



Inženýrsko – výrobní elektrotechnický podnik, a.s.

619 00 Brno, Videnska 117

TEST PROTOCOL No. : 88 - 0134

CTS 38 instrument current transformer



(signature)

Ing. Jaromir Mudra, CSc.

Brno, 2 October 1997

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Only entire protocol can be published, namely with written permission of the test laboratory.

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Type: CTS 38	Test type: partial	
	Tested according to: CSN 35 1360 (short-circuit current strength test)	
Rated values: see test samples identification	Test customer: KPB INTRA s.r.o. Fucikova 860 685 01 Bucovice	
	Order number: 85 / 97 from 11 September 1997	
	Sample registration numbers: 528 to 530 / 97	
	Atmospheric conditions: Temperature: 12° C Pressure: - Humidity: -	
Product manufacturer: KPB INRA s.r.o. Fucikova 860 685 01 Bucovice	Protocol contains: Text pages: 7 Tables: Oscillograms: 4 Diagrams: Drawings: Photographs:	Table of distribution: Customer 2x IVEP Brno archive 1x RZ 1x RT 1x
Samples delivered on: 19 September 1997		
Test results: Tested current measuring transformers, registration No. 529/97 and 530/97 comply with short-circuit current strength test according to CSN 35 1360. At sample 528/97 was performed only heat current test with satisfactory result.		
Test date: 30 September - 1 October 1997	Tested by: (signature) Ing. Petr Kalus	Testing station chief: Ing. Jaromir Mudra, CSc. (stamp) (signature)

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1 Required Tests and Their Parameters

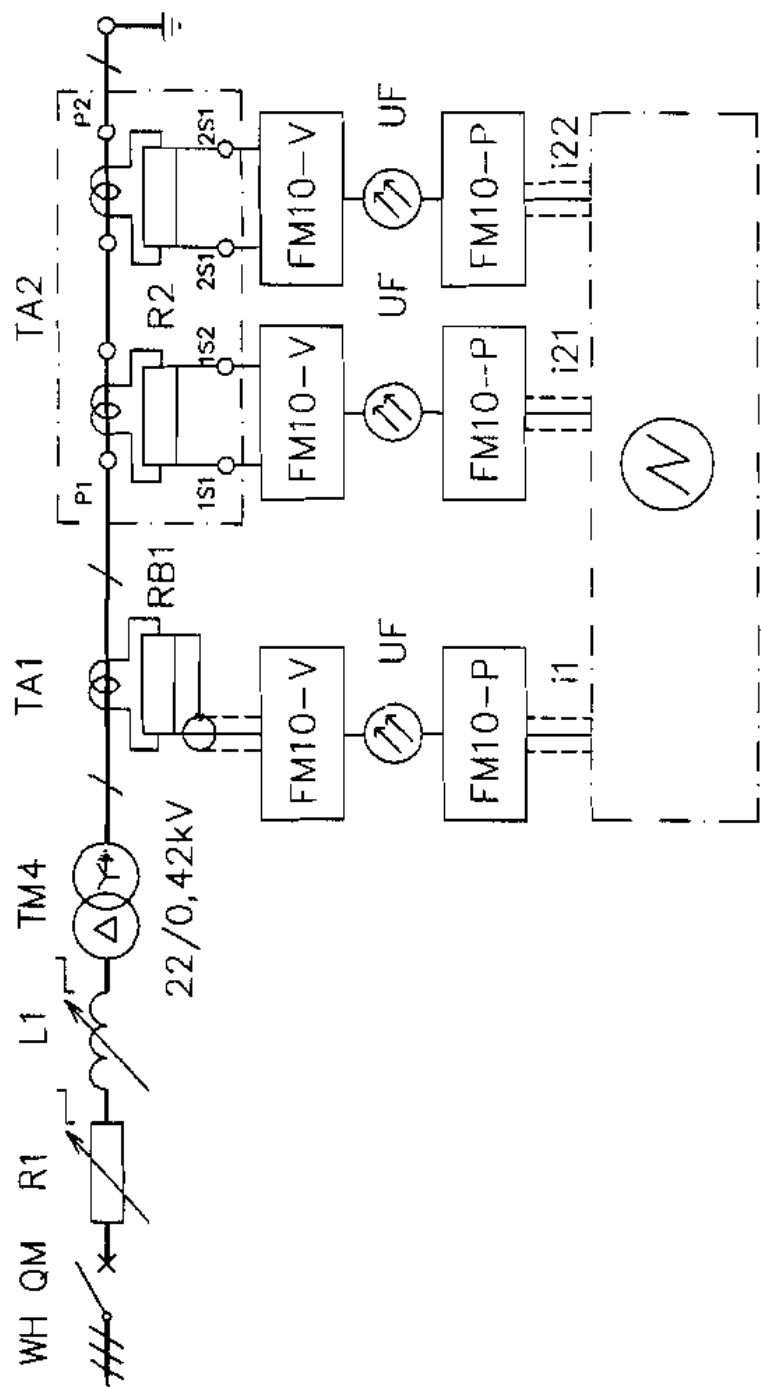
Sample	Test	I_{1m} [kA]	I_1 [kA]	t_k [ms]
528/97	Heat	–	31.5	1,000
529/97	Dynamic heat	63.0	25.0	1,000
530/97	Dynamic heat	40.0	16.0	1,000

2 Test Samples Identification

Type	IVEP Registration No.	Version	Serial Number	I_{1n} [A]	I_{2n} [A]	P_n [VA]	T_p [1]
CTS 38	528/97	thread	3800003	600	5;5	10;30	0.5; 5P
CTS 38	529/97	thread	3800001	300	5;5	10;15	0.5; 5P
CTS 38	530/97	thread	3800002	50	5;5	10;15	0.5; 5P

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3 Test Circuit Connection



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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
R2	- tested transformer load 0.01 Ω
TM4	- testing transformer KobU 825/20; 1.25 MVA 22,000/550/418 V; u_k 2.02/1.98 %; Dy 1; BEZ
TA1	- current measuring transformer BN 00-100; 10 000/5 A; 120 VA; $n > 5$; EJF Brno
TA2	- tested instrument current transformer
RB1	- shunt 3.344 A/V; IVEP Brno
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
u_k	- percentage impedance
I_{1n}	- transformer primary rated current
I_{2n}	- transformer secondary rated current
U_z	- phase 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}	- first secondary winding current instantaneous value
i_{22}	- second secondary winding current instantaneous value
I_{21}	- first secondary winding current effective value
I_{22}	- second secondary winding current effective value
t_k	- short-circuit time; current passage time
P_n	- transformer rated output
T_p	- accuracy class

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5 Test Order and Running

Instrument current transformer was supplied into primary winding, both secondary windings were loaded by resistance of $0.01\ \Omega$ for secondary current course reading.

During all test operations were current courses in primary and secondary windings of tested instrument transformer read by PCL 818 data card.

For documentation purposes were all recorded cathode oscillograms, that are enclosed in this protocol, saved.

6 Table of Measured Values

Sample	ZO	KO	U_z [kV]	I_{1n} [A]	I_1 [kA]	I_{1m} [kA]	I_{21} [A]	I_{22} [A]	t_k [s]
528/97	T	973802	0.15	600	31.9	–	237	256	1.01
529/97	D	973804	0.24	300	29.3	63.4	–	–	0.07
	T	973805	0.15		25.3	–	352	285	1.01
530/97	T+D	973806	0.24	50	16.4	41.7	682	272	1.01

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7 Test Result

On the basis of primary and secondary current course oscillographic records and repeated specified tests is possible to short-circuit current strength test result (according to CSN 35 1360) consider as satisfactory:

a) for sample 529/97 in power test circuit with parameters:

$$I_1 = 25.3 \text{ kA}; I_{1m} = 63.4 \text{ kA}; t_k = 1 \text{ s}$$

b) for sample 530/97 in power test circuit with parameters:

$$I_1 = 16.4 \text{ kA}; I_{1m} = 41.7 \text{ kA}; t_k = 1 \text{ s}$$

At sample 528/97 was performed only heat current test and its result (according to CSN 35 1360) is possible to consider as satisfactory in power test circuit with parameters:

$$I_1 = 31.9 \text{ kA}; t_k = 1 \text{ s}$$

8 Attendance at tests

IVEP Brno, a.s.:

Ing. Petr Kalus
Zdenek Svoboda

