

5

1.8 Partial Discharge Test

In spite of a safety view of the dielectric of an instrument transformer, a partial discharge test has to be carried out. Such a test is required for all transformers with a rated voltage higher than 3.6 kV. The max. permissible levels are listed in the following table.

Instrument Transformer Type	Test Voltage 1 Minute	Partial Discharge Level (pC)
Current Transformer	$1,2 \cdot U_m$	50
Single Pole Voltage Transformer	$1,2 \cdot U_m/\sqrt{3}$	20
Double Pole Voltage Transformer	$1,2 \cdot U_m$	20

2

1.9 Standards

Current and voltage transformers are generally designed in accordance with the following standards:

- IEC 60044-1 "current transformers"
- IEC 60044-2 "inductive voltage transformers"
- ANSI/IEEE-standard
- All other relevant worldwide standards

Handling after Receipt:

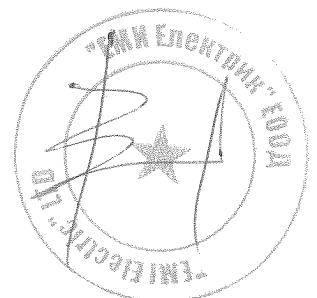
All transformers are suitably packed for transportation. The packaging should be inspected immediately upon receipt for any damages caused in during transportation. Should any external damage(s) be found or any signs of improper handling are present, please notify Ritz Instrument Transformers GmbH immediately.

Safety Advice

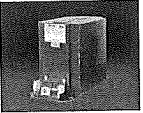
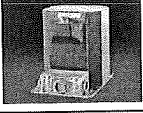
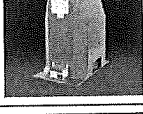

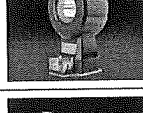

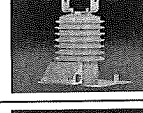
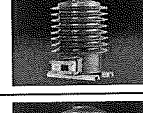

Hazardous voltage occurs in this electrical equipment during operation. Violation of the service instructions can result in property damage, severe personal injury or even death. Only qualified personnel should work on or around this equipment, and only after becoming thoroughly familiar with warnings, safety notices, and maintenance procedures.

The successful and safe operation of this equipment depends on proper handling, installation, operation, and maintenance.

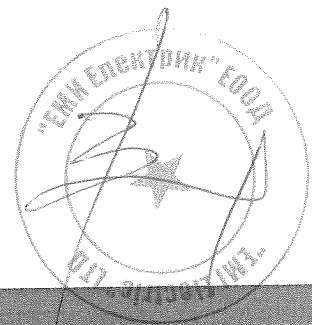
ВЯРНО С
ОРИГИНАЛА



2.0 Products

Design	U_m (kV)	Type	Page
Current Transformer for Indoor Applications			
 Support Type Current Transformer Indoor Block Type Narrow Type DIN 42600, Part 8, available as Size 1, 2, 3	12 17,5 24 36 40,5	ASS 12 17,5 24 36 40,5	18
 Support Type Current Transformer Indoor Block Type Small Type DIN 42600, Part 4	3,6 7,2 12	GSW 12/0	19
 Support Type Current Transformer Indoor Block Type Large Type DIN 42600, Part 5	12 17,5 24 36	ASN 12 17,5 24 36	20
 Current Transformer Indoor Head Type	52 72,5	GI 52 72,5	21
 High Current Transformer Indoor	12 17,5 24	GSSO 12 17,5 24	22
 Bushing Type Current Transformer Indoor	12 17,5 24 36	GDS 12 17,5 24 36	23
Current Transformer for Outdoor Applications			
 Support Type Current Transformer Outdoor Compact Type	12 17,5 24 36	GIFK 12 17,5 24 36	24
 Support Type Current Transformer Outdoor Standard Type	12 17,5 24 36	GIFS 12 17,5 24 36	25
 Head Type Outdoor GOST certificate available	10 17,5 20 30 36 52 72,5	GIF 10 17,5 20 30 36 52 72,5	26

БЯРНО С
ОРИГИНАЛА

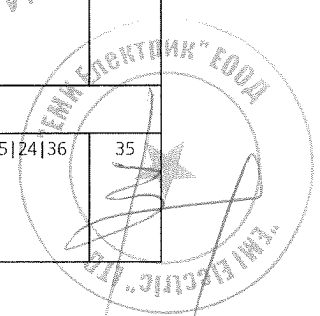


9

Design	U_m (kV)	Type	Page
Voltage Transformer Single Pole			
Indoor			
	Indoor Single Pole Narrow Type DIN 42600, Part 9	12 17,5 24	VES 12 17,5 24 27
	Indoor Single Pole Small Type DIN 42600, Part 7	3,6 7,2 12	GSE 12/0 28
	Indoor Single Pole Large Type DIN 42600, Part 3 VEN 52 and 72,5 not according DIN	12 17,5 24 36 52 72,5	VEN 12 17,5 24 36 VEN 52 72,5 29
Outdoor			
	Outdoor Single Pole GOST Certificate available	12 17,5 24 36	VEF 12 17,5 24 36 30
	Outdoor Single Pole Head Type	52 72,5	VEF 52 72,5 31
Voltage Transformer Double Pole			
Indoor			
	Indoor Double Pole Narrow Type DIN 42600, Part 9	12 17,5 24	VZS 12 17,5 24 32
	Indoor Double Pole Small Type DIN 42600, Part 7	3,6 7,2 12	GSZ 12/0 33
 	Indoor Double Pole Large Type DIN 42600, Part 3	12 17,5 24 36	VZN 12 17,5 24 36 34
Outdoor			
	Outdoor Double Pole GOST Certificate available	12 17,5 24 36	VZF 12 17,5 24 36 35

16

ВЯРНО С
ОРИГИНАЛА

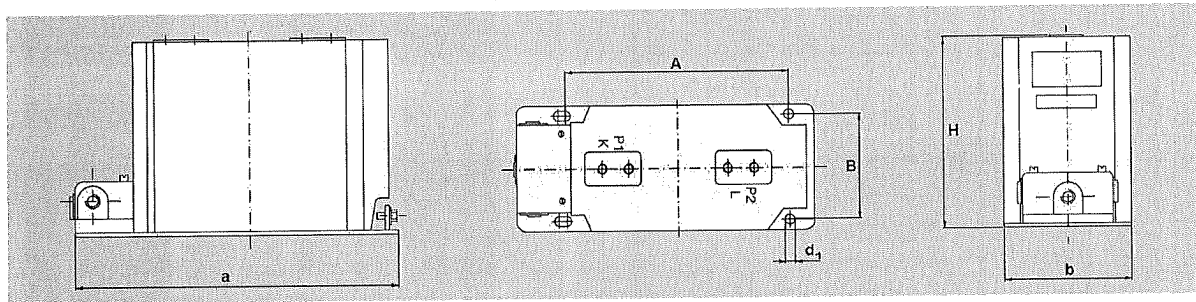
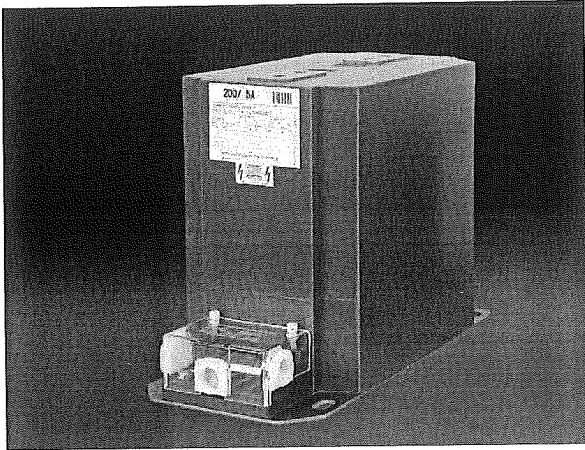


ASS

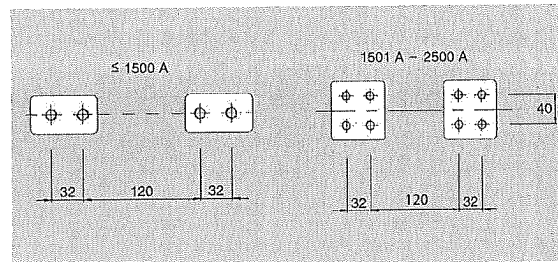
2.1 Current Transformer Indoor up to 72,5 kV

2.1.1 Support Type Current Transformer Indoor Block Type

ASS 12 | 17,5 | 24 | 36 | 40,5



TYPE ASS	Dimensions mm				
	ASS 12	ASS 17,5	ASS 24	ASS 36	ASS 40,5
A	270	270	280	300	300
B	125	125	150	225	225
a	360	360	355	403	403
b	148	148	178	249	249
d ₁	12	12	14	14	14
H	220	220	280	390	450



TYPE ASS		ASS 12	ASS 17,5	ASS 24	ASS 36	ASS 40,5
U _m	kV	12	17,5	24	36	40,5
Test voltages	kV	28 75	38 95	50 125	70 170	95 200
Rated Primary Current – I _{PN}	A	up to 2500	up to 2500	up to 2500	up to 2500	up to 2500
Rated Secondary Current – I _{SN}	A	1 5	1 5	1 5	1 5	1 5
Rated Short Time Thermal Current – I _{th}		up to 1000 x I _{PN} max. 100 kA				
Rated Peak Current – I _{dyn}		2,5 x I _{th}				
Core(s), Number of Cores		Must be determined on the basis of the requirements accuracy class, over-current value, burden				
Frequency	Hz	50 60				
Weight	kg	20	20	28	70	70

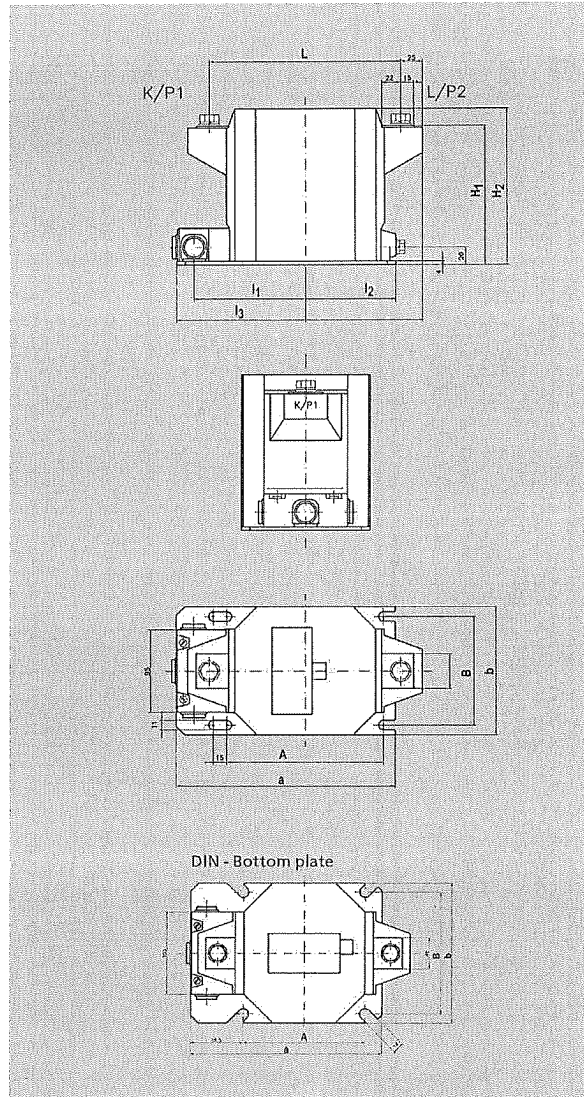
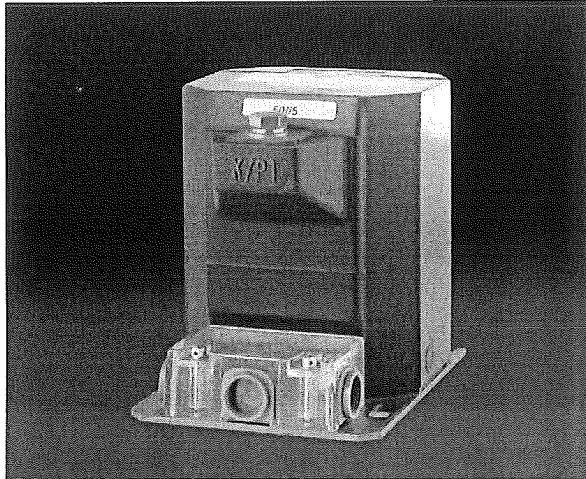
Subject to Technical Changes



9

GSW 12/0

2.1.2 Support Type Current Transformer Indoor Block Type GSW 12/0 3,6 | 7,2 | 12

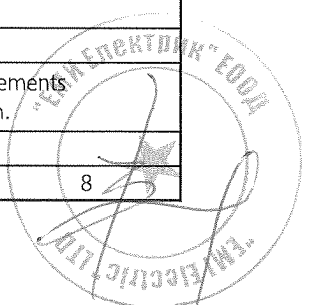


16

TYPE GSW 12/0 Dimensions mm				
Size	1	2	3	DIN
A	135	180	220	155
B	125	125	125	155
a	238	283	323	279
b	148	148	148	178
H ₁	160	160	160	160
H ₂	180	180	180	180
L	175	220	260	220
I ₁	105	128	148	124
I ₂	82	105	125	100
I ₃	125	148	168	144

TYPE GSW 12/0					
Size		1	2	3	DIN
U _m	kV	12	12	12	12
Test voltages	kV	28 75	28 75	28 75	28 75
Rated Primary Current – I _{PN}	A	5 up to 800	5 up to 800	5 up to 800	5 up to 800
Rated Secondary Current – I _{SN}	A	1 5	1 5	1 5	1 5
Rated Short Time Thermal Current – I _{th}		up to 600 x I _{PN} max. 60 kA			
Rated Peak Current – I _{dyn}		2,5 x I _{th}			
Core(s), Number of Cores		Must be determined on the basis of the requirements accuracy class, over-current value, burden.			
Frequency	Hz	50 60			
Weight	kg	6	7	8	8

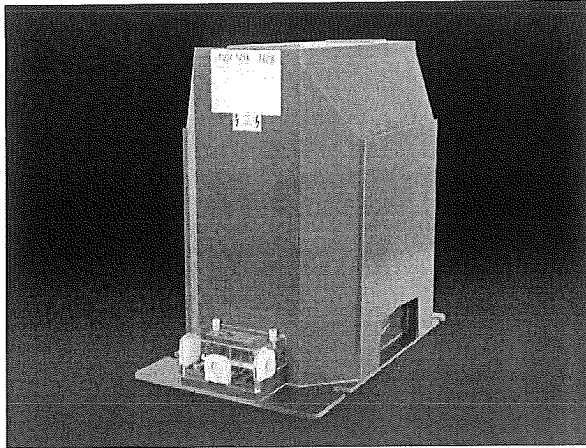
Subject to Technical Changes



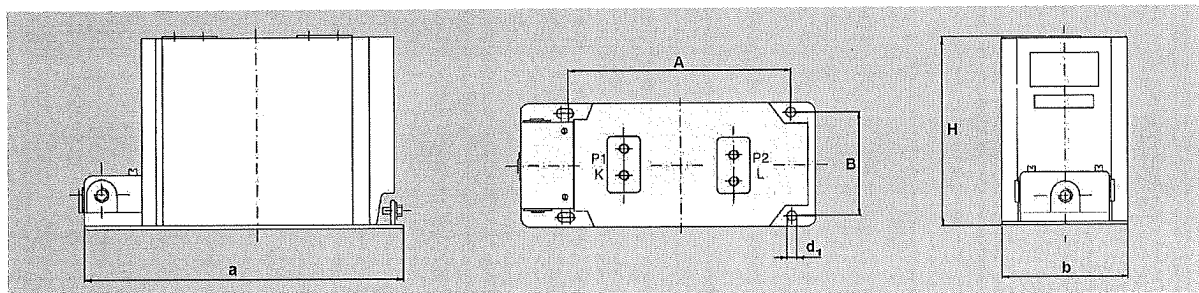
ASN

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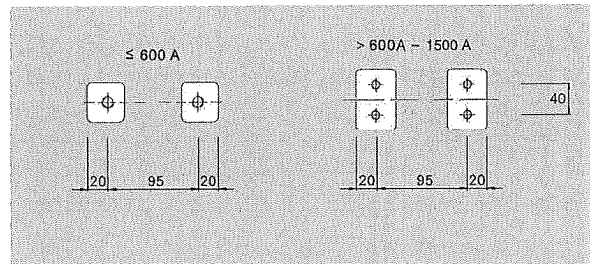
2.1.3 Support Type Current Transformer Indoor Block Type ASN 12 | 17,5 | 24 | 36



120

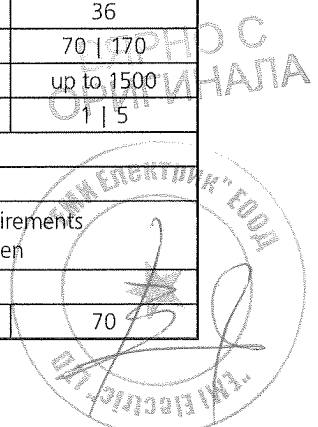


TYPE ASN	Dimensions mm			
	ASN 12	ASN 17,5	ASN 24	ASN 36
A	225	225	250	300
B	175	175	200	225
a	330	330	330	403
b	198	198	198	249
d ₁	11	11	14	14
H	240	240	300	390



TYPE ASN		ASN 12	ASN 17,5	ASN 24	ASN 36
U _m	kV	12	17,5	24	36
Test voltages	kV	28 75	38 95	50 125	70 170
Rated Primary Current – I _{PN}	A	up to 1500	up to 1500	up to 1500	up to 1500
Rated Secondary Current – I _{SN}	A	1 5	1 5	1 5	1 5
Rated Secondary Current – I _{th}		up to 1000 x I _{PN} max. 100 kA			
Rated Peak Current – I _{dyn}		2,5 x I _{th}			
Core(s), Number of Cores		Must be determined on the basis of the requirements accuracy class, over-current value, burden			
Frequency	Hz	50 60			
Weight	kg	24	24	38	70

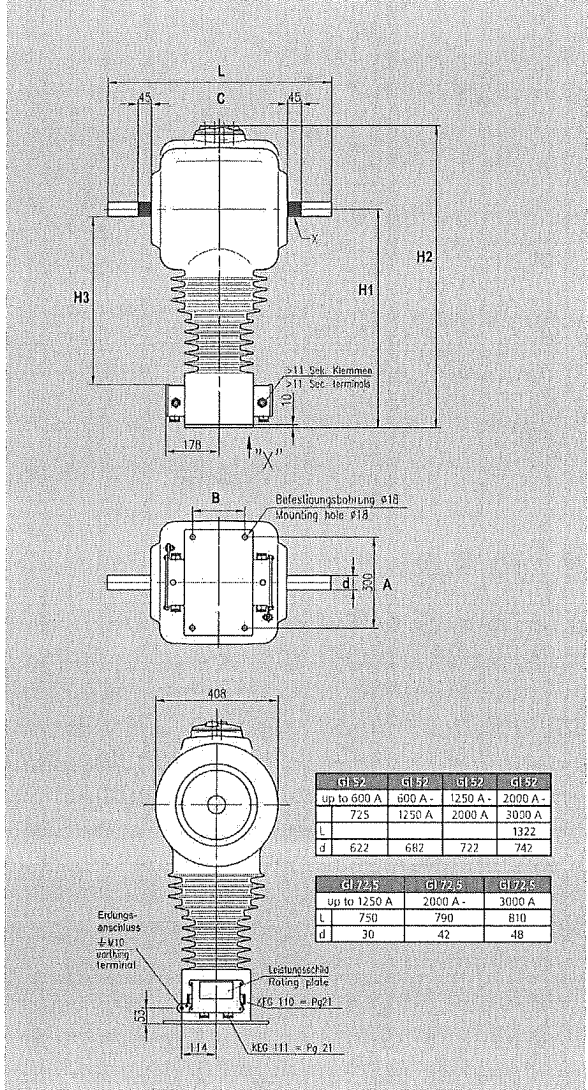
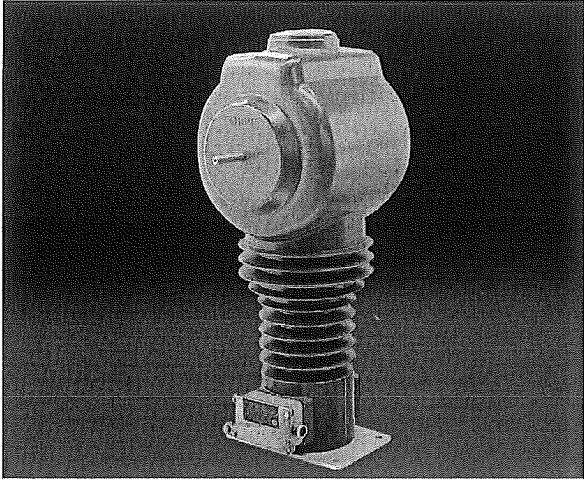
Subject to Technical Changes



59

GI

2.1.4 Current Transformer Indoor Head Type
GI 52 | 72,5



07

TYPE GI Dimensions mm		
	GI 52	GI 72,5
A	175	300
B	300	175
a	230	500
b	350	500
C	452	520
H1	725	900
H2	1002	1217
H3	557,5	745

TYPE GI			
		GI 52	GI 72,5
U_m	kV	52	72,5
Test voltages	kV	95 250	140 325
Rated Primary Current – I_{PN}	A	up to 3000	
Rated Secondary Current – I_{SN}	A	1 5	
Rated Short Time Thermal Current – I_{th}		bis 1000 x I_{PN} max. 100 kA	
Rated Peak Current – I_{dyn}		2,5 x I_{th}	
Core(s), Number of Cores		Must be determined on the basis of the requirements accuracy class, over-current value, burden	
Frequency	Hz	50 60	
Weight	kg	147	180

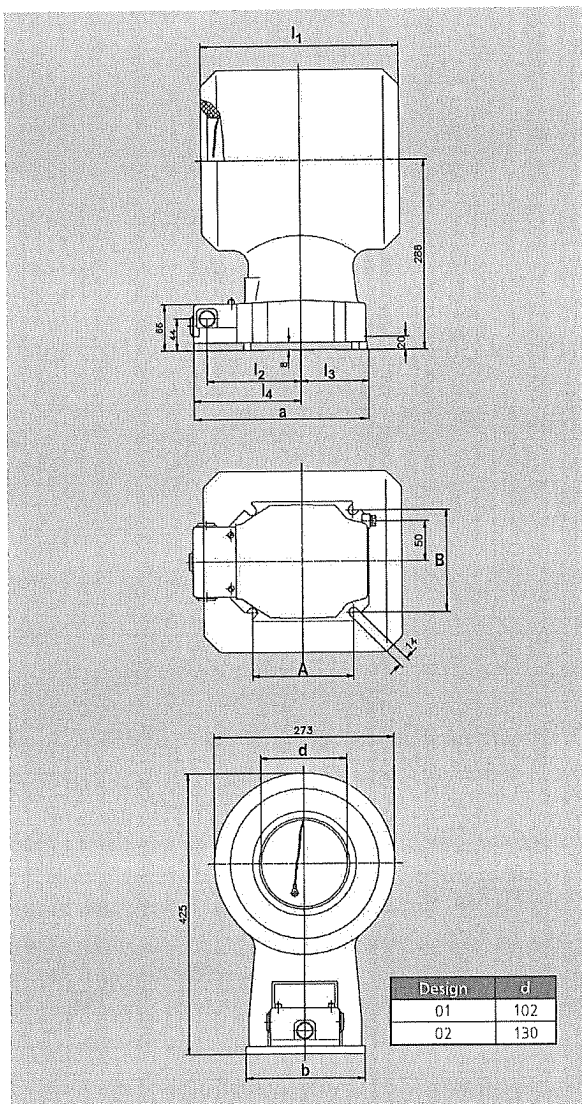
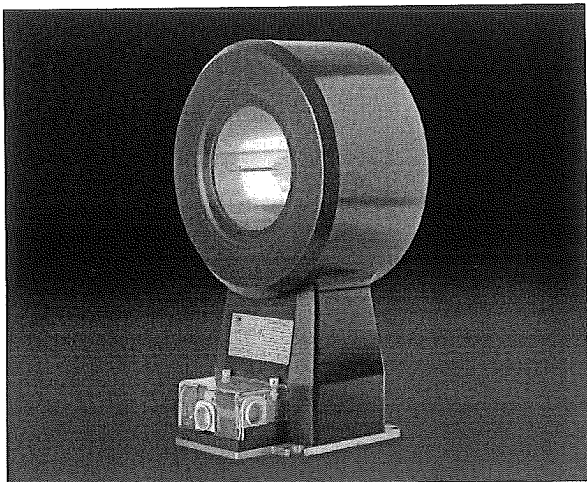
Subject to Technical Changes



GSSO



2.1.5 High Current Transformer Indoor GSSO 12 | 17,5 | 24



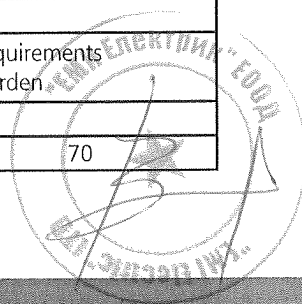
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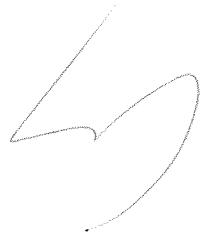
TYPE GSSO Dimensions mm			
Size	0	3	4
A	135	155	305
B	155	155	155
a	207	269	419
b	180	180	180
l ₁	150	300 ⁺²	450 ⁺³
l ₂	105	145	220
l ₃	82	102	177
l ₄	125	167	242

TYPE GSSO				
Size		0	3	4
U _m	kV	12 24	12 24	12 24
Test voltages	kV	50 125	50 125	50 125
Rated Primary Current – I _{PN}	A	100 up to 4000		
Rated Secondary Current – I _{SN}	A	1 5	1 5	1 5
Rated Short Time Thermal Current – I _{th}		up to 1000 x I _{PN} max. 200 kA		
Rated Peak Current – I _{dyn}		2,5 x I _{th}		
Core(s), Number of Cores		Must be determined on the basis of the requirements accuracy class, over-current value, burden		
Frequency	Hz	50 60		
Weight	kg	21	34	70

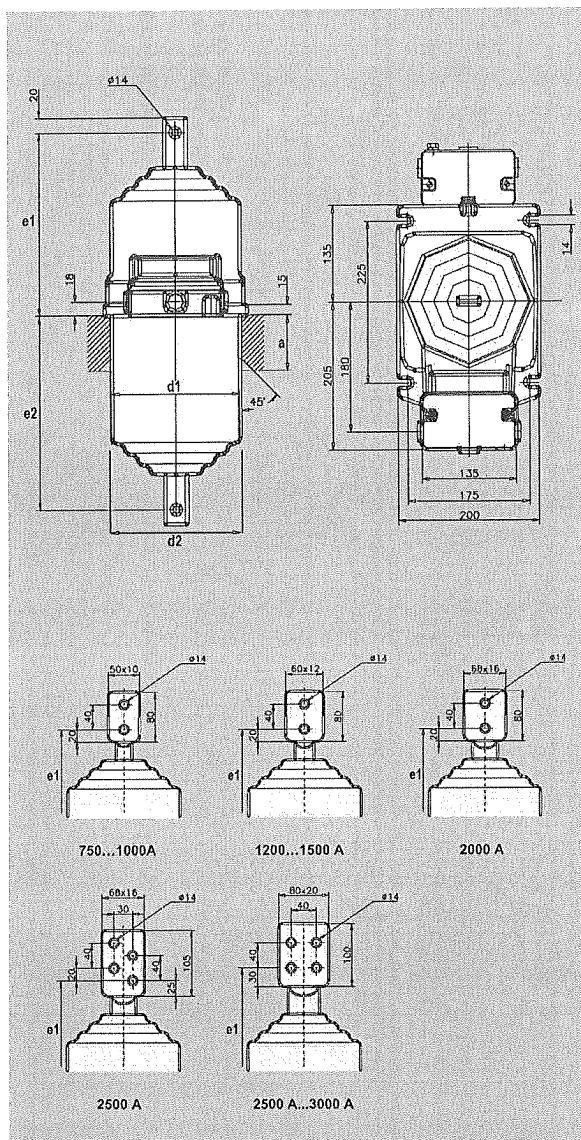
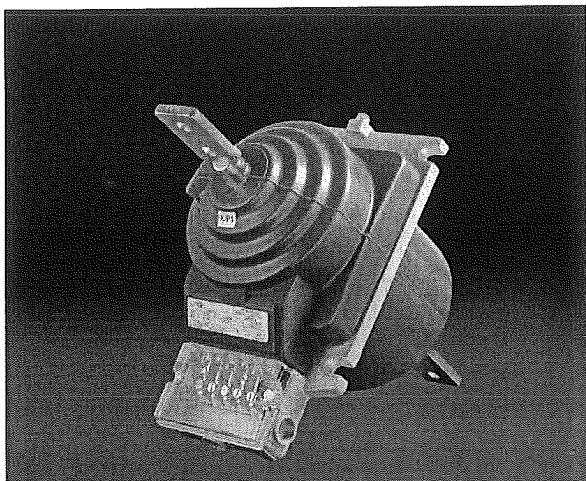
Subject to Technical Changes

ВАРНО С
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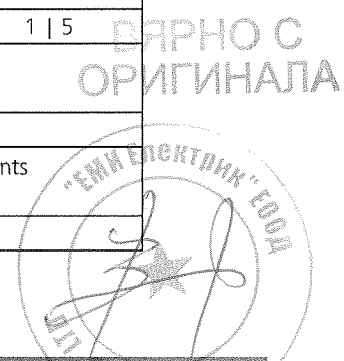
2.1.6 Bushing Type Current Transformer Indoor
GDS 12 | 17,5 | 24 | 36



TYPE GDS		Dimensions mm						
		GDS 12				GDS 24		GDS 36
Size		0	1	2	3	1	2	1
a		50	60	115	195	60	140	60
d1		180						
d2		185						
e1	1500 A	190	190	255	315	255	315	315
	2000 A	195	195	260	320	260	320	320
	2500 A	215	215	280	340	280	340	340
e2	1500 A	150	210	270	330	270	330	330
	2000 A	155	215	275	335	275	335	335
	2500 A	175	235	295	355	295	355	355
Weigh [kg]		12-18	16-22	28-32	34-40	28-32	35-40	35-40

TYPE GDS		GDS 12	GDS 17,5	GDS 24	GDS 36
U _m	kV	12	17,5	24	36
Test voltage	kV	28 75	38 95	50 125	70 170
Rated Primary Current – I _{PN}	A	150 A up to 2500 A on request 3000 A			
Rated Secondary Current – I _{SN}	A	1 5	1 5	1 5	1 5
Rated Short Time Thermal Current – I _{th}		up to 1000 x I _{PN} max. 100 kA			
Rated Peak Current – I _{dyn}		2,5 x I _{th}			
Core(s), Number of Cores		Must be determined on the basis of the requirements accuracy class, over-current value, burden			
Frequency	Hz	50 60			

Subject to Technical Changes



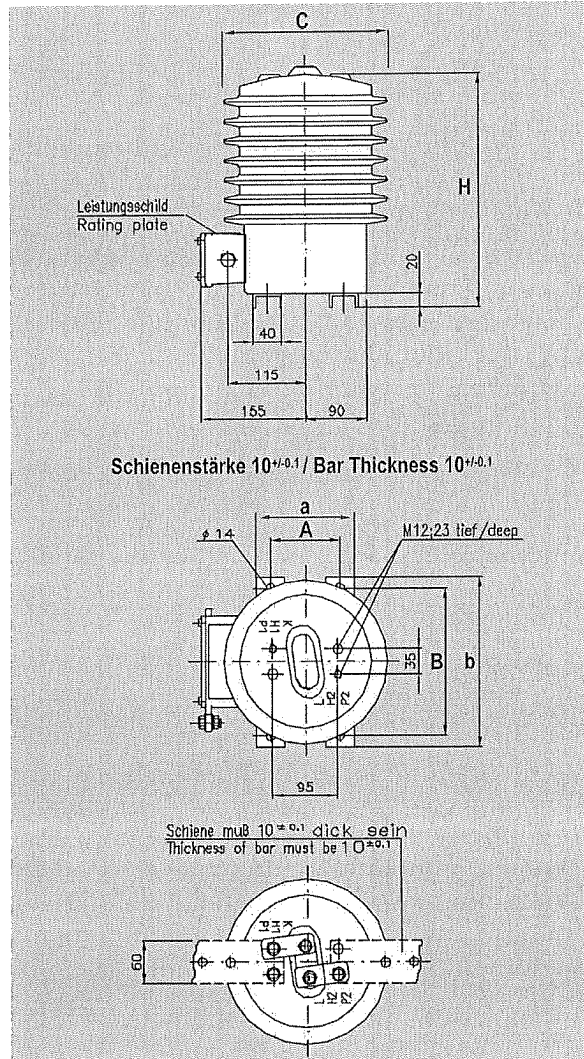
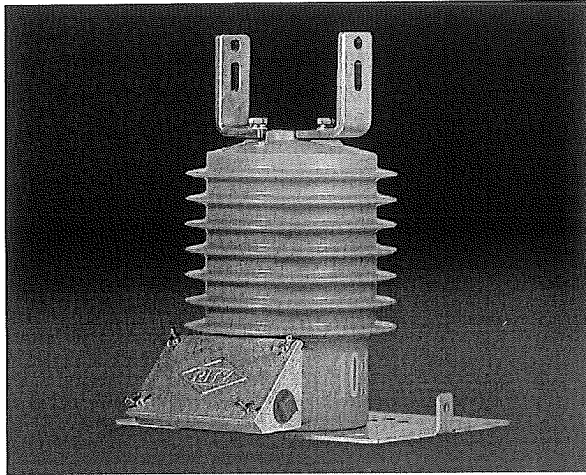
GIFK

9

2.2 Current Transformer Outdoor up to 72,5 kV

2.2.1 Support Type Current Transformer Outdoor Compact Type

GIFK 12 | 17,5 | 24 | 36



M

TYPE GIFK	Dimensions mm	
	GIFK 12 17,5 24	GIFK 36
A	100	100
B	200	200
a	140	140
b	240	240
C	235	235
H	335	419

TYPE GIFK					
		GIFK 12	GIFK 17,5	GIFK 24	GIFK 36
U_m	kV	12	17,5	24	36
Test voltages	kV	28 75	38 95	50 125	70 170
Rated Primary Current – I_{PN}	A	up to 1250			
Rated Secondary Current – I_{SN}	A	1 5	1 5	1 5	1 5
Rated Short Time Thermal Current – I_{th}		up to 1000 x I_{PN} max. 63 kA			
Rated peak Current – I_{dyn}		2,5 x I_{th} , max. 100 kA			
Core(s), Number of Cores		Must be determined on the basis of the requirements accuracy class, over-current value, burden			
Frequency	Hz	50 60			
Creepage Distance	mm	486	486	486	650
Weight	kg	22	22	22	30

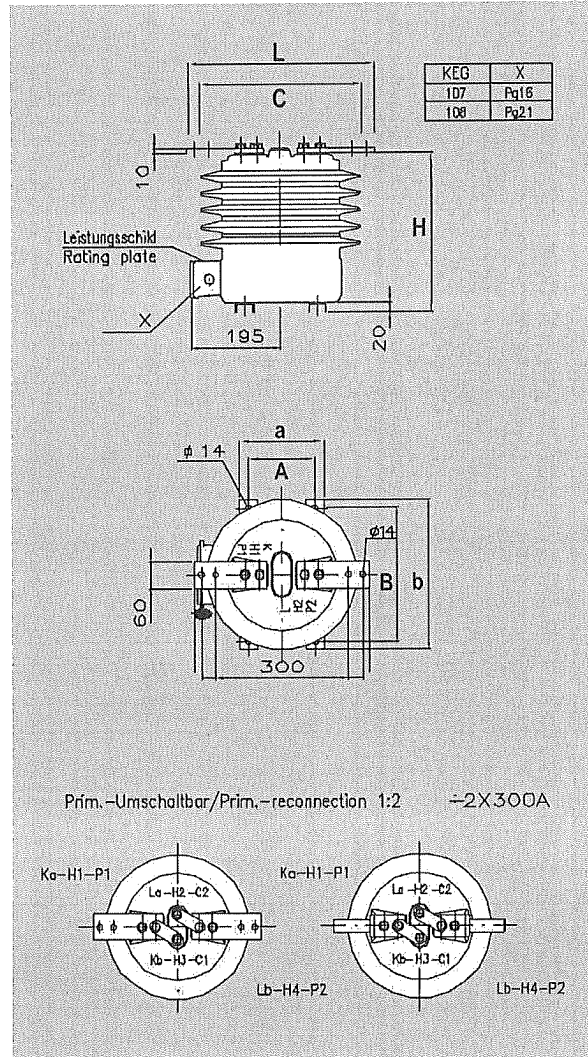
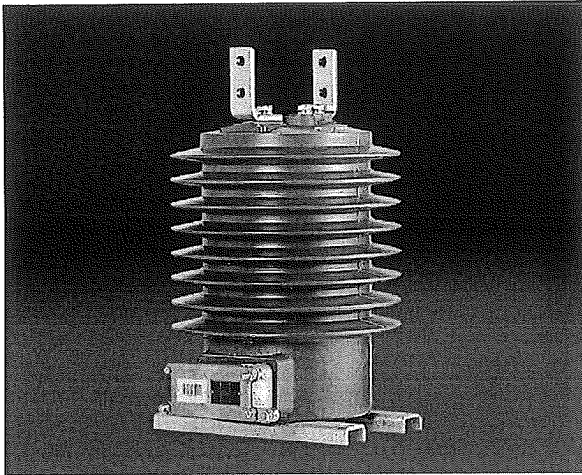
Subject to Technical Changes

ВЯРНО С
ОРИГИНАЛА



6

2.2.2 Support Type Current Transformer Outdoor Standard Type
 GIFS 12 | 17,5 | 24 | 36

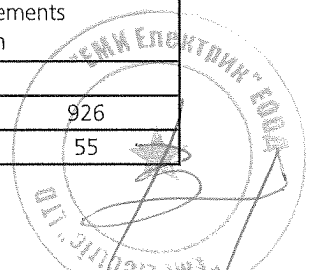


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TYPE GIFS	Dimensions mm	
	GIFs 12 17,5 24	GIFs 36
A	150	150
B	300	300
a	190	190
b	335	335
C	335	335
H	355	439

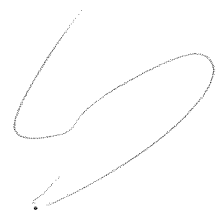
TYPE GIFS		GIFs 12	GIFs 17,5	GIFs 24	GIFs 36
U _m	kV	12	17,5	24	36
Test voltages	kV	28 75	38 95	50 125	70 170
Rated Primary Current – I _{PN}	A	up to 1250			
Rated Secondary Current – I _{SN}	A	1 5	1 5	1 5	1 5
Rated Short Time Thermal Current – I _{th}		up to 1000 x I _{PN} max. 63 kA			
Rated peak Current – I _{dyn}		2,5 x I _{th} , max. 100 kA			
Core(s), Number of Cores		Must be determined on the basis of the requirements accuracy class, over-current value, burden			
Frequency	Hz	50 60			
Creepage Distance	mm	575	575	575	926
Weight	kg	40	40	40	55

ВАРНО С
ОРИГИНАЛА



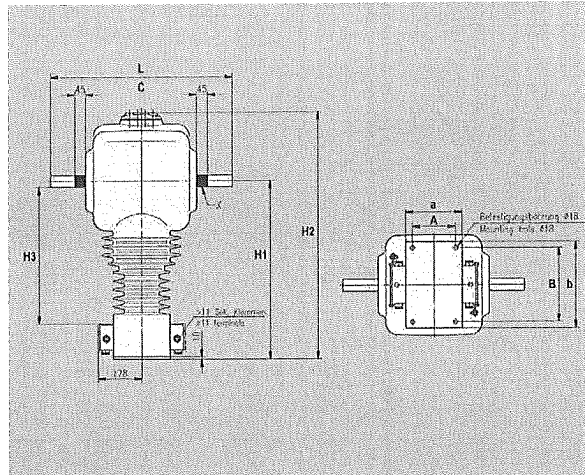
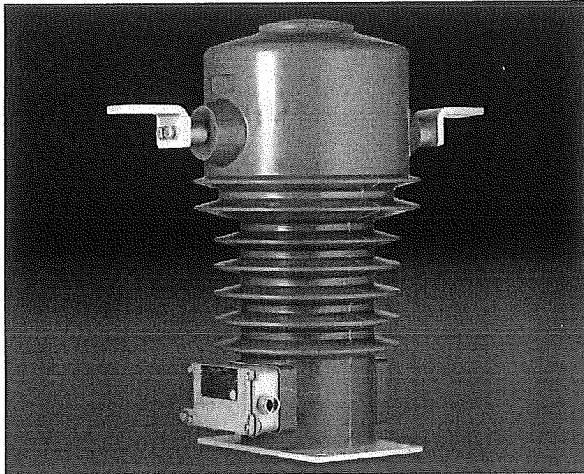
Subject to Technical Changes

GIF



2.2.3 Current Transformer Outdoor Head Type

GIF 10 | 17,5 | 20 | 30 | 36 | 52 | 72,5



TYPE GIF		Dimensions mm					
		GIF 10 17,5	GIF 20	GIF 30	GIF 36	GIF 52	GIF 72,5
A		175	175	175	175	175	175
B		300	300	300	300	300	300
a		230	230	230	230	500	500
b		350	350	350	350	500	500
C		380	430	430	452	520	520
H1		437	527	527	725	910	1015
H2		5921	707	707 ¹	1002	1217	1322
H3		268	358	358	557,5	745	850
L	up to 600 A	550	600	600	622	750	750
	600 A up to 1250 A	610	660	660	682	750	750
	1250 A up to 2000 A	650	700	700	722	790	790
	2000 A up to 3000 A	670	720	720	742	810	810

¹ Without primary reconnection

TYPE GIF		GIF 10	GIF 17,5	GIF 20	GIF 30	GIF 36	GIF 52	GIF 72,5
U_m	kV	12	17,5	24	36	36	52	72,5
Test voltages	kV	28 75	38 95	50 125	70 170	70 170 ²	95 250	140 325
Rated Primary Current – I_{PN}	A	up to 3000						
Rated Secondary Current – I_{SN}	A	1 5	1 5	1 5	1 5	1 5	1 5	1 5
Rated Short Time Thermal Current – I_{th}		up to 1000 x I_{PN} max. 63 kA						
Rated Peak Current – I_{dyn}		2,5 x I_{th} , max. 100 kA						
Core(s), Number of Cores		Must be determined on the basis of the requirements accuracy class, over-current value, burden						
Frequency	Hz	50 60						
Creepage Distance	mm	665	665	800	800	1290	1823	2150
Weight	kg	65	65	100	115	147	180	255

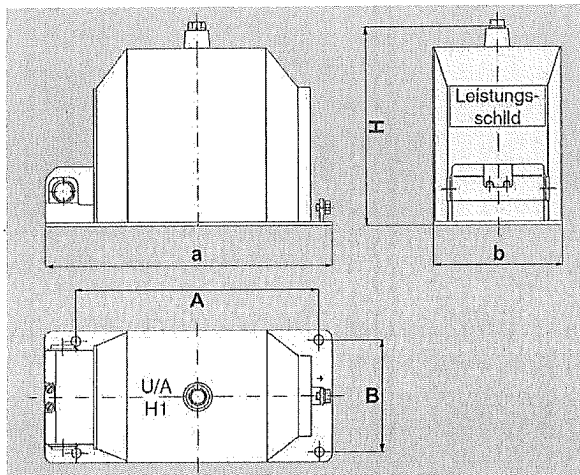
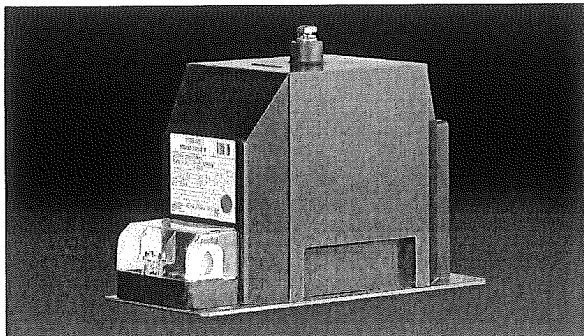
² Increased BIL possible 70/200
Subject to Technical Changes



2.3 Voltage Transformer Single Pole up to 72,5kV

2.3.1 Voltage Transformer Indoor

VES 12 | 17,5 | 24



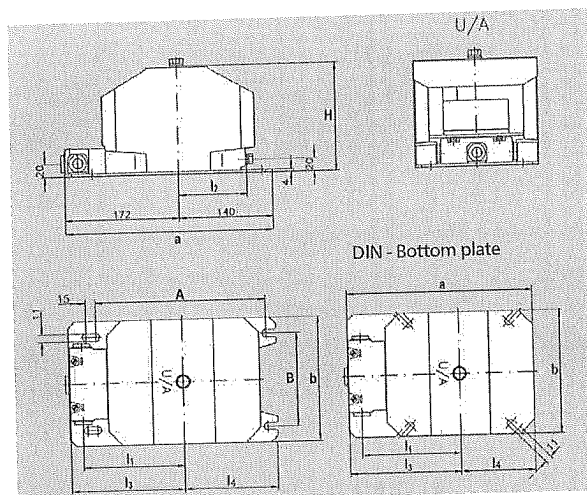
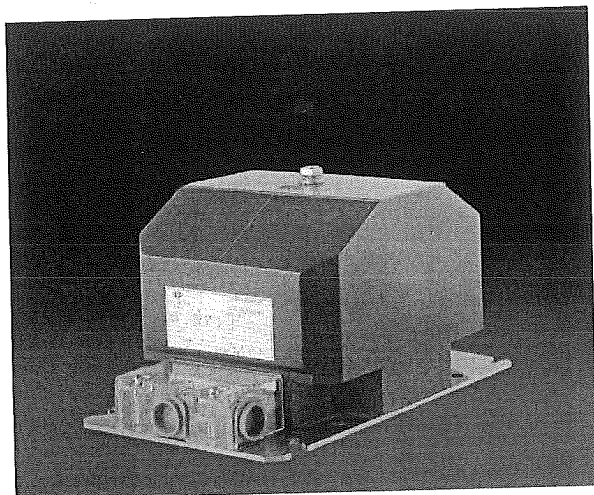
TYPE VES Dimensions mm			
	VES 12	VES 17,5	VES 24
A	270	270	280
B	125	125	150
a	320	320	354
b	148	148	178
H	220	220	280

TYPE VES					
			VES 12	VES 17,5	VES 24
U_m		kV	12	17,5	24
Test voltages		kV	28 28 75	38 38 95	50 50 125
Rated Primary Current – I_{PN}		V	$10000/\sqrt{3}$ $11000/\sqrt{3}$	$13800/\sqrt{3}$ $15000/\sqrt{3}$	$20000/\sqrt{3}$ $22000/\sqrt{3}$
Rated Secondary Voltage – U_{SN}		V	$100/\sqrt{3}$ $110/\sqrt{3}$		
Rated Secondary Voltage for the Earthing Corens		V	$100/3$ $110/3$		
Rated Output in Accuracy Class (IEC)	0,2	VA	20	20	20
	0,5	VA	50	50	50
	1,0	VA	100	100	100
Thermal Limit Current		A	6	6	6
Thermal Limit Current at $1,9 \times U_n / 8h$		A	6	6	6
Frequency		Hz	50 60		
Weight		kg	19	19	27

Subject to Technical Changes

5

2.3.2 Voltage Transformer Indoor GSE 12/0 3,6 | 7,2 | 12



66

TYPE GSE	Dimensions mm	
	GSE 12/0	GSE 12/0 DIN
A	260	155
B	140	155
a	312	286
b	188	188
H	160	160
h ₁	152	152
l ₂	102	102
l ₃	171	171
l ₄	140	100

TYPE GSE				GSE 12 0
U _m		kV		2
Test voltages		kV		28 75
Rated Primary Voltage – U _{PN}		V		3000/√3 5000/√3 6000/√3 10000/√3
Rated Secondary Voltage – U _{SN}		V		100/√3 110/√3
Rated Secondary Voltage for the Earthing Core (en)		V		100/3 110/3
Rated Output in Accuracy Class (IEC)	0,2	VA		30
	0,5	VA		90
	1,0	VA		180
Thermal Limit Current		A		7
Thermal Limit Current at 1,9 x U _n / 8h		A		6
Frequency		Hz		50 60
Weight		kg		18

ВЪРНО С
ОРИГИНАЛА



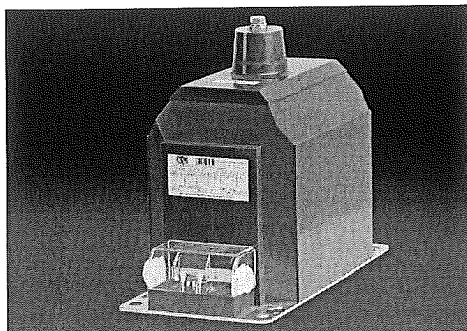
Subject to Technical Changes

302

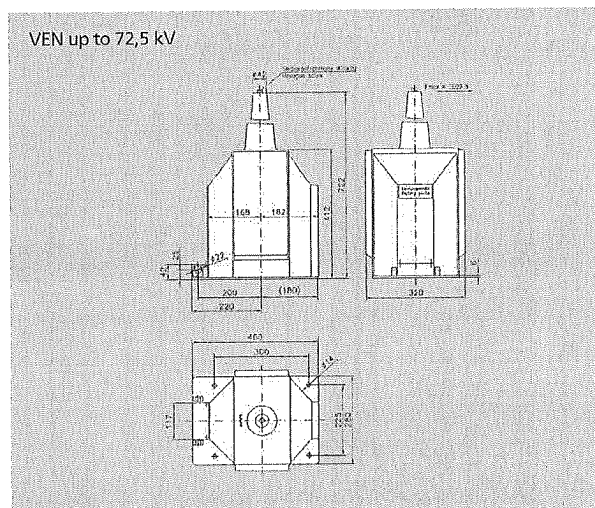
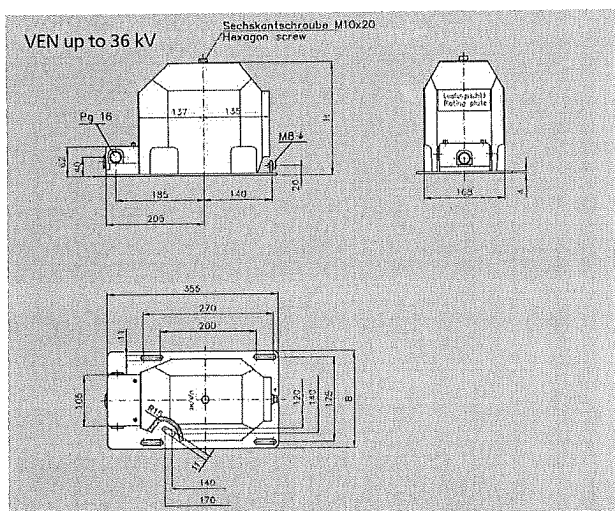


2.3.3 Voltage Transformer Indoor

VEN 12 | 17,5 | 24 | 36 | 52 | 72,5

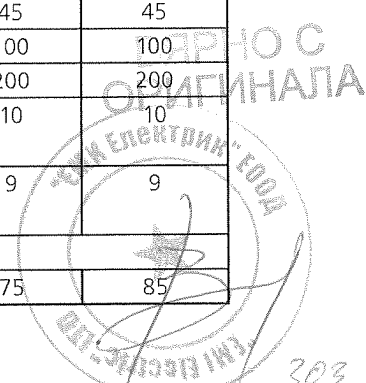


TYPE VEN Dimensions mm						
	VEN 12	VEN 17,5	VEN 24	VEN 36	VEN 52	VEN 72,5
A	225	225	250	300	300	300
B	175	175	200	225	225	225
a	355	355	355	400	400	400
b	200	200	230	250	280	280
H	240	240	273	321	522	722

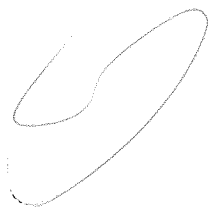


TYPE VEN		VEN 12	VEN 17,5	VEN 24	VEN 36	VEN 52	VEN 72,5
U_m	kV	12	17,5	24	36	52	72,5
Test voltages	kV	28 75	38 95	50 125	70 170	95 250	140 325
Rated Primary Voltage – U_{PN}	V	$10000/\sqrt{3}$	$13800/\sqrt{3}$	$20000/\sqrt{3}$	$30000/\sqrt{3}$	$45000/\sqrt{3}$	$60000/\sqrt{3}$
	V	$11000/\sqrt{3}$	$15000/\sqrt{3}$	$22000/\sqrt{3}$	$33000/\sqrt{3}$	$50000/\sqrt{3}$	$66000/\sqrt{3}$
Rated Secondary Voltage – U_{SN}	V	$100/\sqrt{3} 110/\sqrt{3}$					
Rated Secondary Voltage for the Earthing Core(en)	V	$100/3 110/3$					
Rated Output in Accuracy Class (IEC)	0,2 VA	30	30	30	30	45	45
	0,5 VA	100	100	100	100	100	100
	1,0 VA	200	200	200	200	200	200
Thermal Limit Current	A	10	10	10	10	10	10
Thermal Limit Current at $1,9 \times U_n / 8h$	A	9	9	9	9	9	9
Frequency	Hz	50 60					
Weight	kg	24	24	32,5	50	75	85

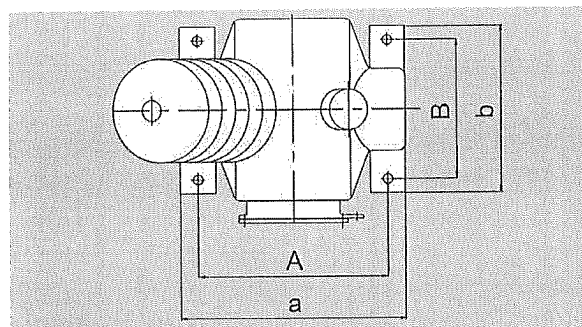
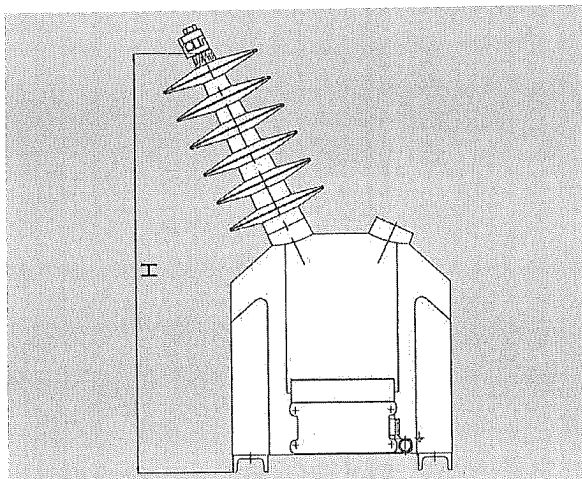
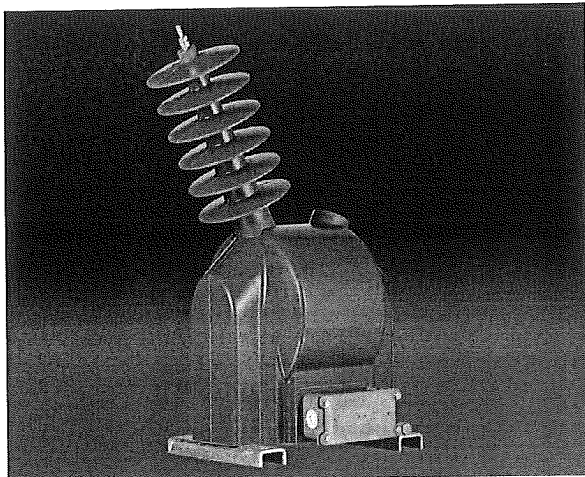
Subject to Technical Changes



VEF



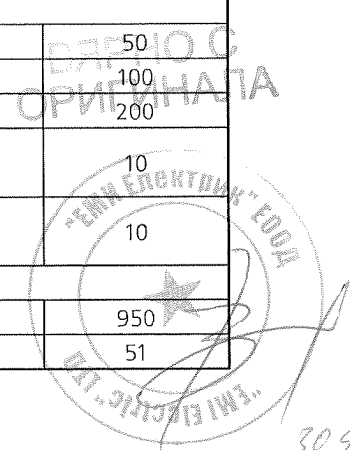
2.3.4 Voltage Transformer Outdoor VEF 12 | 17,5 | 24 | 36



TYPE VEF Abmessungen mm				
	VEF 12	VEF 17,5	VEF 24	VEF 36
A	270	270	270	270
B	160	160	160	200
a	310	310	310	320
b	185	185	185	240
H	380	490	490	622

TYPE VEF						
			VEF 12	VEF 17,5	VEF 24	VEF 36
U_m		kV	12	17,5	24	36
Test voltages		kV	28 75	38 95	50 125	70 170
Rated Primary Voltage – U_{PN}		V	$10000/\sqrt{3}$ $11000/\sqrt{3}$	$13800/\sqrt{3}$ $15000/\sqrt{3}$	$20000/\sqrt{3}$ $22000/\sqrt{3}$	$30000/\sqrt{3}$ $33000/\sqrt{3}$
Rated Secondary Voltage – U_{SN}		V	$100/\sqrt{3}$ $110/\sqrt{3}$			
Rated Secondary Voltage for the Earthing Core (en)		V	$100/3$ $110/3$			
Rated Output in Accuracy Class (IEC)	0,2	VA	40	40	40	50
	0,5	VA	100	100	100	100
	1,0	VA	200	200	200	200
Thermal Limit Current		A	6	9	9	10
Thermal Limit Current at $1,9 \times U_n / 8h$		A	6	6	6	10
Frequency		Hz	50 60			
Creepage Distance		mm	400	745	745	950
Weight		kg	33,5	35,5	35,5	51

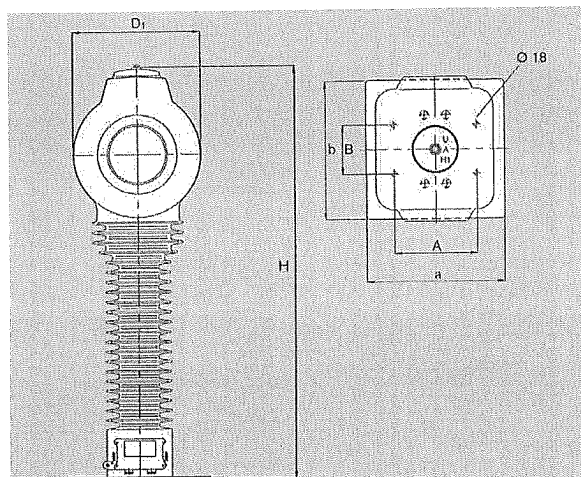
Subject to Technical Changes



309



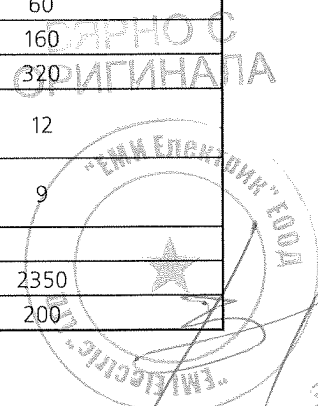
2.3.5 Voltage Transformer Outdoor Head Type
VEF 52 | 72,5



TYPE VEF Dimensions mm		
	VEF 52	VEF 72,5
A	300	300
B	175	175
a	500	500
b	500	500
D ₁	450	450
H	1217	1322

TYPE VEF				
			VEF 52	VEF 72,5
U _m		kV	52	72,5
Test voltages		kV	95 250	140 325
Rated Primary Voltage – U _{PN}		V	45000/√3 50000/√3	60000/√3 66000/√3
Rated Secondary Voltage – U _{SN}		V	100/√3 110/√3	
Rated Secondary Voltage for the Earthing Core (en)		V	100/3 110/3	
Rated Output in Accuracy Class (IEC)	0,2	VA	80	60
	0,5	VA	200	160
	1,0	VA	400	320
Thermal Limit Current		A	12	12
Thermal Limit Current at 1,9 x U _n / 8h		A	9	9
Frequency		Hz	50 60	
Creepage Distance		mm	1910	2350
Weight		kg	170	200

Subject to Technical Changes



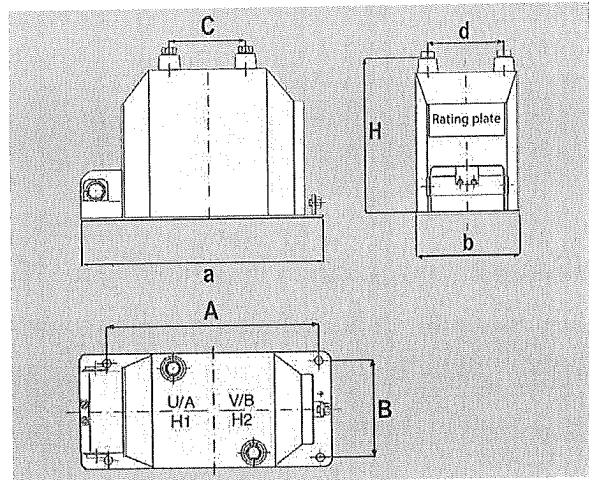
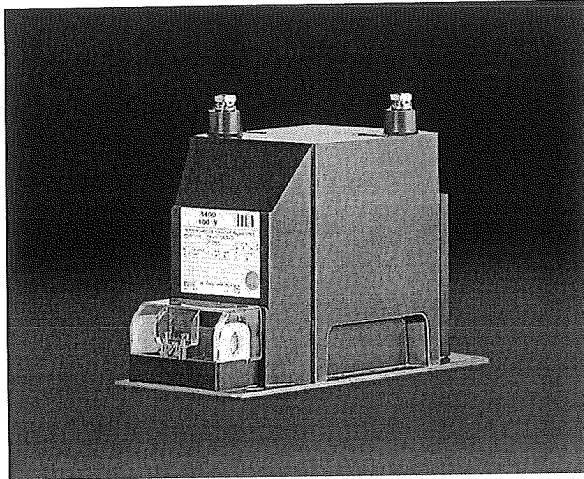
VZS



2.4 Voltage Transformer Double Pole up to 36 kV

2.4.1 Voltage Transformer Indoor

VZS 12 | 17,5 | 24

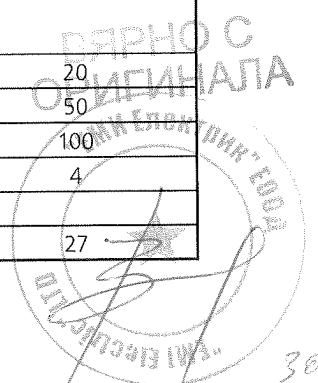


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TYPE VZS Dimensions mm			
	VZS 12	VZS 17,5	VZS 24
A	270	280	280
B	125	150	150
a	320	354	354
b	148	178	178
C	100	165	165
d	110	130	130
H	220	230	280

TYPE VZS					
			VZS 12	VZS 17,5	VZS 24
U_m		kV	12	17,5	24
Test voltages		kV	28 28 75	38 38 95	50 50 125
Rated Primary Voltage – U_{PN}		V	10000 11000	13800 15000	20000 22000
Rated Secondary Voltage – U_{SN}		V	100 110		
Rated Secondary Voltage Class (IEC)	0,2	VA	20	20	20
	0,5	VA	50	50	50
	1,0	VA	100	100	100
Thermal Limit Current		A	4	4	4
Frequency		Hz	50 60		
Weight		kg	19	27	27

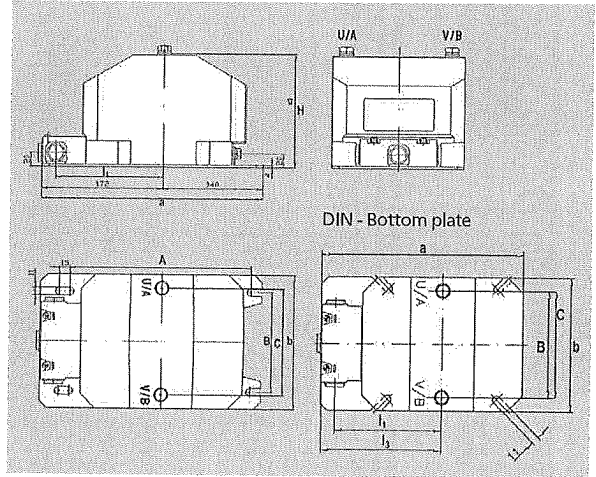
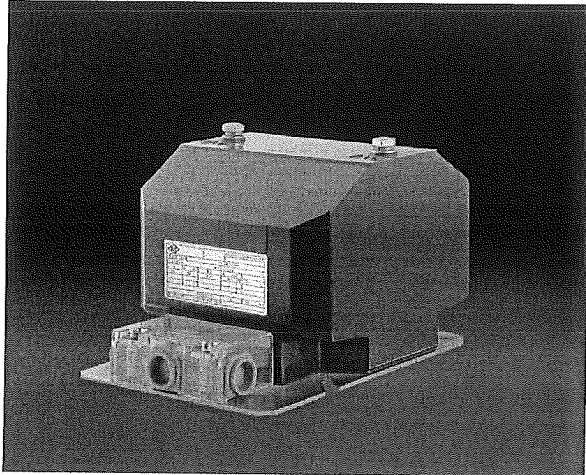
Subject to Technical Changes



306



2.4.2 Voltage Transformer Indoor
GSZ 12/0 3,6 | 7,2 | 12



TYPE GSZ Dimensions mm		
	GSZ 12/0	GSZ 12/0 DIN
A	255	155
B	140	150
a	312	286
b	188	188
C	150	150
H	160	160
l ₁	152	152
l ₂	102	100
l ₃	171	171
l ₄	140	100

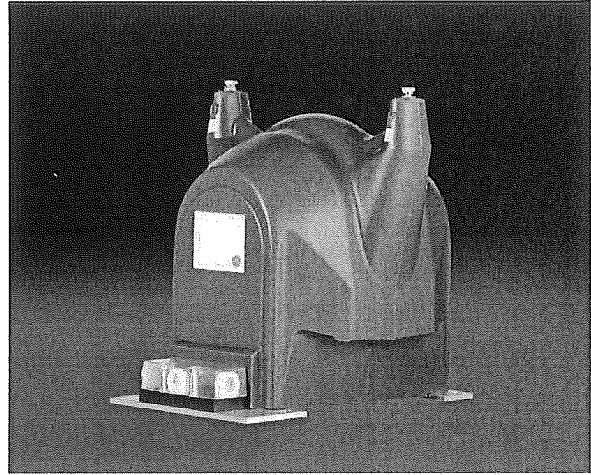
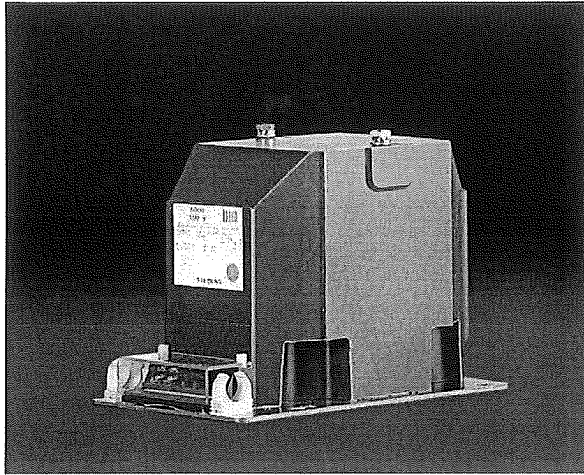
TYPE GSZ			
			GSZ 12
U _m		kV	12
Test voltages		kV	28 28 75
Rated Primary Voltage – U _{PN}		V	3000 5000 6000 10000
Rated Secondary Voltage – U _{SN}		V	100 110
Rated Secondary Class (IEC)	0,2	VA	10
	0,5	VA	45
	1,0	VA	150
Thermal Limit Current		A	4
Frequency		Hz	50 60
Weight		kg	18

Subject to Technical Changes

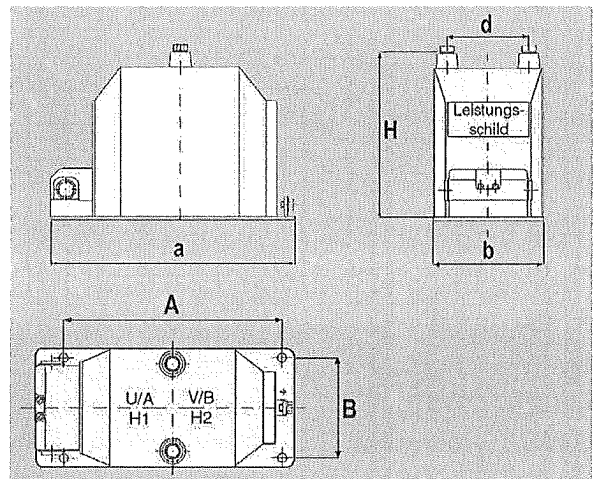


VZN

2.4.3 Voltage Transformer Indoor VZN 12 | 17,5 | 24 | 36



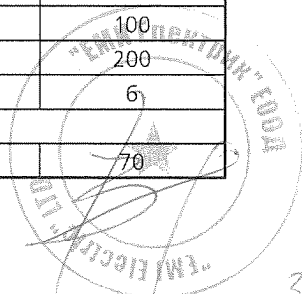
TYPE VZN Dimensions mm				
	VZN 12	VZN 17,5	VZN 24	VZN 36
A	225	225	250	300
B	175	175	200	225
a	355	355	355	400
b	200	200	230	349
d	150	150	210	320
H	240	240	273	390



TYPE VZN						
			VZN 12	VZN 17,5	VZN 24	VZN 36
U_m		kV	12	17,5	24	36
Test voltages		kV	28 28 75	38 38 95	50 50 125	70 70 170
Rated Primary Voltage – U_{PN}		V	10000 11000	13800 15000	20000 22000	30000 33000
Rated Secondary Voltage – U_{SN}		V	100 110			
Rated Secondary Voltage Class (IEC)	0,2	VA	30	30	30	30
	0,5	VA	100	100	100	100
	1,0	VA	200	200	200	200
Thermal Limit Current		A	6	6	6	6
Frequency		Hz	50 60			
Weight		kg	26	26	32,5	70

Subject to Technical Changes

ОРИГИНАЛ



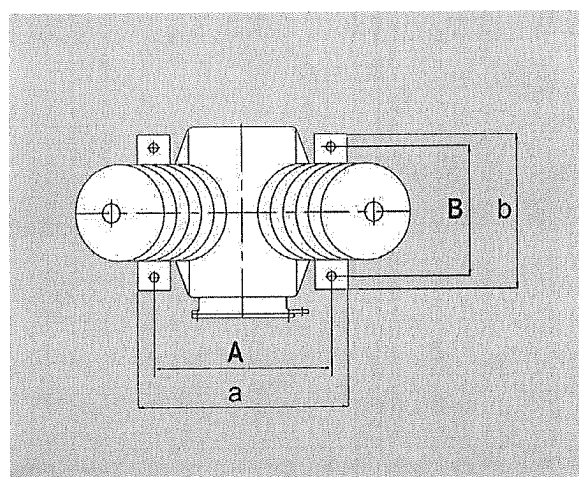
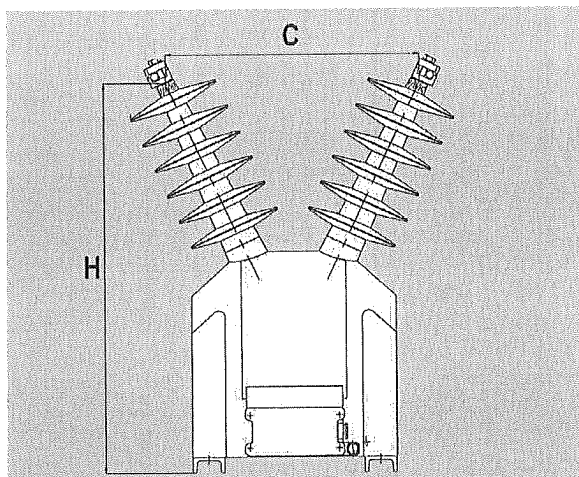
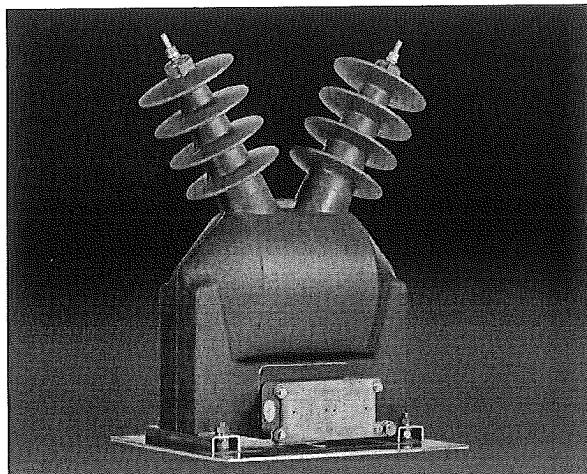
308



VZF

2.4.4 Voltage Transformer Outdoor

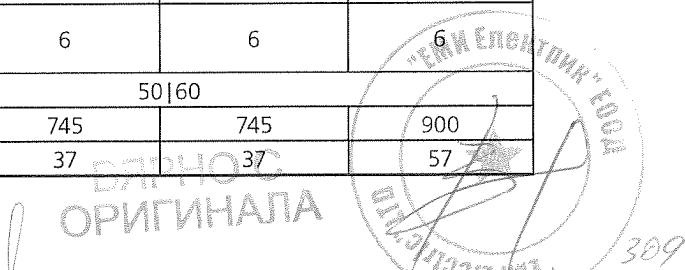
VZF 12 | 17,5 | 24 | 36



TYPE VZF Dimensions mm				
	VZF 12	VZF 17,5	VZF 24	VZF 36
A	270	270	270	270
B	160	160	160	200
a	310	310	310	320
b	185	185	185	240
C	190	320	320	400
H	380	490	490	622

TYPE VZF						
			VZF 12	VZF 17,5	VZF 24	VZF 36
U_m		kV	12	17,5	24	36
Test voltages		kV	28 28 75	38 38 95	50 50 125	70 70 170
Rated Primary Voltage $-U_{PN}$		V	10000 11000	13800 15000	20000 22000	30000 33000
Rated Secondary Voltage $-U_{SN}$		V	100 110			
Rated Output in Accuracy Class (IEC)	0,2	VA	40	40	40	50
	0,5	VA	100	100	100	100
	1,0	VA	200	200	200	200
Thermal Limit Current		A	6	6	6	6
Frequency		Hz	50 60			
Creepage Distance		mm	400	745	745	900
Weight		kg	34	37	37	57

Subject to Technical Changes



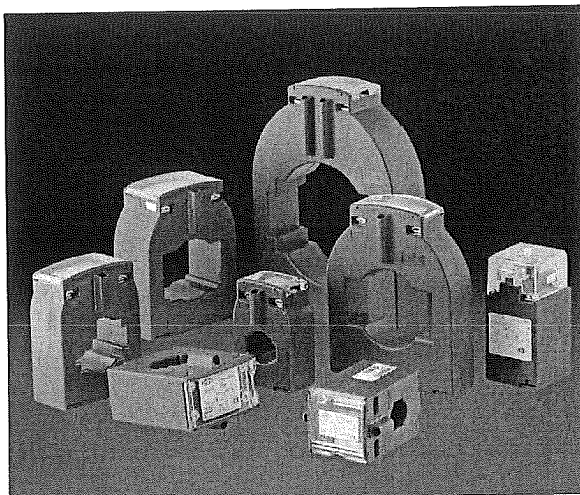
6

RITZ Product Overview

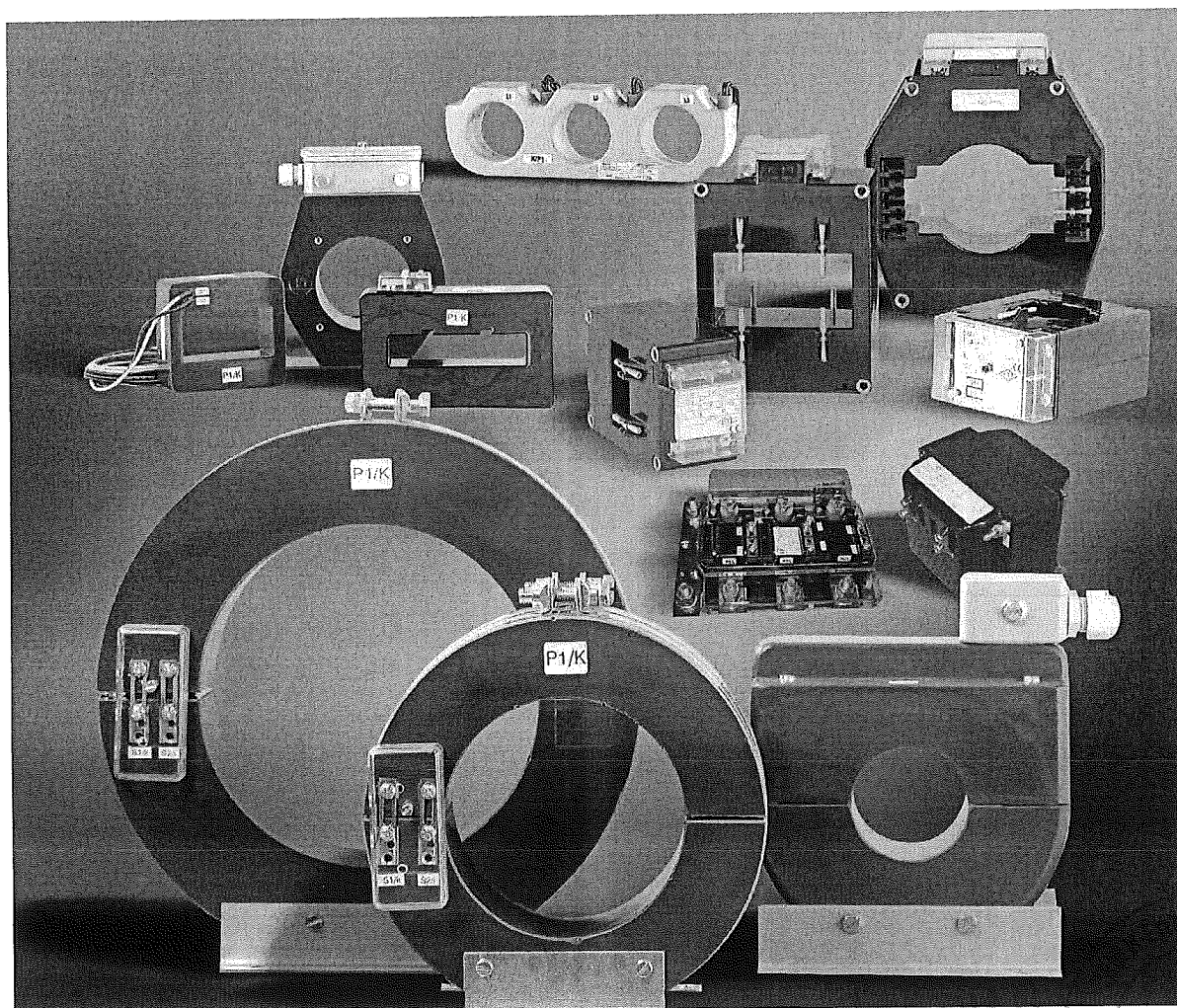
Low Voltage Instrument Transformers

Low-Voltage Instrument Transformers up to 1.2 kV
c.t.s for measuring and protection purposes

- Wound primary c.t.
- Summation c.t.
- C.t.s for switch fuses
- Multi-range c.t.
- Window type c.t.s for high currents
- Split core types for earth fault protection
- Auxiliary c.t.
- Window type c.t.
- Tube type c.t.
- Split-core c.t.



M



ОРИГИНАЛА



RITZ Product Overview

SIS Cast Resin Bus Bar Systems up to 72,5 kV & 6500 A

The Alternative to Parallel-Connected Cables

The RITZ **SIS** Solid Insulated Bus Bar System especially offers for transmission of higher currents and/or limited space requirements a cost-effective and safe alternative to parallel-connected cable systems, metal-enclosed bus bar or bus duct systems.

RITZ Service

- Minimized project engineering for YOU as customer due to complete engineering service for bus bar routing including fixation system as 3D CAD model.
- Providing complete Installation documentation
- Supervisor support on request available
- Installation team on request available

System Specific Benefits

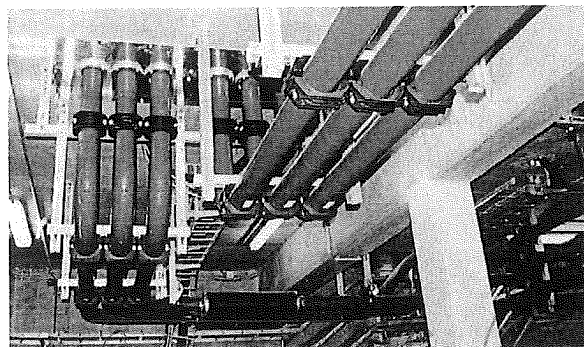
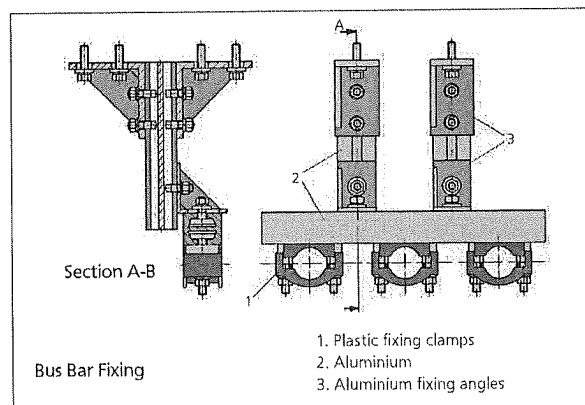
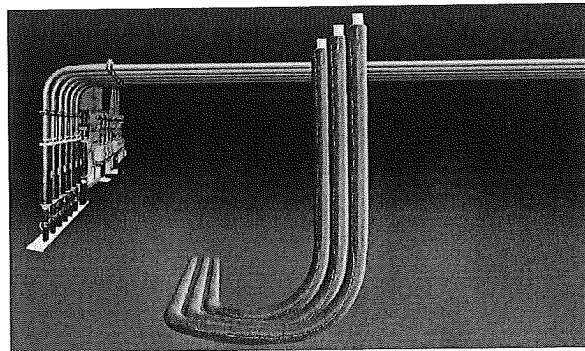
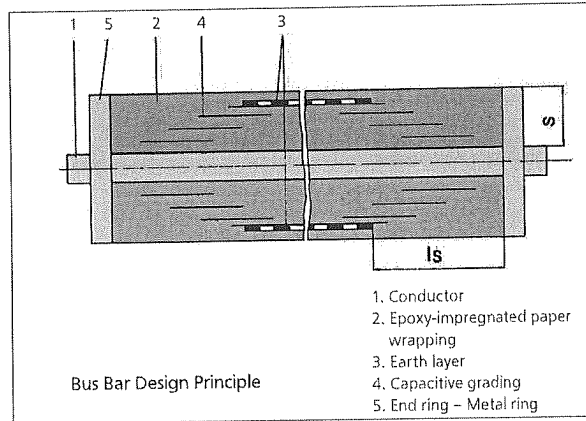
- Compact design
- Reduced requirements for the installation space
- Small bending radii
- 3-dimensional geometric shape is possible
- Natural cooling due to effectual conductor design
- High operational reliability due to factory routine test of each bus bar
- No maintenance

Safety Benefits

- Touch Safe
- Fully insulated and capacitive graded system
- High thermal and dynamic short circuit current withstand capabilities
- Excluded phase to phase short-circuits
- No toxic fumes in case of fire - self extinguishing
- High operating reliability due to routine tests for each bus bar element

Installation

- Easy installation due to standardized installation and fixing parts



RITZ Product Overview

Cast Resin Insulated Power Transformers up to 40,5 kV

Cast Resin Power Transformers 50 kVA up to 25 MVA
RITZ produces transformers in Glass Fibre reinforced Vacuum Technology (GVT) for ratings up to 25 MVA and for a maximum system voltage of 40,5 kV voltage class

Applications

- Power Distribution
- Rectifier Drives
- Oil Platforms / Vessels
- Injection Systems
- Grounding Systems
- Traction Power Systems (Streetcar, Tram, Metro, Railway)
- Generator Excitation
- Transmitter Systems
- Laboratory Systems

Customer oriented package solutions

- Transformer Installation
- Disposal of existing oil and PCB transformers
- Start-up

Glass Fibre reinforced Vacuum Technology (GVT) is used for High Voltage coils and optionally for Low Voltage coils in order to guarantee the highest possible quality and reliability to avoid cracks or voids during manufacturing and service.

Characteristics

- Impulse voltage proof
- Partial discharge free
- Short circuit proof
- Highest mechanical strength
- Cooling channels in HV&LV coils
- Pre-galvanised steel frame

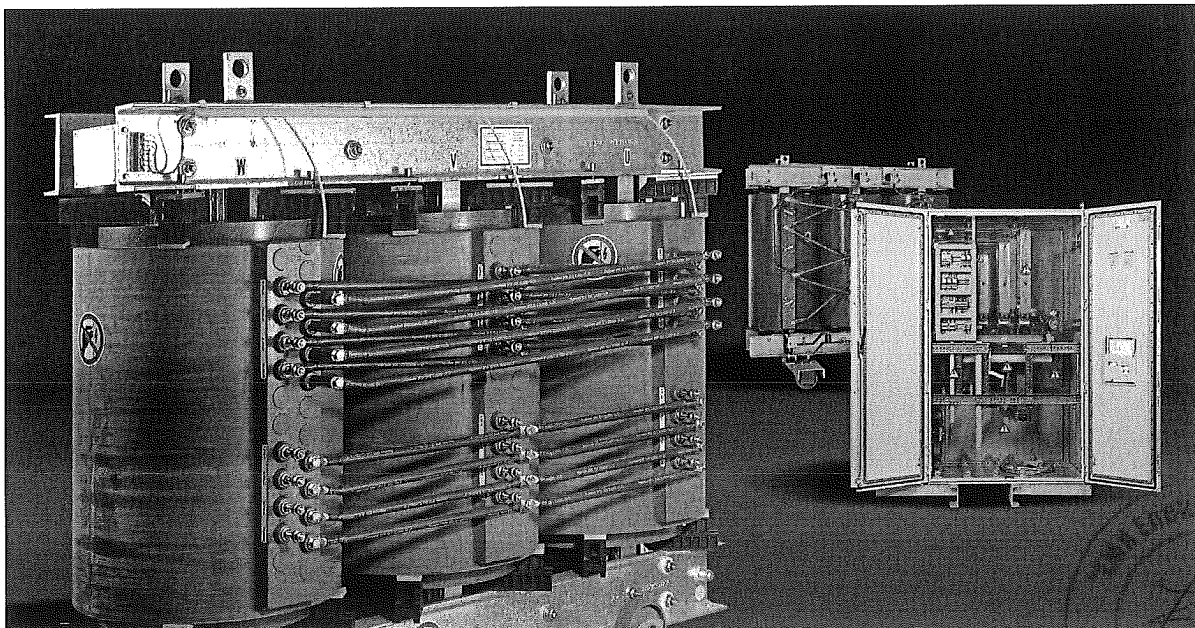
RITZ transformers are designed according to the required international specifications like DIN/VDE or IEC. Furthermore they fulfil all climatic, environmental and fire protection requirements:

- Environmental class E2
- Climate class C2
- Fire protection class F1
- Basic impulse level List 2

The requirements of the environmental protection is taken into account for design of the RITZ cast resin transformers.

Special Transformers

- Injection transformers for ripple control applications
- Reactors for ripple control applications
- High current transformers
- Earthing transformers
- Medium frequency transformers
- Filter and blocking reactors
- Smoothing and interphase reactors



ВЯРНО С
ОРИГИНАЛА



RITZ Product Overview

Electronic Instrument Transformers and Sensor

Voltage-Sensoric

- Voltage up to 90 kV
- Accuracy of 0,2 %
- Frequency from a to 10kHz

Current-Sensoric

- Current up to 24000 A
- Accuracy of 0,01 %
- Frequency from a to 10kHz

Block-Type Multi Sensor

The sensor provides signals for current and voltage measurement as well as voltage reference for electronic protection relays.

Applications

- Power Engineering
- Protection Technology
- Switchgear Systems
- Environment Engineering
- Rail Transportation Power Supply
- Grid Analyse
- Electrochemistry
- Automobile Industry
- Research

Current measurement

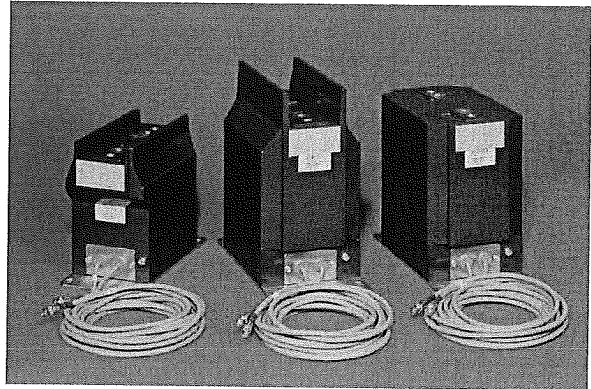
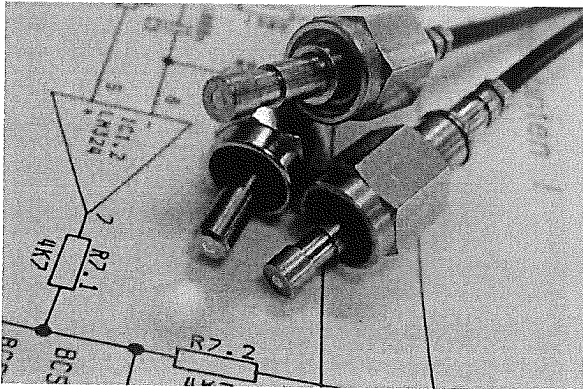
- Using a Rogowski coil

Voltage measurement

- Using an ohmic voltage divider

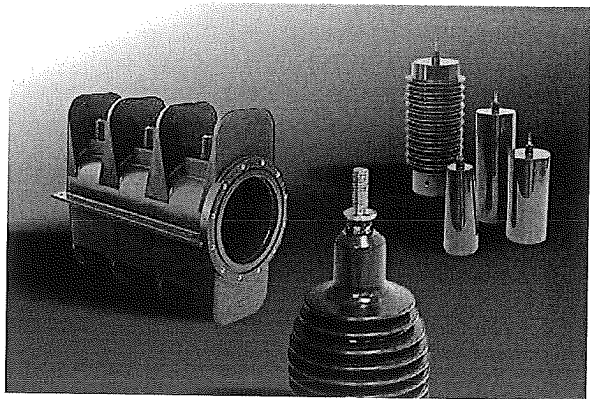
Voltage reference

- Using a coupling electrode



Cast Resin Parts

We develop and formulate casting resin molding materials for electrical applications in the low and medium voltage range and for electronics. We sketch and produce casting resin-isolated devices and shaped parts for application in electrical energy engineering for example special bushings, fuse housings etc.



ВЯРНО С
ОРИГИНАЛА



Sales

<p>RITZ HAMBURG RITZ Instrument Transformers GmbH Wandsbeker Zollstraße 92-98 22041 Hamburg GERMANY Tel +49 40 51123-0 Fax +49 40 51123-333 Medium Voltage Fax +49 40 51123-111 Low Voltage</p>	Low Voltage Instrument Transformers		Medium Voltage Instrument Transformers	Cast Resin Insulated Bus Bar Systems	Cast Resin Power Transformers		Electronic Instrument Transformers and Sensor	Customised Cast Resin Parts
<p>RITZ WIRGES RITZ Instrument Transformers GmbH Siemensstraße 2 56422 Wirges GERMANY Tel +49 2602 679-0 Fax +49 2602 9436-00</p>	Low Voltage Instrument Transformers		Medium Voltage Instrument Transformers	Cast Resin Insulated Bus Bar Systems	Cast Resin Power Transformers		Electronic Instrument Transformers and Sensor	Customised Cast Resin Parts
<p>RITZ DRESDEN RITZ Instrument Transformers GmbH Bergener Ring 65-67 01458 Ottendorf-Okrilla GERMANY Tel +49 35205 62-0 Fax +49 35205 62-216</p>	Low Voltage Instrument Transformers		Medium Voltage Instrument Transformers	Cast Resin Insulated Bus Bar Systems	Cast Resin Power Transformers		Electronic Instrument Transformers and Sensor	Customised Cast Resin Parts
<p>RITZ KIRCHAICH RITZ Instrument Transformers GmbH Mühlberg 1 97514 Oberaurach-Kirchaich GERMANY Tel +49 9549 89-0 Fax +49 9549 89-11</p>	Low Voltage Instrument Transformers		Medium Voltage Instrument Transformers	Cast Resin Insulated Bus Bar Systems	Cast Resin Power Transformers		Electronic Instrument Transformers and Sensor	Customised Cast Resin Parts
<p>RITZ MARCHTRENK RITZ Instrument Transformers GmbH Linzer Straße 79 4614 Marchtrenk AUSTRIA Tel +43 7243 52285-0 Fax +43 7243 52285-38</p>	Low Voltage Instrument Transformers		Medium Voltage Instrument Transformers	Cast Resin Insulated Bus Bar Systems	Cast Resin Power Transformers		Electronic Instrument Transformers and Sensor	Customised Cast Resin Parts
<p>RITZ KECSKEMÉT RITZ Instrument Transformers Kft. Technik-Park Heliport 6000 Kecskemet-Kadafalva HUNGARY Tel +36 76 5040-10 Fax +36 76 470311</p>	Low Voltage Instrument Transformers		Medium Voltage Instrument Transformers	Cast Resin Insulated Bus Bar Systems	Cast Resin Power Transformers		Electronic Instrument Transformers and Sensor	Customised Cast Resin Parts
<p>RITZ SHANGHAI RITZ Instrument Transformers Shanghai Co. Ltd. 99 Huajia Road, Building 1-3, Huabin Industrial Park Songjiang Industrial Zone Shanghai, 201613 P.R. China Tel +86 21 67747698 Fax +86 21 67747678</p>	Low Voltage Instrument Transformers		Medium Voltage Instrument Transformers	Cast Resin Insulated Bus Bar Systems	Cast Resin Power Transformers		Electronic Instrument Transformers and Sensor	Customised Cast Resin Parts
<p>RITZ HARTWELL RITZ Instrument Transformers Inc. 25 Hamburg Avenue Lavonia, GA 30553 USA Tel +1 706-356-7180 Fax +1 866-772-5245</p>	Low Voltage Instrument Transformers		Medium Voltage Instrument Transformers	Cast Resin Insulated Bus Bar Systems	Cast Resin Power Transformers		Electronic Instrument Transformers and Sensor	Customised Cast Resin Parts

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