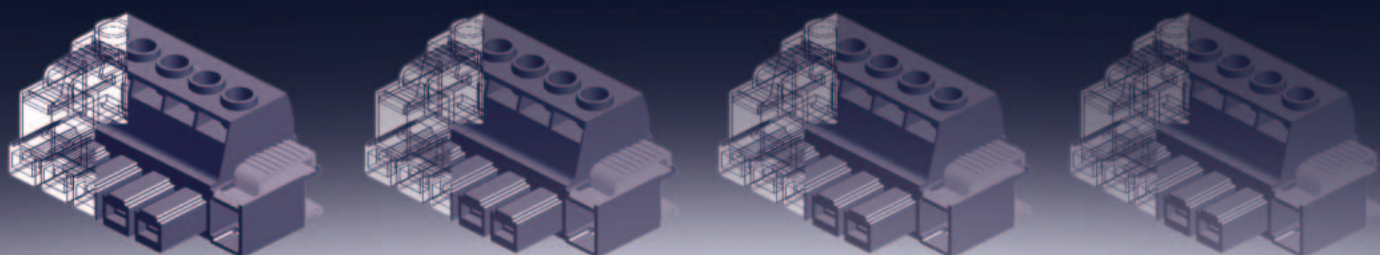


Powermate Range



Power-Terminals and Connectors for PCB

Product Information

When good enough just isn't good enough

Weidmüller 

Powermate Range / Overview

Power-Terminals and Connectors for PCB

More than just contacts

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Power Onboard

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PCB terminals up to 600 V / 76 A

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Good connections – more than just contacts



You can count on us.

From the development to the design-in phase through to series production: competent consultation and individual support for all aspects of connection technology – worldwide, but always close at hand.



America	Europe	Asia/Africa
- Argentina - Brazil - Canada - Chile - Colombia - Costa Rica - Mexico - Peru - USA - Venezuela	- Austria - Belgium/Luxembourg - Czech Rep. - France - Germany - Hungary - Italy - Netherlands - Poland - Portugal - Spain - Sweden - Switzerland - Turkey - United Kingdom	- Bosnia-Herzegovina - Belarus - Bulgaria - Croatia - Denmark - Estonia - Finland - Greece - Ireland - Israel - Kazakhstan - Lithuania - Latvia - Macedonia - Norway - Romania - Serbia Montenegro - Slovakia - Slowenia - Ukraine
		- Australia - China - Japan - Malaysia - Singapore - South Korea - Bahrain - Egypt - Hong Kong - India - Indonesia - Iran - Kuwait - Morocco - Mozambique - New Zealand - Pakistan - Philippines - Saudi Arabia - South Africa - Taiwan - Thailand - United Arab Emirates - Vietnam
		- Sales Companies - Representatives

Our experience – your advantage

From the first terminal block through to the first 'Push In' PCB terminal suitable for reflow soldering process, numerous patents and standards prove that our innovative strength and competence keeps you one step ahead of the rest.



You can rely on us:

Consistent high quality is no coincidence, but the result of clearly defined processes and resolute implementation. The countless number of satisfied Weidmüller partners proves this point far more than the numerous certificates and approvals.

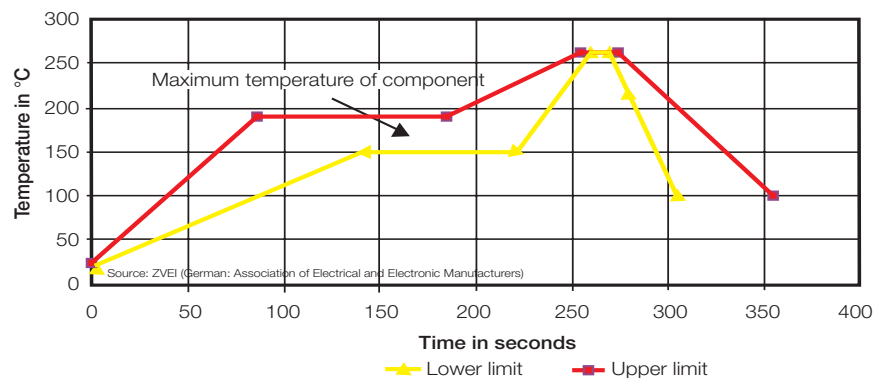


Don't leave yourself open to surprises – let us support you!

When it comes to lead-free manufacturing, you can take advantage of our know-how – from informative conferences for specialists through to individual consultation.

All products in the Powermate range are already lead-free. And fully RoHS-Compliant as of January 2006. (see page 32)

Temperature profile 'lead-free soldering'



Power on Board – One step ahead through innovation

The PCB as a system platform –

this trend requires keeping on top of ever increasing performances. Demands on applications continue to grow:

- Design of interfaces for larger wire cross-sections, voltages and currents
- Faster installation times and more simple, error-free handling
- Low maintenance costs, tool-free and intuitive operation

As well as Weidmüller's proven quality, the product family Powermate Range also offers you advantages to keep you one step ahead of the rest:

- Weidmüller test specifications under realistic test conditions – more stringent than the norm
- Proven high-quality connection techniques for all conditions
- Wide variety of designs and individual customising of standard products

- Innovative, cost-reducing product concepts and handling features
- Comprehensive, competent service with consultation and individual support across the globe

Example of innovation: Weidmüller's unique multifunctional lock

The advantages

- + Simple and tool-free lock and release
- = saves time (less costs for installation and maintenance)
- = Rapid release in case of emergency
- + Optical control of lock status
- = Clearly visible lock status
- + Additional screw optional
- = Double protection, 2 in 1 system

The requirements

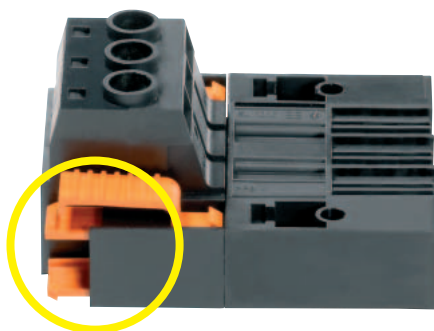
Reliable, vibration resistant interlocking of the socket and pin headers is of elementary importance, in particular when operating with heavy currents.

The standard: flange with screw fixing

The disadvantage: time consuming installation and maintenance requiring tool.

The innovation

One step ahead of the standard: in addition to the conventional securing with screws used to date, Weidmüller's multifunctional lock offers the user the option of also being able to achieve a secure connection with a simple snap-on feature.

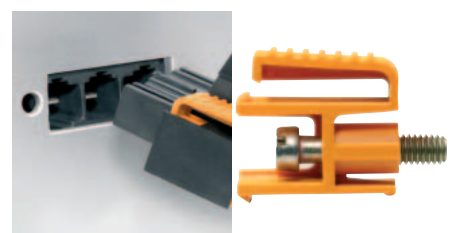
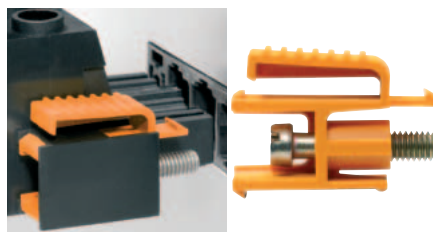
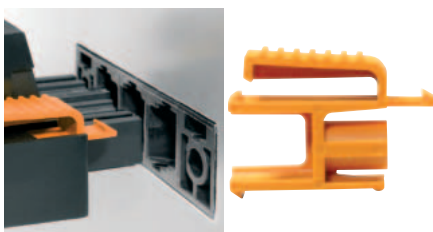
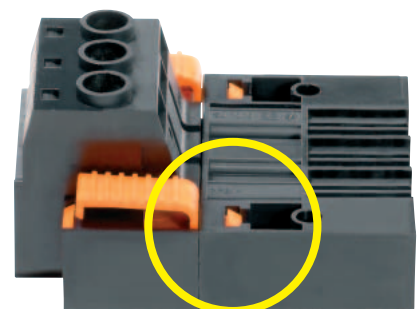


Left: open

Right: secured

Intuitive to use, the orange-coloured, clearly identifiable mechanism provides unhindered optical control of the lock status.

Additional fixing by means of a screw is equally possible, and there is also a version available without a locking mechanism (e.g. for panel feed-throughs). For rear panel installation, the mounting element is simply turned around.



Powermate Range. The system for successful power applications: reliable, fast, simple and innovative.

The advantages and your benefits

- More reliable: reduced rate of errors
- Faster: minimises costs
- More Simple: increase acceptance
- Innovative: get ahead

Product overview

Type	Pitch	IEC data		UL data		Conductor cross-sections	
		U (V)	I (A)	U (V)	I (A)	mm ²	AWG
Terminals							
LU 10.16/90	10.16	690	76	300	60	10	6
LUP 10.16/90	10.16	800	76	300	60	16	6
LUP 12.7/90	12.7	1000	76	600	63	16	6
LX 15.00/90	15.0	1000	101	600	85	25	4
Socket connectors							
BVZ 7.62/180	7.62	500	43	300	31	6	10
BVZF 7.62/180	7.62	500	38	300	27	6	10
BUZ 10.16/180	10.16	690	60	300	54	16	6

LU 10.16/90

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LUP 10.16/90

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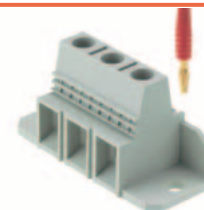
LUP 12.7/90

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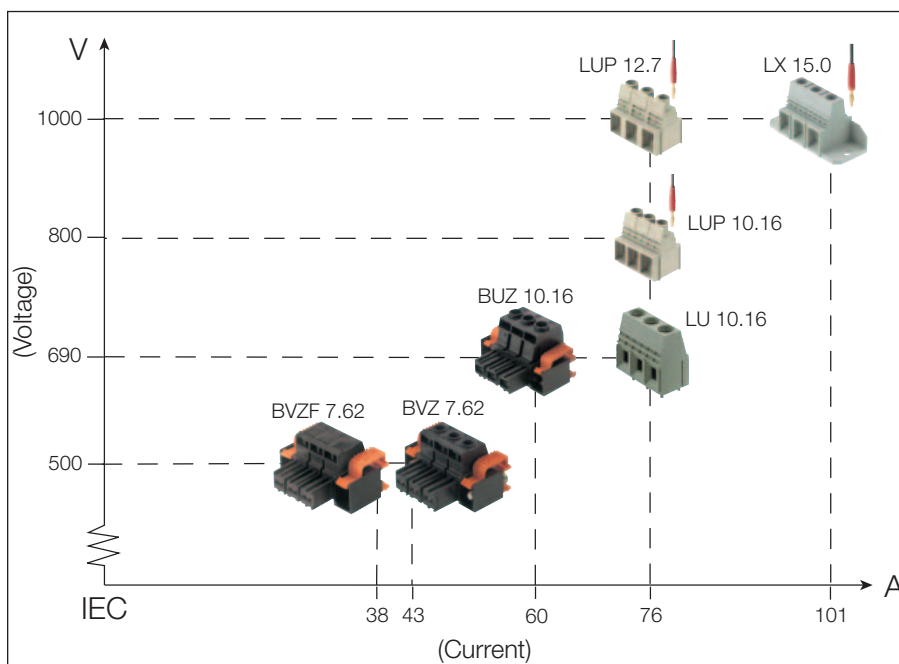
LXB 15.00/90

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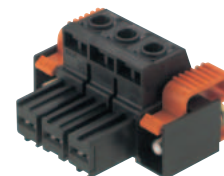
BVZ 7.62/180F

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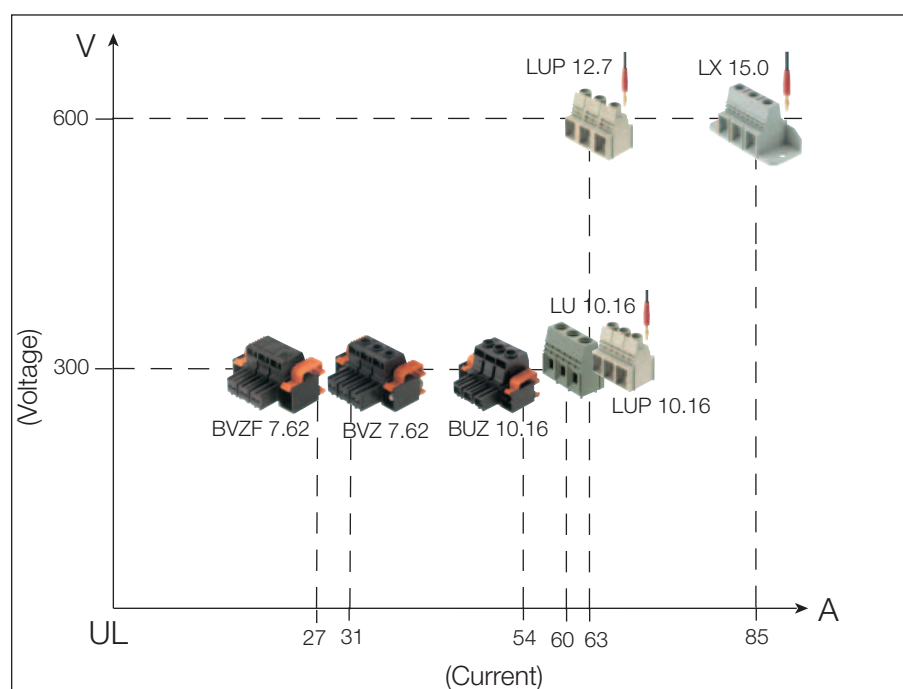
BVZF 7.62/180F

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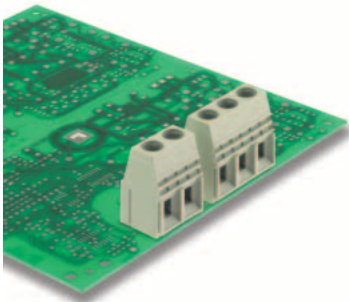
BUZ 10.16/180F

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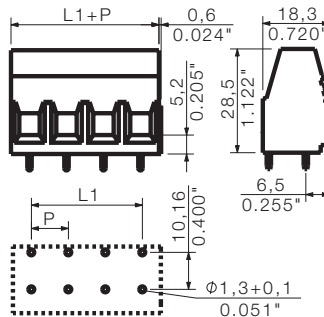
PCB Terminals / Clamping yoke connection

LU 10.16



- 0.13 - 16.0mm² (IEC) / 26 - 6 AWG (UL)
- 690V (IEC) / 300V (UL)
- 76A (IEC) / 60A (UL)

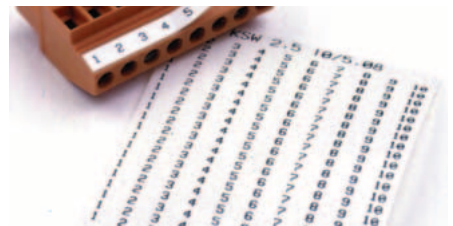
LU 10.16/90



Accessories

Marking strips

See page 28



Marking system

See page 29

Technical data

Rated data acc. to IEC 664-1 / VDE 0110 (4.97)

Clamping range, max.	mm ²	0.13...16.00
Solid H05(07) V-U	mm ²	0.50...16.00
Stranded H07 V-R	mm ²	6...16
Flexible H05(07) V-K	mm ²	0.50...16.00
Flexible with ferrule	mm ²	2.50...10.00
Ferrule with plastic collar	mm ²	2.50...10.00
Stripping length	mm	12.0

Rated current at ambient temperature

	20°C	40°C
A	76.0	74.0

Overvoltage category

	III	III	II
--	-----	-----	----

Pollution severity

	3	2	2
--	---	---	---

Rated voltage	V	690	690	1000
---------------	---	-----	-----	------

Rated impulse voltage	kV	6.0	6.0	4.0
-----------------------	----	-----	-----	-----

UL 1059 rated data - E60693

	B	C	D
--	---	---	---

Rated voltage	V	300	150	300
---------------	---	-----	-----	-----

Rated current	A	60.0	60.0	10.0
---------------	---	------	------	------

AWG conductor			26-6	
---------------	--	--	------	--

CSA C22.2 rated data - LR12400 B

	B	C	D
--	---	---	---

Rated voltage	V	300	150	300
---------------	---	-----	-----	-----

Rated current	A	60.0	60.0	10.0
---------------	---	------	------	------

AWG conductor			26-6	
---------------	--	--	------	--

Material data

Type of insulating material	Wemid (PA)
-----------------------------	------------

Flammability class acc. UL94	V-0
------------------------------	-----

Contact base material	E-Cu
-----------------------	------

Contact plating	tin plated
-----------------	------------

Information

- Additional colours on request
- Rated current refers to rated cross-section and min. number of poles
- ferrule without plastic collar acc. to DIN 46228/1
- Ferrule with plastic collar acc. to DIN 46228/4
- Drawing information P = Pitch

Ordering data

Solder pin length	4.5 mm
-------------------	--------

Colour	grey
--------	------

Pitch 10.16 mm

Poles	L1 mm (inch)	Qty.	Order No.	Order No.
2	10.16 (0.400)	20		1648310000
3	20.32 (0.800)	20		1648300000
4	30.48 (1.200)	20		9956390000
5	40.64 (1.600)	20		9956400000
6	50.80 (2.000)	20		9956410000
7	60.96 (2.400)	20		9956420000
8	71.12 (2.800)	20		9956430000
9	81.28 (3.200)	20		9956440000
10	91.44 (3.600)	20		9956450000

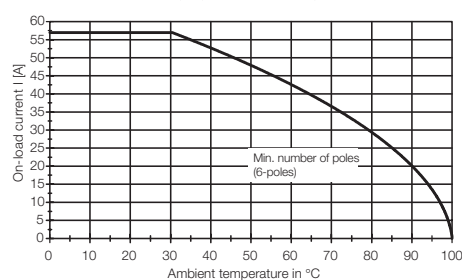
Screwdriver

See page 31
Part no. 9008420000



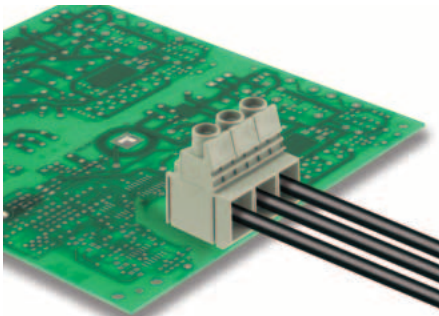
Derating curve

LU 10.16; with H07V-K10; 6 Pole



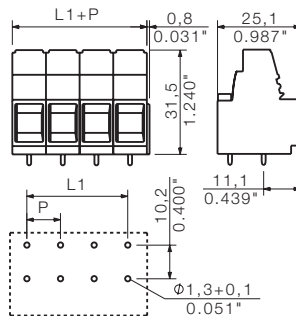
PCB Terminals / Clamping yoke connection

LUP 10.16



- 0.13 - 16.0mm² (IEC) / 26 - 6 AWG (UL)
- 800V (IEC) / 300V (UL)
- 76A (IEC) / 60A (UL)

LUP 10.16/90



Technical data

Rated data acc. to IEC 664-1 / VDE 0110 (4.97)

Clamping range, max.	mm ²	0.13...16.00
Solid H05(07) V-U	mm ²	0.50...16.00
Stranded H07 V-R	mm ²	6...16
Flexible H05(07) V-K	mm ²	0.50...16.00
Flexible with ferrule	mm ²	2.50...10.00
Ferrule with plastic collar	mm ²	2.50...10.00
Stripping length	mm	12.0

Rated current at ambient temperature

	20°C	40°C
A	76.0	74.0

Overvoltage category

III	III	II
-----	-----	----

Pollution severity

3	2	2
---	---	---

Rated voltage	V	800	1000	1000
Rated impulse voltage	kV	8.0	8.0	6.0

UL 1059 rated data - E60693

B	C	D
---	---	---

Rated voltage	V	300	300	300
Rated current	A	60.0	60.0	10.0
AWG conductor			26-6	

CSA C22.2 rated data - LR12400 B

B	C	D
---	---	---

Rated voltage	V	300	300	300
Rated current	A	60.0	60.0	10.0
AWG conductor			26-6	

Material data

Type of insulating material	Wemid (PA)
Flammability class acc. UL94	V-0
Contact base material	E-Cu
Contact plating	tin plated

Information

- Additional colours on request
- Rated current refers to rated cross-section and min. number of poles
- ferrule without plastic collar acc. to DIN 46228/1
- Ferrule with plastic collar acc. to DIN 46228/4
- The data stated under CSA refers to cUL-Approval - E60693
- Drawing information P = Pitch

Ordering data

Solder pin length 3.2 mm

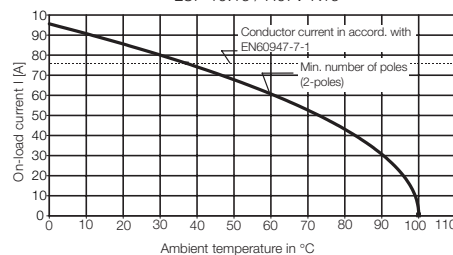
Colour grey

Pitch 10.16 mm

Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	10.16	(0.400)	20	1839270000	
3	20.32	(0.800)	20	1839280000	
4	30.48	(1.200)	20	1839290000	
5	40.64	(1.600)	20	1839300000	
6	50.80	(2.000)	20	1839310000	
7	60.96	(2.400)	20	1839320000	
8	71.12	(2.800)	20	1839330000	
9	81.28	(3.200)	20	1839340000	

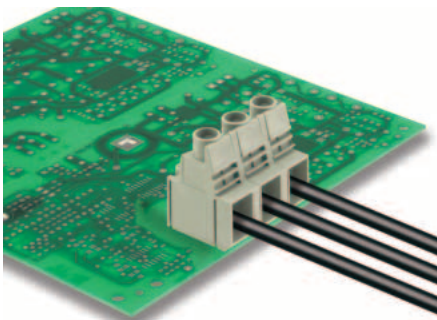
Derating curve

LUP 10.16 / H07V-K16



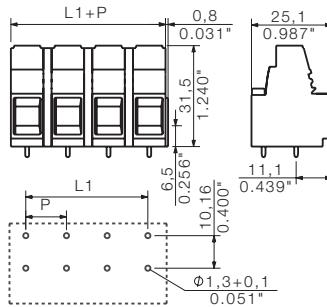
PCB Terminals / Clamping yoke connection

LUP 12.7



- 0.13 - 16.0mm² (IEC) / 26 - 6 AWG (UL)
- 1000V (IEC) / 600V (UL)
- 76A (IEC) / 60A (UL)

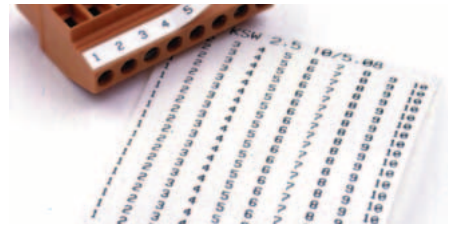
LUP 12.7/90



Accessories

Marking strips

See page 28



Test plug

See page 30

Technical data

Rated data acc. to IEC 664-1 / VDE 0110 (4.97)

Clamping range, max.	mm ²	0.13...16.00
Solid H05(07) V-U	mm ²	0.50...16.00
Stranded H07 V-R	mm ²	6...16
Flexible H05(07) V-K	mm ²	0.50...16.00
Flexible with ferrule	mm ²	2.50...10.00
Ferrule with plastic collar	mm ²	2.50...10.00
Stripping length	mm	12.0

Rated current at ambient temperature

	20°C	40°C
A	76.0	74.0

Overvoltage category

III	III	II
-----	-----	----

Pollution severity

3	2	2
---	---	---

Rated voltage	V	1000	1000	1000
---------------	---	------	------	------

Rated impulse voltage	kV	8.0	8.0	6.0
-----------------------	----	-----	-----	-----

UL 1059 rated data - E60693

	B	C	D
--	---	---	---

Rated voltage	V	600	600	600
---------------	---	-----	-----	-----

Rated current	A	63.0	63.0	5.0
---------------	---	------	------	-----

AWG conductor		26-6		
---------------	--	------	--	--

CSA C22.2 rated data - LR12400 B

	B	C	D
--	---	---	---

Rated voltage	V	600	600	600
---------------	---	-----	-----	-----

Rated current	A	63.0	63.0	5.0
---------------	---	------	------	-----

AWG conductor		26-6		
---------------	--	------	--	--

Material data

Type of insulating material	Wemid (PA)
-----------------------------	------------

Flammability class acc. UL94	V-0
------------------------------	-----

Contact base material	E-Cu
-----------------------	------

Contact plating	tin plated
-----------------	------------

Information

- Additional colours on request
- Rated current refers to rated cross-section and min. number of poles
- ferrule without plastic collar acc. to DIN 46228/1
- Ferrule with plastic collar acc. to DIN 46228/4
- The data stated under CSA refers to cUL-Approval - E60693
- Drawing information P = Pitch

Ordering data

Solder pin length 3.2 mm

Colour	grey
--------	------

Pitch 12.70 mm

Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	12.70	(0.500)	20	1839180000	
3	25.40	(1.000)	20	1839190000	
4	38.10	(1.500)	20	1839200000	
5	50.80	(2.000)	20	1839210000	
6	63.50	(2.500)	20	1839220000	
7	76.20	(3.000)	20	1839230000	
8	88.90	(3.500)	20	1839240000	
9	101.60	(4.000)	20	1839250000	

Screwdriver

See page 31
Part no. 9008410000



LUP-Info

The high-current pcb terminal range from Weidmueller has been broadened with the development of the LUP terminals.

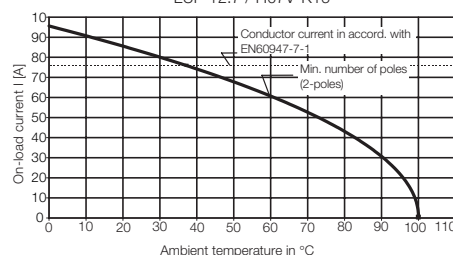
A cable clamping capacity of 16 mm²/AWG 6 enables currents of 76 A (IEC) or 60 A (UL).

The one pole LUP 10.16 base terminal is suitable for use at 600 V in equipment designed to UL 508c & UL 840.

The LUP 12.7 has a straight line pin-to-pin distance that achieves an unrestricted 600 V rating to UL 1059 groups B & C.

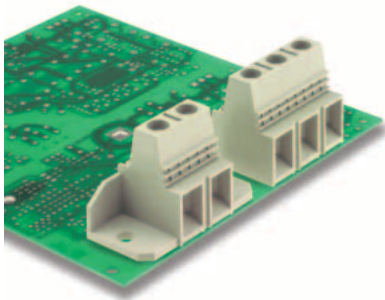
Derating curve

LUP 12.7 / H07V-K16



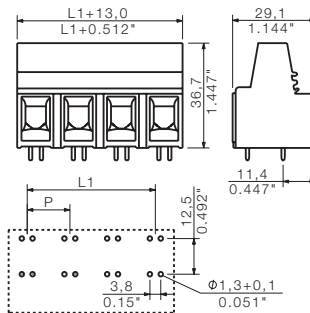
PCB Terminals / Clamping yoke connection

LX 15.00

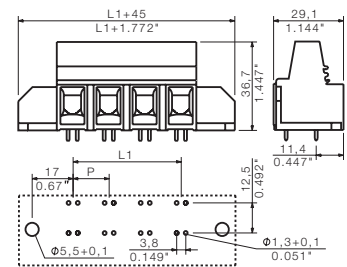


- 1.31 - 25.0mm² (IEC) / 16 - 4 AWG (UL)
- 1000V (IEC) / 600V (UL)
- 101A (IEC) / 85A (UL)

LX 15.00/90



LXB 15.00/90



Technical data

Rated data acc. to IEC 664-1 / VDE 0110 (4.97)

Clamping range, max.	mm ²	1.31...25.00
Solid H05(07) V-U	mm ²	1.50...16.00
Stranded H07 V-R	mm ²	6...25
Flexible H05(07) V-K	mm ²	1.50...25.00
Flexible with ferrule	mm ²	1.50...16.00
Ferrule with plastic collar	mm ²	1.50...16.00
Stripping length	mm	16.0

Rated current at ambient temperature

	20°C	40°C
A	101.0	101.0

Overvoltage category

	III	III	II
Pollution severity	3	2	2

Rated voltage	V	1000	1000	1000
Rated impulse voltage	kV	8.0	8.0	6.0

UL 1059 rated data - E60693

Rated voltage	V	600	600	600
Rated current	A	85.0	85.0	5.0
AWG conductor			16-4	

CSA C22.2 rated data - LR12400 B

Rated voltage	V	600	600	600
Rated current	A	85.0	85.0	5.0
AWG conductor			16-4	

Material data

Type of insulating material	Wemid (PA)
Flammability class acc. UL94	V-0
Contact base material	E-Cu
Contact plating	tin plated

Information

- Additional colours on request
- Rated current refers to rated cross-section and min. number of poles
- ferrule without plastic collar acc. to DIN 46228/1
- Ferrule with plastic collar acc. to DIN 46228/4
- Drawing information P = Pitch

Ordering data

Solder pin length	4.5 mm
Colour	grey

Pitch 15.00 mm

Poles	L1 mm (inch)	Qty.	Order No.	Order No.
1	0.00 (0.000)	20		1783660000
2	15.00 (0.591)	20		1783670000
3	30.00 (1.181)	20		1783680000
4	45.00 (1.772)	20		1783690000
5	60.00 (2.362)	20		1806460000
6	75.00 (2.953)	10		1809870000
8	105.00 (4.134)	10		1809880000

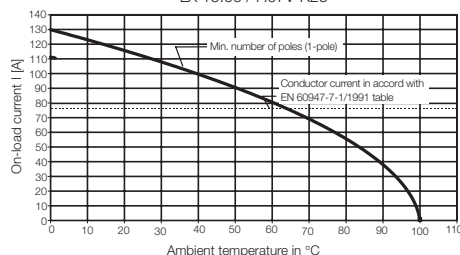
Ordering data

Solder pin length	4.5 mm
Colour	grey

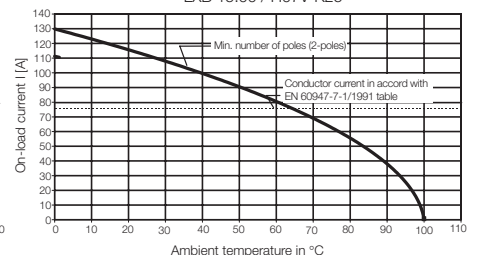
Pitch 15.00 mm

Poles	L1 mm (inch)	Qty.	Order No.	Order No.
2	15.00 (0.591)	20		1783710000
3	30.00 (1.181)	20		1783720000
4	45.00 (1.772)	20		1783730000
5	60.00 (2.362)	20		1806470000
6	75.00 (2.953)	10		1783740000
8	105.00 (4.134)	10		1783750000

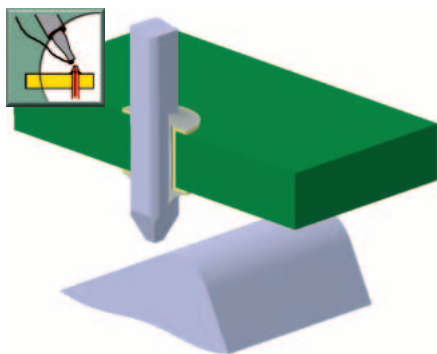
Derating curve
LX 15.00 / H07V-K25



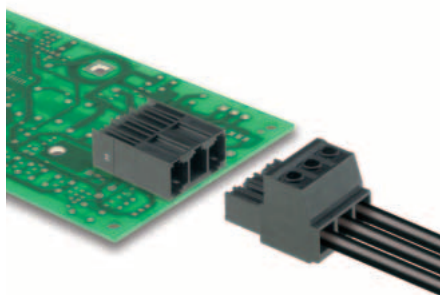
Derating curve
LXB 15.00 / H07V-K25



Solder connection pin headers



SV 7.62/90



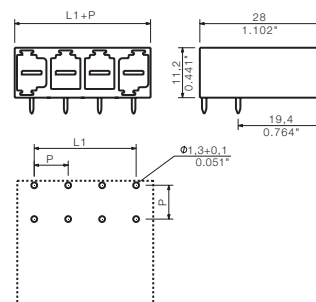
Weidmueller's standard THT (Through-Hole Technology) pcb terminals and connectors have been specifically designed for the Wave(Flow) soldering process.

With the most frequently used pcb's worldwide being single layer 1.6 mm (0.062 inch) and 2.0 mm (0.079 inch) thick, the solder pin length of pcb terminals and connectors needs to be at least 3.2 mm (0.126 inch) long in order to provide problem-free soldering.

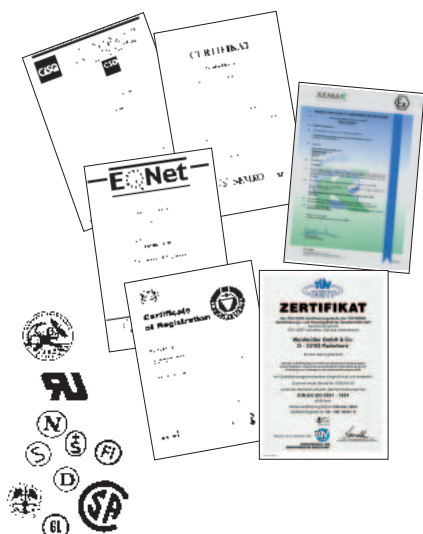
- 500V (IEC) / 300V (UL)
- 43A (IEC) / 31A (UL)

SV 7.62/90G

without flanges



Safety and approvals



Product approvals simplify the approval of finished products.

When mated with the rated cross-section the products are safe from finger touch and from touch by the back of the hand above the PCB in accordance with DIN EN 60529.

The excellent short-time withstand current provides important reserves.

Technical data

Rated data acc. to IEC 664-1 / VDE 0110 (4.97)

Clamping range, max.	mm²
Solid H05(07) V-U	mm²
Stranded H07 V-R	mm²
Flexible H05(07) V-K	mm²
Flexible with ferrule	mm²
Ferrule with plastic collar	mm²
Stripping length	mm

Rated current at ambient temperature

	20°C	40°C
A	43.0	38.0

Overvoltage category

Pollution severity

	III	III	II
	3	2	2

Rated voltage

	V	500	630	800
Rated impulse voltage	kV	6.0	6.0	6.0

UL 1059 rated data - E60693

Rated voltage	V	300	300	600
Rated current	A	31.0	31.0	5.0
AWG conductor				

CSA C22.2 rated data - LR12400 B

Rated voltage	V	300	300	600
Rated current	A	31.0	31.0	5.0
AWG conductor				

Material data

Type of insulating material	PBT GF
Flammability class acc. UL94	V-0
Contact base material	Cu alloy
Contact plating	tin plated

Information

- Additional colours on request
- Rated current refers to rated cross-section and min. number of poles
- The data stated under CSA refers to cUL-Approval - E60693
- Drawing information P = Pitch

Ordering data

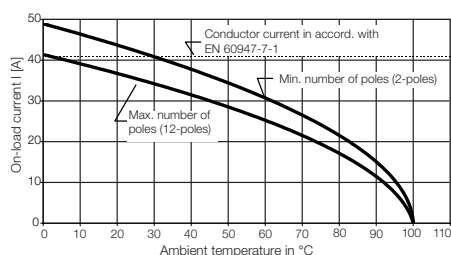
Solder pin length	3.5 mm
Colour	black

Pitch 7.62 mm

Poles	L1 mm (inch)	Qty.	Order No.	Order No.
2	7.62 (0.300)	100		1822280000
3	15.24 (0.600)	100		1822290000
4	22.86 (0.900)	100		1822300000
5	30.48 (1.200)	50		1822310000
6	38.10 (1.500)	50		1822320000
7	45.72 (1.800)	50		1822330000
8	53.34 (2.100)	50		1822340000
9	60.96 (2.400)	50		1822350000
10	68.58 (2.700)	50		1822360000
11	76.20 (3.000)	50		1822370000
12	83.82 (3.300)	50		1822380000

Derating curve

BV/SV 7,62 / 90° / H07V-K6

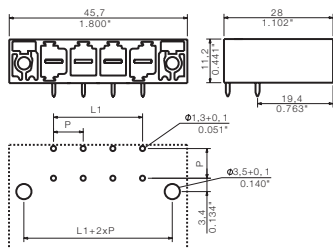
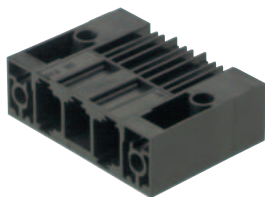


(Measured while connected with socket blocks)

Solder connection pin headers

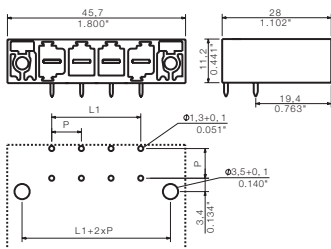
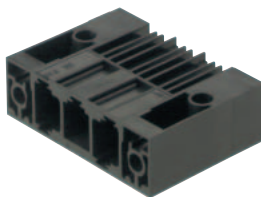
SV 7.62/90F

Interlock flanges



SV 7.62/90SF

Interlock flanges with inserted square nuts



Accessories

Coding element

See page 30

Part no. 1824410000



Ordering data

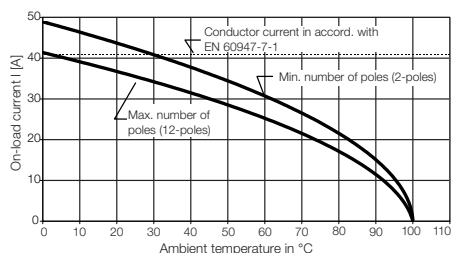
Solder pin length				3.5 mm	
Colour				black	
Pitch 7.62 mm					
Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	7.62	(0.300)	100		1822390000
3	15.24	(0.600)	100		1822400000
4	22.86	(0.900)	100		1822410000
5	30.48	(1.200)	50		1822420000
6	38.10	(1.500)	50		1822430000
7	45.72	(1.800)	50		1822440000
8	53.34	(2.100)	50		1822450000
9	60.96	(2.400)	50		1822460000
10	68.58	(2.700)	50		1822470000
11	76.20	(3.000)	50		1822480000
12	83.82	(3.300)	50		1822490000

Ordering data

Solder pin length				3.5 mm	
Colour				black	
Pitch 7.62 mm					
Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	7.62	(0.300)	100		1852610000
3	15.24	(0.600)	100		1852620000
4	22.86	(0.900)	100		1852630000
5	30.48	(1.200)	50		1852640000
6	38.10	(1.500)	50		1852650000
7	45.72	(1.800)	50		1852660000
8	53.34	(2.100)	50		1852670000
9	60.96	(2.400)	50		1852680000
10	68.58	(2.700)	50		1852690000
11	76.20	(3.000)	50		1852700000
12	83.82	(3.300)	50		1852710000

Derating curve

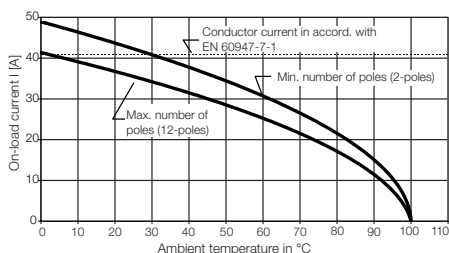
BV/SV 7,62 / 90° / H07V-K6



(Measured while connected with socket blocks)

Derating curve

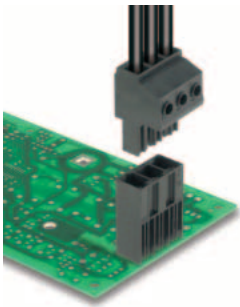
BV/SV 7,62 / 90° / H07V-K6



(Measured while connected with socket blocks)

Solder connection pin headers

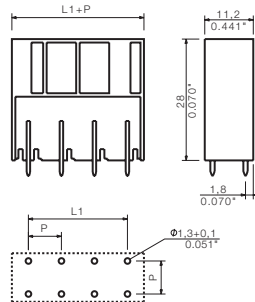
SV 7.62/180



- 500V (IEC) / 300V (UL)
- 41A (IEC) / 31A (UL)

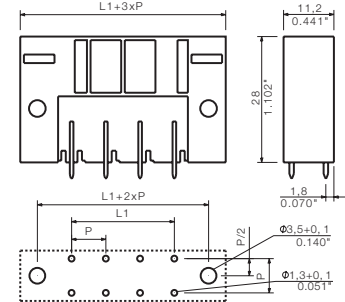
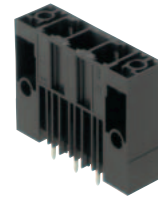
SV 7.62/180G

ohne Flansch



SV 7.62/180F

Interlock flanges



Technical data

Rated data acc. to IEC 664-1 / VDE 0110 (4.97)

Clamping range, max.	mm ²	
Solid H05(07) V-U	mm ²	
Stranded H07 V-R	mm ²	
Flexible H05(07) V-K	mm ²	
Flexible with ferrule	mm ²	
Ferrule with plastic collar	mm ²	
Stripping length	mm	

Rated current at ambient temperature	A	20°C	40°C
		41.0	36.0

Overvoltage category	III	III	II
Pollution severity	3	2	2

Rated voltage	V	500	630	800
Rated impulse voltage	kV	6.0	6.0	6.0

UL 1059 rated data - E60693		B	C	D
Rated voltage	V	300	300	600
Rated current	A	31.0	31.0	5.0
AWG conductor				

CSA C22.2 rated data - LR12400 B		B	C	D
Rated voltage	V	300	300	600
Rated current	A	31.0	31.0	5.0
AWG conductor				

Material data		
Type of insulating material		PBT GF
Flammability class acc. UL94		V-0
Contact base material		Cu alloy
Contact plating		tin plated

Information

- Additional colours on request
- Rated current refers to rated cross-section and min. number of poles
- The data stated under CSA refers to cUL-Approval - E60693
- Drawing information P = Pitch

Ordering data

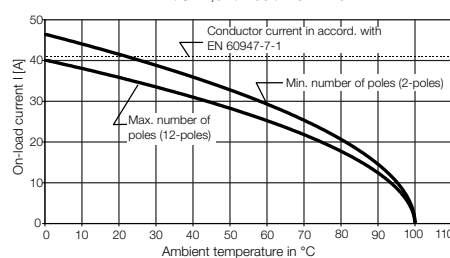
Solder pin length				3.5 mm	
Colour				black	
Pitch 7.62 mm					
Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	7.62	(0.300)	100		1822530000
3	15.24	(0.600)	100		1822540000
4	22.86	(0.900)	100		1822550000
5	30.48	(1.200)	50		1822560000
6	38.10	(1.500)	50		1822570000
7	45.72	(1.800)	50		1822580000
8	53.34	(2.100)	50		1822590000
9	60.96	(2.400)	50		1822600000
10	68.58	(2.700)	50		1822610000
11	76.20	(3.000)	50		1822620000
12	83.82	(3.300)	50		1822630000

Ordering data

Solder pin length				3.5 mm	
Colour				black	
Pitch 7.62 mm					
Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	7.62	(0.300)	100		1822640000
3	15.24	(0.600)	100		1822650000
4	22.86	(0.900)	100		1822660000
5	30.48	(1.200)	50		1822670000
6	38.10	(1.500)	50		1822680000
7	45.72	(1.800)	50		1822690000
8	53.34	(2.100)	50		1822700000
9	60.96	(2.400)	50		1822710000
10	68.58	(2.700)	50		1822720000
11	76.20	(3.000)	50		1822730000
12	83.82	(3.300)	50		1822740000

Derating curve

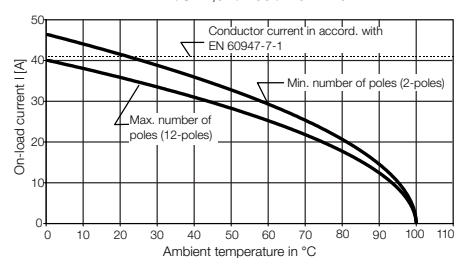
BV/SV 7,62 / 180°/ H07V-K6



(Measured while connected with socket blocks)

Derating curve

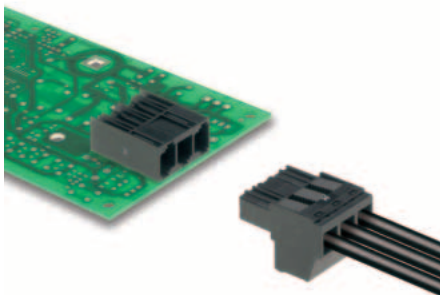
BV/SV 7,62 / 180°/ H07V-K6



(Measured while connected with socket blocks)

Solder connection pin headers

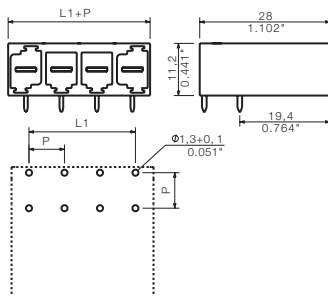
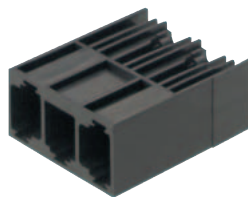
SV 7.62/270



- 500V (IEC) / 300V (UL)
- 43A (IEC) / 31A (UL)

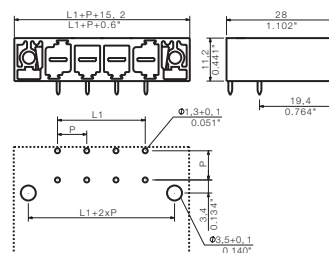
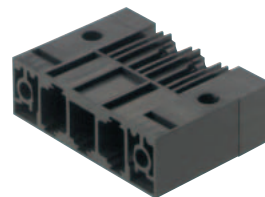
SV 7.62/270G

without flanges



SV 7.62/270F

Interlock flanges



Technical data

Rated data acc. to IEC 664-1 / VDE 0110 (4.97)

Clamping range, max.	mm ²
Solid H05(07) V-U	mm ²
Stranded H07 V-R	mm ²
Flexible H05(07) V-K	mm ²
Flexible with ferrule	mm ²
Ferrule with plastic collar	mm ²
Stripping length	mm

Rated current at ambient temperature

	20°C	40°C
A	43.0	38.0

Overvoltage category

III III II

Pollution severity

3 2 2

Rated voltage V 500 630 800

Rated impulse voltage kV 6.0 6.0 6.0

UL 1059 rated data - E60693

Rated voltage V 300 300 600

Rated current A 31.0 31.0 5.0

AWG conductor

CSA C22.2 rated data - LR12400 B

Rated voltage V 300 300 600

Rated current A 31.0 31.0 5.0

AWG conductor

Material data

Type of insulating material

Flammability class acc. UL94

Contact base material

Contact plating

PBT GF

V-0

Cu alloy

tin plated

Information

- Additional colours on request
- Rated current refers to rated cross-section and min. number of poles
- The data stated under CSA refers to cUL-Approval - E60693
- Drawing information P = Pitch

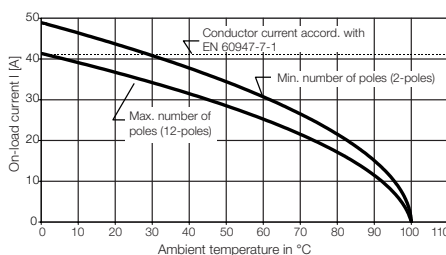
Ordering data

Solder pin length	3.5 mm
Colour	black
Pitch 7.62 mm	
Poles L1 mm (inch) Qty. Order No.	Order No.
2 7.62 (0.300) 100	1822750000
3 15.24 (0.600) 100	1822760000
4 22.86 (0.900) 100	1822770000
5 30.48 (1.200) 50	1822780000
6 38.10 (1.500) 50	1822790000
7 45.72 (1.800) 50	1822800000
8 53.34 (2.100) 50	1822810000
9 60.96 (2.400) 50	1822820000
10 68.58 (2.700) 50	1822830000
11 76.20 (3.000) 50	1822840000
12 83.82 (3.300) 50	1822850000

Ordering data

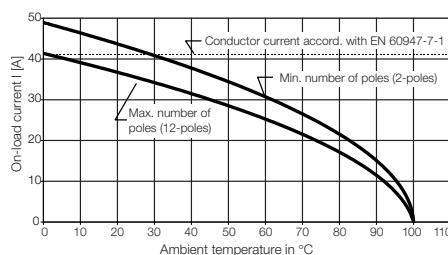
Solder pin length	3.5 mm
Colour	black
Pitch 7.62 mm	
Poles L1 mm (inch) Qty. Order No.	Order No.
2 7.62 (0.300) 100	1822860000
3 15.24 (0.600) 100	1822870000
4 22.86 (0.900) 100	1822880000
5 30.48 (1.200) 50	1822890000
6 38.10 (1.500) 50	1822900000
7 45.72 (1.800) 50	1822910000
8 53.34 (2.100) 50	1822920000
9 60.96 (2.400) 50	1822930000
10 68.58 (2.700) 50	1822940000
11 76.20 (3.000) 50	1822950000
12 83.82 (3.300) 50	1822960000

Derating curve
BV/SV 7,62 / 270° / H07V-K6



(Measured while connected with socket blocks)

Derating curve
BV/SV 7,62 / 270° / H07V-K6

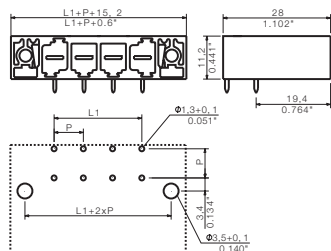
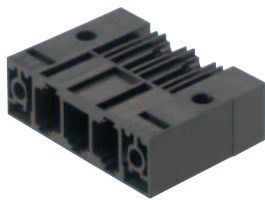


(Measured while connected with socket blocks)

Solder connection pin headers

SV 7.62/270SF

Interlock flanges with inserted square nuts



Accessories

Coding element

See page 30

Part no. 1824410000

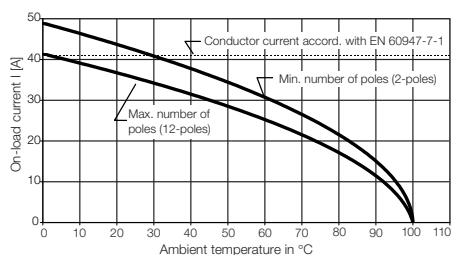


Ordering data

[illegible]

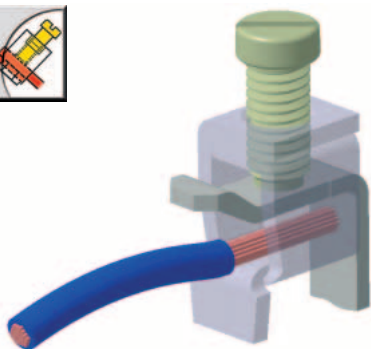
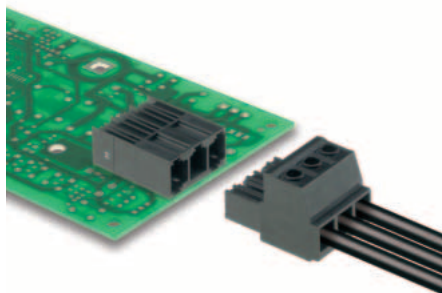
Derating curve

BV/SV 7.62 / 270° / H07V-K6



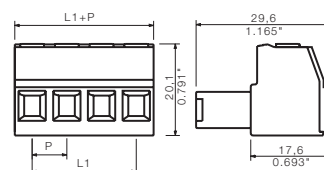
(Measured while connected with socket blocks)

Clamping yoke connection socket connectors

**BVZ 7.62**

BVZ 7.62/180

without flanges



The screw clamping yoke is the most popular and widely used cable connection method worldwide. The security of the cable is vital for every application, and the Weidmueller clamping yoke design has proven its reliability for millions of connections in hundreds of thousands of applications over the last 40 years.

The best and most reliable cable connection mechanisms use the best materials for the mechanical and electrical functions: steel parts for strength and security, brass or copper parts for conductivity.

The Weidmueller clamping yoke and screw are made from hardened steel and are zinc-chrome plated to prevent corrosion.

The current carrying bar/pins are made from a tin plated copper alloy.

High contact force is only effective if it is continuous. When the clamping screw is turned, the Weidmueller clamping yoke rises in the component housing until the cable is firmly held between the current-bar and clamping yoke.

Further turning of the screw achieves the optimum torque level according to DIN EN 60 999. At the point of maximum permitted torque, the upper thread-overlap of the yoke opens causing a locking action to be exerted on the screw.

A maintenance-free and continuous torque is thus achieved.

Technical data

Rated data acc. to IEC 664-1 / VDE 0110 (4.97)

Clamping range, max.	mm ²	0.32...6.00
Solid H05(07) V-U	mm ²	0.50...6.00
Stranded H07 V-R	mm ²	
Flexible H05(07) V-K	mm ²	0.50...6.00
Flexible with ferrule	mm ²	0.50...6.00
Ferrule with plastic collar	mm ²	0.50...4.00
Stripping length	mm	8.0

**Rated current
at ambient temperature**

at ambient temperature		20°C	40°C
	A	43.0	38.0

Overvoltage category

Overvoltage category	III	III	II
Pollution severity	3	2	2

Rated voltage

Rated voltage	V	500	500	500
Rated impulse voltage	kV	6.0	6.0	6.0

UL 1059 rated data - E60693

Rated voltage	V	300	300	600
Rated current	A	31.0	31.0	5.0
AWG conductor			22-10	

CSA C22.2 rated data - LR12400 B

Rated voltage	V	300	300	600
Rated current	A	31.0	31.0	5.0
AWG conductor		22-10		

Material data

Type of insulating material	PBT
Flammability class acc. UL94	V-0
Contact base material	Cu alloy
Contact plating	tin plated

Information

- Additional colours on request
- Rated current refers to rated cross-section and min. number of poles
- ferrule without plastic collar acc. to DIN 46228/1
- Ferrule with plastic collar acc. to DIN 46228/4
- The data stated under CSA refers to cUL-Approval - E60693
- Drawing information P = Pitch

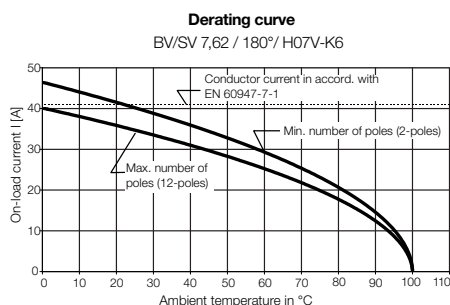
Ordering data

Solder pin length

Colour	black
--------	-------

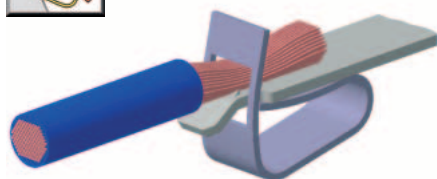
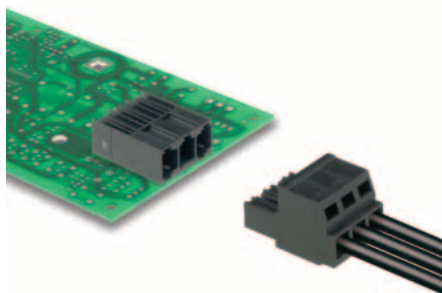
Pitch 7.62 mm

Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	7.62	(0.300)	100		1821520000
3	15.24	(0.600)	100		1821530000
4	22.86	(0.900)	100		1821540000
5	30.48	(1.200)	50		1821550000
6	38.10	(1.500)	50		1821560000
7	45.72	(1.800)	50		1821570000
8	53.34	(2.100)	50		1821580000
9	60.96	(2.400)	50		1821590000
10	68.58	(2.700)	50		1821600000
11	76.20	(3.000)	50		1821610000
12	83.82	(3.300)	50		1821620000



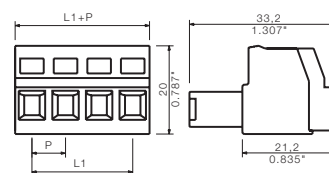
(Measured while connected with pin headers)

Tension clamp connection socket connectors

**BVZF 7.62**

BVZF 7.62/180

without flanges



When hundreds or thousands of cables need to be terminated, any reduction in the time taken to connect each cable can dramatically effect the overall assembly costs.

Screw clamping yoke terminations have twice the clamping strength and cable pull-out force in comparison to screwless tension clamps, but the Weidmueller tension clamp can save seconds per cable connection!

The stainless steel spring clamp is opened by inserting a standard flat-blade screwdriver into the spring activation slot. – 1 second.

The prepared cable is inserted into the cable entry point. – 1 second.

The screwdriver is removed, thus clamping the cable. – 1 second.

3 seconds, finished!

Technical data

Rated data acc. to IEC 664-1 / VDE 0110 (4.97)

Clamping range, max.	mm²	0.32...6.00
Solid H05(07) V-U	mm²	0.50...6.00
Stranded H07 V-R	mm²	
Flexible H05(07) V-K	mm²	0.50...6.00
Flexible with ferrule	mm²	0.50...4.00
Ferrule with plastic collar	mm²	0.50...4.00
Stripping length	mm	8.0

**Rated current
at ambient temperature**

Rated current at ambient temperature	A	20°C 38.0	40°C 33.0	
Overvoltage category		III	III	II
Pollution severity		3	2	2
Rated voltage	V	500	630	800
Rated impulse voltage	kV	6.0	6.0	6.0

UL 1059 rated data - E60693

Rated voltage	V	300	300	600
Rated current	A	27.0	27.0	5.0
AWG conductor		22-10		

CSA C22.2 rated data - LR12400 B

Rated voltage	V	300	300	600
Rated current	A	27.0	27.0	5.0
AWG conductor		22-10		

Material data

Type of insulating material	PBT
Flammability class acc. UL94	V-0
Contact base material	Cu alloy
Contact plating	tin plated

Information

- Additional colours on request
- Rated current refers to rated cross-section and min. number of poles
- ferrule without plastic collar acc. to DIN 46228/1
- Ferrule with plastic collar acc. to DIN 46228/4
- The data stated under CSA refers to cUL-Approval - E60693
- Drawing information P = Pitch

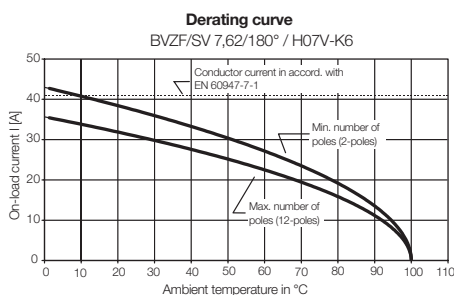
Ordering data

Solder pin length

Colour	black
--------	-------

Pitch 7.62 mm

Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	7.62	(0.300)	100		1821740000
3	15.24	(0.600)	100		1821750000
4	22.86	(0.900)	100		1821760000
5	30.48	(1.200)	50		1821770000
6	38.10	(1.500)	50		1821780000
7	45.72	(1.800)	50		1821790000
8	53.34	(2.100)	50		1821800000
9	60.96	(2.400)	50		1821810000
10	68.58	(2.700)	50		1821820000
11	76.20	(3.000)	50		1821830000
12	83.82	(3.300)	50		1821840000

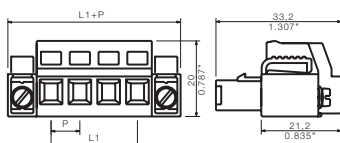


(Measured while connected with pin headers)

Tension clamp connection socket connectors

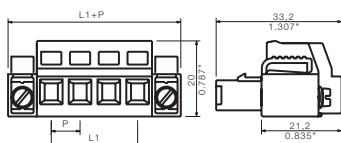
BVZF 7.62/180F

Interlock flanges without screws



BVZF 7.62/180SF

Interlock flanges with screws



Accessories

Coding element

See page 30
Part no. 1824410000



Screwdriver

See page 31
Part no. 9008330000



Ordering data

Solder pin length

Colour

black

Pitch 7.62 mm

Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	7.62	(0.300)	100		1821850000
3	15.24	(0.600)	100		1821860000
4	22.86	(0.900)	100		1821870000
5	30.48	(1.200)	50		1821880000
6	38.10	(1.500)	50		1821890000
7	45.72	(1.800)	50		1821900000
8	53.34	(2.100)	50		1821910000
9	60.96	(2.400)	50		1821920000
10	68.58	(2.700)	50		1821930000
11	76.20	(3.000)	50		1821940000
12	83.82	(3.300)	50		1821950000

Ordering data

Solder pin length

Colour

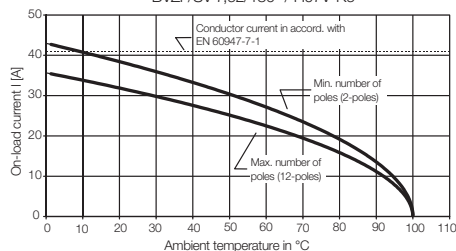
black

Pitch 7.62 mm

Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	7.62	(0.300)	100		1853190000
3	15.24	(0.600)	100		1853200000
4	22.86	(0.900)	100		1853210000
5	30.48	(1.200)	50		1853220000
6	38.10	(1.500)	50		1853230000
7	45.72	(1.800)	50		1853240000
8	53.34	(2.100)	50		1853250000
9	60.96	(2.400)	50		1853260000
10	68.58	(2.700)	50		1853270000
11	76.20	(3.000)	50		1853280000
12	83.82	(3.300)	50		1853290000

Derating curve

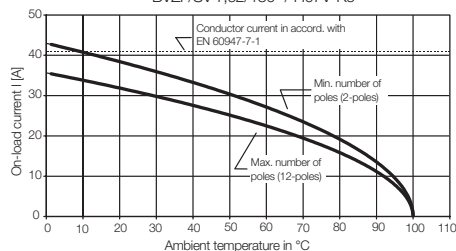
BVZF/SV 7.62/180° / H07V-K6



(Measured while connected with pin headers)

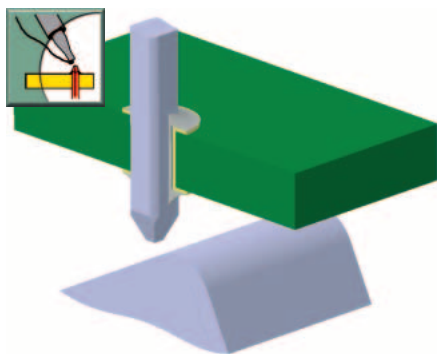
Derating curve

BVZF/SV 7.62/180° / H07V-K6

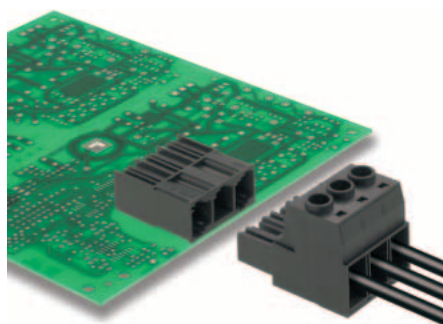


(Measured while connected with pin headers)

Solder connection pin headers

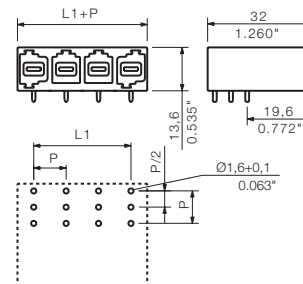


SU 10.16/90



SU 10.16/90

without flanges



Weidmueller's standard THT (Through-Hole Technology) pcb terminals and connectors have been specifically designed for the Wave(Flow) soldering process.

With the most frequently used pcb's worldwide being single layer 1.6 mm (0.062 inch) and 2.0 mm (0.079 inch) thick, the solder pin length of pcb terminals and connectors needs to be at least 3.2 mm (0.126 inch) long in order to provide problem-free soldering.

- 690V (IEC) / 300V (UL)
- 60A (IEC) / 54A (UL)

Technical data

Rated data acc. to IEC 664-1 / VDE 0110 (4.97)				
Clamping range, max.	mm²			
Solid H05(07) V-U	mm²			
Stranded H07 V-R	mm²			
Flexible H05(07) V-K	mm²			
Flexible with ferrule	mm²			
Ferrule with plastic collar	mm²			
Stripping length	mm			
Rated current at ambient temperature		20°C	40°C	
	A	60.0	52.0	
Overvoltage category		III	III	II
Pollution severity		3	2	2
Rated voltage	V	690	1000	1000
Rated impulse voltage	kV	8.0	8.0	6.0
UL 1059 rated data - E60693				
		B	C	D
Rated voltage	V	300	300	600
Rated current	A	54.0	54.0	5.0
AWG conductor				
CSA C22.2 rated data - LR12400 B				
		B	C	D
Rated voltage	V	300	300	600
Rated current	A	54.0	54.0	5.0
AWG conductor				
Material data				
Type of insulating material		PBT GF		
Flammability class acc. UL94		V-0		
Contact base material		Cu alloy		
Contact plating		silver plated		

Information

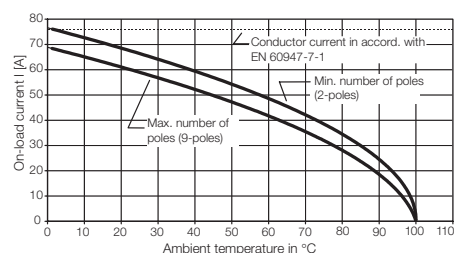
- Additional colours on request
- Rated current refers to rated cross-section and min. number of poles
- The data stated under CSA refers to cUL-Approval - E60693
- Drawing information P = Pitch

Ordering data

Solder pin length				3.5 mm	
Colour				black	
Pitch 10.16 mm					
Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	10,16	(0,400)	50		1813330000
3	20,32	(0,800)	50		1813340000
4	30,48	(1,200)	50		1813350000
5	40,64	(1,600)	20		1813360000
6	50,80	(2,000)	20		1813370000
7	60,96	(2,400)	20		1813380000
8	71,12	(2,800)	20		1813390000
9	81,28	(3,200)	20		1813400000

Derating curve

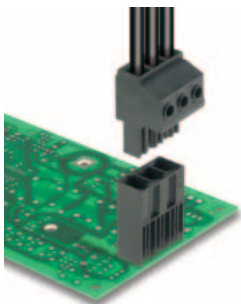
BU/SU 10.16 / 90°/ H07V-K16



(Measured while connected with socket blocks)

Solder connection pin headers

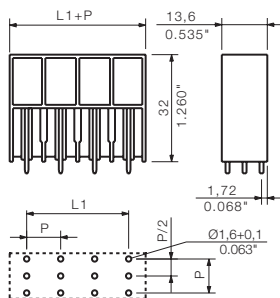
SU 10.16/180



- 690V (IEC) / 300V (UL)
- 56A (IEC) / 54A (UL)

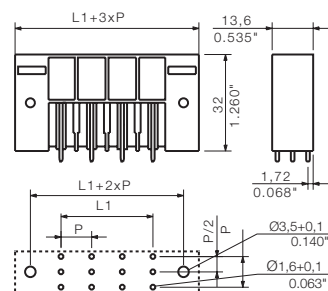
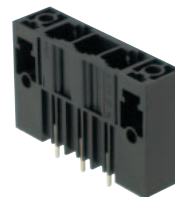
SU 10.16/180G

without flanges



SU 10.16/180F

Interlock flanges



Technical data

Rated data acc. to IEC 664-1 / VDE 0110 (4.97)

Clamping range, max.	mm ²		
Solid H05(07) V-U	mm ²		
Stranded H07 V-R	mm ²		
Flexible H05(07) V-K	mm ²		
Flexible with ferrule	mm ²		
Ferrule with plastic collar	mm ²		
Stripping length	mm		

Rated current at ambient temperature

	20°C	40°C
A	56.0	48.0

Overvoltage category

	III	III	II
Pollution severity	3	2	2

Rated voltage	V	690	1000	1000
Rated impulse voltage	kV	8.0	8.0	6.0

UL 1059 rated data - E60693

Rated voltage	V	300	300	600
Rated current	A	54.0	54.0	5.0

AWG conductor

CSA C22.2 rated data - LR12400 B	B	C	D
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CSA C22.2 rated data - LR12400 B

Rated current	A	54.0	54.0	5.0
AWG conductor				

Material data

Type of insulating material	PBT GF
Flammability class acc. UL94	V-0
Contact base material	Cu alloy
Contact plating	silver plated

Information

- Additional colours on request
- Rated current refers to rated cross-section and min. number of poles
- The data stated under CSA refers to cUL-Approval - E60693
- Drawing information P = Pitch

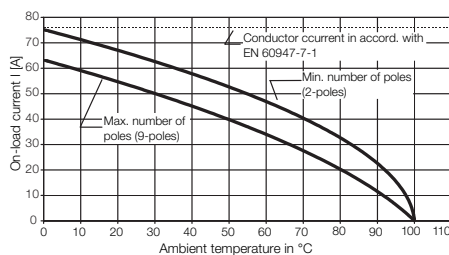
Ordering data

Solder pin length				3.5 mm
Colour				black
Pitch 10.16 mm				
Poles	L1 mm	(inch)	Qty.	Order No.
2	10.16	(0.400)	50	1813410000
3	20.32	(0.800)	50	1813420000
4	30.48	(1.200)	50	1813430000
5	40.64	(1.600)	20	1813440000
6	50.80	(2.000)	20	1813450000
7	60.96	(2.400)	20	1813460000
8	71.12	(2.800)	20	1813470000
9	81.28	(3.200)	20	1813480000

Ordering data

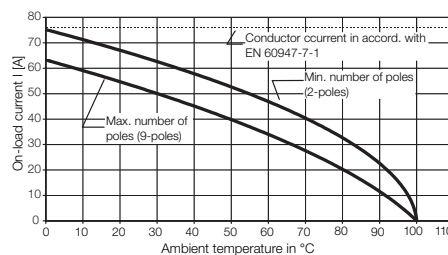
Solder pin length			3.5 mm		
Colour			black		
Pitch 10.16 mm					
Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	10.16	(0.400)	50		1813650000
3	20.32	(0.800)	50		1813660000
4	30.48	(1.200)	50		1813670000
5	40.64	(1.600)	20		1813680000
6	50.80	(2.000)	20		1813690000
7	60.96	(2.400)	20		1813700000
8	71.12	(2.800)	20		1813710000
9	81.28	(3.200)	20		1813720000
					</

Derating curve
BU/SU 10.16 / 180°/ H07V-K16



(Measured while connected with socket blocks)

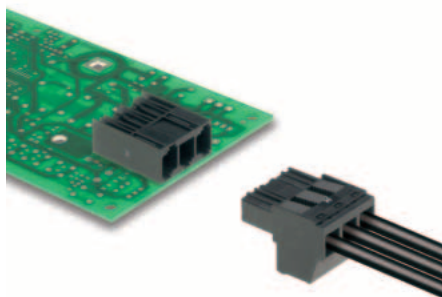
Derating curve
BU/SU 10.16 / 180°/ H07V-K16



(Measured while connected with socket blocks)

Solder connection pin headers

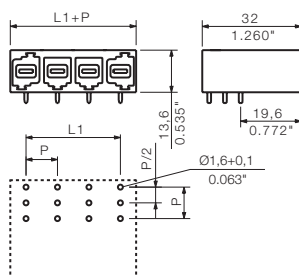
SU 10.16/270



- 690V (IEC) / 300V (UL)
- 60A (IEC) / 54A (UL)

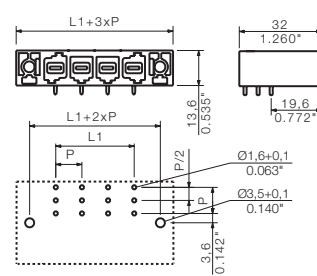
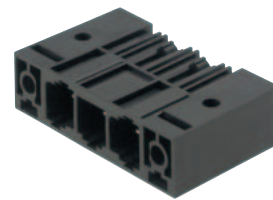
SU 10.16/270G

without flanges



SU 10.16/270F

Interlock flanges



Technische Daten

Rated data acc. to IEC 664-1 / VDE 0110 (4.97)

Clamping range, max.	mm²	
Solid H05(07) V-U	mm²	
Stranded H07 V-R	mm²	
Flexible H05(07) V-K	mm²	
Flexible with ferrule	mm²	
Ferrule with plastic collar	mm²	
Stripping length	mm	

Rated current at ambient temperature

	20°C	40°C
A	60.0	52.0

Overvoltage category

	III	III	II
--	-----	-----	----

Pollution severity

	3	2	2
--	---	---	---

UL 1059 rated data - E60693

Rated voltage	V	300	300	600
Rated current	A	54.0	54.0	5.0

CSA C22.2 rated data - LR12400 B

Rated voltage	V	300	300	600
Rated current	A	54.0	54.0	5.0

Material data

Type of insulating material	PBT GF
Flammability class acc. UL94	V-0
Contact base material	Cu alloy
Contact plating	silver plated

Information

- Additional colours on request
- Rated current refers to rated cross-section and min. number of poles
- The data stated under CSA refers to cUL-Approval - E60693
- Drawing information P = Pitch

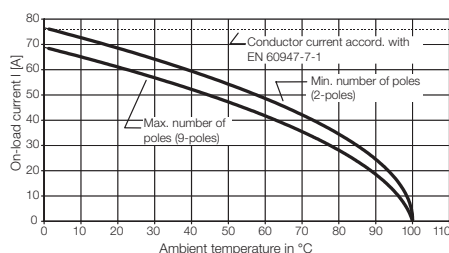
Ordering data

Solder pin length				3.5 mm
Colour				black
Pitch 10.16 mm				
Poles	L1 mm	(inch)	Qty.	Order No.
2	10.16	(0.400)	50	1813490000
3	20.32	(0.800)	50	1813500000
4	30.48	(1.200)	50	1813510000
5	40.64	(1.600)	20	1813520000
6	50.80	(2.000)	20	1813530000
7	60.96	(2.400)	20	1813540000
8	71.12	(2.800)	20	1813550000
9	81.28	(3.200)	20	1813560000

Ordering data

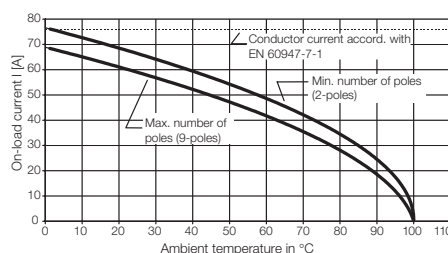
Soldier pin length			3.5 mm		
Colour			black		
Pitch 10.16 mm					
Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	10.16	(0.400)	50		1813730000
3	20.32	(0.800)	50		1813740000
4	30.48	(1.200)	50		1813750000
5	40.64	(1.600)	20		1813760000
6	50.80	(2.000)	20		1813770000
7	60.96	(2.400)	20		1813780000
8	71.12	(2.800)	20		1813790000
9	81.28	(3.200)	20		1813800000

Derating curve
BU/SU 10.16 / 270°/ H07V-K16



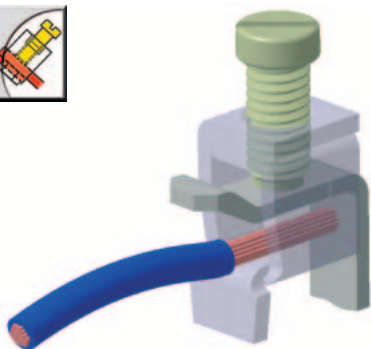
(Measured while connected with socket blocks)

Derating curve
BU/SU 10.16 / 270°/ H07V-K16

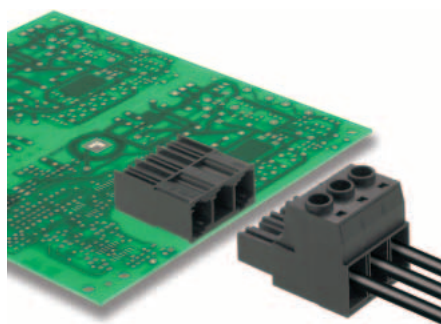


(Measured while connected with socket blocks)

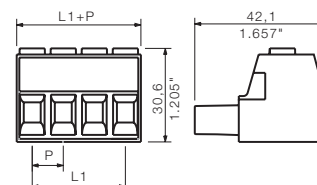
Clamping yoke connection socket connectors



BUZ 10.16



BUZ 10.16/180



The screw clamping yoke is the most popular and widely used cable connection method worldwide. The security of the cable is vital for every application, and the Weidmueller clamping yoke design has proven its reliability for millions of connections in hundreds of thousands of applications over the last 40 years.

The best and most reliable cable connection mechanisms use the best materials for the mechanical and electrical functions: steel parts for strength and security, brass or copper parts for conductivity.

The Weidmueller clamping yoke and screw are made from hardened steel and are zinc-chrome plated to prevent corrosion.

The current carrying bar/pins are made from a tin plated copper alloy.

High contact force is only effective if it is continuous. When the clamping screw is turned, the Weidmueller clamping yoke rises in the component housing until the cable is firmly held between the current-bar and clamping yoke.

Further turning of the screw achieves the optimum torque level according to DIN EN 60 999. At the point of maximum permitted torque, the upper threadoverlap of the yoke opens causing a locking action to be exerted on the screw.

A maintenance-free and continuous torque is thus achieved.

- 0.32 - 16mm² (IEC) / 22 - 6 AWG (UL)
- 690V (IEC) / 300V (UL)
- 60A (IEC) / 54A (UL)

Technical data

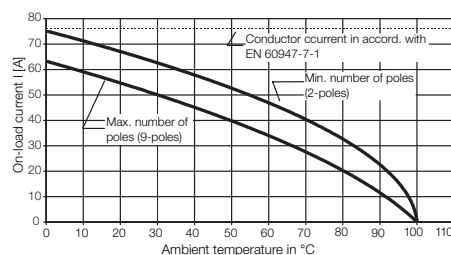
Rated data acc. to IEC 664-1 / VDE 0110 (4.97)				
Clamping range, max.	mm ²	0.32...16.00		
Solid H05(07) V-U	mm ²	0.50...16.00		
Stranded H07 V-R	mm ²	6...16		
Flexible H05(07) V-K	mm ²	0.50...16.00		
Flexible with ferrule	mm ²	0.50...16.00		
Ferrule with plastic collar	mm ²	0.50...10.00		
Stripping length	mm	12.0		
Rated current at ambient temperature				
	A	20°C	30°C	40°C
		60.0	52.0	52.0
Overvoltage category				
		III	III	II
Pollution severity				
		3	2	2
Rated voltage	V	690	1000	1000
Rated impulse voltage	kV	8.0	8.0	6.0
UL 1059 rated data - E60693				
		B	C	D
Rated voltage	V	300	300	600
Rated current	A	54.0	54.0	5.0
AWG conductor			22-6	
CSA C22.2 rated data - LR12400 B				
		B	C	D
Rated voltage	V	300	300	600
Rated current	A	54.0	54.0	5.0
AWG conductor			22-6	
Material data				
Type of insulating material		PBT GF		
Flammability class acc. UL94		V-0		
Contact base material		Cu alloy		
Contact plating		tin plated		
Information				
• Additional colours on request • Rated current refers to rated cross-section and min. number of poles • ferrule without plastic collar acc. to DIN 46228/1 • Ferrule with plastic collar acc. to DIN 46228/4 • The data stated under CSA refers to cUL-Approval - E60693 • Drawing information P = Pitch				

Ordering data

Solder pin length				
Colour				black
Pitch 10.16 mm				
Poles	L1 mm	(inch)	Qty.	Order No.
2	10.16	(0.400)	50	1813810000
3	20.32	(0.800)	50	1813820000
4	30.48	(1.200)	50	1813830000
5	40.64	(1.600)	20	1813840000
6	50.80	(2.000)	20	1813850000
7	60.96	(2.400)	20	1813860000
8	71.12	(2.800)	20	1813870000
9	81.28	(3.200)	20	1813880000

Derating curve

BU/SU 10.16 / 180°/ H07V-K16

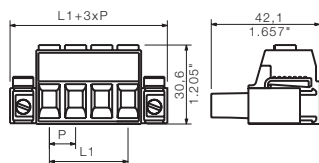


(Measured while connected with pin headers)

Clamping yoke connection socket connectors

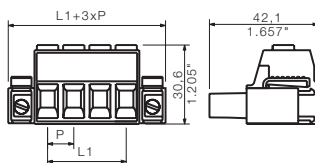
BUZ 10.16/180F

Interlock flanges



BUZ 10.16/180SF

Interlock flanges with screws



Accessories

Coding element

See page 30
Part no. 1824410000



Screwdriver

See page 31
Part no. 9008410000



Ordering data

Solder pin length

Colour

black

Pitch 10.16 mm

Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	10.16	(0.400)	50		1813890000
3	20.32	(0.800)	50		1813900000
4	30.48	(1.200)	50		1813910000
5	40.64	(1.600)	20		1813920000
6	50.80	(2.000)	20		1813930000
7	60.96	(2.400)	20		1813940000
8	71.12	(2.800)	20		1813950000
9	81.28	(3.200)	20		1813960000

Ordering data

Solder pin length

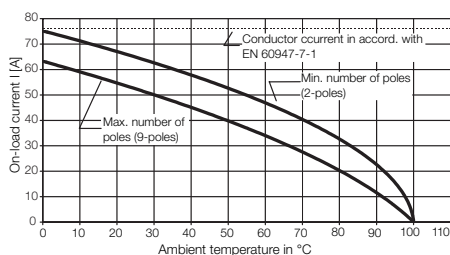
Colour

black

Pitch 10.16 mm

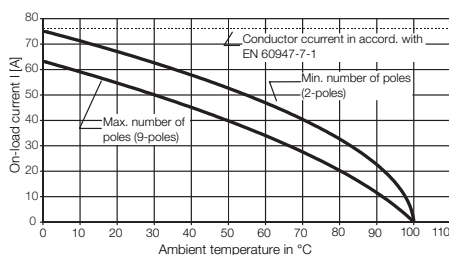
Poles	L1 mm	(inch)	Qty.	Order No.	Order No.
2	10.16	(0.400)	50		1850630000
3	20.32	(0.800)	50		1850640000
4	30.48	(1.200)	50		1850650000
5	40.64	(1.600)	20		1850660000
6	50.80	(2.000)	20		1850670000
7	60.96	(2.400)	20		1850680000
8	71.12	(2.800)	20		1850690000
9	81.28	(3.200)	20		1850700000

Derating curve
BU/SU 10.16 / 180°/H07V-K16



(Measured while connected with pin headers)

Derating curve
BU/SU 10.16 / 180°/H07V-K16



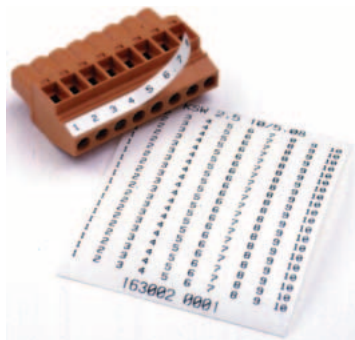
(Measured while connected with pin headers)

Accessories

KSW 4 / KSW 2.5

Marking strips

Minimate Range
Omnimate Range
Unimate Range



KSW marking strips serve for marking multipole printed circuit board terminals and connectors. The white adhesive strips consist of PVC-free, environmentally friendly material. These marking strips permit individual print with pitch selection. Two strips widths are available: 2.5 mm and 4.0 mm.

Technical data

Material:	Polyester with smooth surface
Adhesive:	Acrylate based
Temperature range:	-40°C to +150°C
Minimum bonding temperature:	+4°C
Flammability:	Self extinguishing after 15 seconds

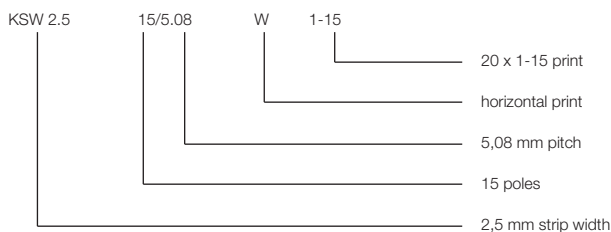
Number of marking strips per sheet

Up to 20 poles = 20 strips per sheet

* Greater than 20 poles = 15 strips per sheet

Ordering example

Order No. **1630060001**



Printed versions

KSW 4	Pitch				
Print	3.50 mm	5.00 mm	5.08 mm	7.50 mm	7.62 mm
1-8	1630190001	1700670001	1630200001	1700690001	1700680001
1-12	-	-	-	1630140001	1652270001
1-16	1630150001	1700700001	1630160001	-	-
1-24*	1640410001	1700710001	1630180001	-	-

KSW 2.5	Pitch				
Print	3.50 mm	5.00 mm	5.08 mm	7.50 mm	7.62 mm
1-8	-	1700660001	1630100001	-	-
1-12	-	-	-	-	-
1-16	1652260001	1630070001	1713970001	-	-
1-24*	1652250001	1713980001	1713990001	-	-

Neutral versions

	Strip length		
	50 mm	100 mm	150 mm
KSW 4	1629970000	1629990000	1630010000
KSW 2.5	1629960000	1629980000	1630000000

Individual print

	Strip length		
	50 mm	100 mm	150 mm
KSW 4	1629910000	1629930000	1629950000
KSW 2.5	1629900000	1629920000	1629940000

Direct printing

Minimate Range
Omnimate Range
Unimate Range



Please contact us if you want to print your pin headers and socket blocks according to your requirements.

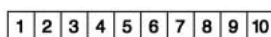
Accessories

DEK 5

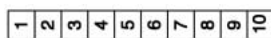
Dekafix System Powermate Range



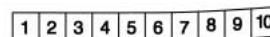
Quantity specification:
1 double card = 10 strips = 100 items
1 packing unit = 500 items
DEK standard print is black.



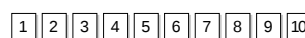
Horizontal print



Vertical print



Strip mounting



Individual tag mounting

Technical data

Material	Polyamid
Temperature range	-40 °C up to +100 °C
Flammability class	UL 94 V-2
Components	silicone free, halogens below limit of detection
Assembly	Strip or individual assembly depending on stackability of the product
Print	Standard or custom, print colour black
Smudge resistance	Smudge resistant according to DIN IEC 50
Custom print	from customer's list or data exchange via disk or modem
Colour	Available in colours of the international colour code
Digits max. DEK 5	3 horizontal/3 vertical up to 2,5 mm type size

Custom print specify print

Colour	Order No.	Colour	Order No.	Colour	Order No.	Qty. 500
○ white	0490760000	(For other colour take 0490790000 and specify colour)				
● black	0490790000	● yellow	0490790000	● violet	0490790000	
● brown	0490790000	● green	0490790000	● grey	0490790000	
● red	0490790000	● blue	0490790000	● orange	0490790000	

Neutral

Colour	Order No.	Colour	Order No.	Colour	Order No.	Qty. 500
● black	0473391694	● yellow	0473391687	● violet	0473391689	
● brown	0473391692	● green	0473391688	● grey	0473391691	
● red	0473391686	● blue	0473391693	○ white	0473360000	
● orange	0473391690					
Z	0522761046					

Ordering data

Printing data																										
(only horizontal)	Print	Order No.		Print	horizontal	vertical																				
Printing with individual letters	A	0522761021	Printing 50 digits in series	1 ... 50	0473460001	0473560001																				
	B	0522761022	<table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr></table>	1	2	3	4	5	6	7	8	9	10	51 ... 100	0473460051	0473560051										
1	2	3	4	5	6	7	8	9	10																	
<table border="1"><tr><td>A</td><td>A</td><td>A</td><td>A</td><td>A</td><td>A</td><td>A</td><td>A</td><td>A</td><td>A</td></tr></table>	A	A	A	A	A	A	A	A	A	A	C	0522761023	<table border="1"><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr></table>	11	12	13	14	15	16	17	18	19	20	to	The last 3 digits of the order no. are the first printed number	
	A	A	A	A	A	A	A	A	A	A																
	11	12	13	14	15	16	17	18	19	20																
	D	0522761024		951 ... 999	0473460951	0473560951																				
	E	0522761025	Printing 10 digits in series	1 ... 10	0523060001	0460660001																				
	F	0522761026	<table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr></table>	1	2	3	4	5	6	7	8	9	10	11 ... 20	0523060011	0460660011										
	1	2	3	4	5	6	7	8	9	10																
	G	0522761027	<table border="1"><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr></table>	11	12	13	14	15	16	17	18	19	20	to	The last 3 digits of the order no. are the first printed number											
	11	12	13	14	15	16	17	18	19	20																
	H	0522761028		91 ... 100	0523060091	0460660091																				
I	0522761029	Printing individual numbers	1	0522660001	-																					
J	0522761030	<table border="1"><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr></table>	1	1	1	1	1	1	1	1	1	1	2	0522660002	-											
1	1	1	1	1	1	1	1	1	1																	
K	0522761031		to	The last 3 digits of the order no. are the first printed number																						
L	0522761032		200	0523266200	-																					
M	0522761033	Printing multiple symbols	L1, L2, L3, N, PE	0354361187	-																					
N	0522761034	<table border="1"><tr><td>L1</td><td>L2</td><td>L3</td><td>N</td><td>PE</td><td>L1</td><td>L2</td><td>L3</td><td>N</td><td>PE</td></tr></table>	L1	L2	L3	N	PE	L1	L2	L3	N	PE														
L1	L2	L3	N	PE	L1	L2	L3	N	PE																	
O	0522761035																									
P	0522761036	Printing single symbols	plus symbol +	0576261198	-																					
Q	0522761037	<table border="1"><tr><td>+</td><td>+</td><td>+</td><td>+</td><td>+</td><td>+</td><td>+</td><td>+</td><td>+</td><td>+</td></tr></table>	+	+	+	+	+	+	+	+	+	+	minus symbol -	0576261199	-											
+	+	+	+	+	+	+	+	+	+																	
R	0522761038	<table border="1"><tr><td>L1</td><td>L1</td><td>L1</td><td>L1</td><td>L1</td><td>L1</td><td>L1</td><td>L1</td><td>L1</td><td>L1</td></tr></table>	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	PE	-	0157261187											
L1	L1	L1	L1	L1	L1	L1	L1	L1	L1																	
S	0522761039		L1	0522361075	-																					
T	0522761040		L2	0522361076	-																					
U	0522761041		L3	0522361077	-																					
V	0522761042		earthing symbol	0576261202	0157261202																					
W	0522761043		earthing symbol in circle	0576261203	0157261203																					
X	0522761044		AC ~	0576261215	-																					
Y	0522761045		custom card (forward printing and direction when placing the order)	0490760000	0490760000																					
Z	0522761046		coloured Dekafix blank	0473390000	0473390000																					
			coloured Dekafix ready printed = custom print																							
			(forward printing and direction when placing the order)	0490790000	0490790000																					

Accessories

PS 2.0 MC

Test Plug



- Accepts cables up to 0.75 mm² (AWG 18).
- Gold plated 'lantern' contact.
- Cables must be soldered to the test plug contact.

BV/SV 7.62 KO

Coding element



SV 7.62 VDS

Placement guide



The placement guide is made from LCP (high-temperature resistant) and can be included in the soldering process without difficulty.

- Ø = 2,0 mm

Ordering data

Type	for max. cable	Qty.	Order No.
PS 2.0 MC	≤ 0.75 mm ²	20	0310000000

Ordering data

Type	Qty.	Order No.
BV/SV 7.62 KO	100	1824410000

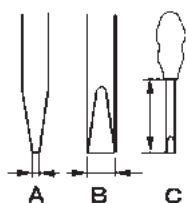
Ordering data

Type	Qty.	Order No.
SV 7.62 VDS	100	1853940000

Accessories

SDI

VDE-insolated slot-head screwdriver

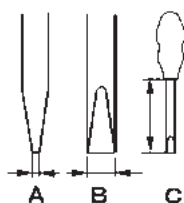


- Flat-blade screwdriver
- Insulated stem
- SoftFinish grip
- DIN 7437, ISO 2380/2



SD

Slot-head screwdriver with round blade



- Flat-blade screwdriver.
- SoftFinish grip.
- DIN 7437, ISO 2380/2.



Ordering data

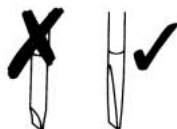
Type	Dim. (mm)	A	B	C	Order No.
SDI	0.4	2.5	75		9008370000
SDI	0.5	3.0	100		9008380000
SDI	0.6	3.5	100		9008390000
SDI	0.8	4.0	100		9008400000
SDI	1.0	4.5	125		9008910000
SDI	1.0	5.5	125		9008410000
SDI	1.2	6.5	150		9008420000
SDI	1.6	8.0	175		9008430000

Ordering data

Type	Dim. (mm)	A	B	C	Order No.
SD	0.4	2.5	75		9009030000
SD	0.5	3.0	80		9008320000
SD	0.6	3.5	100		9008330000
SD	0.8	4.0	100		9008340000
SD	0.8	4.5	125		9009020000
SD	1.0	5.5	150		9008350000
SD	1.2	6.5	150		9009010000

Actuation tool

Actuation tool for PCB-terminals
with tension clamp technology



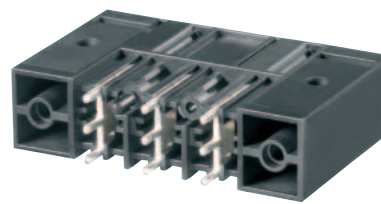
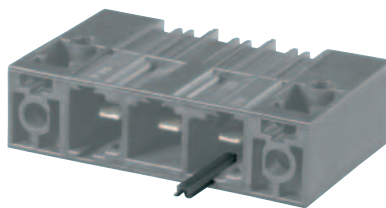
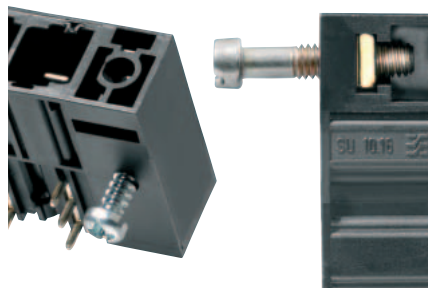
SD 0.6 x 3.5 x 100
(DIN 5264-A)

For use of the tension clamp terminal there is no special tool required. The actuation slot is compatible to a screwdriver 0.6 x 3.5 x 100 acc. DIN 5264-A (with flat blade) which is also available from WI.

PCB connection: design features/RoHS compatibility

Safety first

- Failsafe connection
- Additional coding options



Further optional features:

- Additional sturdy attachment to PCB
- Captive nut for optional screw fastening
- Placement Guide to avoid male assembling on PCB.



RoHS ('Restriction of the use of certain Hazardous Substances') Weidmüller Roadmap

The Directive

The Directive 2002/95/EC of the European Parliament and the Council of Europe on the restriction of the use of certain hazardous substances in electrical and electronic equipment will not only have far-reaching consequences for Weidmüller, but also for our customers.

It mainly applies to the materials lead and chrome6, which will have to be eliminated or replaced.

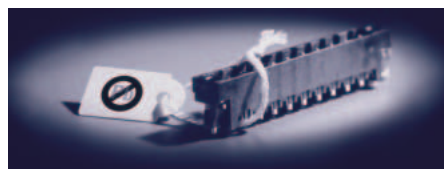
The challenge

Converting to lead-free processes on time requires, for example, that comprehensive measures be taken affecting engineering matters and the processes themselves on a coordinated, company-wide basis.

The schedule

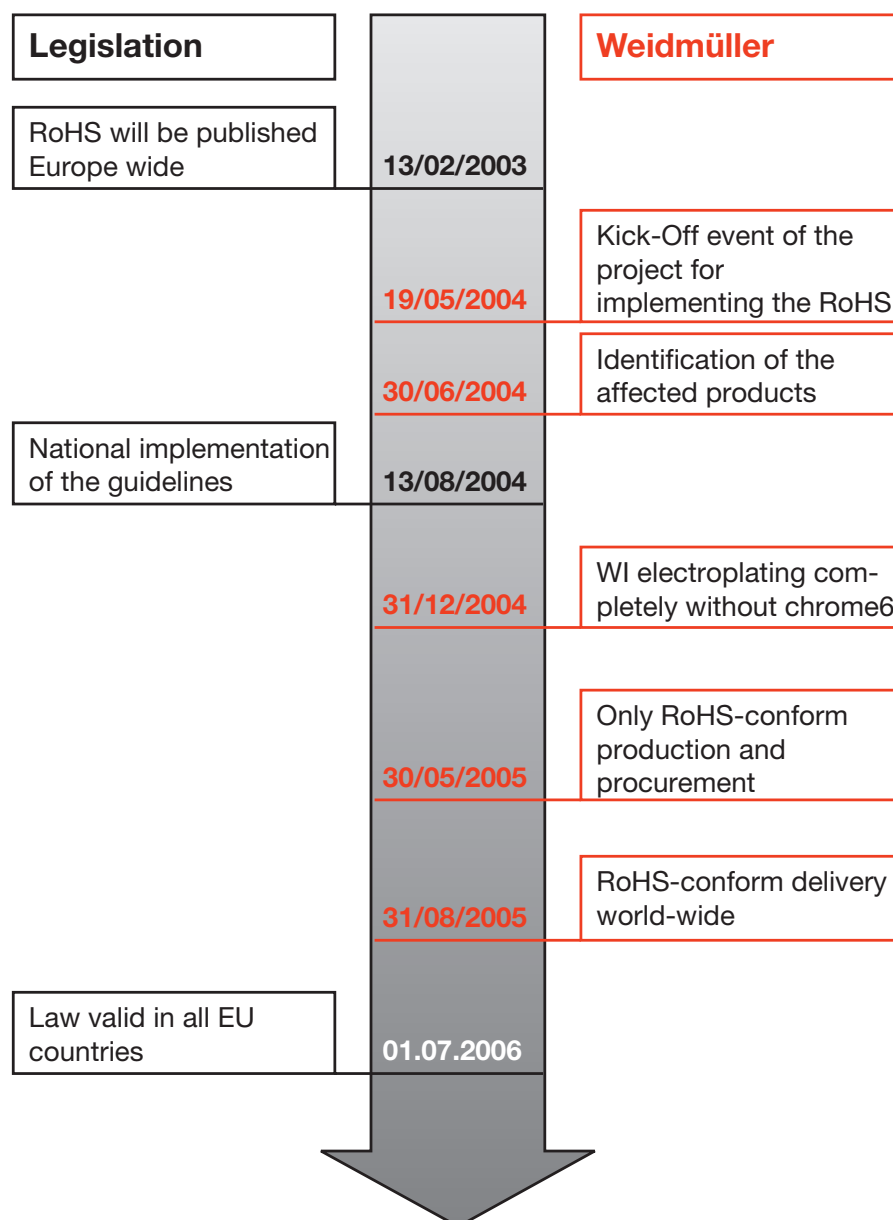
For our customers, implementing the new Directive means

- The statutory 'Roadmap'
- Weidmüller's timetable for implementing the Directive



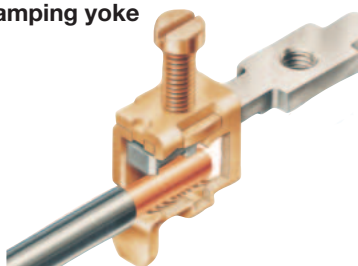
The aim

As the leading manufacturer in the field of electrical connection technology, Weidmüller is equipped to implement all statutory requirements on time. A large part of our products, for example SMT and THR pin headers, are already lead-free.



Basis for Weidmüller's connection technology

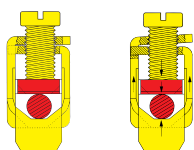
Clamping yoke



Made from electrogalvanized, and additionally chrome-plated case-hardened steel, the clamping yoke and high-strength clamping screw hold the wire securely and reliably in the contact point. Tin plated (BVZ) or silver plated (BUZ), the current carrying bar provides a close fitting, permanent contact featuring low contact resistance. Separation of electrical and mechanical functions allows optimum design of the component groups:

- Clamping yoke and screw made of steel: Optimum contact force
- Current carrying bar made of copper: High conductivity

Function principle



A high contact force is only effective when it is permanently exerted on the wire. The clamping yoke system achieves this effect in the following manner:

When the clamping screw is turned, the upper flank of thread expands slightly, and in so doing locks the clamping screw in position. That achieves a vibration-resistant connection. The elastic design characteristics of the clamping yoke fully compensates changes to the diameter that arise due to fluctuations in temperature. The connection will not work loose.

Result:

A maintenance-free connection under all conditions. It is not necessary to re-tighten the clamping screw.

The following characteristics make the clamping yoke a versatile and reliable connection system:

- Maintenance-free connection
- Sealed contact point
- High contact force
- Two wires can be clamped per terminal point
- Open terminal point
- Suitable for wires from 0,32... 16 mm²

Tension clamp

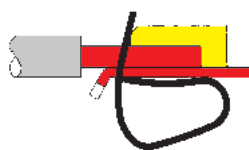


The tension clamp is made from high-quality, corrosion-resistant steel. In keeping with the traditional Weidmüller contact principle, a great deal of importance was placed on separating electrical and mechanical functions in the tension clamp system.

The tension clamp draws the wire onto the tin-plated copper current carrying bar.

- Tension clamp made of steel: Optimum contact forces
- Current carrying bar made of copper: High conductivity

Function principle



Weidmüller's tension clamp generates an outstanding contact force. It reliably compensates fluctuations in temperature as well as vibration stresses. Due to the very principle of the system, it is not possible for the wire to become loose or disconnect unintentionally.

Result:

the connection is totally maintenance-free.

The following characteristics make the tension clamp a simple and rapid connection system:

- Maintenance-free connection
- Sealed contact point
- High contact force
- One wire can be clamped per terminal point
- Suitable for connecting wires from 0,32 ... 6 mm²

Contacts



To guarantee constant performance data, the construction of the socket contacts utilize copper for conductivity and steel for strength. That is absolutely essential for the high current carrying capacity of this product. The contact surface with high-quality silver guarantees durability and shields the contact from negative effects. Four defined contact points provide the reserves for the high load carrying capacity. Large conductor cross-sections up to 16 mm² are possible. In order to be able to transfer the heavy currents to the PCB, three soldering pins are used per contact point.

(Contact system SU/BU)

Converting AWG conductors to mm²

AWG is the abbreviation for "**A**merican **W**ire **G**auge". This gives no indication of the actual conductor cross-sectional area.

The relationship between AWG and mm² is shown in the following table.

AWG	mm ²	AWG	mm ²
28	0.08	11	4.17
26	0.13	10	5.26
24	0.21	9	6.63
22	0.22	8	8.37
20	0.52	7	10.55
19	0.65	6	13.30
18	0.82	5	16.77
17	1.04	4	21.15
16	1.31	3	26.67
15	1.65	2	33.63
14	2.08	1	42.41
13	2.63	0	53.48
12	3.31		

Converting inches to millimetres

Pitch dimensions are generally given in inches.

mm	inch	mm	inch
2.00	0.079	7.50	0.295
2.50	0.098	7.62	0.300
2.54	0.100	9.50	0.374
3.50	0.138	10.16	0.400
3.81	0.150	12.70	0.500
5.00	0.197	15.00	0.591
5.08	0.200	20.00	0.787

Basic information – Materials

Materials

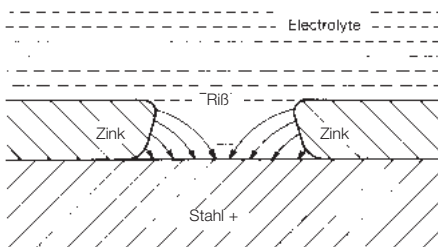
Weidmueller products use insulating materials which have proved highly efficient in the electrical engineering sector. All materials are subject to stringent quality control via a quality system certified according to DIN ISO 9001. Environmental compatibility plays a decisive role in the selection of materials.

Metal

All metals used by Weidmueller are selected, processed and surface treated using the latest technology.

Steel

Steel components are zinc-plated provided with an additional passivation by a yellow chromate layer. The surface protection provided meets the highest requirements. The experience acquired from out-door climatic tests at various locations (maritime and tropical climates, industrial and standard atmospheres) has been used to enhance the quality of the surface protection. This enhanced surface protection considerably increases resistance to corrosion even if the zinc plating is partially damaged by scratches or pores. Zinc reacts negatively to steel under the effects of electrolyte. The metal ions of the zinc migrate to the steel and give the base material lasting protection against corrosive attack.



Conductive materials

Copper, brass and bronze are highly conductive and possess excellent mechanical properties. They are usually tin-lead plated for exceptional contact resistance. In addition to its good electrical properties, the tin-lead plating offers excellent protection against corrosion. Solder connections are also tin-lead plated. In order to ensure good solderability of the tin-lead plating even after long storage periods, brass parts are provided with an additional nickel layer as a diffusion barrier. This nickel layer effectively prevents the discharge of zinc atoms from the brass.

Insulating materials

In order to meet the various demands on our products, it is necessary to use different types of insulating material to suit individual applications. All insulating materials used by Weidmueller are asbestos-free and contain no cadmium-based colour pigments.

Thermoplastics

Polyamide (PA) is one of the most frequently used technical plastics. The advantages of this material are its good electrical and mechanical properties, flexibility and insusceptibility to fracture. Because of its chemical structure, this material also offers good fire resistance (inherent flame protection) without the use of flameproofing agents.

- flexible, insusceptibility to fracture
- good electrical and mechanical properties
- inherent flame protection

Specific volume resistance: $10^{12} \Omega \times \text{cm}$
Dielectric strength: 30 kV/mm
Tracking resistance (A): 600 CTI
Temperature range: -50°C bis $+100^\circ\text{C}$
Flammability class: UL 94 V-2

Wemid (PA) is a modified thermoplastic whose properties are specially adjusted to meet the requirements of our products. The advantages compared to PA are improved fire protection and increased continuous service temperature.

- modified Thermoplastic
- increased continuous service temper.
- improved fire resistance
- halogen and phosphorous-free flameproofing agent
- no dioxin or furan forming substances

Specific volume resistance: $10^{12} \Omega \times \text{cm}$
Dielectric strength: 25 kV/mm
Tracking resistance (A): 600 CTI
Temperature range: -50°C bis $+120^\circ\text{C}$
Flammability class: UL 94 V-0

Thermoplastic Polyester (PBT)

is used for connectors because of its excellent dimensional stability and high continuous service temperature.

Compared to other insulating materials, the tracking resistance is lower.

- high dimensional stability
- good electrical and mechanical properties
- no dioxin or furan forming substances

Specific volume resistance: $10^{13} \Omega \times \text{cm}$
Dielectric strength: 28 kV/mm
Tracking resistance (A): 200 CTI
Temperature range: -50°C bis $+110^\circ\text{C}$
Flammability class: UL 94 V-0

Thermoplastic Polyester (PBT glass fibre reinforced)

offers excellent dimensional stability, very good mechanical properties and allows high continuous service temperature.

Specific volume resistance: $10^{13} \Omega \times \text{cm}$
Dielectric strength: 29 kV/mm
Tracking resistance (A): 200 CTI
Temperature range: -50°C to $+130^\circ\text{C}$
Flammability class: UL 94 V-0

Liquid Critical Polymer

LCP offers excellent dimensional stability, particularly at high temperature. As the materials thermal expansion coefficient is very small and similar to the thermal expansion coefficient of common PCBs it is very interesting for parts which are soldered in a reflow oven.

Specific volume resistance: $10^{15} \Omega \times \text{cm}$
Dielectric strength: 35 kV/mm
Tracking resistance (A): 175 CTI
Temperature range: -55°C bis $+240^\circ\text{C}$
Flammability class: UL 94 V-0

Clearances and creepage distances in electrical equipment

General:

The specifications VDE 0110, part 1 and part 2 have been applicable to the dimensioning of clearances and creepage distances "insulation coordination for electrical equipment within low voltage systems", since 1 January 1989.

DIN VDE 0010, Part 1, makes reference to IEC report 664 and 664 A. The ratings resulting from these specifications – where applicable – are specified in this catalogue product-related. In some applicable equipment specifications (for example, DIN VDE 0627/6.86 for connectors), the specifications for clearances and creepage distances are based on

VDE 0110/11.72 and VDE 0110 b/2.79 "specifications for clearances and creepage distances in electrical equipment". The data based on these specifications is therefore specified in this catalogue for the respective products.

VDE 0110/1.89 (IEC report 664 and 664 A) Dimensioning of clearances and creepage distances; insulation coordination for electrical equipment within low-voltage systems

For dimensioning of clearances and creepage distances, the following relationships are given from the specifications for insulation coordination:

● **Clearances** are dimensioned according to the anticipated **overvoltages** taking into account the ratings of the **overvoltage protection precautions** taken and the anticipated environmental conditions taking into account the protective measures taken against **pollution**.

● **Creepage distances** are dimensioned according to the **working voltage** and the anticipated environmental conditions taking into account the protective measures taken against **pollution** and the **insulating materials** used.

Dimensioning of clearances

Decisive for dimensioning of clearances are the **rated impulse voltages** shown in table 1 which are given from the **overvoltage category** and the **phase-to-earth voltage** derived from the rated supply voltage.

From the **rated impulse voltage** and the **pollution severity**, the minimum clearances (up to site altitudes of 2000 m above mean sea level) are determined from table 2a.

Note:

Clearances which do not correspond to case A, must be subjected to an impulse voltage test (see tab 2a, footnote 1).

The **pollution severity categories** are as follows:

Pollution severity category 1:
No or only dry, non-conductive pollution occurs; the pollution has no influence.

Pollution severity category 2:
Only non-conductive pollution occurs; temporary conductivity can occasionally be expected through moisture condensation.

Pollution severity category 3:
Conductive pollution or dry, non-conductive pollution occurs liable to be rendered conductive through anticipated moisture condensation.

Pollution severity category 4:
Contamination results in constant conductivity, e.g. caused by conductive dust, rain or snow.

Table 1: Rated impulse voltages for electrical equipment

Rated voltage of power supply systems *) in V		Rated impulse voltages in kV for			
Three-phase systems	Single-phase systems with middle point	Electrical equipment at the origin of the installation (Overvoltage category IV)	Electrical equipment which is part of the fixed installation (Overvoltage category III)	Electrical equipment to be connected to the fixed installation (Overvoltage category II)	Specially protected electrical equipment (Overvoltage category I)
	120 bis 240	4.00	2.50	1.50	0.80
230/400 277/480		6.00	4.00	2.50	1.50
400/690		8.00	6.00	4.00	2.50
1000		Values are subject to systems engineers or, if no values available, the values of the above line can be taken.			

*) According to IEC 38

Category I - determined for particular rated equipment

Category II - for technical committees who are responsible for electrical equipment, for connection to the mains power

Category III - for technical committees, who are responsible for installation material, and for some specific technical committees

Category IV - for power supply companies and system engineers

Table 2a: Minimum creepage distances according to VDE 0110-1/4.97

Rated impulse voltage in kV	Minimum clearance distances in mm up to 2000 m above sea level										
	Case A (inhomogeneous field)					Case B (homogeneous field)					
	Pollution severity					Pollution severity					
	1	2	1) ¹⁾	3	4	1	2	1) ¹⁾	3	4	
0.33	0.01	0.20	0.10	0.80	1.60	0.01	0.20	0.10	0.80	1.60	
0.40	0.02					0.02					
0.50	0.04					0.04					
0.60	0.06					0.06					0.12
0.80	0.10					0.10					0.20
1.00	0.15	0.20				0.15		0.20			
1.20	0.25	0.25				0.20	0.30	0.45	1.20	2.00	
1.50	0.50	0.25				0.30					
2.00	1.00	1.00		1.00		0.45	0.60				
2.50	1.50	1.50		1.50		0.60	0.80				
3.00	2.00	2.00		2.00	2.00	0.80	1.20				
4.00	3.00	3.00		3.00	3.00	1.20	1.50		1.50		
5.00	4.00	4.00		4.00	4.00	1.50	2.00		2.00	2.00	
6.00	5.50	5.50		5.50	5.50	2.00	3.00		3.00	3.00	
8.00	8.00	8.00		8.00	8.00	3.00	5.50		5.50	5.50	
10.00	11.00	11.00		11.00	11.00	3.50	5.50		5.50	5.50	
12.00	14.00	14.00		14.00	14.00	4.50	5.50		5.50	5.50	
15.00	18.00	18.00		18.00	18.00	5.50	5.50		5.50	5.50	

¹⁾ The Pollution severity 2 is split for impulse voltages up to 1.00 (1.20) kV. These values apply in deviation from IEC report 664 for printed circuits; an appropriate German amendment proposal is available to the IEC.

Clearances and creepage distances in electrical equipment

The following aspects apply to the **over-voltage categories** in accordance with the national standard DIN VDE 0110-1:

Electrical equipment energised directly from the low-voltage mains

Specification of a specific impulse with-stand category (overvoltage category) shall be based on the following general explanation:

- Equipment of *Overvoltage category I* is equipment which is intended to be connected to the fixed electrical installations of buildings. Protective means are taken outside the equipment – either in the fixed installation or between the fixed installation and the equipment – to limit transient overvoltages to the specific level.

- Equipment of *Overvoltage category II* is equipment to be connected to the fixed electrical installations of buildings.

NOTE: Examples of such equipment are household appliances, portable tools and similar loads.

- Equipment of *Overvoltage category III* is equipment which is part of the fixed electrical installations and other equipment where a higher degree of availability is expected.

NOTE: Examples of such equipment are distribution boards, circuit breakers, wiring systems (IEV 826-06-01, including cables, bus-bars, junction boxes, switches, socket-outlets) in the fixed installation, and equipment for industrial use and some other equipment, e.g. stationary motors with permanent connection to the fixed installation.

- Equipment of *Overvoltage category IV* is for use at or in the proximity of the origin of the electrical installations of buildings upstream of the main distribution board.

NOTE: Examples of such equipment are electricity meters, primary protection devices and ripple control units.

Note on application of pollution severity and overvoltage categories:

The pollution severity and rated impulse voltage derived from the overvoltage category are each specified in this catalogue and are product-related.

In principle, the dimensioning of clearance and creepage distances, and resultant specification of ratings for electromechanical products (terminal blocks, terminal strips, printed circuit board terminals and printed circuit board connectors) is based on the *Overvoltage Category III* under consideration of all mains types.

Dimensioning of creepage distances:

Decisive for dimensioning of creepage distances are the rated voltages derived from the **system voltages** of the power supply for the respective **type of supply system** in conjunction with the **pollution severity** (classification, see under clearances) and the **insulating material** used. Taking into account tables 3 and 4 and the CTI (Comparative Tracking Index) of the insulating material, the minimum creepage distances are determined from table 4.

Table 3a: Single-phase three or two-wire AC or DC systems

Rated voltage of the power supply (mains) ^{*)}	Voltages for table 4	
	For insulation phase-to-phase ¹⁾	For insulation phase-to-earth ¹⁾
	all systems	3-wire systems mid-point earthed
V	V	V
12.5	12.5	–
24	25	–
25		
30	32	–
42		
48	50	–
50 ^{**)}		
60	63	–
30-60	63	32
100 ^{**)}	100	–
110	125	–
120		
150 ^{**)}	160	–
220	250	–
110-220	250	125
120-240		
300 ^{**)}	320	–
220-440	500	250
600 ^{**)}	630	–
480-960	1000	500
1000 ^{**)}	1000	–

1) Phase-to-earth insulation level for unearthed or impedance-earthed systems equals that for phase-to-phase because the operating voltage to earth of any phase can, in practice, approach full phase-to-phase voltage. This is because the actual voltage to earth is determined by the insulation resistance and capacitive reactance of each phase to earth; thus, low (but acceptable) insulation resistance of one phase can in effect earth it and raise the other two to full phase-to-phase voltage to earth.

*) It is assumed that the rated voltage of the electrical equipment is not lower than the nominal voltage of the power supply.

**) Because of the common changes, the meaning of the “-”-mark in table 1 has not been transferred; i.e.:
The /-mark indicates a four-wire three-phase distribution system. The lower value is the voltage phase-to-neutral, while the higher value is the voltage phase-to-phase. Where only one value is indicated, it refers to three-wire, three-phase systems and specifies the value phase-to-phase.
These values correspond to the values given in table 1.

Table 3b: Three-phase four or three-wire AC systems

Rated voltage of the power supply (mains) ^{*)}	Voltages for table 4		
	For insulation phase-to-phase	For insulation phase-to-earth	
	all systems	Three-phase 4-wire systems with earthed neutral wire ²⁾	Three-phase 3-wire systems unearthed ¹⁾ or corner-earthed
V	V	V	V
60	63	32	63
110/120/127	125	80	125
150 ^{**)}	160	–	160
208	200	125	200
220/230/240	250	160	250
300 ^{**)}	320	–	320
380/400/415	400	250	400
440	500	250	500
480/500	500	320	500
575	630	400	630
600 ^{**)}	630	–	630
660/690	630	400	630
720/830	800	500	800
960	1000	630	1000
1000 ^{**)}	1000	–	1000

1) Phase-to-earth insulation level for unearthed or impedance-earthed systems equals that for phase-to-phase because the operating voltage to earth of any phase can, in practice, approach full phase-to-phase voltage. This is because the actual voltage to earth is determined by the insulation resistance and capacitive reactance of each phase to earth; thus, low (but acceptable) insulation resistance of one phase can in effect earth it and raise the other two to full phase-to-phase voltage to earth.

2) For electrical equipment for use on both three-phase four-wire and three-phase three-wire supplies, earthed and unearthed, use the values for three-wire systems only.

*) It is assumed that the rated voltage of the electrical equipment is not lower than the nominal voltage of the power supply.

**) Because of the common changes, the meaning of the “-”-mark in table 1 has not been transferred; i.e.:
The /-mark indicates a four-wire three-phase distribution system. The lower value is the voltage phase-to-neutral, while the higher value is the voltage phase-to-phase. Where only one value is indicated, it refers to three-wire, three-phase systems and specifies the value phase-to-phase.
These values correspond to the values given in table 1.

Electrical data

Creepage distances in electrical equipment

Table 4: Minimum creepage distances

Rated voltage U_{eff} or U_n in V	Creepage distances in mm											
	printed circuits	other electrical equipment										
	Pollution severity			2			Pollution severity 3			4		
	1 Insulation material ²⁾	2 Insulation material ³⁾	1 Insulation material ²⁾	Insulation material group			Insulation material group			Insulation material group		
				I	II	III	I	II	III ⁴⁾	I	II	III ⁴⁾
10	0.025	0.04	0.08	0.40	0.40	0.40	1.00	1.00	1.00	1.60	1.60	1.60
12.5	0.025	0.04	0.09	0.42	0.42	0.42	1.05	1.05	1.05	1.60	1.60	1.60
16	0.025	0.04	0.10	0.45	0.45	0.45	1.10	1.10	1.10	1.60	1.60	1.60
20	0.025	0.04	0.11	0.48	0.48	0.48	1.20	1.20	1.20	1.60	1.60	1.60
25	0.025	0.04	0.125	0.50	0.50	0.50	1.25	1.25	1.25	1.70	1.70	1.70
32	0.025	0.04	0.14	0.53	0.53	0.53	1.30	1.30	1.30	1.80	1.80	1.80
40	0.025	0.04	0.16	0.56	0.80	1.10	1.40	1.60	1.80	1.90	2.40	3.00
50	0.025	0.04	0.18	0.60	0.85	1.20	1.50	1.70	1.90	2.00	2.50	3.20
63	0.040	0.63	0.20	0.63	0.90	1.25	1.60	1.80	2.00	2.10	2.60	3.40
80	0.063	0.10	0.22	0.67	0.95	1.30	1.70	1.90	2.10	2.20	2.80	3.60
100	0.10	0.16	0.25	0.71	1.00	1.40	1.80	2.00	2.20	2.40	3.00	3.80
125	0.16	0.25	0.28	0.75	1.05	1.50	1.90	2.10	2.40	2.50	3.20	4.00
160	0.25	0.40	0.32	0.80	1.10	1.60	2.00	2.20	2.50	3.20	4.00	5.00
200	0.40	0.63	0.42	1.00	1.40	2.00	2.50	2.80	3.20	4.00	5.00	6.30
250	0.56	1.00	0.56	1.25	1.80	2.50	3.20	3.60	4.00	5.00	6.30	8.00
320	0.75	1.60	0.75	1.60	2.20	3.20	4.00	4.50	5.00	6.30	8.00	10.00
400	1.00	2.00	1.00	2.00	2.80	4.00	5.00	5.60	6.30	8.00	10.00	12.50
500	1.30	2.50	1.30	2.50	3.60	5.00	6.30	7.10	8.00	10.00	12.50	16.00
630	1.80	3.20	1.80	3.20	4.50	6.30	8.00	9.00	10.00	12.50	16.00	20.00
800	2.40	4.00	2.40	4.00	5.60	8.00	10.00	11.00	12.50	16.00	20.00	25.00
1000	3.20	5.00	3.20	5.00	7.10	10.00	12.50	14.00	16.00	20.00	25.00	32.00

2) Insulation material I, II, IIIa, IIIb

3) Insulation material I, II, IIIa

4) Creepage distances are not determined in this range.

Insulation group IIIb is generally not recommended for pollution degree 3 at voltages above 630 V, and never recommended for pollution degree 4.

The insulating materials are subdivided into four groups according to their CTI (Comparative Tracking Index):

Insulating material	
I	$600 \leq \text{CTI}$
II	$400 \leq \text{CTI} < 600$
III a	$175 \leq \text{CTI} < 400$
III b	$100 \leq \text{CTI} < 175$

Slots are taken into account in the measurement of creepage distances when their minimum width X is dimensioned according to the following table:

Pollution severity	Minimum width x (mm)
1	0.25
2	1.0
3	1.5
4	2.5

The comparative tracking index must be determined according to DIN IEC 112/VDE 0303, Part 1 on the basis of specially prepared samples with test solution A.

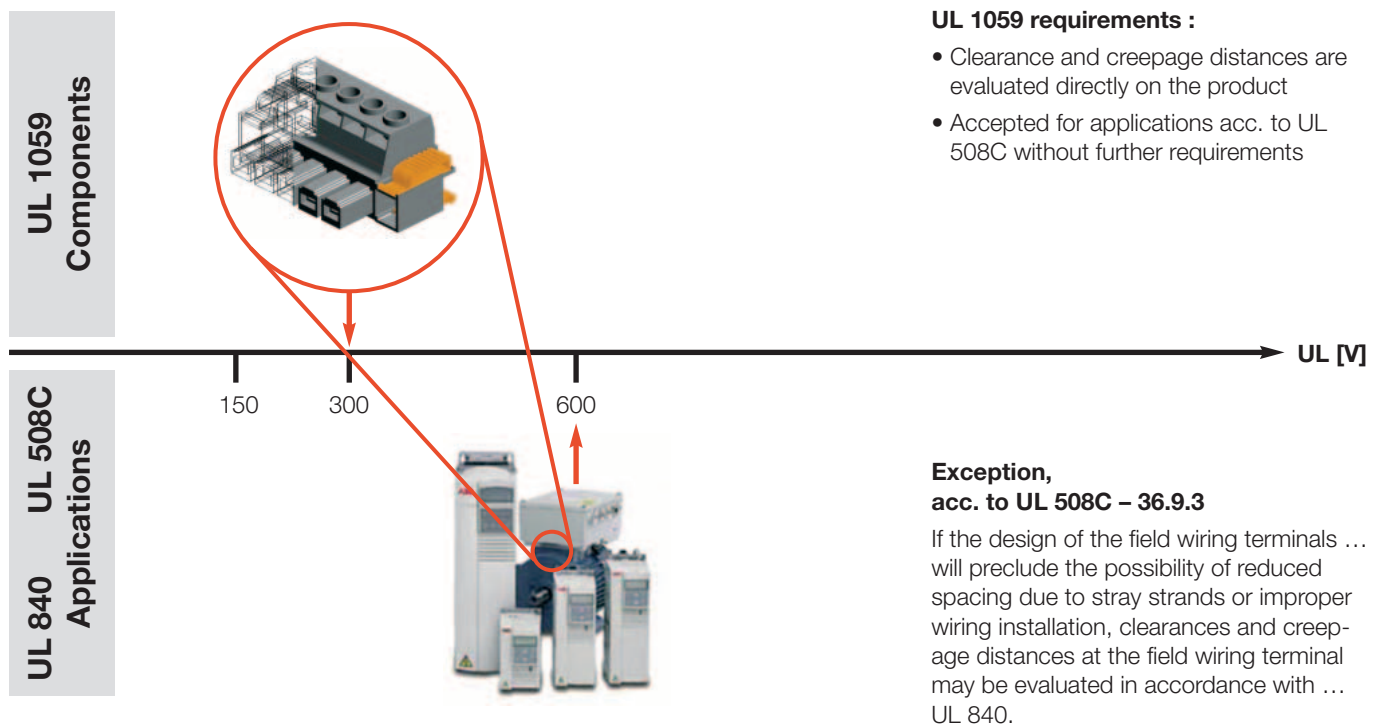
If the associated clearance is less than 3 mm, the minimum width X can be reduced to $\frac{1}{3}$ of the clearance.

Design-in recommendations: applications for 600 V in accordance with UL

Conclusion of the most important UL issues concerning UL 1059 and UL 508 / 508C:

- PCB-components are recognized acc. to UL 1059 and are tested without a PCB or application environment
- Applications refer to UL 508 (or UL 508C concerning motor controls, e.g. frequency converters)
- The application designer is dedicated to refer to the application related UL-Standards, UL 508 or UL 508C, not to UL 1059
- Acc. to UL 508C, and fulfilling specific conditions, 300 V PCB-components acc. to UL 1059 can be used in 600 V applications, referring to UL 840.
- Weidmüller Powermate Range and Power Terminals fulfill the required conditions and therefore can be used in 600 V applications acc. to UL 508C
- For detailed information please refer to the drawing below:

The ratings for higher voltages, according to UL 508 C / UL 840:



Extract from UL 5.08C: (36.9 Spacings for drives evaluated in accordance with UL 840)

36.9.1 Other than as noted in 36.9.2 and 36.9.3, clearances and creepage distances are able to be evaluated in accordance with the requirements in the Standard for Insulation Coordination Including Clearance and Creepage Distances for Electrical Equipment, UL 840. See 36.9.4 for details on applying UL 840.

36.9.2 Clearances between an uninsulated live part and the walls of a

metal enclosure, including fittings for conduit or armored cable, shall be in accordance with 36.2.2. The clearances shall be determined by physical measurement.

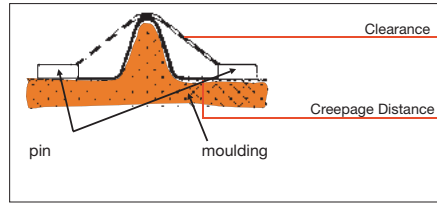
36.9.3 The clearance and creepage distance at field wiring terminals shall be in accordance with the requirements in 36.3.1.

Exception: When the design of the field wiring terminals precludes the possibility of reduced spacing due

to stray strands or improper wiring installation, then clearance and creepage distances at these terminals are able to be evaluated in accordance with the Standard for Insulation Coordination Including Clearance and Creepage Distances for Electrical Equipment, UL 840.

Definition Clearance and Creepage Distances

The maximum voltage to be applied to the connector depends on the distance between two conductors.



Two distances have to be taken in account:

- clearance = shortest distance between two leading parts (air)
- creepage distance = the distance along the surface of a connector

Comparison table for UL clearance and creepage distances at 300 V

Standard	Voltage	Clearance distance	Creepage distance
UL 1059 minimum spacing (table 8.1)	151 - 300V	6.4 mm	9.5 mm
UL508 C minimum spacing table (36.1)	151 - 300V	6.4 mm	9.5 mm
UL 508 C minimum spacing for products with known and controlled transient voltages (table 36.2)	peak: 226 - 450V > 10kVA	3.81 mm	5.08 mm
UL 840 Tables 5.1 and 6.1, pollution degree 3 , (exception 39.3 of UL 508 C) UL 840 is similar to IEC 664-1	peak: 226 - 400V 500VA-10kVA	2.54 mm	2.54 mm
UL 840 Tables 5.1 and 6.1, pollution degree 2 (exception 39.3 of UL 508 C) UL 840 is similar to IEC 664-1	320 V (400 V) [500 V]	Referred to 300V: II / 2.5 kV / 1.5 mm III / 4.0 kV / 3.0 mm IV / 6.0 kV / 5.5 mm	4.0 / 4.5 / 5.0 mm (5.0 / 5.6 / 6.3 mm) [6.3 / 7.1 / 8.0 mm]
	320 V (400 V) [500 V]	Referred to 300V: II / 2.5 kV / 1.5 mm III / 4.0 kV / 3.0 mm IV / 6.0 kV / 5.5 mm	1.6 / 2.2 / 3.2 mm* (2.0 / 2.8 / 4.0 mm) [2.5 / 3.6 / 5.0 mm]

Comparison table for UL clearance and creepage distances at 600 V

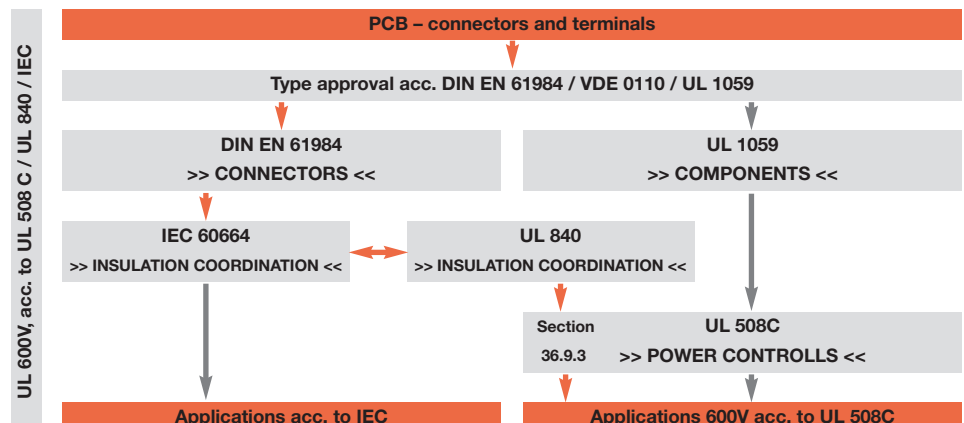
Standard	Voltage	Clearance distance	Creepage distance
UL 1059 minimum spacing (table 8.1)	301 - 600V	9.5 mm	12.7 mm
UL508 C minimum spacing table (36.1)	301 - 600V	9.5 mm	12.7 mm
UL 508 C minimum spacings for products with known and controlled transient voltages (table 36.2)	peak: 451 - 900V > 10kVA	7.62 mm	10.16 mm
UL 840 Table 6.1, pollution degree 3 , (exception 39.3 of UL 508 C) UL 840 is similar to IEC 664-1	peak: 451 - 900V 500VA-10kVA	5.08 mm	5.08 mm
UL 840 Tables 5.1 and 6.1, pollution degree 2 (exception 39.3 of UL 508 C) UL 840 is similar to IEC 664-1	630 V 800 V	Referred to 600V: II / 4.0 kV / 3.0 mm III / 6.0 kV / 5.5 mm IV / 8.0 kV / 8.0 mm	8.0 / 9.0 / 10.0 mm 10.0 / 11.0 / 12.5 mm
	630 V 800 V	Referred to 600V: II / 4.0 kV / 3.0 mm III / 6.0 kV / 5.5 mm IV / 8.0 kV / 8.0 mm	3.2 / 4.5 / 6.3 mm * 4.0 / 5.6 / 8.0 mm

Common Data:

Overvoltage Category concerning clearance distance Material group concerning creepage displayd as I / II / IIIa,
All clearance and creepage distances acc. UL refer to USEGROUP C (Industrial, general)

*) Not less than clearance deistance

Guideline: Relationship between recognitions



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