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Електротехнически инженеринг и производство, АД
619 00 БЪРНО, Videnska 117

ПРОТОКОЛ ТЕХНИЧЕСКИ ХАРАКТЕРИСТИКИ No: 83-0110

ЗАЩИТНИ ТОКОВИ ТРАНСФОРМАТОРИ

Бърно,



Подпис (не се чете)

Зти декември 1996

Предупреждение: Публикуването на съдържанието на този протокол не е разрешено без съгласието на лицето, което е поръчало теста. Този протокол може да бъде разпространяван само изцяло и с писмено съгласие на тестващата лаборатория.

На основание чл.36а ал.3 от
ЗОП





Протокол от тест No: 83 - 0110
Тестван обект: Защитен токов трансформатор

Страница No.:1

Брой на страниците: 8

ТИП: CTS 12.S	ВИД НА ТЕСТА: рутинен	
	ТЕСТВАНЕ СЪГЛАСНО: IEC Публикация 185	
НОМИНАЛНИ СТОЙНОСТИ: Номинален първичен ток 400 A Номинален вторичен ток 5 A Максимално напрежение за оборудването 12 kV Клас на точност 5P Граница на точност (n) 5 Номинална мощност 30 VA Номинална честота 50 Hz Номинален динамичен ток 125 kA Номинален термичен ток 50 kA Тестово напрежение 28 kV	ЗАЯВКА ЗА ТЕСТ ОТ: KPB INTRA, s.r.o Fucikova 860 685 01 Bucovice	
	ПОРЪЧКА НОМЕР: KPB INTRA 55/96	
	РЕГИСТРАЦИОНЕН НОМЕР НА ЕКЗЕМПЛЯРА ОТ ТЕСТА: 370-375/96	
	УСЛОВИЯ НА ОКОЛНАТА СРЕДА: ТЕМПЕРАТУРА: 20 °C АТМОСФЕРНО НАЛЯГАНЕ: ВЛАЖНОСТ НА ВЪЗДУХА:	
ПРОИЗВОДИТЕЛ НА ПРОДУКТА KPB Intra, s.r.o. Fucikova 860 685 01 Bucovice	ТОЗИ ТЕСТОВ ПРОТОКОЛ ВКЛЮЧВА :	СПИСЪК НА РАЗПРОСТРАНЕНИЕ: KPB INTRA 2x IVER 3x
	ТЕКСТОВИ СТРАНИЦИ: 7 ТАБЛИЦИ : ОСЦИЛОГРАМИ: ДИАГРАМИ: ЧЕРТЕЖИ : СНИМКИ :	
ТЕСТОВИЯТ ЕКЗЕМПЛЯР Е ДОСТАВЕН НА: 18 ноеври 1996		
РЕЗУЛТАТ ОТ ТЕСТА: Токовият измервателен трансформатор отговаря на тестовете, необходими съгласно IEC Публикация 185		
ДАТА НА ТЕСТА: 19.-26.11.1996	Тестът е изпълнен от: Подпис (не се чете) Vlastimil Rada	Ръководител на тестовата лаборатория Подпис (не се чете), Кръгъл печат на IVER Jaromir Mudra



**СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗМЕРВАТЕЛЕН
ТРАНСФОРМАТОР ТИП СТС 12**

1. № на тест: 82-0495 – Частичен тест;
2. № на тест: 80-12849 – Тест на типа;
3. № на тест: 83-0101 – Частичен тест;
4. № на тест: 73-0073/06 – Частичен тест;
5. № на тест: 83-0109 – Рутинен тест;
6. № на тест: 83-0114 – Рутинен тест;
7. № на тест: 83-0110 – Рутинен тест.
8. № на тест: 96-079 – Тест при късо съединение.

Съставил:

На основание чл.36а ал.3 от
ЗОП





Inženýrsko-výrobní elektrotechnický podnik, a.s.
619 00 Brno, Videnska 117a

MEASURING TRANSFORMERS LABORATORY

TEST PROTOCOL No. 73 – 0055/05

CTS 25 Current Measuring Transformers

(laboratory stamp)

(signature)

Ing. Rada Vlastimil
Measuring transformers laboratory manager
IVEP a.s.

In Brno on 8 March 2005

Changes and amendments in this protocol can be done only in measuring transformers laboratory of IVEP a.s.

Approved metrology centre
IVEP a.s.

phone: + 420547136698
fax: + 420547136402

e-mail: ams@ivep.cz
<http://www.ivep.cz>





Test protocol No. 73 – 0053/05
Test subject: CTS 25 Current Measuring
Transformers

Page: 1

Number of pages: 5

Type:
CTS 25

Test type:
Type test

Rated values:

Highest voltage for equipment 25 kV

Serial number 009908
Rated transfer 5 // 5/5A
Rated load 10 VA; 15 VA
Accuracy class 0.5 ; 10P

Serial number 012942
Rated transfer 150 - 300 // 5/5A
Rated load 15 VA; 15 VA
Accuracy class 0.5 ; 5P

Serial number 022265
Rated transfer 1 600 // 5/5A
Rated load 15 VA; 15 VA
Accuracy class 0.2S ; 0.5S

Rated frequency 50 Hz
Isolation class E

Tested according to:

CSN EN 60044-1
IEC 60044-1
CSN 35 1301
IEC 185
CSN 35 1360

Test customer:

KPB INTRA s.r.o.
Zdanska 477
685 01 Bucovice

Serial Number:

009908, 012942, 022265

Atmospheric conditions:

Temperature: °C
Pressure: hPa
Air humidity: %

Products manufacturer:

KPB INTRA s.r.o.
Zdanska 477
685 01 Bucovice

Samples delivered on:

2002 - 2005

Test result:

CTS 25 current measuring transformers, producer KPB INTRA s.r.o.,

comply

with the type test conditions pursuant to CSN EN 60044-1, IEC 60044-1, CSN 35 1301,
IEC 185, and CSN 35 1360.

(laboratory stamp)

Test date:

6/2002 - 2/2005

Tested by:

Ing. Vlastimil Rada (signature)
Ing. Maskova Hana (signature)

Chief:

Ing. Vlastimil Rada (signature)





Test protocol No. 73 – 0055/05
Test subject: CTS 25 Current
Measuring Transformers

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In the short circuit testing station and the laboratory of measuring transformers of IVEP, a.s., a type test according to standards CSN EN 60044-1, IEC 60044-1, and CSN 35 1301 was performed on three pieces of current measuring transformers of type CTS 25, for purpose of expansion of the Decision of type approval No. 2416/96/1 with rated primary current 5 A, accuracy classes 0.2S, 0.5S, and the expanded current range of 200 %.

The type test was performed in this scope:

1. Terminal designation correctness check

The measuring transformers of current type CTS 25 complied with CSN EN 60044-1 Art. 8.1., IEC 60044-1 Art. 8.1, and CSN 35 1301 Art. 16.

2. Industrial frequency alternate voltage primary winding test

The test was performed in the laboratory of measuring transformers of IVEP, a.s. with test voltage 50 kV / 50 Hz for a period of 1 minute at measuring transformer of current s. no. 009908 and 012942.

The test results of other prototypes from the type series CTS 25 that were performed according to CSN 35 1360 and IEC 185 are stated in the test protocol of IVEP, a.s. No. 82-0495.

The measuring transformer of current type CTS 25 complied with CSN EN 60044-1 Art. 8.2, IEC 60044-1 Art. 8.2, and CSN 35 1301 Art. 17.

3. Test using alternate voltage of secondary winding

The test was performed in the measuring transformer laboratory of IVEP, a.s. using alternate voltage of 3 kV/50 Hz for a period of 1 minute between the shorted secondary terminals and the transformer parts grounded in operation.

The measuring transformers of current type CTS 25 complied with CSN EN 60044-1 Art. 8.3, IEC 60044-1 Art. 8.3, and CSN 35 1301 Art. 18.

4. Measuring of partial discharges

The measuring was performed at the measuring transformers of current s. no. 009908 and 012942 in the measuring transformer laboratory of IVEP, a.s. according to the test procedure Method – B – stated in CSN EN 60044-1 Art. 8.2. These values of partial discharges were measured:

Serial No.	Test voltage:	Partial discharge amplitude value	Note
009908	$U_{zk} = 1.2 U_m = 30 \text{ kV}$	$q = 5 \text{ pC}$	Complies
	$U_{zk} = 1.2 / \sqrt{3} U_m = 17.3 \text{ kV}$	$q = 2 \text{ pC}$	Complies
012942	$U_{zk} = 1.2 U_m = 30 \text{ kV}$	$q = 45 \text{ pC}$	Complies
	$U_{zk} = 1.2 / \sqrt{3} U_m = 17.3 \text{ kV}$	$q = 0.5 \text{ pC}$	Complies

Further results of measuring of partial discharges at the prototypes of type series CTS 25 are stated in the type protocol of IVEP a.s. No. 80-12849 and No. 82-0495.

The measuring transformers of current type CTS 25 complied with CSN EN 60044-1 Art. 8.2, IEC 60044-1 Art. 8.2, and CSN 35 1301 Art. 17 for both types of grounding in HV grids.

5. Short circuit test

The test was performed in the short circuit testing station of IVEP a.s. at the prototype of measuring transformer of current type CTS 25 s. no. 009908 with rated primary current 5 A - see the test protocol No. 88-0257.

The results of the short circuit tests of other prototypes from the type series of CTS 25 performed in the short circuit testing stations of IVEP a.s. and Bechovice are stated in the test protocol of IVEP a.s. No. 88-0086 and the test record from the short circuit testing station Bechovice No. 96-079.

The measuring transformers of current type CTS 25 complied with CSN EN 60044-1 Art. 7.1, IEC 60044-1 Art. 7.1, and CSN 35 1301 Art. 12.

6. Heating test

The test was performed at the measuring transformers of current type CTS 25 s. no. 012942 (transfer 150-300//5/5 A) and s. no. 022265 (transfer 1 600//5/5 A) with the rated permanent thermal current ext. 200 %. The secondary windings of both measuring transformers of current were loaded with rated burdens of 15 VA with power factor $\cos \beta = 1$.

ВЪРНО С ОРИГИНАЛА





Test protocol No. 73 – 0055/05
Test subject: CTS 25 Current
Measuring Transformers

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The heating of secondary windings was measured by the change of ohmic resistance. Heating of primary terminals P1 and P2 was measured using thermocouples.

These heating values were measured:

		Serial number 022965	Serial number 012942	
Primary winding	P1	61K	P1	60K
	P2	60K	P2	59K
Secondary winding	1S1-1S3	58K	1S1-1S2	69.5K
	2S1-2S3	57K	2S1-2S2	70.4K

Measuring transformers of current CTS 25 complied with CSN EN 60044-1 Art. 7.2, IEC 60044-1 Art. 7.2, and CSN 35 1301 Art. 13 for insulation class E.

7. Error Measuring

The measuring was performed using the differential method and equipment by Tettex for verification of current measuring transformers type 2761, s.no. 136'127 - Calibration sheet no. 8017-KL-0061-04.

During measuring, the following was also used:

Current measuring transformer - comparator Tettex type 4764, s.no. 135'233 - Calibration sheet no. 132-KL-1048-03

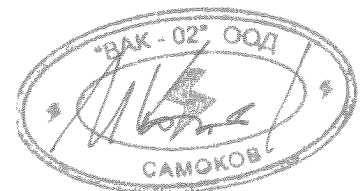
Current load Tettex type 3671/KK, s. no. 135'897 - Calibration sheet no. 817-KL-653-3/00

The measured values of current and angle errors are stated in the following table No. 1.

Table of measured values No. 1

Serial number	Errors	Rated primary current %					Load [VA]
		1	5	20	100	120	
009908 1S1-1S2	ε_i [%]	+0.42	+0.37	+0.41	+0.41	+0.41	2.5
	δ_i [']	+6.83	+6.90	+5.72	+3.08	+2.81	
	ε_i [%]	-0.06	-0.06	+0.04	+0.16	+0.17	10
	δ_i [']	+10.33	+7.70	+1.74	-3.20	-3.28	
009908 2S1-2S2	ε_i [%]				-0.48	15	
	δ_i [']				-3.36		
After short circuit test							
009908 1S1-1S2	ε_i [%]	+0.42	+0.37	+0.41	+0.41	+0.41	2.5
	δ_i [']	+6.83	+6.60	+5.17	+2.76	+2.52	
	ε_i [%]	-0.06	0	+0.04	+0.17	+0.18	10
	δ_i [']	+10.33	+6.67	+1.61	-3.35	-3.60	
009908 2S1-2S2	ε_i [%]				-0.53	15	
	δ_i [']				-4.87		
Serial number	Errors	Rated primary current %					Load [VA]
		1	5	20	100	200	
012942 1S1-1S2	ε_i [%]	-0.25	+0.14	+0.20	+0.22	+0.23	3.75
	δ_i [']	+27.27	+9.63	+6.35	+4.39	+3.72	
	ε_i [%]	-0.99	-0.49	-0.33	-0.18	-0.12	15
	δ_i [']	+8.86	+4.03	+0.37	-3.38	-5.05	

ВЪРНОС ОРИГИНАЛА





Test protocol No. 73 – 0055/05
Test subject: CTS 25 Current
Measuring Transformers

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Serial number	Errors	Rated primary current %					Load [VA]
		1	5	20	100	200	
012942 1S1-1S3	ϵ_i [%]	+ 0.08	+ 0.15	+ 0.17	+ 0.18	+ 0.18	3.75
	δ_i [°]	+ 9.75	+ 4.68	+ 2.92	+ 2.20	+ 2.01	
	ϵ_i [%]	-0.34	-0.01	+ 0.04	+ 0.07	+ 0.08	15
	δ_i [°]	+ 8.53	+ 2.71	+ 1.36	+ 0.58	+ 0.16	
012942 2S1-2S2	ϵ_i [%]				-0.33		15
	δ_i [°]				+ 2.77		
012942 2S1-2S3	ϵ_i [%]				+ 0.11		15
	δ_i [°]				+ 0.91		
022265	ϵ_i [%]	+ 0.10	+ 0.14	+ 0.14	+ 0.15	+ 0.14	3.75
	δ_i [°]	+ 3.00	+ 2.00	+ 2.00	+ 1.80	+ 1.50	
	ϵ_i [%]	0	+ 0.08	+ 0.11	+ 0.12	+ 0.11	15
	δ_i [°]	+ 3.50	+ 2.50	+ 2.00	+ 1.40	+ 2.00	

From the aforementioned measuring and the measuring of accuracy performed at the prototypes of measuring transformers of current type CTS 25 - see protocol of IVEP, a.s. No. 80-12849, these basic measuring parameters result:

Primary I_N range 5 - 3 200 A

Secondary I_N 1 and 5 A

Number of measuring windings 1 - 3

Accuracy classes: 0.2, 0.2S, 0.5, 0.5S, 1, 3

Number of securing windings 1 - 2

Accuracy classes 5P, 10P

Rated secondary loads depending on the size of primary ampere threads and the required accuracy classes are within the range of 2.5 - 60 VA.

All combinations of rated secondary loads and accuracy classes must comply with the requirements of TPM 2272-99 when verifying the measuring transformers of current of accuracy classes 0.2, 0.2S, 0.5, 0.5S.

For other accuracy classes and measuring and securing windings, the provisions of corresponding standards apply.

The rated expanded primary current - 200 % of the rated primary current.

The maximal rated permanent thermal primary current is 3 200 A.

The current measuring transformers type CTS 25 complied with CSN EN 60044-1 Art. 11, 12.3, IEC 60044-1 Art. 11, 12.3, and CSN 35 1301 Art. 26, 37.

Further tests that were performed at the prototypes of type CTS 25 according to standards CSN 35 1360 and IEC 185 are in their performance identical to standards CSN EN 60044-1, IEC 60044-1, and CSN 35 1301.

8. Thread insulation test

The test was performed at the prototypes of measuring transformers of current type CTS 25 and their results are stated in the test protocol of IVEP, a.s. No. 80-12849.

The measuring transformers of current type CTS 25 complied with CSN EN 60044-1 Art. 8.4, IEC 60044-1 Art. 8.4, and CSN 35 1301 Art. 19.

9. Instrument security factor and overall error measuring

The results of the measuring at the prototypes of measuring transformers of current type CTS 25 are stated in the test protocol of IVEP, a.s. No. 80-12849.

The measuring transformers of current type CTS 25 complied with CSN EN 60044-1 Art. 11.6 and 12.5, IEC 60044-1 Art. 11.6, 12.5, and CSN 35 1301 Art. 31 and 40.

ВАРНО С ОПИТИВАЊЕ





Test protocol No. 73 – 0055/05
Test subject: CTS 25 Current
Measuring Transformers

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10. Atmospheric impulse primary winding test

The test was performed on measuring transformer of current type CTS 25 with 15 impulses of positive and negative polarity using test voltage +/- 125 kV.

The test results are stated in the protocol of IVEP, a.s. No. 82-0495.

Measuring transformers of current type CTS 25 complied with CSN EN 60044-12 Art. 7.3.2, IEC 60044-1 Art. 7.3.2, and CSN 35 1301 Art. 14.

ВЪРНО С ОРИГИНАЛА





Inženýrsko-výrobní elektrotechnický podnik, a.s.

619 00 Brno, Videnska 117a

ЛАБОРАТОРИЯ ИЗМЕРВАТЕЛНИ ТРАНСФОРМАТОРИ

ПРОТОКОЛ ОТ ТЕСТ No. 73 – 0055/05

CTS 25 Токови измервателни трансформатори

(печат от лабораторията)

(подпис)

Инж. Rada Vlastimil

Мениджър лаборатория измервателни
трансформатори IVEP a.s.

Бърно, 08 Март 2005

Изменения и допълнения към този протокол могат да бъдат правени само в лаборатория измервателни трансформатори на IVEP a.s.

Одобрен метрологичен
център IVEP a.s.

телефон: + 420547136698


e-mail: ams@ivep.cz

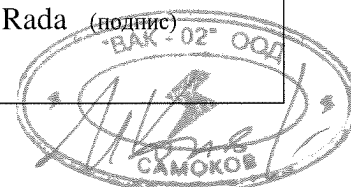
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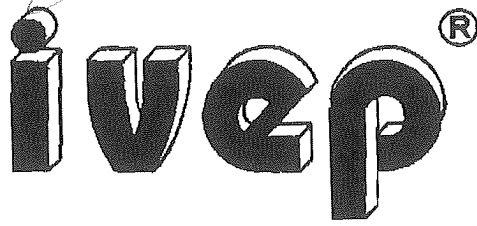
<http://www.ivep.cz>

На основание чл.36а ал.3 от
ЗОП



	Протокол от тест No. 73 – 0053/05 Тестов обект: CTS 25 Токови измервателни трансформатори	Страница: 1
		Брой страници: 5
Тип: CTS 25		Тип на теста: Тест на типа
Номинални стойности: Максимално напрежение за оборудването 25 kV Сериен номер 09908 Ном. коеф. на трансформация 5 // 5/5A Номинален товар 10 VA; 15 VA Клас на точност 0.5 ; 10P Сериен номер 012942 Ном. коеф. на трансформация 150 - 300 // 5/5A Номинален товар 15 VA; 15 VA Клас на точност 0.5 ; 5P Сериен номер 022265 Ном. коеф. на трансформация 1 600 // 5/5A Номинален товар 15 VA; 15 VA Клас на точност 0.2S ; 0.5S Номинална честота 50 Hz Клас на изолацията E	Тестван съгласно: CSN EN 60044-1 IEC 60044-1 CSN 35 1301 IEC 185 CSN 35 1360 Клиент на теста: КРВ INTRA s.r.o. Zdanska 477 685 01 Bucovice	
Сериен номер: 009908, 012942, 022265	Атмосферни условия: Температура: °C Налягане: hPa Влажност на въздуха: %	
Производител на продукта: КРВ INTRA s.r.o. Zdanska 477 685 01 Bucovice	Образците са доставени на: 2002 - 2005	
Резултати от теста: CTS 25 токови измервателни трансформатори, производител КРВ INTRA s.r.o., <p style="text-align: center;">отговарят</p> на тестовите условия за типа съгласно CSN EN 60044-1, IEC 60044-1, CSN 35 1301, IEC 185, и CSN 35 1360.		
Дата на теста: 6/2002 - 2/2005	<div style="border: 2px solid red; padding: 5px;"> На основание чл.36а ал.3 от ЗОП </div>	(печат на лабораторията) Ръководител: Инж. Vlastimil Rada (подпис)





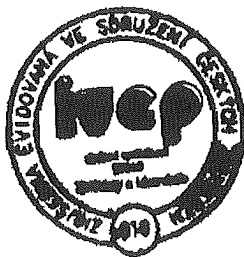
Electrotechnical Engineering and Production, joint-stock company
619 00 BRNO, Vídeňská 117

REPORT OF PERFORMANCE No: 83 - 0115

MEASURING CURRENT TRANSFORMER

CTS

На основание чл.36а ал.3 от
ЗОП



Brno: 29. 4. 1997

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ВЪРНО С ОРИГИНАЛА



4

REPORT OF PERFORMANCE No.: 83-0115		Page: 2
Subject of test: Measuring current transformer		Total of pages: 4
Results of routine tests of measuring instrument current transformer Production No.: 2500152		
Kind of test	Reached values	
Verification of terminal markings acc. to clause 16	Satisfactory	
Tests for accuracy acc. to clause 27	Winding: 30 VA class: 0,5 Satisfactory	
Composite error (ϵ) and accuracy limit (n) acc. to clause 40	Winding :	
Power-frequency test on primary winding acc. to clause 17	55 kV - 50 Hz - 1 min Satisfactory	
Power-frequency tests between sections of primary and secondary windings and on secondary windings acc. to clause 18	2 kV - 50 Hz - 1 min Satisfactory	
Interturn insulation test acc. to clause 19	100% I_N - 50 Hz - 1 min Satisfactory	
Partial discharge acc. to clause 17	Q = pC	
The measuring transformer complies with required according to ČSN 35 1360.		

ВЯРНО СОПРИГНАЛА



REPORT OF PERFORMANCE No.: 83-0115
Subject
of test: Measuring current
transformer

Page: 3

Total
of pages: 4

Results of routine tests of measuring instrument
current transformer
Production No.: 2500153

Kind of test	Reached values
Verification of terminal markings acc. to clause 16	Satisfactory
Tests for accuracy acc. to clause 27	Winding: 30 VA class: 0,5 Satisfactory
Composite error (ϵ) and accuracy limit (n) acc. to clause 40	Winding :
Power-frequency test on primary winding acc. to clause 17	55 kV - 50 Hz - 1 min Satisfactory
Power-frequency tests between sections of primary and secondary windings and on secondary windings acc. to clause 18	2 kV - 50 Hz - 1 min Satisfactory
Interturn insulation test acc. to clause 19	100% I_n - 50 Hz - 1 min Satisfactory
Partial discharge acc. to clause 17	$Q =$ pC

The measuring transformer complies with required according to ČSN 35 1360.

ВЕРНО С ОРИГИНАЛА

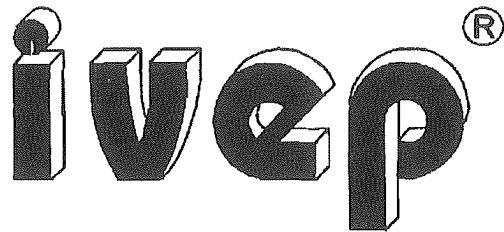


REPORT OF PERFORMANCE No.: 83-0115		Page: 4
Subject of test: Measuring current transformer		Total of pages: 4
Results of routine tests of measuring instrument current transformer Production No.: 2500154		
Kind of test	Reached values	
Verification of terminal markings acc. to clause 16	Satisfactory	
Tests for accuracy acc. to clause 27	Winding: 30 VA class: 0,5 Satisfactory	
Composite error (ϵ) and accuracy limit (n) acc. to clause 40	Winding :	
Power-frequency test on primary winding acc. to clause 17	55 kV - 50 Hz - 1 min Satisfactory	
Power-frequency tests between sections of primary and secondary windings and on secondary windings acc. to clause 18	2 kV - 50 Hz - 1 min Satisfactory	
Interturn insulation test acc. to clause 19	100% I_n - 50 Hz - 1 min Satisfactory	
Partial discharge acc. to clause 17	Q = pC	
The measuring transformer complies with required according to ČSN 35 1360.		

ВЪРНО С ОРИГИНАЛА



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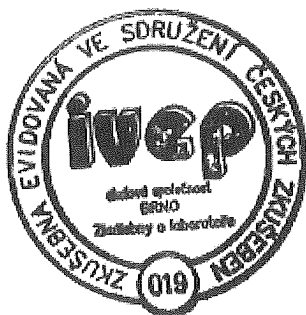


Електротехнически инженеринг и производство, АД
619 00 БЪРНО, Videnska 117

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ПРОТОКОЛ ТЕХНИЧЕСКИ ХАРАКТЕРИСТИКИ No: 83-0115

ТОКОВИ ИЗМЕРВАТЕЛНИ ТРАНСФОРМАТОРИ - ТИП СТС 25



Подпис (не се чете)

.....

Бърно, 29.4.1997

Предупреждение: Публикуването на съдържанието на този протокол не е разрешено без съгласието на лицето, което е поръчало теста. Този протокол може да бъде разпространяван само изцяло и с писмено съгласие на тестващата лаборатория.

На основание чл.36а ал.3 от ЗОП





Протокол от тест No: 83 - 0115
Тестван обект: токов измервателен трансформатор

Страница No.:1

Брой на страниците: 4

ТИП: CTS 25	ВИД НА ТЕСТА: рутинен	
	ТЕСТВАНЕ СЪГЛАСНО: CSN 35 1360	
НОМИНАЛНИ СТОЙНОСТИ: Номинален първичен ток 1500 - 3000 A Номинален вторичен ток 5 A Максимално напрежение за оборудването 25 kV Клас на точност 0,5 Граница на точност (n) n<10 Номинална мощност 30 VA Номинална честота 50 Hz Тестово напрежение 55/125 kV	ЗАЯВКА ЗА ТЕСТ ОТ: KPB INTRA, s.r.o Fucikova 860 685 01 Bucovice	
	ПОРЪЧКА НОМЕР: KPB INTRA 24/97	
	РЕГИСТРАЦИОНЕН НОМЕР НА ЕКЗЕМПЛЯРА ОТ ТЕСТА: 378/97 до 380/97	
	УСЛОВИЯ НА ОКОЛНАТА СРЕДА: ТЕМПЕРАТУРА: АТМОСФЕРНО НАЛЯГАНЕ: ВЛАЖНОСТ НА ВЪЗДУХА:	
ПРОИЗВОДИТЕЛ НА ПРОДУКТА KPB Intra, s.r.o. Fucikova 860 685 01 Bucovice	ТОЗИ ТЕСТОВ ПРОТОКОЛ ВКЛЮЧВА :	СПИСЪК НА РАЗПРОСТРАНЕНИЕ:
ТЕСТОВИЯТ ЕКЗЕМПЛЯР Е ДОСТАВЕН НА: април 1997	ТЕКСТОВИ СТРАНИЦИ: 4 ТАБЛИЦИ : ОСЦИЛОГРАМИ: ДИАГРАМИ: ЧЕРТЕЖИ : СНИМКИ :	KPB INTRA 2x IVEP 3x
РЕЗУЛТАТ ОТ ТЕСТА: Токовият измервателен трансформатор отговаря на тестовете, необходими съгласно CSN 35 1360.		
ДАТА НА ТЕСТА: 17.04.1997	Тестът е изпълнен от: Подпис (не се чете) Vlastimil Rada	Ръководител на тестовата лаборатория Подпис (не се чете), Кръгъл печат на IVEP Jaromir Mudra





IVEP, a.s.
619 00 Brno, Vídeňská 117a, Czech Republic



CZECH TESTING LABORATORIES ASSOCIATION – SDRUŽENÍ ČESKÝCH ZKUŠEBEN A LABORATOŘÍ
ČLEN ASOCIACE ZKUŠEBEN VYSOKÉHO NAPĚTÍ – MEMBER OF HV TESTING STATIONS ASSOCIATION



TEST REPORT No.:

88 - 0918

CTS25
Current Instrument Transformer



На основании чл.36а ал.3 от
ЗОП

Brno, on: November 22th, 2013

Copy No.: 3

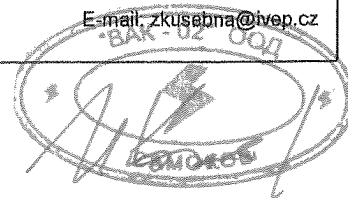
Disclosure of this test report without obtaining an approval from the test orderer is not allowed. The test report can be reproduced only as a whole document, based on a previous written consent issued by the testing station.

IVEP, a.s.
Zkušebny a laboratoře

Vídeňská 117a
CZ 619 00 Brno, CR

Phone: + 420 547 136 690 + 420 547 136 650, + 420 547 136 697-8
Fax: + 420 547 136 402
http:www.ivep.cz

E-mail: zkusabna@ivep.cz





TEST REPORT No.: 88-0918

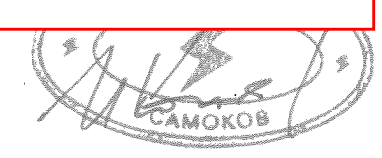
Page No.: 2

Tested device: Current Instrument Transformer

No. of pages: 8

Type: CTS25 1 piece	Test class: part of type test
	Applied test specification: IEC 61869-2 Edition 1.0, (2012-09) clause 7.1: Short-time current test
Rated values: see chapter 2	Test ordered by: KPB INTRA s.r.o. Ždánská 477 685 01 Bučovice Czech Republic
	Tested sample reg. Nos.: Reg. No. : 877/13 Serial No. : 108691
	Atmospheric conditions: Air temperature : 12 to 14°C
Manufacturer of the products: KPB INTRA s.r.o. Ždánská 477 685 01 Bučovice Czech Republic	The test report includes: No. of pages : 8 of which: Tables : 3 Pictures : 1 Photographs : 2 Oscillograms : 2
	Distribution list: copy No. IVEP archives : 1 IVEP ŘZ : 2 The customer : 3,4
Test result: Current instrument transformer for indoor use, type CTS25 , Serial Number. 108691 manufactured by KPB INTRA s.r.o., Ždánská 477, 685 01 Bučovice, Czech Republic was subjected to the short-time current tests at a currents of $I_{th} = 12.5 \text{ kA} / 1\text{s}$ and $I_{th} = 25 \text{ kA} / 1\text{s}$ in accordance with IEC 61869-2 (2012-09), cl. 7.2.201 and customer's request. Transformer passed the tests successfully and is considered to comply with the above standard.	
Date of test: (shift No.13-088) November 19th to 11th, 2013	На основание чл.36а ал.3 от ЗОП

ЗЯРНО С ОРИГИНАЛА



ivep [®]	TEST REPORT No.: 88-0918	Page No.: 3
	Tested device: Current Instrument Transformer	No. of pages: 8

1 Tests required and the corresponding parameters

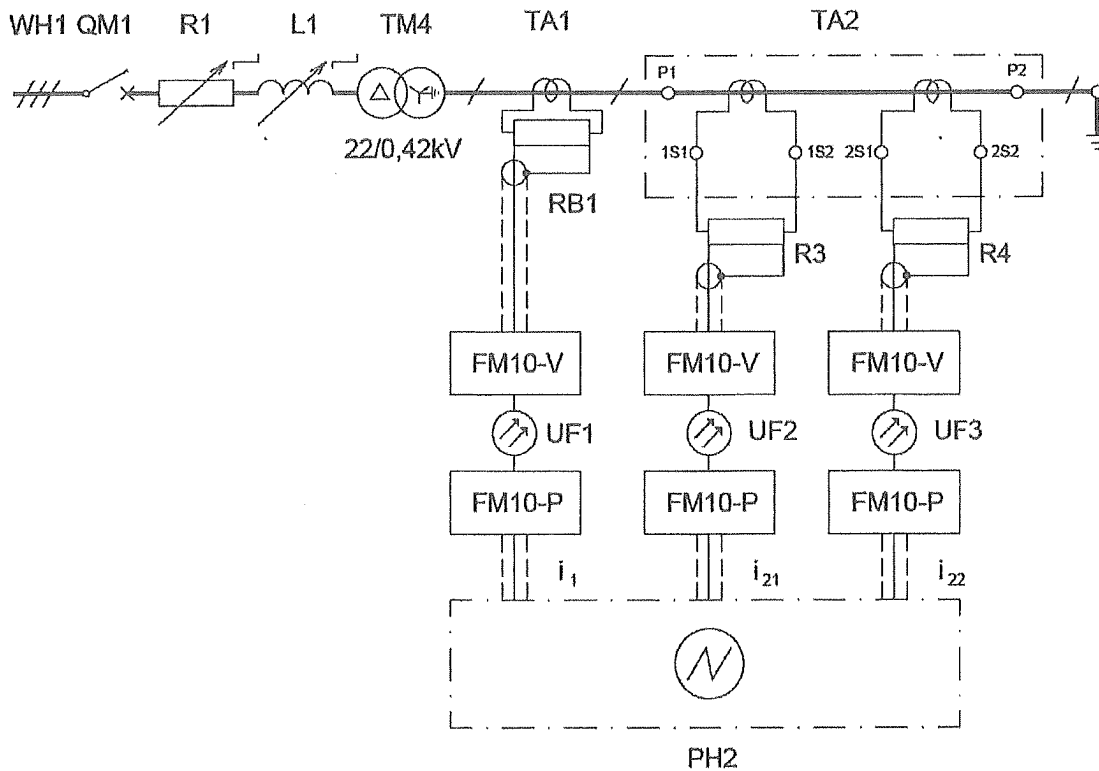
Test	U _z (V)	I _{1n} / I _{2n} (A)	I ₁ (kA)	I _{1m} (kA)	t _k (s)
Short-time current test IEC 61869-2 Edition 1.0, (2012-09)	242	40 / 5 / 5	25	63	1
		20 / 5 / 5	12.5	31.5	1

2 Identification of tested sample

Type	IVEP reg. No.	Serial number	I _{1n} (A)	I _{2n} (A)	P _n (VA)	I _{th} (kA)	I _{dyn} (kA)
CTS25	877/13	108691	20 - 40	5 / 5	15 / 15	12.5 - 25	31.5 - 63

3 Test circuit

3.1 Wiring diagram of the test circuit

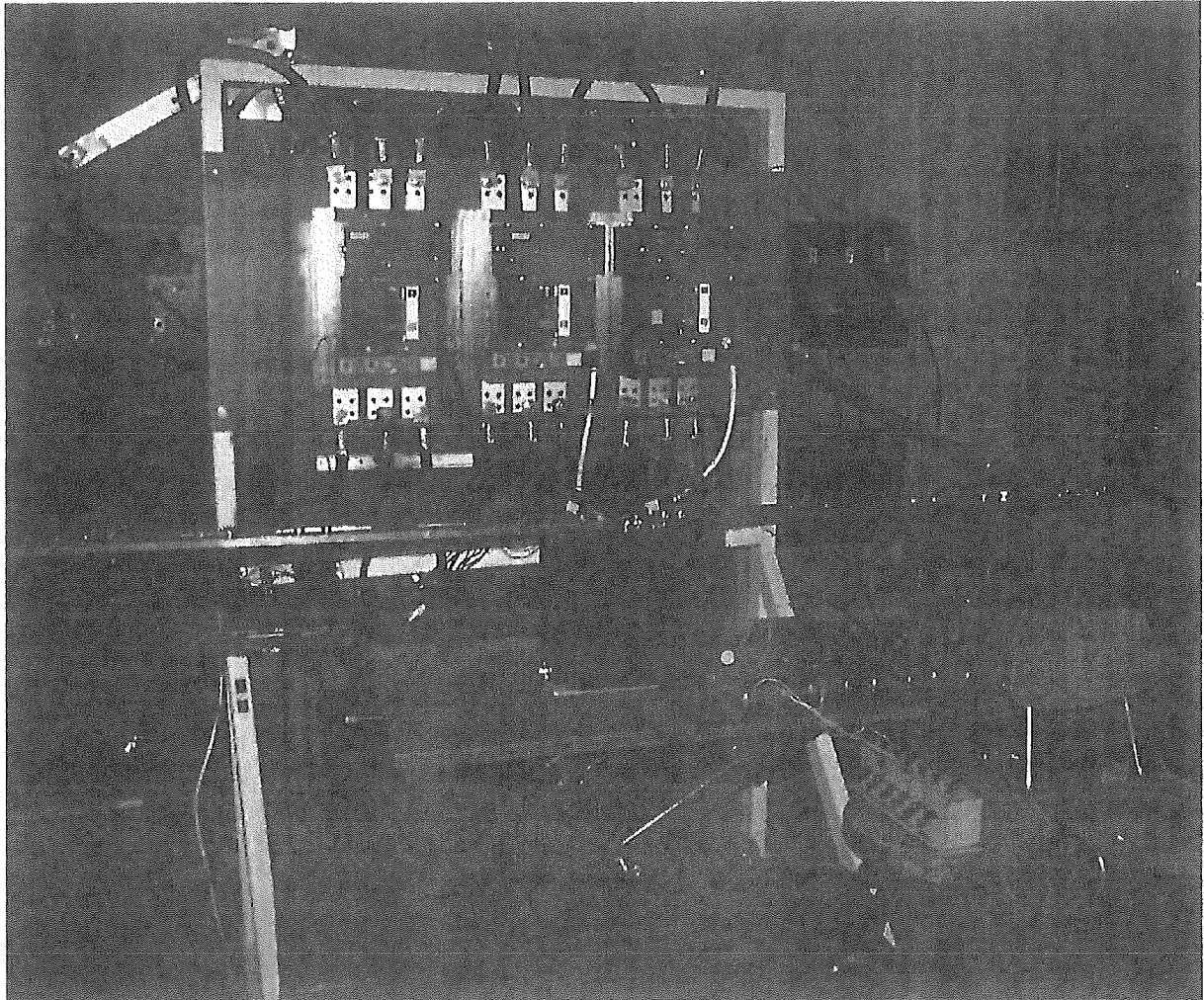


ВЪРНО С ОРИГИНАЛА

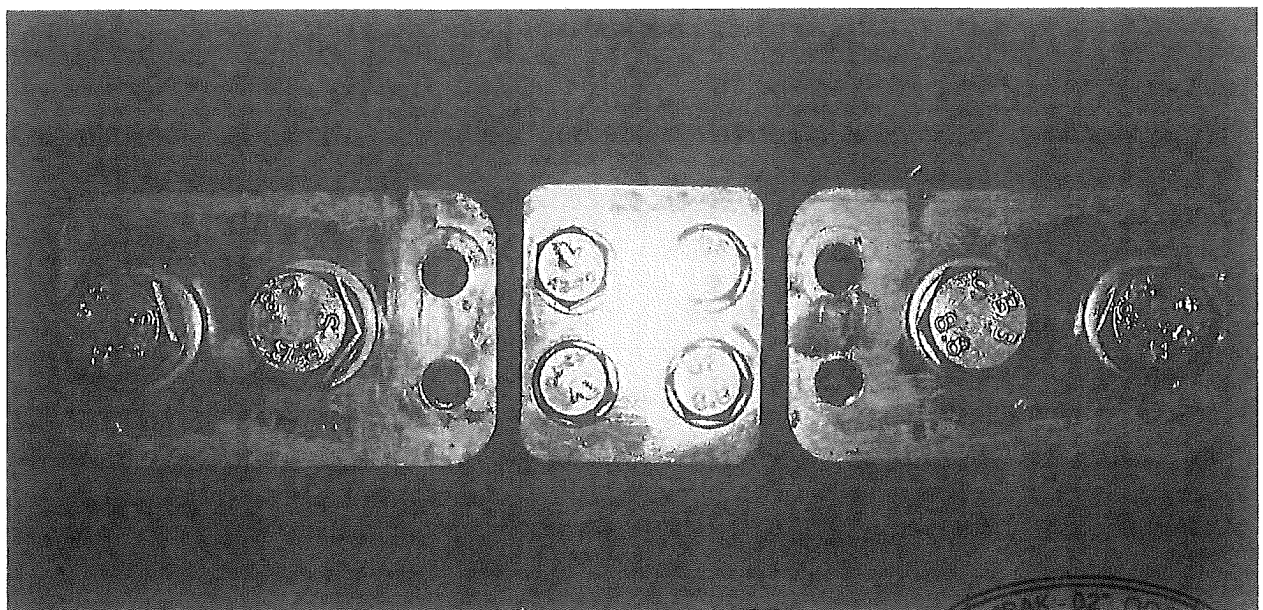


ivep [®]	TEST REPORT No.: 88-0918	Page No.: 4
	Tested device: Current Instrument Transformer	No. of pages: 8

3.2 Tested transformer during short-time current tests




3.3 Detail of tested transformer (after test)



ВЪРНО С ОРИГИНАЛА



	TEST REPORT No.: 88-0918	Page No.: 5
	Tested device: Current Instrument Transformer	No. of pages: 8

4 Symbols and instruments used during the test

4.1 Devices and equipments used during short time current tests

- WH1 - Overhead power line No. 165; 22 kV;
- QM1 - SF6 Protective circuit breaker; VF 251225; 25 kV; 1 250 A; p=0.5 MPa; EJV Brno; inventory No. 00041;
- R1, L1 - MV burden elements at the short-circuit testing station; inventory No. 00041;
- TM4 - KobU 825/20 Testing transformer; 1.25 MVA; 22000//550/418 V; BEZ Bratislava; inventory No. 00058;
- TA1 - BN 00-100 Current instrument transformer; 10 000/5 A; 120 VA; n>5; manufactured by EJV Brno;
- TA2 - Current instrument transformers subject to testing;
- RB1 - Shunt 3,344 A / V; IVEP Brno;
- R3, R4 - Load transformer; Shunt 100 A / 60 mV; Metra;
- UF1-3 - Analogous optoelectronic FM 10 type measuring system; VÚSE Běchovice; inventory No. 00848-00885;
- PH2 - PCL 818 Data logging card; inventory No. 01165;
- NO - Number oscillogram;
- ZO - Test operation;
- T - Test by short-time current;
- D - Test by dynamic current;

4.2 Symbols used

- U_z - RMS value of test voltage;
- U_m - Highest voltage for equipment;
- U_t - Test voltage;
- u_k - Short-circuit voltage of transformer, in per-cent;
- P_n - Rated burden of current instrument transformer;
- I_{1n} - Rated primary current of current instrument transformer;
- I_{2n} - Rated secondary current of current instrument transformer;
- I_{th} - Rated short-time heat current of current instrument transformer;
- I_{dyn} - Rated dynamic current of current instrument transformer;
- i_1 - Value of instantaneous current flowing through the primary winding;
- i_{21} - Value of instantaneous current flowing through the first secondary winding;
- i_{22} - Value of instantaneous current flowing through the second secondary winding;
- I_1 - RMS value of current flowing through the primary winding;
- I_{tm} - Highest current flowing through the primary winding;
- t_k - Duration of short circuit; period of electric current passage;
- q - Partial discharge quantity;

ЗЯРНО С ОРИГИНАЛА



ivep [®]	TEST REPORT No.:	88-0918	Page No.:	6
	Tested device:	Current Instrument Transformer	No. of pages:	8

5 Sequence and course of the tests

5.1 Dielectric routine tests (IEC 61869-2 cl. 7.3)

Were measured in KPB Intra s.r.o. Certificate No. 20131007/108691

5.2 Determination of errors (IEC 61869-2)

Were measured in KPB Intra s.r.o. Certificate No. 20131007/108691

5.3 Thermal and dynamic short – time current test on current transformer (IEC 61869-2 cl. 7.2.201)

Short - time current test was performed at a current of $I_{th} = 12.5 \text{ kA} / 1 \text{ s}$ and $25 \text{ kA} / 1 \text{ s}$.

5.4 Dielectric tests (IEC 61869-2 cl. 7.3.1, 7.3.2, 7.3.3, 7.3.4)

Were measured in KPB Intra s.r.o. Certificate No. 20131120/108691

5.5 Determination of errors (IEC 61869-2)

Were measured in KPB Intra s.r.o. Certificate No. 20131120/108691


6 Tables of measured values

6.1 Thermal and dynamic short – time current test

Sample reg. No.	I_{1n} / I_{2n} (A)	Z0	NO	U_z (kV)	I_1 (kA)	I_{1m} (kA)	t_k (ms)
877/13	40 / 5 / 5	D+T	138804	0.24	25.8	64.9	1022
	20 / 5 / 5	D+T	138806	0.24	14.2	33.5	1032

ВЪЗРНО С ОРИГИНАЛА



	TEST REPORT No.:	88-0918	Page No.:	7
	Tested device:	Current Instrument Transformer	No. of pages:	8

7 Test results

Based on the oscillographic records of the primary currents, and based on the successfully passed and prescribed repeated tests according to IEC 61869-2 (2012-09):

- measuring of errors
- and repeated dielectric tests

it is possible to consider the current instrument transformer CTS25 as **successfully passed** the short-time current tests at the following parameters:

- $U_z = 0.24 \text{ kV}$; $I_1 = 14.2 \text{ kA}$; $I_{1m} = 33.5 \text{ kA}$; $t_k = 1 \text{ sec}$;
- $U_z = 0.24 \text{ kV}$; $I_1 = 25.8 \text{ kA}$; $I_{1m} = 64.9 \text{ kA}$; $t_k = 1 \text{ sec}$.

8 Attendance at the tests

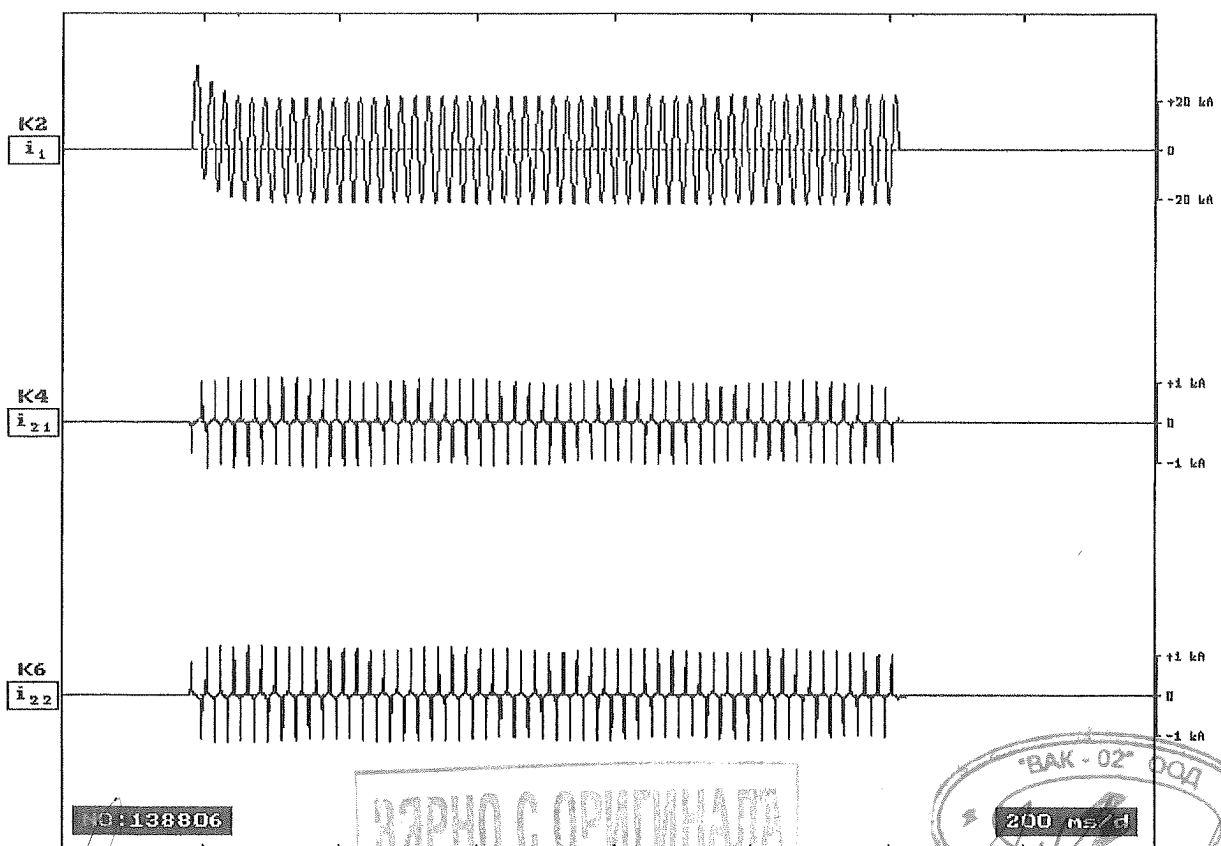
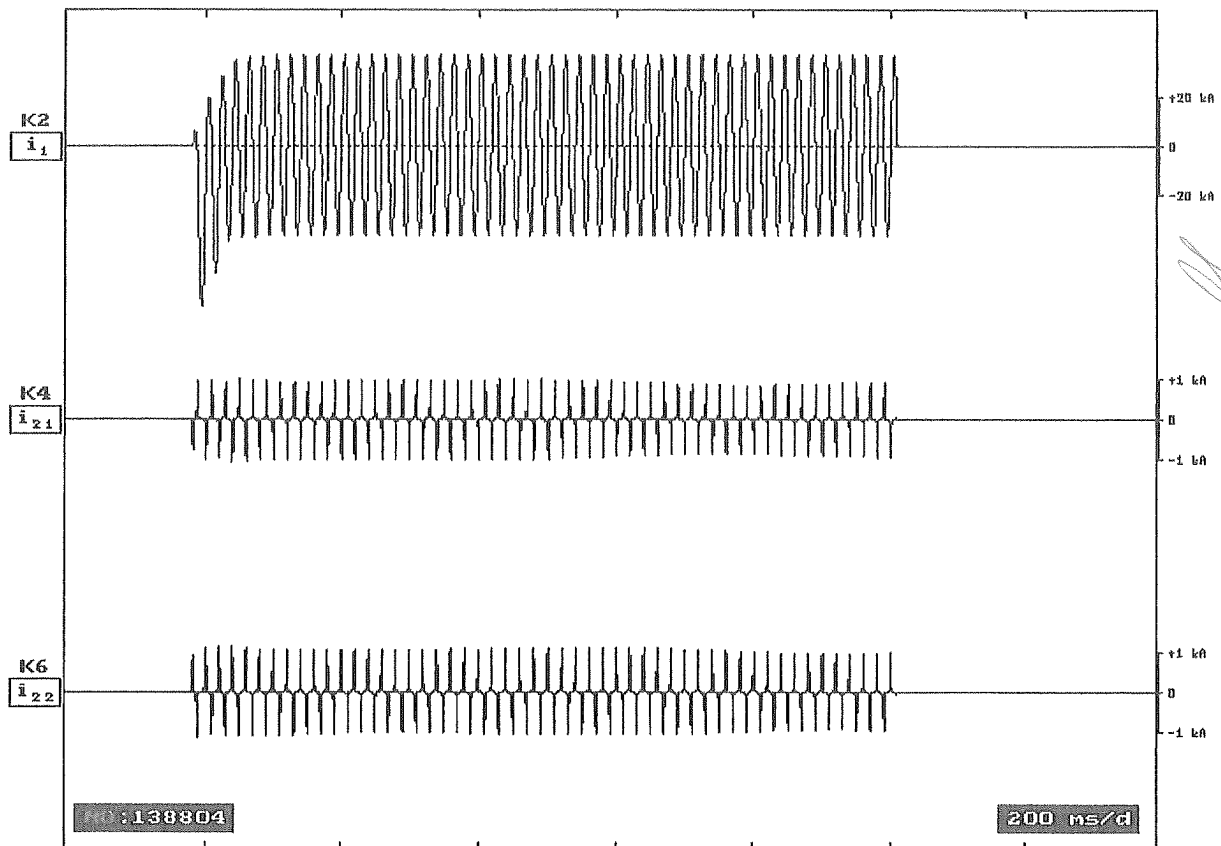
On behalf of:
IVEP, a.s.

Dipl.-Ing. Petr Kalus
Zdeněk Svoboda

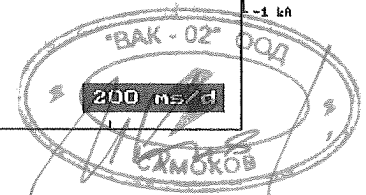
On behalf of:
KPB INTRA s.r.o.

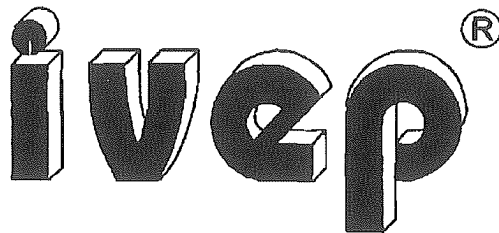
Dipl.-Ing. František Šimko
Dipl.-Ing. Bronislav Horák



9 Oscillograms

ВЪРНО С ОРИГИНАЛА



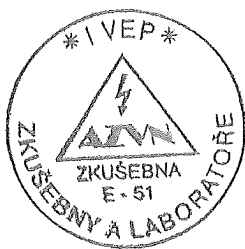


Електротехнически инженеринг и производство, АД
619 00 БЪРНО, Videnska 117

Асоциация на чешките тестови лаборатории – Sdružení českých zkušeben a laboratoří.
Член на асоциацията на тестващите лаборатории ВН

ПРОТОКОЛ ОТ ТЕСТ №: 88-0918

ТОКОВ ИЗМЕРВАТЕЛЕН ТРАНСФОРМАТОР - ТИП CTS 25



Подпис (не се чете)

.....
Jaromir Mudra, Phd

Бърно, 22 ноември 2013

Копие No. 3

Публикуването на съдържанието на този протокол не е разрешено без съгласието на лицето, което е поръчало теста. Този протокол може да бъде разпространяван само изцяло и с писмено съгласие на тестващата лаборатория.

IVEP, a.s.
Zkušebny a laboratoře

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CZ 619 00 Brno, CR

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http:www.ivep.cz

E-mail: zkusebna@ivep.cz

На основание чл.36а ал.3 от
ЗОП





Протокол от тест No: 88 - 0918
Тестван обект: токов измервателен трансформатор

Страница No.: 2

Брой на страниците: 8

ТИП: CTS 25 1 брой	ВИД НА ТЕСТА: част от тест на типа	
	ТЕСТВАНЕ СЪГЛАСНО: IEC 61869-2 издание 1.0, (2012-09) параграф 7.1: тест на кратковременен ток	
НОМИНАЛНИ СТОЙНОСТИ: Виж глава 2	ЗАЯВКА ЗА ТЕСТ ОТ: KPB INTRA, s.r.o Fucikova 860 685 01 Bucovice Czech Republic	
	РЕГИСТРАЦИОНЕН НОМЕР НА ЕКЗЕМПЛЯРА ОТ ТЕСТА: Per. No.:877/13 Сериен No. : 108691	
	УСЛОВИЯ НА ОКОЛНАТА СРЕДА: ТЕМПЕРАТУРА НА ВЪЗДУХА: 12 до 14 °C	
ПРОИЗВОДИТЕЛ НА ПРОДУКТА KPB Intra, s.r.o. Fucikova 860 685 01 Bucovice Czech Republic	ТОЗИ ТЕСТОВ ПРОТОКОЛ ВКЛЮЧВА :	СПИСЪК НА РАЗПРОСТРАНЕНИЕ:
	Брой на страниците: 8 От които: ТАБЛИЦИ : 3 ФИГУРИ: 1 СНИМКИ : 2 ОСЦИЛОГРАМИ:2	Брой копия: Архиви IVEP 1 IVEP RZ 2 Клиент 3,4
РЕЗУЛТАТ ОТ ТЕСТА: Токовият измервателен трансформатор за работа на закрито тип CTS 25, сериен номер : 108691, произведен от KPB INTRA s.r.o., Zdanska 477, 685 01 Bucovice, Чехия бе подложен на тестове с кратковременен ток при токове $I_{th} = 12.5 \text{ kA} / 1\text{s}$ и $I_{th} = 25 \text{ kA} / 1\text{s}$ в съответствие с IEC 61869-2 (2012-09), параграф 7.2.201 и заявката на клиента. Трансформаторът премина успешно тестовете и се счита, че отговаря на горния стандарт.		
ДАТА НА ТЕСТА: (смяна No.13-088) 11 до 19 ноември 2013	Тестът е изпълнен от: Подпис (не се чете) Дипл.инж. Petr Kalus	Ръководител на тестовата лаборатория Подпис (не се чете), Кръгъл печат на IVEP Дипл.инж. Petr Kalus



ZKUŠEBNICTVÍ, a.s.

zkratovna

190 11 PRAHA 9, Běchovice
The Czech Republic

TEST REPORT

No. 96 - 079

ВЪРНО С ОРИГИНАЛА



zkratovna

ZKUŠEBNICTVÍ, a.s. - 190 11 Praha 9, Běchovice

INDEPENDENT TESTING LABORATORY, ACCREDITED ACCORDING TO ČSN EN 45 001
BY THE CZECH ACCREDITATION INSTITUTE UNDER THE NUMBER 1035

TEST REPORT

No. 96 - 079

Test object : Instrument current transformer

Type : CTS 12.S, CTS 25

Manufacturer : KPB INTRA, s.r.o., Bučovice, Czech Republic

Highest voltage for equipment : 12 kV, 25 kV

Rated primary current : 3.200 A, 800 A

Kind of test : Type test

Test performed : Short-time current test according to IEC Publ. 185/1987,
ČSN 35 1360/1977

Customer : KPB INTRA, s.r.o., Bučovice, Czech Republic

Representative of the customer : Mr. Robert Knápek

Date of test : 27.6.1996

THIS TEST REPORT IS CONFIDENTIAL AND MUST NOT BE PASSED OVER OR TRANSFERED TO ANY THIRD PARTY WITHOUT WRITTEN APPROVAL OF THE CUSTOMER.

WITHOUT THE WRITTEN APPROVAL OF THE TESTING LABORATORY SHALL NOT BE REPRODUCED ACCEPT IN FULL THE RESULT OF THE TEST APPLIES ONLY TO THE SPECIMEN TESTED.

Běchovice, 10.7.1996

Tested by:

На основание чл.36а ал.3 от
ЗОП

На основание чл.36а ал.3 от
ЗОП

ВЪРНО С ОПРИГНАЛАТА

Test conditions

Working frequency $f = 48 \text{ Hz up to } 50 \text{ Hz}$
Ambient air temperature $T = 18 \text{ }^\circ\text{C} - 21 \text{ }^\circ\text{C (in the test cell)}$

The single phase test has been made on a single pole instrument current transformer, the secondary winding being short-circuited through a small resistor of 0.001Ω .

The short-time test was carried out as combined test-dynamic current test and short-time thermal current test of 1s duration. The no-load supply voltage of test circuit was 230 V - 350 V.

The connection of the test circuit and measuring circuits is evident from the diagram TPV 121. The connection of the tested instrument current transformers to the test circuit is documented by photographs Fig. 1 - Fig. 4.

Description of the test object

A single phase instrument current transformer for indoor installation. The identification of the test object was made on the basis of drawings Nos. CTS 12 - T12 001, CTS 25 - T25 001.

Type		CTS 12.S	CTS 25
Serial No.		1200003	2500002
Year of manufactured		1996	1996
Rated primary current	[A]	3200	800/400
Rated secondary current	[A]	5/1	5/5
Highest voltage for equipment	[kV]	12	25
Rated insulation level	[kV]	35/75	55/125
Rated short-time current	[kA]	80	50
Rated dynamic current	[kA]	200	125
Rated frequency	[Hz]	50	50
Total mass	[kg]	-	-

Test parameters

Serial No.		1200003	2500002
Short-time current	[kA]	80	50
Dynamic current	[kA]	200	125
Short-circuit duration	[s]	1	1

Result

No mechanical damage has been revealed after the short-time current test. The instrument current transformers passed also successfully the repeated dielectric tests and the inspection accuracy class test.

The tested instrument current transformers passed successfully the short-time current test in compliance with IEC Publ. 185/1987 cl. 12 and ČSN 35 1360/1977 cl. 116.

More details of the tests are in the enclosed table of test results and in graphs.

Notice:

Test results relate only to the tests given in the presented Test Report. No documents of administrative, business or other character can be substituted by this Test Report.

ВЪРНО С ОРИГИНАЛА



List of symbols

a) used in the table of test results

I_m	-	dynamic current
I_e	-	equivalent r.m.s. value of short-time current
I_n	-	rated short-time current
t_s	-	short-circuit duration

b) used in the graphs

I	-	course of primary current
U	-	course of test circuit voltage
$2IA, 2IB$	-	courses of secondary currents
t	-	time

The Test report contains:

16 sheets i.e.

- 1 introductory sheet
- 1 title sheet
- 2 text sheets
- 3 table sheets
- 1 test circuit diagram
- 4 photos
- 4 copies of graphs

Enclosure: 2 catalogue sheets

ВЪРНО С ОРИГИНАЛА



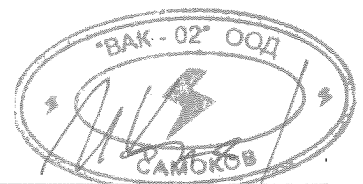
Table of test results: Short-time current test
Test circuit diagram: TPV121
File denomination: mtr27fi

Test No.	I_m [kA]	I_a [kA]	t_i [ms]	$I_a^2 t_i / I_m^2$	Type	Serial No.	Observations
4	203	---	124	---	CTS 12.S	1200003	no effect, no damage
5	---	895	1023	128	CTS 12.S	1200003	no effect, no damage
12	130	---	123	---	CTS 25	2500002	no effect, no damage
13	---	514	1026	108	CTS 25	2500002	no effect, no damage

Condition of test object after test: no damage

Notice: The voltage course distortion within 5 - 6 loop caused by measurement failure

ВЪРНО С ОРИГИНАЛА



Parameters of test circuits
Direct tests

File		mtpr27fi	
Test No.		004 + 013	
Test circuit diagram No.		TPV121	
Generator		S	
Rated (phase to phase) voltage [kV]		8	
Phases connected		R, T	
Inductance per phase [mH]		0.121	
Inductance of reactors per phase [mH]		0.032	
Resistance of resistors per phase [Ω]		---	
Short-circuit transformer		---	
Connection		---	
Transf. ratio		---	
Inductance per phase [mH]		---	
High-current transformer - Connection		Dy	
Transf. ratio		12.56	
Inductance per phase [mH]		0.649	
Total inductance per phase of supply circuit [mH]		0.802	
Power factor		0.1	
Capacity in parallel [μF]		---	
Resistance in series [Ω]		---	
Neutral point of supply circuit		---	
Short-circuit point		earthed	
Load transformer		---	
Connection		---	
Transf. ratio		---	
Resistance of load resistors [Ω]		---	
Inductance of load reactors [mH]		---	
Capacity of load capacitors [μF]		---	
Neutral point of load circuit		---	

ВЪРНО С ОРИГИНАЛА



Measuring devices used

File denomination: mtr27fi

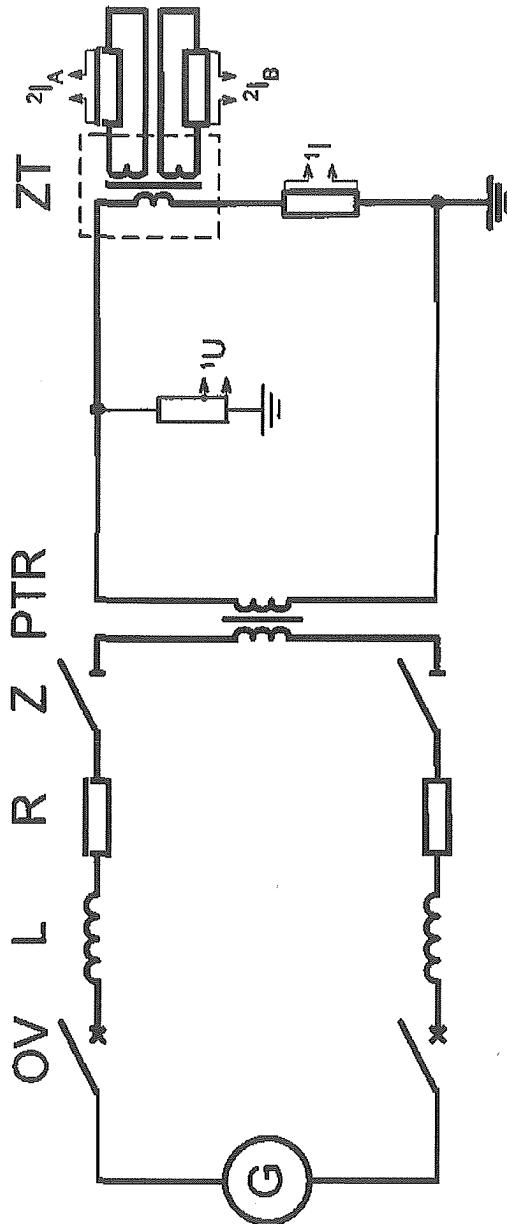
Measured quantity	Sensor	Parameters	Serial No.	Measurement error
I_1	cage shunt	80 kA/ 2 V	1216079	< 2.0 %
I_A	cage shunt	0.2 kA/ 2V	517572	< 2.0 %
I_B	cage shunt	0.2 kA/ 2V	517573	< 2.0 %
U	resistor voltage divider	600 V/ 150 V	DR 001/79	< 3.5 %

Recording devices:

- measuring system with digital optoelectronic transmission (type TR - 01M)

ЗЯРНО С ОРИГИНАЛА

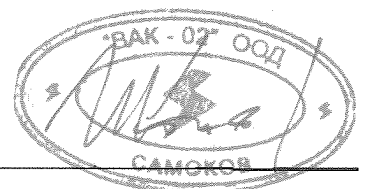




- | | | | | | |
|------|---|-------------------------|------|---|---------------------------------|
| G | - | Short-circuit generator | PTR | - | High-current transformer |
| OV | - | Master breaker | ZT | - | Transformer tested |
| L, R | - | Reactors and resistors | I, U | - | Current and voltage measurement |
| Z | - | Make switch | | | |

Test circuit diagram TPV121

ВЪРНО С ОРИГИНАЛА



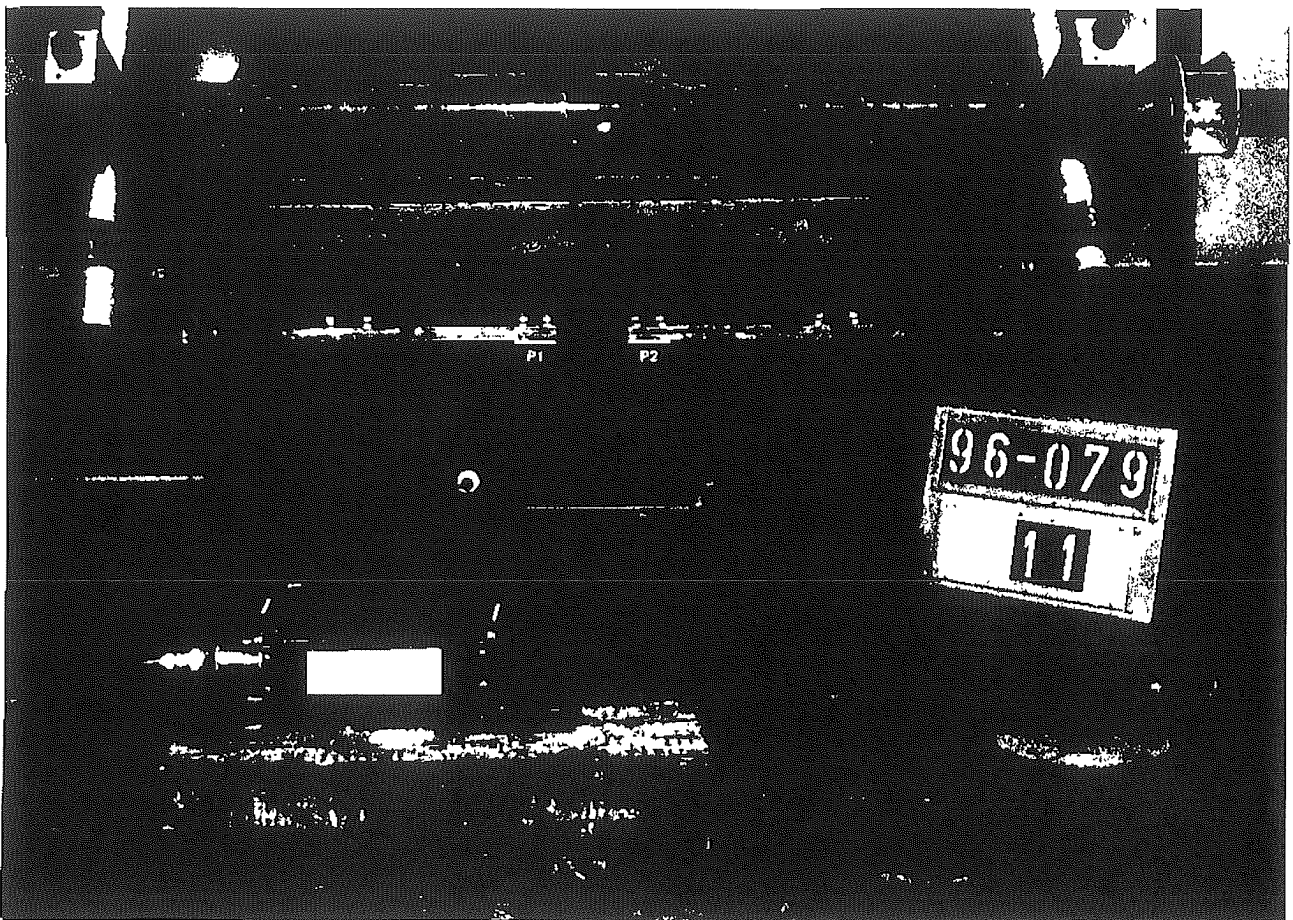


Fig. 1
Instrument current transformer CTS 12.S serial No. 1200003 before test
(photo 96-079/11)

ВЪРНО С ОРИГИНАЛА



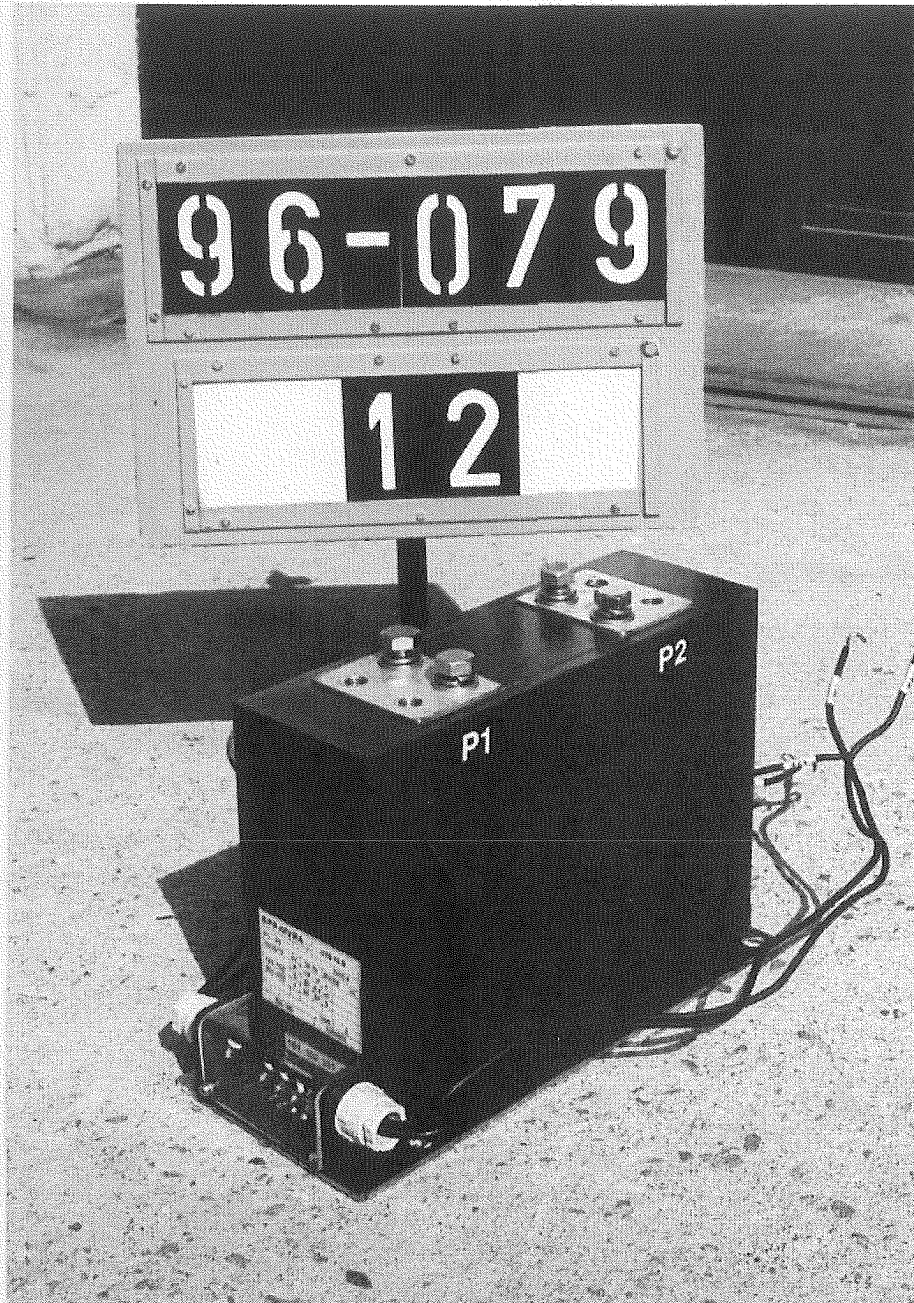


Fig. 2
Instrument current transformer CTS 12.S serial No. 1200003 after test
(photo 96-079/12)

ВЪРНО С ОРИГИНАЛА



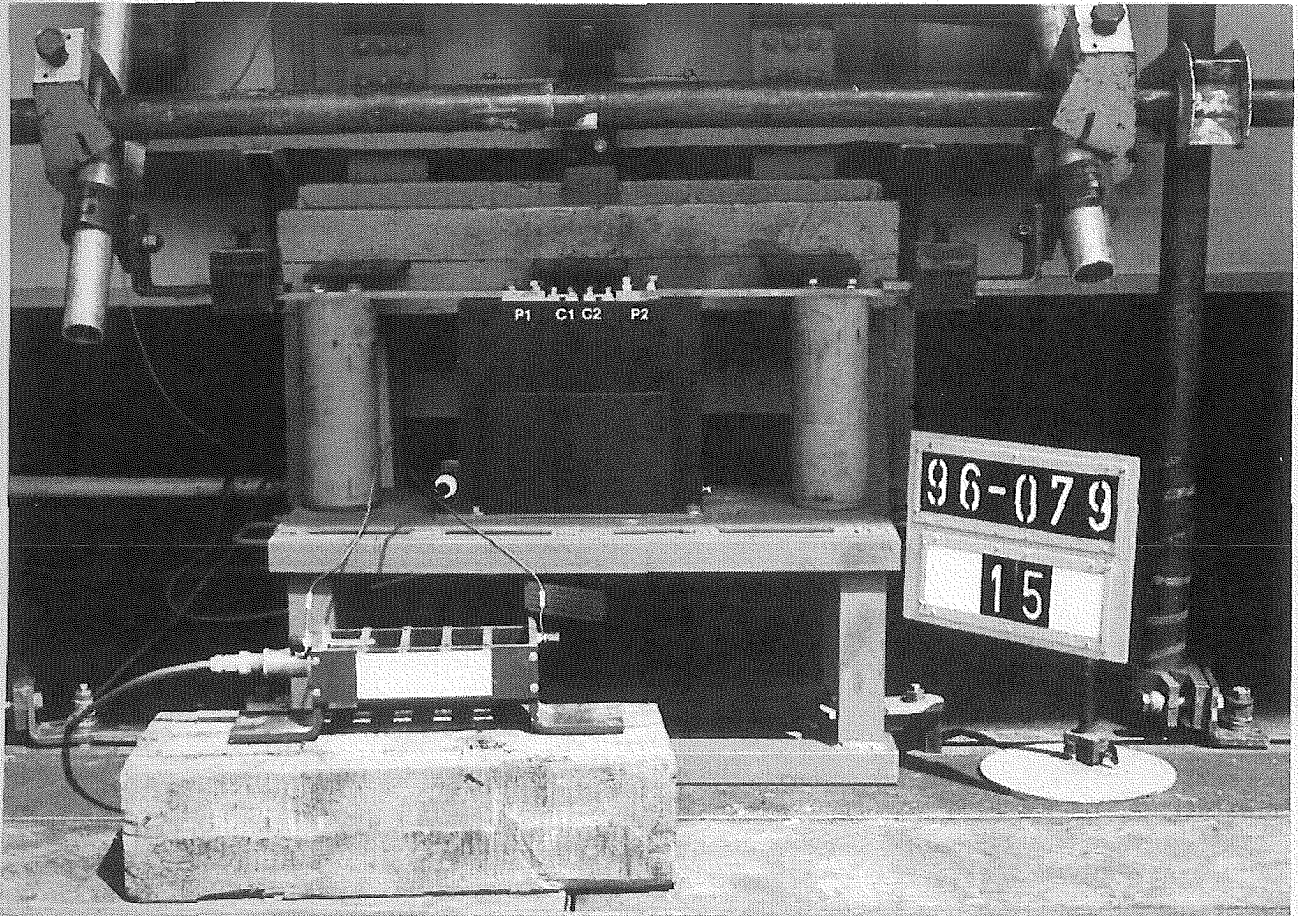


Fig. 3
Instrument current transformer CTS 25 serial No. 2500002 before test
(photo 96-079/15)

ВЪРНО С ОРИГИНАЛА

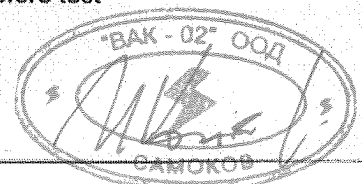


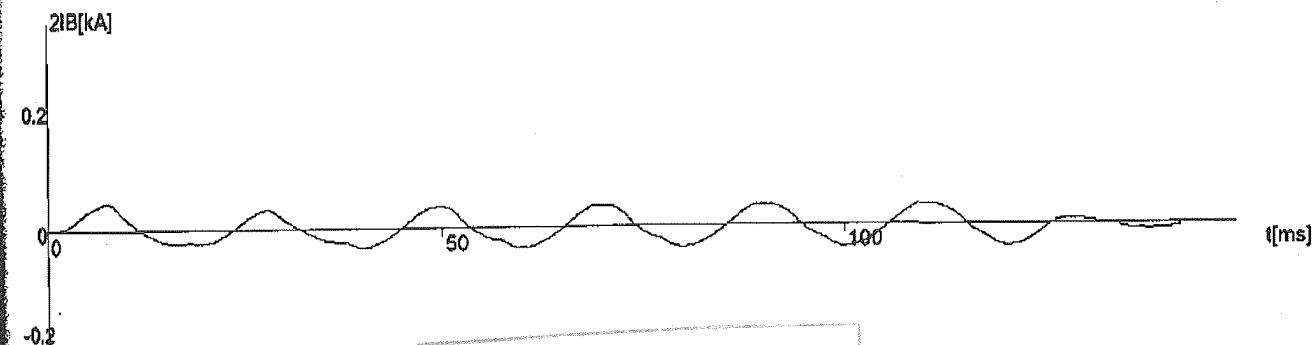
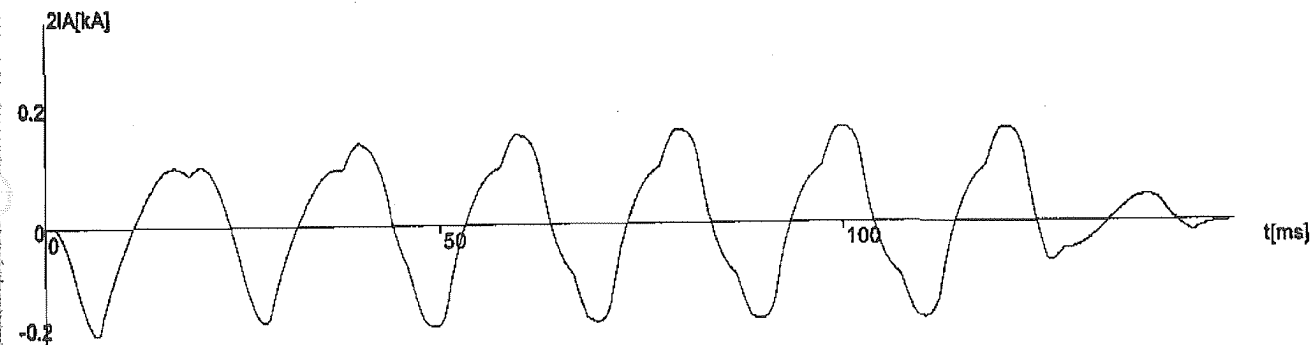
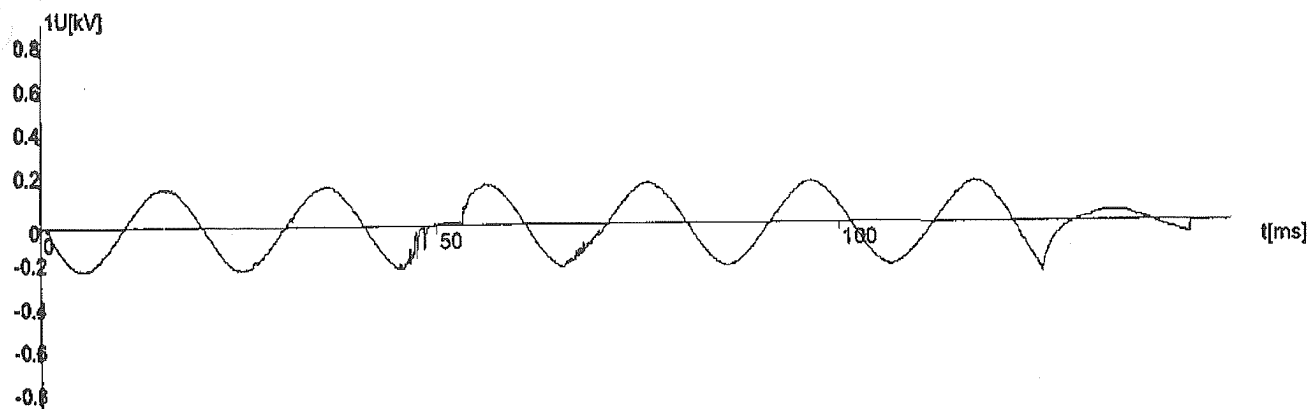
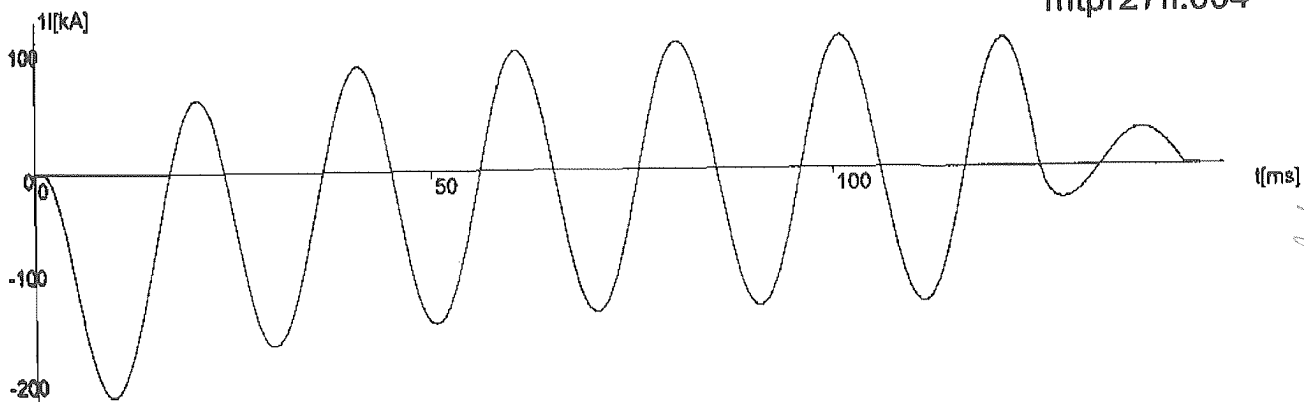


Fig. 4
Instrument current transformer CTS 25 serial No. 2500002 after test
(photo 96-079/16)

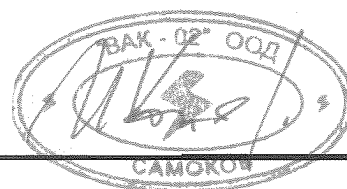
ВЪРНО С ОРИГИНАЛА



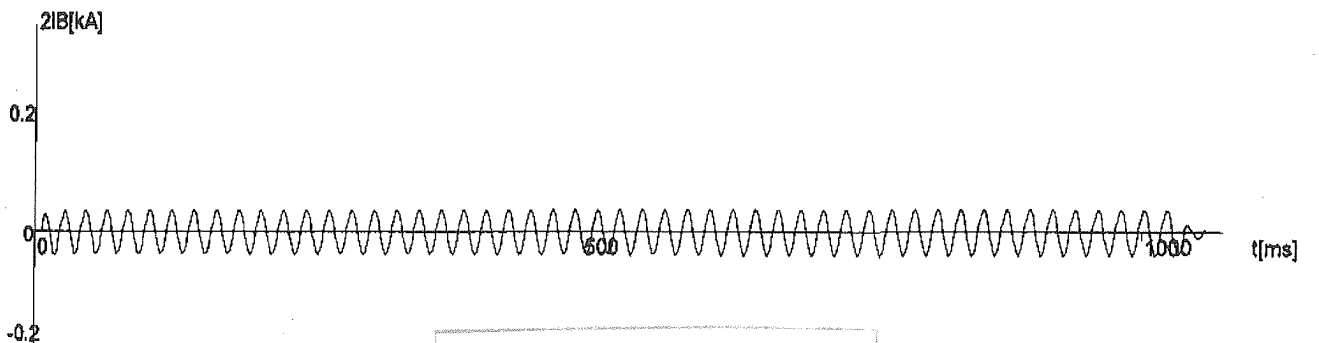
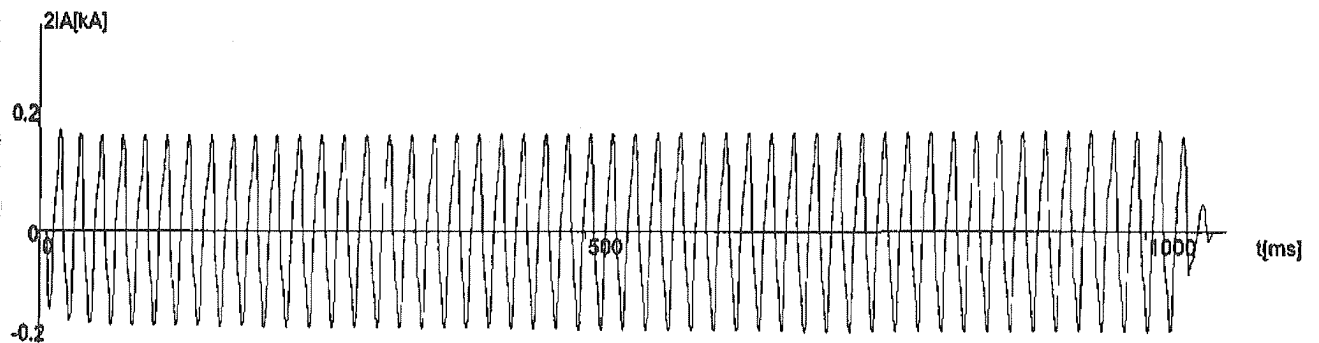
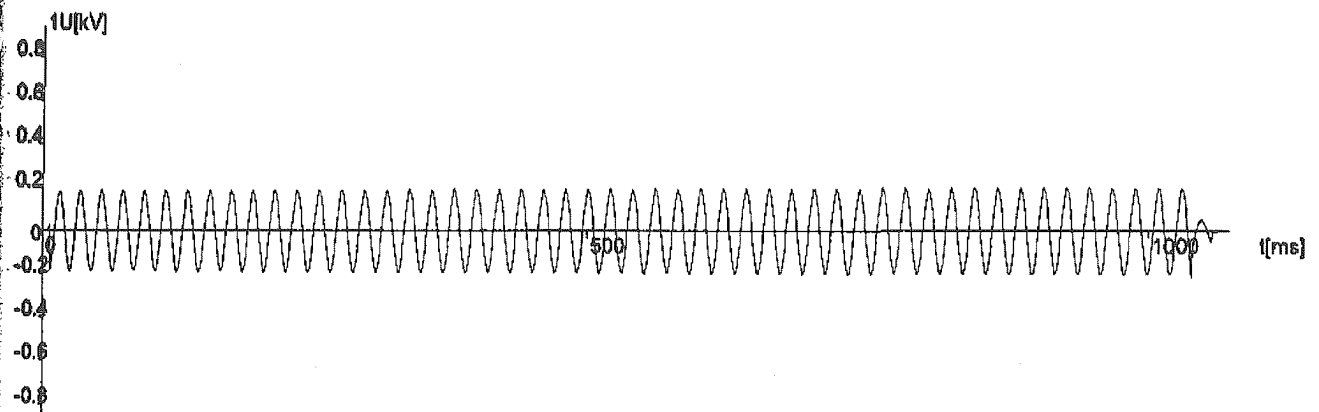
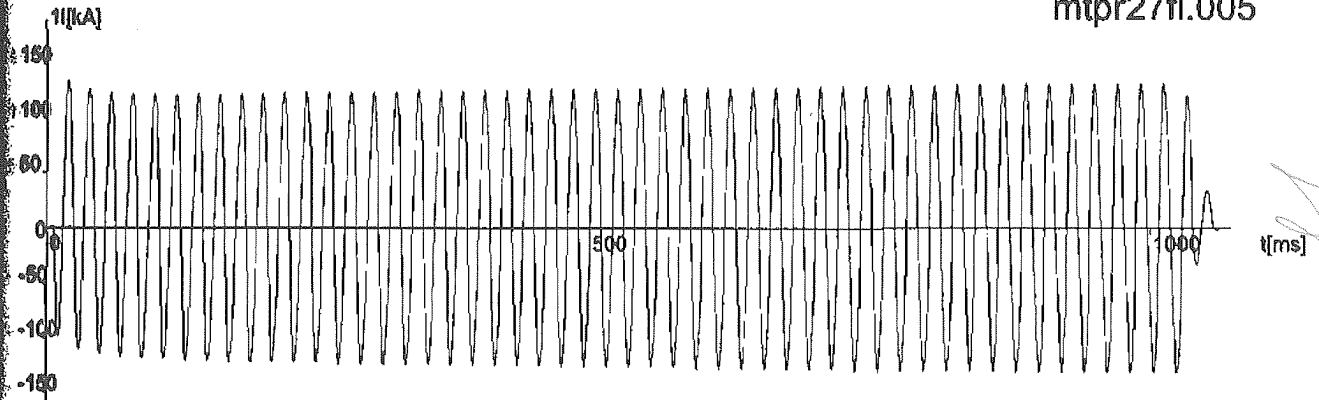
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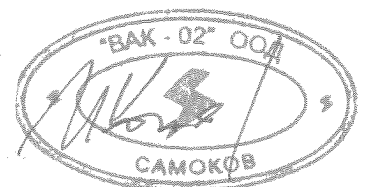
ЗЯРНО С ОРИГИНАЛА



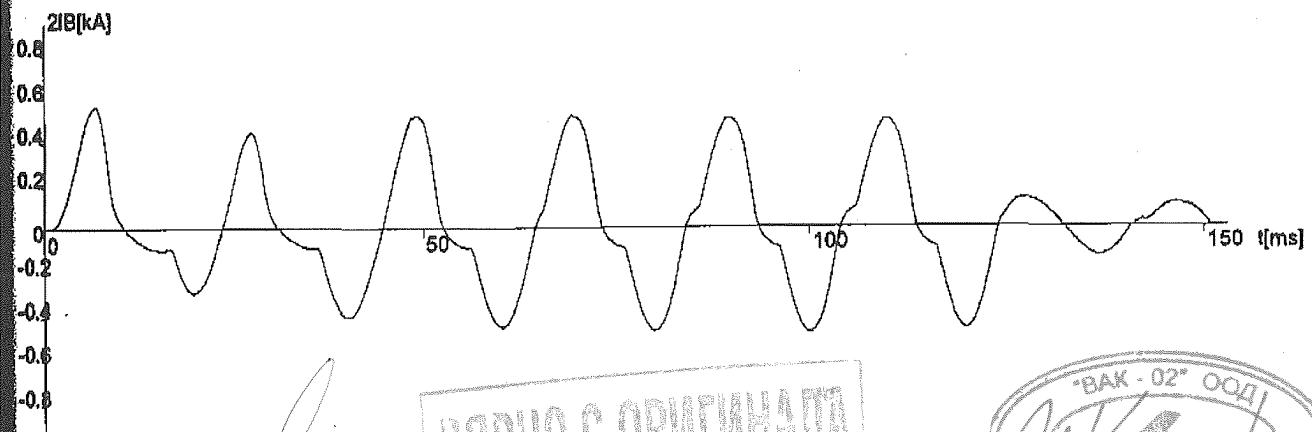
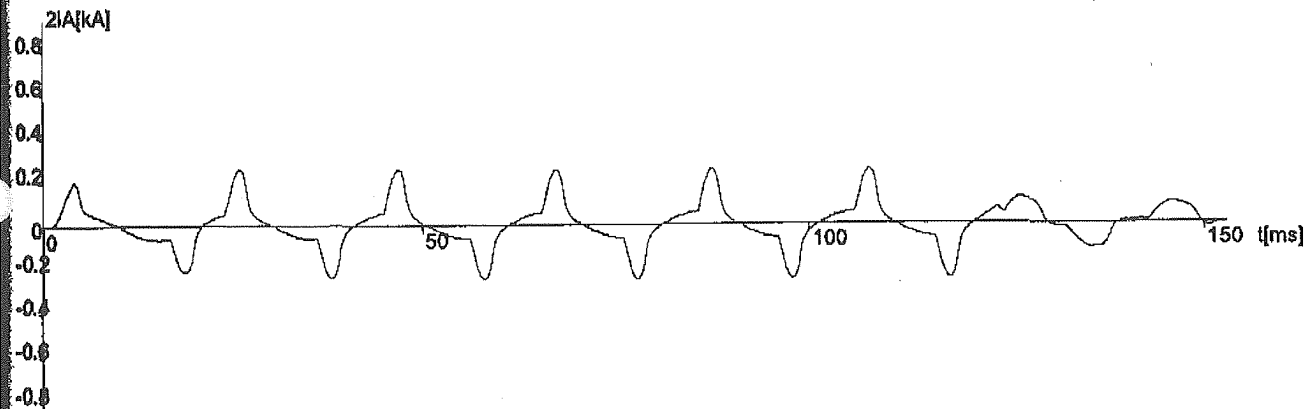
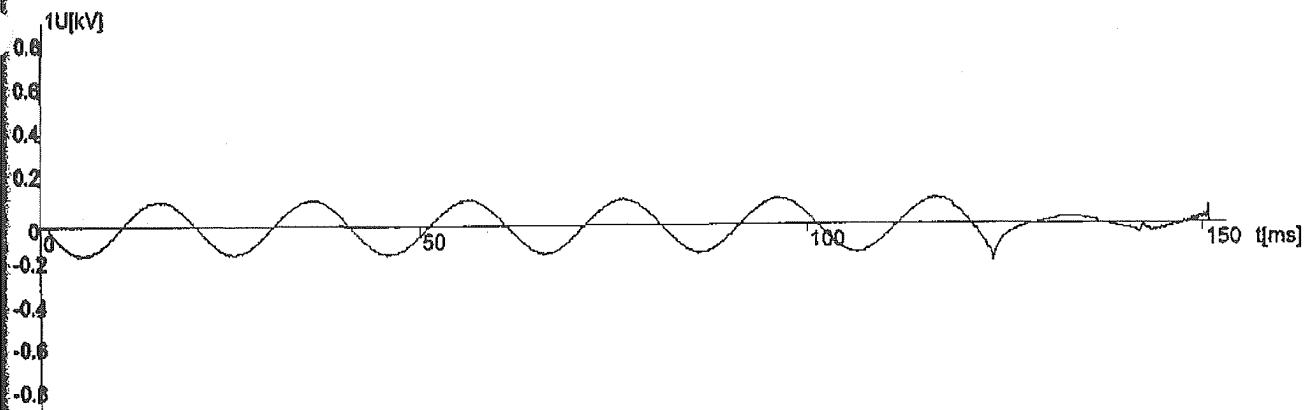
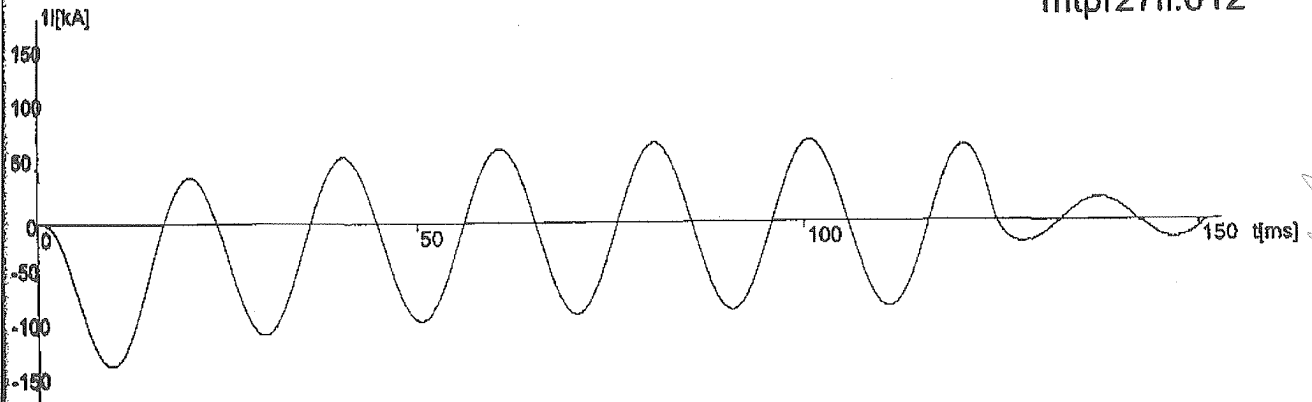
mtr27fi.005



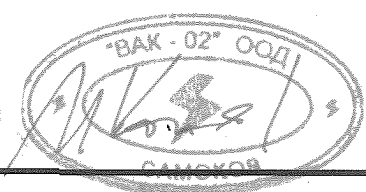
ВЪРНО С ОРИГИНАЛА



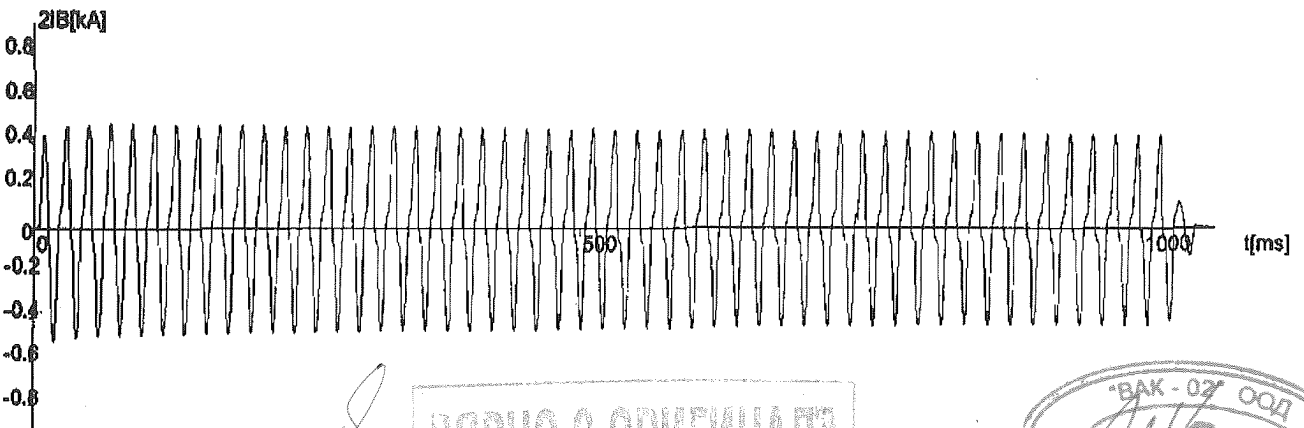
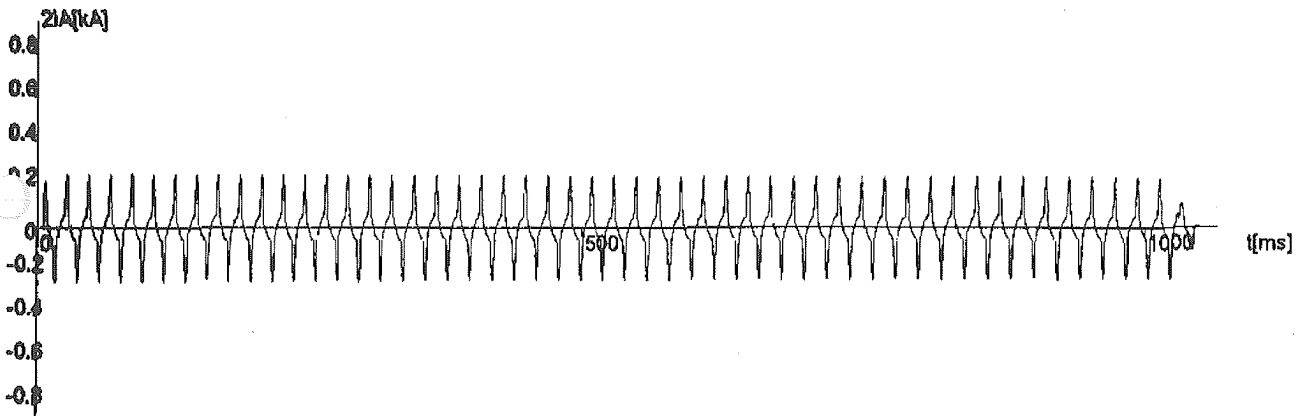
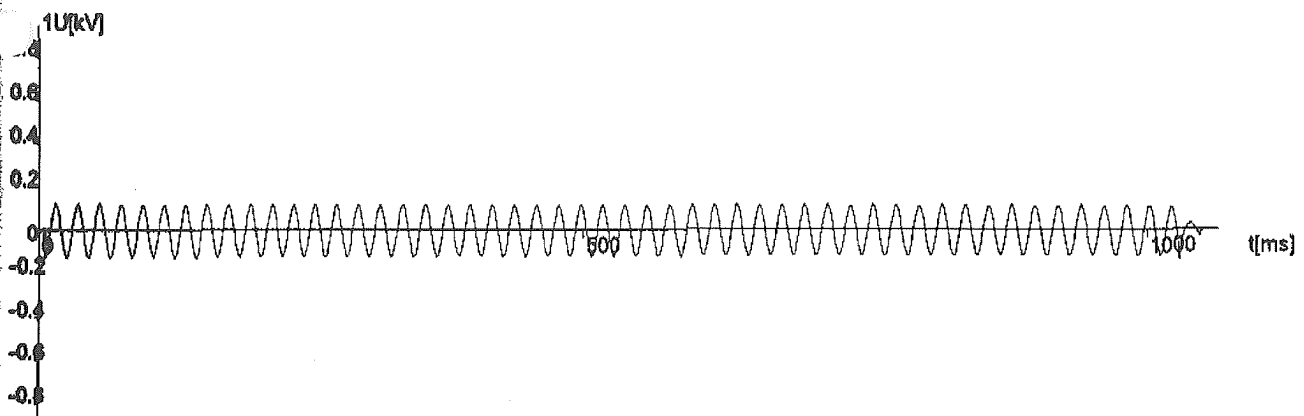
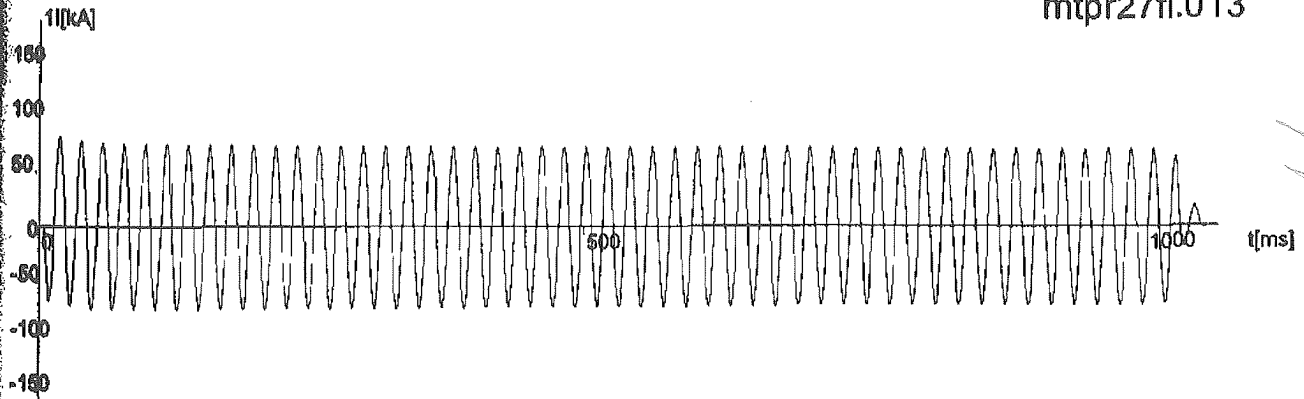
mtpr27fi.012



ВЪРНО С ОРГИНАЛА



mtpr27fi.013



ВЪРНО С ОРИГИНАЛА



zkraťovna

ZKUSEBNICTVÍ, a.s. 190 11 Прага 9, Běchovice

Независима тестваша лаборатория, акредитирана съгласно CSN EN45 001
от чешкия акредитивен институт като член номер 1035

ПРОТОКОЛ ОТ ТЕСТ №: 96-079

Предмет	Токов измервателен трансформатор
Тип	CTS 12.S, CTS 25
Производител	KPB INTRA, s.r.o., Běcovice, Чехия
Максимално напрежение на оборудването	12 kV, 25 kV
Номинален първичен ток	3200A, 800A
Тип на теста	Тест на типа
Изпълнен тест	Тест на кратковременен ток съгласно IEC изд. 185/1987, CSN 35 1360/1977
Клиент	KPB INTRA, s.r.o., Běcovice, Чехия
Представител на клиента	Г-н . Robert Knapек
Дата на теста	27.6.1996

Този протокол от тест е поверителен и не трябва да се предава или разпространява на трета страна без писменото съгласие на клиента.

Протоколът не може да бъде разпространяван без писменото съгласие на тествашата лаборатория освен изцяло.

Резултатите от теста са валидни само за изпитвания екземпляр.

Běchovice, 10.7.1996

Тестът е изпълнен от:

Подпис (не се чете)
Juri Sustera

Подпис (не се чете),
печат на ZKUSEBNICTVÍ a.s.

Pavel Kremen
Началник на лабораторията

На основание чл.36а ал.3 от
ЗОП



Условия на провеждане на теста

Работна честота $f=48 \text{ Hz}$ до 50 Hz

Температура на околния въздух $T=18^{\circ}\text{C}$ до 21°C (в клетката за теста)

Еднофазният тест беше извършен върху еднополюсен токов измервателен трансформатор, чиято вторична намотка беше дадена накъсо чрез малък резистор със стойност 0.001Ω . Кратковременният тест беше извършен като комбиниран тест - тест с ток на динамична устойчивост и тест с кратковременен ток на термична устойчивост с продължителност от 1 секунда. Захранващото напрежение без товар на тестваната схема беше $230 \text{ V} - 350 \text{ V}$. Свързането на тестовата схема и схемите на измерване са показани на диаграма TPV 121. Свързането на тествания токов измервателен трансформатор към тестовата схема е документирано чрез снимки Фиг. 1- Фиг. 4.

Описание на тествания обект

Еднофазов токов измервателен трансформатор за работа на закрито. Идентификацията на тестовия обект беше извършена на базата на чертежи No. CTS 12 -T12 001, CTS 25- T25 001.

Тип	CTS 12.S	CTS25
Сериен No.	1200003	2500002
Година на производство	1996	1996
Номинален първичен ток [A]	3200	800/400
Номинален вторичен ток [A]	5/1	5/5
Максимално напрежение за оборудването [kV]	12	25
Номинално ниво на изолацията[kV]	35/75	55/125
Номинален кратковременен ток[kA]	80	50
Номинален ток на динамична устойчивост [kA]	200	125
Номинална честота[Hz]	50	50
Обща маса [kg]	-	-

Тестови параметри

Сериен No.	1200003	2500002
Кратковременен ток [kA]	80	50
Ток на динамична устойчивост [kA]	200	125
Продължителност на късото съединение [s]	1	1

Резултат

Не е открита механична повреда след кратковременния токов тест. Токовете измервателни трансформатори преминават успешно и неколкочатните тестове на изолацията и теста за проверка на класа на точност. Тестваните токови измервателни трансформатори преминават успешно теста с кратковременен ток съгласно IEC изд.. 185/1987 пар. 12 и CSN 351360/1977 пар. 116.

Повече подробности за тестовете има в приложените таблици с тестови резултати и графиките.

Забележка:

Тестовите резултати се отнасят само за тестовете дадени в представения протокол от тест. Никакви документи от административен, търговски или друг характер не могат да бъдат заменени този протокол от тест.



**СПИСЪК НА ОТДЕЛНИТЕ ИЗПИТВАНИЯ НА ИЗМЕРВАТЕЛЕН
ТРАНСФОРМАТОР ТИП СТС 25**

1. № на тест: 82-0495 – Частичен тест;
2. № на тест: 80-12849 – Тест на типа;
3. № на тест: 83-0101 – Частичен тест;
4. № на тест: 73-0055/05 – Тест на типа;
5. № на тест: 83-0115 – Рутинен тест;
6. № на тест: 88-0918 – Частичен тест;
7. № на тест: 96-079 – Тест при късо съединение.

Съставил:

На основание чл.36а ал.3 от
ЗОП



Declaration of Conformity

Number 345/05

Company: KPB INTRA s.r.o. (a limited liability company)
Ždánská 477
685 01 Bučovice
Czech Republic
Identification no.: 63479451

declares at its exclusive responsibility, that the below specified products
meet

the requirements set by technical regulations and that the products are safe if used as determined by us and that we assumed the measures to assure conformity of all the products launched on the market with the technical documentation.

Product: **Instrument current transformer**

Type: **CTS 12** Official approval mark of type: **TCM 212/96-2415**

The conformity was evaluated in conformity with the standard
IEC 61869-1, IEC 61869-2, IEC 60060-1

The certificate of product quality and completeness makes part of the delivery.

На основание чл.36а ал.3 от
ЗОП

Place of issue: Bučovice

Name: Ing. Robert Knápek

Date of issue: January 2, 2017

Position: Company Executive

KPB INTRA s.r.o.
Ždánská 477
685 01 Bučovice

phone, fax: 517 380 388
phone, fax: 517 381 433
e-mail: info@kpb intra.cz

mobile phone: 603 481 028 000
mobile phone: 607 237 033
www.kpb intra.cz

ВЪРНО С ОРИГИНАЛА



Превод от английски език

Декларация за съответствие

Номер 345/05

Фирма: KPB INTRA s.r.o. (ООД)
Ždánská 477
685 01 Bučovice
Czech Republic
Идентификационен No.: 63479451

декларира на своя собствена отговорност, че посочените по-долу
продукти

отговарят на

изискванията поставени от техническите норми и че продуктите са
безопасни, ако се използват както е определено от нас, и че ние сме
предприели мерките за осигуряване на съответствието на всички пуснати
на пазара продукти с техническата документация.

Продукт: **Измервателни токови трансформатори**

Тип: **CTS 12** Официално одобрено обозначение на типа: **TCM 212/96-2415**

Съответствието беше оценено съгласно стандарт
IEC 61869-1, IEC 61869-2, IEC 60060-1

Сертификатът за качество и пълнота на продукта представлява част от
доставката.

Място на издаване: Bučovice

Име: Инж. Robert Knapek, подпис

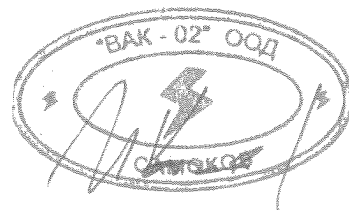
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Дата на издаване: 02 Януари, 2017

Длъжност: Изп. Директор

Кръгъл печат на фирма KPB INTRA

На основание чл.36а ал.3 от
ЗОП



Declaration of Conformity

Number 345/05

Company: KPB INTRA s.r.o. (a limited liability company)
Ždánská 477
685 01 Bučovice
Czech Republic
Identification no.: 63479451

declares at its exclusive responsibility, that the below specified products
meet
the requirements set by technical regulations and that the products are safe if
used as determined by us and that we assumed the measures to assure
conformity of all the products launched on the market with the technical
documentation.

Product: **Instrument current transformer**

Type: **CTS 25** Official approval mark of type: **TCM 212/96-2416**

The conformity was evaluated in conformity with the standard
IEC 61869-1, IEC 61869-2, IEC 60060-1

The certificate of product quality and completeness makes part of the delivery.

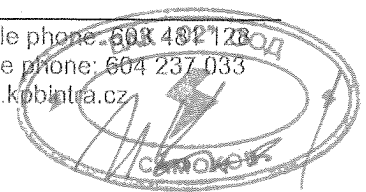
На основание чл.36а ал.3 от
ЗОП

Place of issue: Bučovice

Name: Ing. Robert Knápek

Date of issue: January 2, 2017

Position: Company Executive



Декларация за съответствие

Номер 345/05

Фирма: KPB INTRA s.r.o. (ООД)
Ždánská 477
685 01 Bučovice
Czech Republic
Идентификационен No.: 63479451

декларира на своя собствена отговорност, че посочените по-долу
продукти
отговарят на
изискванията поставени от техническите норми и че продуктите са
безопасни, ако се използват както е определено от нас, и че ние сме
предприели мерките за осигуряване на съответствието на всички пуснати
на пазара продукти с техническата документация.

Продукт: **Измервателни токови трансформатори**

Тип: **CTS 25** Официално одобрено обозначение на типа: **TCM 212/96-2416**

Съответствието беше оценено съгласно стандарт
IEC 61869-1, IEC 61869-2, IEC 60060-1

Сертификатът за качество и пълнота на продукта представлява част от
доставката.

Място на издаване: Bučovice

Име: Инж. Robert Knapek, подпис

(не се чете)

Дата на издаване: 02 Януари, 2017

Длъжност: Изп. Директор

Кръгъл печат на фирма KPB INTRA

На основание чл.36а ал.3 от
ЗОП



Declaration of Conformity

Number 345/05

Company: KPB INTRA s.r.o. (a limited liability company)
Ždánská 477
685 01 Bučovice
Czech Republic
Identification no.: 63479451

declares at its exclusive responsibility, that the below specified products
meet

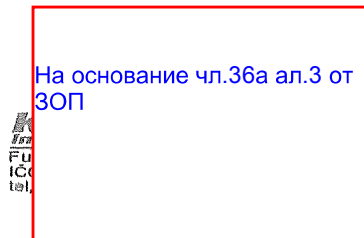
the requirements set by technical regulations and that the products are safe if used as determined by us and that we assumed the measures to assure conformity of all the products launched on the market with the technical documentation.

Product: **Instrument current transformer**

Type: **CTSO 38** Official approval mark of type: **TCM 212/99-3179**

The conformity was evaluated in conformity with the standard
IEC 61869-1, IEC 61869-2, IEC 60060-1

The certificate of product quality and completeness makes part of the delivery.

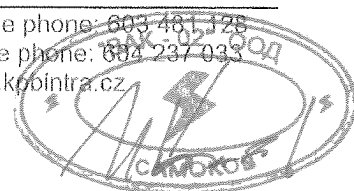


Place of issue: Bučovice

Name: Ing. Robert Knápek

Date of issue: January 2, 2017

Position: Company Executive



Декларация за съответствие

Номер 342/05

Фирма: KPB INTRA s.r.o. (ООД)
Ždánská 477
685 01 Bučovice
Czech Republic
Идентификационен No.: 63479451

декларира на своя собствена отговорност, че посочените по-долу
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отговарят на
изискванията поставени от техническите норми и че продуктите са
безопасни, ако се използват както е определено от нас, и че ние сме
предприели мерките за осигуряване на съответствието на всички пуснати
на пазара продукти с техническата документация.

Продукт: **Измервателни токови трансформатори**

Тип: CTSO 38 Официално одобрено обозначение на типа: **TCM 212/99-3179**

Съответствието беше оценено съгласно стандарт
IEC 61869-1, IEC 61869-2, IEC 60060-1

Сертификатът за качество и пълнота на продукта представлява част от
доставката.

Място на издаване: Bučovice

Име: Инж. Robert Knarek, подпис

(не се чете)

Дата на издаване: 02-01, 2017

Длъжност: Изп. Директор



30.4.2015

DECLARATION BY THE MANUFACTURER OF MEASURING TRANSFORMERS

The change in standard:

The new standards on instrument transformers came into force in 2009 and it is in Czech version ČSN EN 61869-1, ČSN EN 61869-2, ČSN EN 61869-3, i.e. EU IEC 61869-1, IEC 61869-2, IEC 61869-3.

The transformers of KPB INTRA s.r.o. suits of all requirements above mentioned standards. From this reason, these standards will be used on type labels of our instruments.

The change of the IEC standard, which is featured on labels of each transformer, doesn't have any relationship with type tests or a metrology declaration of transformers.

The standard has no effect neither on routine tests nor a type declaration of each country.

The change of the standard is only informative for our customers.

На основание чл.36а ал.3 от
ЗОП

Ing.
director of KPB INTRA s.r.o.

KPB INTRA s. r. o.

Ždánká 477

Bučovice, CZ-685 01

Česká republika

Tel: +420 517 380 388

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e-mail: info@kpb intra.cz



5

ДЕКЛАРАЦИЯ НА ПРОИЗВОДИТЕЛЯ НА ИЗМЕРВАТЕЛНИ ТРАНСФОРМАТОРИ

Промяна в стандарт:

Новите стандарти за трансформатори влизат в сила през 2009, като техни чешки еквиваленти са версиите: CSN EN 61869-1, CSN EN 61869-2, CSN 61968-3, отговарящи на EU IEC 61869-1, IEC 61869-2, EU IEC 61869-3.

Трансформаторите на KPB INTRA отговарят на всички изисквания по тези стандарти. По тази причина те ще бъдат използвани на етикетите на нашите продукти.

Промяната в IEC стандарта, която е отбелязана на етикетите на всеки трансформатор, няма връзка с типовите изпитвания или декларацията за одобрение (метрология) на всяка страна.

Промяната в стандарта е само информативна за нашите клиенти.

Ing. Robert Knapек
Директор на KPB INTRA s.r.o

На основание чл.36а ал.3 от
ЗОП



OPIS

ÚŘAD PRO TECHNICKOU NORMALIZACI, METROLOGII A STÁTNÍ ZKŮŠEBNICTVÍ

Č.j. 3825/09/02

V Praze 27. listopadu 2009



ROZHODNUTÍ

Úřad pro technickou normalizaci, metrologii a státní zkušebnictví podle § 13 odst. 1 písm. e) a § 16 zákona č. 505/1990 Sb., o metrologii, ve znění pozdějších předpisů (dále jen „zákon“), ve správním řízení rozhodl takto:

Zadatel

IVEL, a.s.

Brno, Vědecká 17a, PSC 619 00

IČ: 00566993

je uděluje

AUTORIZACE

pro ověřování stanovených měřidel rozsahu uvedeném v příloze k tomuto rozhodnutí.

Zadatel se ponechává úřední značka K s evidenčním číslem 20, na jejíž použití se vztahují § 9 a § 16 zákona a § 6 vyhlášky č. 262/2000 Sb., ve znění pozdějších předpisů.

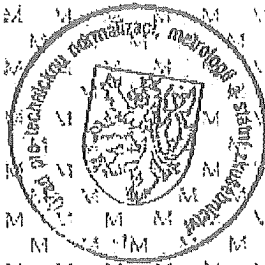
Podmínky autorizace, obsahující základní požadavky a povinnosti, které je autorizované metrologické středisko povinno při ověřování stanovených měřidel dodržovat, jsou uvedeny v příloze k tomuto rozhodnutí, která tvoří jeho nedílnou součást.

Oduvodnění:

Tímto rozhodnutím se v plném rozsahu vyhovuje žádosti o vystavení nového rozhodnutí o autorizaci ze dne 23. 11. 2009, kterou žadatel podal v souvislosti se změnou názvu společnosti, a nahrazuje rozhodnutí Úřadu č. J. 752/00/20 ze dne 21. 12. 2000.

Poučení:

Proti tomuto rozhodnutí lze podat odvolání do 15 dnů ode dne jeho doručení k Ministerstvu průmyslu a obchodu ČR prostřednictvím Úřadu pro technickou normalizaci, metrologii a státní zkušebnictví.



На основании чл.36а ал.3 от ЗОП

Příloha: Podmínky autorizace



**ÚŘAD PRO TECHNICKOU NORMALIZACI,
METROLOGII A STÁTNÍ ZKUŠEBNICTVÍ**

Příloha

k č.j. 3825/09/02

ze dne 27. listopadu 2009

**PODMÍNKY
AUTORIZACE K OVĚŘOVÁNÍ MĚŘIDEL**

Podmínky autorizace se vztahují na ověřování

1. Měřicí transformátory proudu a napětí
- indukční používané ve spojení s elektroměry
 - kapacitní používané ve spojení s elektroměry

v autorizovaném metrologickém středisku

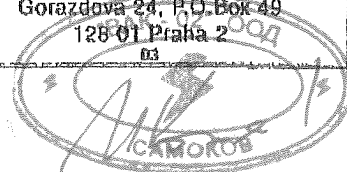
IVEP, a.s.

se sídlem Brno, Vídeňská 117a, PSČ 619 00

Vlastní výkon ověřování bude prováděn v metrologickém středisku
na výše uvedené adrese a nebo u uživatelů stanovených měřidel.

ЗЕРНО С ОПРИГІНАЛАТА

Úřad pro technickou normalizaci,
metrologii a státní zkušebnictví
Gorazdova 24, P.O. Box 49
126 01 Praha 2
03



1. Základní požadavky a povinnosti

- 1.1 Za plnění všech povinností vyplývajících z udělené autorizace odpovídá, ve smyslu §16, §18 a §25 zákona č. 505/1990 Sb., o metrologii, ve znění pozdějších předpisů, (dále jen „zákon“), vedoucí subjektu, který je dle § 16 zákona autorizovaným metrologickým střediskem (dále jen „AMS“). Vedoucí AMS nebo jím zmocněný zástupce sleduje provádění všech technických a organizačních prací souvisejících s ověřováním měřidel.

AMS musí mít platné Osvědčení úrovně metrologického a technického vybavení a kvalifikace zaměstnanců subjektu, vystavené Českým metrologickým institutem (dále jen „ČMI“).

- 1.2 Ověřování měřidel v rámci udělené autorizace mohou provádět pouze určení zaměstnanci AMS, jejichž kvalifikace je doložena v případě vedoucího AMS certifikátem způsobilosti vydaným akreditovanou osobou pro certifikaci personálu v oblasti metrologie, v případě ostatních zaměstnanců AMS buď certifikátem způsobilosti nebo personálním osvědčením o odborné způsobilosti vydaným ČMI.

AMS je povinno sdělit Úřadu pro technickou normalizaci, metrologii a státní zkušebnictví (dále jen „ÚNMZ“) všechny změny týkající se určených zaměstnanců. ÚNMZ je oprávněn v souvislosti se změnou zkušební metodiky, změnou etalonů a etalonového vybavení vyžadovat doškolení určených zaměstnanců, příp. provedení doplňujících zkoušky pro rozšíření certifikátu.

Určení zaměstnanci AMS, provádějící ověřování měřidel, jsou přímo odpovědní za správné provádění zkoušek a ověřování podle platných metrologických předpisů, jakož i za řádné používání a uchovávání přidělených úředních značek i razítka AMS.

- 1.3 AMS je povinno umožnit ČMI v rámci prováděného metrologického dozoru zjišťovat úplnost a správnost výkonu ověřování měřidel ve smyslu stanovených podmínek autorizace. AMS je povinno umožnit zaměstnancům ČMI kdykoliv provést výběr z již ověřených měřidel a poskytnout bezplatně potřebnou součinnost a další údaje nutné pro provedení dozoru.

ČMI může provádět technické проверки úrovně ověřování formou pravidelných kontrolních zkoušek ověřených měřidel. Tyto kontrolní zkoušky budou prováděny jako výkony za úhradu.

O provedeném metrologickém dozoru je sepisován protokol, který orgán metrologického dozoru projedná s vedoucím AMS nebo jím stanoveným zástupcem. Součástí protokolu jsou údaje o výsledku metrologického dozoru, včetně návrhu opatření k odstranění případných nedostatků a lhůt jejich realizace.

- 1.4 AMS si zabezpečí na svůj náklad zhotovení úředních značek v grafické podobě dle přílohy č. 3 (provedení 2, respektive 3) vyhlášky č. 262/2002 Sb. v platném znění, a to objednaním u ČMI (popřípadě výjimečně dle MPM 10-03 bod 7 se souhlasem ÚNMZ přímo u zhotovitele). Dále si AMS zabezpečí na svůj náklad zhotovení razítka AMS v grafické podobě dle přílohy 8 uvedené vyhlášky, a to objednaním přímo u zhotovitele.

- 1.5 ÚNMZ může podle technického vývoje v daném oboru měření na návrh ČMI určit změnu způsobu ověřování měřidel. AMS je povinno si na vlastní náklad zajistit potřebné etalonové zařízení.

Úřad pro technickou normalizaci,
metrologii a státní zkušebnictví
Gorazdova 24, P.O.Box 49
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САНКОС

- 1.6 V případě, že správnost měřidla ověřeného AMS bude předmětem sporu, rozhodne ÚNMZ, na základě technického posouzení ČMI, o dalším postupu.
- 1.7 Při zjištění, že ověřování měřidel není prováděno v souladu s právními předpisy o metrologii nebo podmínkami autorizace, je ÚNMZ oprávněn ve smyslu § 16 zákona autorizaci pozastavit nebo zrušit.
- 1.8 AMS je povinno bez vyzvání zasílat ČMI zprávu do 10. ledna běžného roku o počtech měřidel ověřených v předcházejícím roce.

2. Rozsah metrologické činnosti v rámci autorizace

2.1 Měřidla, která budou ověřovaná, musí splňovat požadavky těchto předpisů, případně dalších předpisů uvedených v dokumentu o schválení typu měřidla:

- ČSN 35 1360 Přístrojové transformátory proudu a napětí
- ČSN 35 1301 Přístrojové transformátory proudu
- ČSN 35 1302 Přístrojové transformátory napětí
- ČSN EN 60044-1 Přístrojové transformátory - Část 1: Transformátory proudu (IEC 60044-1)
- ČSN EN 60044-2 Přístrojové transformátory - Část 2: Induktivní transformátory proudu (IEC 60044-2)

Ověřována mohou být v souladu s právní úpravou pouze následující stanovená měřidla:

- jejichž typ byl schválen podle zákona o metrologii,
- jejichž druh podle příslušné prováděcí vyhlášky k zákonu o metrologii povinností schvalovat typ nepodléhá,
- která byla uvedena na trh, popřípadě do provozu procesem posouzení shody podle příslušného nařízení vlády, které je prováděcím předpisem k zákonu o technických požadavcích na výrobky (zákon č. 22/1997 Sb., v platném znění).

2.2 V rámci udělené autorizace mohou být ověřovány tyto druhy měřidel:

- měřicí transformátory proudu v rozsahu 1 A až 30 000 A / 1 A a 5 A
- měřicí transformátory napětí v rozsahu 100 V až 35 000 V / 100 V, 110 V, 100 / $\sqrt{3}$ V a 110 / $\sqrt{3}$ V.

3. Specifikace etalonů a dalšího technického vybavení

3.1 Etalony pro ověřování měřicích transformátorů

Název	Výrobce	Typ	Výrobní číslo	Rozsah
Měřicí transformátor proudu - komparátor	Tettex	4764	135233	1 A až 5 000 A / 1 A a 5 A
Měřicí transformátor proudu	Tettex	4724	113033	1 A až 5 000 A / 1 A a 5 A
Měřicí transformátor proudu	Tettex	4714	9546	0,1 A až 100 A / 5 A
Měřicí transformátor napětí	Tettex	4821	127508	200 V až 500 V / 100 V

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Měřicí transformátor napětí	Tettex	4822	133957	1 kV až 2 kV / 100 V
Měřicí transformátor proudu	VÚEP	BP222,180-Pa	ZT1	18 000 A / 5 A
Měřicí transformátor proudu	VÚEP	BP22,100P-H	TVT770	10 000 A / 5 A
Sekundární napěťová zátěž	Tettex	3683KS	136626	1,25 VA až 180 VA / 100 V, 100/√3 V, 110 V, 110/√3 V
Sekundární napěťová zátěž	Hartman & Braunn	NBKv	3154032	1,25 VA až 180 VA / 100 V, 100/√3 V, 110 V, 110/√3 V, 2 x 100√3 V
Sekundární napěťová zátěž	Tettex	-	5867	1,25 VA až 101,25 VA / 100/√3 V, 110/√3 V
Sekundární proudová zátěž	Tettex	3671/KK	135897	1,25 VA až 60 VA / 1 A a 5 A
Sekundární proudová zátěž	Tettex	-	4285	1 VA / 5 A
Sekundární proudová zátěž	Tettex	-	4311	1 VA / 1 A
Kontrolní transformátor proudu	MT	CLB 0.92	131449/00	5 A / 1 A
Kontrolní transformátor proudu	MT	CLA 1.2	108072/99	100 A / 5 A
Kontrolní transformátor proudu	MT	CLB4.92	127902/00	300 A / 5 A
Kontrolní transformátor napětí	EJF	D 105	380990	6 000 V / 100 V
Kontrolní transformátor napětí	EJF	J 223	290727	20 000/√3 V / 100/√3 V / 100/3 V
Měřicí transformátor napětí	Messwandler Gallsbach	NUZG 35	72/454315	5 kV až 35 kV / 100 a 110 V

3.2 Měřicí zařízení pro ověřování měřicích transformátorů

Název	Výrobce	Typ	Výrobní číslo	Rozsah
Měřicí zařízení	Tettex	2761	136127	-
Měřicí zařízení	Tettex	2765	136176	-

3.3 Zkušební zařízení pro ověřování měřicích transformátorů

Název	Rozsah
Měřicí sestava pro zkoušení měřicích transformátorů	0,1 kV až 200 kV / 100 V, 110 V, 100/√3 V, 110/√3 V, 2x100/√3 V, 1 A až 30 kA / 1 A a 5 A

ВІРНО С ОРІГІНАЛОМ

Úřad pro technickou normalizaci,
metrologii a státní zkušebnictví
Gorazdova 24, P.O.Box 49
128 01 Praha 2
03

САНКОВ

3.4 Pracovní etalony a ostatní měřidla a zařízení

Název	Výrobce	Typ	Výrobní číslo	Rozsah
Elektronický teploměr a vlhkoměr	Comet	D 3120	01910211	-10 °C až +25 °C 5 % až 95 %

3.5 Metrologická návaznost zařízení AMS

Etalony a zkušební zařízení uvedené v bodě 3.1 podléhají metrologické návaznosti prováděné ČMI ve lhůtě 5 roků (komparátor, dělič a kondenzátory 3 roky).

Měřicí zařízení uvedená v bodě 3.2 podléhají metrologické návaznosti prováděné ČMI ve lhůtách 2 roky.

Zkušební zařízení uvedené v bodech 3.3 jako celek podléhá funkční zkoušce prováděné ČMI ve lhůtě 1 rok.

Pracovní etalony a ostatní měřidla a zařízení uvedené v bodě 3.4 podléhají kalibraci ve lhůtách stanovených v řízené dokumentaci AMS.

4. Metodiky ověřování stanovených měřidel

4.1 Ověřování měřidel bude prováděno podle těchto předpisů, případně dalších předpisů uvedených v dokumentu o schválení typu měřidla:

a) TPM 2272-99 Měřicí transformátory proudu nebo napětí. Metody zkoušení při ověřování

4.2 Měřidla, která při zkoušce vyhoví předepsaným podmínkám, se na místech určených při schválení typu opatří úředními značkami ve smyslu §6 vyhlášky č. 262/2000 Sb. ve znění pozdějších předpisů.

5. Seznam zaměstnanců zabezpečujících metrologickou činnost v rozsahu autorizace

Jméno	Způsobnost k ověřování
Ing. Vlastimil Rada - vedoucí AMS	měřicí transformátory
Ing. Hana Mašková	měřicí transformátory

V Praze 27. listopadu 2009

ЗАРНО С ОРНИНАЛТА

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Úřad pro technickou normalizaci,
metrologii a státní zkušebnictví
Gorazdova 24, P.O.Box 49
128 01 Praha 2

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CAMOKOS

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THE INSTITUTE OF TECHNICAL STANDARDIZATION, METROLOGY AND
STATE TESTING

Ref. N. 3825/09/02

Prague, 27 November 2009

RESOLUTION

The Institute of Technical Standardization, Metrology and State Testing, pursuant to § 13 section 1 letter c) and § 16 of Act N. 505/1990 Sb. on metrology as amended (hereinafter "the Act"), made the following resolution in the administration procedure:

Applicant:

IVEP, a.s.
Brno, Vídeňská 117a, post code 619 00
Company N.: 00566993

Is granted

AUTHORIZATION

to certify measuring devices within the scope listed in the Appendix hereto. The Applicant shall keep an official sign K with reference N. 20. The use of the sign shall be regulated by § 9 and § 16 of the Act and by § 6 of Directive 262/2000 Sb. as amended. Conditions of the Authorization containing the basic requirements and obligations to be observed by the authorized centre in certification of the identified measuring devices are listed in the Appendix hereto and make an integral part hereof.

Justification:

This Resolution fully approves of the application for the renewal of Resolution of Authorization of 23 November 2009 submitted by the Applicant in relation with the change of the business name and replaces the Resolution by the Institute ref. N. 752/00/20 of 21 December 2000.

Advice:

An appeal may be lodged against this Resolution within 15 days of the service hereof at the Ministry of Trade and Industry through the Institute of Technical Standardization, Metrology and State Testing.

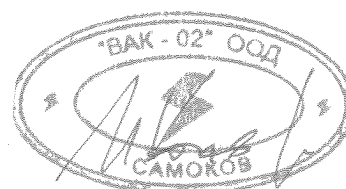
Seal: The Institute of Technical Standardization, Metrology and State Testing -1-

Signature

Ing. Milan Holeček, Chair

Appendix: Terms of the Authorization

ВЕРНО С ОРИГИНАЛА



I certify that this true copy consisting of 1 sheet literally corresponds with the original document from which it was made, consisting of 1 page and 1 sheet.

Dated in Brno, Příkop 8 on 20/5/2010

Seal: JUDr. Alice Sedláková, Notary Public in Brno
Marcela Nová, notarial secretary, signature

ВЕРНО С ОРИГИНАЛОМ



Já, níže podepsaná tlumočnice
jazyka anglického jmenovaná
Krajským soudem v Hradci
Králové pod číslem Spr.
2945/97 tímto stvrzuji, že
překlad souhlasí s textem
přípojené listiny.

I, the undersigned interpreter of
the English language, appointed
by the Regional Court in
Hradec Králové under the
number Spr. 2945/97, hereby
certify that this translation
corresponds with the
accompanying text.

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No. of original pages
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Translation recorded
under No... 1957/10

V Pardubicích dne
24. května 2010.

Dated in Pardubice,
the Czech Republic,
on 24. May 2010.

..... На основании чл.36а ал.3 от
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Notary's seal

**INSTITUTE OF TECHNICAL STANDARDIZATION,
METROLOGY AND STATE TESTING**

Appendix

To ref.N.3825/09/02 of 27 November 2009

**CONDITIONS OF THE AUTHORIZATION TO CERTIFY MEASURING
DEVICES**

The conditions of authorization refer to the certification of the following devices:

1. Current and voltage measuring transformers
 - Inductive – used in connection with electric meters
 - Capacity – used in connection with electric meters

In an authorized metrology centre

IVEP, a.s.

Registered office at Brno, Vídeňská 117a, postcode 619 00

The certification will be performed in the metrology centre at the above indicated address and/or at the users of the appropriate measuring devices.

Institute for Technical Standardization, Metrology and State Testing
Gorazdova 24, P.O.Box 49
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