



Inženýrsko-výrobní elektrotechnický podnik, a.s.

619 00 Brno, Videnska 117a



CZECH TESTING LABORATORIES ASSOCIATION

MEMBER OF HIGH VOLTAGE TESTING STATIONS ASSOCIATION



TEST PROTOCOL No.: 88 – 0257

CTS 25; CTS 38; CTSO 38 INSTRUMENT CURRENT TRANSFORMERS



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Ing. Jaromir Mudra, CSc.

Brno, 8 July 2002

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IVEP, a.s. Videnska 117a
Testing stations and laboratories CZ 619 00 Brno

Phone: +420547136650, +420547136690, +42054713697-8
Fax: +420547136402
<http://www.ivep.cz> e-mail: zkusebna@ivep.cz

	TEST PROTOCOL No. 88 – 0257 Test subject: Instrument current transformers		Page: 2 Number of pages: 6
Type: CTS 25 CTS 38 CTSO 38	Test type: partial Tested according to: CSN EN 60044-1 article 7.1 (short-time current test)		
Rated values: CTS 25: 5//5/5 A CTS 38: 5//5/5 A CTSO 38: 5//5/5 A	Test customer: KPB INTRA s.r.o. Zdanska 477 685 01 Bucovice		
	Order number: 2002019 from 5 January 2002		
	Sample registration numbers: 013/02 to 015/02		
	Atmospheric conditions: Temperature: 24° C Pressure: - Humidity: -		
Product manufacturer: KPB INRA s.r.o. Zdanska 477 685 01 Bucovice	Protocol contains: Text pages: 6 Tables: Oscillograms: 3 Diagrams: Drawings: Photographs:	Table of distribution: Customer 3x IVEP archive 1x RZ 1x RT 1x	
Samples delivered on: 3 July 2002 (shift 02 – 016)			
Test results: <div style="text-align: center;"> All tested instrument current transformers (IVEP stamp) comply with short-time current test according to CSN EN 60044-1 article 7.1 in power testing circuits stated in chapter 1 and 7. </div>			
Test date: 3 and 4 July 2002	Tested by: Ing. Vlastimil Rada (Signature) Ing. Petr Kalus (Signature)	Testing station chief: (signature) Ing. Jaromir Mudra, CSc.	

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1 Required Tests and Their Parameters

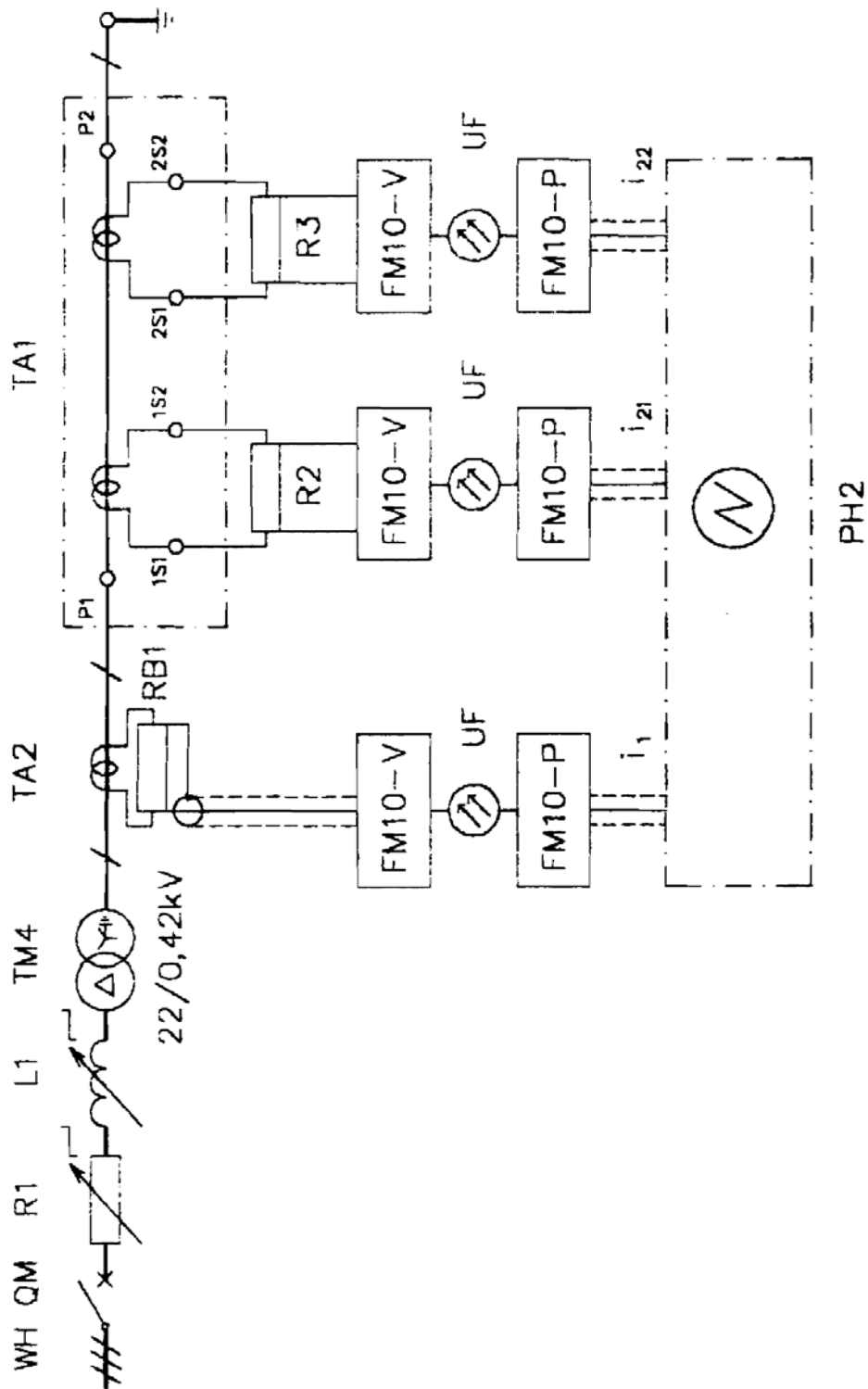
IVEP Registration No.	Test	I_l [kA]	I_{lm} [kA]	t_k [ms]
013/02	Short-time current	4.0	10.0	1,000
014/02	Short-time current	4.0	10.0	1,000
015/02	Short-time current	4.0	10.0	1,000

2 Test Samples Identification

Type	IVEP Registration No.	Version	Serial Number	I_{1n} [A]	I_{2n} [A]	P_n [VA]	C1 [1]	I_{th} [kA]	I_{dyn} [kA]
CTS 25	013/02	thread	009908	5	5	10	0.5	4.0	10.0
					5	15	10P	4.0	10.0
CTS 38	014/02	thread	009909	5	5	10	0.5	4.0	10.0
					5	15	10P	4.0	10.0
CTSO 38	015/02	thread	009910	5	5	10	0.5	4.0	10.0
					5	15	10P	4.0	10.0

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3 Test Circuit Wiring



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4 Used Symbols and Instruments

WH	- external supply cable No. 165; 22kV
QM	- SF6 safety switch, VF 251225; 25 kV; 1,250 A
R1, L1	- HV short-circuit testing station loading elements
TM4	- testing transformer KobU 825/20; 1.25 MVA 22,000/550/418 V; u_k 2.02/1.98 %; Dy 1; BEZ
TA1	- tested instrument current transformers
TA2	- current measuring transformer 10,000/5 A; EJF Brno
RB1	- shunt 3.344 A/V; IVEP Brno
R2, 3	- tested transformer loads (100 A / 60 mV)
UF	- analogue optoelectronic measuring system FM 10 (V - transmitter, P - transceiver); VUSE Bechovice
PH2	- data card PCL 818
KO	- cathode oscillogram
ZO	- testing operation
D	- dynamic current test
T	- heat current test
I_{1n}	- transformer primary rated current
I_{2n}	- transformer secondary rated current
I_{th}	- short-time rated transformer heat current
I_{dyn}	- dynamic rated transformer current
P_n	- rated load
Cl	- accuracy class
U_k	- percentage impedance
U_z	- testing voltage effective value
i_1	- primary winding current instantaneous value
I_1	- primary winding current effective value
I_{1m}	- primary winding current maximum value
i_{21}	- secondary winding current instantaneous value 1S1 - 1S2
i_{22}	- secondary winding current instantaneous value 2S1 - 2S2
I_{21}	- secondary winding current effective value 1S1 - 1S2
I_{22}	- secondary winding current effective value 2S1 - 2S2
t_k	- short-circuit time; current passage time

5 Test Order and Running

Instrument current transformers were supplied into primary winding (terminals P1 and P2), both secondary windings (terminals 1S1 and 1S2, and 2S1 and 2S2) were short-circuited by shunt 100 A / 60 mV. During all test operations were current courses in all windings read by PCL 818 data card.

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6 Table of Measured Values

Sample	ZO	KO	U_z [kV]	I_1 [kA]	I_{1m} [kA]	I_{21} [A]	I_{22} [A]	t_k [s]
013/02	T+D	021601	0.24	4.2	10.6	925	1420	1.06
014/02	T+D	021602	0.24	4.1	10.8	516	780	1.08
015/02	T+D	021603	0.24	4.2	10.5	592	1337	1.04

7 Test Result

On the basis of primary and secondary current course oscillographic records and repeated specified tests (fault measuring and dielectric tests) is possible to consider as satisfactory test result of all short-time current tested instrument current transformers (according to CSN EN 60044-1 article 7.1):

a) for sample registration No. 013/02 (CTS 25 : 5//5/5 A) in power test circuit with parameters:

$$I_1 = 4.2 \text{ kA}; I_{1m} = 10.6 \text{ kA}; t_k = 1.06 \text{ s}$$

b) for sample registration No. 014/02 (CTS 38 : 5//5/5 A) in power test circuit with parameters:

$$I_1 = 4.1 \text{ kA}; I_{1m} = 10.8 \text{ kA}; t_k = 1.08 \text{ s}$$

c) for sample registration No. 015/02 (CTSO 38 : 5//5/5 A) in power test circuit with parameters:

$$I_1 = 4.2 \text{ kA}; I_{1m} = 10.5 \text{ kA}; t_k = 1.04 \text{ s}$$

8 Attendance at tests

IVEP, a.s.:

Ing. Petr Kalus
Ing. Vlastimil Rada

