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STS

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 - .A.C -
 STS

- .A.Ç - -
 STS

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..... -- B.3

..... -- B.4

.A.Ç STS -- C.1

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.A.Ç STS -- C.2

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.A.Ç STS -- C.3

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..... STS -- D.2

..... STS - F.1

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N -- F.1
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EMC

62301-1 IEC

A.C

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60947-6-1 IEC

IEC

UPS

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UPS

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IEC 60068 (all parts), Environmental testing

IEC 60146-1-1, Semiconductor convertors – General requirements and
line commutated convertors – Part 1-1: Specifications of basic
requirements

IEC 60439-1, Low-voltage switchgear and controlgear assemblies – Part
1: Type-tested and partially type-tested assemblies

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IEC 60529, Degrees of protection provided by enclosures (IP Code)

IEC 60947-6-1, Low-voltage switchgear and controlgear – Part 6-1:
Multiple function equipment – Transfer switching equipment

IEC 60950-1, Information technology equipment – Safety – Part 1:
General requirements

IEC 61000-2-2, Electromagnetic compatibility (EMC) – Part 2-2:
Environment – Compatibility levels for low-frequency conducted
disturbances and signalling in public low-voltage power supply systems

IEC 62040-3, Uninterruptible power systems (UPS) – Part 3: Method of
specifying the performance and test requirements

IEC 62310-1, Static Transfer Systems (STS) – Part 1: General and
safety requirements

IEC 62310-2, Static Transfer Systems (STS) – Part 2: Electromagnetic
Compatibility (EMC) requirements

ISO 7779, Measurement of airborne noise emitted by information
technology and telecommunications equipment

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[IEV 551-13-01]

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60950-1 IEC

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62310 -2 IEC

STSs

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T

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$$P = \frac{1}{T} \cdot \int_0^T p \cdot dt$$

IEV131-11-42[

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$$\lambda = \frac{P}{S}$$

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r.m.s

IEV 133- 11- 41

$$S = Ux$$

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[IEV 826 01 04]

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[IEV 151-16-08]

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[IEV 151-16-11]

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IEV 351-12-15]

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[IEV 351-14-04]

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r.m.s

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STSs

XX	YY	B	ST
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STS : PC

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- NS

- NI

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- TRANSIENT - () - B
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B . B B B B STS

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TRANSIENT

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STS

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(A 4/3)

(C 4/2

STS)

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(B /4/2)

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	()		-	
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	(IEC 60950-1 V	TNC, TNS, TT, IT,)		///
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make before break" "

closed transfer"

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STS

.A/5

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STS

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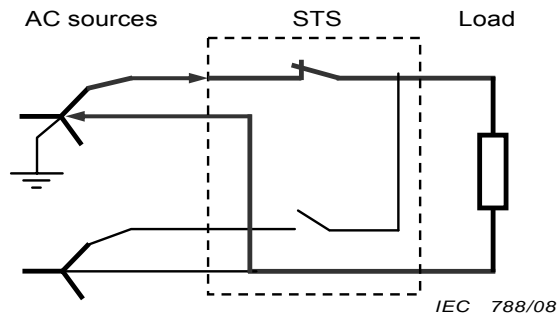
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STS

A.C

TN

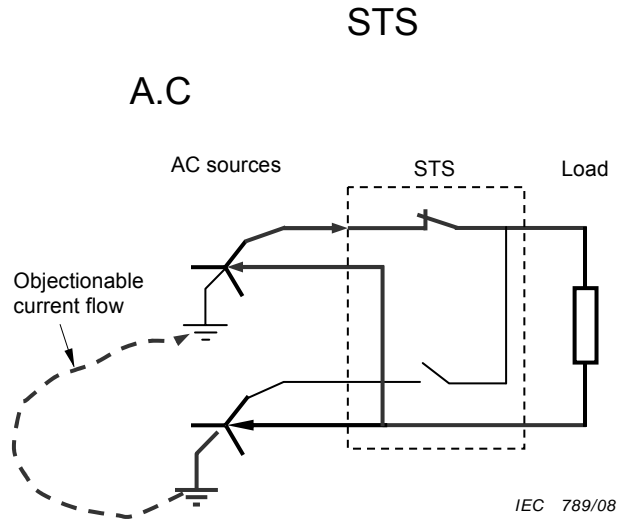


STS

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STS -A.C

A.C STS

(TN.TT.IT)

.60950-1

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E

STS

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STS

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STS

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STS

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a)(- -)		x	///
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(s)	x	x	///
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		x	See IEC 62310-2

(- -)

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60950-1 IEC R

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STS

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V V × , × -

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V (, / +) × V_x , -

V V_x , -

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60950-1 IEC //

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r.m.s = V

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D.C

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IEC 60146-1 //

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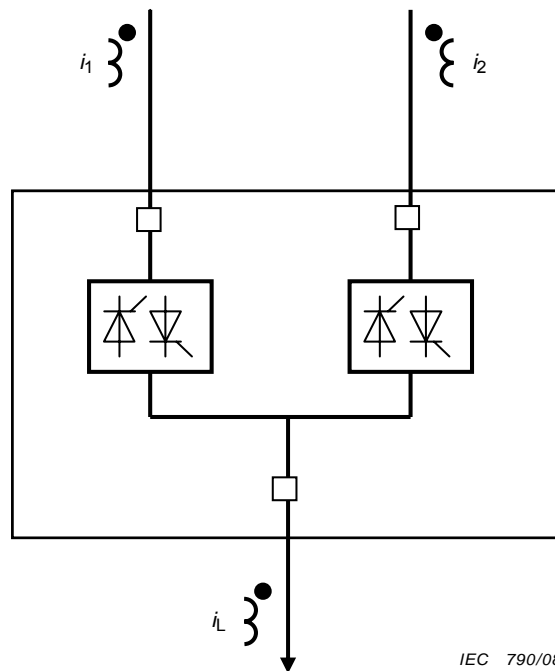
STS

STS

i_L

: () $i_2 i_L$

$$|i_1| + |i_2| = |i_L|$$



IEC 790/08

STS -

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SCR /

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STS

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.IEC - -

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STS

(b/ / /)

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5/2/5/1

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STS .(/)

STS
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STS

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."xxx % for 100 ms"

STS

A.C STS -

(B) "S"

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STS STS -

STS -

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STS

.STS

STS

F :

STS I_e (r.m.s.) A	(r.m.s.) A	(A peak / A r.m.s)	(50/60 Hz)
$I_e \leq 16$	3 000	1,42	1,5
$7516 < I_e \leq$	6 000	1,53	1,5
$40075 < I_e \leq$	10 000	1,70	1,5
$500400 < I_e \leq$	10 000	1,70	3,0
$500 \leq I_e$	20 I_e or 50 kA	$(0,5 I_e + 3 150) /$ 2 000) or 2,2	3,0

STS PC

STS CB

/ -

STS CB

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sts PC

STS

cb pc

F1

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.STS

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STS

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STS

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4/2

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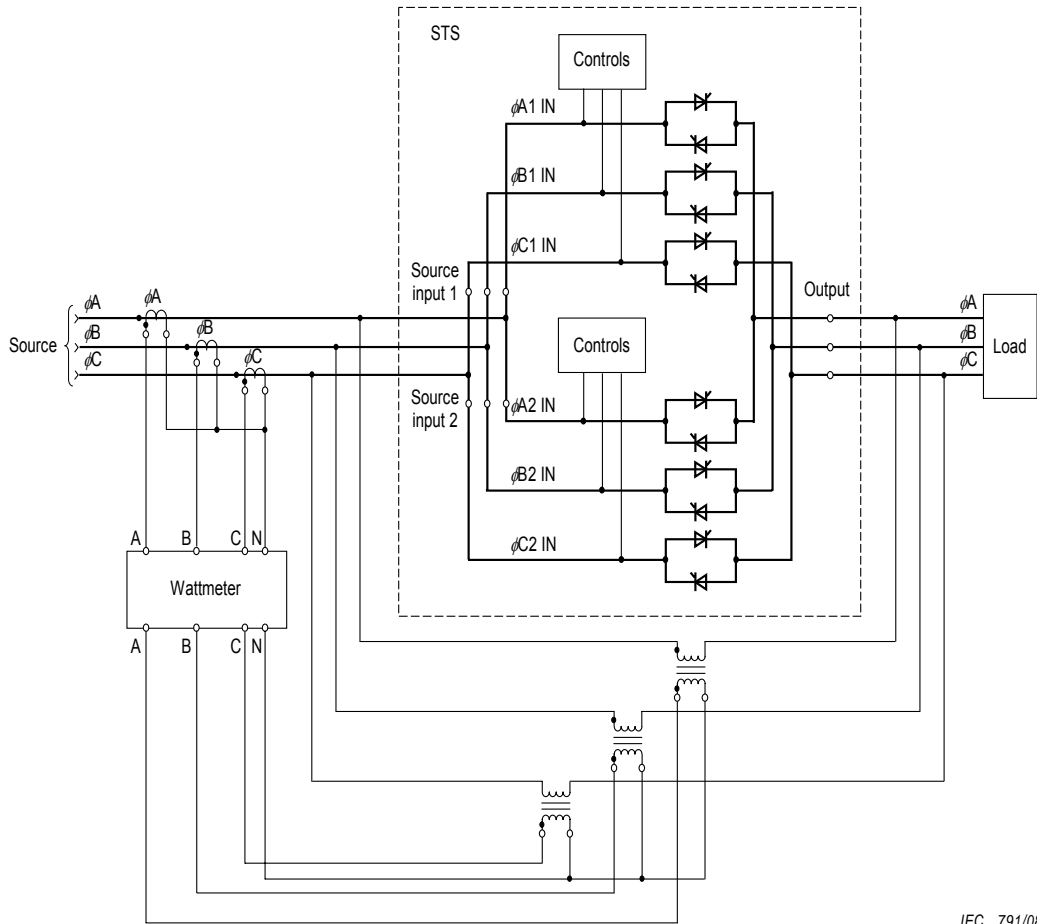
= ()

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STS

STS

.D/3



IEC 791/08

r.m.s

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STS()

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STS

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((A) / (A))× [(W)] = (W)

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. 62310-1 IEC 4/2/1/4

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61400-1 IEC

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(5/2/2) sts :

sts :

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.IEC 60068 2 32

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Mass of unpacked specimen kg	Height of fall mm
$M \leq 10$	250
$10 < M \leq 50$	100
$50 < M \leq 100$	50
$100 < M$	25

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sts :

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VA

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$$W = P$$

$$P / S = \lambda$$

$$V = V$$

$$HZ = F$$

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(switch mode

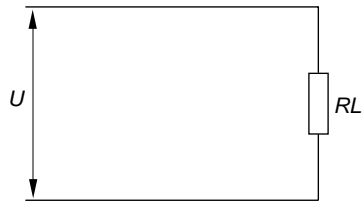
>

.(

()

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STS



IEC 792/08

$$RL = \frac{U^2}{P}$$

()

-

/

(R)

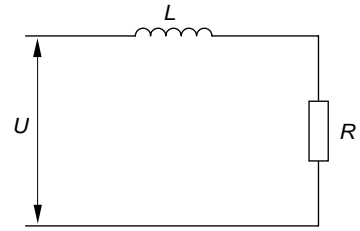
:

(L)

/ -

(

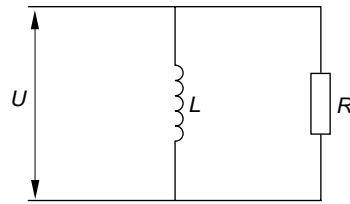
$R = \frac{U^2}{S} \lambda$	(Ω)
$L = \frac{U^2 \sqrt{1 - \lambda^2}}{2 \pi f S}$	(H)



IEC 793/08

(

$R = \frac{U^2}{S \lambda}$	(Ω)
$L = \frac{U^2}{2 \pi f S \sqrt{1 - \lambda^2}}$	(H)



IEC 794/08

()

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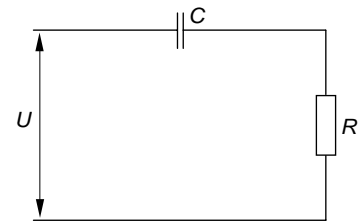
(R)

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(C)

(

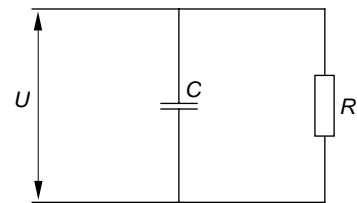
$R = \frac{U^2 \lambda}{S}$	(Ω)
$C = \frac{S}{2 \pi f U^2 \sqrt{1 - \lambda^2}}$	(F)



IEC 795/08

(

$R = \frac{U^2}{S \lambda}$	(Ω)
$C = \frac{S \sqrt{1 - \lambda^2}}{2 \pi f U^2}$	(F)



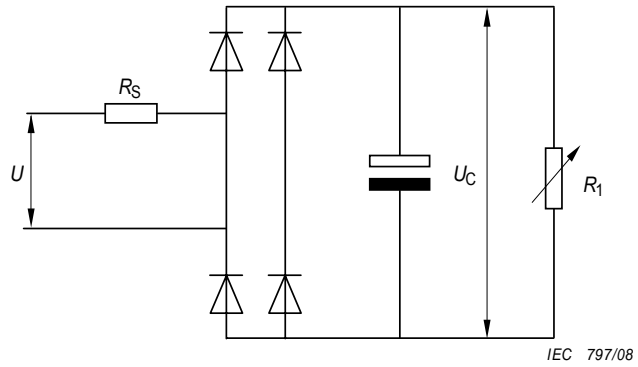
IEC 796/08

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STS

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 % :
 S) = λ - - IEC
 .(R_s R_1



d.c a.c R_s :
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$$\pm = R_s -$$

$$= R_1 -$$

$$+ = C -$$

V_c

s

R_1

R_s

.(

TC / iec

) s

V_c

/ -

$$= c \times R1$$

: Vc

$$UC = \sqrt{2} \times (0,92 \times 0,96 \times 0,975) \times U = 1,22 \times U$$

: c Rs R1

$$R_S = 0,04 \times U^2/S$$

$$R_1 = (U_C)^2 / (0,66 \times S)$$

$$C = 0,15 \text{ s} / R1$$

C :

AC

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sts

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.(- - iec)

sts

r.m.s

R1 (

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R1

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A sts (

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r.m.s A sts (

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4/1/1 s :

B/4 B/3 B/2 B/1

62040-3 iec B/3 B.1 :

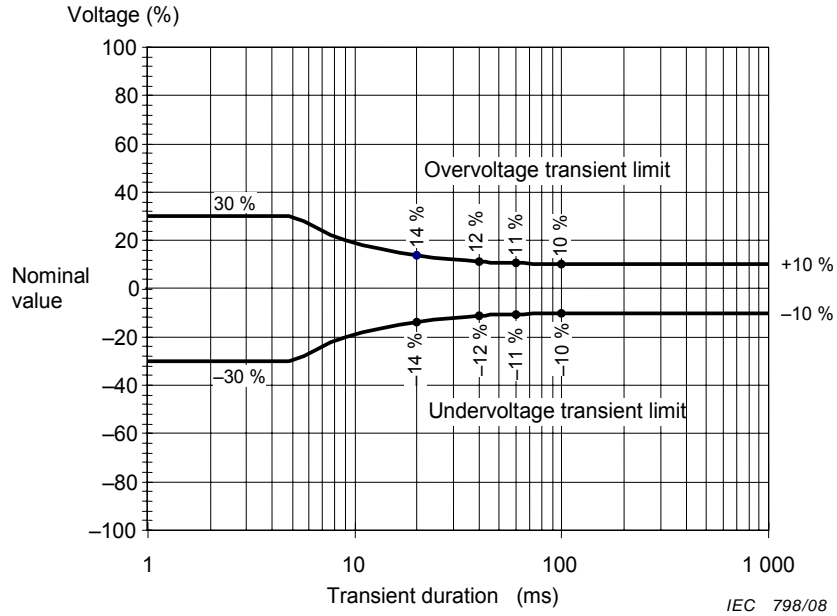
B/3 :

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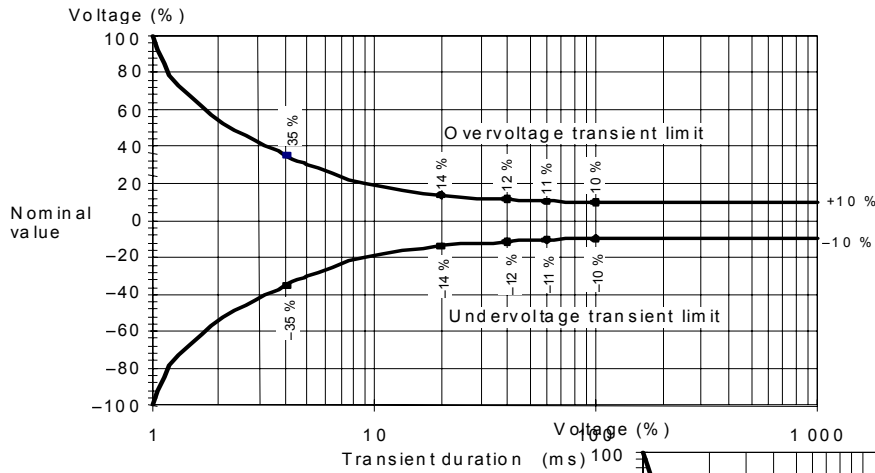
.(switched-mode power supplies)

.(ITIC)

B.4 :

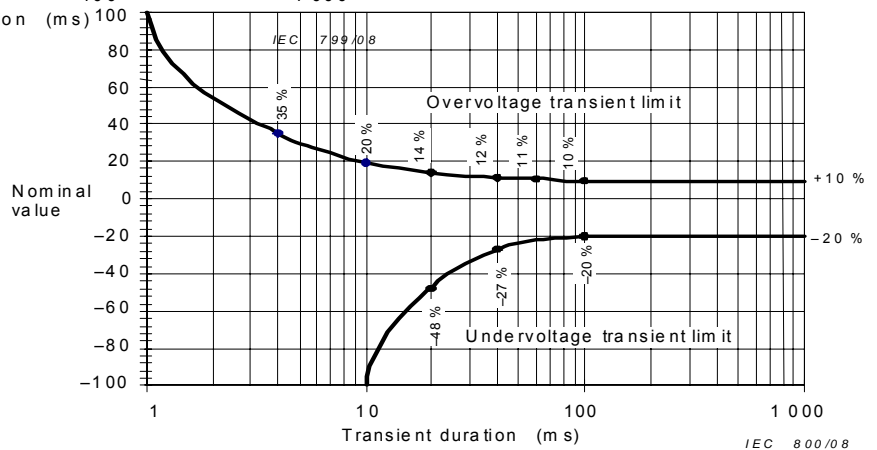


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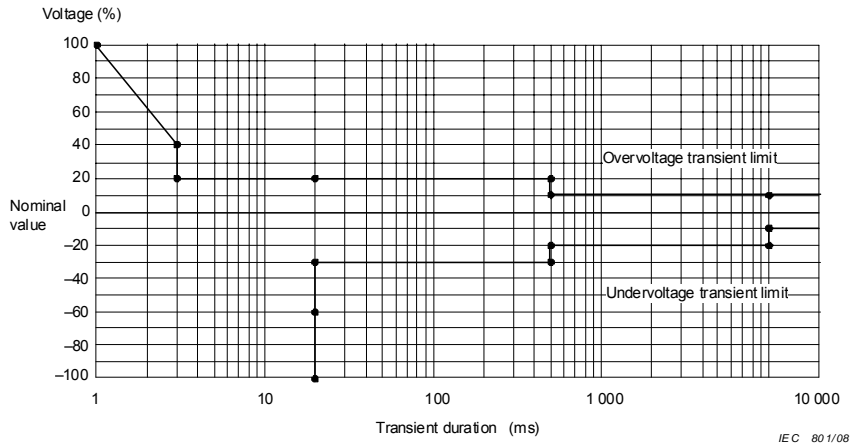


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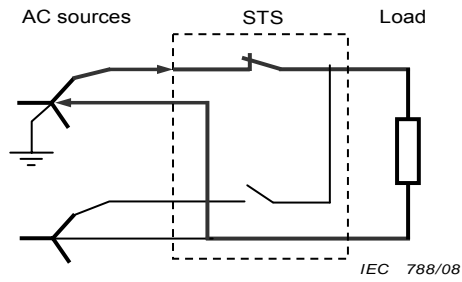
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(C/2 C/1

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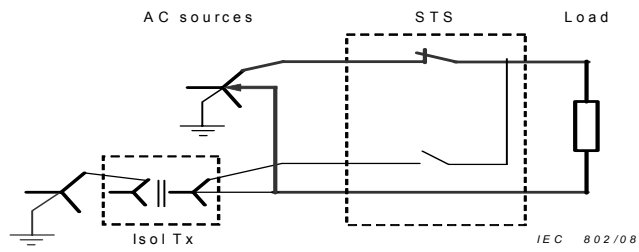
STS

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.A.Ç

STS

C/2

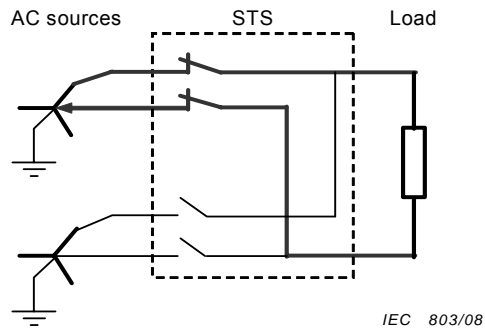
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(C/3) A.C

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.A.Ç

STS - C/3

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STS (C/3)

STS

STS

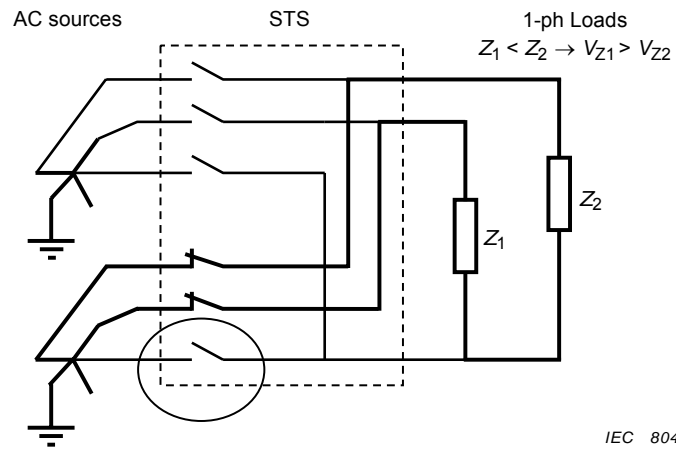
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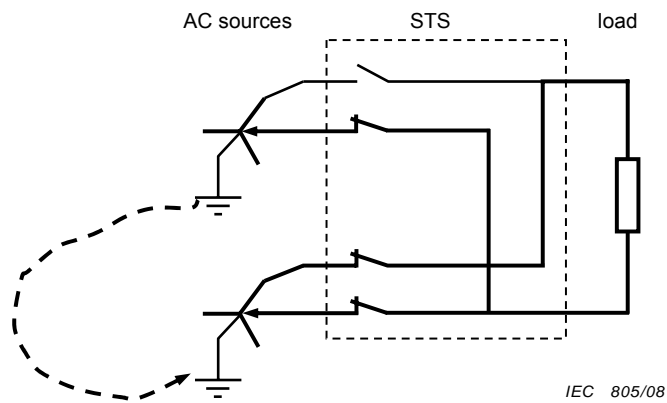
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EMC 62310-2 IEC

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IEC62310-3	STS		
	(model)		
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/ / /	(rated phase r.m.s value)		A
/ / /	r.m.s (ph-ph/ph-neutral and input tolerance)		V +/- %
/ / /			Hz + / - %
/ / /	Wires (# Ph + N + E) per source		
	-		
/ / /	(2 or more)		
	(TNC, TNS, TT or IT)	-	
/ / /	Power poles switched (1,2,3 or 4)		
/ /	(XX YY B IEC ST)		
	:	-	-
/ / /			kA ms
	(PC type only)		kA ms
/ / /	(% of rated phase current)		% 10 min
			% 1 min
			% 1 s
/ / /	(% of rated phase current)		% 100 ms
	:	-	-

IEC62310-3		STS		
C	(% of rated phase current)	-		%
		-		
	STS (yes or no)	-		
	STS (yes or no)	-		
D2	()			ms
			-	-
/ / /	- Break Before Make (open transition) or - Make Before Break (closed transition)			
			-	-
B				Figure B
Table 1	(synchronous)			ms
/ / /	(asynchronous)			ms
/ /				
/ / /	("xxx" %) :		if load > ___ %
/ /				W max
			-	-
	(x x)			mm
				kg
IEC 60529				IP
				°C
				°C
				m
				%
/ /	1 m			dBA
			-	-
	()			
	:		-	-
IEC 62310-2				
			-	-
	Maintenance bypass			Yes <input type="checkbox"/> No <input type="checkbox"/>
				Manual <input type="checkbox"/> Auto <input type="checkbox"/>

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STS

F.1

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F/1

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F/1

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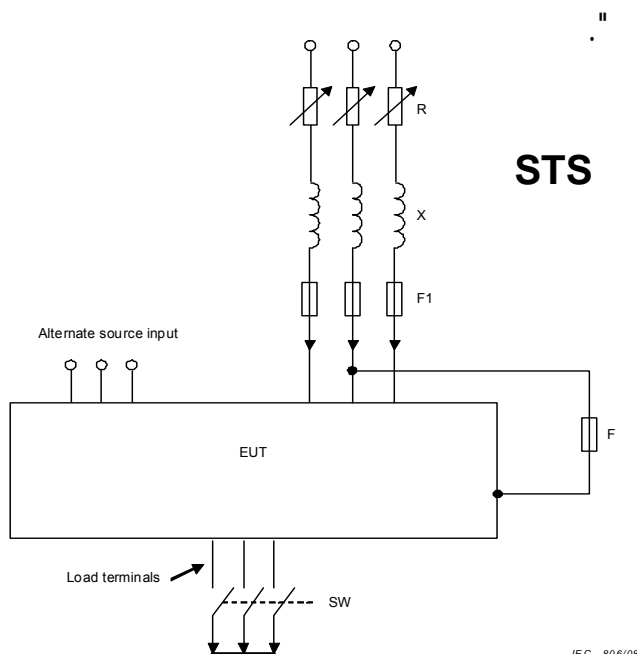
N

-- F/1

.r.m.s

A		ms	<i>n</i>
$I \leq 1\,500$	0,95	5	1,41
$1\,500 < I \leq 3\,000$	0,9	5	1,42
$3\,000 < I \leq 4\,500$	0,8	5	1,47
$4\,500 < I \leq 6\,000$	0,7	5	1,53
$6\,000 < I \leq 10\,000$	0,5	5	1,7
$10\,000 < I \leq 20\,000$	0,3	10	2,0
$20\,000 < I \leq 50\,000$	0,25	15	2,1
$50\,000 < I$	0,2	15	2,2

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a	b	c	d		e	
			mm ²		mm ²	
6	0,75	1,5	0,5	1,5		
8	1	2,5	0,75	2,5		
10	1	2,5	0,75	2,5		
12	1	2,5	0,75	2,5		
16	1,5	4	1	4		
20	1,5	6	1	4		
25	2,5	6	1,5	4		
32	2,5	10	1,5	6		
40	4	16	2,5	10		
63	6	25	6	16		
80	10	35	10	25		
100	16	50	16	35		
125	25	70	25	50		
160	35	95	35	70		

200	50	120	50	95
250	70	150	70	120
315	95	240	95	185
:				

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