current transformer								Page					
	36	37	33	39	40	41	43	48	47	49	52	53	54	55	56	58	60							
	ASR 14.3 (1)	ASR 20.3 (1)	ASR 201.3 (1)	ASR 21.3 (1)	ASR 21.5	ASR 22.3 (1)	ASR 42.45	ASG 210.3	ASG 106	ASG 123	AS 176.3 (1)	ASK 176.3 (1)	ASK 205.3 (1)	ASK 21.3 (1)	ASK 231.5	ASK 31.3 (1)	ASK 318.2 (1)							
	Accuracy classes for secondary 5 A and secondary 1 A with information of the maximal burden in VA.																							
Primary nominal current											New								Primary nominal current					
A	1	0.5	1	0.5	1	1	0.5	1	0.5	1	1	1	1	1	1	0.5	1	0.5	1	0.5	1	0.5	1	A
1											Measuring system TU-reinforced								1					
2.5																								2.5
5																								5
10																								10
15																								15
20																								20
25																								25
30																								30
40																								40
50																								50
60	1						1.5	2.5		1.5														60
75	1.5						1.5	3.75		2.5														75
80	1.5	1.5					1.5	5		2.5														80
100	2.5	1.5	2.5				1	2.5	5	2.5	3.75													100
125	2.5	1.5	2.5	1.5	2.5		1	2.5	5	2.5	3.75													125
150	2.5	1.5	3.75	1.5	3.75		1.5	2.5	7.5	2.5	5													150
200	2.5	2.5	2.5	3.75			2.5	10	10	5	5													200
250	2.5	5	2.5	5			3.75	10	10	5	10													250
300	2.5	5	2.5	5			3.75	10	10	10	10													300
400							5	10	10	10	10													400
500							5	10	10	10	10													500
600							10	10	10	10	10													600
750							15	15	15	15	15													750
800							10																	800
1000																								1000
1200																								1200
1250																								1250
1500																								1500
1600																								1600
1800																								1800
2000																								2000
2500																								2500
3000																								3000
3200																								3200
4000																								4000
5000																								5000
6000																								6000
7500																								7500
Primary conductor in mm											2x120x10	17x6	17x6	20x5	20x10	30x10	30x10	31x18	Primary conductor in mm					
Round conductor in mm											120.5x31					2x20x10			Round conductor in mm					
Transformer width in mm	45	45	44	49.5	50	61	71	44	190	190	45	45	49.5	61	50	61	61	Transformer width in mm						

(*) For the above mentioned current transformers snap-on mountings are available for fitment onto 35 mm DIN rails (DIN 50 022)

Accessories:

Foot and bus bar mounting with isolating caps (shock proof) are included in the supplies. Sealed shutters, copper tubes, snap-on mounting and CU-bus bar are available upon request. The transformers are being supplied with integrated secondary locking caps (exceptions: ASR 201.3, ASK 31.6, ASK 41.6, ASK 51.6, ASK 61.6, WSK 31.5)

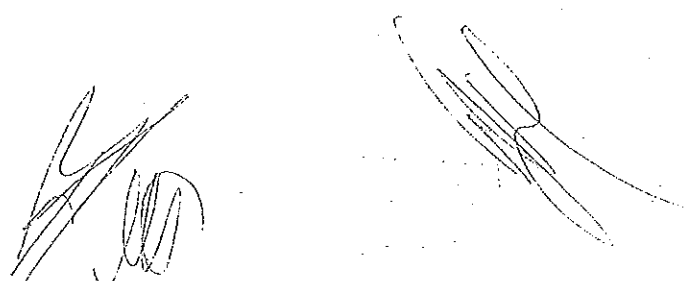


MBS Current Transformers Summarized

Plug-in current transformer

Page	61	63	65	68	69	70	72	73	75	78	79	81	82	Page		
Primary nominal current	ASK 31.4 (I)	ASK 31.5 (I)	ASK 31.6	ASK 41.3 (I)	ASK 421.4	ASK 41.4 (I)	ASK 41.5 (I)	ASK 412.4	ASK 41.6	ASK 541.4	ASK 51.4	ASK 51.6	ASK 561.4	Primary nominal current		
	Accuracy classes for secondary 5 A and secondary 1 A with information of the maximal burden in VA.															
A	0.5	1	0.5	1	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	A
1																1
2.5																2.5
5																5
10																10
15																15
20																20
25																25
30																30
40																40
50						1.5	1.5		1.5	1.5	1.5					50
60					1.5	2.5			1.5	1.5	2.5					60
75	1.5	2.5	2.5	2.5	2.5	2.5	3.75	1.5	2.5	2.5	3.75	1.5	1.5			75
100	2.5	2.5	2.5	5	5	2.5	3.75	1.5	2.5	2.5	3.75	2.5	2.5			100
125						5	5					2.5	6			125
150	2.5	5	5	7.5	5	15						2.5	6			150
200	5	7.5	5	10	15	30						5	10	2.5	5	200
250	5	10	10	15	15	30	2.5	10	15	5	10	15	15	10	15	250
300	10	10	15	15	15	30	5	10	15	10	15	15	15	10	15	300
400	10	10	15	15	15	30	5	15	15	10	15	15	15	10	15	400
500	10	10	15	15	20	30	5	15	15	15	15	15	15	10	15	500
600	15	15	15	15	20	30	5									600
750	15	15	15	15	30	30	10	10	15	15	15	15	15	10	15	750
800																800
1000																1000
1200																1200
1250																1250
1500																1500
1600																1600
1800																1800
2000																2000
2500																2500
3000																3000
3200																3200
4000																4000
5000																5000
6000																6000
7500																7500
Primary conductor in mm	30 x 10	30 x 10	30 x 10	40 x 12	20 x 10	40 x 10	40 x 10	40 x 12	40 x 12	40 x 10	50 x 12	50 x 12	60 x 10	Primary conductor in mm		
Flange conductor in mm	2 x 20 x 10	2 x 20 x 10	20 x 13	32 x 18		2 x 30 x 6	2 x 30 x 5	20 x 15	30 x 15	2 x 30 x 5	2 x 40 x 10	40 x 30	2 x 50 x 10	Flange conductor in mm		
Transformer width in mm	61	61	65	61	71	71	71	71	95	66	66	95	89	Transformer width in mm		

Plug-in current transformer which can be delivered upon request in accuracy class 0.2s
ASR 22.3, ASK 21.3, ASK 31.3, ASK 31.4, ASK 41.4, ASK 541.4, ASK 51.4, ASK 61.4, ASK 81.4, ASK 105.6, ASK 123.3, ASK 130.3, ASK 130.5





MBS Current Transformers Summarized

Plug-in current transformer

Page	88	90	92	93	94	96	100	102	103	104	105	106	107	108	110	111	112	113	114	118	Page
	ASK 61.4	ASK 61.6	ASK 63.4	ASK 63.6	ASK 81.4	ASK 83.4	ASK 101.4	ASK 103.3	ASK 103.41	ASK 105.6	ASK 105.61	ASK 123.3	ASK 127.4	ASK 127.6	ASK 128.4	ASK 129.10	ASK 130.3	ASK 120.5	ASK 165.5	ASK 205.5	
	Accuracy classes for secondary 5 A and secondary 1 A with information of the maximal burden in VA.																				
Primary rated current																			New	New	
A	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	A
1																					1
2.5																					2.5
5																					5
10																					10
15																					15
20																					20
25																					25
30																					30
40																					40
50																					50
60																					60
75																					75
80																					80
100		15	15																		100
125																					125
150		25	25																		150
200	2.5	2.5	5	10			2.5														200
250	2.5	5	5	15			2.5	5													250
300	5	5	10	15	2.5	2.5	5	10													300
400	10	10	15	30	5	5	5	10	5	5											400
500	10	10	15	30	5	10	5	10	5	5	2.5	5									500
600	15	15	15	30	5	10	5	10	5	10	2.5	5									600
750	15	15	15	30	10	15	10	15	10	15	2.5	5	5	10							750
800	15	15	15	30	10	15	10	15	10	15	2.5	5	5	10							800
1000	15	15	15	30	15	15	15	15	10	15	5	10	10	10	5	10	15	15	15	15	1000
1200	30	30	30	45	15	15	15	15	15	15	15	15	15	15	10	15	10	15	15	15	1200
1250	30	30	30	45	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	1250
1500	30	30	30	45	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	1500
1600	30	30	30	45	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	1600
1800	30	30	30	45	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	1800
2000	30	30	30	45	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	2000
2500	30	30	30	45	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	2500
3000	30	30	30	45	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	3000
3200	30	30	30	45	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	3200
4000	30	30	30	45	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	4000
5000	30	30	30	45	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	5000
6000	30	30	30	45	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	6000
7500	30	30	30	45	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	7500
Primary con- ductor in mm	63x10	60x10	60x30	60x30	80x10 60x30	84x34	100x10	2x100x10	103x41	100x55	100x55	123x30	120x70	120x70	126x38	120x90	130x25	130x30	190x60	120x60	Primary con- ductor in mm
Board con- ductor in mm	41	40	44	30	55	34	70	85	40	55	55	100	70	70	33	90	25	30	60	60	Board con- ductor in mm
Trans- former width in mm	95	95	96	98	120	95	120	172	99	129	129	172	159	205	100	250	160	160	255	306	Trans- former width in mm

(* For the above mentioned current transformers snap-on mountings are available for fitment onto 35 mm DIN rails (DIN 50 022).

Accessories:

Foot and bus bar mounting with isolating caps (shock proof) are included in the supplies. Sealed shutters, copper tubes, snap-on mounting and CU-bus bar are available upon request. The transformers are being supplied with integrated secondary locking caps (exceptions: ASR 201.3, ASK 31.6, ASK 41.6, ASK 51.6, ASK 61.6, WSK 31.5)



MBS Current Transformers Summarized

Page	Wickel-Stromwandler										Kabelumbau-Stromwandler				Summen-Stromwandler		Page														
	125		126		127		128		129		130		134		135			138		139		140		141		146		147		FH	
	VSK 30 (I)		VSK 40 (I)		VSK 40 H (I)		VSK 60 (I)		VSK 70.6 H (I)		VSK 31.5 (I)		KBR 18		KBR 32			KBR 44		KEU 23		KEU 58		KEU 812		KEU 816		KSU 2.3			SUSK 3.8
Accuracy classes for secondary 5 A and secondary 1 A with information of the maximal burden in VA.																															
Primary isolated current	Accuracy classes for secondary 5 A and secondary 1 A with information of the maximal burden in VA.																								Primary isolated current						
A	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	1	3	1	3	1	1	3	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	A	
1	2.5	5	10	10																											
2.5	2.5	5	10	10																						15	25	15	30	1	
5	2.5	5	10	10				10	15																		15	25	15	30	2.5
10	2.5	5	10	10				10	15																						5
15	2.5	5	10	10				10	15																						10
20	2.5	5	10	10				10	15																						15
25			10	10				10	15	10	15	15	15																		20
30			10	10				10	15	10	15	15	15																		25
40								10	15	10	15	15	15																		30
50								10	15	10	15	15	15	1																	40
60								10	15	10	15	15	15																		50
75								10	15	10	15	15	15	1																	60
80								10	15	10	15	15	15	1																	75
100								10	15	10	15	15	15		1.25	2.5															80
125															1.5	3															100
150															1.5	3															125
200															1.5	3															150
250															1.5	4	5	2.5	1.5												200
300															5	5	5	2.5	1.5	1.5	1.5										250
400															5	5	5	2.5	1.5	1.5	1.5										300
500															5	5	5	2.5	1.5	1.5	1.5										400
600															5	5	5	2.5	1.5	1.5	1.5										500
750															5	5	5	2.5	1.5	1.5	1.5										600
800															5	5	5	2.5	1.5	1.5	1.5										750
1000															5	5	5	2.5	1.5	1.5	1.5										800
1200															5	5	5	2.5	1.5	1.5	1.5										1000
1250																															1200
1500																															1250
1600																															1500
1600																															1600
1800																															1800
2000																															2000
2500																															2500
3000																															3000
3200																															3200
4000																															4000
5000																															5000
6000																															6000
7500																															7500
Primary conductor in mm																															Primary conductor in mm
Round conductor in mm																															Round conductor in mm
Transformer width in mm	61		71		71		71		60		70		41.6		59.2		72.2		93		125		166		195		127		156	Transformer width in mm	

auf Anfrage / zweifach umschaltbar

These types are only available in secondary 1 A

(*) For the above mentioned current transformers snap-on mountings are available for fitment onto 35 mm DIN rails (DIN 50 022).



MBS Current Transformers Summarized

Protection current transformer

Page	157	158	159	160				166	167	168	170				Page						
	SASK 22.3 (I)	SASK 21.3 (I)	SASK 31.5 (I)	SASK 31.6				SASK 421.4	SASK 41.4	SASK 41.6	SASK 41.10										
Primary nominal current	Accuracy classes for secondary 5 A and secondary 1 A with information of the maximal burden in VA.														Primary nominal current						
A	5A	5A	5A	5A	5A	5A	5A	5A	5A	5A	5A	5A	5A	5A	A						
1																					
2.5																					
5																					
10																					
15																					
20																					
25																					
30																					
40																					
50						1.5	2.5								50						
60						2.5	2.5	1.5							60						
75															75						
80						5	5	1.5	1.5						80						
100	1	1			5	1.5	5	5	5	2.5	5	1.5	2.5	2.5	100						
120															120						
125	1.5	1.5	1.5	5	5	1.5									125						
150	1.5	1.5	1.5	5	1.5	5	5	2.5	2.5	2.5	2.5	2.5	1.5	5	150						
200	1.5	1.5	1.5	5	2.5	2.5	0	0	5	5	2.5	2.5	2.5	5	200						
250	1.5	1.5	1.5	5	2.5	2.5	0	0	5	5	2.5	2.5	2.5	5	250						
300	1.5	1.5	1.5	5	2.5	2.5	0	0	5	5	2.5	2.5	2.5	5	300						
400					2.5	2.5	1.5	1.5	0	0	5	5	2.5	2.5	400						
500					2.5	2.5	1.5	1.5	0	0	5	5	2.5	2.5	500						
600					2.5	2.5	1.5	1.5	0	0	5	5	2.5	2.5	600						
750					2.5	2.5	1.5	1.5	0	0	5	5	2.5	2.5	750						
800															800						
1000															1000						
1200															1200						
1250															1250						
1500															1500						
1600															1600						
1800															1800						
2000															2000						
2500															2500						
3000															3000						
4000															4000						
5000															5000						
6000															6000						
7500															7500						
Primary conductor in mm	20x16		30x20		50x10				20x10		40x10		40x12				40x10				Primary conductor in mm
Round conductor in mm	22.5		28		23				20		22		22				32				Round conductor in mm
Transformer width in mm	61		61		65				71		71		65				65				Transformer width in mm

(*) For the above mentioned current transformers snap-on mountings are available for fitment onto 35 mm DIN rails (DIN 50 022).

Accessories:
Foot and bus bar mounting with isolating caps (shock proof) are included in the supplies. Sealed shutters, copper tubes, snap-on mounting and CU-bus bar are available upon request. The transformers are being supplied with integrated secondary locking caps (exceptions: SASK 31.6, SASK 41.6, SASK 51.6, SASK 61.6)



MBS Current Transformers Summarized

Protection current transformer

Page	176				173				179				182				183				187				188				Page				
	SASK 541.4				SASK 51.4				SASK 51.6				SASK 81.4				SASK 81.10				SASK 63.6				SASK 106.6								
Primary nominal current	Accuracy classes for secondary 5 A and secondary 1 A with information of the maximal burden in VA.																												Primary nominal current				
A	SP5	1P5	SP0	1P0	SP5	1P5	SP5	1P5	SP5	1P5	SP0	1P0	SP5	1P5	SP5	1P5	SP5	1P5	SP5	1P5	SP5	1P5	SP5	1P5	SP5	1P5	SP5	1P5	SP5	1P5	SP5	1P5	A
1																																	
2.5																																	
5																																	
10																																	
15																																	
20																																	
25																																	
30																																	
40																																	
50																																50	
60																																60	
75																																75	
100	5	5															5	5	25	25											100		
120																																120	
125	5	25																														125	
150	25	25			1	1	5	5		25				10	10	5	5	25	25												150		
200	25	25			15	15	5	5	25	25	15	15	15	15	5	5	25	25	25	25	25	25									200		
250	25	25			15	15	25	5	5	25	25	15	15	15	15	10	10	5	5	25	25	25	25	25	25						250		
300	25	5	15	15	25	25	5	10	25	25	25	25	15	15	7.5	7.5	5	5	25	5	25	25									300		
400	5	5	15	15	25	25	10	10	5	5	25	25	15	15	10	10	5	5	5	5	5	5									400		
500	5	5	25	25	25	25	10	5	5	5	25	25	15	15	15	15	10	10	5	5	5	5									500		
600	5	5	25	25	25	25	15	15	5	5	5	5	15	15	15	15	10	10	5	5	5	5									600		
750	10	10	25	25	25	25	3	3	5	5	5	5	5	5	5	15	15	10	10	5	5	5	5								750		
800																																800	
1000	10	10	25	25	25	25	5	5	7.5	7.5	5	5	5	5	5	15	15	10	10	5	5	5	5								1000		
1200																																1200	
1250																																1250	
1500																																1500	
1600																																1600	
1800																																1800	
2000																																2000	
2500																																2500	
3000																																3000	
4000																																4000	
5000																																5000	
6000																																6000	
7500																																7500	
Primary conductor in mm	40x10				30x12				30x12				60x10				60x10				60x30				100x55				Primary conductor in mm				
Round conductor in mm	2x30x5				2x40x10				40x30				2x50x10				50x30												Round conductor in mm				
Transformer with in mm	50				30				55				60				150				80				25				Transformer with in mm				



MBS Current Transformers Summarized

Current transformers for tariff applications

Page	218	219	220	221	222	223	224	225	226	230	232	233	234	Page													
	EASK 14.3 (1)	EASK 22.3 (1)	EAS 176.3 (1)	EASK 176.3 (1)	EASK 21.3 (1)	EASK 31.3 (1)	EASK 31.4 (1)	EASK 31.5 (1)	EASK 31.6 (1)	EASK 41.4 (1)	EASK 41.5 (1)	EASK 41.6 (1)	EASK 51.4 (1)														
Accuracy classes for secondary 5 A and secondary 1 A with information of the maximal burden in VA.																											
Primary nominal current	0.2 0.5%		0.2 0.5%		0.5		0.5		0.2 0.5%		0.2 0.5%		0.2 0.5%		0.2 0.5%		0.2 0.5%		0.2 0.5%		0.2 0.5%		0.2 0.5%		Primary nominal current		
A	0.2	0.5%	0.2	0.5%	0.5	0.5	0.2	0.5%	0.2	0.5%	0.2	0.5%	0.2	0.5%	0.2	0.5%	0.2	0.5%	0.2	0.5%	0.2	0.5%	0.2	0.5%	0.2	0.5%	A
1																										1	
2.5																											2.5
5																											5
10																											10
15																											15
20																											20
25																											25
30																											30
40																											40
50																											50
60																											60
75		1.5																									75
80		1.5																									80
100	1.5	1.5	1.5	2.5	1.5	1.5	1.5	2.5	1.5	2.5	2.5	2.5	2.5	5	2.5	10	1.5	2.5	2.5	2.5	10	2.5	5	2.5	5	100	
120	1.5	2.5																									120
125	1.5	2.5																									125
150	2.5	2.5	2.5	5	2.5	2.5	2.5	5	1.5	2.5	2.5	5	2.5	5	5	15	2.5	5	2.5	5	5	15	5	15	5	10	150
200		5	5	5	2.5	2.5	5	5	5	5	5	5	5	10	10	15	5	5	5	5	10	15	10	15	10	15	200
250		5	5	2.5	2.5	5	5	5	5	5	5	5	5	10	15	10	15	5	5	5	10	15	10	15	10	15	250
300		5	10			5	10	5	5	10	10	10	15	10	30	5	10	10	15	15	15	15	15	15	15	15	300
400		10	10			10	10	5	5	10	10	10	15	15	30	10	10	10	15	15	15	15	15	15	15	15	400
500		10	10			10	10	5	5	10	10	10	15	15	30	15	15	10	15	15	15	15	15	15	15	15	500
600		10	10					5	5	10	15	10	15	15	30	15	15	10	15	15	30	15	30	15	30	600	
750								5	5	10	15	10	15	15	30	10	15	10	15	15	30	15	30	15	30	750	
800																											800
1000																											1000
1200																											1200
1250																											1250
1500																											1500
1600																											1600
1800																											1800
2000																											2000
2400																											2400
2500																											2500
3000																											3000
3200																											3200
4000																											4000
5000																											5000
6000																											6000
7500																											7500
Primary conductor in mm			17 x 6	17 x 6	20 x 10	30 x 10	30 x 10	30 x 10	30 x 10	30 x 10	30 x 10	40 x 10	40 x 10	40 x 12	40 x 10	40 x 12	40 x 15	40 x 15	40 x 15	40 x 15	40 x 15	40 x 15	40 x 15	40 x 15	40 x 15	40 x 15	Primary conductor in mm
Rated conductor in mm	14	22.5	15.2	15.2	18.2	28	28	28	28	28	28	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	Rated conductor in mm
Transformer width in mm	45	61	45	45	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	Transformer width in mm

(*) For the above mentioned current transformers snap-on mountings are available for fitment onto 35 mm DIN rails (DIN 50 022)

Accessories:

Foot and bus bar mounting with isolating caps (shock proof) are included in the supplies. Sealed shutters, copper tubes, snap-on mounting and CU-bus bar are available upon request. The transformers are being supplied with integrated secondary locking caps (exceptions: EASK 31.6, EASK 41.6, EASK 51.6, EASK 61.6, WSK 31.5).



MBS Current Transformers Summarized

Current transformers for tariff applications

Page	235	237	240	241	242	243	245	247	249	250	254	255	Page	
	EASK 51.4	EASK 51.6	EASK 61.4	EASK 61.6	EASK 63.6	EASK 81.4	EASK 105.6	EASK 123.2	EASK 130.3	EASK 130.5	EASK 31.5	ESUSK 2.8		
Primary nominal current	Accuracy classes for secondary 5 A and secondary 1 A with information of the maximal burden in VA.												Primary nominal current	
A	0.2	0.5(s)	0.2	0.5(s)	0.2	0.5(s)	0.2	0.5(s)	0.2	0.5(s)	0.2	0.5(s)	0.2	A
1													1	
2.5													2.5	
5													5	
10													10	
15													15	
20													20	
25													25	
30											10	15	30	
40											10	15	40	
50											10	15	50	
60											10	15	60	
75											10	15	75	
80											10	15	80	
100	2.5	2.5	5										100	
120											10	15	120	
125													125	
150	1.5	2.5	5	10							10	15	150	
200	5	5	5	10	2.5	2.5	2.5	5					200	
250	5	5	10	15	5	5	5	10	2.5	5		2.8	250	
300	5	5	10	15	5	10	10	15	5	10		Current class	300	
400	10	10	10	15	10	10	10	15	5	10	2.5	5	400	
500	10	10	10	15	10	15	10	15	10	10	2.5	5	500	
600	15	15	15	15	15	15	10	15	15	10	5	10	600	
750	15	15	15	15	15	15	15	15	10	10	10	10	750	
800									10	5	10	10	800	
1000	15	15	15	30	15	15	15	15	10	15	15	15	1000	
1200		15	30	15	15	15	30	15	15	15	10	15	1200	
1250		15	30	15	30	15	30	15	15	15	15	15	1250	
1500			15	30	15	30	15	30	15	15	15	15	1500	
1600									30	30	15	30	1600	
1800													1800	
2000								30	30	15	30		2000	
2400										30	30		2400	
2500								30	30	15	30		2500	
3000								30	30	15	30		3000	
3200													3200	
4000													4000	
5000													5000	
6000													6000	
7500													7500	
Primary conductor in mm	50 x 12	50 x 12	60 x 10	60 x 10	60 x 30	80 x 10	100 x 55	120 x 30	130 x 25	130 x 30			Primary conductor in mm	
Round conductor in mm	2 x 40 x 10	40 x 30	2 x 50 x 10	50 x 30		2 x 60 x 10		3 x 100 x 10					Round conductor in mm	
Transformer in mm	88	86	98	95	88	120	120	172	180	180	70	155	Transformer width in mm	

(*) For the above mentioned current transformers snap-on mountings are available for fitment onto 35 mm DIN rails (DIN 50 022).

Accessories:

Foot and bus bar mounting with isolating caps (shock proof) are included in the supplies. Sealed shutters, copper tubes, snap-on mounting and CU-bus bar are available upon request. The transformers are being supplied with integrated secondary locking caps (exceptions: EASK 31.6, EASK 41.6, EASK 51.6, EASK 61.6, WSK 31.5).

Current transformers – Technical Characteristics

Current transformers are special transformers for the proportional transformation of currents of larger current forces into direct measurable smaller values. Due to their constructive design as well as their physical operating principle a true galvanic separation between primary circuit and measuring circuit is achieved.

Primary rated current	Value of the primary current which marks the current transformer and for which it is rated.
Secondary rated current	Value of the secondary current which marks the current transformer and for which it is rated.
Measured burden	Value of the apparent power (in a VA) specified power factor which the current transformer is intended to supply to the secondary circuit at the secondary rated current and rated burden.
Measuring ratio	Ratio of the primary rated current to the secondary rated current. The actual measuring ratio of a current transformer is specified as an unbridged break.
Burden	Impedance of the secondary circuit expressed in Ohm with data of the power factor.
Measured burden	Value of the burden upon which the accurate requirements of the current transformer are based.
Rated frequency	Value of the frequency upon which the calculation of the current transformer is dependent.
Accuracy class	Declaration of a current transformer that its measuring deviation are governed within specified rules.
Phase displacement error	Phase shift difference between the primary and secondary current. The direction of the indicator is such that with an ideal current transformer the phase displacement is equal to zero.
Current deviation	Measurement deviation which a current transformer causes, when measuring a current, and the result hereby created, that the actual ratio deviates from the rated measuring ratio. The current error expressed in percentage is calculated according to the following rule:

$$F_1 [\%] = \frac{(K_n I_s - I_p) \times 100}{I_p}$$

F_1 = Current error deviation in %

K_n = nominal transformation ratio

I_p = actual primary current

I_s = tatsächlicher sekundärer Strom, wenn I_p unter Messbedingungen fließt

Maximum voltage for electrical equipment U_m

Effective value of the max. phase-phase-voltage for which a current transformer is measured, with a view of its isolation.

Total measuring deviation In the stationary position the effective value of the difference between:

- a) The momentary value of the primary current and
- b) The momentary values of the rated measuring ratio multiplied by the actual secondary current whereby the positive symptoms of the primary and secondary currents correspond to the reconciliation for the connection denotation

The total deviation F_G is generally calculated in percentage of the effective value of the primary current as follows F_G :

$$F_G = \frac{100}{I_p} \times \sqrt{\frac{1}{T} \times \int_0^T (K_n i_s - i_p)^2 dt}$$

K_n = rated measuring ratio
 I_p = Effective value of the primary current
 i_p = Momentary value of the primary current
 i_s = Momentary value of the secondary current
 T = Period duration

Rated-current limit [I_p] Value of the lowest primary current whereby the secondary rated burden of the total deviation of the current transformer is equal or larger than 10 %.

Over-current-limit factor (FS) Ratio of the limited current to the primary rated current.

Thermal nominal rated continuous current [I_{ctn}] Value of the current in the primary winding, the excess temperature adhere to the norm value and the secondary winding is loaded with the rated burden.

Thermal rated short time current [I_{th}] Effective value of the primary current which the current transformer can hold for 1 second w/o damage with short circuited secondary winding.

Rated surge current [I_{dyn}] Peak value of the primary current, whose electro-mechanical impact is resisted by the current transformer with short circuited secondary winding without electrical and mechanical damage.

"Open circuit voltage" of current transformers **Current transformers which are not switched directly to a consumer have to be secondarily short circuited to conform with safety standards**
 A secondary open operated current transformer induces on its secondary terminals very high peak voltages. The combined amounts of these voltages can reach values of some kilovolt and, dependent on the dimension of the current transformer, result a hazard for people and prevent the continuous trouble free operation of the transformer. For safety reasons and to eliminate the iron core being magnetized in a secondary operated open operation, an open operation should be discouraged.

Earthing of secondary terminals According to DIN VDE 0141 (01/2000) paragraph 5.3.4, the current- and voltage transformers for rated voltages from $U_m = 3.6$ kV are to be secondarily earthed. At low voltage ($U_m \leq 1.2$ kV) earthing is not required as long as the transformer housings are compact and do not have exposed metal surface.

Primary bus bar cross sections The geometric dimension of the primary conductor aperture of our current transformers are only limited for the actual interpretation of the nominal current range. In the range of the primary conductor, the total bus bar cross section of the current transformer can be calculated fractually smaller, provided it is ensured that the excess temperature is absorbed via the connection cross section of the bordering bus bar.


Special configurations

- Saturation current transformers upon request
- Current transformers for tropical application upon request
- Primary nominal currents deviating from preferred values upon request
- Deviating rated frequencies (16²/₃ up to 400 Hz) upon request
- Transformers for higher mechanical load capacity (vibration protection) upon request

MBS-Stromwandler-Palette zur Verrechnung

Neben einem umfangreichen Sortiment an Standard-Stromwandlern in den Genauigkeitsklassen 0,5 und 1 fertigt die MBS AG eine reichhaltige Produktpalette an Verrechnungs-Stromwandlern für Strombereiche von 25 A bis 3000 A in den Genauigkeitsklassen 0,2S; 0,2; 0,5S und 0,5.

Diese bauartzugelassenen Stromwandler besitzen die nationalen Zulassungen Deutschlands, sowie weiterer europäischer Länder.

Die durch die Physikalisch Technische Bundesanstalt (PTB) Braunschweig zugelassenen Wandler sind an einer, in einem stilisierten  angeordneten, Gattungs- und Bauartnummer erkennbar. Der üblichen MBS-Typenbezeichnung ist zusätzlich ein „E“ vorangestellt.

Die Eichung der Wandler wird durch einen amtlichen Sicherungsstempel (Plombe) sowie eine zusätzlich angebrachte gelbe Eichmarke (Hauptstempel) dokumentiert. Die für die Eichung zu erhebenden Gebührensätze richten sich nach der jeweils gültigen amtlichen Eichkostenverordnung.

Die Eichung der Stromwandler erfolgt auf Wunsch durch die „Staatlich anerkannte Prüfstelle für Messgeräte für Elektrizität EA90“, deren Träger die MBS AG ist.

Ausführung MBS-Niederspannungs-Stromwandler

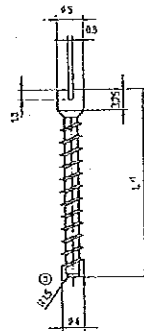
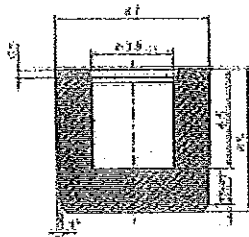
Alle bei der MBS AG gefertigten Niederspannungs-Stromwandler entsprechen der DIN VDE 0414/1; DIN 42600 und DIN EN 60044/1 Ausgabe 12, 2003 sowie der Vorschrift VBG 4.

Die Stromwandler besitzen folgende Eigenschaften:

- bruchfestes Kunststoffgehäuse
- Polycarbonat schwarz
- schwer entflammbar
- selbstverlöschend
- Wandlergehäuse ultraschallverschweißt
- Sekundärklemmen vernickelt
mit Plus-Minus-Schraube M 5 x 8 mm vernickelt
- integrierte Sekundär-Verschlussklappe

Fußwinkel und Schienenbefestigungsschrauben mit Isolierschutzkappe (berührungssicher) sind Bestandteile des Lieferumfangs. Alle Wandler sind sowohl für den Einsatz auf massiven Primärleitern, als auch auf flexiblem, isoliertem Kupferband geeignet.

Isolation protection cap



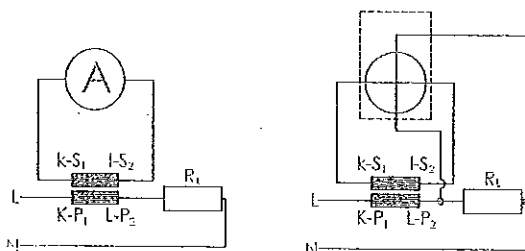
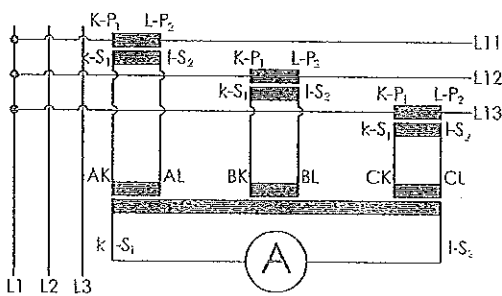
M 11



Bus bar mounting screw,
screw length (L)
25, 32, 36, 46, 54, 80 mm,
torque 0,5 Nm

General technical information

Rated frequency	50(60)Hz (16 2/3 up to 400 Hz upon request)
Maximum voltage for electrical equipment	$U_m \cong 0.72 \text{ kV}$ $U_m \cong 1.2 \text{ kV}$ (type CTB)
Isolation class	E
Isolation testing voltage	3 kV, 1 min, U_{eff} , 50 Hz ($U_m \cong 0.72 \text{ kV}$) 6 kV, 1 min, U_{eff} , 50 Hz ($U_m \cong 1.2 \text{ kV}$)
Thermal nominal continuous rated current	$I_{cth} = 1.0 \times I_n$ (higher values upon request) $I_{cth} = 1.2 \times I_n$ (types EASK and CTB)
Thermal rated short time current	$I_{th} = 60 \times I_n$, 1 sec (max. 100 kA) (types ASK, ASR, EASK, EASR, KBU, KBR, CTB) $I_{th} = 40 \times I_n$, 1 sec (max. 100 kA) (Types WSK, KSU, SUSK)
Ratio surge current	$I_{dyn} = 2,5 \times I_{th}$
Over current-limit factor	FS 5 to FS 15 (exact data, refer to name plate)
Working temperature range	$-5^\circ\text{C} \cong \theta \cong +50^\circ\text{C}$
Storage temperature range	$-25^\circ\text{C} \cong \theta \cong +70^\circ\text{C}$
Applied norms	DIN EN 60044-1 edition 12/2003 DIN 42600-1 edition 08/1973 DIN 42600-2 edition 05/1983 VDE 0414 part 44-1 edition 12/2003





Error limit values of class 0.2 ... 3 according to DIN IEC 60044/1

Accuracy class	Current error $\pm \Delta F$ at					Phase displacement error $\pm \Delta \varphi$ at				
	1.2 I_n 1.0 I_n	0.2 I_n	0.1 I_n	0.05 I_n	0.01 I_n	1.2 I_n 1.0 I_n	0.2 I_n	0.1 I_n	0.05 I_n	0.01 I_n
	%	%	%	%	%	min	min	min	min	min
0.2	0.2	0.35		0.75		10	15		30	
0.2s	0.2	0.2		0.35	0.75	10	10		15	30
0.5	0.5	0.75		1.5		30	45		90	
0.5s	0.5	0.5		0.75	1.5	30	30		45	90
1	-1	1.5		3		60	90		180	
3	3*									

* at 0.5 I_n and thermal nominal continuous current

Error limit values of the current transformer for protection purposes

Accuracy class	Current error $\pm F_1$ at		Phase displacement error $\pm F_2$ bei	
	1.0 I_n and thermal nominal continuous current		1.0 I_n and thermal nominal continuous current	
	%		Minutes	
5 P ...	1		60	
10 P ...	3			

Total error F_0 at nominal rated error limit current and nominal burden class 5P ... $\leq 5\%$
class 10P ... $\leq 10\%$

Permissible current of bus bar dimensions and current values according to DIN 43671.

Bus bar cross section	1 bus bar	2 bus bars	3 bus bars
20 x 10	427 A	825 A	1,180 A
30 x 05	379 A	672 A	896 A
30 x 10	573 A	1060 A	1,480 A
40 x 05	482 A	836 A	1,090 A
40 x 10	715 A	1290 A	1,770 A
50 x 10	852 A	1510 A	2,040 A
60 x 10	985 A	1720 A	2,300 A
80 x 10	1240 A	2110 A	2,790 A
100 x 10	1490 A	2480 A	3,260 A
Bus bar surface		Clear	

Above mentioned values are applicable for continuous current load at approximately 30°C ambient temperature.

Markings of the current transformers' connection terminals

The connections of all primary windings are marked with capital letters "K-P₁" and "L-P₂", the connections of all secondary windings are marked with the corresponding lower case letters "k-s₁" and "l-s₂".

By current transformers with a multiple secondary tapplings the winding end is marked "I" followed by the prefix "1", the tapplings with a decreasing number of windings are sequentially numbered to "2"; "3" etc.

By summation current transformers with a multiple of independent primary windings, the terminals of the individual windings are distinguishable from the terminal details "K" or "L" set before the capital letters "A", "B", "C".

By summation current transformers which are for the connection of different main transformers, the connection of the main transformer with the highest ratio transmission is made to the lowest terminal pair ("Akk"-AL). The correct order of connection can also be seen from the name plate which bears an information of the individual nominal currents.

Example:

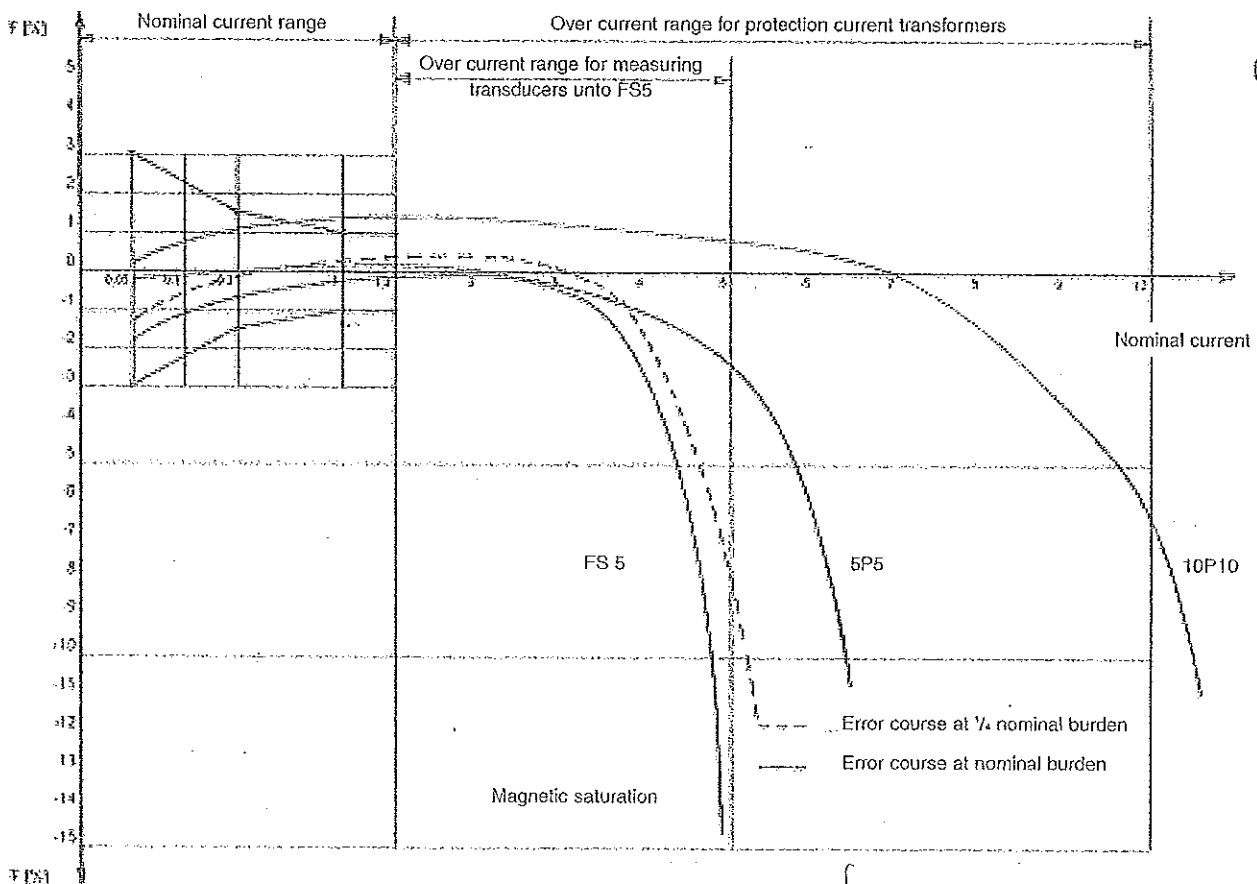
Main current transformer 1: 300/5A

Main current transformer 2: 150/5A

Main current transformer 3: 100/5A

→ information on the name plate: 6_A : 3_B : 2_C

Error curves of low voltage current transformers



Power requirements of measuring units and relays

By application of current transformers, two main demands will be requested from the user:

- high degree of measuring precision in the nominal current range
- protection function in the over current range

In order to fulfill these demands it is necessary that the assumed nominal power of a current transformer is adapted to the actual power requirements of the measuring conductor.

When establishing the actual power requirement, consideration has to be given not only to power losses of units to be connected, but also to the losses of the measuring conductors.

For the realization of the demands it is necessary that the assumed nominal power of the current transformer is largely adapted to the actual power requirements of the measuring set up. For the appraisal of the actual power requirements, apart of the own power consumption requirements of the connected measuring units, also the conductor losses must be considered which are connected to the secondary circuit of the transformer measuring conductors.

Own Power consumption requirement of typical measuring units

Current meter soft iron up to 100 mm Ø	0.700	-	1.5 VA
Rectifier current meter	0.001	-	0.25 VA
Multi range current meter	0.005	-	5.0 VA
Current recorder	0.300	-	9.0 VA
Bimetal-current meter	2.500	-	3.0 VA
Power factor meter	0.200	-	5.0 VA
Power factor recorder	3.000	-	12.0 VA
Power factor meter	2.000	-	6.0 VA
Power factor recorder	9.000	-	16.0 VA
Meter	0.400	-	1.0 VA
Relay			
N-Relay			14.0 VA
Over current-Relay	0.200	-	6.0 VA
Over current time-Relay	3.000	-	6.0 VA
Direction-Relay			10.0 VA
Bimetal-Relay	7.000	-	11.0 VA
Distance-Relay	1.000	-	30.0 VA
Differential-Relay	0.200	-	2.0 VA
	1.000	-	15.0 VA
Current transformer trip switch	5.000	-	150.0 VA
Controler	5.000	-	180.0 VA

Eigenverbrauch von Kupfer-Leitungen

$$P_v = \frac{I_s^2 \times 2 \times l}{A_{cu} \times 56} \text{ VA}$$

I_s = Secondary rated current intensity [A]
 l = single wire length in meter
 A_{cu} = wire cross section in mm²
 P_v = power loss of the connection leads

Comment: By joint AC return the half values of P_v are applicable.

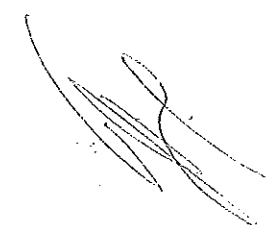
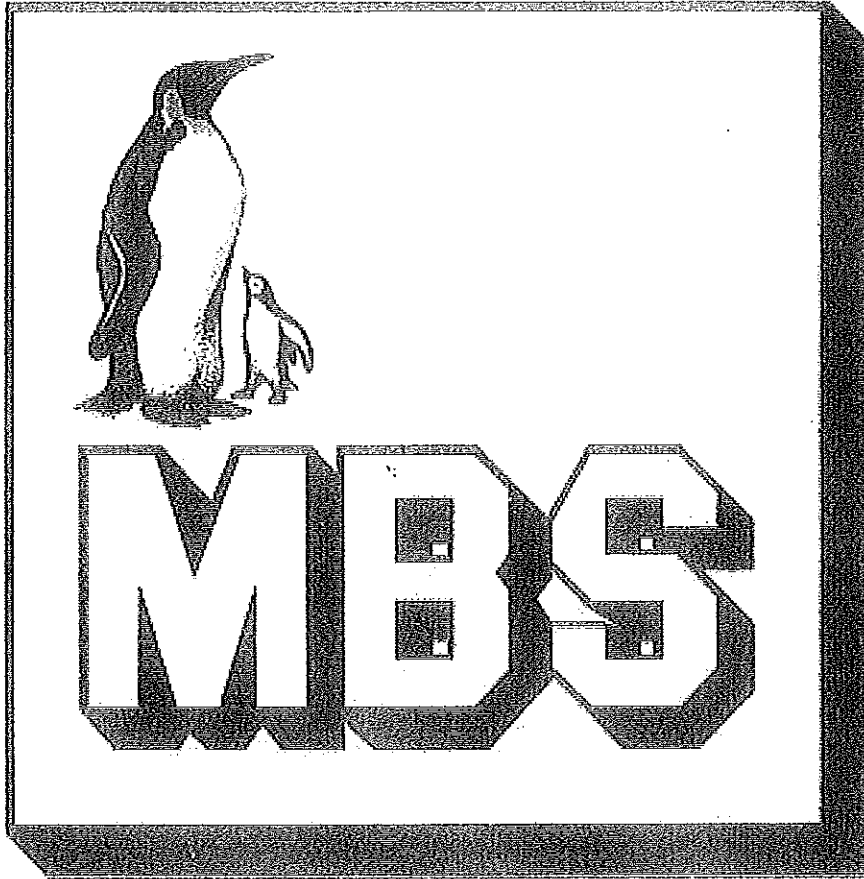


Chart for values referring to 5 A

Nominal cross section	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m
2.5 mm ²	0.36	0.71	1.07	1.43	1.78	2.14	2.50	2.86	3.21	3.57
4.0 mm ²	0.22	0.45	0.67	0.89	1.12	1.34	1.56	1.79	2.01	2.24
6.0 mm ²	0.15	0.30	0.45	0.60	0.74	0.89	1.04	1.19	1.34	1.49
10.0 mm ²	0.09	0.18	0.27	0.36	0.44	0.54	0.63	0.71	0.80	0.89

Chart for values referring to 1 A

Nominal cross section	10 m	20 m	30 m	40 m	50 m	60 m	70 m	80 m	90 m	100 m
1.0 mm ²	0.36	0.71	1.07	1.43	1.78	2.14	2.50	2.86	3.21	3.57
2.5 mm ²	0.14	0.29	0.43	0.57	0.72	0.86	1.00	1.14	1.29	1.43
4.0 mm ²	0.09	0.18	0.27	0.36	0.45	0.54	0.63	0.71	0.80	0.89
6.0 mm ²	0.06	0.12	0.18	0.24	0.30	0.36	0.42	0.48	0.54	0.60
10.0 mm ²	0.04	0.07	0.11	0.14	0.18	0.21	0.25	0.29	0.32	0.36



MBS AG

Prüfprotokoll / Test Report
Stromwandler / Current Transformer

Besteller Client
Bestellnummer Client order No.
Kunden-Auftragsnummer Customer Order Number



Seite 1 / 2

Artikelnummer Item number 9578
Typ Type EASK 31.5
Auftragsnummer Order No. 11195-1
Fabriknummer Serial No. 12/178579...12/178581

Norm Standard IEC 60044-1
Frequenz Frequency 50 Hz
Isolationspegel Insulation level 0,72 / 3 / - kV
Ith Ith 60*In

A large, stylized handwritten signature in black ink.

Kern / Core	Klasse / Class	Leistung / Power	Übersetzung / Ratio
1 s1-s2	0.5SFS5	5 VA	150/5 A

Prüfung der Anschlussbezeichnungen erfolgreich
Verification of terminal markings Passed

Dieses Dokument ist ohne Unterschrift verbindlich
This document is valid without signature

6.7.2012

Datum:

Three handwritten signatures in black ink, located below the date field.

6.7.2012

Dateiname:
 Bestellnummer / Order No.:
 Seite / Page:



1. Genauigkeitsprüfung
 Accuracy Test

F Strommessabweichung / Current error
 d Winkelmessabweichung / Phase displacement

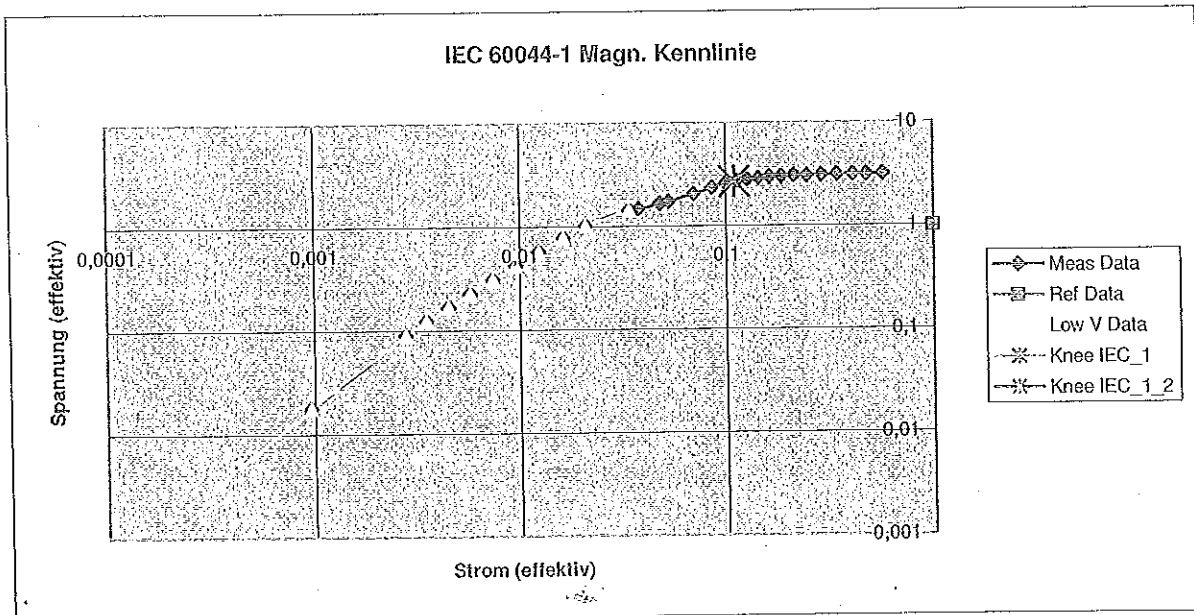
Fabr.-Nr. Serial No.	Klemmen Terminals	Leistung Power	5% I _n		20% I _n		100% I _n		120% I _n	
			F [%]	d [min]	F [%]	d [min]	F [%]	d [min]	F [%]	d [min]
12/178579	s1-s2 150/5 A	5 VA	-0,186	8,49	0,037	2,62	0,083	-0,73	0,043	0,77
		1,25 VA				0,450	3,90			
12/178580	s1-s2 150/5 A	5 VA	-0,265	9,28	-0,023	2,40	0,072	-1,56	0,030	0,12
		1,25 VA				0,431	3,97			
12/178581	s1-s2 150/5 A	5 VA	-0,334	10,79	-0,077	2,96	0,054	-2,28	0,020	-1,00
		1,25 VA				0,416	3,90			

2. Magnetisierungscharakteristik
 Excitation Characteristics

Fabr.-Nr. Serial No.	Klemmen Terminals	Klasse class	U _{kn} [V]	I _{max} [A]	U _{ist} [V]	I _{kn} [mA]	R _{CT} (75°C)
12/178579	s1-s2	0.5SFS5	3			110	50,39 mOhm
12/178580	s1-s2	0.5SFS5	3			113	50,52 mOhm
12/178581	s1-s2	0.5SFS5	3			110	50,43 mOhm

U_{kn}; I_{kn} ... acc. IEC 60044-1

3. Magnetisierungskurve
 Excitation curve



Datum:

6.7.2012

Handwritten signatures and initials are present at the bottom of the page, including a large signature on the left and 'e4' on the right.

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer: (Customer Order Number)



KA26301/12

Fabrikat: (Type) EASK 31.5
 Artikelnummer: (Item number) 9578
 Fabrik-Nr.: (Serial-number) 12/178579
 Hersteller: (Manufacturer) MBS AG

Übersetzungsfaktor: (Ratio factor) Ip 150 A
 Is 5 A
 Leistung: (Rated Power) 5 VA
 Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor: (Accuracy class with saturation factor) 0.5SFS5
 Frequenz: (Rated frequency) 50 Hz
 Isolationsprüfung: (Test voltage) 3 kV
 Prüfdatum: (Test date) 2012-07-06, 09:17:02 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) (A)
 Ip Primärer Nennstrom (Primary rated current) (A)
 Is Sekundärer Nennstrom (Secondary rated current) (A)
 Fi % Stromfehler in Prozent (Current default) (%)
 phi ' Fehlwinkel in Minuten (Phase default) (min)

VA	5		1,25	
cos β	0,8		1	
In in %	Fi %	phi '	Fi %	phi '
120	0,043	0,77		
100	0,083	-0,73	0,450	3,9
20	0,037	2,62		
5	-0,186	8,49		
1	-0,706	23,02		

Prüfer (tested by) :

MBS AG
 Eisbachstrasse 51
 74429 Sulzbach-Laufen

MBS AG
 Eisbachstraße 51
 74429 Sulzbach-Laufen
 Sulzbach Messwandler

☎ +49 79 76 98 51 0

☎ +49 79 76 98 51 90

E-Mail: mbs@mbs-stromwandler.de

Datum:

6.7.2012

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer: (Customer Order Number)



Fabrikat:	(Type)	EASK 31.5
Artikelnummer:	(Item number)	9578
Fabrik-Nr.:	(Serial-number)	12/178580
Hersteller:	(Manufacturer)	MBS AG
Übersetzungsfaktor:	(Ratio factor)	Ip 150 A Is 5 A 5 VA
Leistung:	(Rated Power)	
Genauigkeitsklasse mit	(Accuracy class with	
Überstrom-Begrenzungsfaktor:	saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-07-06, 09:21:43 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) (A)
 Ip Primärer Nennstrom (Primary rated current) (A)
 Is Sekundärer Nennstrom (Secondary rated current) (A)
 Fi % Stromfehler in Prozent (Current default) (%)
 phi ' Fehlwinkel in Minuten (Phase default) (min)

VA	5		1,25	
cos β	0,8		1	
In in %	Fi %	phi '	Fi %	phi '
120	0,030	0,12		
100	0,072	-1,56	0,431	4,0
20	-0,023	2,40		
5	-0,265	9,28		
1	-0,807	24,90		

Prüfer (tested by) :

MBS AG
 Eisbachstrasse 51
 74429 Sulzbach-Laufen

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 74429 Sulzbach-Laufen
 Sulzbach Messwandler

☎ +49 7976 98 51 0
 ☎ +49 7976 98 51 90
 E-Mail: mbs@mbs-stromwandler.de

Datum:

6.7.2012

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer: (Customer Order Number)



Fabrikat:	(Type)	EASK 31.5
Artikelnummer:	(Item number)	9578
Fabrik-Nr.:	(Serial-number)	12/178581
Hersteller:	(Manufacturer)	MBS AG
Übersetzungsfaktor:	(Ratio factor)	Ip 150 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-07-06, 09:50:22 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) (A)
 Ip Primärer Nennstrom (Primary rated current) (A)
 Is Sekundärer Nennstrom (Secondary rated current) (A)
 Fi % Stromfehler in Prozent (Current default) (%)
 phi ' Fehlwinkel in Minuten (Phase default) (min)

VA	5		1,25	
cos β	0,8		1	
In in %	Fi %	phi '	Fi %	phi '
120	0,020	-1,00		
100	0,054	-2,28	0,416	4,2
20	-0,077	2,96		
5	-0,334	10,79		
1	-0,920	27,42		

Prüfer (tested by) :

MBS AG
 Eisbachstrasse 51
 74429 Sulzbach-Laufen

MBS AG
 Eisbachstraße 51
 74429 Sulzbach-Laufen
 Sulzbach Messwandler

+49 7976 9851 0

+49 7976 9851 90

E-Mail: mbs@mbs-stromwandler.de

Datum:

6.7.2012

MBS AG

Prüfschein (Test report)

Antragsteller (Applicant) : **EVN Macedonia. AD**
 Bestellnr. (Order-No.) : **9578**

Fabrikat : EASK_31.5 (Type) :	Übersetzungsfaktor : Ip (A) 150 (Translationfactor) Is (A) 5
Fabrikat-Nr. : 13/139638 (Series-No.) :	
Hersteller : MBS AG (Manufacturer) :	Leistung : (VA) 5,00 (Rated Power)
Frequenz : 50,00 Hz (Frequency) :	Genauigkeitsklasse : 0,5S (accuracy class)
Isolationsprüfung : 0,72/3 kV (Test voltage) :	Überstrom-Begrenzungsfaktor : 5 (Saturation factor)

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- VBG 4: DIN VDE 0414/1
1. Isolationsprüfung (insulation test) DIN 42600
 2. Genauigkeitsprüfung (accuracy test) IEC 60044-1

Legende:

In	Nennstrom	(Rated current)	(A)
I1	Primärer Nennstrom	(Primary rated current)	(A)
I2	Sekundärer Nennstrom	(Secondary rated current)	(A)
Fi %	Stromfehler in Prozent	(Current default)	(%)
phi '	Fehlwinkel in Minuten	(Phase default)	(min)

	VA	5,00		1,25	
	cos β	0,8		1,0	
I1n/I2n	In x	Fi %	Phi '	Fi %	Phi '
	120	0,058	1,32		
	100	0,100	0,25	0,437	3,81
	20	0,034	2,38		
	5	-0,183	6,14		
	1	-0,783	21,16		

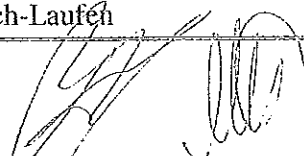
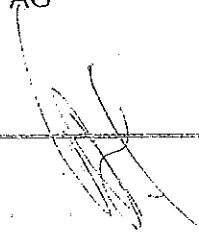
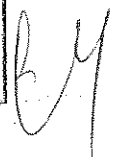
Datum (Date): 03.06.2013

Prüfer (tested by):

MBS AG
 Eisbachstr. 51
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 ☎ +49 79 76 98 51 90
 E-Mail: info@mbs-ag.com

Digital unterschrieben
 von: Rudolf Hennig
 am: 2013-06-13
 um: 12:09:41 GMT
 MBS AG

MBS AG

Prüfprotokoll / Test Report
Stromwandler / Current Transformer

Besteller	Client	GHV
Bestellnummer	Client order No.	19322
Kunden-Auftragsnummer	Customer Order Number	KA23079/14

Seite 1 / 3

Artikelnummer	Item number	13576
Typ	Type	EASK 41.4
Auftragsnummer	Order No.	19322
Fabriknummer	Serial No.	14/139927...14/139929

Norm	Standard	IEC 61869-2
Frequenz	Frequency	50 Hz
Isolationspegel	Insulation level	0,72 / 3 / - kV
I_{th}	I_{th}	60 x I_n
I_{cth}	I_{cth}	1,2 x I_n

Kern / Core	Klasse / Class	Leistung / Power	Übersetzung / Ratio
1 s1-s2	0.5SFS5	5 VA	200/5 A

Prüfung der Anschlussbezeichnungen
Verification of terminal markings

erfolgreich
Passed

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28.5.2014

Dateiname: GHV
 Bestellnummer / Order No.: 19322
 Seite / Page: 2 / 3

1. Genauigkeitsprüfung
 Accuracy Test

F Strommessabweichung / Current error
 d Winkelmessabweichung / Phase displacement

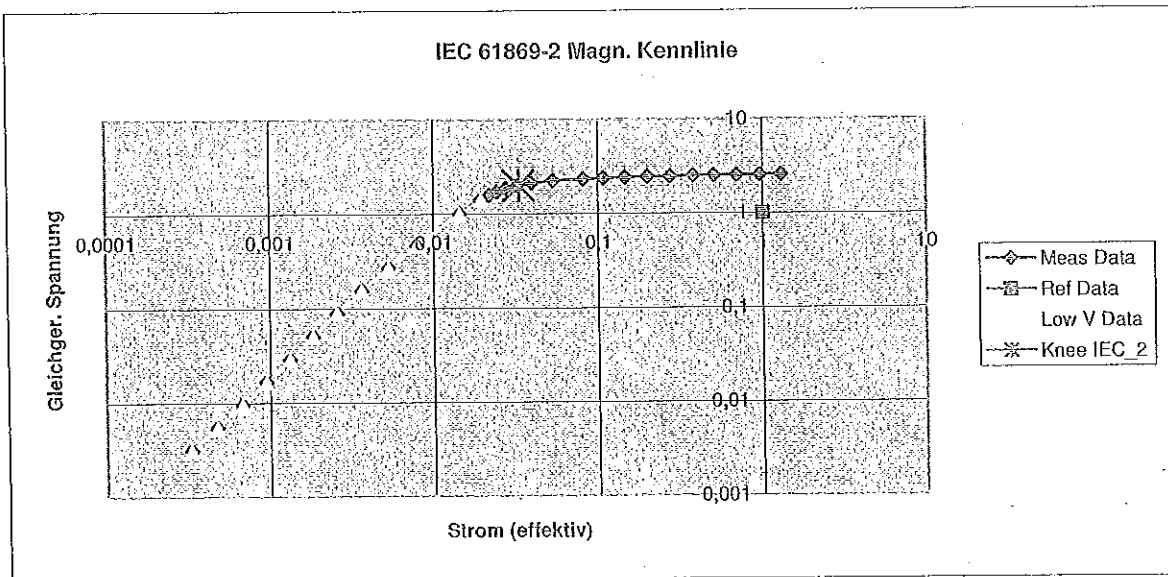
Fabr.-Nr. Serial No.	Klemmen Terminals	Leistung Power	5% I _n		20% I _n		100% I _n		120% I _n		Wdg.
			F [%]	d [min]	F [%]	d [min]	F [%]	d [min]	F [%]	d [min]	
14/139927	s1-s2	5 VA	-0,308	8,32	-0,037	2,01	0,108	-0,67	0,114	-0,90	39,82
	200/5 A	1,25 VA					0,318	2,89			
14/139928	s1-s2	5 VA	-0,245	3,63	-0,014	-0,78	0,122	-2,59	0,133	-2,76	39,82
	200/5 A	1,25 VA					0,308	2,07			
14/139929	s1-s2	5 VA	-0,272	3,10	-0,033	-1,12	0,106	-2,68	0,116	-2,83	39,82
	200/5 A	1,25 VA					0,301	2,11			

2. Magnetisierungscharakteristik
 Excitation Characteristics

Fabr.-Nr. Serial No.	Klemmen Terminals	Klasse class	U _{kn} [V]	I _{kn} [mA]	ALF	FS	R _{CT} (75°C)
14/139927	s1-s2	0.5SFS5	2,01	33,17		2,26	40,36 mOhm
14/139928	s1-s2	0.5SFS5	2,17	31,74		2,30	40,6 mOhm
14/139929	s1-s2	0.5SFS5	2,17	33,58		2,28	40,84 mOhm

U_{kn}; I_{kn} ... acc. IEC 61869-2

3. Magnetisierungskurve
 Excitation curve



[Handwritten signatures and marks]

MBS AG

Prüfprotokoll / Test Report
Stromwandler / Current Transformer

Besteller	Client	GHV
Bestellnummer	Client order No.	OVMB-489/2014
Kunden-Auftragsnummer	Customer Order Number	KA27601/14

Seite 1 / 2

Artikelnummer	Item number	13581
Typ	Type	ASK 41.4
Auftragsnummer	Order No.	OVMB-489/2014
Fabriknummer	Serial No.	14/158049...14/158051

Norm	Standard	IEC 61869-2
Frequenz	Frequency	50 Hz
Isolationspegel	Insulation level	0,72 / 3 / - kV
I_{th}	I_{th}	60 * I_n
I_{cth}	I_{cth}	1,2 x I_n

Kern / Core	Klasse / Class	Leistung / Power	Übersetzung / Ratio
1 s1-s2	0.5SFS5	5 VA	300/5 A

Prüfung der Anschlussbezeichnungen
Verification of terminal markings

erfolgreich
Passed

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21.7.2014

Dateiname: GHV
 Bestellnummer / Order No.: OVMB-489/2014
 Seite / Page: 2 / 2

1. Genauigkeitsprüfung
 Accuracy Test

F Strommessabweichung / Current error
 d Winkelmessabweichung / Phase displacement

Fabr.-Nr. Serial No.	Klemmen Terminals	Leistung Power	5% I _n		20% I _n		100% I _n		120% I _n	
			F [%]	d [min]	F [%]	d [min]	F [%]	d [min]	F [%]	d [min]
14/158049	s1-s2	5 VA	-0,099	6,92	0,064	2,81	0,080	1,57	0,047	2,51
	300/5 A	1,25 VA					0,305	2,78		
14/158050	s1-s2	5 VA	-0,099	4,91	0,069	1,32	0,081	0,39	0,046	1,62
	300/5 A	1,25 VA					0,300	2,22		
14/158051	s1-s2	5 VA	-0,252	7,26	-0,034	1,50	0,047	0,10	0,022	1,03
	300/5 A	1,25 VA					0,269	2,68		

Wdg.

59,75

59,75

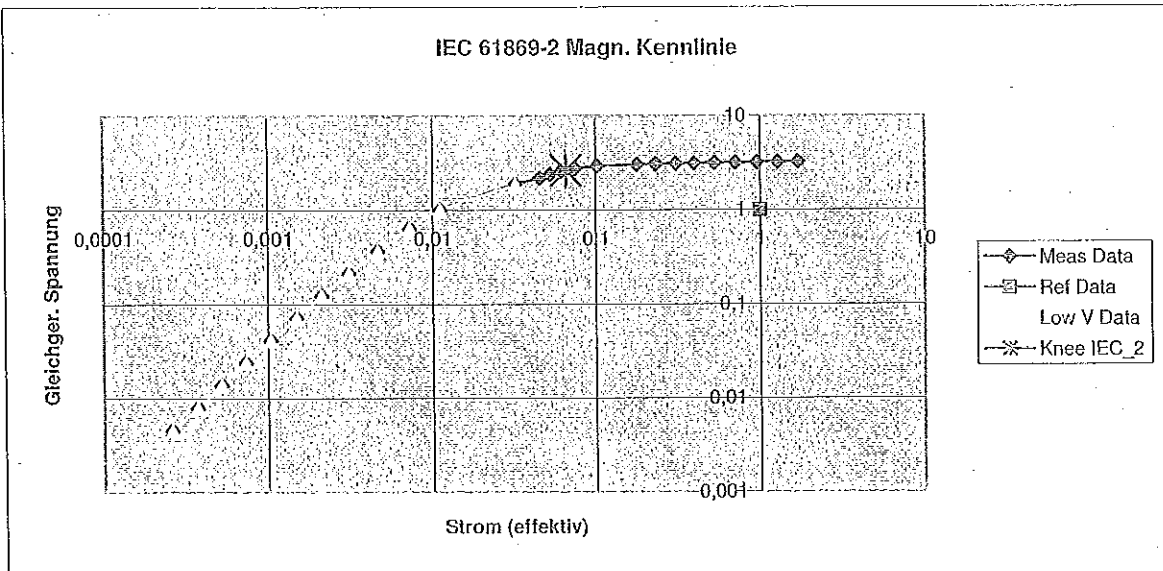
59,75

2. Magnetisierungscharakteristik
 Excitation Characteristics

Fabr.-Nr. Serial No.	Klemmen Terminals	Klasse class	U _{kn} [V]	I _{kn} [mA]	ALF	FS	R _{CT} (75°C)
14/158049	s1-s2	0.5SFS5	2,64	65,99		2,49	78,62 mOhm
14/158050	s1-s2	0.5SFS5	2,62	64,53		2,50	78,38 mOhm
14/158051	s1-s2	0.5SFS5	2,65	63,96		2,53	78,91 mOhm

U_{kn}; I_{kn} ... acc. IEC 61869-2

3. Magnetisierungskurve
 Excitation curve



[Handwritten signatures and marks]

MBS AG

Prüfprotokoll / Test Report Stromwandler / Current Transformer

Firma
Bestellnummer
Kunden-Auftragsnummer

Client
Client order No.
Customer Order Number



Seite 1 / 3

Artikelnummer	Item number	13584
Typ	Type	EASK 41.4
Auftragsnummer	Order No.	10930-1
Fabriknummer	Serial No.	12/131574...12/131576

Norm	Stand: Standard	IEC 60044-1
Frequenz	Frequ: Frequency	50 Hz
Isolationspegel	Insulation level	0,72 / 3 / - kV
ItH	ItH	60*In

Kern / Core	Klasse / Class	Leistung / Power	Übersetzung / Ratio
1 S1-S2	0.5SFS5	5 VA	400/5 A

Prüfung der Anschlussbezeichnungen Verification of terminal markings	erfolgreich Passed
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02.03.2012

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Dateiname:

Bestellnummer / Order No.:

Seite / Page:



1. Genauigkeitsprüfung Accuracy Test

F Strommessabweichung / Current error

d Winkelmessabweichung / Phase displacement

Fabr.-Nr. Serial No.	Klemmen Terminals	Leistung Power	5% In		20% In		100% In		120% In	
			F [%]	d [min]	F [%]	d [min]	F [%]	d [min]	F [%]	d [min]
12/131574	S1-S2	5 VA	-0,175	7,14	-0,031	4,30	0,086	0,66	0,102	0,14
	400/5 A	1,25 VA					0,290	4,35		
12/131575	S1-S2	5 VA	-0,181	6,65	-0,036	4,01	0,083	0,42	0,100	-0,13
	400/5 A	1,25 VA					0,288	4,32		
12/131576	S1-S2	5 VA	-0,172	6,85	-0,025	4,16	0,089	0,75	0,105	0,20
	400/5 A	1,25 VA					0,292	4,33		

2. Magnetisierungscharakteristik Excitation Characteristics

Fabr.-Nr. Serial No.	Klemmen Terminals	Klasse class	U_{kn} [V]	I_{max} [A]	U_{ist} [V]	I_{kn} [mA]	R_{CT} (75°C)
12/131574	S1-S2	0.5SFS5	4			49	92,92 mOhm
12/131575	S1-S2	0.5SFS5	4			49	92,49 mOhm
12/131576	S1-S2	0.5SFS5	4			47	92,75 mOhm

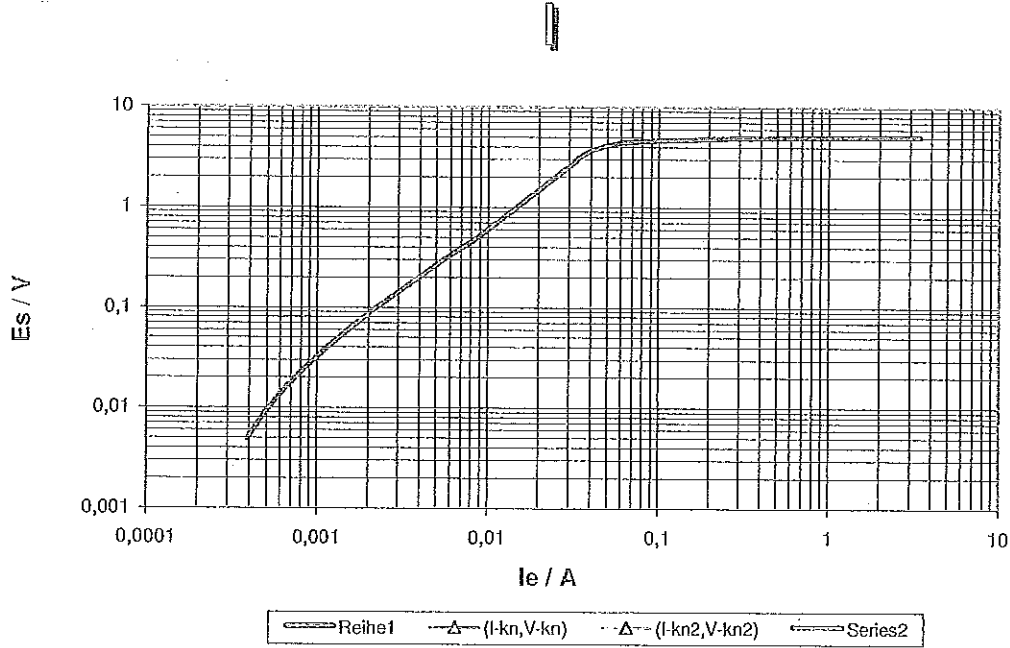
Ukn; Ikn ... acc. IEC 60044-1

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Dateiname:
Bestellnummer / Order No.:
Seite / Page:



3. Magnetisierungskurve Excitation curve



MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer (Customer Order Number)



Fabrikat: (Type) EASK 41.4
 Artikelnummer: (Item number) 13584
 Fabrik-Nr.: (Serial-number) 12/131574
 Hersteller: (Manufacturer) MBS

Übersetzungsfaktor: (Ratio factor) Ip 400 A
 Is 5 A

Leistung: (Rated Power) 5 VA
 Genauigkeitsklasse mit (Accuracy class with
 Überstrom-Begrenzungsfaktor: saturation factor) 0.5SFS5
 Frequenz: (Rated frequency) 50 Hz
 Isolationsprüfung: (Test voltage) 3 kV
 Prüfdatum: (Test date) 2012-03-02, 19:49:42 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1: | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2: | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

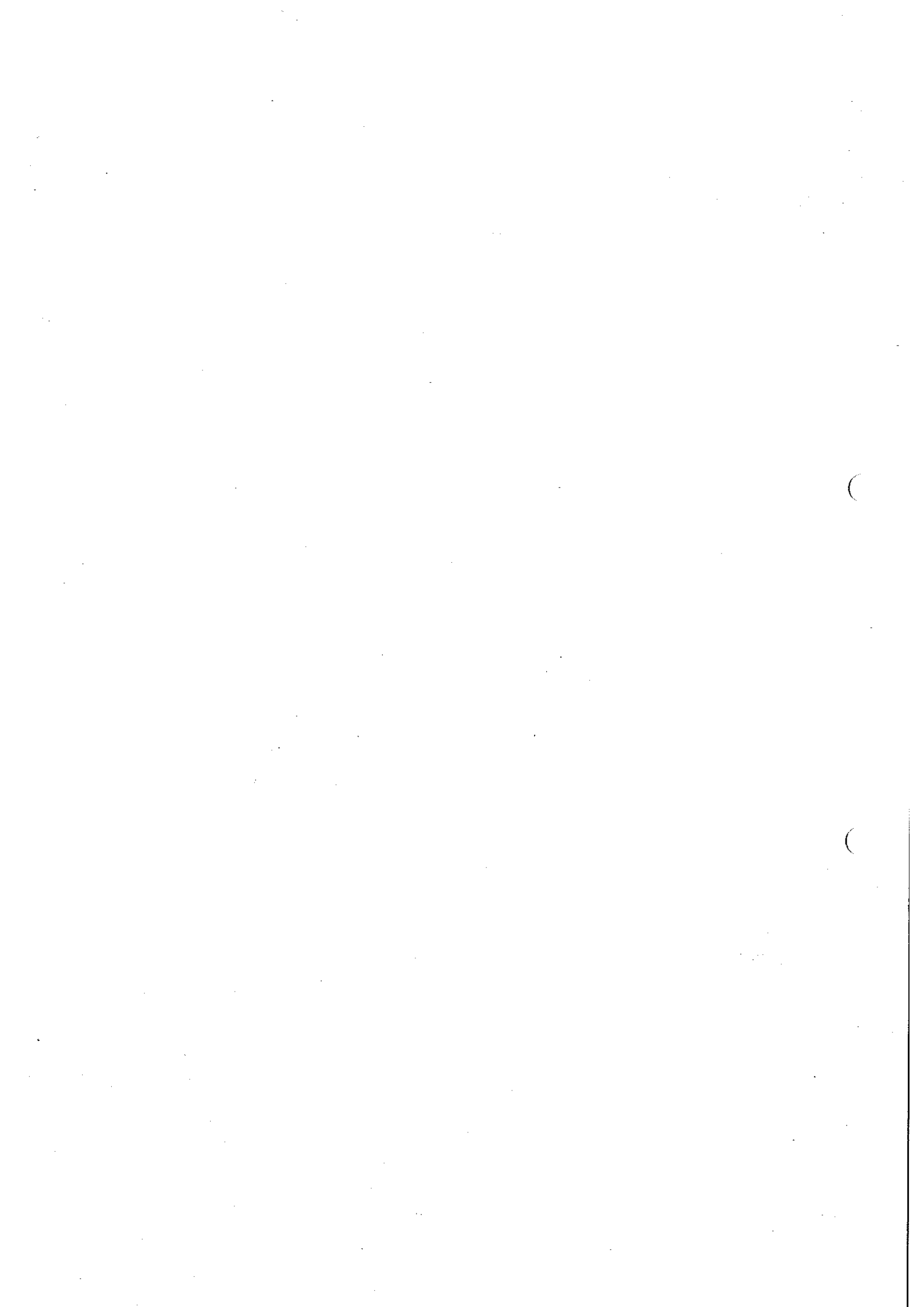
Legende: In Nennstrom (Rated current) [A]
 Ip Primärer Nennstrom (Primary rated current) [A]
 Is Sekundärer Nennstrom (Secondary rated current) [A]
 Fi % Stromfehler in Prozent (Current default) [%]
 phi ' Fehlwinkel in Minuten (Phase default) [min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,102	0,14		
100	0,086	0,66	0,290	4,35
20	-0,031	4,30		
5	-0,175	7,14		
1	-0,610	17,93		

Prüfer (tested by) :

MBS AG
 Eisbachstrasse 51
 74429 Sulzbach-Laufen

MBS AG
 Eisbachstraße 51
 74429 Sulzbach-Laufen
 Sulzbach Messwandler
 ☎ +49 7976 9851 0
 ☎ +49 7976 9851 90
 E-Mail: mbs@mbs-stromwandler.de



ly

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer (Customer Order Number)



Fabrikat: (Type) **EASK 41.4**
 Artikelnummer: (Item number) **13584**
 Fabrik-Nr.: (Serial-number) **12/131575**
 Hersteller: (Manufacturer) **MBS**

Übersetzungsfaktor: (Ratio factor) **Ip 400 A**
Is 5 A

Leistung: (Rated Power) **5 VA**
 Genauigkeitsklasse mit (Accuracy class with)
 Überstrom-Begrenzungsfaktor: saturation factor **0.5SFS5**
 Frequenz: (Rated frequency) **50 Hz**
 Isolationsprüfung: (Test voltage) **3 kV**
 Prüfdatum: (Test date) **2012-03-02, 19:49:42 AM**

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) [A]
 Ip Primärer Nennstrom (Primary rated current) [A]
 Is Sekundärer Nennstrom (Secondary rated curr) [A]
 Fi % Stromfehler in Prozent (Current default) [%]
 phi ' Fehlwinkel in Minuten (Phase default) [min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,100	-0,13		
100	0,083	0,42	0,288	4,32
20	-0,036	4,01		
5	-0,181	6,65		
1	-0,610	17,37		

Prüfer (tested by) :

MBS AG
 Eisbachstrasse 51
 74429 Sulzbach-Laufen

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 Sulzbach Messwandler
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 E-Mail: mbs@mbs-stromwandler.de

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer (Customer Order Number)



Fabrikat:	(Type)	EASK 41.4
Artikelnummer:	(Item number)	13584
Fabrik-Nr.:	(Serial-number)	12/131576
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 400 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-03-02, 19:49:42 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) [A]
 Ip Primärer Nennstrom (Primary rated current) [A]
 Is Sekundärer Nennstrom (Secondary rated curr) [A]
 Fi % Stromfehler in Prozent (Current default) [%]
 phi ' Fehlwinkel in Minuten (Phase default) [min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,105	0,20		
100	0,089	0,75	0,292	4,33
20	-0,025	4,16		
5	-0,172	6,85		
1	-0,615	17,82		

Prüfer (tested by):

MBS AG
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MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer (Customer Order Number)



Fabrikat: (Type) EASK 41.4
 Artikelnummer: (Item number) 13584
 Fabrik-Nr.: (Serial-number) 12/
 Hersteller: (Manufacturer) MBS

Übersetzungsfaktor: (Ratio factor) Ip 400 A
 Is 5 A

Leistung: (Rated Power) 5 VA
 Genauigkeitsklasse mit
 Überstrom-Begrenzungsfaktor: (Accuracy class with
 saturation factor) 0,5FS5

Frequenz: (Rated frequency) 50 Hz
 Isolationsprüfung: (Test voltage) 3 kV
 Prüfdatum: (Test date) 2012-03-02, 19:49:42 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) [A]
 Ip Primärer Nennstrom (Primary rated current) [A]
 Is Sekundärer Nennstrom (Secondary rated curr) [A]
 Fi % Stromfehler in Prozent (Current default) [%]
 phi ' Fehlwinkel in Minuten (Phase default) [min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,155	4,38		
100	0,151	4,53	0,229	3,48
20	0,076	7,82		
5	-0,006	16,81		
1	-0,081	32,92		

Prüfer (tested by):

MBS AG
 Eisbachstrasse 51
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 +49 7976 9851 90
 E-Mail: mbs@mbs-stromwandler.de

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer (Customer Order Number)



Fabrikat:	(Type)	EASK 41.4
Artikelnummer:	(Item number)	13584
Fabrik-Nr.:	(Serial-number)	12/
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 400 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0,5FS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-03-02, 19:49:42 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende:	In	Nennstrom	(Rated current)	[A]
	Ip	Primärer Nennstrom	(Primary rated current)	[A]
	Is	Sekundärer Nennstrom	(Secondary rated curr)	[A]
	Fi %	Stromfehler in Prozent	(Current default)	[%]
	phi'	Fehlwinkel in Minuten	(Phase default)	[min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi'	Fi %	phi'
120	0,155	4,38		
100	0,151	4,53	0,229	3,48
20	0,076	7,82		
5	-0,006	16,81		
1	-0,081	32,92		

Prüfer (tested by):

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 74429 Sulzbach-Laufen

MBS AG
 Eisbachstraße 51
 74429 Sulzbach-Laufen
 Sulzbach Messwandler

☎ +49 79 76 98 51 0

☎ +49 79 76 98 51 90

E-Mail: mbs@mbs-stromwandler.de

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer (Customer Order Number)



KAT4031712

Fabrikat: (Type) EASK 41.4
 Artikelnummer: (Item number) 13584
 Fabrik-Nr.: (Serial-number) 12/
 Hersteller: (Manufacturer) MBS

Übersetzungsfaktor: (Ratio factor) Ip 400 A
 Is 5 A

Leistung: (Rated Power) 5 VA
 Genauigkeitsklasse mit (Accuracy class with)
 Überstrom-Begrenzungsfaktor: saturation factor) 0,5FS5
 Frequenz: (Rated frequency) 50 Hz
 Isolationsprüfung: (Test voltage) 3 kV
 Prüfdatum: (Test date) 2012-03-02, 19:49:42 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) [A]
 Ip Primärer Nennstrom (Primary rated current) [A]
 Is Sekundärer Nennstrom (Secondary rated curr) [A]
 Fi % Stromfehler in Prozent (Current default) [%]
 phi ' Fehlwinkel in Minuten (Phase default) [min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,155	4,38		
100	0,151	4,53	0,229	3,48
20	0,076	7,82		
5	-0,006	16,81		
1	-0,081	32,92		

Prüfer (tested by):

MBS AG
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MBS AG
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 Sulzbach Messwandler

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 E-Mail: mbs@mbs-stromwandler.de

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer (Customer Order Number)



Fabrikat:	(Type)	EASK 41.4
Artikelnummer:	(Item number)	13584
Fabrik-Nr.:	(Serial-number)	12/
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 400 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-03-02, 19:49:42 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende:	In	Nennstrom	(Rated current)	[A]
	Ip	Primärer Nennstrom	(Primary rated current)	[A]
	Is	Sekundärer Nennstrom	(Secondary rated curr)	[A]
	Fi %	Stromfehler in Prozent	(Current default)	[%]
	phi '	Fehlwinkel in Minuten	(Phase default)	[min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,155	4,38		
100	0,151	4,53	0,229	3,48
20	0,076	7,82		
5	-0,006	16,81		
1	-0,081	32,92		

Prüfer (tested by) :

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 Sulzbach Messwandler
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 E-Mail: mbs@mbs-stromwandler.de

(Handwritten signatures and marks)

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer (Customer Order Number)



Fabrikat: (Type) **EASK 41.4**
 Artikelnummer: (Item number) **13584**
 Fabrik-Nr.: (Serial-number) **12/**
 Hersteller: (Manufacturer) **MBS**

Übersetzungsfaktor: (Ratio factor) **Ip 400 A**
Is 5 A

Leistung: (Rated Power) **5 VA**
 Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor: (Accuracy class with saturation factor) **0,5FS5**
 Frequenz: (Rated frequency) **50 Hz**
 Isolationsprüfung: (Test voltage) **3 kV**
 Prüfdatum: (Test date) **2012-03-02, 19:49:42 AM**

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) [A]
 Ip Primärer Nennstrom (Primary rated current) [A]
 Is Sekundärer Nennstrom (Secondary rated current) [A]
 Fi % Stromfehler in Prozent (Current default) [%]
 phi ' Fehlwinkel in Minuten (Phase default) [min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,155	4,38		
100	0,151	4,53	0,229	3,48
20	0,076	7,82		
5	-0,006	16,81		
1	-0,081	32,92		

Prüfer (tested by):

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 E-Mail: mbs@mbs-stromwandler.de

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer (Customer Order Number)



Fabrikat:	(Type)	EASK 41.4
Artikelnummer:	(Item number)	13584
Fabrik-Nr.:	(Serial-number)	12/
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 400 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0,5FS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-03-02, 19:49:42 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | |
|----|--------------------------------------|----------------|
| | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: (accuracy test) | IEC 60044-1 |

Legende:	In	Nennstrom	(Rated current)	[A]
	Ip	Primärer Nennstrom	(Primary rated current)	[A]
	Is	Sekundärer Nennstrom	(Secondary rated curr)	[A]
	Fi %	Stromfehler in Prozent	(Current default)	[%]
	phi'	Fehlwinkel in Minuten	(Phase default)	[min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi'	Fi %	phi'
120	0,155	4,38		
100	0,151	4,53	0,229	3,48
20	0,076	7,82		
5	-0,006	16,81		
1	-0,081	32,92		

Prüfer (tested by):

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E-Mail: mbs@mbs-stromwandler.de

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer (Customer Order Number)



Fabrikat: (Type) EASK 41.4
 Artikelnummer: (Item number) 13584
 Fabrik-Nr.: (Serial-number) 12/
 Hersteller: (Manufacturer) MBS

Übersetzungsfaktor: (Ratio factor) Ip 400 A
 Is 5 A

Leistung: (Rated Power) 5 VA
 Genauigkeitsklasse mit (Accuracy class with)
 Überstrom-Begrenzungsfaktor: saturation factor) 0,5FS5
 Frequenz: (Rated frequency) 50 Hz
 Isolationsprüfung: (Test voltage) 3 kV
 Prüfdatum: (Test date) 2012-03-02, 19:49:42 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) [A]
 Ip Primärer Nennstrom (Primary rated current) [A]
 Is Sekundärer Nennstrom (Secondary rated curr) [A]
 Fi % Stromfehler in Prozent (Current default) [%]
 phi ' Fehlwinkel in Minuten (Phase default) [min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,155	4,38		
100	0,151	4,53	0,229	3,48
20	0,076	7,82		
5	-0,006	16,81		
1	-0,081	32,92		

Prüfer (tested by) :

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MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer (Customer Order Number)



Fabrikat: (Type) EASK 41.4
 Artikelnummer: (Item number) 13584
 Fabrik-Nr.: (Serial-number) 12/
 Hersteller: (Manufacturer) MBS

Übersetzungsfaktor: (Ratio factor) Ip 400 A
 Is 5 A

Leistung: (Rated Power) 5 VA
 Genauigkeitsklasse mit (Accuracy class with
 Überstrom-Begrenzungsfaktor: saturation factor) 0.5SFS5
 Frequenz: (Rated frequency) 50 Hz
 Isolationsprüfung: (Test voltage) 3 kV
 Prüfdatum: (Test date) 2012-03-02, 19:49:42 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) [A]
 Ip Primärer Nennstrom (Primary rated current) [A]
 Is Sekundärer Nennstrom (Secondary rated curr) [A]
 Fi % Stromfehler in Prozent (Current default) [%]
 phi ' Fehlwinkel in Minuten (Phase default) [min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,155	4,38		
100	0,151	4,53	0,229	3,48
20	0,076	7,82		
5	-0,006	16,81		
1	-0,081	32,92		

Prüfer (tested by):

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MBS AG

Prüfschein (Test report)

Antragsteller: (Customer)
 Bestell-Nummer: (Order-Number)
 Kunden-Auftragsnummer (Customer Order Number)



Fabrikat:	(Type)	EASK 41.4
Artikelnummer:	(Item number)	13584
Fabrik-Nr.:	(Serial-number)	12/
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 400 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-03-02, 19:49:42 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) [A]
 Ip Primärer Nennstrom (Primary rated current) [A]
 Is Sekundärer Nennstrom (Secondary rated curr) [A]
 Fi % Stromfehler in Prozent (Current default) [%]
 phi' Fehlwinkel in Minuten (Phase default) [min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi'	Fi %	phi'
120	0,155	4,38		
100	0,151	4,59	0,229	3,48
20	0,076	7,82		
5	-0,006	16,81		
1	-0,081	32,92		

Prüfer (tested by):

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E-Mail: mbs@mbs-stromwandler.de

MBS AG

Prüfschein (Test report)

Antragsteller:	(Customer)	ENSO
Bestell-Nummer:	(Order-Number)	011/1100606
Kunden-Auftragsnummer:	(Customer Order Number)	KA27165/14
Fabrikat:	(Type)	EASK 51.4
Artikelnummer:	(Item number)	16590
Fabrik-Nr.:	(Serial-number)	14/135501
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 500 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2014-07-15, 13:09:35

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
(The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 61869-2 |

Legende:	In	Nennstrom	(Rated current)	(A)
	Ip	Primärer Nennstrom	(Primary rated current)	(A)
	Is	Sekundärer Nennstrom	(Secondary rated current)	(A)
	Fi %	Stromfehler in Prozent	(Current default)	(%)
	phi '	Fehlwinkel in Minuten	(Phase default)	(min)

VA	5		1,25 VA	
cos β	0,8		1	
In in %	Fi %	phi '	Fi %	phi '
120	0,083	1,31		
100	0,068	1,83	0,334	5,6
20	-0,125	7,06		
5	-0,441	11,86		
1	-1,411	30,39		

Prüfer (tested by) :

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☎ +49 79 76 98 51 99
E-Mail: info@mbs-ag.com

signiert
von: Rudolf Hennig
am: 2014-07-15
um: 11:47:50 GMT
MBS AG

MBS AG

Prüfprotokoll / Test Report Stromwandler / Current Transformer

Firma	Client	GmbH "Global Trade"
Bestellnummer	Client order No.	270/12
Kunden-Auftragsnummer	Customer Order Number	KA40437/12

Seite 1 / 3

Artikelnummer	Item number	16593
Typ	Type	EASK 51.4
Auftragsnummer	Order No.	270/12
Fabriknummer	Serial No.	12/229259...12/229261

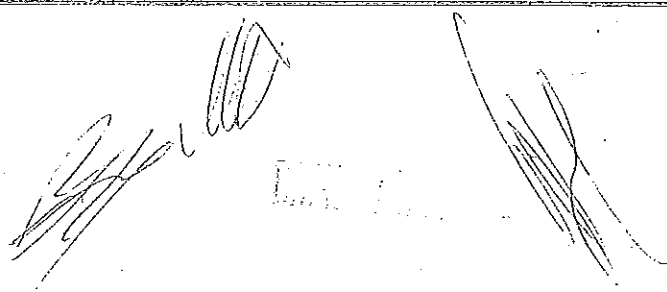
Norm	Stand: Standard	IEC 60044-1
Frequenz	Frequ: Frequency	50 Hz
Isolationspegel	Insulation level	0,72 / 3 / - kV
lth	lth	60*ln

Kern / Core	Klasse / Class	Leistung / Power	Übersetzung / Ratio
1 S1-S2	0.5SFS5	5 VA	600/5 A

Prüfung der Anschlussbezeichnungen Verification of terminal markings	erfolgreich Passed
---	-----------------------

Dieses Dokument ist ohne Unterschrift verbindlich
This document is valid without signature

29.11.2012



Dateiname: GmbH "Global Trade"
 Bestellnummer / Order No.: 270/12
 Seite / Page: 2 / 3

1. Genauigkeitsprüfung Accuracy Test

F Strommessabweichung / Current error
 d Winkelmessabweichung / Phase displacement

Fabr.-Nr. Serial No.	Klemmen Terminals	Leistung Power	5% In		20% In		100% In		120% In	
			F [%]	d [min]	F [%]	d [min]	F [%]	d [min]	F [%]	d [min]
12/229259	S1-S2	5 VA	-0,216	8,77	-0,099	5,41	0,003	1,43	0,015	0,90
	600/5 A	1,25 VA					0,195	4,37		
12/229260	S1-S2	5 VA	-0,212	8,19	-0,086	5,08	0,018	1,21	0,031	0,68
	600/5 A	1,25 VA					0,201	4,18		
12/229261	S1-S2	5 VA	-0,212	8,28	-0,099	5,33	0,006	1,38	0,020	0,83
	600/5 A	1,25 VA					0,197	4,38		
12/229250	S1-S2	5 VA	-0,183	8,52	-0,073	5,31	0,022	1,51	0,034	0,99
	600/5 A	1,25 VA					0,204	4,20		
12/229251	S1-S2	5 VA	-0,245	9,01	-0,118	5,47	-0,005	1,18	0,009	0,62
	600/5 A	1,25 VA					0,189	4,42		
12/229252	S1-S2	5 VA	-0,228	8,68	-0,113	5,65	-0,009	1,60	0,004	1,06
	600/5 A	1,25 VA					0,187	4,53		
12/229253	S1-S2	5 VA	-0,198	8,48	-0,087	5,28	0,014	1,27	0,027	0,74
	600/5 A	1,25 VA					0,204	4,30		
12/229254	S1-S2	5 VA	-0,225	7,87	-0,096	4,84	0,013	1,03	0,026	0,52
	600/5 A	1,25 VA					0,200	4,19		
12/229255	S1-S2	5 VA	-0,218	8,15	-0,104	5,39	0,004	1,48	0,018	0,94
	600/5 A	1,25 VA					0,198	4,47		
12/229256	S1-S2	5 VA	-0,201	7,30	-0,088	4,66	0,011	1,06	0,024	0,55
	600/5 A	1,25 VA					0,198	4,13		
12/229257	S1-S2	5 VA	-0,235	9,23	-0,107	5,66	0,004	1,27	0,018	0,70
	600/5 A	1,25 VA					0,197	4,45		
12/229258	S1-S2	5 VA	-0,223	9,22	-0,108	5,96	0,002	1,65	0,015	1,09
	600/5 A	1,25 VA					0,201	4,66		

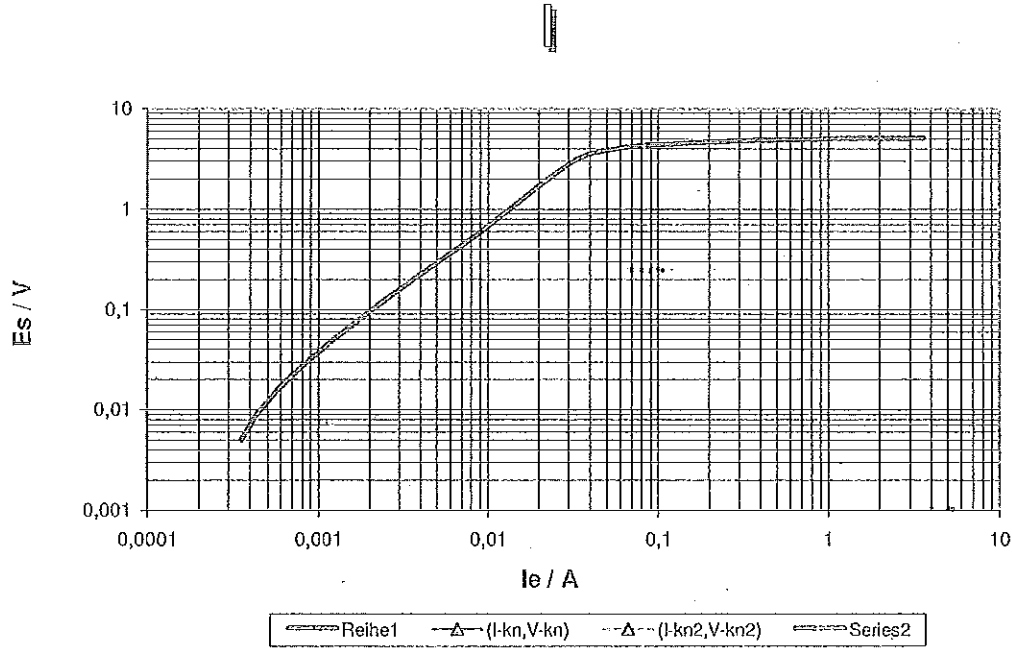
2. Magnetisierungscharakteristik Excitation Characteristics

Fabr.-Nr. Serial No.	Klemmen Terminals	Klasse class	U_{kn} [V]	I_{max} [A]	U_{ist} [V]	I_{kn} [mA]	R_{CT} (75°C)
12/229259	S1-S2	0.5SFS5	4			49	93,39 mOhm
12/229260	S1-S2	0.5SFS5	4			46	93,15 mOhm
12/229261	S1-S2	0.5SFS5	4			52	93,58 mOhm
12/229250	S1-S2	0.5SFS5	4			45	93,66 mOhm
12/229251	S1-S2	0.5SFS5	4			51	93,11 mOhm
12/229252	S1-S2	0.5SFS5	4			46	93,11 mOhm
12/229253	S1-S2	0.5SFS5	4			49	93,14 mOhm
12/229254	S1-S2	0.5SFS5	4			44	93,15 mOhm
12/229255	S1-S2	0.5SFS5	4			46	93,01 mOhm
12/229256	S1-S2	0.5SFS5	4			47	93,22 mOhm
12/229257	S1-S2	0.5SFS5	4			52	93,38 mOhm
12/229258	S1-S2	0.5SFS5	4			51	93,38 mOhm

Ukn; Ikn ... acc. IEC 60044-1

Dateiname: GmbH "Global Trade"
Bestellnummer / Order No.: 270/12
Seite / Page: 3 / 3

3. Magnetisierungskurve Excitation curve



MBS AG

Prüfschein (Test report)

Antragsteller:	(Customer)	GmbH "Global Trade"
Bestell-Nummer:	(Order-Number)	270/12
Kunden-Auftragsnummer:	(Customer Order Number)	KA40437/12
Fabrikat:	(Type)	EASK 51.4
Artikelnummer:	(Item number)	16593
Fabrik-Nr.:	(Serial-number)	12/229259
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 600 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-11-29, 14:41:14 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
(The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) [A]
 Ip Primärer Nennstrom (Primary rated current) [A]
 Is Sekundärer Nennstrom (Secondary rated curr) [A]
 Fi % Stromfehler in Prozent (Current default) [%]
 phi ' Fehlwinkel in Minuten (Phase default) [min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,015	0,90		
100	0,003	1,43	0,195	4,37
20	-0,099	5,41		
5	-0,216	8,77		
1	-0,577	17,95		

Prüfer (tested by):

MBS AG
Eisbachstrasse 51
74429 Sulzbach-Laufen

MBS AG
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MBS AG

Prüfschein (Test report)

Antragsteller:	(Customer)	GmbH "Global Trade"
Bestell-Nummer:	(Order-Number)	270/12
Kunden-Auftragsnummer:	(Customer Order Number)	KA40437/12
Fabrikat:	(Type)	EASK 51.4
Artikelnummer:	(Item number)	16593
Fabrik-Nr.:	(Serial-number)	12/229260
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 600 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-11-29, 14:41:14 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
(The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende:	In	Nennstrom	(Rated current)	[A]
	Ip	Primärer Nennstrom	(Primary rated current)	[A]
	Is	Sekundärer Nennstrom	(Secondary rated current)	[A]
	Fi %	Stromfehler in Prozent	(Current default)	[%]
	phi'	Fehlwinkel in Minuten	(Phase default)	[min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi'	Fi %	phi'
120	0,031	0,68		
100	0,018	1,21	0,201	4,18
20	-0,086	5,08		
5	-0,212	8,19		
1	-0,577	18,05		

Prüfer (tested by) :

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E-Mail: mbs@mbs-stromwandler.de

MBS AG

Prüfschein (Test report)

Antragsteller:	(Customer)	GmbH "Global Trade"
Bestell-Nummer:	(Order-Number)	270/12
Kunden-Auftragsnummer:	(Customer Order Number)	KA40437/12
Fabrikat:	(Type)	EASK 51.4
Artikelnummer:	(Item number)	16593
Fabrik-Nr.:	(Serial-number)	12/229261
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 600 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-11-29, 14:41:14 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
(The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende:	In	Nennstrom	(Rated current)	[A]
	Ip	Primärer Nennstrom	(Primary rated current)	[A]
	Is	Sekundärer Nennstrom	(Secondary rated curr)	[A]
	Fi %	Stromfehler in Prozent	(Current default)	[%]
	phi '	Fehlwinkel in Minuten	(Phase default)	[min]

VA	5		1,25	
cos B	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,020	0,83		
100	0,006	1,38	0,197	4,38
20	-0,099	5,33		
5	-0,212	8,28		
1	-0,553	16,63		

Prüfer (tested by) :

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E-Mail: mbs@mbs-stromwandler.de

MBS AG

Prüfschein (Test report)

Antragsteller:	(Customer)	GmbH "Global Trade"
Bestell-Nummer:	(Order-Number)	270/12
Kunden-Auftragsnummer:	(Customer Order Number)	KA40437/12
Fabrikat:	(Type)	EASK 51.4
Artikelnummer:	(Item number)	16593
Fabrik-Nr.:	(Serial-number)	12/229250
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 600 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-11-29, 14:41:14 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
(The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende:	In	Nennstrom	(Rated current)	[A]
	Ip	Primärer Nennstrom	(Primary rated current)	[A]
	Is	Sekundärer Nennstrom	(Secondary rated current)	[A]
	Fi %	Stromfehler in Prozent	(Current default)	[%]
	phi'	Fehlwinkel in Minuten	(Phase default)	[min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi'	Fi %	phi'
120	0,034	0,99		
100	0,022	1,51	0,204	4,20
20	-0,073	5,31		
5	-0,183	8,52		
1	-0,527	17,44		

Prüfer (tested by) :

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MBS AG

Prüfschein (Test report)

Antragsteller:	(Customer)	GmbH "Global Trade"
Bestell-Nummer:	(Order-Number)	270/12
Kunden-Auftragsnummer:	(Customer Order Number)	KA40437/12
Fabrikat:	(Type)	EASK 51.4
Artikelnummer:	(Item number)	16593
Fabrik-Nr.:	(Serial-number)	12/229251
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 600 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-11-29, 14:41:14 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
(The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende:	In	Nennstrom	(Rated current)	[A]
	Ip	Primärer Nennstrom	(Primary rated current)	[A]
	Is	Sekundärer Nennstrom	(Secondary rated curr)	[A]
	Fi %	Stromfehler in Prozent	(Current default)	[%]
	phi '	Fehlwinkel in Minuten	(Phase default)	[min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,009	0,62		
100	-0,005	1,18	0,189	4,42
20	-0,118	5,47		
5	-0,245	9,01		
1	-0,663	18,70		

Prüfer (tested by) :

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Prüfschein (Test report)

Antragsteller:	(Customer)	GmbH "Global Trade"
Bestell-Nummer:	(Order-Number)	270/12
Kunden-Auftragsnummer:	(Customer Order Number)	KA40437/12
Fabrikat:	(Type)	EASK 51.4
Artikelnummer:	(Item number)	16593
Fabrik-Nr.:	(Serial-number)	12/229252
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 600 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-11-29, 14:41:14 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
(The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende:	In	Nennstrom	(Rated current)	[A]
	Ip	Primärer Nennstrom	(Primary rated current)	[A]
	Is	Sekundärer Nennstrom	(Secondary rated curr)	[A]
	Fi %	Stromfehler in Prozent	(Current default)	[%]
	phi '	Fehlwinkel in Minuten	(Phase default)	[min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,004	1,06		
100	-0,009	1,60	0,187	4,53
20	-0,113	5,65		
5	-0,228	8,68		
1	-0,556	17,42		

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MBS AG

Prüfschein (Test report)

Antragsteller:	(Customer)	GmbH "Global Trade"
Bestell-Nummer:	(Order-Number)	270/12
Kunden-Auftragsnummer:	(Customer Order Number)	KA40437/12
Fabrikat:	(Type)	EASK 51.4
Artikelnummer:	(Item number)	16593
Fabrik-Nr.:	(Serial-number)	12/229253
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 600 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-11-29, 14:41:14 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
(The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende:	In	Nennstrom	(Rated current)	[A]
	Ip	Primärer Nennstrom	(Primary rated current)	[A]
	Is	Sekundärer Nennstrom	(Secondary rated curr)	[A]
	Fi %	Stromfehler in Prozent	(Current default)	[%]
	phi'	Fehlwinkel in Minuten	(Phase default)	[min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi'	Fi %	phi'
120	0,027	0,74		
100	0,014	1,27	0,204	4,30
20	-0,087	5,28		
5	-0,198	8,48		
1	-0,529	17,30		

Prüfer (tested by) :

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MBS AG

Prüfschein (Test report)

Antragsteller:	(Customer)	GmbH "Global Trade"
Bestell-Nummer:	(Order-Number)	270/12
Kunden-Auftragsnummer:	(Customer Order Number)	KA40437/12
Fabrikat:	(Type)	EASK 51.4
Artikelnummer:	(Item number)	16593
Fabrik-Nr.:	(Serial-number)	12/229254
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 600 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-11-29, 14:41:14 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
(The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) [A]
 Ip Primärer Nennstrom (Primary rated current) [A]
 Is Sekundärer Nennstrom (Secondary rated curr) [A]
 Fi % Stromfehler in Prozent (Current default) [%]
 phi ' Fehlwinkel in Minuten (Phase default) [min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi.'	Fi %	phi.'
120	0,026	0,52		
100	0,013	1,03	0,200	4,19
20	-0,096	4,84		
5	-0,225	7,87		
1	-0,589	18,04		

Prüfer (tested by) :

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E-Mail: mbs@mbs-stromwandler.de

MBS AG

Prüfschein (Test report)

Antragsteller:	(Customer)	GmbH "Global Trade"
Bestell-Nummer:	(Order-Number)	270/12
Kunden-Auftragsnummer:	(Customer Order Number)	KA40437/12
Fabrikat:	(Type)	EASK 51.4
Artikelnummer:	(Item number)	16593
Fabrik-Nr.:	(Serial-number)	12/229255
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 600 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-11-29, 14:41:14 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
(The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende:	In	Nennstrom	(Rated current)	[A]
	Ip	Primärer Nennstrom	(Primary rated current)	[A]
	Is	Sekundärer Nennstrom	(Secondary rated curr)	[A]
	Fi %	Stromfehler in Prozent	(Current default)	[%]
	phi'	Fehlwinkel in Minuten	(Phase default)	[min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi'	Fi %	phi'
120	0,018	0,94		
100	0,004	1,48	0,198	4,47
20	-0,104	5,39		
5	-0,218	8,15		
1	-0,548	16,31		

Prüfer (tested by) :

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E-Mail: mbs@mbs-stromwandler.de

MBS AG

Prüfschein (Test report)

Antragsteller:	(Customer)	GmbH "Global Trade"
Bestell-Nummer:	(Order-Number)	270/12
Kunden-Auftragsnummer:	(Customer Order Number)	KA40437/12
Fabrikat:	(Type)	EASK 51.4
Artikelnummer:	(Item number)	16593
Fabrik-Nr.:	(Serial-number)	12/229256
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 600 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-11-29, 14:41:14 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
(The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende:	In	Nennstrom	(Rated current)	[A]
	Ip	Primärer Nennstrom	(Primary rated current)	[A]
	Is	Sekundärer Nennstrom	(Secondary rated current)	[A]
	Fi %	Stromfehler in Prozent	(Current default)	[%]
	phi'	Fehlwinkel in Minuten	(Phase default)	[min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi'	Fi %	phi'
120	0,024	0,55		
100	0,011	1,06	0,198	4,13
20	-0,088	4,66		
5	-0,201	7,30		
1	-0,537	15,44		

Prüfer (tested by):

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MBS AG

Prüfschein (Test report)

Antragsteller:	(Customer)	GmbH "Global Trade"
Bestell-Nummer:	(Order-Number)	270/12
Kunden-Auftragsnummer:	(Customer Order Number)	KA40437/12
Fabrikat:	(Type)	EASK 51.4
Artikelnummer:	(Item number)	16593
Fabrik-Nr.:	(Serial-number)	12/229257
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 600 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-11-29, 14:41:14 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
(The current transformers were tested in according with:)

		VBG 4	DIN VDE 0414/1
1.	Isolationsprüfung:	(Insulation test)	DIN 42600
2.	Genauigkeitsprüfung:	(accuracy test)	IEC 60044-1

Legende: In	Nennstrom	(Rated current)	[A]
Ip	Primärer Nennstrom	(Primary rated current)	[A]
Is	Sekundärer Nennstrom	(Secondary rated curr)	[A]
Fi %	Stromfehler in Prozent	(Current default)	[%]
phi'	Fehlwinkel in Minuten	(Phase default)	[min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi'	Fi %	phi'
120	0,018	0,70		
100	0,004	1,27	0,197	4,45
20	-0,107	5,66		
5	-0,235	9,23		
1	-0,661	19,15		

Prüfer (tested by) :

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MBS AG

Prüfschein (Test report)

Antragsteller:	(Customer)	GmbH "Global Trade"
Bestell-Nummer:	(Order-Number)	270/12
Kunden-Auftragsnummer:	(Customer Order Number)	KA40437/12
Fabrikat:	(Type)	EASK 51.4
Artikelnummer:	(Item number)	16593
Fabrik-Nr.:	(Serial-number)	12/229258
Hersteller:	(Manufacturer)	MBS
Übersetzungsfaktor:	(Ratio factor)	Ip 600 A Is 5 A
Leistung:	(Rated Power)	5 VA
Genauigkeitsklasse mit Überstrom-Begrenzungsfaktor:	(Accuracy class with saturation factor)	0.5SFS5
Frequenz:	(Rated frequency)	50 Hz
Isolationsprüfung:	(Test voltage)	3 kV
Prüfdatum:	(Test date)	2012-11-29, 14:41:14 AM

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
(The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende:	In	Nennstrom	(Rated current)	[A]
	Ip	Primärer Nennstrom	(Primary rated current)	[A]
	Is	Sekundärer Nennstrom	(Secondary rated curr)	[A]
	Fi %	Stromfehler in Prozent	(Current default)	[%]
	phi '	Fehlwinkel in Minuten	(Phase default)	[min]

VA	5		1,25	
cos β	0,8		0,8	
In in %	Fi %	phi '	Fi %	phi '
120	0,015	1,09		
100	0,002	1,65	0,201	4,66
20	-0,108	5,96		
5	-0,223	9,22		
1	-0,554	18,27		

Prüfer (tested by) :

MBS AG
Eisbachstrasse 51
74429 Sulzbach-Laufen

MBS AG
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Sulzbach Messwandler

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E-Mail: mbs@mbs-stromwandler.de

MBS AG

Prüfprotokoll / Test Report
Stromwandler / Current Transformer

Besteller	Client	ASTAT sp. z o.o.
Bestellnummer	Client order No.	Z-317-11-853
Kunden-Auftragsnummer	Customer Order Number	KA42058/11

Seite 1 / 3

Artikelnummer	Item number	19651
Typ	Type	EASK 61.4
Auftragsnummer	Order No.	Z-317-11-853
Fabriknummer	Serial No.	11/211938...11/212328

Norm	Standard	IEC 60044-1
Frequenz	Frequency	50 Hz
Isolationspegel	Insulation level	0,72 / 3 / - kV
Ith	Ith	60*In

Kern / Core	Klasse / Class	Leistung / Power	Übersetzung / Ratio
1 s1-s2	0.5SFS5	5 VA	800/5 A

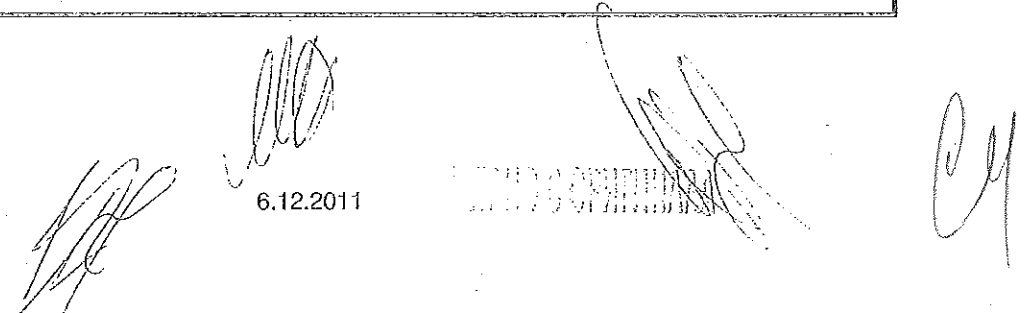
Prüfung der Anschlussbezeichnungen Verification of terminal markings	erfolgreich Passed
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Dieses Dokument ist ohne Unterschrift verbindlich
This document is valid without signature

6.12.2011

Datum:

6.12.2011



Dateiname: ASTAT sp. z o.o.
 Bestellnummer / Order No.: Z-317-11-853
 Seite / Page: 2 / 3

1. Genauigkeitsprüfung
 Accuracy Test

F Strommessabweichung / Current error
 d Winkelmessabweichung / Phase displacement

Fabr.-Nr. Serial No.	Klemmen Terminals	Leistung Power	5% In		20% In		100% In		120% In	
			F [%]	d [min]	F [%]	d [min]	F [%]	d [min]	F [%]	d [min]
11/211938	s1-s2	5 VA	-0,299	11,61	-0,182	7,89	-0,081	3,03	-0,068	2,53
	800/5 A	1,25 VA					0,084	4,99		
11/212036	s1-s2	5 VA	-0,305	10,28	-0,185	6,87	-0,083	2,52	-0,070	2,05
	800/5 A	1,25 VA					0,081	4,55		
11/212230	s1-s2	5 VA	-0,233	8,02	-0,127	5,43	-0,043	2,19	-0,031	1,78
	800/5 A	1,25 VA					0,099	4,99		
11/212328	s1-s2	5 VA	-0,300	10,82	-0,182	7,31	-0,074	2,54	-0,059	2,06
	800/5 A	1,25 VA					0,086	4,76		
Fab-Nr	s1-s2	5 VA	-0,265	8,35	-0,111	2,73	-0,010	0,07	-0,005	-0,08
	800/5 A	1,25 VA					0,172	2,58		
Fab-Nr	s1-s2	5 VA	-0,293	5,80	-0,105	0,10	-0,001	-1,28	0,005	-1,43
	800/5 A	1,25 VA					0,162	1,88		

2. Magnetisierungscharakteristik
 Excitation Characteristics

Fabr.-Nr. Serial No.	Klemmen Terminals	Klasse class	U_{kn} [V]	I_{max} [A]	U_{lst} [V]	I_{kn} [mA]	R_{CT} (75°C)
11/211938	s1-s2	0.5SFS5	5			87	123,1 mOhm
11/212036	s1-s2	0.5SFS5	5			73	108,74 mOhm
11/212230	s1-s2	0.5SFS5	5			49	123,27 mOhm
11/212328	s1-s2	0.5SFS5	5			83	122,89 mOhm
Fab-Nr	s1-s2	0.2SFS5	2			27	35,13 mOhm
Fab-Nr	s1-s2	0.2SFS5	2			27	35,03 mOhm

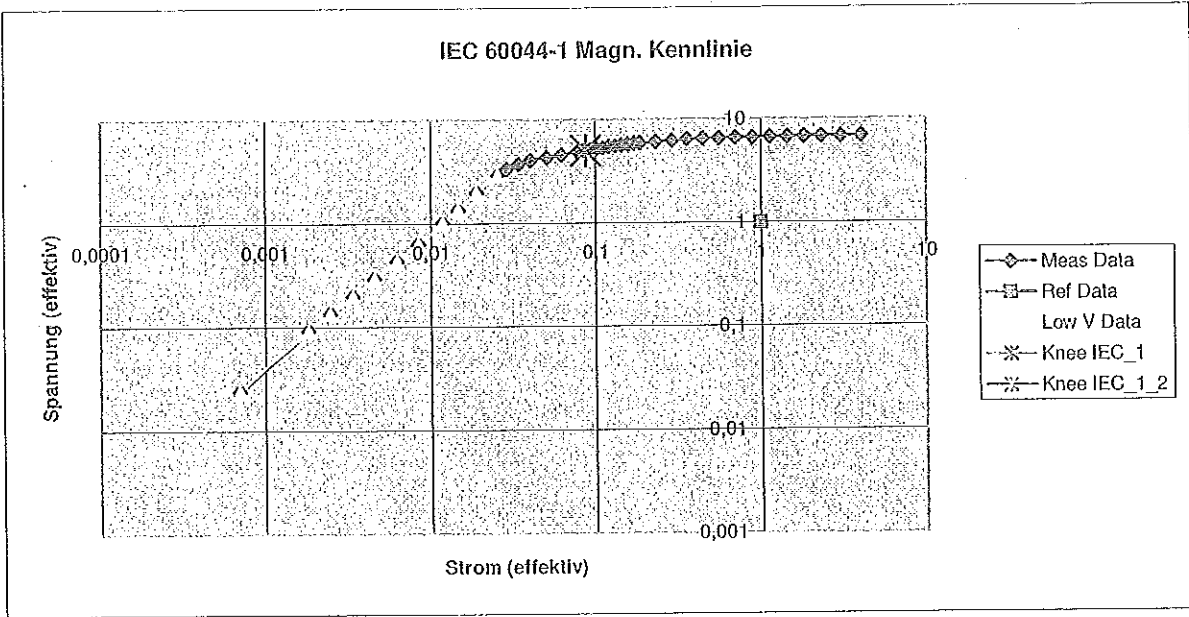
Ukn; Ikn ... acc. IEC 60044-1

Datum:

6.12.2011

Dateiname: ASTAT sp. z o.o.
Bestellnummer / Order No.: Z-317-11-853
Seite / Page: 3 / 3

3. Magnetisierungskurve
Excitation curve



Datum:

6.12.2011

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer) **ASTAT sp. z o.o.**
 Bestell-Nummer: (Order-Number) **Z-317-11-853**
 Kunden-Auftragsnummer: (Customer Order Number) **KA42058/11**

Fabrikat: (Type) **EASK 61.4**
 Artikelnummer: (Item number) **19651**
 Fabrik-Nr.: (Serial-number) **11/211938**
 Hersteller: (Manufacturer) **MBS AG**

Übersetzungsfaktor: (Ratio factor) **Ip 800 A**
Is 5 A
5 VA

Leistung: (Rated Power)
 Genauigkeitsklasse mit (Accuracy class with
 Überstrom-Begrenzungsfaktor: saturation factor) **0.5SFS5**
 Frequenz: (Rated frequency) **50 Hz**
 Isolationsprüfung: (Test voltage) **3 kV**
 Prüfdatum: (Test date) **2011-12-06, 10:10:31 AM**

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

VBG 4 DIN VDE 0414/1

1. Isolationsprüfung: (Insulation test) DIN 42600
 2. Genauigkeitsprüfung: (accuracy test) IEC 60044-1

Legende: In Nennstrom (Rated current) (A)
 Ip Primärer Nennstrom (Primary rated current) (A)
 Is Sekundärer Nennstrom (Secondary rated current) (A)
 Fi % Stromfehler in Prozent (Current default) (%)
 phi ' Fehlwinkel in Minuten (Phase default) (min)

VA	5		1,25	
cos β	0,8		1	
In in %	Fi %	phi '	Fi %	phi '
120	-0,068	2,53		
100	-0,081	3,03	0,084	5,0
20	-0,182	7,89		
5	-0,299	11,61		
1	-0,620	22,00		

Prüfer (tested by) :

MBS AG
 Eisbachstrasse 51
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MBS AG
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 Sulzbach Messwandler

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 E-Mail: mbs@mbs-stromwandler.de

Datum:

6.12.2011

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer) **ASTAT sp. z o.o.**
 Bestell-Nummer: (Order-Number) **Z-317-11-853**
 Kunden-Auftragsnummer: (Customer Order Number) **KA42058/11**

Fabrikat: (Type) **EASK 61.4**
 Artikelnummer: (Item number) **19651**
 Fabrik-Nr.: (Serial-number) **11/212036**
 Hersteller: (Manufacturer) **MBS AG**

Übersetzungsfaktor: (Ratio factor) **Ip 800 A**
Is 5 A
5 VA
 Leistung: (Rated Power)
 Genauigkeitsklasse mit (Accuracy class with
 Überstrom-Begrenzungsfaktor: saturation factor) **0.5SFS5**
 Frequenz: (Rated frequency) **50 Hz**
 Isolationsprüfung: (Test voltage) **3 kV**
 Prüfdatum: (Test date) **2011-12-06, 10:12:59 AM**

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) (A)
 Ip Primärer Nennstrom (Primary rated current) (A)
 Is Sekundärer Nennstrom (Secondary rated current) (A)
 Fi % Stromfehler in Prozent (Current default) (%)
 phi ' Fehlwinkel in Minuten (Phase default) (min)

VA	5		1,25	
cos β	0,8		1	
In in %	Fi %	phi '	Fi %	phi '
120	-0,070	2,05		
100	-0,083	2,52	0,081	4,6
20	-0,185	6,87		
5	-0,305	10,28		
1	-0,629	20,33		

MBS AG

Prüfer (tested by):

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Sulzbach Messwandler

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 E-Mail: mbs@mbs-stromwandler.de

Datum:

6.12.2011

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MBS AG

Prüfschein (Test report)

Antragsteller: (Customer) **ASTAT sp. z o.o.**
 Bestell-Nummer: (Order-Number) **Z-317-11-853**
 Kunden-Auftragsnummer: (Customer Order Number) **KA42058/11**

Fabrikat: (Type) **EASK 61.4**
 Artikelnummer: (Item number) **19651**
 Fabrik-Nr.: (Serial-number) **11/212230**
 Hersteller: (Manufacturer) **MBS AG**

Übersetzungsfaktor: (Ratio factor) **Ip 800 A**
Is 5 A
5 VA

Leistung: (Rated Power)
 Genauigkeitsklasse mit (Accuracy class with
 Überstrom-Begrenzungsfaktor: saturation factor) **0.5SFS5**
 Frequenz: (Rated frequency) **50 Hz**
 Isolationsprüfung: (Test voltage) **3 kV**
 Prüfdatum: (Test date) **2011-12-06, 10:18:28 AM**

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) (A)
 Ip Primärer Nennstrom (Primary rated current) (A)
 Is Sekundärer Nennstrom (Secondary rated current) (A)
 Fi % Stromfehler in Prozent (Current default) (%)
 phi ' Fehlwinkel in Minuten (Phase default) (min)

VA	5		1,25	
cos β	0,8		1	
In in %	Fi %	phi '	Fi %	phi '
120	-0,031	1,78		
100	-0,043	2,19	0,099	4,0
20	-0,127	5,43		
5	-0,233	8,02		
1	-0,536	16,51		

Prüfer (tested by):

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MBS AG
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 Sulzbach Messwandler

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☎ +49 79 76 98 51 90

E-Mail: mbs@mbs-stromwandler.de

Datum:

6.12.2011

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer) **ASTAT sp. z o.o.**
 Bestell-Nummer: (Order-Number) **Z-317-11-853**
 Kunden-Auftragsnummer: (Customer Order Number) **KA42058/11**

Fabrikat: (Type) **EASK 61.4**
 Artikelnummer: (Item number) **19651**
 Fabrik-Nr.: (Serial-number) **11/212328**
 Hersteller: (Manufacturer) **MBS AG**

Übersetzungsfaktor: (Ratio factor) **Ip 800 A**
Is 5 A
5 VA

Leistung: (Rated Power)
 Genauigkeitsklasse mit (Accuracy class with)
 Überstrom-Begrenzungsfaktor: saturation factor) **0.5SFS5**
 Frequenz: (Rated frequency) **50 Hz**
 Isolationsprüfung: (Test voltage) **3 kV**
 Prüfdatum: (Test date) **2011-12-06, 10:10:31 AM**

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) (A)
 Ip Primärer Nennstrom (Primary rated current) (A)
 Is Sekundärer Nennstrom (Secondary rated current) (A)
 Fi % Stromfehler in Prozent (Current default) (%)
 phi ' Fehlwinkel in Minuten (Phase default) (min)

VA	5		1,25	
cos β	0,8		1	
In in %	Fi %	phi '	Fi %	phi '
120	-0,059	2,06		
100	-0,074	2,54	0,086	4,8
20	-0,182	7,31		
5	-0,300	10,82		
1	-0,625	20,98		

Prüfer (tested by) :

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MBS AG
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 Sulzbach Messwandler

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 ☎ +49 79 76 98 51 90
 E-Mail: mbs@mbs-stromwandler.de

Datum:

6.12.2011

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer) **ASTAT sp. z o.o.**
 Bestell-Nummer: (Order-Number) **Z-317-11-853**
 Kunden-Auftragsnummer: (Customer Order Number) **KA42058/11**

Fabrikat: (Type) **EASK 61.4**
 Artikelnummer: (Item number) **19651**
 Fabrik-Nr.: (Serial-number) **Fab-Nr**
 Hersteller: (Manufacturer) **MBS AG**

Übersetzungsfaktor: (Ratio factor) **Ip 800 A**
Is 5 A
5 VA

Leistung: (Rated Power)
 Genauigkeitsklasse mit (Accuracy class with
 Überstrom-Begrenzungsfaktor: saturation factor) **0.5SFS5**
 Frequenz: (Rated frequency) **50 Hz**
 Isolationsprüfung: (Test voltage) **3 kV**
 Prüfdatum: (Test date) **2011-12-06, 10:10:31 AM**

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) (A)
 Ip Primärer Nennstrom (Primary rated current) (A)
 Is Sekundärer Nennstrom (Secondary rated current) (A)
 Fi % Stromfehler in Prozent (Current default) (%)
 phi ' Fehlwinkel in Minuten (Phase default) (min)

VA	5		1,25	
cos β	0,8		1	
In in %	Fi %	phi '	Fi %	phi '
120	-0,005	-0,08		
100	-0,010	0,07	0,172	2,6
20	-0,111	2,73		
5	-0,265	8,35		
1	-0,512	17,89		

Prüfer (tested by) :

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E-Mail: mbs@mbs-stromwandler.de

Datum:

6.12.2011

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer) **ASTAT sp. z o.o.**
 Bestell-Nummer: (Order-Number) **Z-317-11-853**
 Kunden-Auftragsnummer: (Customer Order Number) **KA42058/11**

Fabrikat: (Type) **EASK 61.4**
 Artikelnummer: (Item number) **19651**
 Fabrik-Nr.: (Serial-number) **Fab-Nr**
 Hersteller: (Manufacturer) **MBS AG**

Übersetzungsfaktor: (Ratio factor) **Ip 800 A**
Is 5 A
5 VA

Leistung: (Rated Power)
 Genauigkeitsklasse mit (Accuracy class with
 Überstrom-Begrenzungsfaktor: saturation factor) **0.5SFS5**
 Frequenz: (Rated frequency) **50 Hz**
 Isolationsprüfung: (Test voltage) **3 kV**
 Prüfdatum: (Test date) **2011-12-06, 10:10:31 AM**

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) (A)
 Ip Primärer Nennstrom (Primary rated current) (A)
 Is Sekundärer Nennstrom (Secondary rated current) (A)
 Fi % Stromfehler in Prozent (Current default) (%)
 phi ' Fehlwinkel in Minuten (Phase default) (min)

VA	5		1,25	
cos β	0,8		1	
In in %	Fi %	phi '	Fi %	phi '
120	0,005	-1,43		
100	-0,001	-1,28	0,162	1,9
20	-0,105	0,10		
5	-0,293	5,80		
1	-0,592	17,16		

Prüfer (tested by) :

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 Eisbachstrasse 51
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 Sulzbach Messwandler

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 E-Mail: mbs@mbs-stromwandler.de

Datum:

6.12.2011

VERBODEN TOEGANG
 TOEGANG VERBODEN

MBS AG

Prüfprotokoll / Test Report
Stromwandler / Current Transformer

Besteller	Client	ASTAT
Bestellnummer	Client order No.	Z-234-03-197
Kunden-Auftragsnummer	Customer Order Number	KA17236/12

Seite 1 / 2

Artikelnummer	Item number	19625
Typ	Type	EASK 61.4
Auftragsnummer	Order No.	Z-234-03-197
Fabriknummer	Serial No.	12/142503...12/142505

Norm	Standard	IEC 60044-1
Frequenz	Frequency	50 Hz
Isolationspegel	Insulation level	0,72 / 3 / - kV
lth	lth	60*ln

Kern / Core	Klasse / Class	Leistung / Power	Übersetzung / Ratio
1 s1-s2	0.5SFS5	5 VA	1000/5 A

Prüfung der Anschlussbezeichnungen
Verification of terminal markings

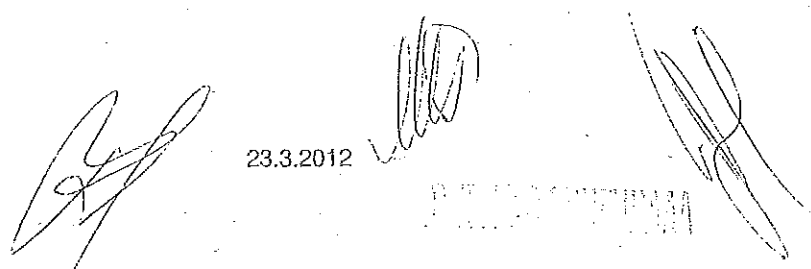
erfolgreich
Passed

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This document is valid without signature

23.3.2012

Datum:

23.3.2012



Dateiname: ASTAT
 Bestellnummer / Order No.: Z-234-03-197
 Seite / Page: 2/2

**1. Genauigkeitsprüfung
Accuracy Test**

F Strommessabweichung / Current error
 d Winkelmessabweichung / Phase displacement

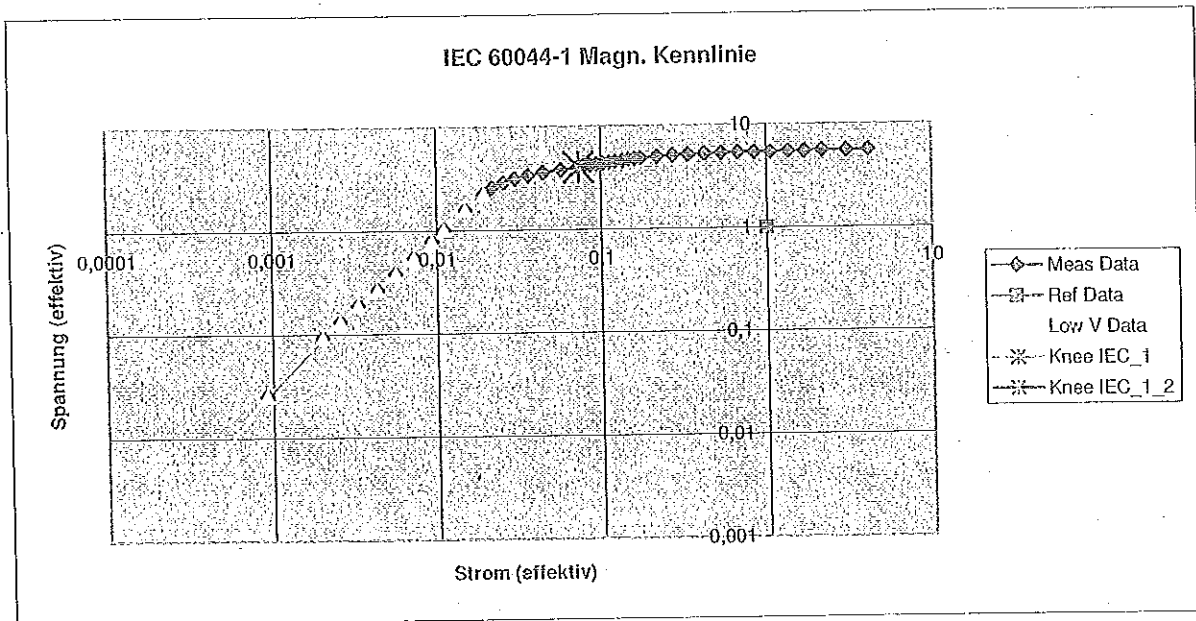
Fabr.-Nr. Serial No.	Klemmen Terminals	Leistung Power	5% I _n		20% I _n		100% I _n		120% I _n	
			F [%]	d [min]	F [%]	d [min]	F [%]	d [min]	F [%]	d [min]
12/142503	s1-s2	5 VA	-0,097	12,17	0,096	7,48	0,230	2,23	0,241	1,91
	1000/5 A	1,25 VA					0,371	4,66		
12/142504	s1-s2	5 VA	-0,135	10,17	0,071	5,78	0,208	1,39	0,222	1,04
	1000/5 A	1,25 VA					0,347	3,93		
12/142505	s1-s2	5 VA	-0,057	10,29	0,123	6,20	0,241	1,89	0,252	1,53
	1000/5 A	1,25 VA					0,368	4,66		

**2. Magnetisierungscharakteristik
Excitation Characteristics**

Fabr.-Nr. Serial No.	Klemmen Terminals	Klasse class	U _{kn} [V]	I _{max} [A]	U _{ist} [V]	I _{kn} [mA]	R _{CT} (75°C)
12/142503	s1-s2	0.5SFS5	4			73	146,62 mOhm
12/142504	s1-s2	0.5SFS5	4			59	109,1 mOhm
12/142505	s1-s2	0.5SFS5	4			47	146,63 mOhm

U_{kn}; I_{kn} ... acc. IEC 60044-1

**3. Magnetisierungskurve
Excitation curve**



Datum:

23.3.2012

BIBLIO C OPIEREN

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer) **ASTAT**
 Bestell-Nummer: (Order-Number) **Z-234-03-197**
 Kunden-Auftragsnummer: (Customer Order Number) **KA17236/12**

Fabrikat: (Type) **EASK 61.4**
 Artikelnummer: (Item number) **19625**
 Fabrik-Nr.: (Serial-number) **12/142503**
 Hersteller: (Manufacturer) **MBS AG**

Übersetzungsfaktor: (Ratio factor) **Ip 1000 A**
Is 5 A
5 VA

Leistung: (Rated Power)
 Genauigkeitsklasse mit (Accuracy class with
 Überstrom-Begrenzungsfaktor: saturation factor) **0.5SFS5**
 Frequenz: (Rated frequency) **50 Hz**
 Isolationsprüfung: (Test voltage) **3 kV**
 Prüfdatum: (Test date) **2012-03-23, 11:59:17 AM**

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) (A)
 Ip Primärer Nennstrom (Primary rated current) (A)
 Is Sekundärer Nennstrom (Secondary rated current) (A)
 Fi % Stromfehler in Prozent (Current default) (%)
 phi ' Fehlwinkel in Minuten (Phase default) (min)

VA	5		1,25	
cos B	0,8		1	
In in %	Fi %	phi '	Fi %	phi '
120	0,241	1,91		
100	0,230	2,23	0,371	4,7
20	0,096	7,48		
5	-0,097	12,17		
1	-0,627	29,24		

Prüfer (tested by) :

MBS AG
 Eisbachstrasse 51
 74429 Sulzbach-Laufen

MBS AG
 Eisbachstraße 51
 74429 Sulzbach-Laufen
 Sulzbach Messwandler

☎ +49 79 76 98 51 0
 ☎ +49 79 76 98 51 90
 E-Mail: mbs@mbs-stromwandler.de

Datum:

23.3.2012

MBS AG

Prüfschein (Test report)

Antragsteller: (Customer) **ASTAT**
 Bestell-Nummer: (Order-Number) **Z-234-03-197**
 Kunden-Auftragsnummer: (Customer Order Number) **KA17236/12**

Fabrikat: (Type) **EASK 61.4**
 Artikelnummer: (Item number) **19625**
 Fabrik-Nr.: (Serial-number) **12/142504**
 Hersteller: (Manufacturer) **MBS AG**

Übersetzungsfaktor: (Ratio factor) **Ip 1000 A**
Is 5 A
5 VA

Leistung: (Rated Power)
 Genauigkeitsklasse mit (Accuracy class with
 Überstrom-Begrenzungsfaktor: saturation factor) **0.5SFS5**
 Frequenz: (Rated frequency) **50 Hz**
 Isolationsprüfung: (Test voltage) **3 kV**
 Prüfdatum: (Test date) **2012-03-23, 12:02:05 AM**

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with):

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) (A)
 Ip Primärer Nennstrom (Primary rated current) (A)
 Is Sekundärer Nennstrom (Secondary rated current) (A)
 Fi % Stromfehler in Prozent (Current default) (%)
 phi ' Fehlwinkel in Minuten (Phase default) (min)

VA	5		1,25	
cos B	0,8		1	
In in %	Fi %	phi '	Fi %	phi '
120	0,222	1,04		
100	0,208	1,39	0,347	3,9
20	0,071	5,78		
5	-0,135	10,17		
1	-0,685	27,76		

Prüfer (tested by) :

MBS AG
 Eisbachstrasse 51
 74429 Sulzbach-Laufen

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Prüfschein (Test report)

Antragsteller: (Customer) **ASTAT**
 Bestell-Nummer: (Order-Number) **Z-234-03-197**
 Kunden-Auftragsnummer: (Customer Order Number) **KA17236/12**

Fabrikat: (Type) **EASK 61.4**
 Artikelnummer: (Item number) **19625**
 Fabrik-Nr.: (Serial-number) **12/142505**
 Hersteller: (Manufacturer) **MBS AG**

Übersetzungsfaktor: (Ratio factor) **Ip 1000 A**
Is 5 A
5 VA

Leistung: (Rated Power)
 Genauigkeitsklasse mit (Accuracy class with
 Überstrom-Begrenzungsfaktor: saturation factor) **0.5SFS5**
 Frequenz: (Rated frequency) **50 Hz**
 Isolationsprüfung: (Test voltage) **3 kV**
 Prüfdatum: (Test date) **2012-03-23, 12:04:47 AM**

Der Stromwandler wurde in Übereinstimmung folgender Vorschriften geprüft:
 (The current transformers were tested in according with:)

- | | | | |
|----|----------------------|-------------------|----------------|
| | | VBG 4 | DIN VDE 0414/1 |
| 1. | Isolationsprüfung: | (Insulation test) | DIN 42600 |
| 2. | Genauigkeitsprüfung: | (accuracy test) | IEC 60044-1 |

Legende: In Nennstrom (Rated current) (A)
 Ip Primärer Nennstrom (Primary rated current) (A)
 Is Sekundärer Nennstrom (Secondary rated current) (A)
 Fi % Stromfehler in Prozent (Current default) (%)
 phi ' Fehlwinkel in Minuten (Phase default) (min)

VA	5		1,25	
cos β	0,8		1	
In in %	Fi %	phi '	Fi %	phi '
120	0,252	1,53		
100	0,241	1,89	0,368	4,1
20	0,123	6,20		
5	-0,057	10,29		
1	-0,545	26,02		

Prüfer (tested by) :

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