Overview PCB transformers

Power at a glance

Typ	Features	Rated input voltage	Rated output voltage	0.35 VA	0.5 VA	0.7 VA	1.0 VA	1.2 VA	1.5 VA	1.9 VA	2.0 VA	2.1 VA	2.3 VA
VBN	short circuit proof, ta 70° C Cl.B	230 Vac	6 - 36 Vac										
VB	short circuit proof, ta 70° C Cl.B	230 Vac	6 - 48 Vac										
AVB	short circuit proof, ta 70° C Cl.B, double input voltage	2 x 115 Vac	6 - 48 Vac										
VBEI	short circuit proof, geringe Bauhöhe, ta 70° C Cl.B	230 Vac	6 - 48 Vac										
ECO2003	short circuit proof, low no-load losses	230 Vac	6 - 24 Vac										
VCN	ta 70° C Cl.B	230 Vac	6 - 36 Vac										
VC		230 Vac	6 - 48 Vac										
VCM	with fixing points	230 Vac	6 - 48 Vac										
VR	fixing by foot plate	230 Vac	8 - 36 Vac										
PT	short circuit proof, fixing by foot plate	230 Vac	6 - 48 Vac										
EP	encapsulated bobbin	230 Vac	2 x 6 - 2 x 18 Vac										

BLOCK

2.5 VA	2.8 VA	3.0 VA	3.2 VA	4.5 VA	5.0 VA	6.0 VA	6.5 VA	7.5 VA	10.0 VA	12.0 VA	13.0 VA	16.0 VA	18.0 VA	20.0 VA	22.0 VA	25.0 VA	28.0 VA	30.0 VA	33.0 VA	35.0 VA	36.0 VA	44.0 VA	50.0 VA	Page
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Short circuit proof PCB transformer
VBN

General Data

- Rated input voltage 230 Vac
- Rated output voltage 6 - 2 x 18 Vac
- Rated power 0.7 - 3 VA
- Insulation class B
- Maximum ambient temperature 70 °C
- Efficiency up to 59 %
- Degree of protection IP 00

Advantages

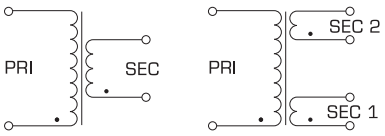
- Minimum size at high output
- Unconditionally short-circuit proof
- Also with double output voltage for series or parallel connection
- Designed for high ambient temperatures
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material

Applications

As a mains transformer for adjustment of the voltage and simple electrical isolation.

As a safety isolating transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Mains transformer
to: VDE 0570 Teil 2-1, DIN EN 61558-2-1, EN 61558-2-1, IEC 61558-2-1

Safety isolating transformer
to: VDE 0570 Teil 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6

Short circuit proof PCB transformer
VBN

VBN also available with 115 Vac rated input voltage!

Electrical data

Type	VBN 0,7/1/..	VBN 0,7/2/..	VBN 1,5/1/..	VBN 1,5/2/..	VBN 1,9/1/..	VBN 1,9/2/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	6 Vac: VBN 0,7/1/6 7,5 Vac: VBN 0,7/1/7,5 9 Vac: VBN 0,7/1/9 12 Vac: VBN 0,7/1/12 15 Vac: VBN 0,7/1/15 18 Vac: VBN 0,7/1/18 24 Vac: VBN 0,7/1/24	2x6 Vac: VBN 0,7/2/6 2x7,5 Vac: VBN 0,7/2/7,5 2x9 Vac: VBN 0,7/2/9 2x12 Vac: VBN 0,7/2/12 2x15 Vac: VBN 0,7/2/15 2x18 Vac: VBN 0,7/2/18*	6 Vac: VBN 1,5/1/6 8 Vac: VBN 1,5/1/7,5 9 Vac: VBN 1,5/1/9 12 Vac: VBN 1,5/1/12 15 Vac: VBN 1,5/1/15 18 Vac: VBN 1,5/1/18 24 Vac: VBN 1,5/1/24	2x6 Vac: VBN 1,5/2/6 2x8 Vac: VBN 1,5/2/7,5 2x9 Vac: VBN 1,5/2/9 2x12 Vac: VBN 1,5/2/12 2x15 Vac: VBN 1,5/2/15 2x18 Vac: VBN 1,5/2/18*	6 Vac: VBN 1,9/1/6 7,5 Vac: VBN 1,9/1/7,5 9 Vac: VBN 1,9/1/9 12 Vac: VBN 1,9/1/12 15 Vac: VBN 1,9/1/15 18 Vac: VBN 1,9/1/18 24 Vac: VBN 1,9/1/24	2x6 Vac: VBN 1,9/2/6 2x7,5 Vac: VBN 1,9/2/7,5 2x9 Vac: VBN 1,9/2/9 2x12 Vac: VBN 1,9/2/12 2x15 Vac: VBN 1,9/2/15 2x18 Vac: VBN 1,9/2/18*
Rated Power	0.7 VA	0.7 VA	1.5 VA	1.5 VA	1.9 VA	1.9 VA
No-load voltage (app. x factor)	1.60	1.60	1.44	1.44	1.43	1.43
No-load loss (typ.)	2.20 W	2.20 W	1.60 W	1.60 W	1.40 W	1.40 W
Efficiency	30 %	30 %	51 %	51 %	54.5 %	54.5 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer	Safety isolating transformer *Mains transformer
Approvals						
Approvals	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation
Environment						
Ambient temperature max.	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	B	B	B	B	B	B
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

VBN also available with 115 Vac rated input voltage!

Short circuit proof PCB transformer
VBN

Electrical data

Type	VBN 2,1/1/..	VBN 2,1/2/..	VBN 2,3/1/..	VBN 2,3/2/..	VBN 3,0/1/..	VBN 3,0/2/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	6 Vac: VBN 2,1/1/6 7,5 Vac: VBN 2,1/1/7,5 9 Vac: VBN 2,1/1/9 12 Vac: VBN 2,1/1/12 15 Vac: VBN 2,1/1/15 18 Vac: VBN 2,1/1/18 24 Vac: VBN 2,1/1/24	2x6 Vac: VBN 2,1/2/6 2x7,5 Vac: VBN 2,1/2/7,5 2x9 Vac: VBN 2,1/2/9 2x12 Vac: VBN 2,1/2/12 2x15 Vac: VBN 2,1/2/15 2x18 Vac: VBN 2,1/2/18*	6 Vac: VBN 2,3/1/6 8 Vac: VBN 2,3/1/7,5 9 Vac: VBN 2,3/1/9 12 Vac: VBN 2,3/1/12 15 Vac: VBN 2,3/1/15 18 Vac: VBN 2,3/1/18 24 Vac: VBN 2,3/1/24	2x6 Vac: VBN 2,3/2/6 2x8 Vac: VBN 2,3/2/7,5 2x9 Vac: VBN 2,3/2/9 2x12 Vac: VBN 2,3/2/12 2x15 Vac: VBN 2,3/2/15 2x18 Vac: VBN 2,3/2/18*	6 Vac: VBN 3,0/1/6 7,5 Vac: VBN 3,0/1/7,5 9 Vac: VBN 3,0/1/9 12 Vac: VBN 3,0/1/12 15 Vac: VBN 3,0/1/15 18 Vac: VBN 3,0/1/18 24 Vac: VBN 3,0/1/24	2x6 Vac: VBN 3,0/2/6 2x7,5 Vac: VBN 3,0/2/7,5 2x9 Vac: VBN 3,0/2/9 2x12 Vac: VBN 3,0/2/12 2x15 Vac: VBN 3,0/2/15 2x18 Vac: VBN 3,0/2/18*
Rated Power	2.1 VA	2.1 VA	2.3 VA	2.3 VA	3.0 VA	3.0 VA
No-load voltage (app. x factor)	1.68	1.68	1.43	1.43	1.47	1.47
No-load loss (typ.)	0.90 W	0.90 W	0.90 W	0.90 W	0.90 W	0.90 W
Efficiency	53 %	53 %	59 %	59 %	59 %	59 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer	Safety isolating transformer *Mains transformer
Approvals						
Approvals	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation
Environment						
Ambient temperature max.	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	B	B	B	B	B	B
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

Short circuit proof PCB transformer
VBN

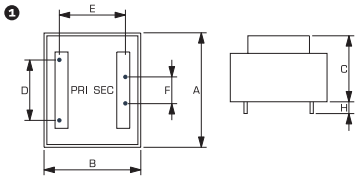
30

Mechanical data

Typ	Terminals	Pin (ø)	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H
VBN 0,7/1/..	Pins for printed circuit boards	0.8 mm	EI 30/5,5	0.04 kg	1	32.5	27.3	15	20	20	10	-	6.7
VBN 0,7/2/..	Pins for printed circuit boards	0.8 mm	EI 30/5,5	0.04 kg	2	32.5	27.3	15	20	20	10	5	6.7
VBN 1,5/1/..	Pins for printed circuit boards	0.8 mm	EI 30/10,5	0.08 kg	1	32.3	27.3	21.8	20	20	10	-	5
VBN 1,5/2/..	Pins for printed circuit boards	0.8 mm	EI 30/10,5	0.07 kg	2	32.3	27.3	21.8	20	20	10	5	5
VBN 1,9/1/..	Pins for printed circuit boards	0.8 mm	EI 30/12,5	0.08 kg	1	32.3	27.3	23.8	20	20	10	-	5
VBN 1,9/2/..	Pins for printed circuit boards	0.8 mm	EI 30/12,5	0.08 kg	2	32.3	27.3	23.8	20	20	10	5	5
VBN 2,1/1/..	Pins for printed circuit boards	0.8 mm	EI 30/15,5	0.10 kg	1	32.3	27.3	26.8	20	20	10	-	5
VBN 2,1/2/..	Pins for printed circuit boards	0.8 mm	EI 30/15,5	0.10 kg	2	32.3	27.3	26.8	20	20	10	5	5
VBN 2,3/1/..	Pins for printed circuit boards	0.8 mm	EI 30/18,0	0.11 kg	1	32.3	27.3	29	20	20	10	-	5
VBN 2,3/2/..	Pins for printed circuit boards	0.8 mm	EI 30/18,0	0.11 kg	2	32.3	27.3	29	20	20	10	5	5
VBN 3,0/1/..	Pins for printed circuit boards	0.8 mm	EI 30/23	0.14 kg	1	32.3	27.3	34	20	20	10	-	5
VBN 3,0/2/..	Pins for printed circuit boards	0.8 mm	EI 30/23	0.14 kg	2	32.3	27.3	34	20	20	10	5	5

Dimension pictures

1



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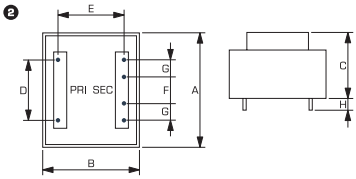


Short circuit proof PCB transformer
VB

General Data

- Rated input voltage 230 Vac
- Rated output voltage 6 - 2 x 24 Vac
- Rated power 0.35 - 3.2 VA
- Insulation class B
- Maximum ambient temperature 70 °C
- Efficiency up to 58 %
- Degree of protection IP 00

Advantages

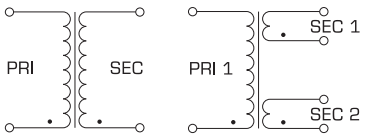
- Minimum size at high output
- Unconditionally short-circuit proof
- Also with double output voltage for series or parallel connection
- Designed for high ambient temperatures
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material

Applications

As a mains transformer for adjustment of the voltage and simple electrical isolation.

As a safety isolating transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit diagram



Standards

Mains transformer
to: VDE 0570 Teil 2-1, DIN EN 61558-2-1, EN 61558-2-1, IEC 61558-2-1, UL 5085-1/-2, CSA 22.2 No.66

Safety isolating transformer
to: VDE 0570 Teil 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6, UL 5085-1/-2, CSA 22.2 No.66

Certifications

ENEC 10 (VDE), UL 5085-1/-2, CSA 22.2 No.66

Short circuit proof PCB transformer
VB

Electrical data

Type	VB 0,35/1/..	VB 0,35/2/..	VB 0,5/1/..	VB 0,5/2/..	VB 1,0/1/..	VB 1,0/2/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	6 Vac: VB 0,35/1/6 8 Vac: VB 0,35/1/8 9 Vac: VB 0,35/1/9 12 Vac: VB 0,35/1/12 15 Vac: VB 0,35/1/15 18 Vac: VB 0,35/1/18 24 Vac: VB 0,35/1/24	2x6 Vac: VB 0,35/2/6 2x8 Vac: VB 0,35/2/8 2x9 Vac: VB 0,35/2/9 2x12 Vac: VB 0,35/2/12 2x15 Vac: VB 0,35/2/15* 2x18 Vac: VB 0,35/2/18* 2x24 Vac: VB 0,35/2/24*	6 Vac: VB 0,5/1/6 8 Vac: VB 0,5/1/8 9 Vac: VB 0,5/1/9 12 Vac: VB 0,5/1/12 15 Vac: VB 0,5/1/15 18 Vac: VB 0,5/1/18 24 Vac: VB 0,5/1/24	2x6 Vac: VB 0,5/2/6 2x8 Vac: VB 0,5/2/8 2x9 Vac: VB 0,5/2/9 2x12 Vac: VB 0,5/2/12 2x15 Vac: VB 0,5/2/15* 2x18 Vac: VB 0,5/2/18* 2x24 Vac: VB 0,5/2/24*	6 Vac: VB 1,0/1/6 8 Vac: VB 1,0/1/8 9 Vac: VB 1,0/1/9 12 Vac: VB 1,0/1/12 15 Vac: VB 1,0/1/15 18 Vac: VB 1,0/1/18 24 Vac: VB 1,0/1/24	2x6 Vac: VB 1,0/2/6 2x8 Vac: VB 1,0/2/8 2x9 Vac: VB 1,0/2/9 2x12 Vac: VB 1,0/2/12 2x15 Vac: VB 1,0/2/15* 2x18 Vac: VB 1,0/2/18* 2x24 Vac: VB 1,0/2/24*
Rated Power	0.35 VA	0.35 VA	0.50 VA	0.50 VA	1.00 VA	1.00 VA
No-load voltage (app. x factor)	1.80	1.80	1.80	1.80	1.40	1.40
No-load loss (typ.)	1.30 W	1.30 W	1.10 W	1.10 W	0.90 W	0.90 W
Efficiency	30 %	30 %	40 %	40 %	55 %	55 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)
Approvals						
Approvals	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)
Environment						
Ambient temperature max.	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

Short circuit proof PCB transformer
VB

Electrical data

Type	VB 1,2/1/..	VB 1,2/2/..	VB 1,5/1/..	VB 1,5/2/..	VB 2,0/1/..	VB 2,0/2/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	6 Vac: VB 1,2/1/6 8 Vac: VB 1,2/1/8 9 Vac: VB 1,2/1/9 12 Vac: VB 1,2/1/12 15 Vac: VB 1,2/1/15 18 Vac: VB 1,2/1/18 24 Vac: VB 1,2/1/24	2x6 Vac: VB 1,2/2/6 2x8 Vac: VB 1,2/2/8 2x9 Vac: VB 1,2/2/9 2x12 Vac: VB 1,2/2/12 2x15 Vac: VB 1,2/2/15* 2x18 Vac: VB 1,2/2/18* 2x24 Vac: VB 1,2/2/24*	6 Vac: VB 1,5/1/6 8 Vac: VB 1,5/1/8 9 Vac: VB 1,5/1/9 12 Vac: VB 1,5/1/12 15 Vac: VB 1,5/1/15 18 Vac: VB 1,5/1/18 24 Vac: VB 1,5/1/24	2x6 Vac: VB 1,5/2/6 2x8 Vac: VB 1,5/2/8 2x9 Vac: VB 1,5/2/9 2x12 Vac: VB 1,5/2/12 2x15 Vac: VB 1,5/2/15* 2x18 Vac: VB 1,5/2/18* 2x24 Vac: VB 1,5/2/24*	6 Vac: VB 2,0/1/6 8 Vac: VB 2,0/1/8 9 Vac: VB 2,0/1/9 12 Vac: VB 2,0/1/12 15 Vac: VB 2,0/1/15 18 Vac: VB 2,0/1/18 24 Vac: VB 2,0/1/24	2x6 Vac: VB 2,0/2/6 2x8 Vac: VB 2,0/2/8 2x9 Vac: VB 2,0/2/9 2x12 Vac: VB 2,0/2/12 2x15 Vac: VB 2,0/2/15* 2x18 Vac: VB 2,0/2/18* 2x24 Vac: VB 2,0/2/24*
Rated Power	1.20 VA	1.20 VA	1.50 VA	1.50 VA	2.00 VA	2.00 VA
No-load voltage (app. x factor)	1.35	1.35	1.45	1.45	1.70	1.70
No-load loss (typ.)	1.00 W	1.00 W	1.00 W	1.00 W	1.10 W	1.10 W
Efficiency	57 %	57 %	57 %	57 %	52 %	52 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)
Approvals						
Approvals	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)
Environment						
Ambient temperature max.	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

Short circuit proof PCB transformer
VB

Electrical data

Type	VB 2,3/1/..	VB 2,3/2/..	VB 2,8/1/..	VB 2,8/2/..	VB 3,2/1/..	VB 3,2/2/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	6 Vac: VB 2,3/1/6 8 Vac: VB 2,3/1/8 9 Vac: VB 2,3/1/9 12 Vac: VB 2,3/1/12 15 Vac: VB 2,3/1/15 18 Vac: VB 2,3/1/18 24 Vac: VB 2,3/1/24	2x6 Vac: VB 2,3/2/6 2x8 Vac: VB 2,3/2/8 2x9 Vac: VB 2,3/2/9 2x12 Vac: VB 2,3/2/12 2x15 Vac: VB 2,3/2/15* 2x18 Vac: VB 2,3/2/18* 2x24 Vac: VB 2,3/2/24*	6 Vac: VB 2,8/1/6 8 Vac: VB 2,8/1/8 9 Vac: VB 2,8/1/9 12 Vac: VB 2,8/1/12 15 Vac: VB 2,8/1/15 18 Vac: VB 2,8/1/18 24 Vac: VB 2,8/1/24	2x6 Vac: VB 2,8/2/6 2x8 Vac: VB 2,8/2/8 2x9 Vac: VB 2,8/2/9 2x12 Vac: VB 2,8/2/12 2x15 Vac: VB 2,8/2/15* 2x18 Vac: VB 2,8/2/18* 2x24 Vac: VB 2,8/2/24*	6 Vac: VB 3,2/1/6 8 Vac: VB 3,2/1/8 9 Vac: VB 3,2/1/9 12 Vac: VB 3,2/1/12 15 Vac: VB 3,2/1/15 18 Vac: VB 3,2/1/18 24 Vac: VB 3,2/1/24	2x6 Vac: VB 3,2/2/6 2x8 Vac: VB 3,2/2/8 2x9 Vac: VB 3,2/2/9 2x12 Vac: VB 3,2/2/12 2x15 Vac: VB 3,2/2/15* 2x18 Vac: VB 3,2/2/18* 2x24 Vac: VB 3,2/2/24*
Rated Power	2.30 VA	2.30 VA	2.80 VA	2.80 VA	3.20 VA	3.20 VA
No-load voltage (app. x factor)	1.43	1.43	1.80	1.80	1.70	1.70
No-load loss (typ.)	0.90 W	0.90 W	0.90 W	0.90 W	1.00 W	1.00 W
Efficiency	59 %	59 %	57 %	57 %	58 %	58 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)
Approvals						
Approvals	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)
Environment						
Ambient temperature max.	70 °C	70 °C	70 °C	70 °C	50 °C	50 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

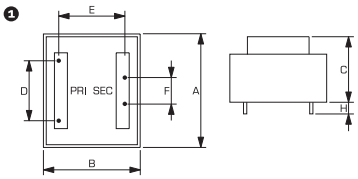
Short circuit proof PCB transformer
VB

30 Mechanical data

Typ	Terminals	Pin (ø)	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H
VB 0,35/1/..	Pins for printed circuit boards	0.6 mm	EE 20/6,1	0.02 kg	❶	22	22.7	15	15	15	5	-	5
VB 0,35/2/..	Pins for printed circuit boards	0.6 mm	EE 20/6,1	0.02 kg	❷	22	22.7	15	15	15	5	5	5
VB 0,5/1/..	Pins for printed circuit boards	0.6 mm	EE 20/10,5	0.04 kg	❶	22	22.7	19	15	15	5	-	5
VB 0,5/2/..	Pins for printed circuit boards	0.6 mm	EE 20/10,5	0.04 kg	❷	22	22.7	19	15	15	5	5	5
VB 1,0/1/..	Pins for printed circuit boards	0.8 mm	EI 30/10,5	0.07 kg	❶	32.3	27.3	21.8	20	20	10	-	5
VB 1,0/2/..	Pins for printed circuit boards	0.8 mm	EI 30/10,5	0.07 kg	❷	32.3	27.3	21.8	20	20	10	5	5
VB 1,2/1/..	Pins for printed circuit boards	0.8 mm	EI 30/12,5	0.08 kg	❶	32.3	27.3	23.8	20	20	10	-	5
VB 1,2/2/..	Pins for printed circuit boards	0.8 mm	EI 30/12,5	0.08 kg	❷	32.3	27.3	23.8	20	20	10	5	5
VB 1,5/1/..	Pins for printed circuit boards	0.8 mm	EI 30/12,5	0.08 kg	❶	32.3	27.3	23.8	20	20	10	-	5
VB 1,5/2/..	Pins for printed circuit boards	0.8 mm	EI 30/12,5	0.08 kg	❷	32.3	27.3	23.8	20	20	10	5	5
VB 2,0/1/..	Pins for printed circuit boards	0.8 mm	EI 30/15,5	0.10 kg	❶	32.3	27.3	26.8	20	20	10	-	5
VB 2,0/2/..	Pins for printed circuit boards	0.8 mm	EI 30/15,5	0.10 kg	❷	32.3	27.3	26.8	20	20	10	5	5
VB 2,3/1/..	Pins for printed circuit boards	0.8 mm	EI 30/18,0	0.11 kg	❶	32.3	27.3	29	20	20	10	-	5
VB 2,3/2/..	Pins for printed circuit boards	0.8 mm	EI 30/18,0	0.11 kg	❷	32.3	27.3	29	20	20	10	5	5
VB 2,8/1/..	Pins for printed circuit boards	0.8 mm	EI 30/23,0	0.14 kg	❶	32.3	27.3	34	20	20	10	-	5
VB 2,8/2/..	Pins for printed circuit boards	0.8 mm	EI 30/23,0	0.14 kg	❷	32.3	27.3	34	20	20	10	5	5
VB 3,2/1/..	Pins for printed circuit boards	0.8 mm	EI 38/16,5	0.17 kg	❶	41	35	30.8	20	25	10	-	5
VB 3,2/2/..	Pins for printed circuit boards	0.8 mm	EI 38/16,5	0.17 kg	❷	41	35	30.8	20	25	10	5	5

Dimension pictures

❶



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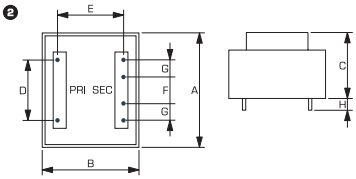
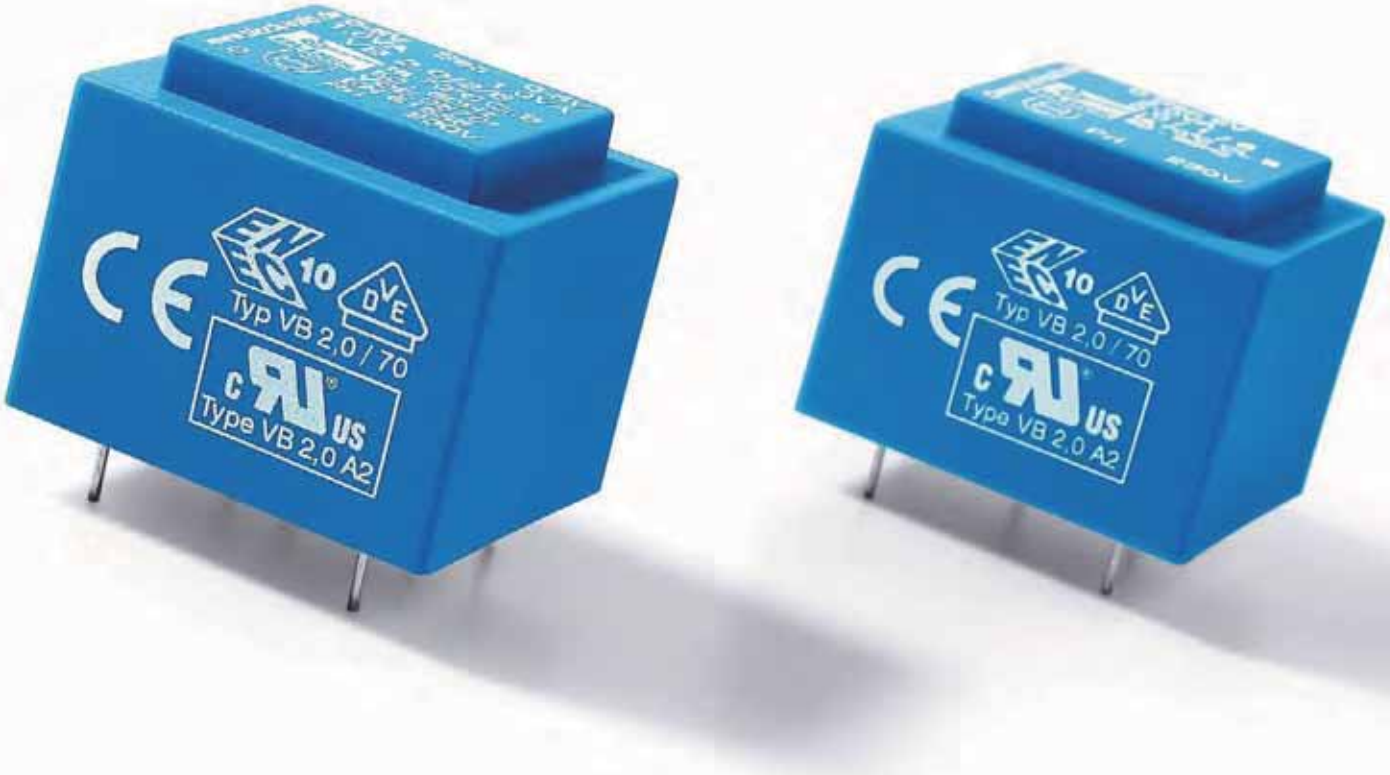



Typ VB 2,0 / 70
Type VB 2,0 A2
Typ VB 2,0 / 70
Type VB 2,0 A2

Short circuit proof PCB transformer
AVB

General Data

- Rated input voltage 2 x 115 Vac
- Rated output voltage 6 - 2 x 24 Vac
- Rated power 0.35 - 3.2 VA
- Insulation class B
- Maximum ambient temperature 70 °C
- Efficiency up to 59 %
- Degree of protection IP 00

Advantages

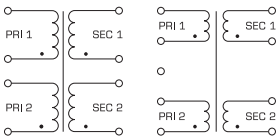
- Minimum size at high output
- Unconditionally short-circuit proof
- Double input voltage for series or parallel connection
- Also with double output voltage for series or parallel connection
- Designed for high ambient temperatures
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting and hood material

Applications

As a mains transformer for adjustment of the voltage and simple electrical isolation.

As a safety transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Mains transformer
to: VDE 0570 Teil 2-1, DIN EN 61558-2-1, EN 61558-2-1, IEC 61558-2-1, UL 5085-1/-2, CSA 22.2 No.66

Safety isolating transformer
to: VDE 0570 Teil 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6, UL 5085-1/-2, CSA 22.2 No.66

Certifications

UL 5085-1/-2, CSA 22.2 No.66

Short circuit proof PCB transformer
AVB

Electrical data

Type	AVB 0,35/2/..	AVB 0,5/2/..	AVB 1,0/2/..	AVB 1,5/2/..	AVB 2,0/2/..	AVB 2,3/2/..
Input						
Rated input Voltage	2x115 Vac	2x115 Vac	2x115 Vac	2x115 Vac	2x115 Vac	2x115 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	2x6 Vac: AVB 0,35/2/6 2x2 Vac: AVB 0,35/2/9 2x12 Vac: AVB 0,35/2/12 2x15 Vac: AVB 0,35/2/15* 2x18 Vac: AVB 0,35/2/18* 2x24 Vac: AVB 0,35/2/24*	2x6 Vac: AVB 0,5/2/6 2x8 Vac: AVB 0,5/2/8 2x9 Vac: AVB 0,5/2/9 2x12 Vac: AVB 0,5/2/12 2x15 Vac: AVB 0,5/2/15* 2x18 Vac: AVB 0,5/2/18* 2x24 Vac: AVB 0,5/2/24*	2x6 Vac: AVB 1,0/2/6 2x9 Vac: AVB 1,0/2/9 2x12 Vac: AVB 1,0/2/12 2x15 Vac: AVB 1,0/2/15 2x18 Vac: AVB 1,0/2/18* 2x24 Vac: AVB 1,0/2/24*	2x6 Vac: AVB 1,5/2/6 2x8 Vac: AVB 1,5/2/8 2x9 Vac: AVB 1,5/2/9 2x12 Vac: AVB 1,5/2/12 2x15 Vac: AVB 1,5/2/15 2x18 Vac: AVB 1,5/2/18* 2x24 Vac: AVB 1,5/2/24*	2x12 Vac: AVB 2,0/2/12	2x6 Vac: AVB 2,3/2/6 2x8 Vac: AVB 2,3/2/8 2x9 Vac: AVB 2,3/2/9 2x12 Vac: AVB 2,3/2/12 2x15 Vac: AVB 2,3/2/15 2x18 Vac: AVB 2,3/2/18* 2x24 Vac: AVB 2,3/2/24*
Rated Power	0.35 VA	0.50 VA	1.00 VA	1.50 VA	2.00 VA	2.30 VA
No-load voltage (app. x factor)	1.80	1.80	1.32	1.39	1.43	1.43
No-load loss (typ.)	1.30 W	1.10 W	0.90 W	1.00 W	0.90 W	0.90 W
Efficiency	30 %	40 %	55 %	57 %	0 %	59 %
Standards						
Classification	Safety isolating transformer *Mains transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer	Safety isolating transformer *Mains transformer
Approvals						
Approvals	cURus	cURus	cURus	cURus	cURus	cURus
Environment						
Ambient temperature max.	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof	inherently short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

Short circuit proof PCB transformer
AVB

Electrical data

Type	AVB 3,2/2/..
Input	
Rated input Voltage	2x115 Vac
Rated frequency	50 - 60 Hz
Output	
Rated output voltage: Order no.	2x6 Vac: AVB 3,2/2/6 2x9 Vac: AVB 3,2/2/9 2x12 Vac: AVB 3,2/2/12 2x15 Vac: AVB 3,2/2/15 2x18 Vac: AVB 3,2/2/18 2x24 Vac: AVB 3,2/2/24*
Rated Power	3.20 VA
No-load voltage (app. x factor)	1.57
No-load loss (typ.)	1.00 W
Efficiency	58 %
Standards	
Classification	Safety isolating transformer *Mains transformer
Approvals	
Approvals	cURus
Environment	
Ambient temperature max.	50 °C
Safety and protection	
Type	encapsulated
Class of Insulation System	VDE=B, UL=class 105
Protection index	IP 00
Safety class (prepared)	II
Short circuit strength	inherently short-circuit proof
Order numbers	
Order Number	**refer to rated output voltage**

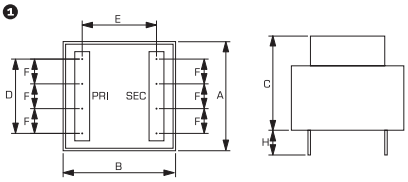
Short circuit proof PCB transformer
AVB

30 Mechanical data

Typ	Terminals	Pin (ø)	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H
AVB 0,35/2/..	Pins for printed circuit boards	0.6	EE 20/6,1	0.02 kg	1	22	22.7	15	15	15	5	-	5
AVB 0,5/2/..	Pins for printed circuit boards	0.6	EE 20/10,5	0.04 kg	1	22	22.7	19	15	15	5	-	5
AVB 1,0/2/..	Pins for printed circuit boards	0.8	EI 30/10,5	0.07 kg	2	32.3	27.3	21.8	20	20	10	5	5
AVB 1,5/2/..	Pins for printed circuit boards	0.8	EI 30/12,5	0.08 kg	2	32.3	27.3	23.8	20	20	10	5	5
AVB 2,0/2/..	Pins for printed circuit boards	0.8	EI 30/15,5	0.10 kg	2	32.3	27.3	26.8	20	20	10	5	5
AVB 2,3/2/..	Pins for printed circuit boards	0.8	EI 30/18	0.11 kg	2	32.3	27.3	34	20	20	10	5	5
AVB 3,2/2/..	Quick connect terminals	0.6 x 0.8	EI 38/16,5	0.17 kg	2	41	35	30.8	20	25	10	5	5

Dimension pictures

1



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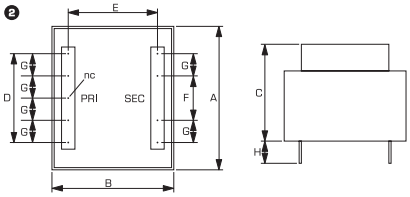
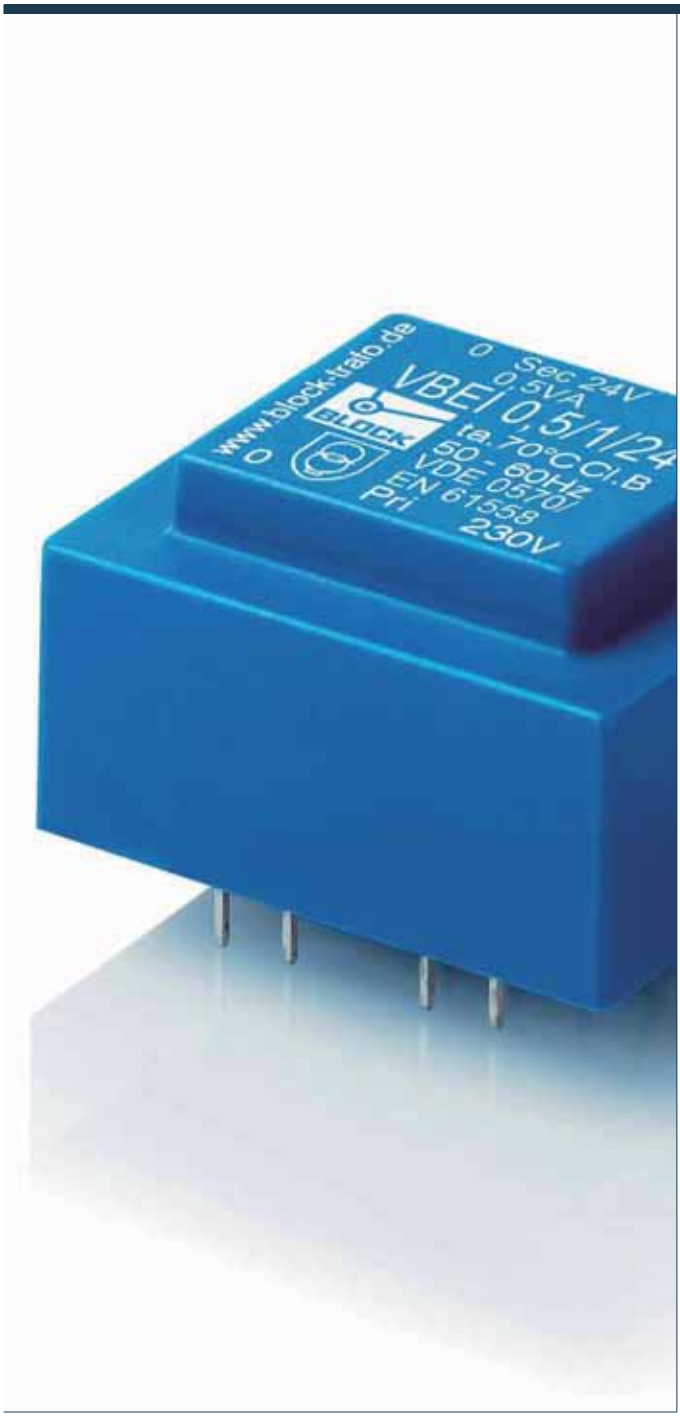


Short circuit proof PCB transformer
VBEI



General Data

- Rated input voltage 230 Vac
- Rated output voltage 6 - 2 x 24 Vac
- Rated power 0.5 VA
- Insulation class B
- Maximum ambient temperature 70 °C
- Efficiency up to 37 %
- Degree of protection IP 00

Advantages

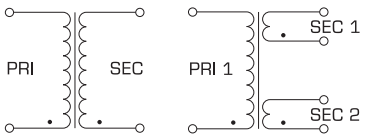
- Minimum size at high output
- Very low height
- Unconditionally short-circuit proof
- Also with double output voltage for series or parallel connection
- Designed for high ambient temperatures
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material

Applications

As a mains transformer for adjustment of the voltage and simple electrical isolation.

As a safety transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Mains transformer
to: VDE 0570 Teil 2-1, DIN EN 61558-2-1, EN 61558-2-1, IEC 61558-2-1, UL 5085-1/-2, CSA 22.2 No.66

Safety isolating transformer
to: VDE 0570 Teil 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6, UL 5085-1/-2, CSA 22.2 No.66

Certifications

ENEC 10 (VDE), UL 5085-1/-2, CSA 22.2 No.66

Short circuit proof PCB transformer
VBEI

Electrical data

Type	VBEI 0,5/1/..	VBEI 0,5/2/..
Input		
Rated input voltage	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz
Output		
Rated output voltage: Order no.	6 Vac: VBEI 0,5/1/6 8 Vac: VBEI 0,5/1/8 9 Vac: VBEI 0,5/1/9 12 Vac: VBEI 0,5/1/12 15 Vac: VBEI 0,5/1/15 18 Vac: VBEI 0,5/1/18 24 Vac: VBEI 0,5/1/24	2x6 Vac: VBEI 0,5/2/6 2x8 Vac: VBEI 0,5/2/8 2x9 Vac: VBEI 0,5/2/9 2x12 Vac: VBEI 0,5/2/12 2x15 Vac: VBEI 0,5/2/15 2x18 Vac: VBEI 0,5/2/18* 2x24 Vac: VBEI 0,5/2/24*
Rated Power	0.50 VA	0.50 VA
No-load voltage (app. x factor)	1.57	1.57
No-load loss (typ.)	1.10 W	1.10 W
Efficiency	37 %	37 %
Standards		
Classification	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)
Approvals		
Approvals	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)
Environment		
Ambient temperature max.	70 °C	70 °C
Safety and protection		
Type	encapsulated	encapsulated
Class of Insulation System	VDE=B, UL=class 105	VDE=B, UL=class 105
Protection index	IP 00	IP 00
Safety class (prepared)	II	II
Short circuit strength	inherently short-circuit proof	inherently short-circuit proof
Order numbers		
Order Number	**VBEI 0,5/1/6**	**VBEI 0,5/2/6**

Short circuit proof PCB transformer
VBEI

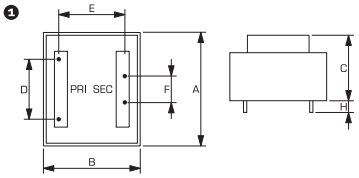
30

Mechanical data

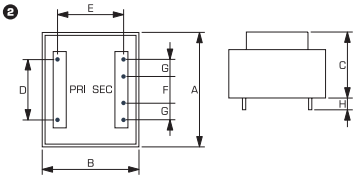
Typ	Terminals	Pin (ø)	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H
VBEI 0,5/1/..	Pins for printed circuit boards	0.8 mm	EI 30/5,0	0.42 kg	❶	32.5	27.3	15	20	20	10	5	6.7
VBEI 0,5/2/..	Pins for printed circuit boards	0.8 mm	EI 30/5,0	0.42 kg	❷	32.5	27.3	15	20	20	10	5	6.7

Dimension pictures

❶



❷




Sec 24V
0,5VA
VBEI 0,5/1/24
BLOCK
ta 70°C Cl. B
50 - 60 Hz
VDE 0570/
EN 61558
Pri 230 V

Efficient PCB transformer
ECO 2003

General Data

- Rated input voltage 230 Vac
- Rated output voltage 6 - 2 x 12 Vac
- Rated power 1.5 - 10 VA
- Insulation class B
- Maximum ambient temperature 70 °C
- Efficiency up to 77 %
- Degree of protection IP 00

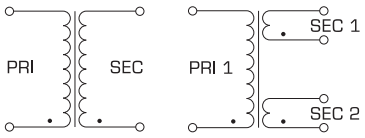
Advantages

- Low no-load losses max. 0.6 W
- Unconditionally short-circuit proof (up to 1.5 VA)
- Also with double output voltage for series or parallel connection
- Designed for high ambient temperatures
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material

Applications

Safety transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Safety isolating transformer
to: VDE 0570 Teil 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6, UL 5085-1/-2, CSA 22.2 No.66

Certifications

ENEC 10 (VDE), UL 5085-1/-2, CSA 22.2 No.66

Efficient PCB transformer
ECO 2003

Electrical data

Type	ECO2003-1,5S..	ECO2003-1,5DD..	ECO2003-3,2S..	ECO2003-3,2DD..	ECO2003-5,0S..	ECO2003-5,0DD..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Output rated voltage: Order no.	6 Vac: ECO2003-1,5S6 8 Vac: ECO2003-1,5S8 9 Vac: ECO2003-1,5S9 12 Vac: ECO2003-1,5S12 18 Vac: ECO2003-1,5S18	2x9 Vac: ECO2003-1,5DD9 2x12 Vac: ECO2003-1,5DD12	8 Vac: ECO2003-3,2S8 12 Vac: ECO2003-3,2S12	2x9 Vac: ECO2003-3,2DD9 2x12 Vac: ECO2003-3,2DD12	8 Vac: ECO2003-5,0S8 12 Vac: ECO2003-5,0S12	2x9 Vac: ECO2003-5,0DD9 2x12 Vac: ECO2003-5,0DD12
Rated Power	1.5 VA	1.5 VA	3.2 VA	3.2 VA	5.0 VA	5.0 VA
No-load voltage (app. x factor)	1.39	1.39	1.50	1.50	1.25	1.25
No-load loss (typ.)	0.60 W	0.60 W	0.60 W	0.60 W	0.60 W	0.60 W
Efficiency	61 %	61 %	64 %	64 %	74 %	74 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer
Approvals						
Approvals	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)
Environment						
Ambient temperature max.	70 °C	70 °C	60 °C	60 °C	50 °C	50 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	inherently short-circuit proof	inherently short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

Efficient PCB transformer
ECO 2003

Electrical data

Type	ECO2003-10S..
Input	
Rated input voltage	230 Vac
Rated frequency	50 - 60 Hz
Output	
Output rated voltage: Order no.	9 Vac: ECO2003-10S9
Rated Power	10.0 VA
No-load voltage (app. x factor)	1.22
No-load loss (typ.)	0.60 W
Efficiency	77 %
Standards	
Classification	Safety isolating transformer
Approvals	
Approvals	cURus, ENEC 10 (VDE)
Environment	
Ambient temperature max.	40 °C
Safety and protection	
Type	encapsulated
Class of Insulation System	VDE=B, UL=class 105
Protection index	IP 00
Safety class (prepared)	II
Short circuit strength	non-short-circuit proof
Order numbers	
Order Number	**refer to rated output voltage**

Efficient PCB transformer
ECO 2003

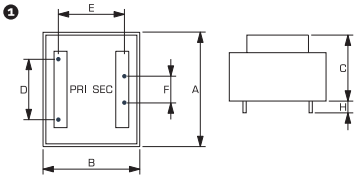
30

Mechanical data

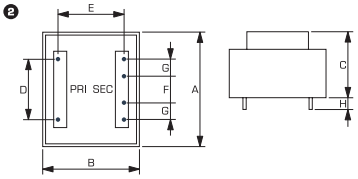
Typ	Terminals	Pin (ø)	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H
ECO2003-1,5S..	Pins for printed circuit board	0.8 mm	EI 30/12,5	0.08 kg	1	32.3	27.3	23.8	20	20	10	5	5
ECO2003-1,5DD..	Pins for printed circuit board	0.8 mm	EI 30/12,5	0.08 kg	2	32.3	27.3	23.8	20	20	10	5	5
ECO2003-3,2S..	Pins for printed circuit board	0.8 mm	EI 38/13,5	0.15 kg	2	41	35	28.1	20	25	10	5	5
ECO2003-3,2DD..	Pins for printed circuit board	0.8 mm	EI 38/13,5	0.15 kg	2	41	35	28.1	20	25	10	5	5
ECO2003-5,0S..	Pins for printed circuit board	0.8 mm	EI 42/14,8	0.20 kg	2	44	37	33	25	25	15	5	5
ECO2003-5,0DD..	Pins for printed circuit board	0.8 mm	EI 42/14,8	0.20 kg	2	44	37	33	25	25	15	5	5
ECO2003-10S..	Pins for printed circuit board	0.8 mm	EI 48/16,8	0.30 kg	2	51	43	34.6	25	27.5	15	5	5

Dimension pictures

1



2



PCB transformer
VCN

General Data

- Rated input voltage 230 Vac
- Rated output voltage 6 - 2 x 18 Vac
- Rated power 4.5 - 50 VA
- Insulation class B
- Maximum ambient temperature 70 °C
- Efficiency up to 84 %
- Degree of protection IP 00

Advantages

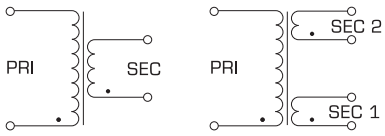
- Minimum size at high output
- Also with double output voltage for series or parallel connection
- Designed for high ambient temperatures
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material
- Additional mounting option with tabs on the housing (from 28 VA)

Applications

As a mains transformer for adjustment of the voltage and simple electrical isolation.

As a safety isolating transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Mains transformer
to: VDE 0570 Teil 2-1, DIN EN 61558-2-1, EN 61558-2-1, IEC 61558-2-1

Safety isolating transformer
to: VDE 0570 Teil 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6

PCB transformer
VCN

VCN also available with 115 Vac rated input voltage!

Electrical data

Type	VCN 4,5/1/..	VCN 4,5/2/..	VCN 6/1/..	VCN 6/2/..	VCN 6,5/1/..	VCN 6,5/2/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Output rated voltage: Order no.	4,5 Vac: VCN 4,5/1/6 7,5 Vac: VCN 4,5/1/7,5 9 Vac: VCN 4,5/1/9 12 Vac: VCN 4,5/1/12 15 Vac: VCN 4,5/1/15 18 Vac: VCN 4,5/1/18 24 Vac: VCN 4,5/1/24	2x6 Vac: VCN 4,5/2/6 2x7,5 Vac: VCN 4,5/2/7,5 2x9 Vac: VCN 4,5/2/9 2x12 Vac: VCN 4,5/2/12 2x15 Vac: VCN 4,5/2/15 2x18 Vac: VCN 4,5/2/18*	6 Vac: VCN 6/1/6 7,5 Vac: VCN 6/1/7,5 9 Vac: VCN 6/1/9 12 Vac: VCN 6/1/12 15 Vac: VCN 6/1/15 18 Vac: VCN 6/1/18 24 Vac: VCN 6/1/24	2x6 Vac: VCN 6/2/6 2x7,5 Vac: VCN 6/2/7,5 2x9 Vac: VCN 6/2/9 2x12 Vac: VCN 6/2/12 2x15 Vac: VCN 6/2/15 2x18 Vac: VCN 6/2/18*	6 Vac: VCN 6,5/1/6 7,5 Vac: VCN 6,5/1/7,5 9 Vac: VCN 6,5/1/9 12 Vac: VCN 6,5/1/12 15 Vac: VCN 6,5/1/15 18 Vac: VCN 6,5/1/18 24 Vac: VCN 6,5/1/24	2x6 Vac: VCN 6,5/2/6 2x7,5 Vac: VCN 6,5/2/7,5 2x9 Vac: VCN 6,5/2/9 2x12 Vac: VCN 6,5/2/12 2x15 Vac: VCN 6,5/2/15 2x18 Vac: VCN 6,5/2/18
Rated output voltage	4.5 Vac	2x6 Vac	6 Vac	2x6 Vac	6 Vac	2x6 Vac
Rated Power	4.5 VA	4.5 VA	6.0 VA	6.0 VA	6.5 VA	6.5 VA
No-load voltage (app. x factor)	1.53	1.53	1.46	1.46	1.35	1.35
No-load loss (typ.)	1.50 W	1.50 W	2.00 W	2.00 W	1.40 W	1.40 W
Efficiency	59 %	59 %	63 %	63 %	67 %	67 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer	Safety isolating transformer
Approvals						
Approvals	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation
Environment						
Ambient temperature max.	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	B	B	B	B	B	B
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

PCB transformer
VCN

VCN also available with 115 Vac rated input voltage!

Electrical data

Type	VCN 10/1/..	VCN 10/2/..	VCN-A 10/1/..	VCN-A 10/2/..	VCN 12/1/..	VCN 12/2/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Output rated voltage: Order no.	6 Vac: VCN 10/1/6 7,5 Vac: VCN 10/1/7,5 9 Vac: VCN 10/1/9 12 Vac: VCN 10/1/12 15 Vac: VCN 10/1/15 18 Vac: VCN 10/1/18 24 Vac: VCN 10/1/24	2x6 Vac: VCN 10/2/6 2x7,5 Vac: VCN 10/2/7,5 2x9 Vac: VCN 10/2/9 2x12 Vac: VCN 10/2/12 2x15 Vac: VCN 10/2/15 2x18 Vac: VCN 10/2/18	6 Vac: VCN-A 10/1/6 7,5 Vac: VCN-A 10/1/7,5 9 Vac: VCN-A 10/1/9 12 Vac: VCN-A 10/1/12 15 Vac: VCN-A 10/1/15 18 Vac: VCN-A 10/1/18 24 Vac: VCN-A 10/1/24	2x6 Vac: VCN-A 10/2/6 2x7,5 Vac: VCN-A 10/2/7,5 2x9 Vac: VCN-A 10/2/9 2x12 Vac: VCN-A 10/2/12 2x15 Vac: VCN-A 10/2/15 2x18 Vac: VCN-A 10/2/18	6 Vac: VCN 12/1/6 7,5 Vac: VCN 12/1/7,5 9 Vac: VCN 12/1/9 12 Vac: VCN 12/1/12 15 Vac: VCN 12/1/15 18 Vac: VCN 12/1/18 24 Vac: VCN 12/1/24	2x6 Vac: VCN 12/2/6 2x7,5 Vac: VCN 12/2/7,5 2x9 Vac: VCN 12/2/9 2x12 Vac: VCN 12/2/12 2x15 Vac: VCN 12/2/15 2x18 Vac: VCN 12/2/18
Rated output voltage	6 Vac	2x6 Vac	0 Vac	2x0 Vac	6 Vac	2x6 Vac
Rated Power	10.0 VA	10.0 VA	10.0 VA	10.0 VA	12.0 VA	12.0 VA
No-load voltage (app. x factor)	1.34	1.34	1.35	1.35	1.25	1.25
No-load loss (typ.)	1.50 W	1.50 W	2.50 W	2.50 W	2.10 W	2.10 W
Efficiency	70 %	70 %	66 %	66 %	72 %	72 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer
Approvals						
Approvals	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation
Environment						
Ambient temperature max.	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	B	B	B	B	B	B
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

PCB transformer
VCN

VCN also available with 115 Vac rated input voltage!

Electrical data

Type	VCN 16/1/..	VCN 16/2/..	VCN 20/1/..	VCN 20/2/..	VCN 22/1/..	VCN 22/2/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Output rated voltage: Order no.	6 Vac: VCN 16/1/6 7,5 Vac: VCN 16/1/7,5 9 Vac: VCN 16/1/9 12 Vac: VCN 16/1/12 15 Vac: VCN 16/1/15 18 Vac: VCN 16/1/18 24 Vac: VCN 16/1/24	2x6 Vac: VCN 16/2/6 2x7,5 Vac: VCN 16/2/7,5 2x9 Vac: VCN 16/2/9 2x12 Vac: VCN 16/2/12 2x15 Vac: VCN 16/2/15 2x18 Vac: VCN 16/2/18	6 Vac: VCN 20/1/6 7,5 Vac: VCN 20/1/7,5 9 Vac: VCN 20/1/9 12 Vac: VCN 20/1/12 15 Vac: VCN 20/1/15 18 Vac: VCN 20/1/18 24 Vac: VCN 20/1/24	2x6 Vac: VCN 20/2/6 2x7,5 Vac: VCN 20/2/7,5 2x9 Vac: VCN 20/2/9 2x12 Vac: VCN 20/2/12 2x15 Vac: VCN 20/2/15 2x18 Vac: VCN 20/2/18	6 Vac: VCN 22/1/6 7,5 Vac: VCN 22/1/7,5 9 Vac: VCN 22/1/9 12 Vac: VCN 22/1/12 15 Vac: VCN 22/1/15 18 Vac: VCN 22/1/18 24 Vac: VCN 22/1/24	2x6 Vac: VCN 22/2/6 2x7,5 Vac: VCN 22/2/7,5 2x9 Vac: VCN 22/2/9 2x12 Vac: VCN 22/2/12 2x15 Vac: VCN 22/2/15 2x18 Vac: VCN 22/2/18
Rated output voltage	6 Vac	2x6 Vac	6 Vac	2x6 Vac	6 Vac	2x6 Vac
Rated Power	16.0 VA	16.0 VA	20.0 VA	20.0 VA	22.0 VA	22.0 VA
No-load voltage (app. x factor)	1.22	1.22	1.18	1.18	1.20	1.20
No-load loss (typ.)	2.50 W	2.50 W	2.60 W	2.60 W	3.20 W	3.20 W
Efficiency	74 %	74 %	79 %	79 %	77 %	77 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer
Approvals						
Approvals	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation
Environment						
Ambient temperature max.	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	B	B	B	B	B	B
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

PCB transformer
VCN

VCN auch mit einer Rated input voltage 115 V lieferbar!

Electrical data

Type	VCN 28/1/..	VCN 28/2/..	VCN 30/1/..	VCN 30/2/..	VCN 33/1/..	VCN 33/2/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Output rated voltage: Order no.	6 Vac: VCN 28/1/6 7,5 Vac: VCN 28/1/7,5 9 Vac: VCN 28/1/9 12 Vac: VCN 28/1/12 15 Vac: VCN 28/1/15 18 Vac: VCN 28/1/18 24 Vac: VCN 28/1/24	2x6 Vac: VCN 28/2/6 2x7,5 Vac: VCN 28/2/7,5 2x9 Vac: VCN 28/2/9 2x12 Vac: VCN 28/2/12 2x15 Vac: VCN 28/2/15 2x18 Vac: VCN 28/2/18	6 Vac: VCN 30/1/6 7,5 Vac: VCN 30/1/7,5 9 Vac: VCN 30/1/9 12 Vac: VCN 30/1/12 15 Vac: VCN 30/1/15 18 Vac: VCN 30/1/18 24 Vac: VCN 30/1/24	2x6 Vac: VCN 30/2/6 2x7,5 Vac: VCN 30/2/7,5 2x9 Vac: VCN 30/2/9 2x12 Vac: VCN 30/2/12 2x15 Vac: VCN 30/2/15 2x18 Vac: VCN 30/2/18	6 Vac: VCN 33/1/6 7,5 Vac: VCN 33/1/7,5 9 Vac: VCN 33/1/9 12 Vac: VCN 33/1/12 15 Vac: VCN 33/1/15 18 Vac: VCN 33/1/18 24 Vac: VCN 33/1/24	2x6 Vac: VCN 33/2/6 2x7,5 Vac: VCN 33/2/7,5 2x9 Vac: VCN 33/2/9 2x12 Vac: VCN 33/2/12 2x15 Vac: VCN 33/2/15 2x18 Vac: VCN 33/2/18
Rated output voltage	6 Vac	2x6 Vac	6 Vac	2x6 Vac	6 Vac	2x6 Vac
Rated Power	28.0 VA	28.0 VA	30.0 VA	30.0 VA	33.0 VA	33.0 VA
No-load voltage (app. x factor)	1.20	1.20	1.15	1.15	1.19	1.19
No-load loss (typ.)	3.00 W	3.00 W	3.40 W	3.40 W	3.50 W	3.50 W
Efficiency	80 %	80 %	82 %	82 %	81 %	81 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer
Approvals						
Approvals	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation
Environment						
Ambient temperature max.	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	B	B	B	B	B	B
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

PCB transformer
VCN

VCN also available with 115 Vac rated input voltage!

Electrical data

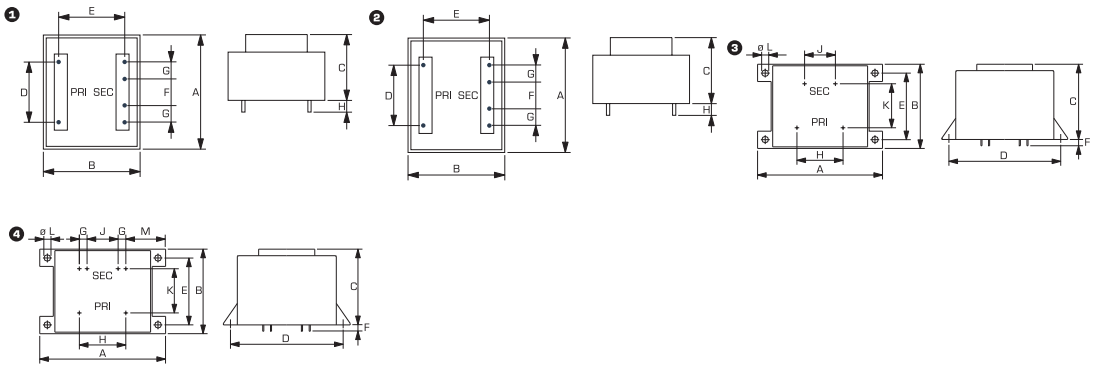
Type	VCN 44/1/..	VCN 44/2/..	VCN 50/1/..	VCN 50/2/..
Input				
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output				
Output rated voltage: Order no.	6 Vac: VCN 44/1/6 7,5 Vac: VCN 44/1/7,5 9 Vac: VCN 44/1/9 12 Vac: VCN 44/1/12 15 Vac: VCN 44/1/15 18 Vac: VCN 44/1/18 24 Vac: VCN 44/1/24	2x6 Vac: VCN 44/2/6 2x7,5 Vac: VCN 44/2/7,5 2x9 Vac: VCN 44/2/9 2x12 Vac: VCN 44/2/12 2x15 Vac: VCN 44/2/15 2x18 Vac: VCN 44/2/18	6 Vac: VCN 50/1/6 7,5 Vac: VCN 50/1/7,5 9 Vac: VCN 50/1/9 12 Vac: VCN 50/1/12 15 Vac: VCN 50/1/15 18 Vac: VCN 50/1/18 24 Vac: VCN 50/1/24	2x6 Vac: VCN 50/2/6 2x7,5 Vac: VCN 50/2/7,5 2x9 Vac: VCN 50/2/9 2x12 Vac: VCN 50/2/12 2x15 Vac: VCN 50/2/15 2x18 Vac: VCN 50/2/18
Rated output voltage	6 Vac	2x6 Vac	6 Vac	2x6 Vac
Rated Power	44.0 VA	44.0 VA	50.0 VA	50.0 VA
No-load voltage (app. x factor)	1.15	1.15	1.13	1.13
No-load loss (typ.)	4.40 W	4.40 W	4.80 W	4.80 W
Efficiency	82 %	82 %	84 %	84 %
Standards				
Classification	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer
Approvals				
Approvals	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation
Environment				
Ambient temperature max.	70 °C	70 °C	70 °C	70 °C
Safety and protection				
Type	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	B	B	B	B
Protection index	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers				
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

PCB transformer
VCN

VCN also available with 115 Vac rated input voltage!

Typ	Terminals	Pin (ø)	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H	J	K	L
VCN 4,5/1/..	Pins for printed circuit boards	0.8 mm	EI 38/13,6	0.13 kg	1	41	35	28.1	20	25	10	-	5	-	-	-
VCN 4,5/2/..	Pins for printed circuit boards	0.8 mm	EI 38/13,6	0.13 kg	2	41	35	28.1	20	25	10	5	5	-	-	-
VCN 6/1/..	Pins for printed circuit boards	0.8 mm	EI 42/14,8	0.15 kg	1	44	37	33	25	25	15	-	5	-	-	-
VCN 6/2/..	Pins for printed circuit boards	0.8 mm	EI 42/14,8	0.15 kg	2	44	37	33	25	25	15	5	5	-	-	-
VCN 6,5/1/..	Pins for printed circuit boards	0.8 mm	EI 38/16,5	0.19 kg	1	41	35	30.8	20	25	10	-	5	-	-	-
VCN 6,5/2/..	Pins for printed circuit boards	0.8 mm	EI 38/16,5	0.19 kg	2	41	35	30.8	20	25	10	5	5	-	-	-
VCN 10/1/..	Pins for printed circuit boards	0.8 mm	EI 48/16,8	0.29 kg	1	51	43	34.6	25	27.5	15	-	7	-	-	-
VCN 10/2/..	Pins for printed circuit boards	0.8 mm	EI 48/16,8	0.29 kg	2	51	43	34.6	25	27.5	15	5	7	-	-	-
VCN-A 10/1/..	Pins for printed circuit boards	0.8 mm	EI 42/20,5	0.26 kg	1	44	37	38	25	25	15	-	6.5	-	-	-
VCN-A 10/2/..	Pins for printed circuit boards	0.8 mm	EI 42/20,5	0.26 kg	2	44	37	38	25	25	15	5	6.5	-	-	-
VCN 12/1/..	Pins for printed circuit boards	0.8 mm	EI 48/20,5	0.34 kg	1	51	43	38.5	25	27.5	15	-	7	-	-	-
VCN 12/2/..	Pins for printed circuit boards	0.8 mm	EI 48/20,5	0.34 kg	2	51	43	38.5	25	27.5	15	5	7	-	-	-
VCN 16/1/..	Pins for printed circuit boards	0.8 mm	EI 54/18,8	0.40 kg	1	57	48	39	30	30	20	-	7	-	-	-
VCN 16/2/..	Pins for printed circuit boards	0.8 mm	EI 54/18,8	0.40 kg	2	57	48	39	30	30	20	5	7	-	-	-
VCN 20/1/..	Pins for printed circuit boards	0.8 mm	EI 60/21	0.58 kg	1	81.2	55	44.7	72.5	43.5	30	-	6.5	-	-	-
VCN 20/2/..	Pins for printed circuit boards	0.8 mm	EI 60/21	0.58 kg	2	81.2	55	44.7	72.5	43.5	30	5	6.5	-	-	-
VCN 22/1/..	Pins for printed circuit boards	0.8 mm	EI 54/23	0.48 kg	1	57	48	43.3	30	30	20	-	7.5	-	-	-
VCN 22/2/..	Pins for printed circuit boards	0.8 mm	EI 54/23	0.48 kg	2	57	48	43.3	30	30	20	5	7.5	-	-	-
VCN 28/1/..	Pins for printed circuit boards	0.8 mm	EI 60/25,5	0.68 kg	3	81.2	55	49.2	72.5	43.5	6.5	-	30	20	32.5	4.2
VCN 28/2/..	Pins for printed circuit boards	0.8 mm	EI 60/25,5	0.68 kg	4	81.2	55	49.2	72.5	43.5	6.5	5	30	20	32.5	4.2
VCN 30/1/..	Pins for printed circuit boards	0.8 mm	EI 60/31	0.78 kg	3	81.2	55	54.3	72.5	43.5	6.5	-	30	20	32.5	4.2
VCN 30/2/..	Pins for printed circuit boards	0.8 mm	EI 60/31	0.78 kg	4	81.2	55	54.3	72.5	43.5	6.5	5	30	20	32.5	4.2
VCN 33/1/..	Pins for printed circuit boards	0.8 mm	EI 66/23	0.77 kg	3	87.2	60	48.5	77.5	47.5	7	-	35	15	35	4.2
VCN 33/2/..	Pins for printed circuit boards	0.8 mm	EI 66/23	0.77 kg	4	87.2	60	48.5	77.5	47.5	7	10	35	15	35	4.2
VCN 44/1/..	Pins for printed circuit boards	0.8 mm	EI 66/30	0.94 kg	3	87.2	60	55.8	77.5	47.5	7	-	35	15	35	4.2
VCN 44/2/..	Pins for printed circuit boards	0.8 mm	EI 66/30	0.94 kg	4	87.2	60	55.8	77.5	47.5	7	10	35	15	35	4.2
VCN 50/1/..	Pins for printed circuit boards	0.8 mm	EI 66/34,5	1.07 kg	3	87.2	60	60.2	77.5	47.5	7	-	35	15	35	4.2
VCN 50/2/..	Pins for printed circuit boards	0.8 mm	EI 66/34,5	1.07 kg	4	87.2	60	60.2	77.5	47.5	7	10	35	15	35	4.2

Dimension pictures




0-18V
8VA
Sec
0-18V
8VA
0,4AT
VC 16/2/18
ta 40°C Cl B
50 - 60Hz
BLOCK
CE
230V
VDE 0570/EN 61558
Pri
VC 16 / 1 / 12
1,25AT
50 - 60Hz
Pri
230V

PCB transformer
vc

General Data

- Rated input voltage 230 Vac
- Rated output voltage 6 - 2 x 24 Vac
- Rated power 3.2 - 16 VA
- Insulation class B
- Maximum ambient temperature 40 - 60 °C
- Efficiency up to 76 %
- Degree of protection IP 00

Advantages

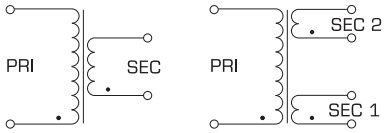
- Minimum size at high output
- Also with double output voltage for series or parallel connection
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material

Applications

As a mains transformer for adjustment of the voltage and simple electrical isolation.

As a safety transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Mains transformer
to: VDE 0570 Teil 2-1, DIN EN 61558-2-1, EN 61558-2-1, IEC 61558-2-1, UL 5085-1/-2, CSA 22.2 No.66

Safety isolating transformer
to: VDE 0570 Teil 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6, UL 5085-1/-2, CSA 22.2 No.66

Certifications

ENEC 10 (VDE), UL 5085-1/-2, CSA 22.2 No.66

PCB transformer
VC

Electrical data

Type	VC 3,2/1/...	VC 3,2/2/...	VC 5,0/1/...	VC 5,0/2/...	VC 10/1/...	VC 10/2/...
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	6 Vac: VC 3,2/1/6 8 Vac: VC 3,2/1/8 9 Vac: VC 3,2/1/9 12 Vac: VC 3,2/1/12 15 Vac: VC 3,2/1/15 18 Vac: VC 3,2/1/18 24 Vac: VC 3,2/1/24	2x6 Vac: VC 3,2/2/6 2x8 Vac: VC 3,2/2/8 2x9 Vac: VC 3,2/2/9 2x12 Vac: VC 3,2/2/12 2x15 Vac: VC 3,2/2/15 2x18 Vac: VC 3,2/2/18* 2x24 Vac: VC 3,2/2/24*	6 Vac: VC 5,0/1/6 8 Vac: VC 5,0/1/8 9 Vac: VC 5,0/1/9 12 Vac: VC 5,0/1/12 15 Vac: VC 5,0/1/15 18 Vac: VC 5,0/1/18 24 Vac: VC 5,0/1/24	2x6 Vac: VC 5,0/2/6 2x8 Vac: VC 5,0/2/8 2x9 Vac: VC 5,0/2/9 2x12 Vac: VC 5,0/2/12 2x15 Vac: VC 5,0/2/15 2x18 Vac: VC 5,0/2/18 2x24 Vac: VC 5,0/2/24*	6 Vac: VC 10/1/6 8 Vac: VC 10/1/8 9 Vac: VC 10/1/9 12 Vac: VC 10/1/12 15 Vac: VC 10/1/15 18 Vac: VC 10/1/18 24 Vac: VC 10/1/24	2x6 Vac: VC 10/2/6 2x8 Vac: VC 10/2/8 2x9 Vac: VC 10/2/9 2x12 Vac: VC 10/2/12 2x15 Vac: VC 10/2/15 2x18 Vac: VC 10/2/18 2x24 Vac: VC 10/2/24*
Rated Power	3.2 VA	3.2 VA	5.0 VA	5.0 VA	10.0 VA	10.0 VA
No-load voltage (app. x factor)	1.50	1.50	1.25	1.25	1.25	1.25
No-load loss (typ.)	1.00 W	1.00 W	1.50 W	1.50 W	1.60 W	1.60 W
Efficiency	60 %	60 %	68 %	68 %	74 %	74 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)
Approvals						
Approvals	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)
Environment						
Ambient temperature max.	60 °C	60 °C	50 °C	50 °C	40 °C	40 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

PCB transformer
VC

Electrical data

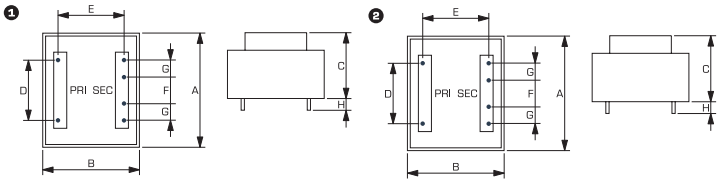
Type	VC 16/1/...	VC 16/2/...
Input		
Rated input voltage	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz
Output		
Rated output voltage: Order no.	6 Vac: VC 16/1/6 8 Vac: VC 16/1/8 9 Vac: VC 16/1/9 12 Vac: VC 16/1/12 15 Vac: VC 16/1/15 18 Vac: VC 16/1/18 24 Vac: VC 16/1/24	2x6 Vac: VC 16/2/6 2x8 Vac: VC 16/2/8 2x9 Vac: VC 16/2/9 2x12 Vac: VC 16/2/12 2x15 Vac: VC 16/2/15 2x18 Vac: VC 16/2/18 2x24 Vac: VC 16/2/24*
Rated Power	16.0 VA	16.0 VA
No-load voltage (app. x factor)	1.24	1.24
No-load loss (typ.)	1.80 W	1.80 W
Efficiency	76 %	76 %
Standards		
Classification	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)
Approvals		
Approvals	cURus, ENEC (VDE)	cURus, ENEC (VDE)
Environment		
Ambient temperature max.	40 °C	40 °C
Safety and protection		
Type	encapsulated	encapsulated
Class of Insulation System	VDE=B, UL=class 105	VDE=B, UL=class 105
Protection index	IP 00	IP 00
Safety class (prepared)	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof
Order numbers		
Order Number	**refer to rated output voltage**	**refer to rated output voltage**

PCB transformer
VC

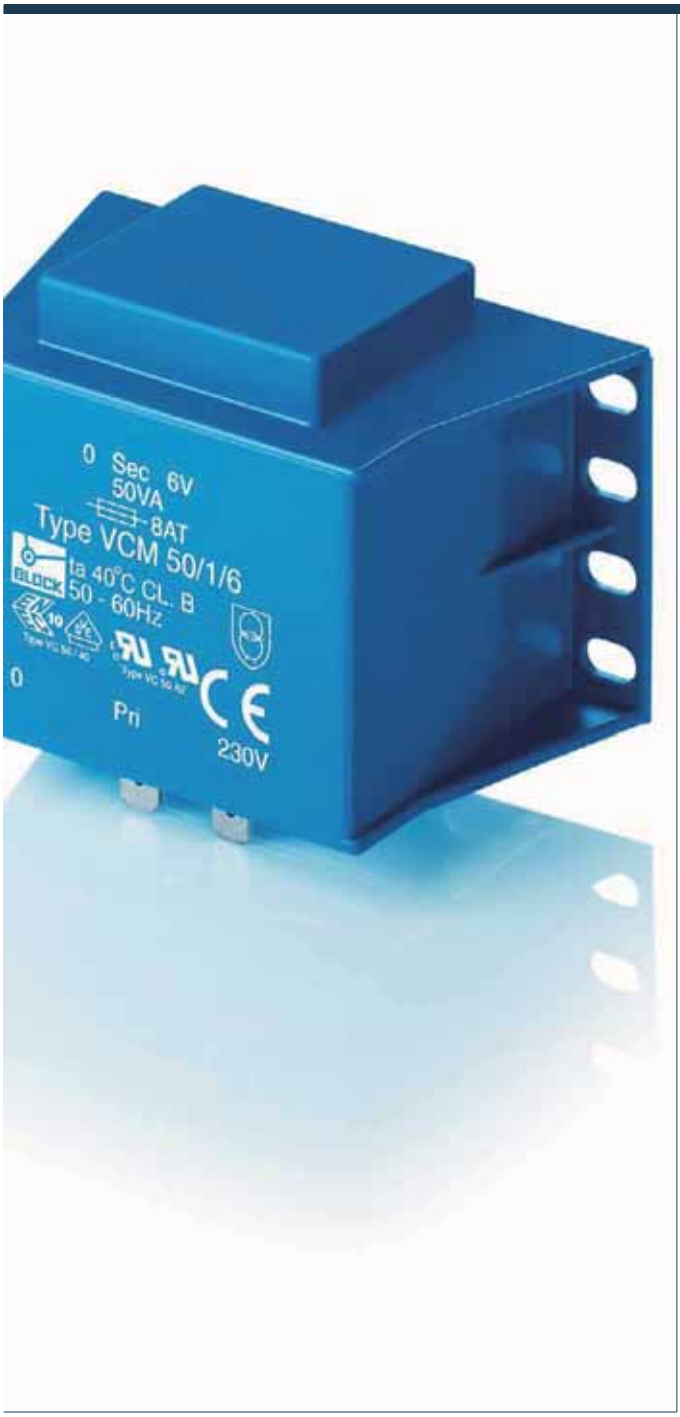
30 Mechanical data

Typ	Terminals	Pin (ø)	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H
VC 3,2/1/...	Pins for printed circuit boards	0.8 mm	EI 38/13,5	0.15 kg	1	41	35	28.1	20	25	10	5	5
VC 3,2/2/...	Pins for printed circuit boards	0.8 mm	EI 38/13,5	0.15 kg	2	41	35	28.1	20	25	10	5	5
VC 5,0/1/...	Pins for printed circuit boards	0.8 mm	EI 42/14,8	0.19 kg	1	44	37	33	25	25	15	5	5
VC 5,0/2/...	Pins for printed circuit boards	0.8 mm	EI 42/14,8	0.19 kg	2	44	37	33	25	25	15	5	5
VC 10/1/...	Pins for printed circuit boards	0.8 mm	EI 48/16,8	0.28 kg	1	51	43	34.6	25	27.5	15	5	7
VC 10/2/...	Pins for printed circuit boards	0.8 mm	EI 48/16,8	0.28 kg	2	51	43	34.6	25	27.5	15	5	7
VC 16/1/...	Pins for printed circuit boards	0.8 mm	EI 54/18,8	0.42 kg	1	57	48	39	30	30	20	5	7.5
VC 16/2/...	Pins for printed circuit boards	0.8 mm	EI 54/18,8	0.42 kg	2	57	48	39	30	30	20	5	7.5

Dimension pictures



PCB transformer, mountable
VCM



General Data

- Rated input voltage 230 Vac
- Rated output voltage 6 - 2 x 24 Vac
- Rated power 5 - 50 VA
- Insulation class B
- Maximum ambient temperature 40 - 50 °C
- Efficiency up to 87 %
- Degree of protection IP 00

Advantages

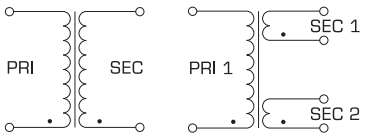
- Minimum size at high output
- Also with double output voltage for series or parallel connection
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material
- Additional mounting option with tabs on the housing

Applications

As a safety isolating transformer for the safe electrical isolation of the input and output sides.

As a safety isolating transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Mains transformer
to: VDE 0570 Teil 2-1, DIN EN 61558-2-1, EN 61558-2-1, IEC 61558-2-1, UL 5085-1/-2, CSA 22.2 No.66

Safety isolating transformer
to: VDE 0570 Teil 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6, UL 5085-1/-2, CSA 22.2 No.66

Certifications

ENEC 10 (VDE), UL 5085-1/-2, CSA 22.2 No.66

PCB transformer, mountable
VCM

Electrical data

Type	VCM 5,0/1/..	VCM 5,0/2/..	VCM 10/1/..	VCM 10/2/..	VCM 16/1/..	VCM 16/2/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	6 Vac: VCM 5,0/1/6 8 Vac: VCM 5,0/1/8 9 Vac: VCM 5,0/1/9 12 Vac: VCM 5,0/1/12 15 Vac: VCM 5,0/1/15 18 Vac: VCM 5,0/1/18 24 Vac: VCM 5,0/1/24	2x6 Vac: VCM 5,0/2/6 2x8 Vac: VCM 5,0/2/8 2x9 Vac: VCM 5,0/2/9 2x12 Vac: VCM 5,0/2/12 2x15 Vac: VCM 5,0/2/15 2x18 Vac: VCM 5,0/2/18 2x24 Vac: VCM 5,0/2/24*	6 Vac: VCM 10/1/6 8 Vac: VCM 10/1/8 9 Vac: VCM 10/1/9 12 Vac: VCM 10/1/12 15 Vac: VCM 10/1/15 18 Vac: VCM 10/1/18 24 Vac: VCM 10/1/24	2x6 Vac: VCM 10/2/6 2x8 Vac: VCM 10/2/8 2x9 Vac: VCM 10/2/9 2x12 Vac: VCM 10/2/12 2x15 Vac: VCM 10/2/15 2x18 Vac: VCM 10/2/18 2x24 Vac: VCM 10/2/24*	6 Vac: VCM 16/1/6 8 Vac: VCM 16/1/8 9 Vac: VCM 16/1/9 12 Vac: VCM 16/1/12 15 Vac: VCM 16/1/15 18 Vac: VCM 16/1/18 24 Vac: VCM 16/1/24	2x6 Vac: VCM 16/2/6 2x8 Vac: VCM 16/2/8 2x9 Vac: VCM 16/2/9 2x12 Vac: VCM 16/2/12 2x15 Vac: VCM 16/2/15 2x18 Vac: VCM 16/2/18 2x24 Vac: VCM 16/2/24*
Rated Power	5.0 VA	5.0 VA	10.0 VA	10.0 VA	16.0 VA	16.0 VA
No-load voltage (app. x factor)	1.25	1.25	1.25	1.25	1.24	1.24
No-load loss (typ.)	1.50 W	1.50 W	1.60 W	1.60 W	1.80 W	1.80 W
Efficiency	68 %	68 %	74 %	74 %	76 %	76 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)
Approvals						
Approvals	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)
Environment						
Ambient temperature max.	50 °C	50 °C	40 °C	40 °C	40 °C	40 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

PCB transformer, mountable
VCM

Electrical data

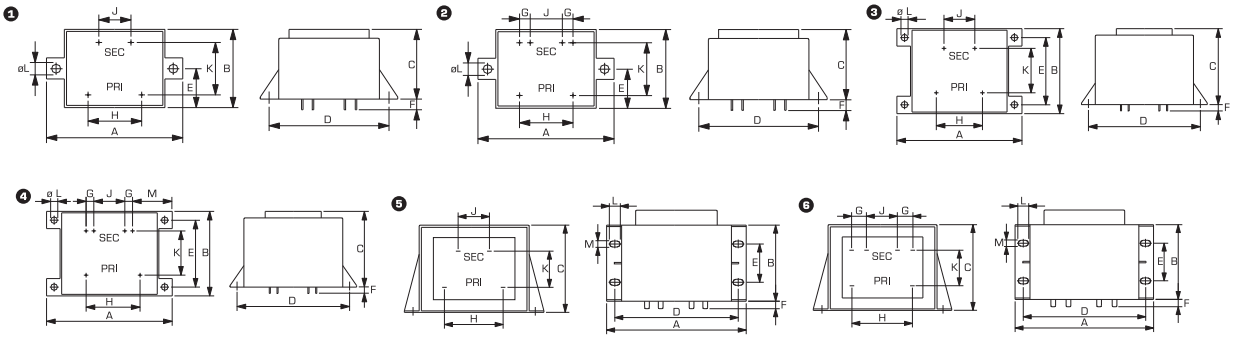
Type	VCM 25/1/..	VCM 25/2/..	VCM 36/1/..	VCM 36/2/..	VCM 50/1/..	VCM 50/2/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	6 Vac: VCM 25/1/6 8 Vac: VCM 25/1/8 9 Vac: VCM 25/1/9 12 Vac: VCM 25/1/12 15 Vac: VCM 25/1/15 18 Vac: VCM 25/1/18 24 Vac: VCM 25/1/24	2x6 Vac: VCM 25/2/6 2x8 Vac: VCM 25/2/8 2x9 Vac: VCM 25/2/9 2x12 Vac: VCM 25/2/12 2x15 Vac: VCM 25/2/15 2x18 Vac: VCM 25/2/18 2x24 Vac: VCM 25/2/24*	6 Vac: VCM 36/1/6 8 Vac: VCM 36/1/8 9 Vac: VCM 36/1/9 12 Vac: VCM 36/1/12 15 Vac: VCM 36/1/15 18 Vac: VCM 36/1/18 24 Vac: VCM 36/1/24	2x6 Vac: VCM 36/2/6 2x8 Vac: VCM 36/2/8 2x9 Vac: VCM 36/2/9 2x12 Vac: VCM 36/2/12 2x15 Vac: VCM 36/2/15 2x18 Vac: VCM 36/2/18 2x24 Vac: VCM 36/2/24**	6 Vac: VCM 50/1/6 8 Vac: VCM 50/1/8 9 Vac: VCM 50/1/9 12 Vac: VCM 50/1/12 15 Vac: VCM 50/1/15 18 Vac: VCM 50/1/18 24 Vac: VCM 50/1/24	2x6 Vac: VCM 50/2/6 2x8 Vac: VCM 50/2/8 2x9 Vac: VCM 50/2/9 2x12 Vac: VCM 50/2/12 2x15 Vac: VCM 50/2/15 2x18 Vac: VCM 50/2/18 2x24 Vac: VCM 50/2/24**
Rated Power	25.0 VA	25.0 VA	36.0 VA	36.0 VA	50.0 VA	50.0 VA
No-load voltage (app. x factor)	1.12	1.12	1.11	1.11	1.09	1.09
No-load loss (typ.)	2.50 W	2.50 W	2.60 W	2.60 W	3.80 W	3.80 W
Efficiency	82 %	82 %	83 %	83 %	87 %	87 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer **isolating transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer **isolating transformer (without VDE mark)
Approvals						
Approvals	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)
Environment						
Ambient temperature max.	40 °C	40 °C	40 °C	40 °C	40 °C	40 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

PCB transformer, mountable
VCM

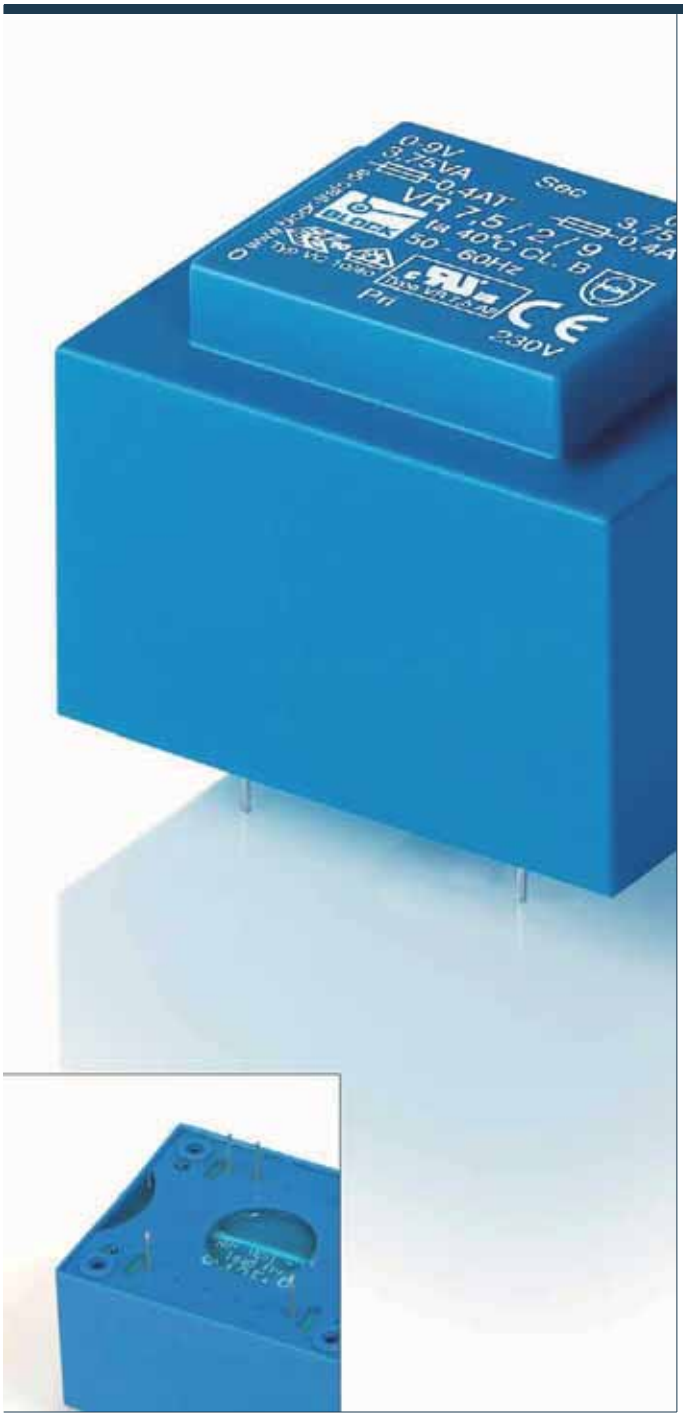
Mechanical data

Typ	Fixing method	Terminals	Pin (ø)	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H	J	K	L	M
VCM 5,0/1/..	Fixing points on the case	Pins for pcb	0.8 mm	EI 42/14,8	0.19 kg	1	64	37	32.3	55	18.5	5	-	25	15	25	4.2	-
VCM 5,0/2/..	Fixing points on the case	Pins for pcb	0.8 mm	EI 42/14,8	0.19 kg	2	64	37	32.3	55	18.5	5	5	25	15	25	4.2	-
VCM 10/1/..	Fixing points on the case	Pins for pcb	0.8 mm	EI 48/16,8	0.28 kg	1	69	42.2	34.6	60	21.1	5	-	25	15	27.5	4.2	-
VCM 10/2/..	Fixing points on the case	Pins for pcb	0.8 mm	EI 48/16,8	0.28 kg	2	69	42.2	34.6	60	21.1	5	5	25	15	27.5	4.2	-
VCM 16/1/..	Fixing points on the case	Pins for pcb	0.8 mm	EI 54/18,8	0.42 kg	3	75.2	47.1	39	65	37.5	5	-	30	20	30	4.2	-
VCM 16/2/..	Fixing points on the case	Pins for pcb	0.8 mm	EI 54/18,8	0.42 kg	4	75.2	47.1	39	65	37.5	5	5	30	20	30	4.2	23.3
VCM 25/1/..	Fixing points on the case	Pins for pcb	0.8 mm	EI 60/25,5	0.61 kg	3	81.2	55	49.2	72.5	43.5	6.5	-	30	20	32.5	4.2	-
VCM 25/2/..	Fixing points on the case	Pins for pcb	0.8 mm	EI 60/25,5	0.61 kg	4	81.2	55	49.2	72.5	43.5	6.5	5	30	20	32.5	4.2	26
VCM 36/1/..	Fixing points on the case	Pins for pcb	0.8 mm	EI 66/23,0	0.75 kg	3	87.2	60	48.5	77.5	47.5	5	-	35	25	35	4.2	-
VCM 36/2/..	Fixing points on the case	Pins for pcb	0.8 mm	EI 66/23,0	0.75 kg	4	87.2	61	48.5	77.5	47.5	5	5	35	20	35	4.2	31
VCM 50/1/..	Fixing points on the case	Quick connect terminals	PRI 4.8 x 0.8 mm, SEC 6.3 x 0.8 mm	EI 66/34,5	0.99 kg	5	94	61	58.5	82	37.5	9	-	35	15	35	8.3	4.8
VCM 50/2/..	Fixing points on the case	Quick connect terminals	PRI 4.8 x 0.8 mm, SEC 6.3 x 0.8 mm	EI 66/34,5	0.99 kg	6	94	61	58.5	82	37.5	9	10	35	15	35	8.3	4.8

Dimension pictures



PCB transformer
VR



General Data

- Rated input voltage 230 Vac
- Rated output voltage 8 - 2 x 18 Vac
- Rated power 4.5 - 30 VA
- Insulation class B
- Maximum ambient temperature 40 °C
- Efficiency up to 84 %
- Degree of protection IP 00

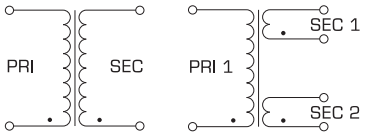
Advantages

- Minimum size at high output
- Also with double output voltage for series or parallel connection
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material
- Space saving installation thanks to additional screw mounting in the base plate

Applications

Safety transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Safety isolating transformer
to: VDE 0570 Teil 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6, UL 5085-1/-2, CSA 22.2 No.66

Certifications

ENEC 10 (VDE), UL 5085-1/-2, CSA 22.2 No.66

PCB transformer
VR

Electrical data

Type	VR 4,5/1/..	VR 4,5/2/..	VR 7,5/1/..	VR 7,5/2/..	VR 13/1/..	VR 13/2/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	8 Vac: VR 4,5/1/8 9 Vac: VR 4,5/1/9 12 Vac: VR 4,5/1/12 15 Vac: VR 4,5/1/15 18 Vac: VR 4,5/1/18 24 Vac: VR 4,5/1/24	2x8 Vac: VR 4,5/2/8 2x9 Vac: VR 4,5/2/9 2x12 Vac: VR 4,5/2/12 2x15 Vac: VR 4,5/2/15 2x18 Vac: VR 4,5/2/18	8 Vac: VR 7,5/1/8 9 Vac: VR 7,5/1/9 12 Vac: VR 7,5/1/12 15 Vac: VR 7,5/1/15 18 Vac: VR 7,5/1/18 24 Vac: VR 7,5/1/24	2x8 Vac: VR 7,5/2/8 2x9 Vac: VR 7,5/2/9 2x12 Vac: VR 7,5/2/12 2x15 Vac: VR 7,5/2/15 2x18 Vac: VR 7,5/2/18	8 Vac: VR 13/1/8 9 Vac: VR 13/1/9 12 Vac: VR 13/1/12 15 Vac: VR 13/1/15 18 Vac: VR 13/1/18 24 Vac: VR 13/1/24	2x8 Vac: VR 13/2/8 2x9 Vac: VR 13/2/9 2x12 Vac: VR 13/2/12 2x15 Vac: VR 13/2/15 2x18 Vac: VR 13/2/18
Rated Power	4.5 VA	4.5 VA	7.5 VA	7.5 VA	13.0 VA	13.0 VA
No-load voltage (app. x factor)	1.27	1.27	1.18	1.18	1.19	1.19
No-load loss (typ.)	1.50 W	1.50 W	1.30 W	1.30 W	1.30 W	1.30 W
Efficiency	69 %	69 %	76 %	76 %	78 %	78 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer
Approvals						
Approvals	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)
Environment						
Ambient temperature max.	40 °C	40 °C	40 °C	40 °C	40 °C	40 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

PCB transformer
VR

Electrical data

Type	VR 22/1/..	VR 22/2/..	VR 30/1/..	VR 30/2/..
Input				
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output				
Rated output voltage: Order no.	8 Vac: VR 22/1/8 9 Vac: VR 22/1/9 12 Vac: VR 22/1/12 15 Vac: VR 22/1/15 18 Vac: VR 22/1/18 24 Vac: VR 22/1/24	2x8 Vac: VR 22/2/8 2x9 Vac: VR 22/2/9 2x12 Vac: VR 22/2/12 2x15 Vac: VR 22/2/15 2x18 Vac: VR 22/2/18	8 Vac: VR 30/1/8 9 Vac: VR 30/1/9 12 Vac: VR 30/1/12 15 Vac: VR 30/1/15 18 Vac: VR 30/1/18 24 Vac: VR 30/1/24	2x8 Vac: VR 30/2/8 2x9 Vac: VR 30/2/9 2x12 Vac: VR 30/2/12 2x15 Vac: VR 30/2/15 2x18 Vac: VR 30/2/18
Rated Power	22.0 VA	22.0 VA	30.0 VA	30.0 VA
No-load voltage (app. x factor)	1.15	1.15	1.11	1.11
No-load loss (typ.)	2.40 W	2.40 W	2.50 W	2.50 W
Efficiency	80 %	80 %	84 %	84 %
Standards				
Classification	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer
Approvals				
Approvals	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)
Environment				
Ambient temperature max.	40 °C	40 °C	40 °C	40 °C
Safety and protection				
Type	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105	VDE=B, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers				
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

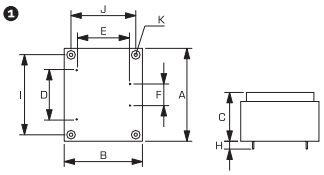
PCB transformer
VR

Mechanical data

Typ	Fixing method	Terminals	Pin (ø)	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H	I	J	K
VR 4,5/1/..	Additional fixing by self-tapping screws	Pins for printed circuit boards	0.8 mm	EI 42/14,8	0.19 kg	1	44	37	33	25	25	15	-	5	35	28	2.5
VR 4,5/2/..	Additional fixing by self-tapping screws	Pins for printed circuit boards	0.8 mm	EI 42/14,8	0.19 kg	2	44	37	33	25	25	15	5	5	35	28	2.5
VR 7,5/1/..	Additional fixing by self-tapping screws	Pins for printed circuit boards	0.8 mm	EI 48/16,8	0.28 kg	1	51	43	36	25	27.5	15	-	5	40	32	2.5
VR 7,5/2/..	Additional fixing by self-tapping screws	Pins for printed circuit boards	0.8 mm	EI 48/16,8	0.28 kg	2	51	43	36	25	27.5	15	5	5	40	32	2.5
VR 13/1/..	Additional fixing by self-tapping screws	Pins for printed circuit boards	0.8 mm	EI 54/18,8	0.42 kg	1	56	47	40	30	30	20	-	5	47.5	37.5	2.5
VR 13/2/..	Additional fixing by self-tapping screws	Pins for printed circuit boards	0.8 mm	EI 54/18,8	0.42 kg	2	56	47	40	30	30	20	5	5	47.5	37.5	2.5
VR 22/1/..	Additional fixing by self-tapping screws	Pins for printed circuit boards	0.8 mm	EI 60/21	0.57 kg	1	64	54	46	30	32.5	10	-	5	52.5	40	2.5
VR 22/2/..	Additional fixing by self-tapping screws	Pins for printed circuit boards	0.8 mm	EI 60/21	0.57 kg	2	64	54	46	30	32.5	10	10	5	52.5	40	2.5
VR 30/1/..	Additional fixing by self-tapping screws	Pins for printed circuit boards	0.8 mm	EI 60/30,5	0.78 kg	1	64	54	55	30	32.5	10	-	5	52.5	40	2.5
VR 30/2/..	Additional fixing by self-tapping screws	Pins for printed circuit boards	0.8 mm	EI 60/30,5	0.78 kg	2	64	54	55	30	32.5	10	10	5	52.5	40	2.5

Dimension pictures

1



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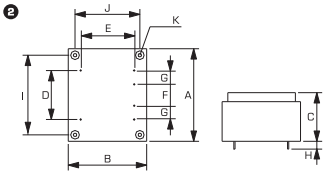


Short circuit proof PCB transformer
PT

General Data

- Rated input voltage 230 Vac
- Rated output voltage 6 - 2 x 24 Vac
- Rated power 4.5 - 30 VA
- Insulation class E
- Maximum ambient temperature 40 °C
- Efficiency up to 83 %
- Degree of protection IP 00

Advantages

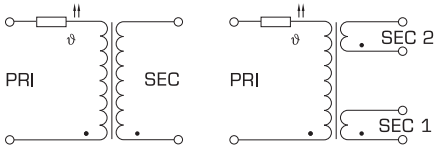
- Minimum size at high output
- Integrated overload protection using PTC in the input
- Also with double output voltage for series or parallel connection
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material
- Space saving installation thanks to additional screw mounting in the base plate

Applications

As a mains transformer for adjustment of the voltage and simple electrical isolation.

Safety transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Mains transformer
to: VDE 0570 Teil 2-1, DIN EN 61558-2-1, EN 61558-2-1, IEC 61558-2-1, UL 5085-1/-2, CSA 22.2 No.66

Safety isolating transformer
to: VDE 0570 Teil 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6, UL 5085-1/-2, CSA 22.2 No.66

Certifications

ENEC 10 (VDE), UL 5085-1/-2, CSA 22.2 No.66

Short circuit proof PCB transformer
PT

Electrical data

Type	PT 4,5/1/..	PT 4,5/2/..	PT 7,5/1/..	PT 7,5/2/..	PT 13/1/..	PT 13/2/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	6 Vac: PT 4,5/1/6 8 Vac: PT 4,5/1/8 9 Vac: PT 4,5/1/9 12 Vac: PT 4,5/1/12 15 Vac: PT 4,5/1/15 18 Vac: PT 4,5/1/18 24 Vac: PT 4,5/1/24	2x6 Vac: PT 4,5/2/6 2x8 Vac: PT 4,5/2/8 2x9 Vac: PT 4,5/2/9 2x12 Vac: PT 4,5/2/12 2x15 Vac: PT 4,5/2/15 2x18 Vac: PT 4,5/2/18 2x24 Vac: PT 4,5/2/24*	6 Vac: PT 7,5/1/6 8 Vac: PT 7,5/1/8 9 Vac: PT 7,5/1/9 12 Vac: PT 7,5/1/12 15 Vac: PT 7,5/1/15 18 Vac: PT 7,5/1/18 24 Vac: PT 7,5/1/24	2x6 Vac: PT 7,5/2/6 2x8 Vac: PT 7,5/2/8 2x9 Vac: PT 7,5/2/9 2x12 Vac: PT 7,5/2/12 2x15 Vac: PT 7,5/2/15 2x18 Vac: PT 7,5/2/18 2x24 Vac: PT 7,5/2/24*	6 Vac: PT 13/1/6 8 Vac: PT 13/1/8 9 Vac: PT 13/1/9 12 Vac: PT 13/1/12 15 Vac: PT 13/1/15 18 Vac: PT 13/1/18 24 Vac: PT 13/1/24	2x6 Vac: PT 13/2/6 2x8 Vac: PT 13/2/8 2x9 Vac: PT 13/2/9 2x12 Vac: PT 13/2/12 2x15 Vac: PT 13/2/15 2x18 Vac: PT 13/2/18 2x24 Vac: PT 13/2/24*
Rated Power	4.5 VA	4.5 VA	7.5 VA	7.5 VA	13.0 VA	13.0 VA
No-load voltage (app. x factor)	1.32	1.32	1.21	1.21	1.23	1.23
No-load loss (typ.)	1.50 W	1.50 W	1.30 W	1.30 W	1.30 W	1.30 W
Efficiency	65 %	65 %	65 %	65 %	73 %	73 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer	Safety isolating transformer *Mains transformer (without VDE mark)
Approvals						
Approvals	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)
Environment						
Ambient temperature max.	40 °C	40 °C	40 °C	40 °C	40 °C	40 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

Short circuit proof PCB transformer
PT

Electrical data

Type	PT 22/1/..	PT 22/2/..	PT 30/1/..	PT 30/2/..
Input				
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output				
Rated output voltage: Order no.	6 Vac: PT 22/1/6 8 Vac: PT 22/1/8 9 Vac: PT 22/1/9 12 Vac: PT 22/1/12 15 Vac: PT 22/1/15 18 Vac: PT 22/1/18 24 Vac: PT 22/1/24	2x6 Vac: PT 22/2/6 2x8 Vac: PT 22/2/8 2x9 Vac: PT 22/2/9 2x12 Vac: PT 22/2/12 2x15 Vac: PT 22/2/15 2x18 Vac: PT 22/2/18	6 Vac: PT 30/1/6 8 Vac: PT 30/1/8 9 Vac: PT 30/1/9 12 Vac: PT 30/1/12 15 Vac: PT 30/1/15 18 Vac: PT 30/1/18 24 Vac: PT 30/1/24	2x6 Vac: PT 30/2/6 2x8 Vac: PT 30/2/8 2x9 Vac: PT 30/2/9 2x12 Vac: PT 30/2/12 2x15 Vac: PT 30/2/15 2x18 Vac: PT 30/2/18
Rated Power	22.0 VA	22.0 VA	30.0 VA	30.0 VA
No-load voltage (app. x factor)	1.19	1.19	1.13	1.13
No-load loss (typ.)	2.40 W	2.40 W	2.30 W	2.30 W
Efficiency	77 %	77 %	83 %	83 %
Standards				
Classification	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer
Approvals				
Approvals	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)	cURus, ENEC (VDE)
Environment				
Ambient temperature max.	40 °C	40 °C	40 °C	40 °C
Safety and protection				
Type	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II
Short circuit strength	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof
Order numbers				
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

Short circuit proof PCB transformer
PT

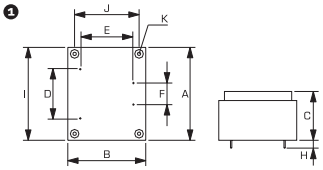
30

Mechanical data

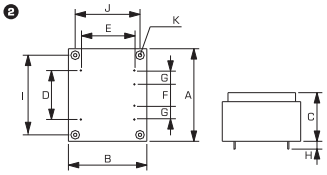
Typ	Terminals	Pin (ø)	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H	I	J	K
PT 4,5/1/..	Pins for printed circuit boards	0.8 mm	EI 42/14,8	0.19 kg	1	44	37	33	25	25	15	-	7	35	28	2.5
PT 4,5/2/..	Pins for printed circuit boards	0.8 mm	EI 42/14,8	0.19 kg	2	44	37	33	25	25	15	5	7	35	28	2.5
PT 7,5/1/..	Pins for printed circuit boards	0.8 mm	EI 48/16,8	0.28 kg	1	51	43	36	25	27.5	15	-	7	40	32	2.5
PT 7,5/2/..	Pins for printed circuit boards	0.8 mm	EI 48/16,8	0.28 kg	2	51	43	36	25	27.5	15	5	7	40	32	2.5
PT 13/1/..	Pins for printed circuit boards	0.8 mm	EI 54/18,8	0.42 kg	1	56	47	40	30	30	20	-	7	47.5	37.5	2.5
PT 13/2/..	Pins for printed circuit boards	0.8 mm	EI 54/18,8	0.42 kg	2	56	47	40	30	30	20	5	7	47.5	37.5	2.5
PT 22/1/..	Pins for printed circuit boards	0.8 mm	EI 60/21	0.57 kg	1	64	54	46	30	32.5	10	-	7	52.5	40	2.5
PT 22/2/..	Pins for printed circuit boards	0.8 mm	EI 60/21	0.57 kg	2	64	54	46	30	32.5	10	10	7	52.5	40	2.5
PT 30/1/..	Pins for printed circuit boards	0.8 mm	EI 60/30,5	0.78 kg	1	64	54	55	30	32.5	10	-	7	52.5	40	2.5
PT 30/2/..	Pins for printed circuit boards	0.8 mm	EI 60/30,5	0.78 kg	2	64	54	55	30	32.5	10	10	7	52.5	40	2.5

Dimension pictures

1



2



PCB transformer
EP

General Data

- Rated input voltage 230 Vac
- Rated output voltage 2 x 6 - 2 x 18 Vac
- Rated power 2.5 - 35 VA
- Insulation class E
- Maximum ambient temperature 40 °C
- Efficiency up to 79 %
- Degree of protection IP 00

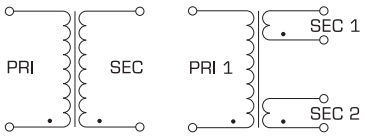
Advantages

- Minimum size at high output
- Double output voltage for series or parallel connection
- Very good moisture protection and low noise thanks to BLOCKIMPEX vacuum impregnation
- Encapsulated safety coil bodies in 2-chamber technology
- Contact protected on the circuit board thanks to covered solder pin strips
- Stable connection technology with injected round wire soldering pins
- Additional mounting option with holes in the core

Applications

Safety isolating transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Safety isolating transformer
to: VDE 0570 Part 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6

PCB transformer
EP

Electrical data

Type	EP 2,5/..	EP 4,5/..	EP 7,5/..	EP 13/..	EP 18/..	EP 28/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	2x6 Vac: EP 2,5/6 2x9 Vac: EP 2,5/9 2x12 Vac: EP 2,5/12	2x6 Vac: EP 4,5/6 2x9 Vac: EP 4,5/9 2x12 Vac: EP 4,5/12 2x15 Vac: EP 4,5/15	2x6 Vac: EP 7,5/6 2x9 Vac: EP 7,5/9 2x12 Vac: EP 7,5/12 2x15 Vac: EP 7,5/15 2x18 Vac: EP 7,5/18	2x6 Vac: EP 13/6 2x9 Vac: EP 13/9 2x12 Vac: EP 13/12 2x15 Vac: EP 13/15 2x18 Vac: EP 13/18	2x6 Vac: EP 18/6 2x9 Vac: EP 18/9 2x12 Vac: EP 18/12 2x15 Vac: EP 18/15 2x18 Vac: EP 18/18	2x6 Vac: EP 28/6 2x9 Vac: EP 28/9 2x12 Vac: EP 28/12 2x15 Vac: EP 28/15 2x18 Vac: EP 28/18
Rated Power	2.5 VA	4.5 VA	7.5 VA	13.0 VA	18.0 VA	28.0 VA
No-load voltage (app. x factor)	1.81	1.51	1.38	1.28	1.18	1.16
No-load loss (typ.)	1.00 W	1.90 W	2.00 W	2.20 W	2.70 W	3.10 W
Efficiency	47 %	56 %	62 %	67 %	72 %	77 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer
Environment						
Ambient temperature max.	40 °C	40 °C	40 °C	40 °C	40 °C	40 °C
Safety and protection						
Type	open type	open type	open type	open type	open type	open type
Class of Insulation System	E	E	E	E	E	E
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Overload protection	Typ PTC 884 (Accessory - available on request)	Typ PTC 890 (Accessory - available on request)	Typ PTC 880 (Accessory - available on request)	Typ PTC 872 (Accessory - available on request)	Typ PTC 860 (Accessory - available on request)	Typ PTC 850 (Accessory - available on request)
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

PCB transformer
EP

Electrical data

Type	EP 35/..
Input	
Rated input voltage	230 Vac
Rated frequency	50 - 60 Hz
Output	
Rated output voltage: Order no.	2x6 Vac: EP 35/6 2x9 Vac: EP 35/9 2x12 Vac: EP 35/12 2x15 Vac: EP 35/15 2x18 Vac: EP 35/18
Rated Power	35.0 VA
No-load voltage (app. x factor)	1.15
No-load loss (typ.)	3.90 W
Efficiency	79 %
Standards	
Classification	Safety isolating transformer
Environment	
Ambient temperature max.	40 °C
Safety and protection	
Type	open type
Class of Insulation System	E
Protection index	IP 00
Safety class (prepared)	II
Short circuit strength	non-short-circuit proof
Overload protection	Typ PTC 850 (Accessory - available on request)
Order numbers	
Order Number	**refer to rated output voltage**

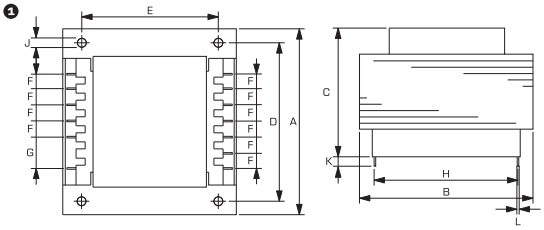
PCB transformer
EP

Mechanical data

Typ	Fixing method	Terminals	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H	J	K	L	M
EP 2,5/..	Holes in the core package	Pins for printed circuit boards	EI 38/13,5	0.13 kg	1	38	38	27.5	-	-	5	10	25	-	4	0.8	-
EP 4,5/..	Holes in the core package	Pins for printed circuit boards	EI 42/14,8	0.16 kg	2	42	35.5	30	35	28	5	12.5	25	3.5	4	0.8	7.5
EP 7,5/..	Holes in the core package	Pins for printed circuit boards	EI 48/16,5	0.25 kg	1	48	43	35	40	32	5	10	27.5	3.5	4	0.8	-
EP 13/..	Holes in the core package	Pins for printed circuit boards	EI 54/18,8	0.35 kg	1	54	45	40	45	36	5	10	30	3.5	4	0.8	-
EP 18/..	Holes in the core package	Pins for printed circuit boards	EI 60/21	0.48 kg	1	60	50	43	50	40	5	10	32.5	3.5	4	0.8	-
EP 28/..	Holes in the core package	Pins for printed circuit boards	EI 60/30	0.66 kg	1	60	50	53	50	40	5	10	32.5	3.5	4	0.8	-
EP 35/..	Holes in the core package	Pins for printed circuit boards	EI 66/30,5	0.80 kg	1	66	55	55	55	44	5	10	35	4.5	4	0.8	-

Dimension pictures

1



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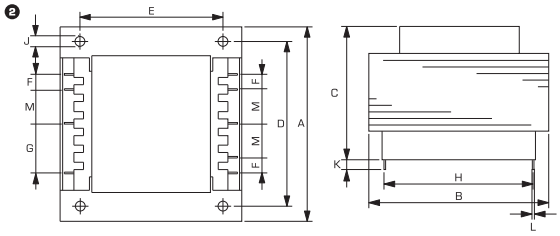


Overview
Low profile transformers

Power at a glance

Typ	Features	Rated input voltage	Rated output voltage	2.0 VA	3.0 VA	4.0 VA	4.3 VA	6.0 VA	7.0 VA	8.0 VA	10.0 VA	11.0 VA	12.0 VA	13.2 VA
FLN	double input voltage, ta 70° C Cl.B	2 x 115 Vac	2 x 6 - 2 x 21 Vac											
FL	double input voltage	2 x 115 Vac	2 x 5 - 2 x 24 Vac											
FL 14014	for triple voltage	2 x 115 Vac	9 and 14-0-14 Vac											
FLE	short circuit proof	230 Vac	2 x 6 - 2 x 18 Vac											
FLD	double input voltage, short circuit proof	2 x 115 Vac	2 x 6 - 2 x 18 Vac											

	14.0 VA	16.0 VA	18.0 VA	18.3 VA	24.0 VA	26.1 VA	30.0 VA	35.0 VA	37.3 VA	40.0 VA	42.0 VA	48.0 VA	52.0 VA	60.0 VA	Page
	■	■	■		■		■			■				■	244
	■		■		■		■				■		■		248
				■		■			■						252
			■		■			■							256
			■		■			■				■			260

Low profile transformer
FLN

General Data

- Rated input voltage 2 x 115 Vac
- Rated output voltage 2 x 6 - 2 x 21 Vac
- Rated power 3 - 60 VA
- Insulation class B
- Maximum ambient temperature 70 °C
- Efficiency up to 85 %
- Degree of protection IP 00

Advantages

- Minimum size at high output
- Low height
- Double input voltage for series or parallel connection
- Double output voltage for series or parallel connection
- Designed for high ambient temperatures
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material

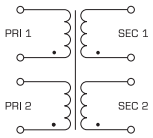
Applications

As a mains transformer for adjustment of the voltage and simple electrical isolation.

As an isolating transformer for the safe electrical isolation of the input and output sides. The transformer may be used to set up protective separation as a protective measure.

As a safety isolating transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Mains transformer
to: VDE 0570 Teil 2-1, DIN EN 61558-2-1, EN 61558-2-1, IEC 61558-2-1

Isolating transformer
to: VDE 0570 Part 2-4, DIN EN 61558-2-4, EN 61558-2-4, IEC 61558-2-4

Safety isolating transformer
to: VDE 0570 Part2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6

Low profile transformer
FLN

Electrical data

Type	FLN 3/..	FLN 4/..	FLN 6/..	FLN 10/..	FLN 11/..	FLN 14/..
Input						
Rated input Voltage	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	2x6 Vac: FLN 3/6 2x9 Vac: FLN 3/9 2x12 Vac: FLN 3/12 2x15 Vac: FLN 3/15 2x18 Vac: FLN 3/18* 2x21 Vac: FLN 3/21*	2x6 Vac: FLN 4/6 2x9 Vac: FLN 4/9 2x12 Vac: FLN 4/12 2x15 Vac: FLN 4/15 2x18 Vac: FLN 4/18* 2x21 Vac: FLN 4/21*	2x6 Vac: FLN 6/6 2x9 Vac: FLN 6/9 2x12 Vac: FLN 6/12 2x15 Vac: FLN 6/15 2x18 Vac: FLN 6/18* 2x21 Vac: FLN 6/21*	2x6 Vac: FLN 10/6 2x9 Vac: FLN 10/9 2x12 Vac: FLN 10/12 2x15 Vac: FLN 10/15 2x18 Vac: FLN 10/18* 2x21 Vac: FLN 10/21*	2x6 Vac: FLN 11/6 2x9 Vac: FLN 11/9 2x12 Vac: FLN 11/12 2x15 Vac: FLN 11/15 2x18 Vac: FLN 11/18* 2x21 Vac: FLN 11/21*	2x6 Vac: FLN 14/6 2x9 Vac: FLN 14/9 2x12 Vac: FLN 14/12 2x15 Vac: FLN 14/15 2x18 Vac: FLN 14/18* 2x21 Vac: FLN 14/21*
Rated Power	3.0 VA	4.0 VA	6.0 VA	10.0 VA	11.0 VA	14.0 VA
No-load voltage (app. x factor)	1.60	1.53	1.49	1.44	1.37	1.38
No-load loss (typ.)	2.40 W	0.85 W	0.75 W	1.60 W	1.00 W	2.00 W
Efficiency	50 %	58 %	62 %	63 %	66 %	67 %
Standards						
Classification	Safety isolating transformer *Mains transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer *Mains transformer
Approvals						
Approvals	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation
Environment						
Ambient temperature max.	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	B	B	B	B	B	B
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

Low profile transformer
FLN

Electrical data

Type	FLN 16/..	FLN 18/..	FLN 24/..	FLN 30/..	FLN 40/..	FLN 60/..
Input						
Rated input Voltage	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	2x6 Vac: FLN 16/6 2x9 Vac: FLN 16/9 2x12 Vac: FLN 16/12 2x15 Vac: FLN 16/15 2x18 Vac: FLN 16/18 2x21 Vac: FLN 16/21*	2x6 Vac: FLN 18/6 2x9 Vac: FLN 18/9 2x12 Vac: FLN 18/12 2x15 Vac: FLN 18/15 2x18 Vac: FLN 18/18 2x21 Vac: FLN 18/21*	2x6 Vac: FLN 24/6 2x9 Vac: FLN 24/9 2x12 Vac: FLN 24/12 2x15 Vac: FLN 24/15 2x18 Vac: FLN 24/18 2x21 Vac: FLN 24/21*	2x6 Vac: FLN 30/6 2x9 Vac: FLN 30/9 2x12 Vac: FLN 30/12 2x15 Vac: FLN 30/15 2x18 Vac: FLN 30/18 2x21 Vac: FLN 30/21**	2x6 Vac: FLN 40/6 2x9 Vac: FLN 40/9 2x12 Vac: FLN 40/12 2x15 Vac: FLN 40/15 2x18 Vac: FLN 40/18 2x21 Vac: FLN 40/21**	2x6 Vac: FLN 60/6 2x9 Vac: FLN 60/9 2x12 Vac: FLN 60/12 2x15 Vac: FLN 60/15 2x18 Vac: FLN 60/18 2x21 Vac: FLN 60/21**
Rated Power	16.0 VA	18.0 VA	24.0 VA	30.0 VA	40.0 VA	60.0 VA
No-load voltage (app. x factor)	1.26	1.35	1.26	1.19	1.20	1.12
No-load loss (typ.)	1.70 W	1.49 W	2.00 W	2.30 W	2.30 W	3.20 W
Efficiency	74 %	69 %	74 %	77 %	82 %	85 %
Standards						
Classification	Safety isolating transformer *Mains transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer *Mains transformer	Safety isolating transformer **Isolating transformer	Safety isolating transformer **Isolating transformer	Safety isolating transformer **Isolating transformer
Approvals						
Approvals	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation	cURus in preparation, ENEC 10 (VDE) in preparation
Environment						
Ambient temperature max.	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	B	B	B	B	B	B
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

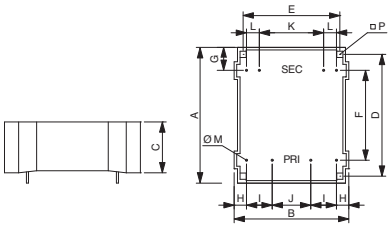
Low profile transformer
FLN

Mechanical data

Typ	Terminals	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
FLN 3/..	Pins for printed circuit boards	UI 30/5,5	0.13 kg	1	53	44.2	17.8	47.5	37.5	35	9	4.6	10	15	25	5	0.8	-	-	2.4
FLN 4/..	Pins for printed circuit boards	UI 30/7,5	0.15 kg	1	53	44.2	19.8	47.5	37.5	35	9	4.6	10	15	25	5	0.8	-	-	2.4
FLN 6/..	Pins for printed circuit boards	UI 30/10,5	0.19 kg	1	53	44.2	22.8	47.5	37.5	35	9	4.6	10	15	25	5	0.8	-	-	2.4
FLN 10/..	Pins for printed circuit boards	UI 39/8	0.29 kg	2	68.2	57.3	23	62.5	50	45	11.5	5.6	15	16	26	10	0.8	-	-	2.4
FLN 11/..	Pins for printed circuit boards	UI 30/16	0.26 kg	1	53	44.2	28.8	47.5	37.5	35	9	4.6	10	15	25	5	0.8	-	-	2.4
FLN 14/..	Pins for printed circuit boards	UI 39/10,2	0.34 kg	2	68.2	57.3	25.2	62.5	50	45	11.5	5.6	15	16	26	10	0.8	-	-	2.4
FLN 16/..	Pins for printed circuit boards	UI 30/26	0.38 kg	1	53	44.2	37.6	47.5	37.5	35	9	4.6	10	15	25	5	0.8	-	-	2.4
FLN 18/..	Pins for printed circuit boards	UI 39/13,5	0.40 kg	2	68.2	57.3	28.5	62.5	50	45	11.5	5.6	15	16	26	10	0.8	-	-	2.4
FLN 24/..	Pins for printed circuit boards	UI 39/17	0.49 kg	2	68.2	57.3	32	62.5	50	45	11.5	5.6	15	16	26	10	0.8	-	-	2.4
FLN 30/..	Pins for printed circuit boards	UI 39/21	0.57 kg	2	68.2	57.3	36	62.5	50	45	11.5	5.6	15	16	26	10	0.8	-	-	2.4
FLN 40/..	Pins for printed circuit boards	UI 48/17	0.76 kg	3	83.7	70.6	38.7	75	60	53.5	15	6.8	15	27	37	10	-	0.5	1	3.3
FLN 60/..	Pins for printed circuit boards	UI 48/26	1.05 kg	3	83.7	70.6	47.9	75	60	53.5	15	6.8	15	27	37	10	-	0.5	1	3.3

Dimension pictures

1



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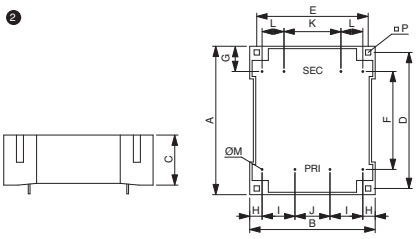

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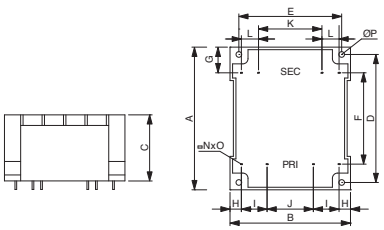


Low profile transformer
FL

General Data

- Rated input voltage 2 x 115 Vac
- Rated output voltage 2 x 5 - 2 x 24 Vac
- Rated power 2 - 52 VA
- Insulation class E
- Maximum ambient temperature 40 °C
- Efficiency up to 81 %
- Degree of protection IP 00

Advantages

- Minimum size at high output
- Low height
- Double input voltage for series or parallel connection
- Double output voltage for series or parallel connection
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material

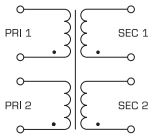
Applications

As a mains transformer for adjustment of the voltage and simple electrical isolation.

As an isolating transformer for the safe electrical isolation of the input and output sides. The transformer may be used to set up protective separation as a protective measure in accordance with VDE 0100.

As a safety isolating transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Mains transformer
to: VDE 0570 Teil 2-1, DIN EN 61558-2-1, EN 61558-2-1, IEC 61558-2-1, UL 5085-1/-2, CSA 22.2 No.66

Isolating transformer
to: VDE 0570 Part 2-4, DIN EN 61558-2-4, EN 61558-2-4, IEC 61558-2-4, UL 5085-1/-2, CSA 22.2 No.66

Safety isolating transformer
to: VDE 0570 Part 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6, UL 5085-1/-2, CSA 22.2 No.66

Certifications

ENEC 10 (VDE), UL 5085-1/-2, CSA 22.2 No.66

Low profile transformer
FL

Electrical data

Type	FL 2/..	FL 4/..	FL 6/..	FL 8/..	FL 10/..	FL 14/..
Input						
Rated input Voltage	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	2x5 Vac: FL 2/5 2x6 Vac: FL 2/6 2x8 Vac: FL 2/8 2x9 Vac: FL 2/9 2x12 Vac: FL 2/12 2x15 Vac: FL 2/15 2x18 Vac: FL 2/18 2x24 Vac: FL 2/24*	2x5 Vac: FL 4/5 2x6 Vac: FL 4/6 2x8 Vac: FL 4/8 2x9 Vac: FL 4/9 2x12 Vac: FL 4/12 2x15 Vac: FL 4/15 2x18 Vac: FL 4/18 2x24 Vac: FL 4/24*	2x5 Vac: FL 6/5 2x6 Vac: FL 6/6 2x8 Vac: FL 6/8 2x9 Vac: FL 6/9 2x12 Vac: FL 6/12 2x15 Vac: FL 6/15 2x18 Vac: FL 6/18 2x24 Vac: FL 6/24*	2x6 Vac: FL 8/6 2x8 Vac: FL 8/8 2x9 Vac: FL 8/9 2x12 Vac: FL 8/12 2x15 Vac: FL 8/15 2x18 Vac: FL 8/18 2x24 Vac: FL 8/24*	2x5 Vac: FL 10/5 2x6 Vac: FL 10/6 2x8 Vac: FL 10/8 2x9 Vac: FL 10/9 2x12 Vac: FL 10/12 2x15 Vac: FL 10/15 2x18 Vac: FL 10/18 2x24 Vac: FL 10/24*	2x5 Vac: FL 14/5 2x6 Vac: FL 14/6 2x8 Vac: FL 14/8 2x9 Vac: FL 14/9 2x12 Vac: FL 14/12 2x15 Vac: FL 14/15 2x18 Vac: FL 14/18 2x24 Vac: FL 14/24*
Rated Power	2.0 VA	4.0 VA	6.0 VA	8.0 VA	10.0 VA	14.0 VA
No-load voltage (app. x factor)	1.35	1.35	1.35	1.22	1.32	1.28
No-load loss (typ.)	0.60 W	0.90 W	1.20 W	1.30 W	1.10 W	1.20 W
Efficiency	66 %	66 %	69 %	76 %	72 %	74 %
Standards						
Classification	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer *Mains transformer (without VDE mark)
Approvals						
Approvals	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)
Environment						
Ambient temperature max.	40 °C	40 °C	40 °C	40 °C	40 °C	40 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

Low profile transformer
FL

Electrical data

Type	FL 18/..	FL 24/..	FL 30/..	FL 42/..	FL 52/..
Input					
Rated input Voltage	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output					
Rated output voltage: Order no.	2x5 Vac: FL 18/5 2x6 Vac: FL 18/6 2x8 Vac: FL 18/8 2x9 Vac: FL 18/9 2x12 Vac: FL 18/12 2x15 Vac: FL 18/15 2x18 Vac: FL 18/18 2x24 Vac: FL 18/24*	2x5 Vac: FL 24/5 2x6 Vac: FL 24/6 2x8 Vac: FL 24/8 2x9 Vac: FL 24/9 2x12 Vac: FL 24/12 2x15 Vac: FL 24/15 2x18 Vac: FL 24/18 2x24 Vac: FL 24/24*	2x5 Vac: FL 30/5 2x6 Vac: FL 30/6 2x8 Vac: FL 30/8 2x9 Vac: FL 30/9 2x12 Vac: FL 30/12 2x15 Vac: FL 30/15 2x18 Vac: FL 30/18 2x24 Vac: FL 30/24*	2x5 Vac: FL 42/5 2x6 Vac: FL 42/6 2x8 Vac: FL 42/8 2x9 Vac: FL 42/9 2x12 Vac: FL 42/12 2x15 Vac: FL 42/15 2x18 Vac: FL 42/18 2x24 Vac: FL 42/24**	2x5 Vac: FL 52/5 2x6 Vac: FL 52/6 2x8 Vac: FL 52/8 2x9 Vac: FL 52/9 2x12 Vac: FL 52/12 2x15 Vac: FL 52/15 2x18 Vac: FL 52/18 2x24 Vac: FL 52/24**
Rated Power	18.0 VA	24.0 VA	30.0 VA	42.0 VA	52.0 VA
No-load voltage (app. x factor)	1.22	1.20	1.17	1.16	1.12
No-load loss (typ.)	1.50 W	1.60 W	1.70 W	3.50 W	4.00 W
Efficiency	77 %	77 %	81 %	81 %	81 %
Standards					
Classification	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer *Mains transformer (without VDE mark)	Safety isolating transformer **isolating transformer (without VDE mark)	Safety isolating transformer **isolating transformer (without VDE mark)	Safety isolating transformer **isolating transformer (without VDE mark)
Approvals					
Approvals	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)
Environment					
Ambient temperature max.	40 °C	40 °C	40 °C	40 °C	40 °C
Safety and protection					
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers					
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

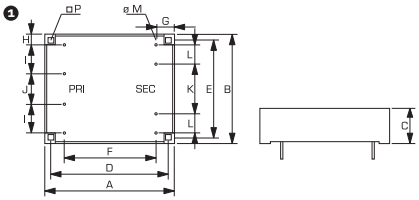
Low profile transformer
FL

Mechanical data

Typ	Terminals	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
FL 2/..	Pins for printed circuit boards	UI 30/5,5	0.12 kg	1	53	44	17.6	47.5	37.5	35	9	4.5	10	15	25	5	0.8	-	-	2.5
FL 4/..	Pins for printed circuit boards	UI 30/7,5	0.15 kg	1	53	44	19.6	47.5	37.5	35	9	4.5	10	15	25	5	0.8	-	-	2.5
FL 6/..	Pins for printed circuit boards	UI 30/10,5	0.18 kg	1	53	44	22.6	47.5	37.5	35	9	4.5	10	15	25	5	0.8	-	-	2.5
FL 8/..	Pins for printed circuit boards	UI 30/16,5	0.25 kg	1	53	44	28.6	47.5	37.5	35	9	4.5	10	15	25	5	0.8	-	-	2.5
FL 10/..	Pins for printed circuit boards	UI 39/8	0.28 kg	1	68	57	22.8	62.5	50	45	11.5	5.5	15	16	26	10	0.8	-	-	2.5
FL 14/..	Pins for printed circuit boards	UI 39/10,2	0.32 kg	1	68	57	24.4	62.5	50	45	11.5	5.5	15	16	26	10	0.8	-	-	2.5
FL 18/..	Pins for printed circuit boards	UI 39/13,5	0.38 kg	1	68	57	27.6	62.5	50	45	11.5	5.5	15	16	26	10	0.8	-	-	2.5
FL 24/..	Pins for printed circuit boards	UI 39/17	0.45 kg	1	68	57	31.4	62.5	50	45	11.5	5.5	15	16	26	10	0.8	-	-	2.5
FL 30/..	Pins for printed circuit boards	UI 39/21	0.53 kg	1	68	57	35.8	62.5	50	45	11.5	5.5	15	16	26	10	0.8	-	-	2.5
FL 42/..	Pins for printed circuit boards	UI 48/17	0.72 kg	2	83.5	70	39	75	60	53.5	15	6.5	15	27	37	10	-	0.5	1	3.1
FL 52/..	Pins for printed circuit boards	UI 48/26	0.98 kg	2	86.5	70	49	75	60	53.5	16.5	6.5	15	27	37	10	-	0.5	1	3.1

Dimension pictures

1



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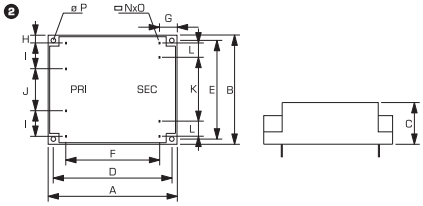


Low profile transformer for three-phase voltage power units
FL 14014

General Data

- Rated input voltage 2 x 115 Vac
- Rated output voltage I 9 Vac
- Rated output voltage II 14.0-0-14.0 Vac
- Rated power 4.34 - 37.3 VA
- Insulation class E
- Maximum ambient temperature 40 °C
- Efficiency up to 78 %
- Degree of protection IP 00

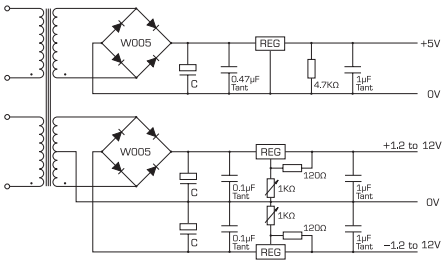
Advantages

- Minimum size at high output
- Low height
- Double input voltage for series or parallel connection
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material

Applications

Safety isoalting transformer specially trimmed for building a DC supply (see sample application).

Anwendungsbeispiel



Standards

Safety isolating transformer
to: VDE 0570 Teil 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6, UL 5085-1/-2, CSA 22.2 No.66

Certifications

ENEC 10 (VDE), UL 5085-1/-2, CSA 22.2 No.66

Low profile transformer for three-phase voltage power units
FL 14014

Electrical data

Type	FL 6/14014/9	FL 10/14014/9	FL 14/14014/9	FL 18/14014/9	FL 24/14014/9	FL 30/14014/9
Input						
Rated input Voltage	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated Output voltage I	9 Vac	9 Vac	9 Vac	9 Vac	9 Vac	9 Vac
Rated Output voltage II	14.0-0-14.0 Vac	14.0-0-14.0 Vac	14.0-0-14.0 Vac	14.0-0-14.0 Vac	14.0-0-14.0 Vac	14.0-0-14.0 Vac
Rated Power	4.34 VA	7.07 VA	10.03 VA	13.19 VA	18.30 VA	26.10 VA
Rated output current I	0.14 A	0.35 A	0.43 A	0.75 A	1.10 A	1.50 A
Rated output current II	0.11 A	0.14 A	0.22 A	0.23 A	0.30 A	0.45 A
Smoothing Cap. C SEC I	470 µF	1000 µF	1000 µF	2000 µF	4700 µF	4700 µF
Smoothing Cap. C SEC II	2 x 220 µF	2 x 220 µF	2 x 220 µF	2 x 220 µF	2 x 1000 µF	2 x 1000 µF
No-load voltage (app. x factor)	1.33	1.32	1.28	1.26	1.22	1.25
No-load loss (typ.)	1.20 W	1.20 W	1.40 W	1.40 W	1.80 W	2.20 W
Regulator Reference SEC I	7805	7805	7805	7805	7805	7805
Regulator Reference SEC II	317L,337LZ	317L,337LZ	317L,337LZ	317L,337LZ	317L,337LZ	317L,337LZ
Efficiency	68 %	71 %	72 %	74 %	76 %	77 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer
Approvals						
Approvals	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)	cURus, ENEC 10 (VDE)
Environment						
Ambient temperature max.	40 °C	40 °C	40 °C	40 °C	40 °C	40 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105	VDE=E, UL=class 105
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof	non-short-circuit proof
Order numbers						
Order Number	**FL 6/14014/9**	**FL 10/14014/9**	**FL 14/14014/9**	**FL 18/14014/9**	**FL 24/14014/9**	**FL 30/14014/9**

Low profile transformer for three-phase voltage power units
FL 14014

Electrical data

Type	FL 42/14014/9
Input	
Rated input Voltage	2 x 115 Vac
Rated frequency	50 - 60 Hz
Output	
Rated Output voltage I	9 Vac
Rated Output voltage II	14.0-0-14.0 Vac
Rated Power	37.30 VA
Rated output current I	1.50 A
Rated output current II	0.85 A
Smoothing Cap. C SEC I	4700 µF
Smoothing Cap. C SEC II	2 x 1000 µF
No-load voltage (app. x factor)	1.24
No-load loss (typ.)	3.80 W
Regulator Reference SEC I	7805
Regulator Reference SEC II	317L,337LZ
Efficiency	78 %
Standards	
Classification	Safety isolating transformer
Approvals	
Approvals	cURus, ENEC 10 (VDE)
Environment	
Ambient temperature max.	40 °C
Safety and protection	
Type	encapsulated
Class of Insulation System	VDE=E, UL=class 105
Protection index	IP 00
Safety class (prepared)	II
Short circuit strength	non-short-circuit proof
Order numbers	
Order Number	**FL 42/14014/9**

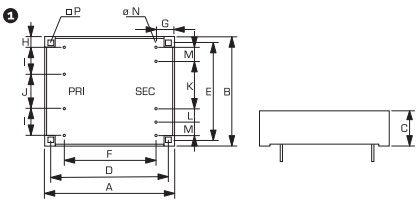
Low profile transformer for three-phase voltage power units
FL 14014

Mechanical data

Typ	Terminals	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
FL 6/14014/9	Pins for printed circuit boards	0.18 kg	1	53	44	22.6	47.5	37.5	35	9	4.5	10	15	20	5	5	0.8	-	2.5
FL 10/14014/9	Pins for printed circuit boards	0.28 kg	1	68	57	22.8	62.5	50	45	11.5	5.5	15	16	30	5	5	0.8	-	2.5
FL 14/14014/9	Pins for printed circuit boards	0.32 kg	1	68	57	24.4	62.5	50	45	11.5	5.5	15	16	30	5	5	0.8	-	2.5
FL 18/14014/9	Pins for printed circuit boards	0.38 kg	1	68	57	27.6	62.5	50	45	11.5	5.5	15	16	30	5	5	0.8	-	2.5
FL 24/14014/9	Pins for printed circuit boards	0.45 kg	1	68	57	31.4	62.5	50	45	11.5	5.5	15	16	30	5	5	0.8	-	2.5
FL 30/14014/9	Pins for printed circuit boards	0.53 kg	1	68	57	35.8	62.5	50	45	11.5	5.5	15	16	30	5	5	0.8	-	2.5
FL 42/14014/9	Pins for printed circuit boards	0.72 kg	2	83.5	70	39	75	60	52.5	15	6.5	15	27	32	5	10	0.5	1	3.1

Dimension pictures

1



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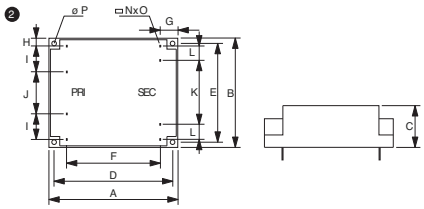


Short circuit proof low profile transformer
FLE

General Data

- Rated input voltage 230 Vac
- Rated output voltage 2 x 6 - 2 x 18 Vac
- Rated power 4 - 35 VA
- Insulation class E
- Maximum ambient temperature 40 °C
- Efficiency up to 78 %
- Degree of protection IP 00

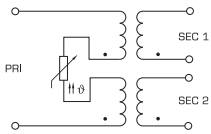
Advantages

- Minimum size at high output
- Low height
- Integrated overload protection using PTC in the input
- Double output voltage for series or parallel connection
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material

Applications

As a safety isolating transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Safety isolating transformer
to: VDE 0570 Part 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6

Certifications

ENEC 10 (VDE)

Short circuit proof low profile transformer
FLE

Electrical data

Type	FLE 4/..	FLE 6/..	FLE 12/..	FLE 18/..	FLE 24/..	FLE 35/..
Input						
Rated input voltage	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac	230 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	2x6 Vac: FLE 4/6 2x8 Vac: FLE 4/8 2x9 Vac: FLE 4/9 2x12 Vac: FLE 4/12 2x15 Vac: FLE 4/15 2x18 Vac: FLE 4/18	2x6 Vac: FLE 6/6 2x8 Vac: FLE 6/8 2x9 Vac: FLE 6/9 2x12 Vac: FLE 6/12 2x15 Vac: FLE 6/15 2x18 Vac: FLE 6/18	2x6 Vac: FLE 12/6 2x8 Vac: FLE 12/8 2x9 Vac: FLE 12/9 2x12 Vac: FLE 12/12 2x15 Vac: FLE 12/15 2x18 Vac: FLE 12/18	2x6 Vac: FLE 18/6 2x8 Vac: FLE 18/8 2x9 Vac: FLE 18/9 2x12 Vac: FLE 18/12 2x15 Vac: FLE 18/15 2x18 Vac: FLE 18/18	2x6 Vac: FLE 24/6 2x8 Vac: FLE 24/8 2x9 Vac: FLE 24/9 2x12 Vac: FLE 24/12 2x15 Vac: FLE 24/15 2x18 Vac: FLE 24/18	2x6 Vac: FLE 35/6 2x8 Vac: FLE 35/8 2x9 Vac: FLE 35/9 2x12 Vac: FLE 35/12 2x15 Vac: FLE 35/15 2x18 Vac: FLE 35/18
Rated Power	4.0 VA	6.0 VA	12.0 VA	18.0 VA	24.0 VA	35.0 VA
No-load voltage (app. x factor)	1.37	1.33	1.31	1.30	1.25	1.20
No-load loss (typ.)	0.80 W	1.30 W	1.80 W	2.00 W	2.90 W	3.20 W
Efficiency	70 %	72 %	73 %	75 %	75 %	78 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer
Approvals						
Approvals	ENEC 10 (VDE)	ENEC 10 (VDE)	ENEC 10 (VDE)	ENEC 10 (VDE)	ENEC 10 (VDE)	ENEC 10 (VDE)
Environment						
Ambient temperature max.	40 °C	40 °C	40 °C	40 °C	40 °C	40 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	E	E	E	E	E	E
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

Short circuit proof low profile transformer
FLE

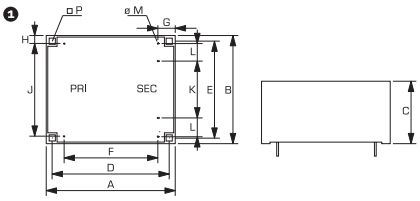
30

Mechanical data

Typ	Terminals	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
FLE 4/..	Pins for printed circuit boards	UI 30/10,5	0.18 kg	1	53	44	22.6	47.5	37.5	35	9	4.5	35	25	5	0.8	-	-	2.5
FLE 6/..	Pins for printed circuit boards	UI 30/16,5	0.25 kg	1	53	44	28.6	47.5	37.5	35	9	4.5	35	25	5	0.8	-	-	2.5
FLE 12/..	Pins for printed circuit boards	UI 39/13,5	0.37 kg	1	68	57	27.6	62.5	50	45	11.5	5.5	46	26	10	0.8	-	-	2.5
FLE 18/..	Pins for printed circuit boards	UI 39/17,0	0.45 kg	1	68	57	31.4	62.5	50	45	11.5	5.5	46	26	10	0.8	-	-	2.5
FLE 24/..	Pins for printed circuit boards	UI 39/21	0.53 kg	1	68	57	35.8	62.5	50	45	11.5	5.5	46	26	10	0.8	-	-	2.5
FLE 35/..	Pins for printed circuit boards	UI 48/17,0	0.74 kg	2	83.5	70	39	75	60	53.5	15	6.5	57	37	10	-	0.5	1	3

Dimension pictures

1



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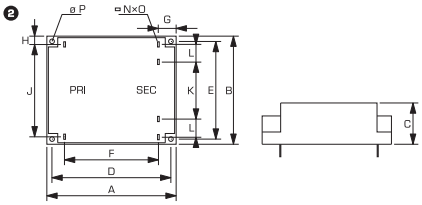
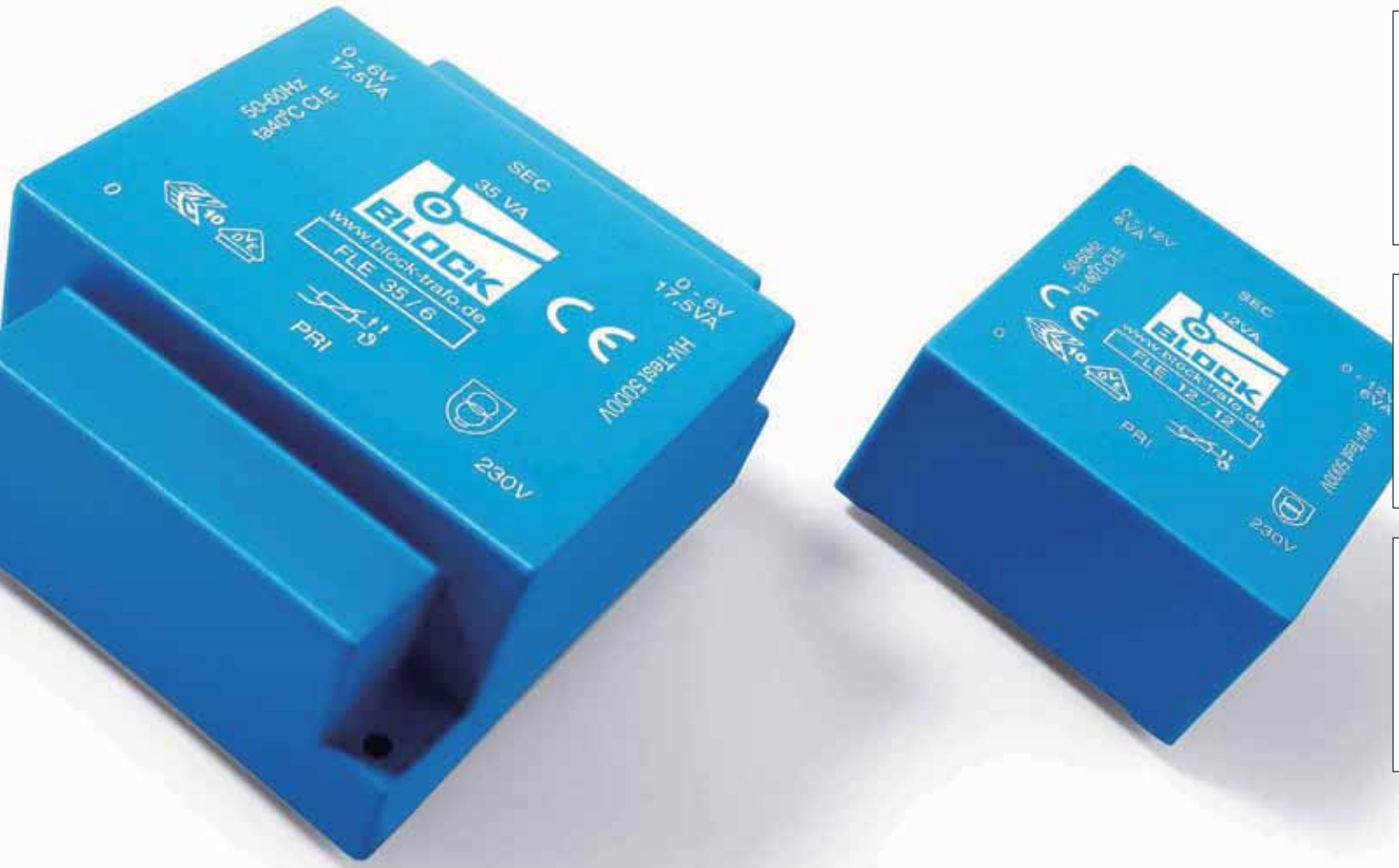



0 - 6V
17,5VA
50-60Hz
t≥40°C CLE
SEC
35 VA
BLOCK
www.block-trafo.de
FLE 35 / 6
PRI
230V
HV-Test 5000V
12VA
FLE 12 / 12

Short circuit proof low profile transformer
FLD

General Data

- Rated input voltage 2 x 115 Vac
- Rated output voltage 2 x 6 - 2 x 18 Vac
- Rated power 4 - 48 VA
- Insulation class E
- Maximum ambient temperature 40 °C
- Efficiency up to 79 %
- Degree of protection IP 00

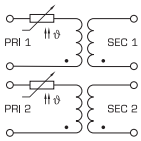
Advantages

- Minimum size at high output
- Low height
- Integrated overload protection using PTC in the input
- Double input voltage for series or parallel connection
- Double output voltage for series or parallel connection
- Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation
- Coil shell in 2-chamber technology
- Self-extinguishing potting material

Applications

As a safety isolating transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

Circuit Diagram



Standards

Safety isolating transformer
to: VDE 0570 Part 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6

Certifications

ENEC 10 (VDE)

Short circuit proof low profile transformer
FLD

Electrical data

Type	FLD 4/..	FLD 6/..	FLD 12/..	FLD 18/..	FLD 24/..	FLD 35/..
Input						
Rated input Voltage	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac	2 x 115 Vac
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Output						
Rated output voltage: Order no.	2x6 Vac: FLD 4/6 2x8 Vac: FLD 4/8 2x9 Vac: FLD 4/9 2x12 Vac: FLD 4/12 2x15 Vac: FLD 4/15 2x18 Vac: FLD 4/18	2x6 Vac: FLD 6/6 2x8 Vac: FLD 6/8 2x9 Vac: FLD 6/9 2x12 Vac: FLD 6/12 2x15 Vac: FLD 6/15 2x18 Vac: FLD 6/18	2x6 Vac: FLD 12/6 2x8 Vac: FLD 12/8 2x9 Vac: FLD 12/9 2x12 Vac: FLD 12/12 2x15 Vac: FLD 12/15 2x18 Vac: FLD 12/18	2x6 Vac: FLD 18/6 2x8 Vac: FLD 18/8 2x9 Vac: FLD 18/9 2x12 Vac: FLD 18/12 2x15 Vac: FLD 18/15 2x18 Vac: FLD 18/18	2x6 Vac: FLD 24/6 2x8 Vac: FLD 24/8 2x9 Vac: FLD 24/9 2x12 Vac: FLD 24/12 2x15 Vac: FLD 24/15 2x18 Vac: FLD 24/18	2x6 Vac: FLD 35/6 2x8 Vac: FLD 35/8 2x9 Vac: FLD 35/9 2x12 Vac: FLD 35/12 2x15 Vac: FLD 35/15 2x18 Vac: FLD 35/18
Rated Power	4.0 VA	6.0 VA	12.0 VA	18.0 VA	24.0 VA	35.0 VA
No-load voltage (app. x factor)	1.37	1.33	1.31	1.30	1.25	1.20
No-load loss (typ.)	0.80 W	1.30 W	1.80 W	2.00 W	2.90 W	3.20 W
Efficiency	70 %	72 %	73 %	75 %	75 %	78 %
Standards						
Classification	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer	Safety isolating transformer
Approvals						
Approvals	ENEC 10 (VDE)	ENEC 10 (VDE)	ENEC 10 (VDE)	ENEC 10 (VDE)	ENEC 10 (VDE)	ENEC 10 (VDE)
Environment						
Ambient temperature max.	40 °C	40 °C	40 °C	40 °C	40 °C	40 °C
Safety and protection						
Type	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated	encapsulated
Class of Insulation System	E	E	E	E	E	E
Protection index	IP 00	IP 00	IP 00	IP 00	IP 00	IP 00
Safety class (prepared)	II	II	II	II	II	II
Short circuit strength	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof	non-inherently short-circuit proof
Order numbers						
Order Number	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**	**refer to rated output voltage**

Short circuit proof low profile transformer
FLD

Electrical data

Type	FLD 48/..
Input	
Rated input Voltage	2 x 115 Vac
Rated frequency	50 - 60 Hz
Output	
Rated output voltage: Order no.	2x6 Vac: FLD 48/6 2x8 Vac: FLD 48/8 2x9 Vac: FLD 48/9 2x12 Vac: FLD 48/12 2x15 Vac: FLD 48/15 2x18 Vac: FLD 48/18
Rated Power	48.0 VA
No-load voltage (app. x factor)	1.20
No-load loss (typ.)	4.50 W
Efficiency	79 %
Standards	
Classification	Safety isolating transformer
Approvals	
Approvals	ENEC 10 (VDE)
Environment	
Ambient temperature max.	40 °C
Safety and protection	
Type	encapsulated
Class of Insulation System	E
Protection index	IP 00
Safety class (prepared)	II
Short circuit strength	non-inherently short-circuit proof
Order numbers	
Order Number	**refer to rated output voltage**

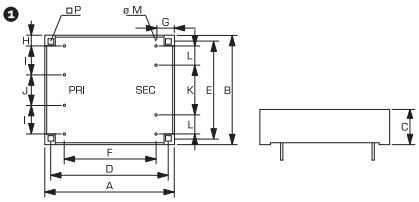
Short circuit proof low profile transformer
FLD

Mechanical data

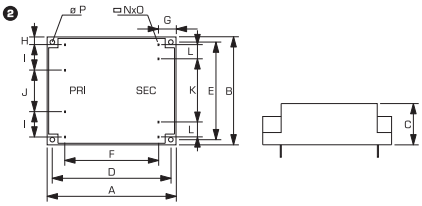
Typ	Terminals	Core type	Weight	Dimension picture (in mm)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
FLD 4/..	Pins for printed circuit boards	UI 30/10,5	0.18 kg	1	53	44	22.6	47.5	37.5	35	9	4.5	10	15	25	5	0.8	-	-	2.5
FLD 6/..	Pins for printed circuit boards	UI 30/16,5	0.25 kg	1	53	44	28.6	47.5	37.5	35	9	4.5	10	15	25	5	0.8	-	-	2.5
FLD 12/..	Pins for printed circuit boards	UI 39/13,5	0.37 kg	1	68	57	27.6	62.5	50	45	11.5	5.5	15	16	26	10	0.8	-	-	2.5
FLD 18/..	Pins for printed circuit boards	UI 39/17,0	0.45 kg	1	68	57	31.4	62.5	50	45	11.5	5.5	15	16	26	10	0.8	-	-	2.5
FLD 24/..	Pins for printed circuit boards	UI 39/21,0	0.53 kg	1	68	57	35.8	62.5	50	45	11.5	5.5	15	16	26	10	0.8	-	-	2.5
FLD 35/..	Pins for printed circuit boards	UI 48/17,0	0.74 kg	2	83.5	70	39	75	60	53.5	15	6.5	15	27	37	10	-	0.5	1	3
FLD 48/..	Pins for printed circuit boards	UI 48/26,0	1.02 kg	2	86.5	70	49	75	60	53	17	6.5	15	27	37	10	-	0.5	1	3

Dimension pictures

1



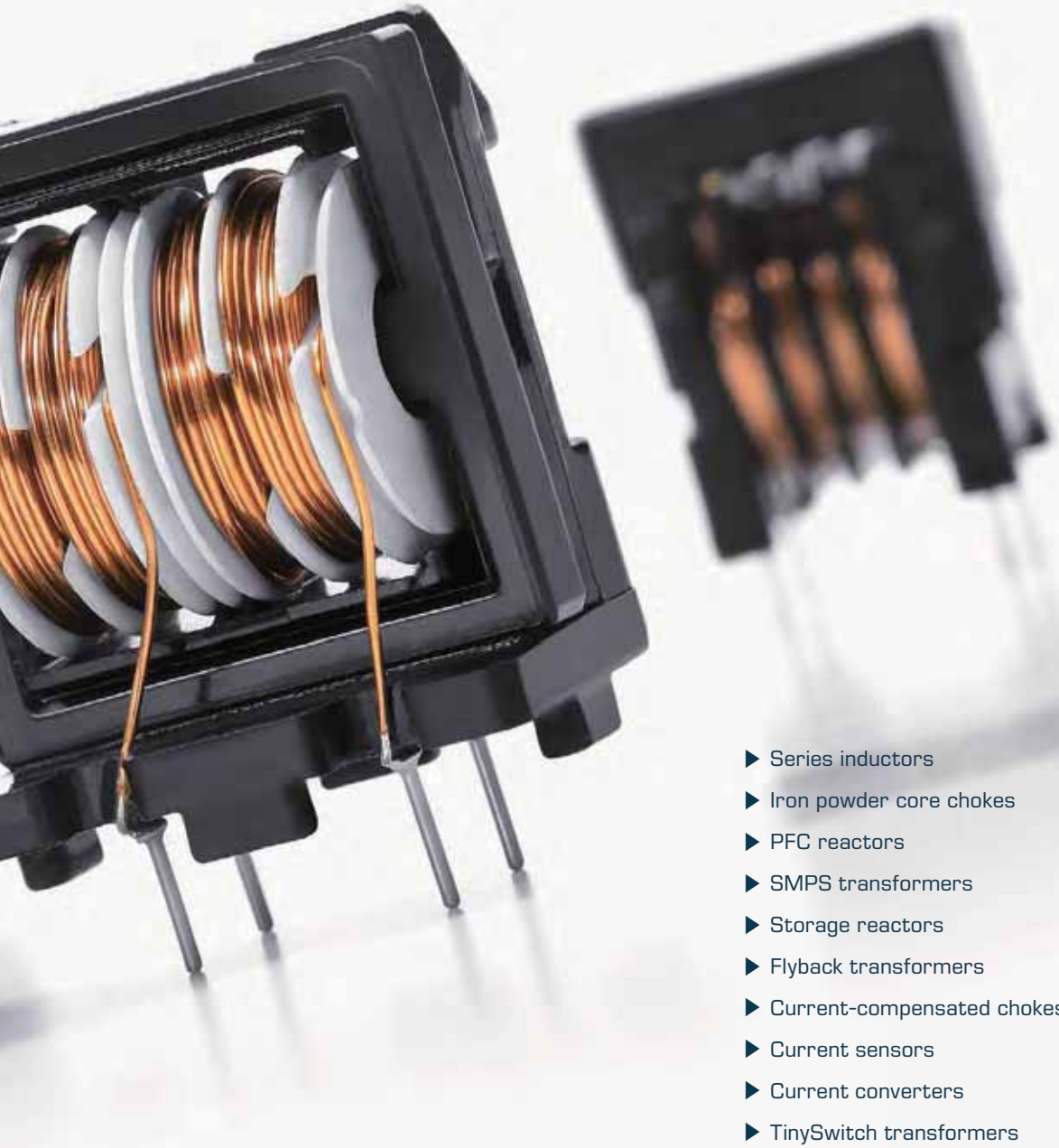
2



Inductive components

BLOCK has been developing and producing components for industry for a long time. Particularly in the field of inductive components, we have produced a wide range of customer-specific product innovations:

- Drive transformers
- Backlight transformers
- Forward converter transformers
- RFI chokes
- Push-pull transformers
- Half-bridge transformers
- High-voltage transformers

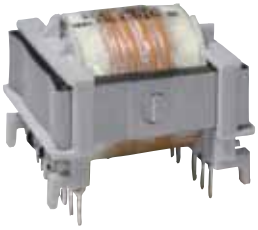


- Series inductors
- Iron powder core chokes
- PFC reactors
- SMPS transformers
- Storage reactors
- Flyback transformers
- Current-compensated chokes up to 320 A
- Current sensors
- Current converters
- TinySwitch transformers
- TOPSwitch transformers
- Full-bridge transformers

BLOCK CUSTOM MADE

Components for switched mode power supplies

Push-pull transformer



- Input voltages up to 10 kVac
- Output voltages up to 10 kVac
- Power up to 100 kW
- Frequencies up to 300 kHz
- Core forms E, ETD, EFD, PQ etc.
- UL-insulating system Class B, Class F

Sample data

Input rated voltage 400 Vac	Switching 66 kHz
Output rated voltage 14 Vac	Core size ETD 39
Power 280 W	Standard EN 60950
Inductance 4,26 mH	

RFI chokes

Current compensated ring core choke

- Current compensated chokes
- Linear series chokes
- Ring core chokes
- Rod core chokes
- UL-insulating system Class B, Class F

Sample data

Rated voltage 250 Vac	Inductance 2 x 3,3 mH
Rated current 4 A	Standard EN 61558

BLOCK experience

When it comes to inductive components you will find BLOCK an efficient partner. The smallest batches or large-scale production are our strength. Alongside product performance in the smallest spaces and precision workmanship, the following market requirements are also increasing:

- Environmental sustainability
- Recyclable
- The latest quality standards
- EMC guidelines

Storage reactors

Step down storage choke

Sample data

Inductance 740 µH @ 7 A	Switching 130 kHz
Input voltage max. 625 Vac	Core E 42/15 (Kool Mµ®)
Output voltage 200 Vac	UL-insulating system Class B
Power 1,2 kW	

- Input voltages up to 10 kVac
- Output voltages up to 10 kVac
- Power up to 100 kW
- Core materials e.g. Ferrit, Iron powder
- Core forms E, ETD, EFD, PQ etc.
- UL-insulating system Class B, Class F