Test report

No.: **11_175-1** **Version: 2/2**

Customer	:	Hauff- Technik GmbH & Co. KG -Werk 3- Gewerbestrasse 6 89428 Syrgenstein / Landshausen
Test object	:	Insulated earthing wall bushing
Type	:	HEA-IS-M12/x
Manufacturer	:	Hauff-Technik GmbH & Co. KG
Date of receipt	:	30.05.2011
Date of test	:	31.05.2011
Applied test regulations	:	- By prescription of the manufacturer - E DIN EN 50522 (VDE0101-2):2008-12, Annex D
Test carried out	:	2 Short circuit tests with 10 kA/1 s according E DIN EN 50522 (VDE0101-2):2008-12
Test result	:	The maximum allowed temperature of 300 °C was not reached. No damage was visible at the test object after the tests.
Specialist testers	:	A. Cichowski; C. Pieper

Dortmund, 26.08.2011

H. Walter
Test engineer

A. Schlüter
Test engineer

Report No. 11_175-1 contains 6 pages and 3 annexes.

Summary

RWE Eurotest GmbH carried out 2 short circuit tests with 10 kA/1 s by prescription of the manufacturer on an insulated earthing wall bushing type HEA-IS-M12/x manufactured by Hauff-Technik GmbH & Co. KG.

Result:

The maximum allowed temperature of 300 °C was not reached. No damage was visible at the test object after the tests.

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Annex:

01 Design drawing (1 page)
02 Current -/time-diagrams (2 pages)
03 Temperature-/time-diagrams (2 pages)

1. Applied test regulations

By prescription of the manufacturer

based on E DIN EN 50522 (VDE0101-2):2008-12

- 2 short circuit tests with 10 kA/1s
- Maximum allowed temperature of 300 °C
- No visible damage allowed

2. Technical data of the test object

Test object: Insulated earthing wall bushing

Type: HEA-IS-M12/x Z-Nr. 97.1253

Manufacturer: Hauff-Technik GmbH & Co. KG

In concrete C30/35 / wall thickness 100 mm (see figure 1)

3. Test and measuring equipment

Equip.-No.	cal.	Equipment	Type	Manufacturer
ET-501	*	Fibre Optic Isolated Digitizing Subsys-tem	BE 256-M7	Nicolet
ET-505	*	Impulse Current Sensing Resistor	ISM 250 P	Hilo Test
ET-506	*	Impulse Current Sensing Resistor	ISM 250 P	Hilo Test
ET-507	*	Impulse Current Sensing Resistor	ISM 250 P	Hilo Test
ET-533		50 kA High-Current Test Equipment	GDPN 5000/12 Sp	Siemens
ET-651	*	ScopeCorder	DL750	YOKOGAWA

*) Measuring equipment is calibrated based on national and international reference standards. Calibration certificates can be inspected on request.

Table 1: Test and measuring equipment

The measurement uncertainty of the measuring instruments has been calculated and is archived by RWE Eurotest. Documents can be inspected on request.

4. Tests carried out and results

2 short circuit tests with 10 kA/1 s were carried out on an insulated earthing wall bushing, type HEA-IS-M12/x.

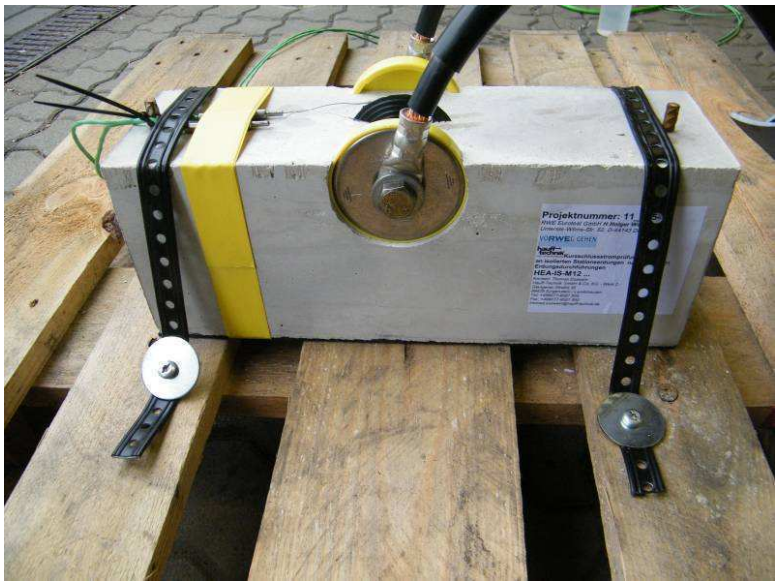


Figure 1: Test setup

The temperatures of the test object were measured with NiCr-Ni thermocouples (diameter of 0.5 mm) during the short-circuit tests at two points (figure 2).

The maximum allowed temperature of 300 °C was not reached. No damage was visible at the test object after the tests.

The results of the tests are summarized in table 2

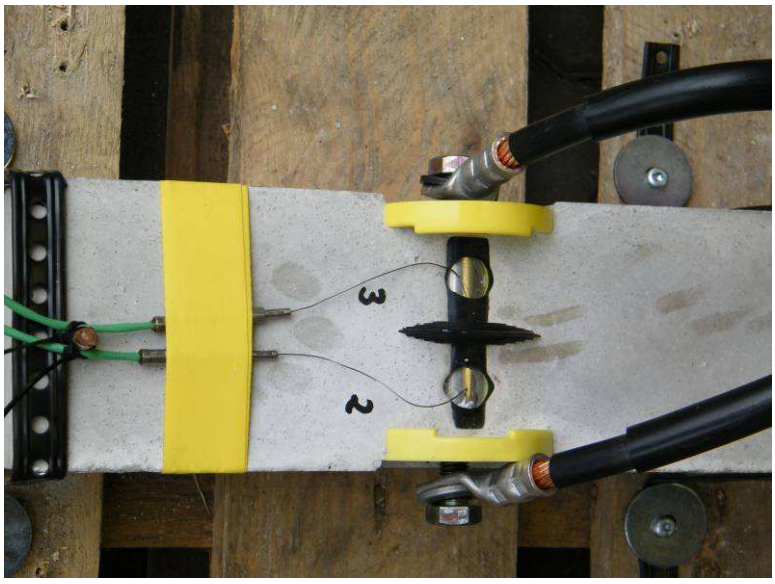


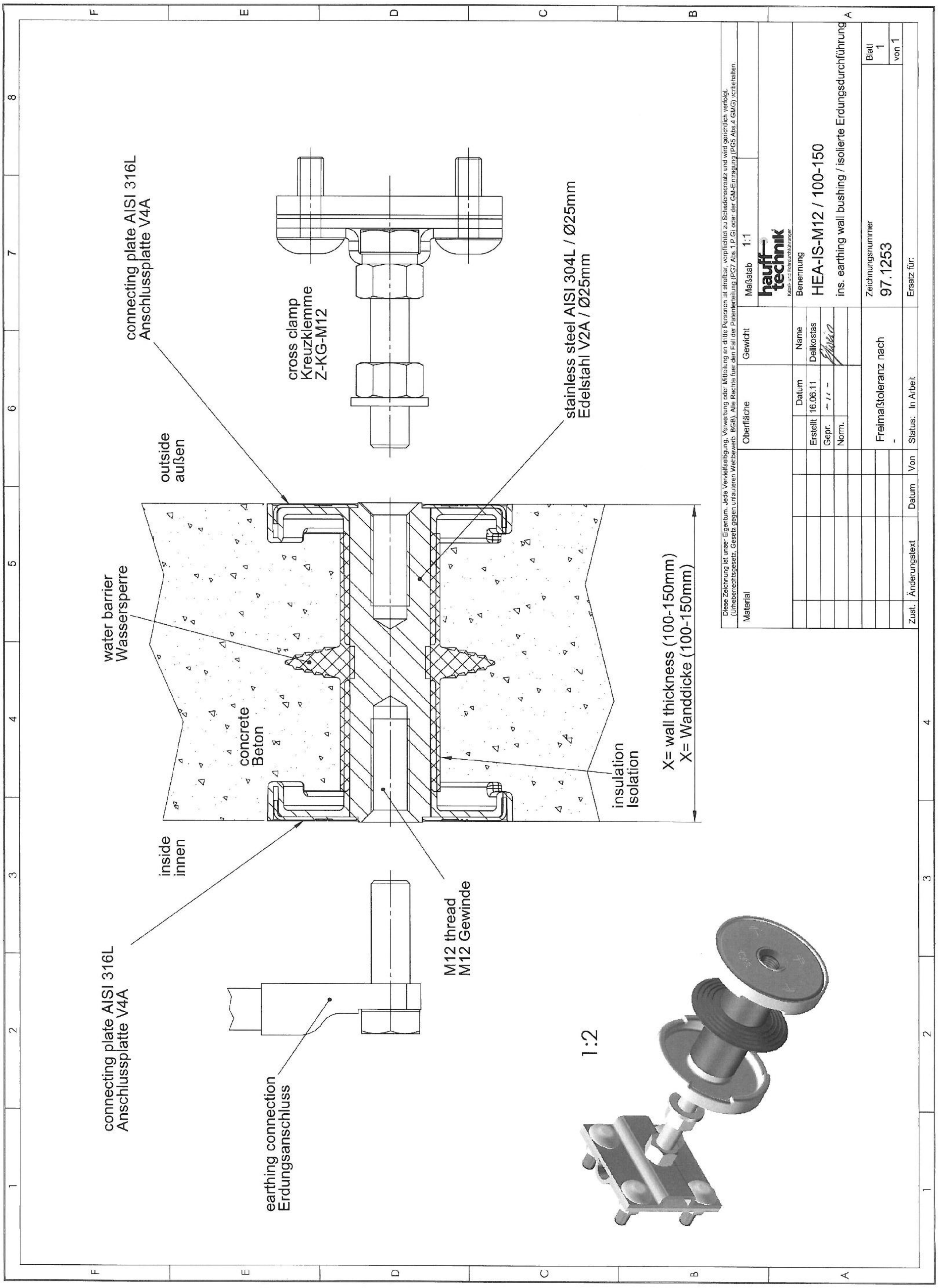
Figure 2: Thermocouples

Test	Short-circuit current [kA]	Duration [s]	Maximum temperature [°C]			Remark	Result
			T1	T2	T3		
1	10.36	1.003	19.1	150.4	107.8	No damage	Passed
2	10.47	1.003	19.2	138.2	106.7	No damage	Passed

5. Overall result

The maximum allowed temperature of 300 °C was not reached. No damage was visible at the test object after the tests.

- End of report -


connecting plate AISI 316L
Anschlussplatte V4A
cross clamp
Kreuzklemme
Z-KG-M12
stainless steel AISI 304L / Ø25mm
Edelstahl V2A / Ø25mm
outside
außen
water barrier
Wassersperre
concrete
Beton
insulation
Isolation
X= wall thickness (100-150mm)
X= Wanddicke (100-150mm)
inside
innen
connecting plate AISI 316L
Anschlussplatte V4A
M12 thread
M12 Gewinde
earthing connection
Erdungsanschluss
1:2
Material
Oberfläche
Gewicht
Maßstab 1:1
hauff-technik
Benennung
HEA-IS-M12 / 100-150
ins. earthing wall bushing / isolierte Erdungsdurchführung
Datum
Name
Erstellt 16.06.11 Delikostas
Gepr.
Norm.
Freimaßtoleranz nach
Zeichnungsnummer
97.1253
Blatt 1 von 1
Zust. Änderungstext Datum Von Status: In Arbeit Ersatz für:

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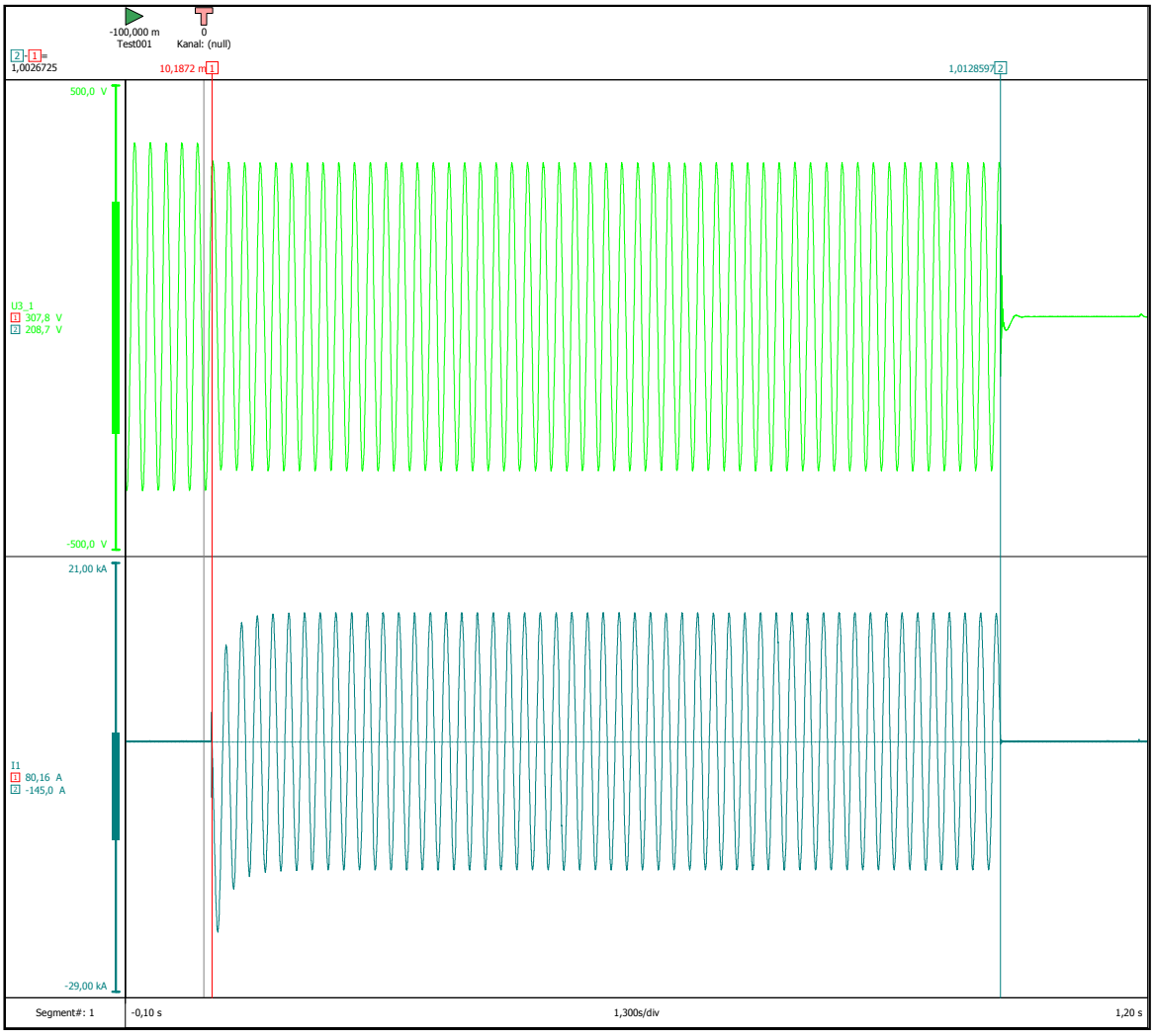

Table		
U1_2_eff	233,4	V
U3_1_eff	230,4	V
I1_eff	10,36 k	A
I3_eff	10,27 k	A
I1²t	107,6 M	A²s
I3²t	105,7 M	A²s
I1_max	-21,63 k	A
I3_max	21,58 k	A
Time	1,003	s
Winkel_cursor	18,05 k	°
Strom_im_Mittel	10,31 k	A
Winkel_im_Mittel	75,52	°
LeerSpg	260,9	V

Settings of the high current plant		
	L1	L3
U [V]	449	449
R_{slide} [mΩ]	0	0
R_{fixed} [mΩ]	0	0
X_L	i	i

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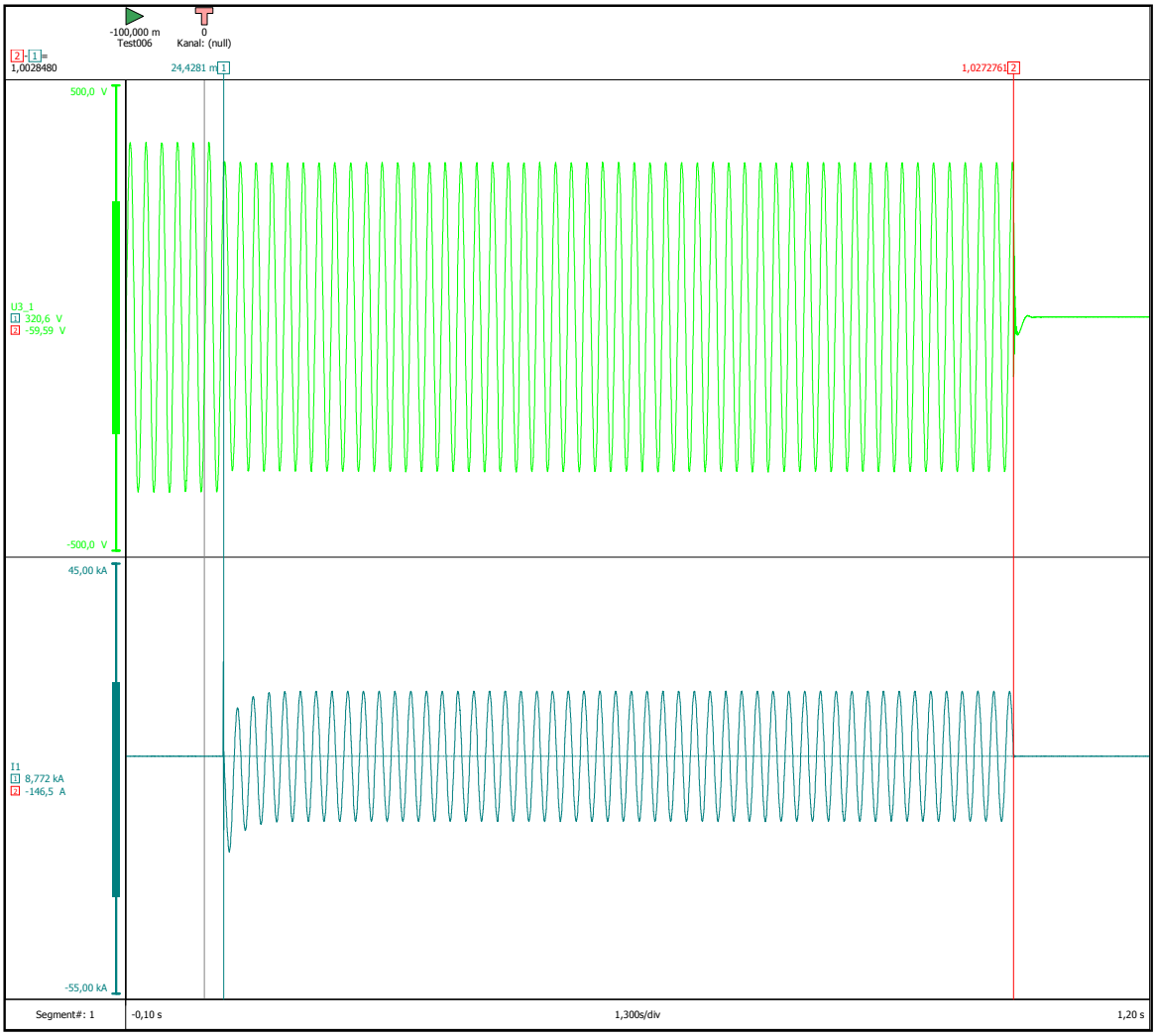
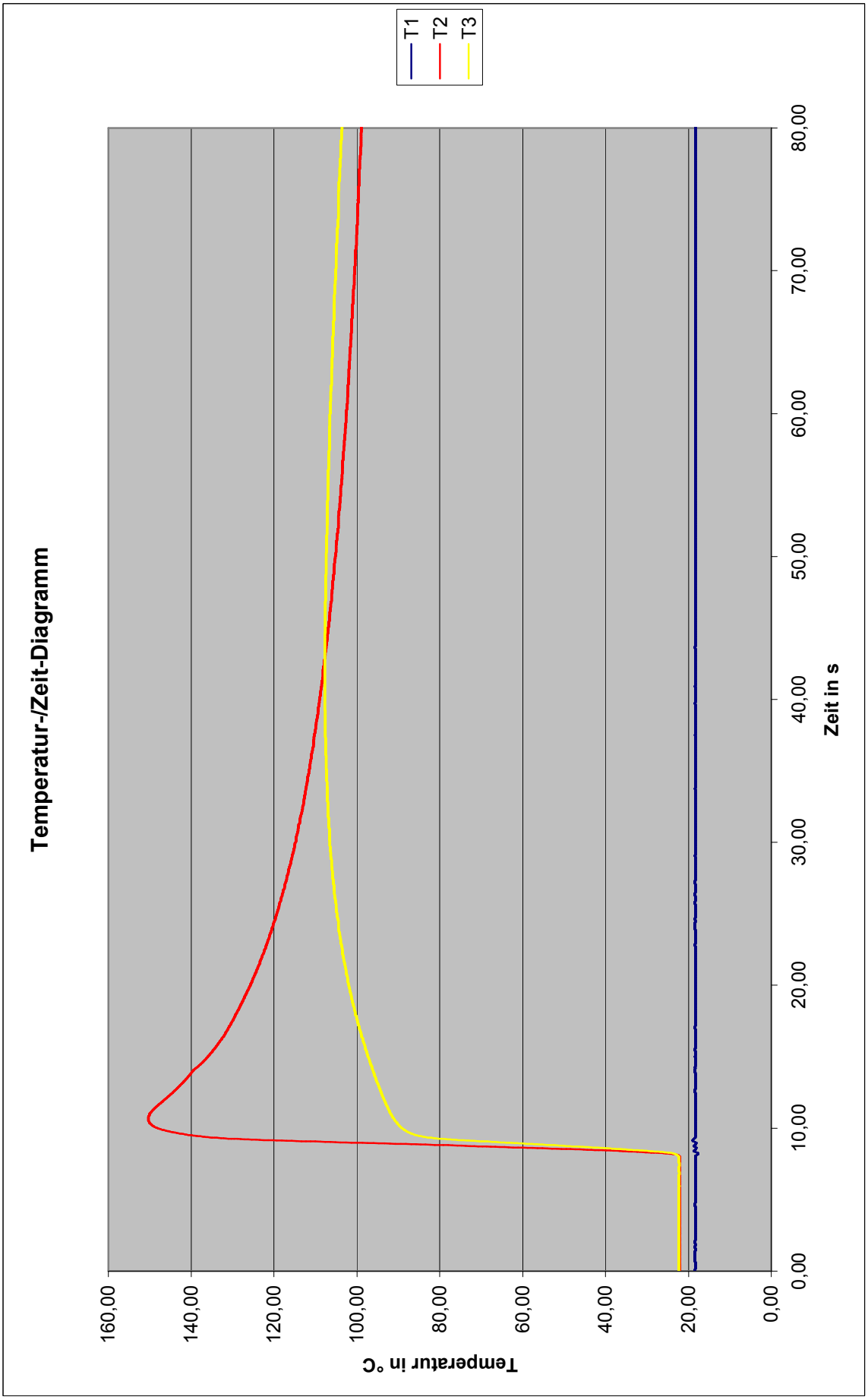


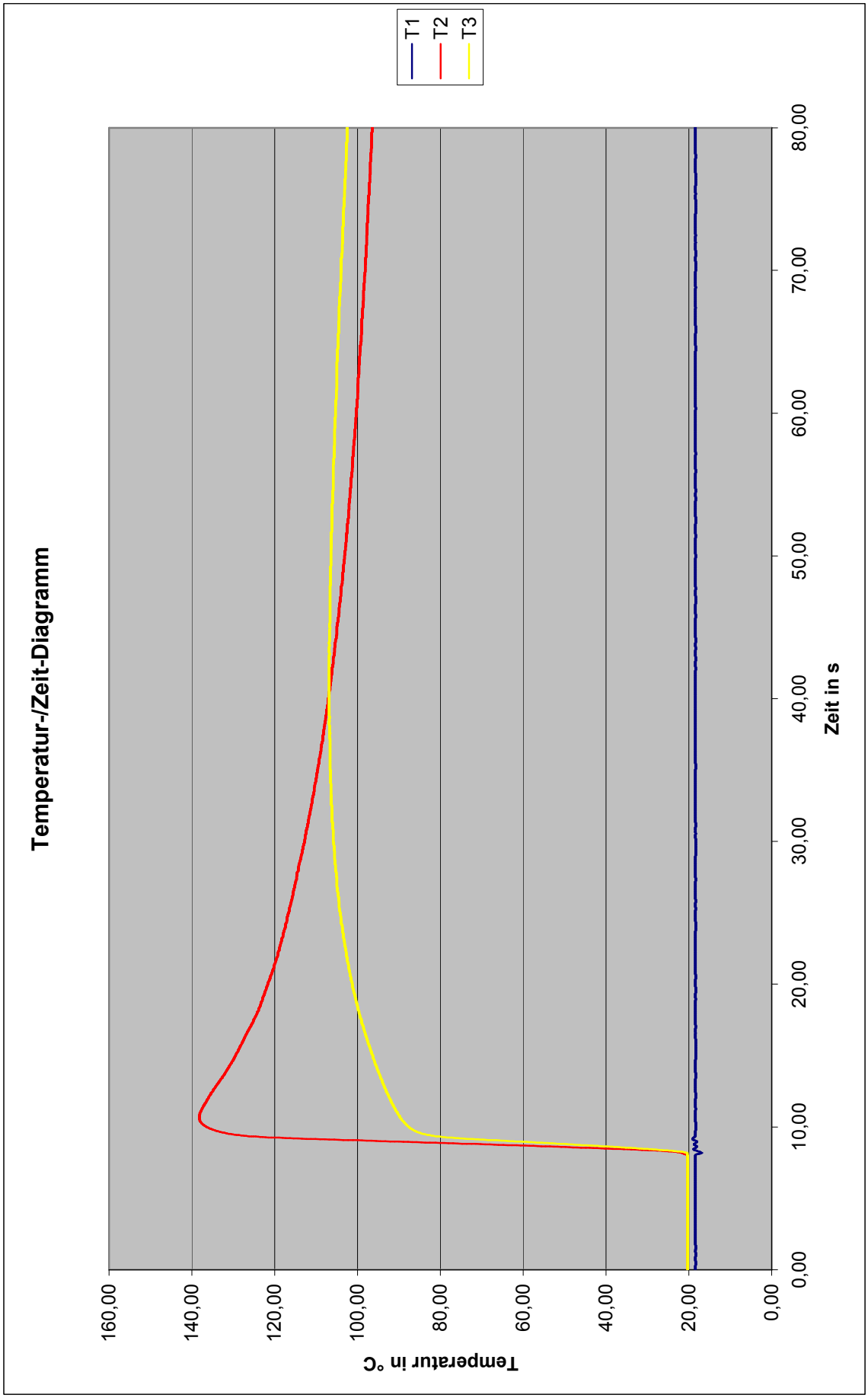
Table		
U1_2_eff	233,9	V
U3_1_eff	231,0	V
I1_eff	10,47 k	A
I3_eff	10,37 k	A
I1²t	109,9 M	A²s
I3²t	107,9 M	A²s
I1_max	-21,68 k	A
I3_max	21,68 k	A
Time	1,003	s
Winkel_cursor	18,05 k	°
Strom_im_Mittel	10,42 k	A
Winkel_im_Mittel	76,25	°
LeerSpg	261,2	V

Settings of the high current plant		
	L1	L3
U [V]	449	449
R_{slide} [mΩ]	0	0
R_{fixed} [mΩ]	0	0
X_L	i	i

Test 1


T1
T2
T3
Temperatur-/Zeit-Diagramm
Temperatur in °C
160,00
140,00
120,00
100,00
80,00
60,00
40,00
20,00
0,00
Zeit in s
0,00
10,00
20,00
30,00
40,00
50,00
60,00
70,00
80,00

Test 2


T1
T2
T3
Temperatur-/Zeit-Diagramm
Temperatur in °C
160,00
140,00
120,00
100,00
80,00
60,00
40,00
20,00
0,00
Zeit in s
0,00
10,00
20,00
30,00
40,00
50,00
60,00
70,00
80,00