



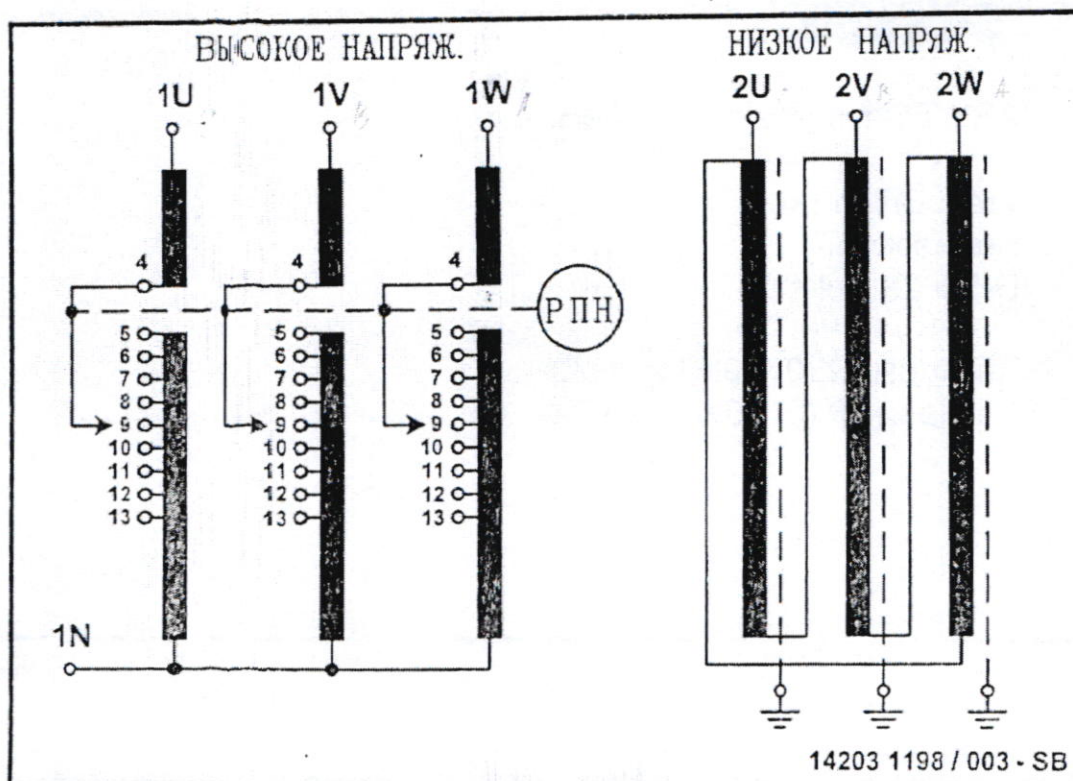
ABB Transformatoren GmbH

Werk Brilon
Brenecketal
D-59929 Brilon

Telefon:+49 (0) 29 61 / 7 970
Telefax:+49 (0) 29 61 / 7 97-0

Manufacturer: ABB Transformatoren GmbH			Document type: Leistungsschild / Rating plate 14203 1198		
Prepared by: J. Ising 14-Aug-03	Approved by:	Revision:	Revision date:	Language: russisch	Page: 1 / 1

3-ФАЗНЫЙ ТРАНСФОРМАТОР					
ТИП	RESIBLOC®	НОМЕР-СЕРИИ 14203 1198 / 003		IEC 726 / GOST	
НОМ.МОЩНОСТЬ	10 000	кВА			
НОМ. НАПРЯЖ.	35 000 / 6 300	В			
НОМ. ТОК	165 / 916,4	А			
ГОД ВЫПУСКА	2003	СХЕМА И ГРУППА		YNd11	
ЧАСТОТА	50	Гц	МАССА	28,5	т
КЛАСС ЗАЩИТЫ	IP X4D	НАПРЯЖ. К.З.		*)	%
ОХЛАЖДЕНИЕ	AN	ДЛИТЕЛ. ТОКА К.З.		2	с
МАТЕРИАЛ	Cu / Cu	(ВН/НН)	ТОК К.З.	кА	
КЛАСС ИЗОЛЯЦИИ	F / F	(ВН/НН)			
МАКС. НАПРЯЖ.	40,5 / 7,2	кВ			
ИЗОЛЯЦ. УРОВЕНЬ	LI 190 AC 85 / LI 60 AC 20	кВ			
КЛИМ. И ПОЖАРН. ИСП.				E2 / C2 / F1	
МАКС. СУТОЧНАЯ ТЕМ.	40	°C	СРЕДНЕГОДОВАЯ	20	°C
СРЕДНЕСУТОЧНАЯ	30	°C			
РПН - Тип : 3 x VT II 500 / List: 36 Ток : 500 А					
РПН - No.: 160189					
Made by: ABB Transformatoren GmbH, Brilon / Germany					



Manufacturer: ABB Transformatoren GmbH			Document type: 1422003 1198 / x03		
Prepared by: J. Ising 15-Aug-03	Approved by:	Revision:	Revision date:	Language: russisch	Page: 1 / 1

*)

ВЫСОКОЕ НАПРЯЖ.					НИЗКОЕ НАПРЯЖ.		
ПОЗ.	В	А	КОНТАКТЫ	КЛЕМЫ	В	КЛЕМЫ	Uк, [%]
9	37 100	155,6	4 - 5	1U	6 300	2U	10,42
8	36 575	157,9	4 - 6				
7	36 050	160,2	4 - 7				
6	35 525	162,5	4 - 8				
5	35 000	165,0	4 - 9	1V		2V	10,19
4	34 475	167,5	4 - 10				
3	33 950	170,0	4 - 11				
2	33 425	172,7	4 - 12				
1	32 900	175,5	4 - 13	1W		2W	9,95

1422003 1198 / x03

Type: RESIBLOC
Ws.-No.: XAL 140 065-130

Serial-No.: 14203 1198 / 3
Diagram plate: 14203 1198 SB

Rated Power 1000u kVA
Rated High Voltage HV 35000 V
Rated Low Voltage LV 6300 V
Connection Symbol YNd11

Total Weight 28500 kg
Duration of short-circuit max. 2 s

Year 2003
Rated current HV 165,0 A
Rated current LV 916,4 A
Frequency 50 Hz
Type of cooling AN
Protective System IP X4D
Insulation Class F / F

Measurement of voltage ratio and check of phase displacement

Tap Position	Connection		HV * 0,866	Existing			Deviation		
	1U-1V-1W	2U-2V-2W		U	V	W	U	V	W
9	37100 V	6300 V	5,100	5,112	5,112	5,112	0,24%	0,24%	0,24%
8	36575 V	6300 V	5,028	5,039	5,039	5,039	0,22%	0,22%	0,22%
7	36050 V	6300 V	4,956	4,967	4,967	4,967	0,23%	0,23%	0,23%
6	35525 V	6300 V	4,883	4,895	4,895	4,895	0,24%	0,24%	0,24%
5	35000 V	6300 V	4,811	4,823	4,823	4,823	0,24%	0,24%	0,24%
4	34475 V	6300 V	4,739	4,751	4,751	4,751	0,25%	0,25%	0,25%
3	33950 V	6300 V	4,667	4,678	4,678	4,678	0,24%	0,24%	0,24%
2	33425 V	6300 V	4,595	4,606	4,606	4,606	0,24%	0,24%	0,24%
1	32900 V	6300 V	4,523	4,534	4,534	4,534	0,25%	0,25%	0,25%

Measurement of winding resistance

Tap Position	Connection	High Voltage at 24,5 °C		
		1U - 1V	1W - 1U	1V - 1W
9	37100 V	[Ohm]	[Ohm]	[Ohm]
8	36575 V	0,712350	0,711190	0,713300
7	36050 V	0,701260	0,699370	0,700700
6	35525 V	0,688450	0,687710	0,690170
5	35000 V	0,677530	0,675470	0,676720
4	34475 V	0,664460	0,663410	0,665190
3	33950 V	0,652650	0,651350	0,652680
2	33425 V	0,640720	0,640720	0,641880
1	32900 V	0,628840	0,628070	0,628690
		0,616470	0,615760	0,616880
Tap Position	Connection	Low Voltage		
		2U - 2V	2W - 2U	2V - 2W
	2U-2V-2W	[Ohm]	[Ohm]	[Ohm]
	6300 V	0,013678	0,013684	0,013610

Applied AC Overvoltage Withstand Test

High Voltage 85,0 kV 60 s 50 Hz
Low Voltage 20,0 kV 60 s 50 Hz

Induced AC Overvoltage Withstand Test

70000 V 60 s 100 Hz
12600 V

Type : RESIBLOC

Serial-No.: 14203 1198 / 3

Measurement of no load- losses and current

		50 Hz		
Connection	Voltage	Current	No Load Losses	
2U - 2V	6310,0 V	3,23 A	measured	17740 W
2V - 2W	6306,0 V	2,92 A	guaranted	18000 W
2W - 2U	6285,0 V	4,00 A	No Load current I ₀	3,38 A
	6300,3 V	3,38 A	No Load current in [%]	0,369 %

Measurement of load losses and impedance-voltage

Tap 9		Frequency:		50 Hz	Winding-material
Rated power:	10000 kVA	Connection:	1U-1V-1W	37100 V	Cu
Temperature:	24,5 °C	Short circuit:	2U-2V-2W	6300 V	Cu
		Voltage	Current	Load Losses	Impedance
1U - 1V	3035,0 V	123,20 A	measured	32160 W	
1V - 1W	3051,0 V	121,90 A	at rated current	51844 W	10,41 %
1W - 1U	3041,0 V	122,60 A	at 75 °C	58800 W	10,42 %
	3042,3 V	122,57 A			

Measurement of load losses and impedance-voltage

Tap 5		Frequency:		50 Hz	Winding-material
Rated power:	10000 kVA	Connection:	1U-1V-1W	35000 V	Cu
Temperature:	24,5 °C	Short circuit:	2U-2V-2W	6300 V	Cu
		Voltage	Current	Load Losses	Impedance
1U - 1V	2627,0 V	122,50 A	measured	28270 W	
1V - 1W	2643,0 V	121,40 A	at rated current	51711 W	10,18 %
1W - 1U	2633,0 V	122,00 A	at 75 °C	59133 W	10,19 %
	2634,3 V	121,97 A	guaranted	60000 W	10,00 %

Measurement of load losses and impedance-voltage

Tap 1		Frequency:		50 Hz	Winding-material
Rated power:	10000 kVA	Connection:	1U-1V-1W	32900 V	Cu
Temperature:	24,5 °C	Short circuit:	2U-2V-2W	6300 V	Cu
		Voltage	Current	Load Losses	Impedance
1U - 1V	2283,0 V	123,30 A	measured	25420 W	
1V - 1W	2298,0 V	122,30 A	at rated current	51912 W	9,95 %
1W - 1U	2288,0 V	122,80 A	at 75 °C	59785 W	9,95 %
	2289,7 V	122,80 A			

HV - Partial-discharge-Test : 60,75 / 44,55 kV 0,5 / 3 min. 100 Hz PD - Value < 20 pC

LV - Partial-discharge-Test : 10,8 / 7,92 kV 0,5 / 3 min. 100 Hz PD - Value < 20 pC

Brilon, 04.08.2003

Rickert

Testfield 1

Checking of auxiliary equipment

Diagram plate no.: XAL 140 501-198

Transformer-serial no.: 14203 1198 / 3

F1 Temperature control-unit 1 piece

manufacturer : Ziehl type : MSF 220 V voltage : 220-240 V AC

alarm : 1 NO / NC trip : 1 NO / NC

Temperature-sensor (PTC) for alarm (3 piece serial)

110 °C => 175 Ohm

Temperature-sensor (PTC) for trip (3 piece serial)

130 °C => 200 Ohm

E1 Heater 2 piece (for motor drive unit and temp.-controll box)

E2 manufacturer : Rittal type : CS 9769-015

voltage : 230 V 50 Hz rated power: 1000 W

connected with thermostat

manufacturer : Rittal type: Sk.3110.000
E3 Heater 3 piece (for on-load tap changer)

E4 manufacturer : Helios type : 6012081
E5 voltage : 230 V AC rated power: 2000 W

connected with thermostat

manufacturer : Rittal type: Sk.3110.000

Test of insulation of auxiliary wiring performed with 2 kV to IEC 76 part 3.9

Brilon, 04.08.2003

Ising 

Testfield 1

Checking of On-load tap changer

Transformer-serial no.: 14203 1198 / 3

On-load tap-changer

1 piece

manufacturer : MR Phase 1U type : VTI 500 serial-no. : 160189 C
 Phase 1V type : VTI 500 serial-no. : 160189 B
 Phase 1W type : VTI 500 serial-no. : 160189 A

motor drive unit

manufacturer : MR type : ED 100S serial-no. : 160189

motor drive unit control diagram : 160187

motor : U = 400 V AC f = 50 Hz 3 ph.
 relay : U = 230 V AC f = 50 Hz

On-load tap-changer operation tested to IEC 76 part 1 10.8.1

Resistance-measurement of earthing system transformer

1. Measurement between:

Earthing-point HV and earthing point LV in the bottom of the transformer.

Result: 0,000420 Ohm

2. Measurement between:

Earthing-point HV in the bottom of the transformer and cable support HV.

Result: 0,000679 Ohm

Test of insulation of auxiliary wiring performed with 2 kV to IEC 76 part 3.9

Brilon, 04.08.2003

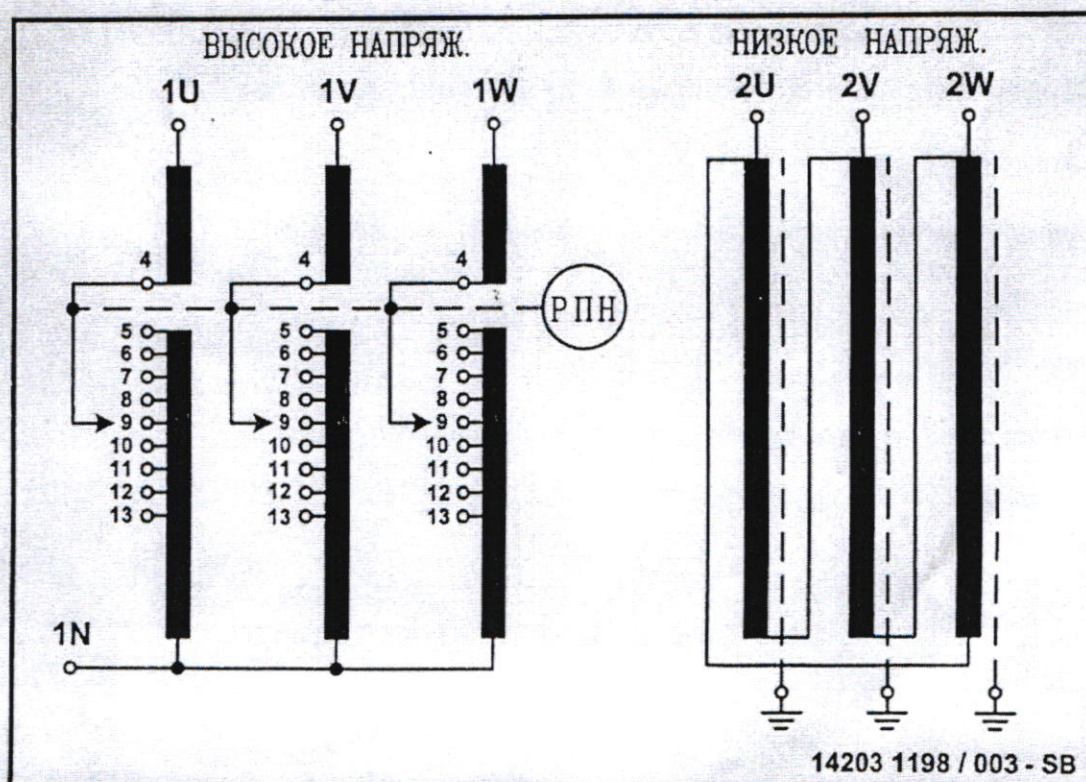
Ising

Testfield 1

Manufacturer: ABB Transformatoren GmbH			Document type: Leistungsschild / Rating plate 14203 1198 / 3		
Prepared by: J. Ising 14-Aug-03	Approved by:	Revision: 0 J. Ising	Revision date: 18-Aug-03	Language: russisch	Page: 516

3-ФАЗНЫЙ ТРАНСФОРМАТОР

ТИП	RESIBLOC ®	НОМЕР-СЕРИИ	14203 1198 / 003	IEC 726 / GOST
НОМ.МОЩНОСТЬ	10 000	кВА		
НОМ. НАПРЯЖ.	35 000 / 6 300	В		
НОМ. ТОК	165 / 916,4	А		
ГОД ВЫПУСКА	2003	СХЕМА И ГРУППА	YNd11	
ЧАСТОТА	50	Гц	МАССА	28,5 т
КЛАСС ЗАЩИТЫ	IP X4D	НАПРЯЖ. К.З.	*)	%
ОХЛАЖДЕНИЕ	AN	ДЛИТЕЛ. ТОКА К.З.	2	с
МАТЕРИАЛ	Cu / Cu (ВН/НН)	ТОК К.З.	кА	
КЛАСС ИЗОЛЯЦИИ	F / F (ВН/НН)			
МАКС. НАПРЯЖ.	40,5 / 7,2	кВ		
ИЗОЛЯЦ. УРОВЕНЬ	LI 190 AC 85 / LI 60 AC 20	кВ		
КЛИМ. И ПОЖАРН. ИСП.				E2 / C2 / F1
МАКС. СУТОЧНАЯ ТЕМ.	40 °C	СРЕДНЕГОДОВАЯ	20 °C	
СРЕДНЕСУТОЧНАЯ	30 °C			
РПН - Тип : 3 x VT I 500 / List: 36 Ток : 500 А				
РПН - No.: 160189				
Made by: ABB Transformatoren GmbH, Brilon / Germany				



Manufacturer:

ABB Transformatoren GmbH

Document type:

1422003 1198 / x03

Prepared by:

J. Ising
15-Aug-03

Approved by:

Revision:

Revision date:

Language:

russisch

Page:

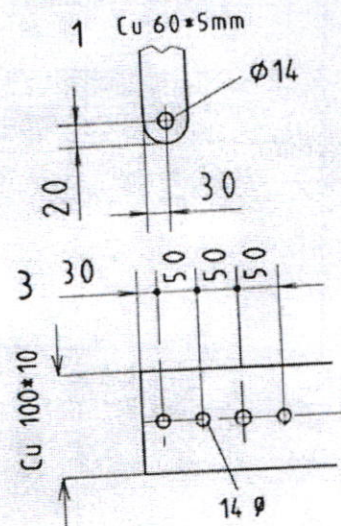
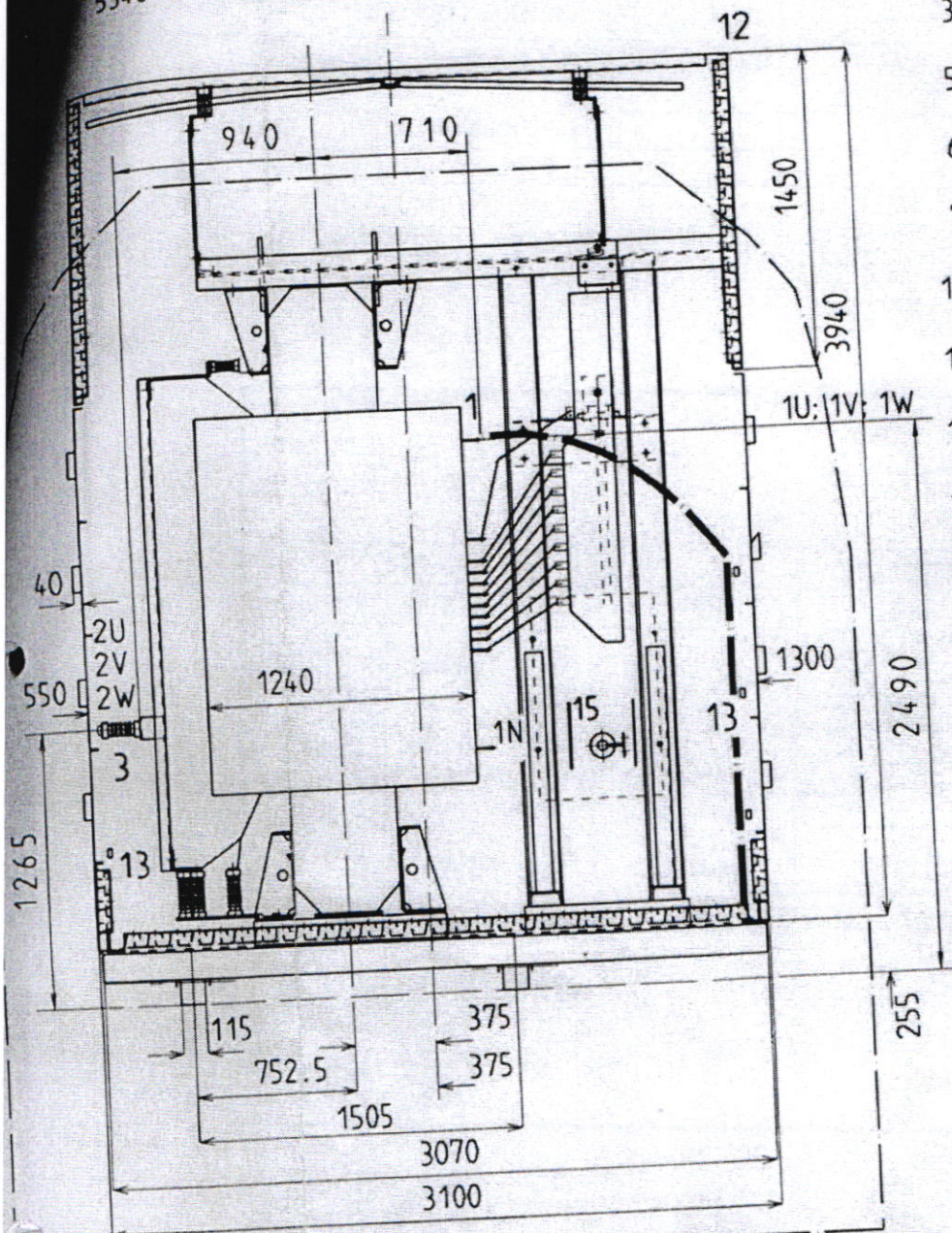
616

*)

ВЫСОКОЕ НАПРЯЖ.					НИЗКОЕ НАПРЯЖ.		
ПОЗ.	В	А	КОНТАКТЫ	КЛЕМЫ	В	КЛЕМЫ	Uк, [%]
9	37 100	155,6	4 - 5	1U	6 300	2U	10,42
8	36 575	157,9	4 - 6				
7	36 050	160,2	4 - 7				
6	35 525	162,5	4 - 8	1V		2V	10,19
5	35 000	165,0	4 - 9				
4	34 475	167,5	4 - 10				
3	33 950	170,0	4 - 11	1W		2W	
2	33 425	172,7	4 - 12				
1	32 900	175,5	4 - 13				
							9,95

1422003 1198 / x03

- 1 OS-Anschluss
HV terminal
- 3 US-Anschluss
LV terminal
- 5 Erdung
Ground terminal
- 6 Schaltbild
Rating plate
- 7 Klemmenkasten
Terminal box
- 12 Gehäuse IP X4D
Enclosure IP X4D
- 13 Kabelhalter
Cable support
- 15 Heizung 3*2000W
Heater 3*2000W
- 15a Heizung 2*1000W
Heater 2*1000W
- 16a Lastschalter
On-Load-Tapchanger
- 16b Motorantrieb
Motor drive



Technische Werte - Technical data
3-phasen Trockentransformator - 3-phase dry-type transformer: Type RESIBLOC
Rated power: kVA : 10000

Leistung	kVA - Rated power	kVA : 10000
Spannung	V - Rated voltage	V : 35000+4*1.5%/6300
Schaltgruppe	- Vector group	: YNd11
Schutzart	- Protection mode	: IP X4D
Frequenz	Hz - Frequency	c/s : 50
Isolierstoffklasse	- Insulating class	: F
Gesamtgewicht	kg - Total weight	kg : 28500

Gesamtgewicht		kg - Total weight		kg : 28500	
#BA ZB \TTMASSBILD\IP_SPEZ\		#L: 14231198			
Accepted by qual control	Accepted for prod by	Description (English)		V.1.03	
		Outline drawing			
Design checked by	Drawn by	Description (own language)		1:33.34	
	Göbel	Massbild			
Drawing checked by	Issued by Dept	Year.	Week	Sheet	
	BT	03/24		1	
ABB Transformatoren GmbH			14203 1198		Cont
					-

1915 DOCUMENT MUST NOT BE COPIED WITHOUT THE
 WRITTEN PERMISSION, AND THE CONTENTS THEREOF
 MUST NOT BE REPRODUCED IN ANY MANNER OR
 USED FOR ANY UNAUTHORIZED PURPOSE. CONVICTION
 WILL BE PROSECUTED.

2 Div. rev.
 1 LV-terminal

Revision
 No
 58
 Dept.
 Year

ABB Träfo-88

ABB Träfo-88

