

DRAFT - PRODUCT SPECIFICATION

Description

Transformer HF/DAB/22kW/840V/90-140kHz/THT/Leak=28uH



Customer

PRAX

Cust P/N

Prax P/N

PI-103734-00

Edition

EDA

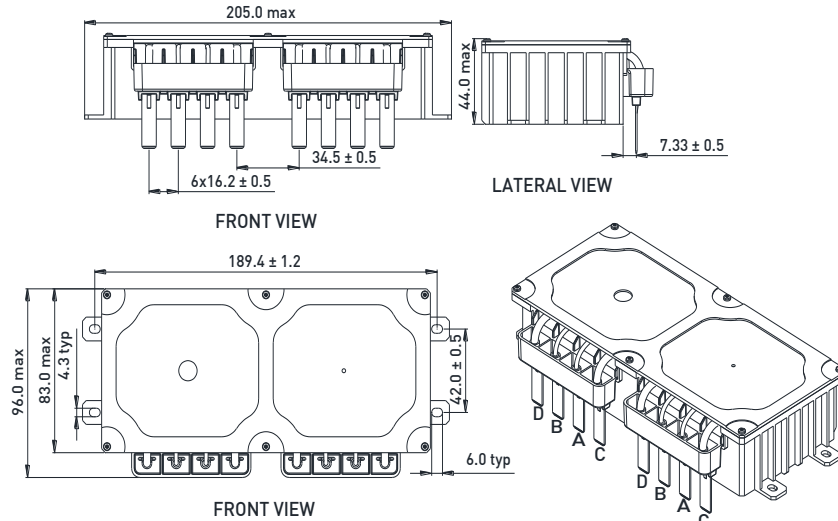
Date

29-Jan-2025

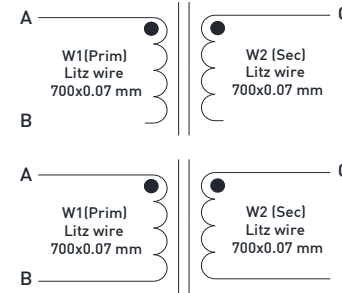
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DIMENSIONS



ELECTRICAL DIAGRAM



APPLIED STANDARDS & NOTES

Product designed according to

- 1 RoHS directive
- 2 All materials UL approved
- 3 PCB blade terminal: 8,0x0,9 mm
- 4 PCB blade terminal length: 30 mm
- 5 W1 windings connected in series
- 6 W2 windings connected in series
- 7 Creepage and clearance: 7 mm minimum.

MARKING

Marked on top side of box as follows:

PI-103734-00 EDA
PRAX WW/YY

WW Week
YY Year

WORKING CONDITIONS

Rated power	22 kW
Application	Dual Active Bridge (DAB)
Working Voltage	1680 V
Operating frequency	90-140 kHz
Turns ratio (W1:W2)	1,80 : 1,00
Primary Inductance (W1)	600 uH minimum
Leakage inductance (W1)	28 uH ± 10%
DCR Primary (W1)	40,0 mOhms max at 25°C
DCR Secondary (W2)	9,5 mOhms max at 25°C
Copper losses (120°C)	See table
Core losses (120°C)	See table
Estimated temperature rise	See table
Operating temperature	-40°C to 125°C

Operating temperature includes component self heating

Operating points (typical values at 120°C) - per transformer

Op. Point	Prim Voltage	Iprim	Isec	Freq	Core losses	Copper losses	Total losses	AT
1	840 V	13,49 A	25,80 A	140 kHz	39,57 W	22,22 W	61,79 W	50 °C
2	650 V	20,73 A	38,09 A	90 kHz	35,57 W	42,60 W	78,17 W	55 °C

Temperature rise consider water cooling.

Primary and secondary currents defined in RMS.

Losses per transformer. Total losses must be x2 (123,58 W and 156,34 W).

Edition	Change Description	Changed by	Date
A	First edition - Preliminary design.	DP	29-1-25
A			
B			
C			

Units: mm / General dimension tolerance unless otherwise stated: ±0,3
Product specification draft has the only purpose to communicate product characteristics, tested or theoretically estimated, of a preliminary design. It is not the product specification resulting of the completed product development process.

PARAMETERS TESTED (per transformer)

Parameter	Min	Typ	Max	Unit	Condition
Inductance (W1)	600	-	1200	uH	100kHz, 0,1Vac
Leakage (W1)	23,8	28,0	32,2	uH	100kHz, 0,1Vac
Turns ratio	1,8	1,0	-		100kHz, 0,1Vac
Hi-Pot (W1,2-Core)	4000		Vac	50 Hz, 2mA, 2s	
Hi-Pot (W1-W2)	4000		Vac	50 Hz, 2mA, 2s	

Designed by DP
Approved by PC



PRODUCT SPECIFICATION-DRAFT

Description

Transformer HF/DAB/30kW/1000V/50-200kHz/Leads/Lk=33.6uH

Customer

PRAX

Cust P/N

Prax P/N

PI-103735-00

Edition

EDA

Date

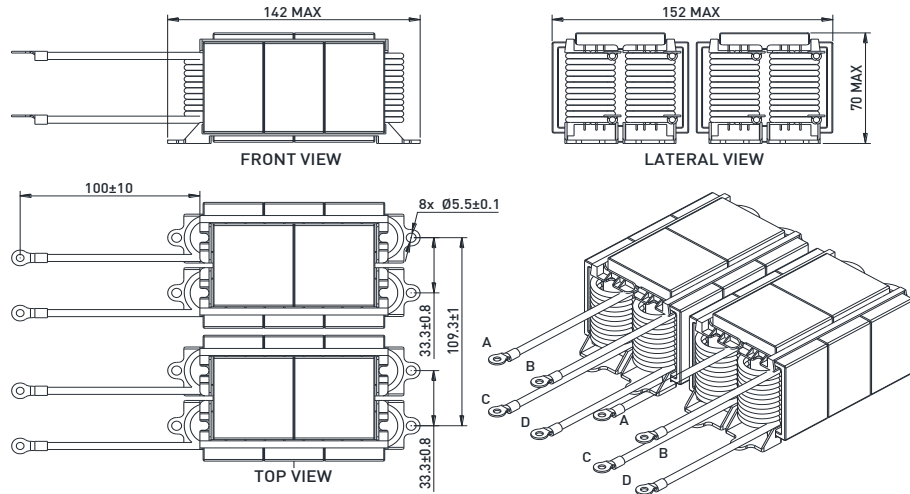
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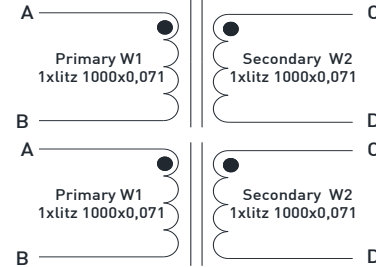
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DIMENSIONS



ELECTRICAL DIAGRAM



APPLIED STANDARDS & NOTES

Product designed according to

- 1 RoHS and REACH directive
- 2 All materials UL approved
- 3 W1 windings connected in parallel
- 4 W2 windings connected in parallel
- 5 Creepage and clearance: 4 mm minimum

WORKING CONDITIONS

Rated power	30 kW
Application	Dual Active Bridge (DAB)
Working Voltage	1000 Vdc
Operating frequency	50-200 kHz
Turns ratio (W1:W2)	12 : 12
Primary Inductance (W1)	250 uH ± 10%
Leakage inductance (W1)	33,6 uH ± 10%
DCR Primary (W1)	17,2 mOhms at 23±3°C
DCR Secondary (W2)	17,2 mOhms at 23±3°C
Copper losses (100°C)	See table
Core losses (100°C)	See table
Estimated temperature rise	See table
Operating temperature	-40°C to 125°C

Operating temperature includes component self heating

Operating points (typical values at 100°C, per transformer)

Op. Point	Prim Voltage	Current	Freq	Core losses	Copper losses	Total losses	AT
1	600 V	26,25 A	50 kHz	29,08 W	27,24 W	56,32 W	45 °C
2	800 V	10,25 A	100 kHz	24,71 W	5,90 W	30,61 W	45 °C
3	1000 V	8,9 A	150 kHz	27,14 W	6,65 W	33,79 W	45 °C
4	1000 V	8,9 A	200 kHz	21,56 W	9,72 W	31,28 W	35 °C

Temperature rise considering air cooling (air speed=2 m/s)

Losses per transformer. Total losses must be x2 (112,64 W, 61,22 W, 67,58 W and 62,56 W)

Edition	Change Description	Changed by	Date
A	First edition - Preliminary design	AH	29-1-25

MARKING

Marked on lateral side of box as follows:

PI-103735-00 EDA
PRAX WW/YY

WW Week
YY Year

PARAMETERS TESTED (per transformer)

Parameter	Min	Typ	Max	Unit	Condition
Inductance (W1)	225,0	250,0	275,0	uH	10kHz, 0,1Vac
Leakage (W1)	30,24	33,6	36,96	uH	10kHz, 0,1Vac
DCR (W1)			17,2	mΩ	23±3°C
Turns ratio	-	1 : 1	-	-	10kHz, 0,1Vac
Hi-Pot (W1-W2)	4000			Vac	50 Hz, 2mA, 2s

Units: mm / General dimension tolerance unless otherwise stated: ±0,3

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Designed by AH
Approved by DP

