

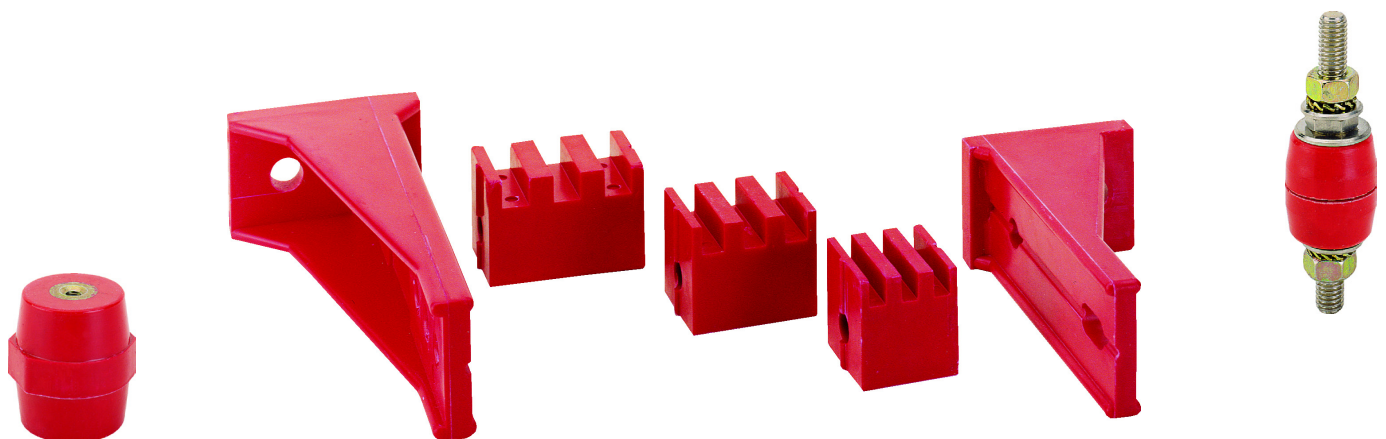


Bus bar isolators / -supports

We make energy measurable and take care of your future



www.mbs-ag.com



Independent, accredited testing station · Member laboratory of STL and LOVAG

TEST REPORT

NO. 1469.2101.265.0692

MBS AG Eisbachstraße 51 74429 Sulzbach-Laufen GERMANY	CLIENT
Busbar systems: ERIM SRL, Novate Milanese Distance insulators: MBS AG	MANUFACTURER
Busbar systems for low-voltage switchgear assemblies with distance insulators	TEST OBJECT
DB/P 50 with M10 & M12 threads	TYPE:
Test sample	SERIAL NO.
Rated operational voltage U _n 400 V	RATED CHARACTERISTICS GIVEN BY THE CLIENT
Rated insulation voltage U _i 1000 V	
Rated peak withstand current	
30 mm x 10 mm up to I _{pk} 63 kA	
40 mm x 10 mm up to I _{pk} 106 kA	
60 mm x 10 mm up to I _{pk} 132 kA	
80 mm x 10 mm up to I _{pk} 144 kA	
Rated frequency f 50 Hz	
IEC 61439-2: 2009-01, EN 61439-2: 2009-11	NORMATIVE DOCUMENT
Verification of dynamic short-circuit withstand strength	RANGE OF TESTS PERFORMED
12 to 14 October 2010	DATE OF TEST
See Sub-clause 4.6	TEST RESULT

RONALD BORCHERT
Senior engineer
Berlin, 25 November 2010

MICHAEL HEISE
Test engineer in charge

Independent test laboratory, accredited by Deutsche A and switchgear, power cables and power cable accessories and control equipment.
Institut „Prüfteil für elektrische Hochleistungstechnik“ G

Unabhängiges, akkreditiertes Prüflaboratorium · Mitgliedsprüfteil bei STL und LOVAG

PRÜFBERICHT

NR. 1469.2111429.0957

MBS AG Eisbachstraße 51 74429 Sulzbach-Laufen	AUFTRAGGEBER
MBS AG	HERSTELLER
Sammelschienensysteme für Niederspannungs-Schaltgerätekombinationen mit vertikalen Schienenhaltern Typ PSB, L & Z	PRÜFBEIJEKT
PSB/1, PSB/2, PSB/10, PSB/120, Distanzstück PSB, Schienenhalter L 100, Z 185-2	TYP
90175, 90176, 90177, 90180, 28246, 90391, 90385	SERIEN-NR.
Bemessungsbetriebsspannung U _n 400 V	BEMESSUNGS-DATEN NACH ANGABEN DES AUFTRAGGEBERS
Bemessungsisolationsspannung U _i bis zu 264 kV	
Bemessungsstoßstromfestigkeit: I _{pk} bis zu 120 kA, 1s	
Bemessungskurzzeitstromfestigkeit I _{kw} 50 Hz	
Bemessungsfrequenz f	
IEC 61439-2: 2011-08, EN 61439-2: 2012-06	PRÜFVORSCHRIFT
Nachweis der Kurzschlussfestigkeit	UMFANG DER PRÜFUNG
16. und 17. August 2012	DATUM DER PRÜFUNG
Siehe Punkt 4.6	PRÜFERGEBNIS

RONALD BORCHERT
Oberingenieur
Berlin, den 30. November 2012

MICHAEL HEISE
Verantwortlicher Prüflingenieur

Prüfteil der DAKKS, Deutsche Akkreditierungsstelle GmbH, für die und deren Komponenten, Kabel und Leitungen sowie industrielle Schaltungstechnik“ GmbH (IPH, Berlin) ist ein Tochterunternehmen von

Management System

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

MBS AG
 Eisbachstraße 51
 D-74429 Sulzbach-Laufen

has established and applies
a Quality Management System for

Development, production and distribution of measuring transducers, energy meters, low voltage current transformers, split core current transformers, all current sensors, bus bar isolators / supports, switchgear cabinet heating and control equipment,

“State approved test organization for measurement and calibration of current transformers and energy meters”.

An audit was performed, Report No. 70003062
Proof has been furnished that the requirements
according to

ISO 9001:2008

are fulfilled. The certificate is valid until 2015-03-14
Certificate Registration No. 12 100 20346 TMS

Munich, 2012-03-15

INTERNATIONAL ACCREDITED FORUM

TÜV SÜD Management Service GmbH • Zertifizierungsgesellschaft • Hohenstraße 65 • 85389 München • Germany

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Spacing isolator Type DB/P



Made of Polyglas-polyester material, reinforced with fiberglass, colour red, self-extinguishing.

The isolators of type DB are unbreakable and have excellent electrical and mechanical characteristics and can be used under extreme working conditions such as high room temperatures, also when in contact with corrosive substances, vibrations, etc.

The hexagon, arranged middle layer with two facing sides, facilitates the connection and locking in place the isolator.

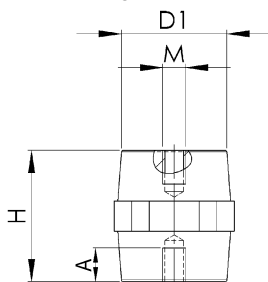
Upon request, the isolators can be supplied as follows:

- The isolator can be equipped with a thread which is not standard
- The isolator can be supplied with one or two threaded bolts „GB“

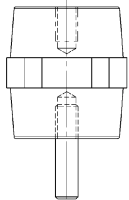
Operating temperature: -40 °C up to +130 °C

Fire resistance class: UL94-V0

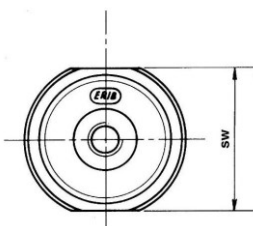
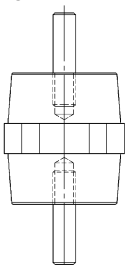
Isolator without threaded bolt
(Art.no. XXXXX;
e.g. 90015):



Isolator with one threaded bolt
(Art.no. XXXXX-1;
e.g. 90015-1):



Isolator with two threaded bolts
(Art.no. XXXXX-2;
e.g. 90015-2):



Art.-no.	Type	H [mm]	sw* [mm]	D1 [mm]	U _M [V]	M	A [mm]	Colour	Packaging unit [pcs.]
90015	DB/P 12	12	11	10	220	M3	3	black	100
90018	DB/P 12	12	11	10	220	M4	3	red	100
90022	DB/P 16	16	14	13	380	M4	4	red	100
90025	DB/P 20	20	17	15	500	M4	6	red	100
90026	DB/P 20	20	17	15	500	M6	6	red	100
90028	DB/P 25	25	19	15	600	M6	7	black	250
90029	DB/P 25	25	19	15	600	M5	7	red	250
90030	DB/P 25	25	19	15	600	M6	7	red	250
90033	DB/P 30	30	30	26	600	M6	8	red	80
90034	DB/P 30	30	30	26	600	M8	7	red	80
90035	DB/P 34	35	32	28	1000	M6	9	red	64
90036	DB/P 34	35	32	28	1000	M8	10	red	64
90037	DB/P 34	35	32	28	1000	M10	10	red	64
90038	DB/P 35	35	41	35	1000	M6	9	red	36
90039	DB/P 35	35	41	35	1000	M8	9	red	36
90040	DB/P 35	35	41	35	1000	M10	10	red	36
90438	DB/P 40	40	40	30	1000	M8	11	red	100
90439	DB/P 40	40	40	30	1000	M10	12	red	100
90440	DB/P 40	40	40	30	1000	M12	10	red	100
90041	DB/P 45	45	41	35	1500	M6	12	red	27
90042	DB/P 45	45	41	35	1500	M8	12	red	27
90043	DB/P 45	45	41	35	1500	M10	12	red	27
90044	DB/P 45	45	41	35	1500	M12	12	red	27
90046	DB/P 50	50	36	29	2000	M8	12	red	36
90047	DB/P 50	50	36	29	2000	M10	12	red	36
90048	DB/P 50	50	36	29	2000	M12	13	red	36
90441	DB/P 60	60	55	40	2000	M8	20	red	25
90442	DB/P 60	60	55	40	2000	M10	21	red	25
90443	DB/P 60	60	55	40	2000	M12	20	red	25
90050	DB/P 65	63.5	41	35	3000	M8	17	red	22
90051	DB/P 65	63.5	41	35	3000	M10	19	red	22
90052	DB/P 65	63.5	41	35	3000	M12	19	red	22
90053	DB/P 75	76	50	36	5000	M8	19	red	12
90054	DB/P 75	76	50	36	5000	M10	19	red	12
90055	DB/P 75	76	50	36	5000	M12	19	red	12
90057	DB/P 750	75	65	52	5000	M12	18	red	8
90058	DB/P 750	75	65	52	5000	M16	23	red	8

* sw = wrench width

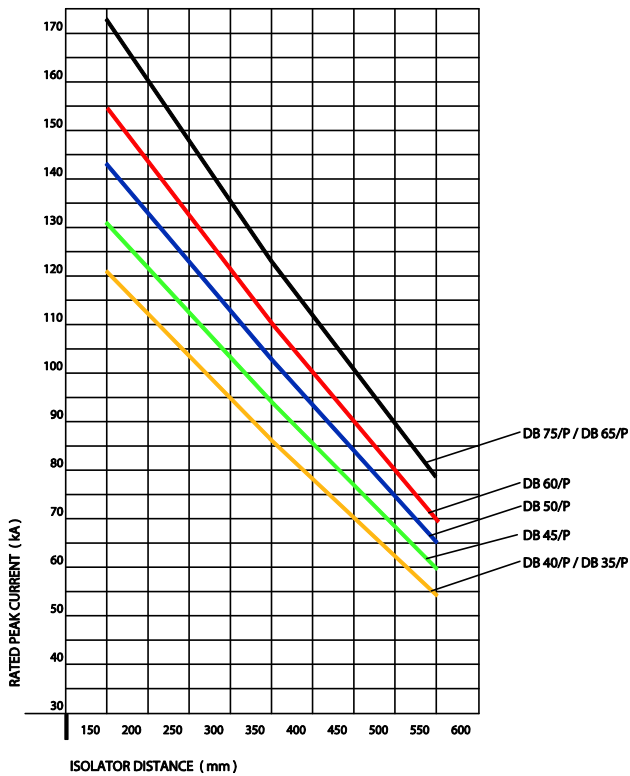
Type	Thread	Ripple current resistance [kV]	Discharge voltage [kV]	Max. tensile load [kN]	Max. bending load [kN]	Max. compression load [kN]	Max. tightening torque [Nm]
DB/P 16	M4	3	8	1	0.5	5	2.8
DB/P 20	M4	4	15	1.5	0.6	6	2.8
DB/P 20	M6	4	15	1.5	0.6	6	8.9
DB/P 25	M5	7	20	3	1.8	21	5.1
DB/P 25	M6	7	20	3	1.8	21	8.9
DB/P 30	M6	8	23	5	2.5	44	8.9
DB/P 30	M8	8	23	5	2.5	44	21.5
DB/P 34	M6	10	30	8	4.5	65	8.9
DB/P 34	M8	10	30	8	4.5	65	21.5
DB/P 34	M10	10	30	8	4.5	65	43.0
DB/P 35	M6	10	30	11	8	80	8.9
DB/P 35	M8	10	30	11	8	80	21.5
DB/P 45	M6	12	40	12	8	80	8.9
DB/P 45	M8	12	40	12	8	80	21.5
DB/P 45	M10	12	40	12	8	80	43.0
DB/P 45	M12	12	40	12	8	80	85.0
DB/P 50	M8	12	40	8.5	4.5	68	21.5
DB/P 50	M10	12	40	8.5	4.5	68	43.0
DB/P 50	M12	12	40	8.5	4.5	68	85.0
DB/P 65	M8	15	40	15	7	83	21.5
DB/P 65	M10	15	40	15	7	83	43.0
DB/P 65	M12	15	40	15	7	83	85.0
DB/P 75	M8	25	50	23	9	100	21.5
DB/P 75	M10	25	50	23	9	100	43.0
DB/P 75	M12	25	50	23	9	100	85.0
DB/P 750	M12	25	50	28	15	150	85.0
DB/P 750	M16	25	50	28	15	150	180.4

The spacing isolator type DB/P has been tested for dynamic short-circuit withstand strength according to the regulations covering IEC 61439-1+2: 2009-01.

Short-circuiting resistance of the isolators Type DB/P

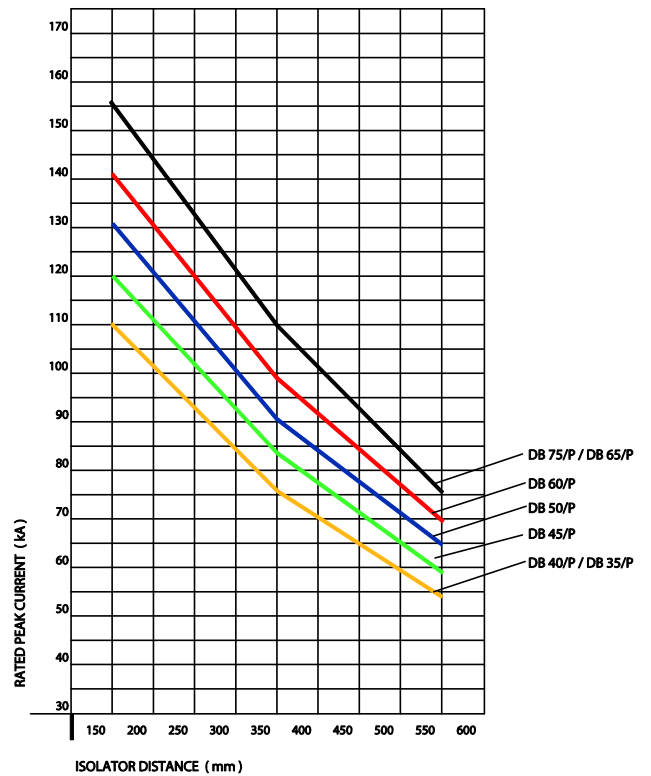
SHORT-CIRCUITING RESISTANCE / ISOLATOR DISTANCE - Tab. 1

Isolator T_Y pe: DB 35/P to DB 75/P - M8/M10/M12
 Bus bar s^o stem Cu 1 x 60 mm x 10 mm / Distance between phases = 185 mm



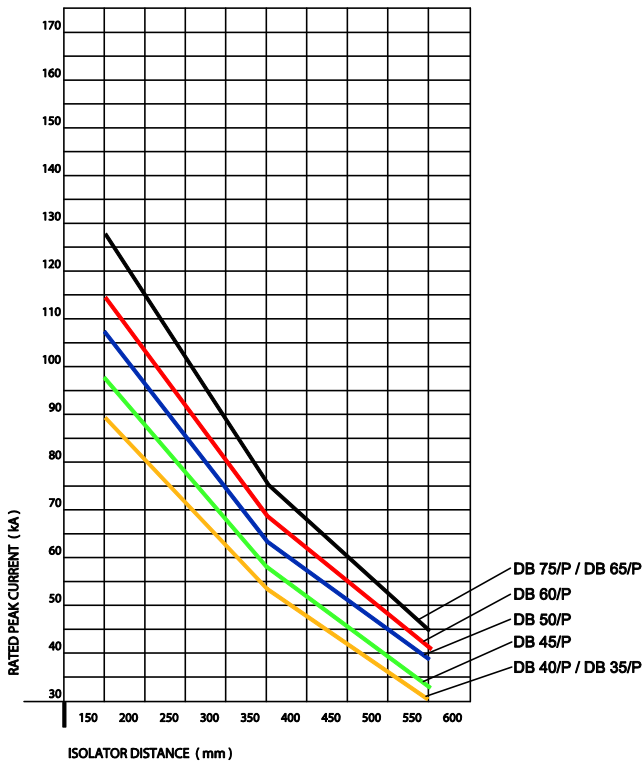
SHORT-CIRCUITING RESISTANCE / ISOLATOR DISTANCE - Tab. 2

Isolator T_Y pe: DB 35/P to DB 75/P - M8/M10/M12
 Bus bar s^o stem Cu 1 x 80 mm x 10 mm / Distance between phases = 185 mm



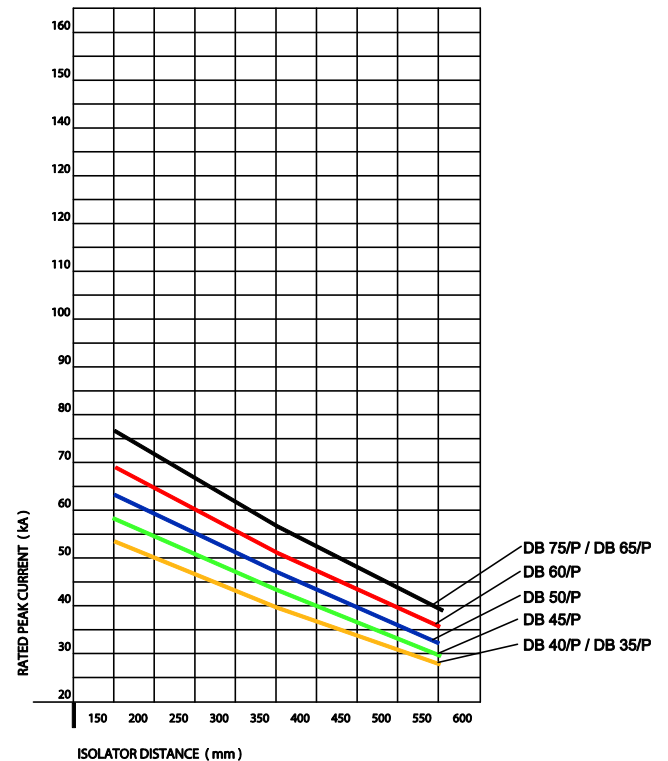
SHORT-CIRCUITING RESISTANCE / ISOLATOR DISTANCE - Tab. 3

Isolator T_Y pe: DB 35/P to DB 75/P - M8/M10/M12
 Bus bar s^o stem Cu 1 x 30 mm x 10 mm / Distance between phases = 100 mm



SHORT-CIRCUITING RESISTANCE / ISOLATOR DISTANCE - Tab. 4

Isolator T_Y pe: DB 35/P to DB 75/P - M8/M10/M12
 Bus bar s^o stem Cu 1 x 40 mm x 10 mm / Distance between phases = 60 mm



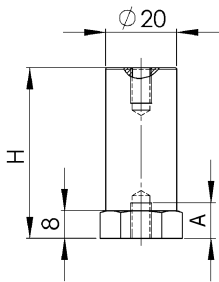
Spacing isolator Type CO/P



Made of Polyglas-polyester material, reinforced with fiberglass, colour red, self-extinguishing.

Upon request the isolators type CO/P, can be supplied with 1 or 2 threaded bolts "GB", fitted and secured with Loctite.

Operating temperature: -40 °C up to +130 °C
Fire resistance class: UL94-V0



Art.-no.	Type	H [mm]	Sw* [mm]	D1 [mm]	U _M [V]	M	A [mm]	Packaging unit [pcs.]
90061	CO/P 16	16	21	20	220	M4	4	200
90062	CO/P 16	16	21	20	220	M5	4	200
90063	CO/P 16	16	21	20	220	M6	4	100
90064	CO/P 16	16	21	20	220	M8	4	150
90065	CO/P 20	20	21	20	400	M5	5	200
90066	CO/P 20	20	21	20	400	M6	5	100
90067	CO/P 20	20	21	20	400	M8	5	200
90068	CO/P 25	25	21	20	500	M5	6	150
90069	CO/P 25	25	21	20	500	M6	6	150
90070	CO/P 25	25	21	20	500	M8	6	150
90071	CO/P 30	30	21	20	600	M5	7	140
90072	CO/P 30	30	21	20	600	M6	7	140
90073	CO/P 30	30	21	20	600	M8	7	140
90075	CO/P 35	35	21	20	600	M6	7	120
90077	CO/P 40	40	21	20	600	M6	9	110
90078	CO/P 40	40	21	20	600	M8	10	110
90079	CO/P 45	45	21	20	750	M6	9	100
90080	CO/P 45	45	21	20	750	M8	10	100
90081	CO/P 50	50	21	20	750	M6	10	80
90082	CO/P 50	50	21	20	750	M8	10	80
90083	CO/P 60	60	21	20	750	M6	9	70
90084	CO/P 60	60	21	20	750	M8	9	70

* sw = wrench width

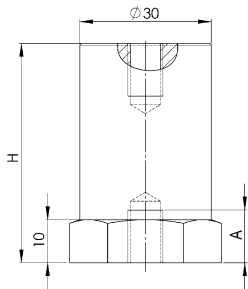
Type	Ripple current resistance [kV]	Discharge voltage [kV]	Max. tensile load [kN]	Max. bending load [kN]	Max. compression load [kN]	Max. tightening torque [Nm]
CO/P 30	5	15	4	2	21	5.9 (M5) ... 21.5 (M8)
CO/P 40	8	20	4	1.5	21	8.9 (M6) ... 21.5 (M8)
CO/P 50	10	25	4	1	21	8.9 (M6) ... 21.5 (M8)
CO/P 60	10	30	4	1	21	8.9 (M6) ... 21.5 (M8)

Spacing isolator Type CS/P



Made of Polyglas-polyester material, reinforced with fiberglass, colour red, self-extinguishing.

Operating temperature: -40 °C up to +130 °C
Fire resistance class: UL94-V0



Art.-no.	Type	H [mm]	sw* [mm]	D1 [mm]	U _M [V]	M	A [mm]	Packaging unit [pcs.]
90087	CS/P 30	30	30	30	750	M6	9	80
90088	CS/P 30	30	30	30	750	M8	9	80
90089	CS/P 30	30	30	30	750	M10	9	80
90090	CS/P 35	35	30	30	1000	M6	9	64
90091	CS/P 35	35	30	30	1000	M8	9	64
90092	CS/P 35	35	30	30	1000	M10	9	64
90093	CS/P 40	40	30	30	1000	M6	12	60
90094	CS/P 40	40	30	30	1000	M8	12	60
90095	CS/P 40	40	30	30	1000	M10	12	60
90096	CS/P 45	45	30	30	1000	M6	12	48
90097	CS/P 45	45	30	30	1000	M8	12	48
90098	CS/P 45	45	30	30	1000	M10	13	48
90099	CS/P 50	50	30	30	1500	M6	12	48
90100	CS/P 50	50	30	30	1500	M8	13	48
90101	CS/P 50	50	30	30	1500	M10	12	48
90102	CS/P 55	55	30	30	1500	M6	12	40
90103	CS/P 55	55	30	30	1500	M8	11	40
90105	CS/P 60	60	30	30	1500	M6	12	40
90106	CS/P 60	60	30	30	1500	M8	16	40
90107	CS/P 60	60	30	30	1500	M10	20	40
90109	CS/P 65	65	30	30	1500	M8	18	32
90111	CS/P 70	70	30	30	1500	M6	14	32
90112	CS/P 70	70	30	30	1500	M8	18	32
90113	CS/P 70	70	30	30	1500	M10	18	32

* sw = wrench width

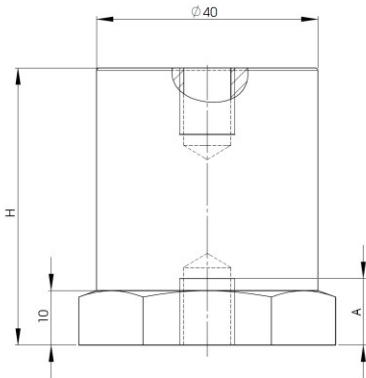
Type	Ripple current resistance [kV]	Discharge voltage [kV]	Max. tensile load [kN]	Max. bending load [kN]	Max. compression load [kN]	Max. tightening torque [Nm]
CS/P 30	8	20	9	4.5	40	8.9 (M6) ... 43 (M10)
CS/P 40	8	25	9	3	40	8.9 (M6) ... 43 (M10)
CS/P 50	10	35	9	2	40	8.9 (M6) ... 43 (M10)
CS/P 60	15	35	9	1.5	40	8.9 (M6) ... 43 (M10)

Spacing isolator Type CT/P



Made of Polyglas-polyester material, reinforced with fiberglass, colour red, self-extinguishing.

Operating temperature: -40 °C up to +130 °C
Fire resistance class: UL94-V0



Art.-no.	Typ	H [mm]	sw* [mm]	D1 [mm]	U _M [V]	M	A [mm]	Packaging unit [pcs.]
90118	CT/P 30	30	41	40	750	M8	8	45
90119	CT/P 30	30	41	40	750	M10	9	45
90120	CT/P 35	35	41	40	750	M8	9	36
90121	CT/P 35	35	41	40	750	M10	9	36
90122	CT/P 40	40	41	40	1000	M8	12	27
90123	CT/P 40	40	41	40	1000	M10	12	27
90123M12	CT/P 40	40	41	40	1000	M12	12	27
90124	CT/P 45	45	41	40	1000	M8	13	27
90125	CT/P 45	45	41	40	1000	M10	12	27
90126	CT/P 50	50	41	40	1500	M8	12	27
90127	CT/P 50	50	41	40	1500	M10	13	27
90127M12	CT/P 50	50	41	40	1500	M12	11	27
90129	CT/P 55	55	41	40	1500	M10	12	18
90130	CT/P 60	60	41	40	1500	M8	18	18
90131	CT/P 60	60	41	40	1500	M10	18	18
90131M12	CT/P 60	60	41	40	1500	M12	18	18
90133	CT/P 65	65	41	40	1500	M10	18	18
90134	CT/P 70	70	41	40	1500	M8	18	18
90135	CT/P 70	70	41	40	1500	M10	18	18

* sw = wrench width

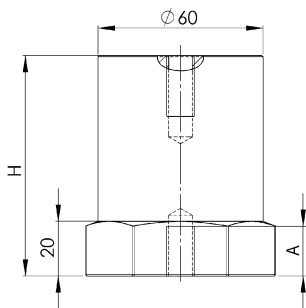
Type	Thread	Ripple current resistance [kV]	Discharge voltage [kV]	Max. tensile load [kN]	Max. bending load [kN]	Max. compression load [kN]	Max. tightening torque [Nm]
CT/P 30	M8	8	20	10	7.5	80	21.5
CT/P 30	M10	8	20	10	7.5	80	43.0
CT/P 40	M8	10	25	10	7	80	21.5
CT/P 40	M10	10	25	10	7	80	43.0
CT/P 40	M12	10	25	10	7	80	73.8
CT/P 50	M8	10	35	10	5	80	21.5
CT/P 50	M10	10	35	10	5	80	43.0
CT/P 50	M12	10	35	10	5	80	73.8
CT/P 60	M8	10	35	10	3.7	80	21.5
CT/P 60	M10	10	35	10	3.7	80	43.0
CT/P 60	M12	10	35	10	3.7	80	73.8

Spacing isolator Type CPE



Made of Polyglas-polyester material, reinforced with fiberglass, colour red, self-extinguishing.

Operating temperature: $-40\text{ °C} < T < +130\text{ °C}$
Fire resistance class: UL94-V0



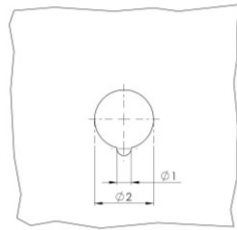
Art.-no.	Type	H [mm]	sw* [mm]	D1 [mm]	U _M [V]	M	A [mm]	Packaging unit [pcs.]
90140	CPE 40	40	60	60	1500	M10	11	12
90141	CPE 40	40	60	60	1500	M12	11	12
90142	CPE 40	40	60	60	1500	M16	12	12
90143	CPE 60	60	60	60	3000	M10	18	10
90144	CPE 60	60	60	60	3000	M12	18	10
90145	CPE 60	60	60	60	3000	M16	19	10
90146	CPE 80	80	60	60	5000	M10	19	8
90147	CPE 80	80	60	60	5000	M12	19	8
90148	CPE 80	80	60	60	5000	M16	23	8
90149	CPE 100	100	60	60	8000	M10	19	5
90150	CPE 100	100	60	60	8000	M12	19	5
90151	CPE 100	100	60	60	8000	M16	23	5

* sw = wrench width

Type	Ripple current resistance [kV]	Discharge voltage [kV]	Max. tensile load [kN]	Max. bending load [kN]	Max. compression load [kN]	Max. tightening torque [Nm]
CPE 40	10	25	11	7	100	43 (M10) ... 180.4 (M16)
CPE 60	20	50	15	5	100	43 (M10) ... 180.4 (M16)
CPE 80	25	50	23	9	120	43 (M10) ... 180.4 (M16)
CPE 100	30	50	30	15	150	43 (M10) ... 180.4 (M16)

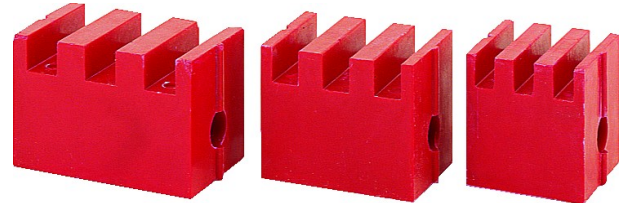
Passing isolator Type PI/P

Polyester material, red



Panel bore

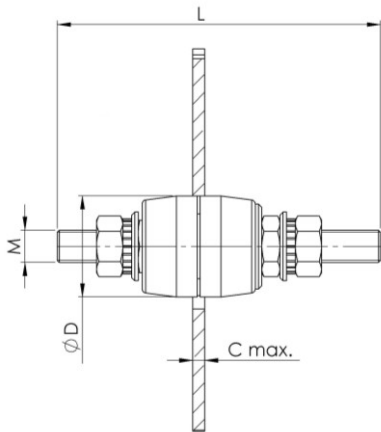
Vertical bus bar support Type PSB



Art.-no.	Type	L [mm]	$\varnothing D$ [mm]	U_M [V]	M	Pack. [pcs.]
90166	PI/P 4	50	15	600	M4	60
90167	PI/P 6	65	22	1000	M6	40
90168	PI/P 8	80	25	1000	M8	25
90169	PI/P 10	95	30	1000	M10	20
90170	PI/P 12	105	35	1000	M12	15
90171	PI/P 16	135	43	2000	M16	8
90172	PI/P 20	155	54	2000	M20	4

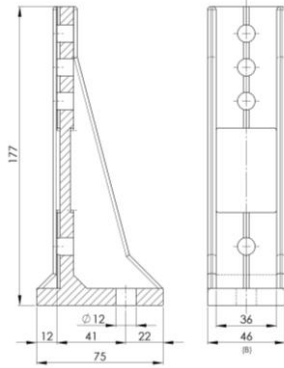
Easy to assemble vertical bus bar support in polyester material with reinforced fibre glass, red, suitable for bus bars with dimensions between 40 x 60 mm and 120 x 10 mm. Due to its construction characteristics this bus bar support is suitable for special isolating and mechanical resistance requirements.

For the mounting of a bus bar support the following parts are required:
1 or 2 lateral supports, two mounting screws and the necessary block number to clamp into place the required bus bars.

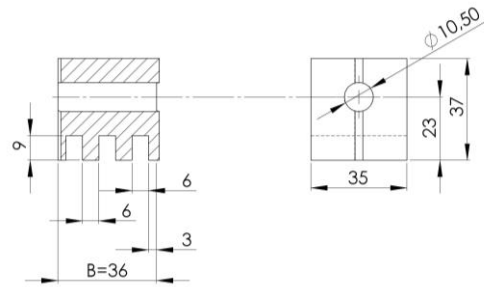


Art.-no.	Type	$\varnothing 1$ [mm]	$\varnothing 2$ [mm]	C_{max} [mm]	Tightening torque (max.)
90166	PI/P 4	2.0	8.5	2.0	3,0Nm
90167	PI/P 6	3.0	12.0	3.0	5,0Nm
90168	PI/P 8	3.0	15.0	4.0	10,0Nm
90169	PI/P 10	4.0	17.0	4.0	16,0Nm
90170	PI/P 12	4.5	20.0	4.0	18,0Nm
90171	PI/P 16	5.0	25.0	8.0	22,0Nm
90172	PI/P 20	5.5	31.0	10.0	26,0Nm

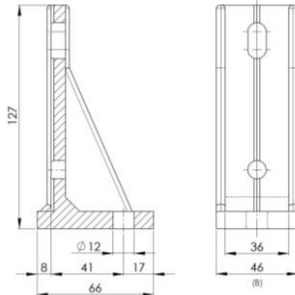
PSB/1 – Horizontal / lateral support



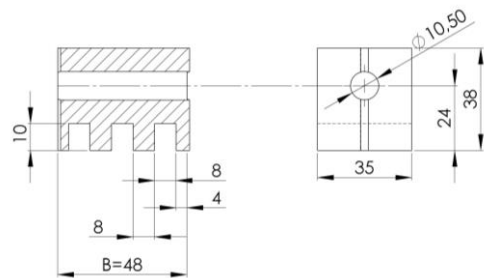
PSB/6 - Block for 6 mm bus bar



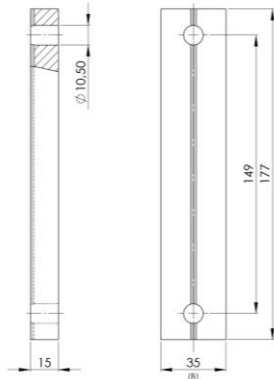
PSB/2 - Horizontal / lateral support



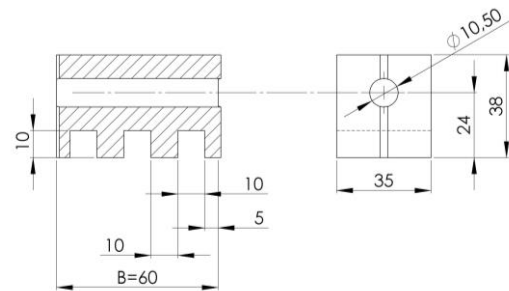
PSB/8 - Block for 8 mm bus bar



PSB/120 - Horizontal / lateral support



PSB/10 - Block for 10 mm bus bar



Lateral support	Blocks	Bus bars			Art.-no.
PSB/1	PSB 6	60 x 6	80 x 6	100 x 6	90175*
	PSB 8	60 x 8	80 x 8	100 x 8	
	PSB 10	60 x 10	80 x 10	100 x 10	
PSB/2	PSB 6	40 x 6	50 x 6		90176*
	PSB 8	40 x 8	50 x 8		
	PSB 10	40 x 10	50 x 10		
PSB/120	PSB 6	120 x 6			90177*
	PSB 8	120 x 8			
	PSB 10	120 x 10			

Elastic deviation of the teeth with signs of rupture			Pack. [pcs.]	Art.-no.
PSB/6	kg	950	36	90178*
PSB/8	kg	1130	30	90179*
PSB/10	kg	1375	24	90180*

* = storage parts

Operating voltage **1000 V**
 Operating temperature **-40 °C ≤ q ≤ +130 °C**
 Fire resistance **class: UL94-V0**

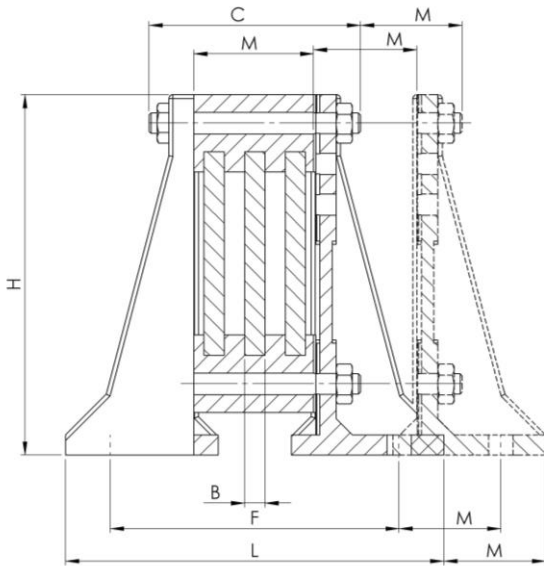
Resistance of short-circuiting of the bus bar support type PSB

Type	Mounting acc. illustration	Bus bar per phase	Distance between phases [mm]	Supporting width [mm]	Rated surge current I _{pk} [kA]	Rated short-time current [kA / 1 sec.]
PSB/1	1B	3 x 100 mm x 10 mm	185	400	143	65
PSB/1	1B	3 x 100 mm x 10 mm	185	300	154	70
PSB/1	5	3 x 100 mm x 10 mm	120	300	220	100
PSB/1 plus PSB/120	1B	3 x 120 mm x 10 mm	185	300	176	80
PSB/1 plus PSB/120	5	3 x 120 mm x 10 mm	185	300	264	120

Vertical bus bar support Type PSB

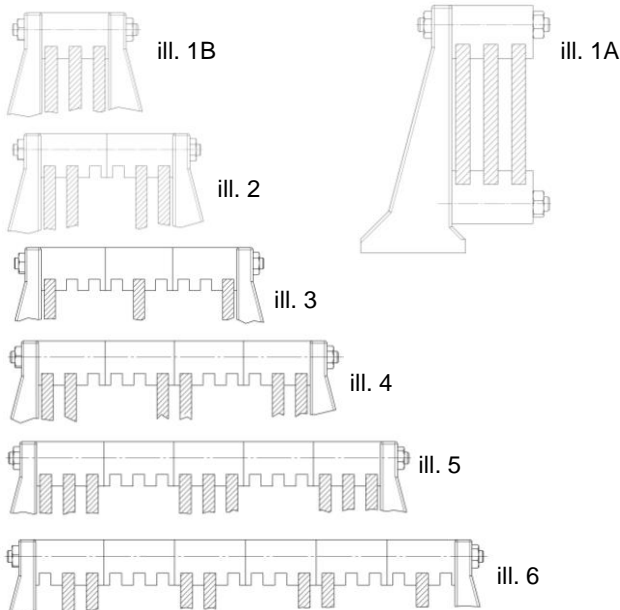
Illustration 1

Example of an unipolar bus bar support with 3 parallel bus bar support holders



A = Number of blocks
 B = Bus bar thickness
 C = Length of mounting screw
 L = External space requirement
 H = Height
 M = Module

Illustrations 1 – 2 – 3 – 4 – 5 – 6
 show some of the possible variations.
 Illustrations up to max. 10 x 100 mm



H. With lateral support
 PSB/1 = 177 mm
 PSB/2 = 127 mm

M. With block
 PSB/6 = 36 mm
 PSB/8 = 48 mm
 PSB/10 = 60 mm

Art.-no.	Pack. [pcs.]	Article group	H [mm]	B [mm]	U _M [V]	For thread
90175	96	PSB/1	177	46	1000	M10
90176	144	PSB/2	127	46	1000	M10
90177	244	PSB/120	177	35	1000	M10
90178	36	PSB/6	37	36	1000	M10
90179	30	PSB/8	38	48	1000	M10
90180	24	PSB/10	38	60	1000	M10

Art.-no.	Article group	ill.	H [mm]	L [mm]	U _M [V]	For thread	B [mm]
90187	PSB	1A	177		1000	M10	6
90188	PSB	1A	177		1000	M10	8
90189	PSB	1A	177		1000	M10	10
90190	PSB	1B	177	162	1000	M10	6
90191	PSB	1B	177	174	1000	M10	8
90192	PSB	1B	177	186	1000	M10	10
90193	PSB	2	177	198	1000	M10	6
90194	PSB	2	177	222	1000	M10	8
90195	PSB	2	177	246	1000	M10	10
90196	PSB	3	177	234	1000	M10	6
90197	PSB	3	177	270	1000	M10	8
90198	PSB	3	177	306	1000	M10	10
90199	PSB	4	177	270	1000	M10	6
90200	PSB	4	177	318	1000	M10	8
90201	PSB	4	177	366	1000	M10	10
90202	PSB	5	177	306	1000	M10	6
90203	PSB	5	177	366	1000	M10	8
90204	PSB	5	177	426	1000	M10	10
90205	PSB	6	177	342	1000	M10	6
90206	PSB	6	177	414	1000	M10	8
90207	PSB	6	177	486	1000	M10	10
90211	PSB	1A	127		1000	M10	6
90212	PSB	1A	127		1000	M10	8
90213	PSB	1A	127		1000	M10	10
90214	PSB	1B	127	152	1000	M10	6
90215	PSB	1B	127	164	1000	M10	8
90216	PSB	1B	127	176	1000	M10	10
90217	PSB	2	127	188	1000	M10	6
90218	PSB	2	127	212	1000	M10	8
90219	PSB	2	127	236	1000	M10	10
90220	PSB	3	127	224	1000	M10	6
90221	PSB	3	127	260	1000	M10	8
90222	PSB	3	127	296	1000	M10	10
90223	PSB	4	127	260	1000	M10	6
90224	PSB	4	127	308	1000	M10	8
90225	PSB	4	127	356	1000	M10	10
90226	PSB	5	127	296	1000	M10	6
90227	PSB	5	127	356	1000	M10	8
90228	PSB	5	127	416	1000	M10	10
90229	PSB	6	127	332	1000	M10	6
90230	PSB	6	127	404	1000	M10	8
90231	PSB	6	127	476	1000	M10	10

The above mentioned data are only for information purposes and are without a guarantee. The customer is required to check from time to time if the product is suitable for the required application.

Upon request milled bus bar supports and other from GPO-3 extracted details can be supplied.
 In this instance drawings are to be submitted.

Type-tested according to IEC 61439-2:2011-08, EN 61439-2:2012-06 with practically relevant fixing points and supporting widths.

Mounting material / Threaded bolts

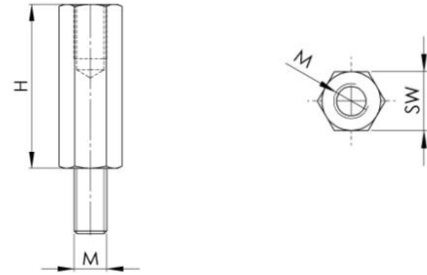
Hexagon spacer in brass

GB
Threaded bolt



Art.-no.	Pack. [pcs.]	Article group	Thread	Length L [mm]
90270	100	GB	M3	12
90271	100	GB	M3	15
90272	100	GB	M4	15
90273	100	GB	M4	16
90274	100	GB	M4	18
90275	100	GB	M4	20
90276	100	GB	M5	20
90277	100	GB	M5	22
90278	100	GB	M5	27
90279	100	GB	M5	30
90280	100	GB	M6	18
90281	100	GB	M6	20
90282	100	GB	M6	25
90283	100	GB	M6	27
90284	100	GB	M6	33
90285	100	GB	M6	35
90286	100	GB	M8	20
90287	100	GB	M8	23
90288	100	GB	M8	25
90289	100	GB	M8	30
90290	100	GB	M8	33
90291	100	GB	M8	35
90292	100	GB	M8	38
90293	100	GB	M8	50
90294	100	GB	M10	30
90295	100	GB	M10	35
90296	100	GB	M10	38
90297	100	GB	M10	40
90298	100	GB	M10	45
90299	100	GB	M10	50
90300	100	GB	M12	30
90301	100	GB	M12	50
90326	100	GB	M16	40
90327	100	GB	M16	60

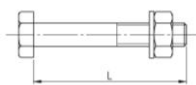
SK



Art.-no.	Pack. [pcs.]	Thread	Height H [mm]	sw* [mm]
90330	100	M4	15	7
90331	100	M4	20	7
90332	100	M4	25	7
90333	100	M4	30	7
90334	100	M4	50	7
90335	100	M4	70	7
90336	100	M5	90	7
90337	100	M5	15	8
90338	100	M5	20	8
90339	100	M5	25	8
90340	100	M5	30	8
90341	100	M5	50	8
90342	100	M5	70	8
90343	100	M5	90	8
90344	100	M6	15	10
90345	100	M6	20	10
90346	100	M6	25	10
90347	100	M6	30	10
90348	100	M6	50	10
90349	100	M6	70	10
90350	100	M6	90	10
90351	100	M8	15	13
90352	100	M8	20	13
90353	100	M8	25	13
90354	100	M8	30	13
90355	100	M8	50	13
90356	100	M8	70	13
90357	100	M8	90	13

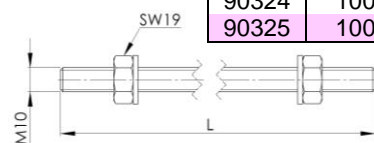
*sw = wrench width

Hexagon screw
M10 with nut and washer



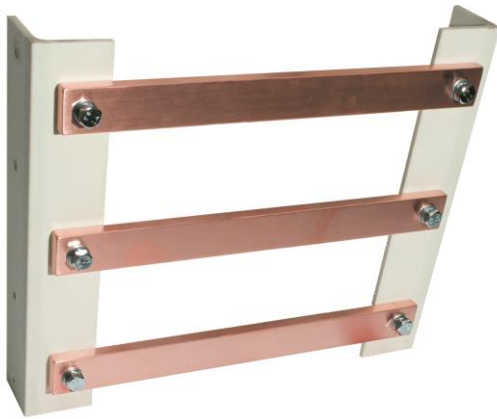
Art.-no.	Pack. [pcs.]	Article group	Thread	Length L [mm]
90309	100	SKS	M10	60
90310	100	SKS	M10	80
90311	100	SKS	M10	70
90312	100	SKS	M10	90
90313	100	SKS	M10	100
90314	100	SKS	M10	110
90315	100	SKS	M10	140
90316	100	SKS	M10	150
90317	100	SKS	M10	160

Threaded bolt
M10 complete with nut and washer



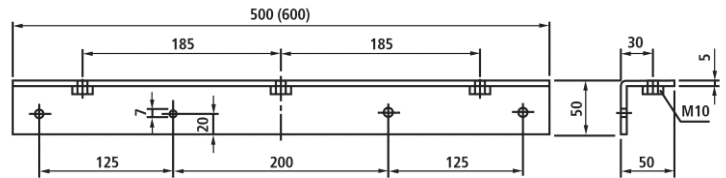
Art.-no.	Pack. [pcs.]	Article group	Thread	Length L [mm]
90318	100	GB	M10	194
90319	100	GB	M10	230
90320	100	GB	M10	242
90321	100	GB	M10	270
90322	100	GB	M10	290
90323	100	GB	M10	350
90324	100	GB	M10	410
90325	100	GB	M10	1000

Bus bar support L

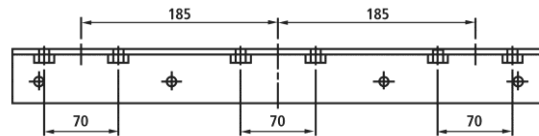


Support L185/1

Art.-no. 90392



Support L185/2 (2 x M10 each phase) Art.-no. 90395



Bus bar supports in general

Characteristics of the raw material (GRP-profile, hot hardened)

- Temperature range -40 °C to +130 °C
- Operating AC voltage 1000 V
- Continuous current
 - L/Z 280 mm 2500 A
 - L/Z 500 mm 4000 A
- Phase clearance
 - L/Z 280 mm 100 mm
 - L/Z 500 mm 185 mm
- Form stability DIN 53462 °C > 200
- Natural density DIN 53479 gr/cm² approx. 1.7
- Fire resistance UL 94 HB
- Discharge resistance DIN 53481 kV/cm 10
- Resistance voltage tracking DIN IEC 112 CTI 600
- Specific flow resistance DIN 53482 Ohm x cm 1012

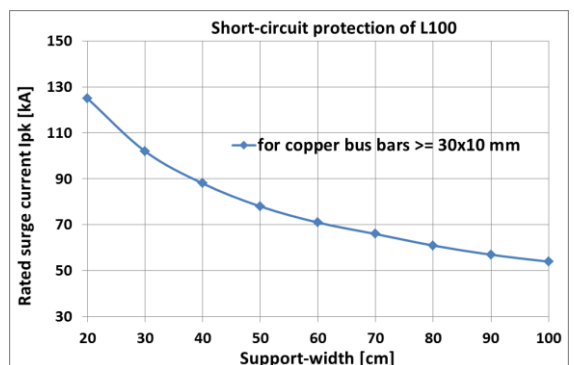
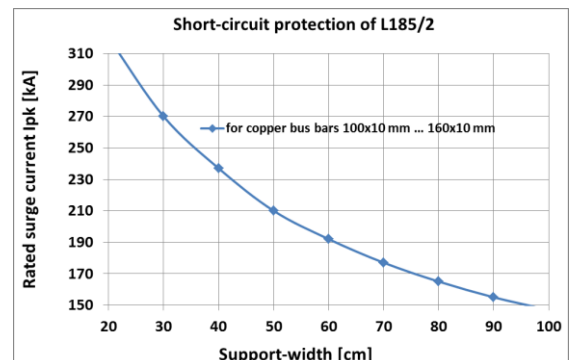
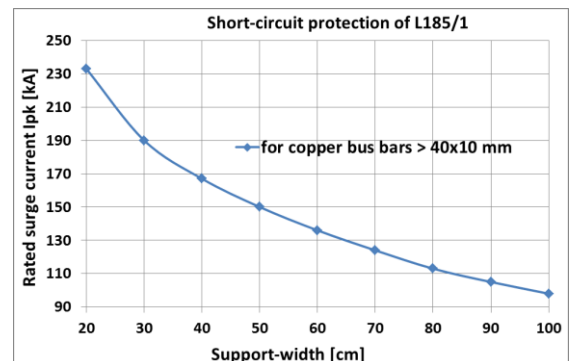
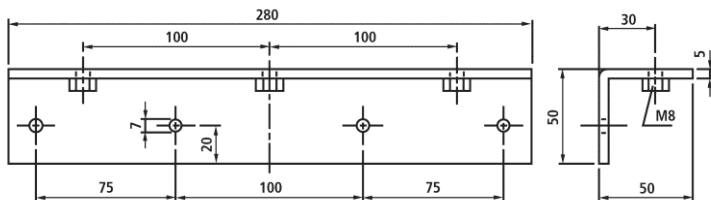
All bus bars are type tested acc. to VDE 0660, part 500

- Torque for M10: approx. 4.5 Nm
- Copper bus bar 10 mm thick made of copper F30 not nickel-plated

Type-tested according IEC 61439-2:2011-08, EN 61439-2:2012-06 with practically relevant fixing points and supporting widths.

Support L100

Art.-no. 90391



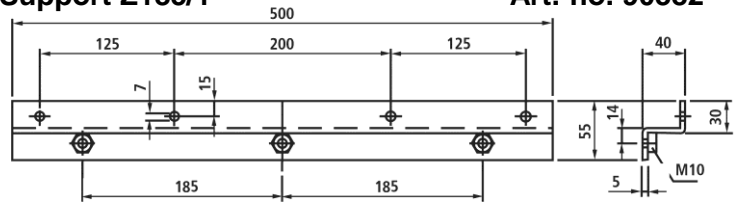
Type	Art.-no.	Pack. [pcs.]	Article group	Length [mm]	Profile [mm]	Bore [mm]	Thread	Color
L100	90391	1	L	280	50/50	7	M8	grey
L185/1	90392	1	L	500	50/50	7	M10	grey
L185/2	90395	1	L	500	50/50	7	M10	grey

Bus bar support Z

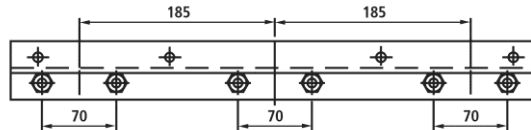


Support Z185/1

Art.-no. 90382



Support Z185/2 (2 x M10 each phase) Art.-no. 90385



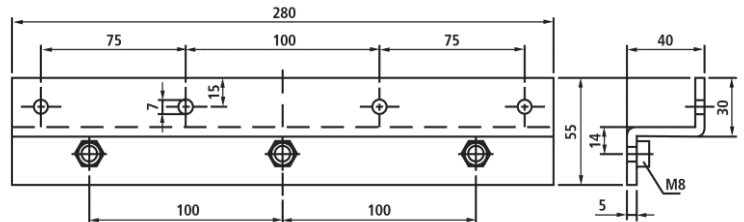
Bus bar supports in general

Characteristics of the raw material (GRP-profile, hot hardened)

- Temperature range	-40 °C to +130 °C
- Operating AC voltage	1000 V
- Continuous current	L/Z 280 mm 2500 A L/Z 500 mm 4000 A
- Phase clearance	L/Z 280 mm 100 mm L/Z 500 mm 185 mm
- Form stability	DIN 53462 °C > 200
- Natural density	DIN 53479 gr/cm ² approx. 1.7
- Fire resistance	UL 94 HB
- Discharge resistance	DIN 53481 kV/cm 10
- Resistance voltage tracking	DIN IEC 112 CTI 600
- Specific flow resistance	DIN 53482 Ohm x cm 1012

Support Z100

Art.-no. 90381



All bus bars are type tested acc. to VDE 0660, part 500

- Torque for M10: approx. 4.5 Nm
- Copper bus bar 10 mm thick made of copper F30 not nickel-plated

Type-tested according IEC 61439-2:2011-08, EN 61439-2:2012-06 with practically relevant fixing points and supporting widths.

Type	Art.-no.	Pack. [pcs.]	Article group	Length [mm]	Profile [mm]	Bore [mm]	Thread	Color
Z100	90381	1	Z	280	30/40/30	7	M8	grey
Z185/1	90382	1	Z	500	30/40/30	7	M10	grey
Z185/2	90385	1	Z	500	30/40/30	7	M10	grey

Short-circuiting resistance of the lateral bus bar support type L100 and Z185/2

Type	Mounting acc. illustration	Bus bar per phase	Distance between phases [mm]	Supporting width [mm]	Rated surge current I _{pk} [kA]	Rated short-time current [kA / 1 sec.]
L100 / 1x M8	Art.-no. 90391	1 x 30 mm x 10 mm	100	300	105	50
Z185/2 / 2 x M10	Art.-no. 90382	1 x 100 mm x 10 mm	185	400	176	60



- Current transformers for industry
- Current transformers for tariff
- Accessories for current transformers
- Medium-voltage CTs
- Bus bar insulators / -supports
- Shunts
- Voltage transformers
- All current sensors
- Measuring transducers
- Energy meters with or without MID approval
- Accessories for energy meters
- Panel board heaters, filter fans, roof fans and control units



MBS AG
Eisbachstraße 51 • 74429 Sulzbach-Laufen • Germany
Telefon: +49 7976 9851-0 • Telefax: +49 7976 9851-90
info@mbs-ag.com • www.mbs-ag.com