

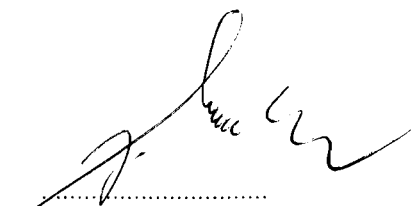


**Electrotechnical Engineering and Production, joint-stock company**  
619 00 BRNO, Vídeňská 117

REPORT OF PERFORMANCE No: 82-0650

INDOOR INSTRUMENT VOLTAGE TRANSFORMERS DOUBLE POLE  
INSULATED TYPE VTD 25



  
Jaromír Mudra, Phd

Brno, November 20, 1998

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TEST REPORT No: 82 - 0650  
Tested Instrument Voltage  
subject: Transformers Double pole  
insulated Indoor type

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TYPE:

VTD 25

KIND OF TEST: partial type test

TESTING ACC. TO:

ČSN 35 1360  
IEC 186

RATED VALUES:

Rated ratios

22 000/100V

TEST REQUEST ISSUED BY:

KPB INTRA, s.r.o.  
Fučíkova 860  
685 01 Bučovice

ORDER NUMBER:

Z-98005 of Nov. 16, 1998

TESTED SPECIMEN REG. NUMBER:

Reg. No. 267-269/98  
Prod. No. KPB 002497 to 002499

drawing No. KPB-0206001

ENVIRONMENTAL CONDITIONS:

TEMPERATURE: 21°C  
ATMOSPHERIC PRESSURE: 1008.7 hPa  
AIR HUMIDITY: 46 %

PRODUCT MANUFACTURER

KPB Intra, s.r.o.  
Fučíkova 860  
685 01 Bučovice

THIS TEST REPORT  
INCLUDES:

TEXT PAGES: 5  
TABLES:  
OSCILLOGRAMMES:  
DIAGRAMMES:  
DRAWINGS:  
PHOTOS:

DISTRIBUTION  
LIST:

KPB INTRA 2x  
IVEP ŘZ 1x  
IVEP ŘT 1x  
Archives 1x

TESTED SPECIMENS DELIVERED ON:

November 17, 1998

TEST RESULT:

The indoor instrument voltage transformers double pole insulated  
of VTD 25 type, manufactured by KPB INTRA, s.r.o, designed as  
22 000/100 V

c o m p l y

with the insulation tests of power frequency and impulse voltage  
by requirements according to the ČSN 35 1360 and IEC 186.

DATE OF TEST:

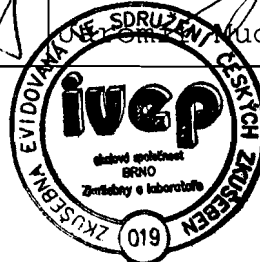
Nov. 19 to 20  
1998

TEST PERFORMED BY:

Jaromír Mudra, PhD.  
Ladislav Dvořák

MANAGER OF TEST LAB

Jaromír Mudra, PhD.



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Tested Indoor Instrument Voltage Transformers  
Subject: Double Pole Insulated  
VTD 25

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On the days of November from 19 to 20, 1998, and based on the order No. KPB-Z-980075 KPB Intra, s.r.o., insulation tests by impulse and AC testing voltage was conducted on three pieces of indoor instrument voltage transformers double pole insulated of VTD 25 type, with transformer ratio 22000/100 V, at the testing laboratory of IVEP Brno s.s.

Testing equipment

Impulse generator 1.2 MV, manufactured by Haefely; 1.2/50  $\mu$ s; 30 kJ, arranged for 400 kV  
Two-beam impulse oscilloscope, Haefely, 72 E type  
Impulse, peak oscilloscope, Haefely, 64 M type  
Transformer cascade, 500 kV, 150 kVA, manufactured by Siemens  
Capacitive voltage divider, 600 kV, Haefely, with Trüb-Taüber peak voltmeters

Test procedures and scope of the testing

Conformably to the ČSN 35 1360 and the IEC 186 standards the transformer was subjected to the 1.2/50  $\mu$ s lightning impulse test, performed as dry, with both polarities, by using a short-time AC 200/50 Hz voltage, during a time period of 30 sec./1 minute, respectively, with insulation test voltages applied across the windings.

Symbols used:

+U, -U - rated withstand voltage at the 1.2/50  $\mu$ s lightning impulse test, with positive and negative wave (peak value)

The 15/0 and 5/0 records indicate 15 or 5 impulses, without flashover

~Us, - rated short-time AC withstand voltage, dry test 50 Hz/200 Hz (rms value)

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Tested Indoor Instrument Voltage Transformers  
Subject: Double Pole Insulated  
VTD 25

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pages: 5Test results

1. Instrument voltage transformer, VTD 25 type,  
prod. No. 002497, prod. year 1998, reg. No. 267/98,  
transformer ratio 22000/100 V, 50 Hz, 500 VA, ČSN 35 1360

a) Impulse test

to the ČSN 35 1360 art.123 and the IEC 186 standards

- a1) Testing voltage conducted to the terminal A, terminals
- 
- B, a and PE were earthed, the terminal b was insulated

+ U = 125 kV/5/15/0

- test passed

- U = 125 kV/5/15/0

- test passed

- a2) Testing voltage conducted to the terminal B, terminals A, b and
- 
- PE were earthed, terminal a was insulated

+ U = 125 kV/5/15/0

- test passed

- U = 125 kV/5/15/0

- test passed

- b)
- Power frequency withstand insulation test
- between
- 
- the primary and secondary, to the ČSN 35 1360, Art.124
- 
- and the IEC 186 standards, performed as dry
- 
- Testing voltage conducted to the terminals A and B
- 
- both connected, terminals a, b and PE were earthed.

 $\sim U_s = 55 \text{ kV/50 Hz/1 min.}$ 

- test passed

Note:

The IEC 186 standard requires test voltage

 $\sim U_s = 50 \text{ kV/50 Hz/1 min.}$ 

- c)
- Power frequency withstand insulation test
- on primary winding
- 
- to the ČSN 35 1360, Art.125 and the IEC 186 standards.

 $\sim U_s = 55 \text{ kV/200 Hz/30 s}$ 

- test passed

Note:

The IEC 186 standard requires test voltage

 $\sim U_s = 50 \text{ kV/200 Hz/30s}$ 

2. Instrument voltage transformer, VTD 25 type,  
prod. No. 002498, prod. year 1998, reg. No. 268/98,  
transformer ratio 22000/100 V, 50 Hz, 500 VA, ČSN 35 1360

a) Impulse test

to the ČSN 35 1360 art.123 and the IEC 186 standards

- a1) Testing voltage conducted to the terminal A, terminals
- 
- B, a and PE were earthed, the terminal b was insulated

+ U = 125 kV/5/15/0

- test passed

- U = 125 kV/5/15/0

- test passed

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Subject: Double Pole Insulated  
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- a2) Testing voltage conducted to the terminal B, terminals A, b and PE were earthed, terminal a was insulated

+ U = 125 kV/5/15/0

- test passed

- U = 125 kV/5/15/0

- test passed

- b) Power frequency withstand insulation test between the primary and secondary, to the ČSN 35 1360, Art.124 and the IEC 186 standards, performed as dry  
Testing voltage conducted to the terminals A and B both connected, terminals a, b and PE were earthed.

 $\sim U_s = 55 \text{ kV/50 Hz/1 min.}$ 

- test passed

Note:

The IEC 186 standard requires test voltage

 $\sim U_s = 50 \text{ kV/50 Hz/1 min.}$ 

- c) Power frequency withstand insulation test on primary winding to the ČSN 35 1360, Art.125 and the IEC 186 standards.

 $\sim U_s = 55 \text{ kV/200 Hz/30 s}$ 

- test passed

Note:

The IEC 186 standard requires test voltage

 $\sim U_s = 50 \text{ kV/200 Hz/30 s.}$ 

3. Instrument voltage transformer, VTD 25 type,  
prod. No. 002499, prod. year 1998, reg. No. 268/98,  
transformer ratio 22000/100 V, 50 Hz, 500 VA, ČSN 35 1360

- a) Impulse test

to the ČSN 35 1360 art.123 and the IEC 186 standards

- a1) Testing voltage conducted to the terminal A, terminals B, a and PE were earthed, the terminal b was insulated

+ U = 125 kV/5/15/0

- test passed

- U = 125 kV/5/15/0

- test passed

- a2) Testing voltage conducted to the terminal B, terminals A, b and PE were earthed, terminal a was insulated

+ U = 125 kV/5/15/0

- test passed

- U = 125 kV/5/15/0

- test passed

- b) Power frequency withstand insulation test between the primary and secondary, to the ČSN 35 1360, Art.124 and the IEC 186 standards, performed as dry  
Testing voltage conducted to the terminals A and B both connected, terminals a, b and PE were earthed.

 $\sim U_s = 55 \text{ kV/50 Hz/1 min.}$ 

- test passed

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## Note:

The IEC 186 standard requires test voltage

 $\sim U_s = 50 \text{ kV}/50 \text{ Hz}/1 \text{ min.}$ 

- c) Power frequency withstand insulation test on primary winding to the ČSN 35 1360, Art.125 and the IEC 186 standards.

 $\sim U_s = 55 \text{ kV}/200 \text{ Hz}/30 \text{ s}$  - test passed

## Note:

The IEC 186 standard requires test voltage

 $\sim U_s = 50 \text{ kV}/200 \text{ Hz}/30 \text{ s.}$ **Summary:**

All the indoor instrument transformers double pole insulated of VTD 25 type, manufactured by KPB Intra, prod. No. 002497 to 002499, for the transformer ratio of 22000/100 V have passed the insulation tests to ČSN 351360 and IEC 186 standards.