

Horizontal fuse disconnects



Horizontal fuse disconnects

Horizontal fuse Disconnects are used in building installations, switchgear and controlgear as well as in power utility networks. The contact system enables safe load break operation using the fuse-links as moving contacts.

The product is safe against finger-touch in closed position and provides a safe and visible isolating distance in open position. Different versions for baseplate mounting, DIN-rail or busbar mounting are available to fit a variety of applications.



Product definition

Horizontal fuse disconnect according to EN60947-3 are single-pole or multipole NH fuse-bases arranged horizontally and equipped with a common fuse-carrier.

Incoming and outgoing contacts are accessible from outside and fitted with terminals for the connection of cables or bars. The feeder side of fuse-switches for busbar mounting is designed to provide mechanical and electrical connection to standardised busbar systems.

Applications

Its compact design makes the horizontal fuse disconnect a perfect feeder switch in low voltage distribution panels, as well as a protective device mounted on standardized busbar systems having 40mm, 60mm or 100mm busbar distance or for meter protection in domestic buildings. Single-pole and two-pole fuse-switches are used for UPS battery protection or in telecom power supplies e.g. 4-pole fuse-switches can be used to disconnect secondary power generators from public networks.

Product advantages

JEAN MÜLLER offers NH fuse-switches in sizes 000, 00, 1, 2, 3 and 4a. The switches size 00, 1, 3 and 4a are available in single-pole up to 4-pole design. Executions for baseplate mounting as well as for busbar mounting are available in all sizes. Thanks to the wide product range, tailor-made solutions with respect to current rating, voltage rating and mode of installation can be found for nearly every application.

Insulation parts

Similar to the vertical fuse disconnects all products from size 1 and above, contain only thermosetting materials for insulators supporting live parts because of their high dimensional stability and superior resistance to tracking.

Current carrying parts

Products having rated currents of 400A and above, are equipped with Q-contacts for quasi-independent operation. Q-contacts ensure high short-circuit capability up to 80kA and safe load-break operation. Particularly NH fuse-switches for busbar mounting without separate adapters exhibit very low values for power loss due to their short connecting bars.

Versions/Accessories

Monitoring components allow remote monitoring of switch-position as well as of fuse-links. Microswitches or electronic components will be used for fuse monitoring, depending on the application.

Special executions enable size 00 fuse-switches up to 800A rated current in combination with the corresponding fuse-links, thus providing significant savings in space.

1-pole and 3-pole disconnectors up to 1200V, protected against direct access to live parts and safe in operation, provide electric protection of solar power installations.

Horizontal fuse disconnects for panel mounting



General-purpose terminal

- All sizes are equipped with general-purpose flat terminals for cable lugs and direct terminal clamps



Reliable overreach protection

- Optimum touch protection including when feeding from bottom side by retrofit overreach protector



High short-circuit capability

- Fuse protected conditional short-circuit current up to 80kA
- 35kA/1s short-circuit withstand when equipped with solid links



Terminal covers (sold separately) are required for all disconnects (refer to page 76)



LTL1-1/9

1 pole horizontal fuse disconnects

Size	For Fuses	Current Rating (A)	Terminal	Connection Capacity(mm ²)	Part No.
DIN 000	DIN 000	100	Flat terminal M8	max. 95	LTL000-1/9
DIN 00	DIN 000 & DIN00	160	Flat terminal M8	max. 95	LTL00-1/9
DIN 1	DIN 1	250	Flat terminal M10	max. 150	LTL1-1/9
DIN 3	DIN 2 & DIN 3	630	Flat terminal M10	max. 300	LTL3-1/9
DIN 4A	DIN4A	1250	Flat terminal M16	max. 400	LTL4A-1X/9/1250
DIN 4A	DIN4A	1600	Flat terminal 2x M12		LTL4A-1X/9/1600



LTL00-2/9

2 pole horizontal fuse disconnects

Size	For Fuses	Current Rating (A)	Terminal	Connection Capacity(mm ²)	Part No.
DIN 00	DIN 000 & DIN00	160	Flat terminal M8	max. 95	LTL00-2/9
DIN 1	DIN 1	250	Flat terminal M10	max. 150	LTL1-2/9
DIN 3	DIN 2 & DIN 3	630	Flat terminal M10	max. 300	LTL3-2/9

3 pole and 4 pole horizontal fuse disconnects

Size	For Fuses	Current Rating (A)	Terminal	Connection Capacity(mm ²)	Part No.
DIN 000	DIN000	100	Flat terminal M8	max. 95	LTL000-3/9
DIN 00	DIN000 & DIN00	160	Flat terminal M8 4 Pole*	max. 95	LTL00-3/9 (3 Pole) LTL00-4/9 (4 Pole*)
DIN 1	DIN 1	250	Flat terminal M10 4 Pole*	max. 150	LTL1-3/9 (3 Pole) LTL1-4/9 (4 Pole*)
DIN 2	DIN 2	400	Flat terminal M10	max. 240	LTL2-3/9
DIN 3	DIN 2 & DIN 3	630	Flat terminal M10	max. 300	LTL3-3/9
DIN4A	DIN4A	1250	Flat terminal 1xM16	max. 400	LTL4A-3x3/9/1250
DIN4A	DIN4A	1600	Flat terminal 2xM12		LTL4A-3x3/9/1600

LTL4A-3X3/**



LTL3-3/9

LTL2-3/9

LTL1-3/9

LTL00-3/9

LTL000-3/9

Horizontal fuse disconnects for busbar mounting



Adaptor free installation

- Small installation depth and direct busbar connection ensure low power loss

One device fits three busbar systems

- Only one device size 00 for 40, 50 or 60mm busbar systems
- Fast installation by means of twist-lock mounting

Compact size 000 fuse-switch

- Space saving 63mm width
- Easy snap-on technique without screws
- For busbars having 5mm or 10mm thickness

Combinations of different sizes possible

- Uniform installation depth of 60mm above busbar surface by means of stepped frames of sizes 00 to 3
- Various protective covers provide a high safety level



Terminal covers (sold separately) are required for all disconnects (refer to page 76)

1 pole horizontal fuse disconnects - busbar mount

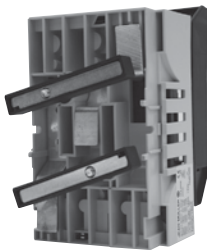
Size	For Fuses	Current Rating (A)	Cable Connection	Connection Capacity(mm²)	Connection to Busbars	Part No.
DIN 00	DIN 000 & DIN00	160	Bottom	max. 95	Clamp/Screw	LTL00-1/SK/AU
DIN 1	DIN 1	250	Bottom	max. 150	Screw connection to busbar	LTL1-1/AU
DIN 3	DIN 2 & DIN 3	630	Bottom	max. 300	Screw connection to busbar	LTL3-1/AU

3 pole horizontal fuse disconnects - 60mm centres busbar mount

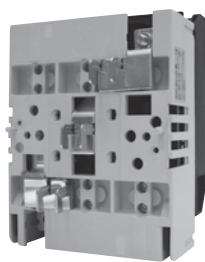
Size	For Fuses	Current Rating (A)	Cable Connection	Connection Capacity(mm²)	Connection to Busbars	Part No.
DIN 000	DIN000	100	Bottom clamp	1.5 - 50	Snap-on	LTL000-3/9/60/AU/F57/5
DIN 00	DIN000 & DIN00	160	Top or bottom	1.5 - 70	Clamp	LTL00-3/9/4060
DIN 1	DIN 1	250	Bottom	max. 150	Clamp	LTL1-3/9/60AU
DIN 2	DIN 2	400	Bottom	max. 240	Clamp	LTL2-3/9/60AU
DIN 3	DIN 2 & DIN 3	630	Bottom	max. 300	Clamp	LTL3-3/9/60AU

3 pole horizontal fuse disconnects - 100mm centres busbar mount

Size	For Fuses	Current Rating (A)	Cable Connection	Connection Capacity(mm²)	Connection to Busbars	Part No.
DIN 1	DIN 1	250	Bottom	max. 150	Screw connection to busbars	LTL1-3/9/100AU
DIN 2	DIN 2	400	Bottom	max. 240	Screw connection to busbars	LTL2-3/9/100AU
DIN 3	DIN 2 & DIN 3	630	Bottom	max. 300	Screw connection to busbars	LTL3-3/9/100AU



LTL00-3/9/4060



LTL1-3/9/60/AU

Horizontal fuse disconnects - Special versions



Fuse-switch-disconnectors for baseplate monitoring

- For fuse-protected feeding of plug-in modules
- Fast module changing without cable disconnecting



Disconnectors rated 1000V and above

- Proven technology for reliable operation of switchgear rated 1000V and above



Space-saving protection of DC-systems up to 1000V

- 1-pole disconnecter for safe feeding of photovoltaic installations



Compact switching devices up to DC 250V rating

- Minimum space required for fuse protection up to 800A with LTT size 00
- Versions for baseplate and busbar mounting as well as feeding on rear side



Terminal covers (sold separately) are required for all disconnects (refer to page 76)

1 pole horizontal fuse disconnects for telecom supplies up to 250V DC base mounting

Size	For Fuses	Current Rating (A)	Connection	Terminal	Part No.
DIN 00	DC	800	Top and bottom	Flat Terminal M12	LTT00-1/9
DIN 00	DC	800	Rear	Flat Terminal M12	LTT00-1/9R
DIN 00	DC	800	Top and Bottom 2 Pole	Flat Terminal M12	LTT00-2/9



LTT00-1/9



LTT00-1/9R



LTT00-2/9

Accessories



Description		Size	Part No.
Clamp terminal			
	1,5-70 mm ² Cu	LTL00	S00
	25-150 mm ² Cu	LTL1	S1
	25-240 mm ² Cu	LTL2	S2
	Bar 11 x 21	LTL3	S3



Prism clamp			
	10-70 mm ² Al/Cu	LTL00	P0070
	70-150 mm ² Al/Cu	LTL1	P1
	120-240 mm ² Al/Cu	LTL2	P2
	120-300 mm ² Al/Cu	LTL3	P3



Prism clamp for 2-conductors connection			
	2 x 70-150 mm ² Al/Cu	LTL1	P12
	2 x 120-240 mm ² Al/Cu	LTL2	P22
	2 x 120-300 mm ² Al/Cu	LTL3	P32



Switch position indicator			
	1- and 3- pole	LTL00	EV-LTL00
	1- and 2-pole	LTL1-3	EV-LTL123-1
	3-pole	LTL1-3	EV-LTL123-3



Switch position indicator or fuse blown indicating microswitch			
	1- and 3- pole	LTL4a	K/EV-LTL/SLTL4A



Fuse blown indicating microswitch (use with striker fuses)			
	1-pole	LTL00	K-LTL00-1/H
	1-pole	LTL1	K-LTL1-1/H
	1-pole	LTL3	K-LTL3-1/H
	3-pole	LTL00	K-LTL00-3/H
	3-pole	LTL1	K-LTL1-3/H
	3-pole	LTL2	K-LTL2-3/H
	3-pole	LTL3	K-LTL3-3/H



Accessories

Description		For Mounting on	Part No.
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Protective cover, 1-pole, baseplate mounting			
	Top and bottom side	LTL00	GOU-LTL00-1
	Top and bottom side	LTL1	GOU-LTL1-1
	Top and bottom side	LTL3	GOU-LTL3-1



Protective cover, 3-pole, baseplate mounting			
	Top and bottom side	LTL000	GOU-LTL000-3
	Top and bottom side	LTL00	GOU-LTL00-3
	Top side	LTL1	GO-LTL1-3
	Top side	LTL2	GO-LTL2-3
	Top side	LTL3	GO-LTL3-3
	Bottom side	LTL1	GU-LTL1-3
	Bottom side	LTL2	GU-LTL2-3
	Bottom side	LTL3	GU-LTL3-3
	Top and bottom side	LTL4	GOU-LTL4-3



Protective cover 3-pole, busbar mounting			
	Top side	LTL00	GOV-LTL00-3/230
	Top side	LTL1	GOV-LTL1-3
	Top side	LTL2	GOV-LTL2-3
	Bottom side	LTL00	GUV-LTL00-3/230
	Bottom side	LTL1	GUV-LTL1-3
	Bottom side	LTL2	GUV-LTL2-3



DIN Rail Mounting Kit			
	For mounting of NH fuse-switch-disconnectors on DIN rails acc. to EN 50022	LTL00	Z-LTL00-3

TECHNICAL INFORMATION

LTL NH fuse switch-disconnector specification

		Unit	LTL000	LTL000 Busbar	LTL00	LTL1	LTL2	LTL3	LTL4a-1250	LT- L4a-1600
Accord to standard			EN60947-3							
For NH fuse link			000	000	000/00	1	2	2&3	4a	
Rated operational Voltage		V	AC690 DC220	AC500 DC220	AC690 DC440				AC690	AC690
Rated operational Current		A	160	125	160	250	400	630	1250	1600
Thermal rating with fuse links		A	160	125	160	250	400	630	1250	1600
Thermal rating with solid links		A	160	160	210	325	520	910	1250	1600
Rated frequency		Hz	40-60							
Rated AC insulation		V	AC690	AC500	AC800					
Power loss at max current not including fuse or link		W	7	18	7	13	27	52	32	52
Power loss at 80% max current not including fuse or link		W	4.5	11.5	4.5	8.3	17.3	33.3	20.5	33.3
Rated withstand voltage		kV	8							
Utilisation category	AC-22B 400V		160A							
	AC-22B 500V		100A	125A	160A	250A	400A	630A	1250A	1600A
	AC-22B 690V				100A	200A	315A	500A		
	AC-21B 690V		125A						1000A	1000A
	DC-21B 440V				100A	200A	315A	500A		
	DC-22B 220V			100A	160A	250A	400A	630A		
No switching under load	DC-20B 1000V			160A	250A	400A	630A	1250A	1600A	
Rated conditional short circuit current		kA	63	50	50	50	80	80	35	35
Max. power loss per fuse link		W	10	8	12	23	34	48	110	164
Flat Bolt terminal	Bolt Diameter		M8		M8	M10	M10	M10	M16	2xM12
	Cable lug	mm2	1x10-70		1x10-95	1x25-150	1 x25-240	1x25-300	400	400
	Flat bar	mm			20x10	30x10	30x10	40x10	80x30	80x30
	Tightening Torque	Nm	12-15		12-15	30-35	30-35	30-35	50-60	35-40
Clamp S type copper			S000-16 S000-50	F50	S00	S1	S2	S3		
Cu	Cross Section	mm2	6-16 25-50	1.5-50	1.5-70	25-150	25-240	11x21x1		
Tightening torque		Nm	2.6	2.6	2.6	9.5	23	□ 23		
Clamp P type copper & aluminium	Single		P000-35 P000-70		P00-70	P1	P2	P3		
	Double		P000-2-35 P000-2-50		P00-95	P12	P22	P32		
Cu/Al	Cross section	mm2	10-35 50-70		10-70	10-150	120-240	120-300		
	Double Clamp		2x25-35Cu 2x50 Cu		35-95	2x(10-150)	2x(120-150)	2x(120-240)		
Tightening torque		Nm	4.5		2.6	4.5	11	11		
Front side IP	Closed Position		IP20							
	Open position		IP10							
Operating temperature		C	-25/+55							
Actuation			Dependent manual operation							
Mounting position			Vertical or horizontal							
Altitude		M	Up to 2000							
Pollution degree			3							
Overvoltage category			III							



Accessories - Micro switches			
Switch Position Indicator		EV-LT00, EV-LTL123-1	EV-LTL123-3, EV-LTL4A
Fuse Blown Position Indicator		K-LTL**-1/H	K-LTL**-3/H, K-LTL4A
Rated Current @ 250V AC	A	5	5
Rated Current @ 110V DC	A	0.35	0.35

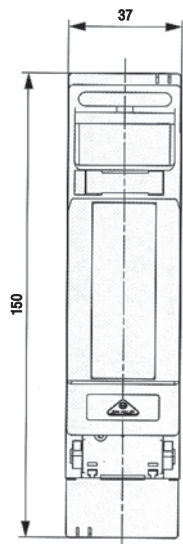
D - Type fuse bases	
- Rated Current: 25A and 63A - Rated Voltage: 25A - 500V, 63A - 690V - Standard: IEC269-3-1 - Flame Resistance to: UL94V-ø -Terminal: Clamp Type, self lifting, 25mm² max. - Touch Protection: Clip-on Covers for top, bottom and sides are available. - Mounting: On Busbars 12-30mm width, 5 or 10mm thick.	

Terminal with connecting lug						
	AL/Cu Cable [mm ²]				Allen Key	Tightening Torque (Nm)
	Rounded Stranded	Sector Stranded	Round Solid	Sector Solid		
K2G/A	50-185	70-240	50-185	70-240	6 mm	40
KM2G/AF3040	25-300	25-240	25-150	25-240	6 mm	32
K2HG/2/AF30	2 x 25-120	2 x 35-120	2 x 25-50	2 x 50-120	6 mm	40
KV2HG/2/AF30	2 x 12-185	2 x 12-185	-	-	6 mm	40

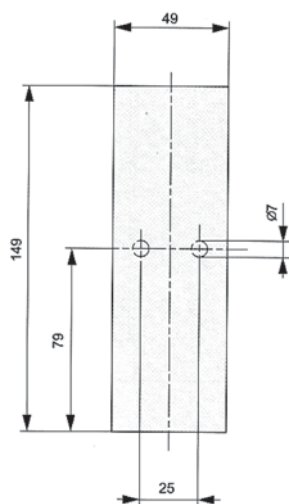
Fuse switches DIN-Rail mount			
		WH-AMB1/10 WH-AMB3/10	WH-AMB1/22 WH-AMB3/22
Rated Current @ 690V AC @ 440V DC		32A 32A	125A 125A
Application Category		AC-22B (400V)	AC-20B (690V)
Conditional Rated Short Circuit Current		50kA (400V)	100kA (500V)
Terminal Capacity		1x 0.75 - 25mm ² 2x 0.75 - 10mm ²	1x 4 - 50mm ²

DIMENSIONS

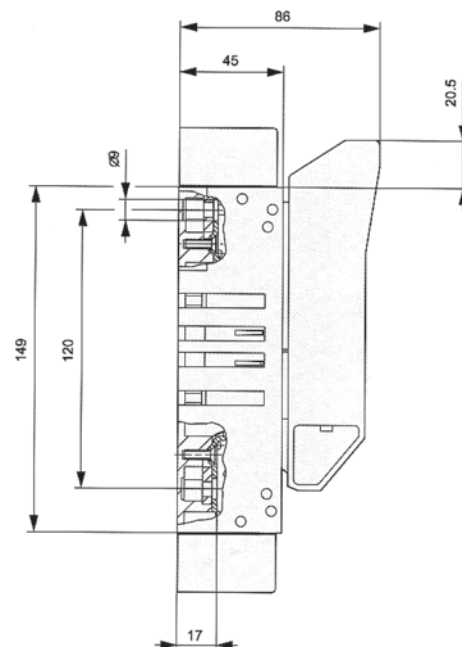
LTL000-1/9



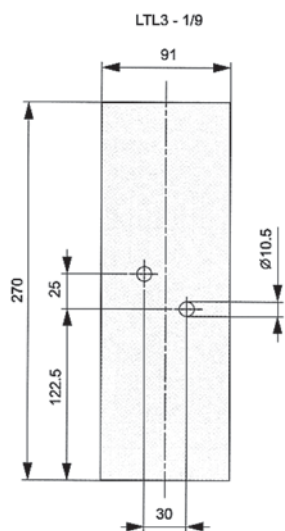
LTL00-1/9



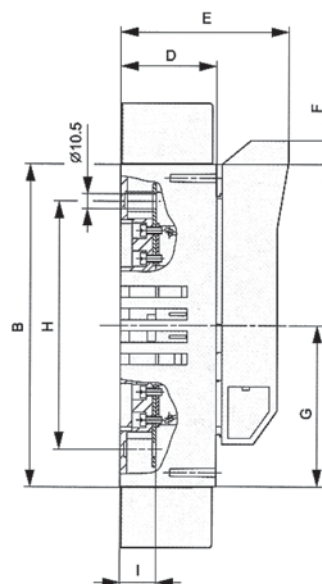
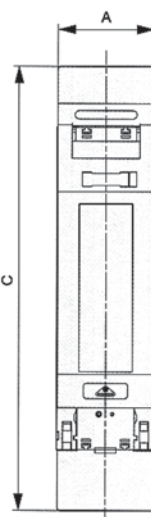
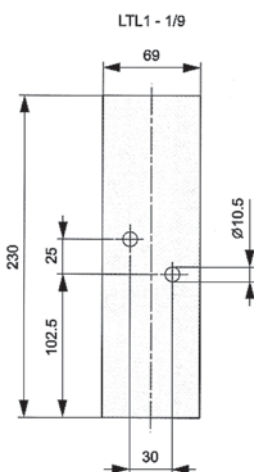
Befestigungsmasse



LTL1-1/9
LTL3-1/9



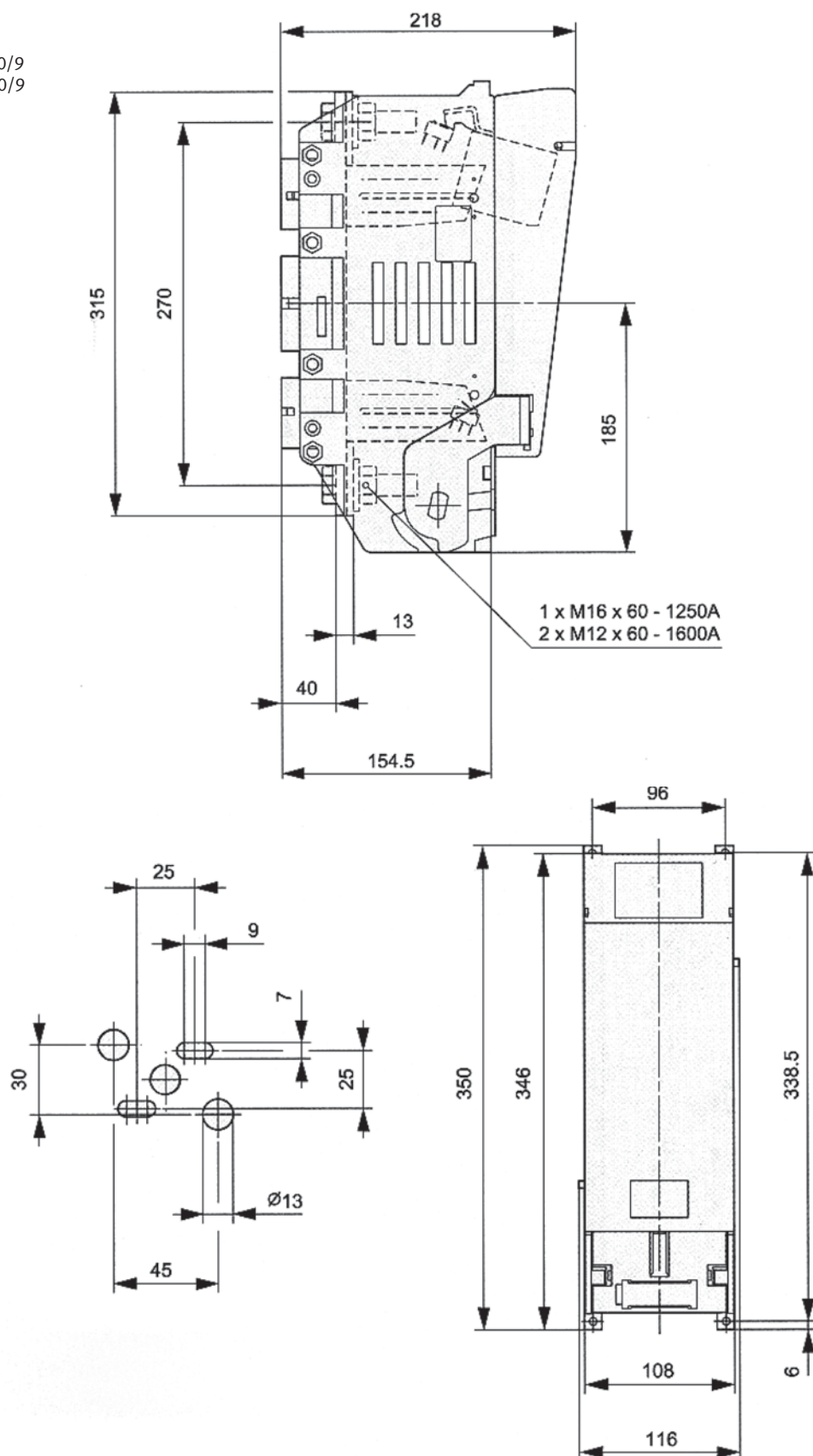
Befestigungsmasse



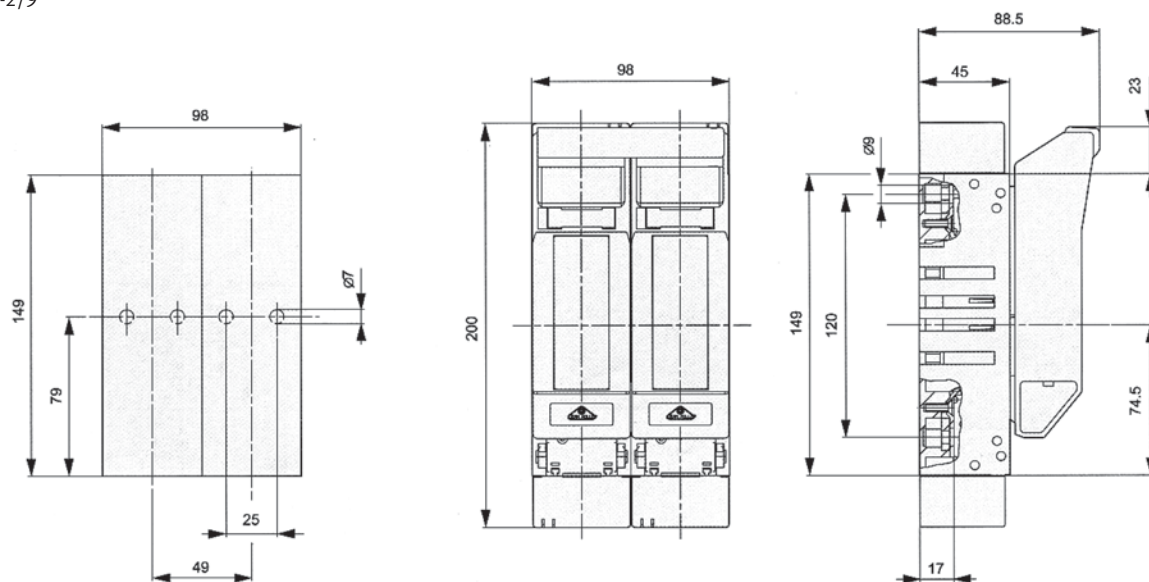
	A	B	C	D	E	F	G	H	I
LTL1-1/9	69	230	317	68	119	16.5	102.5	177	25
LTL3-1/9	91	270	431	96	147	9	122.5	220.5	30.5



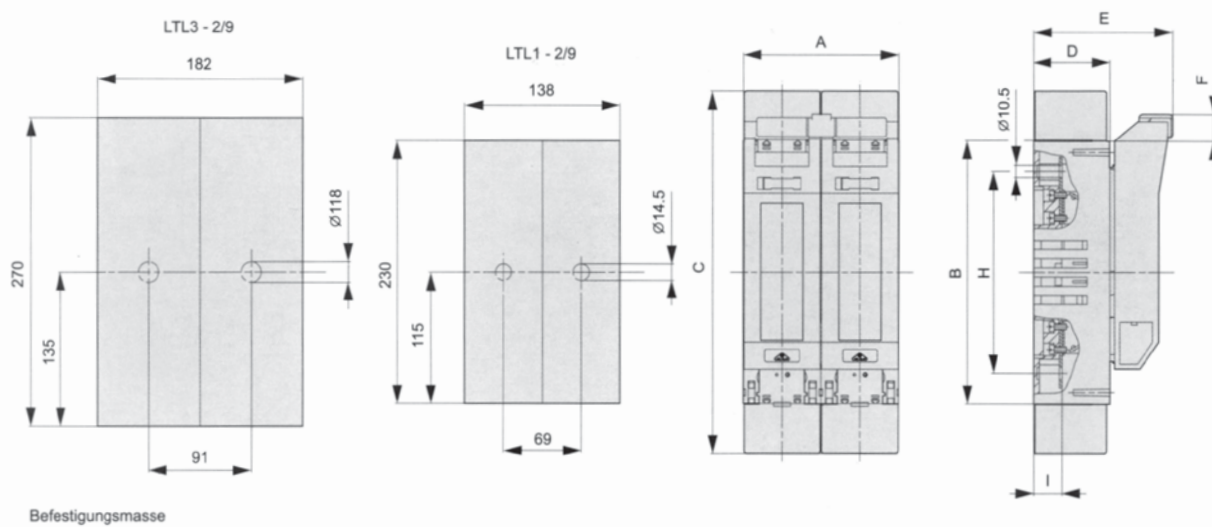
LTL4a-1/1250/9
LTL4a-1/1600/9



LTL00-2/9



LTL1-2/9
LTL3-2/9

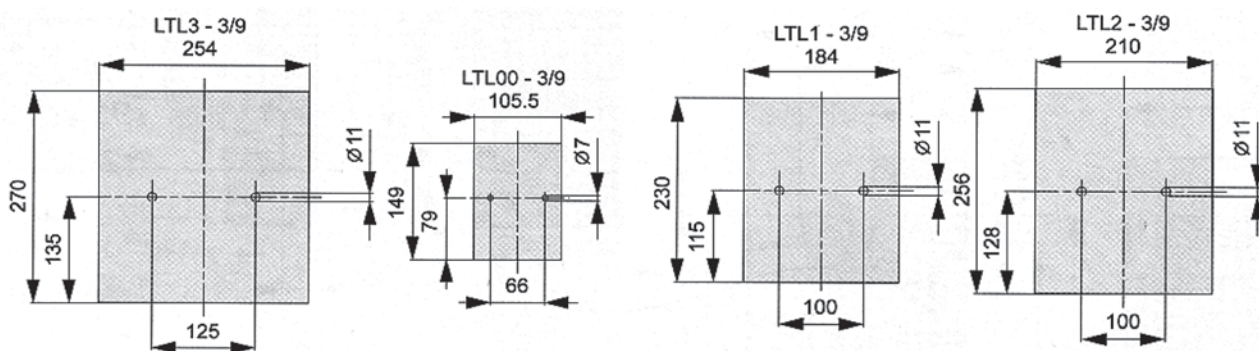
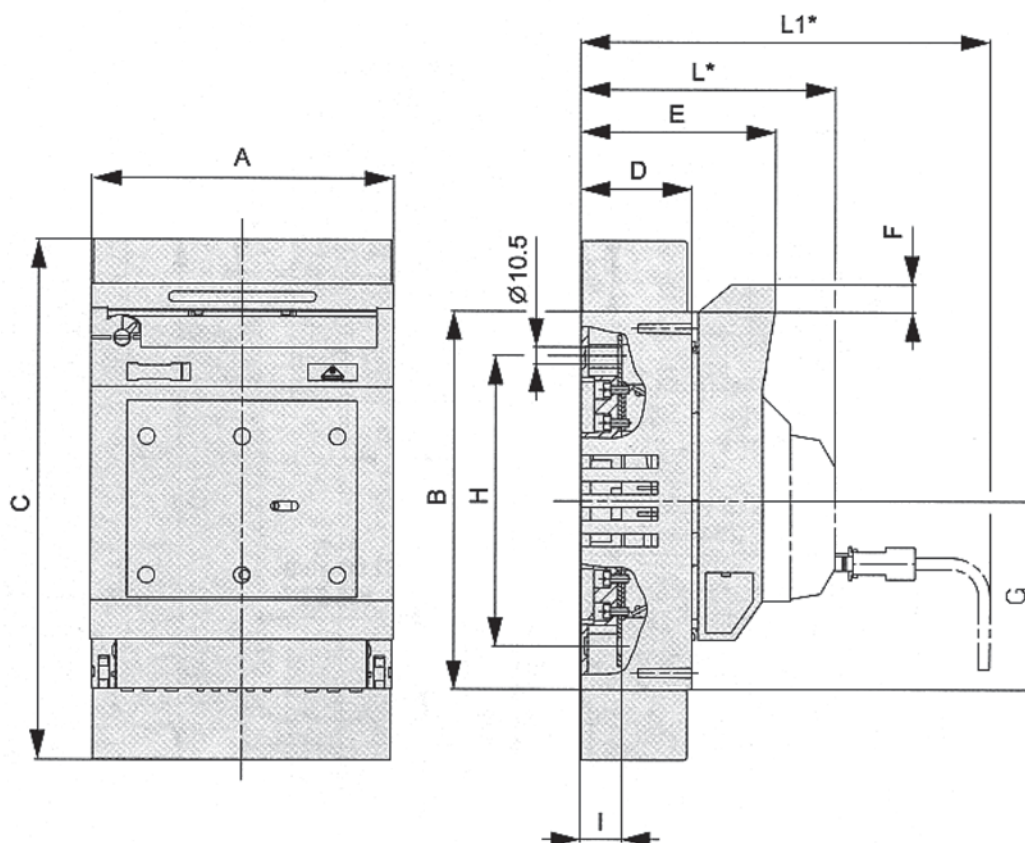


Befestigungsmasse

	A	B	C	D	E	F	G	H	I
LTL1-2/9	138	230	317	68	123.5	23	115	177	25
LTL3-2/9	182	270	430	96	151.5	15.5	135	220.5	30.5

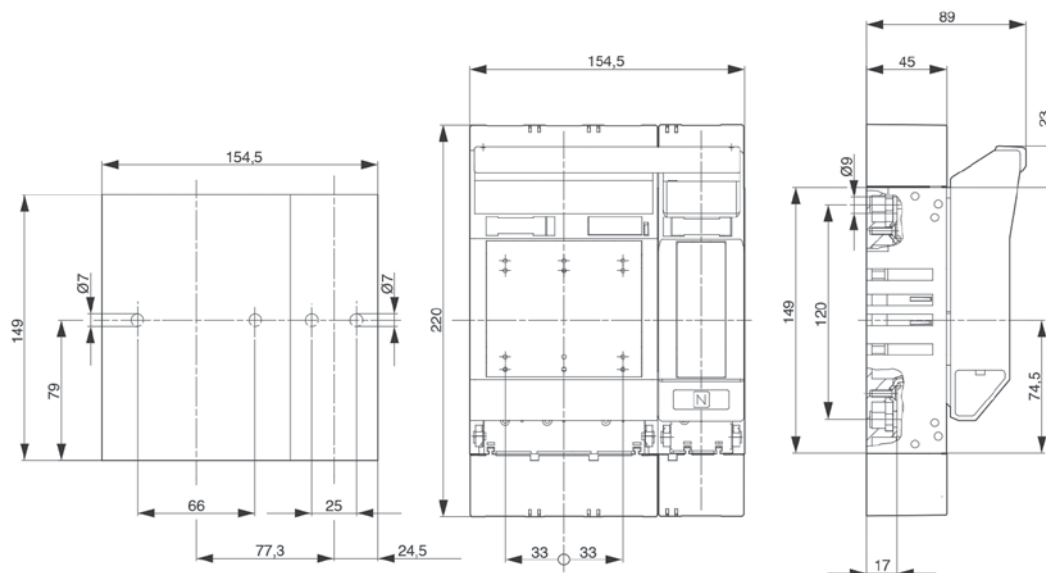


LTL00-3/9
LTL1-3/9
LTL2-3/9
LTL3-3/9

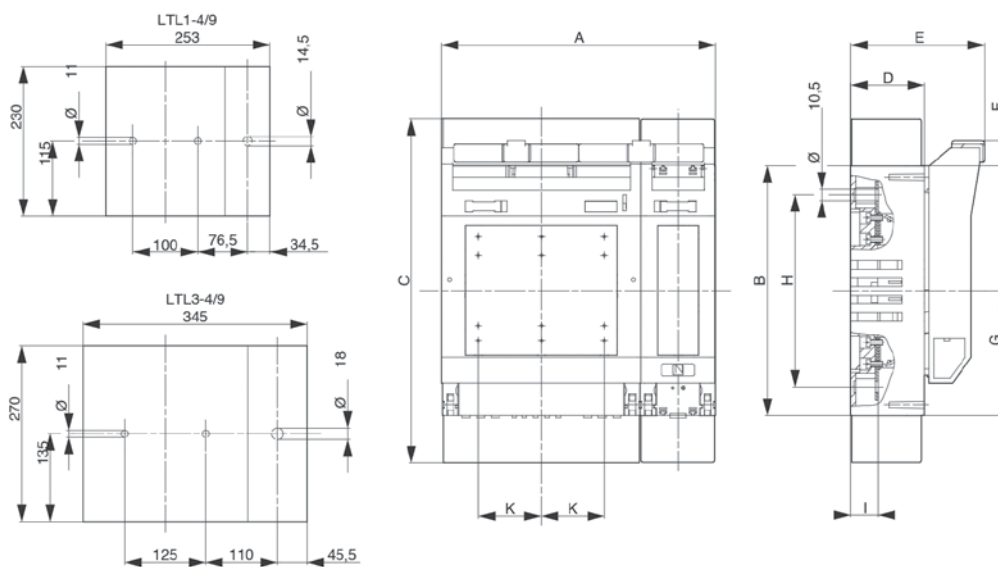


	A	B	C	D	E	F	G	H	I
LTL000-3/9	89	139	150	48	78.5	0	70	112	15
LTL00-3/9	105.5	149	200	45	86	20.5	74.5	120	17
LTL1-3/9	184	230	317	68	119	16.5	115	177	25
LTL2-3/9	210	256	397	81	133	16.5	128	205	25
LTL3-3/9	254	270	430	96	147	9	135	220.5	30.5

LTL00-4/9

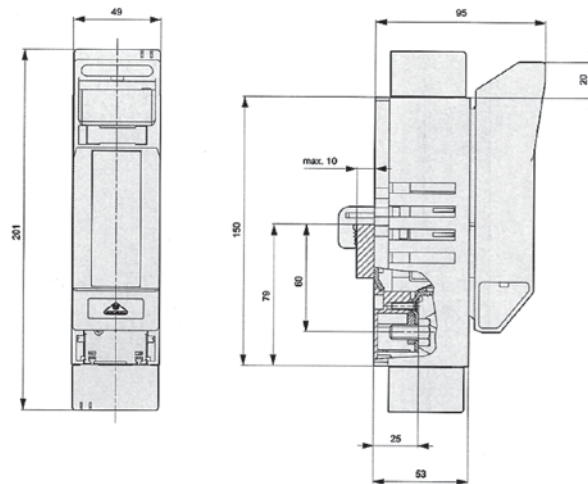


LTL1-4/9

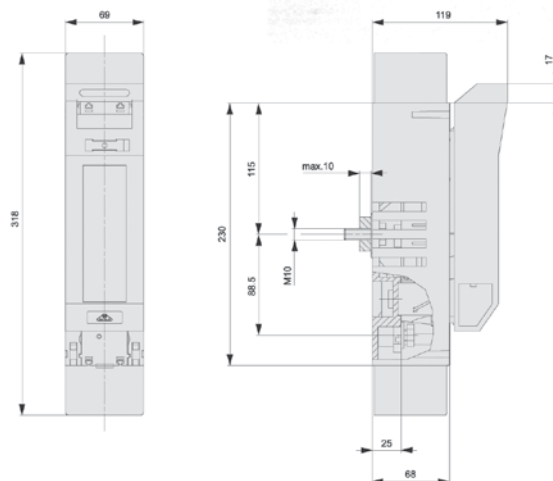


Type	A	B	C	D	E	F	G	H	I	K
LTL1-4/9	253	230	317	68	123.5	23	115	177	25	58

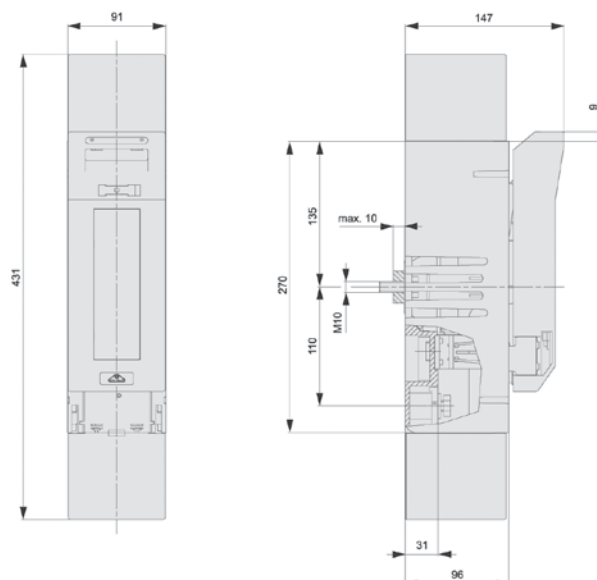
LTL00-1/SK



LTL1-1/SK

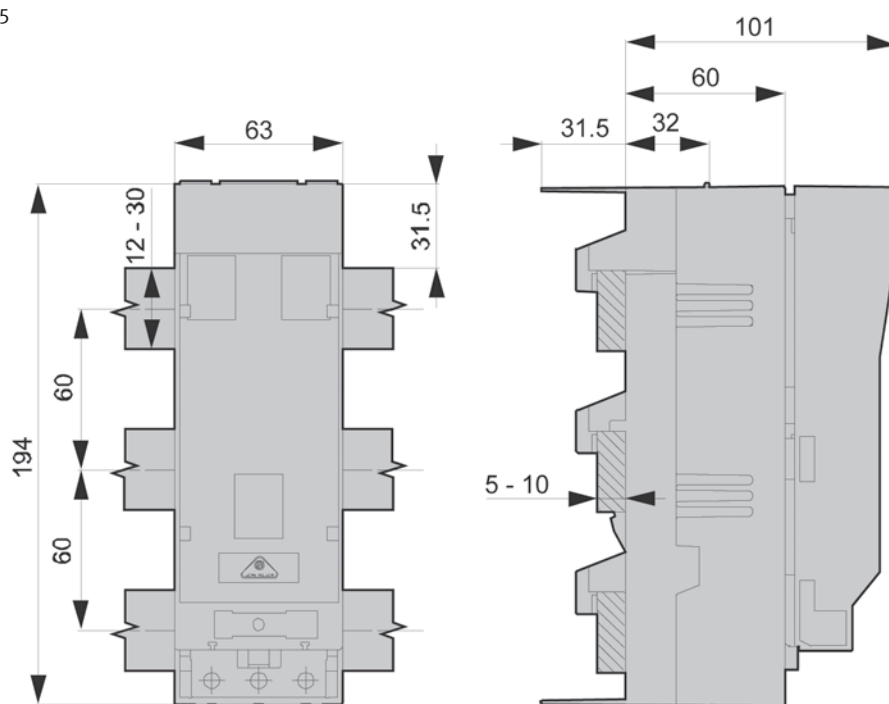


LTL3-1/SK

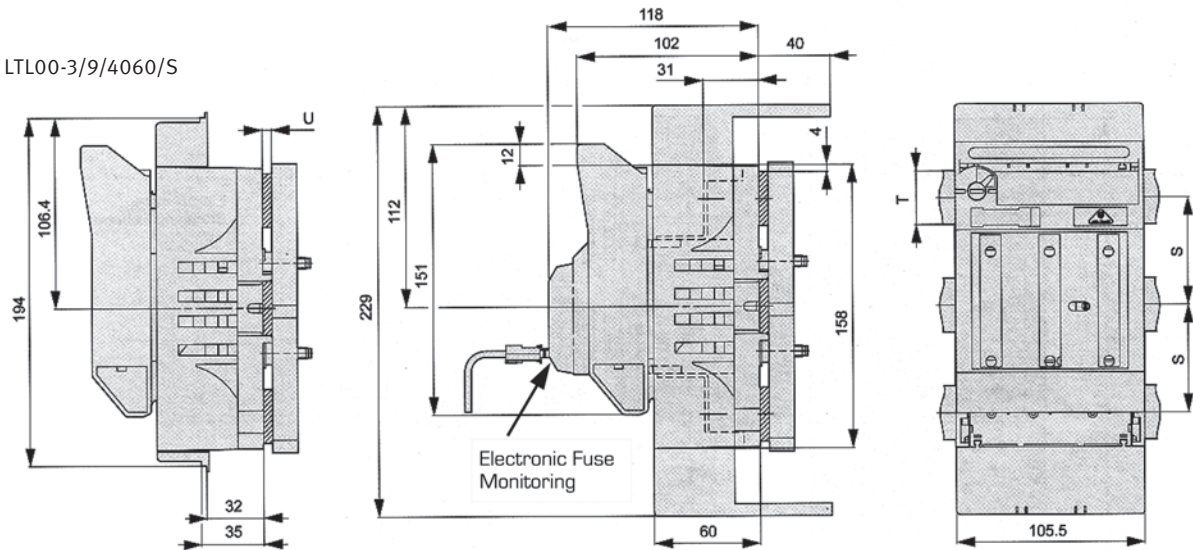




LTL000-3/9/60/F57/F5

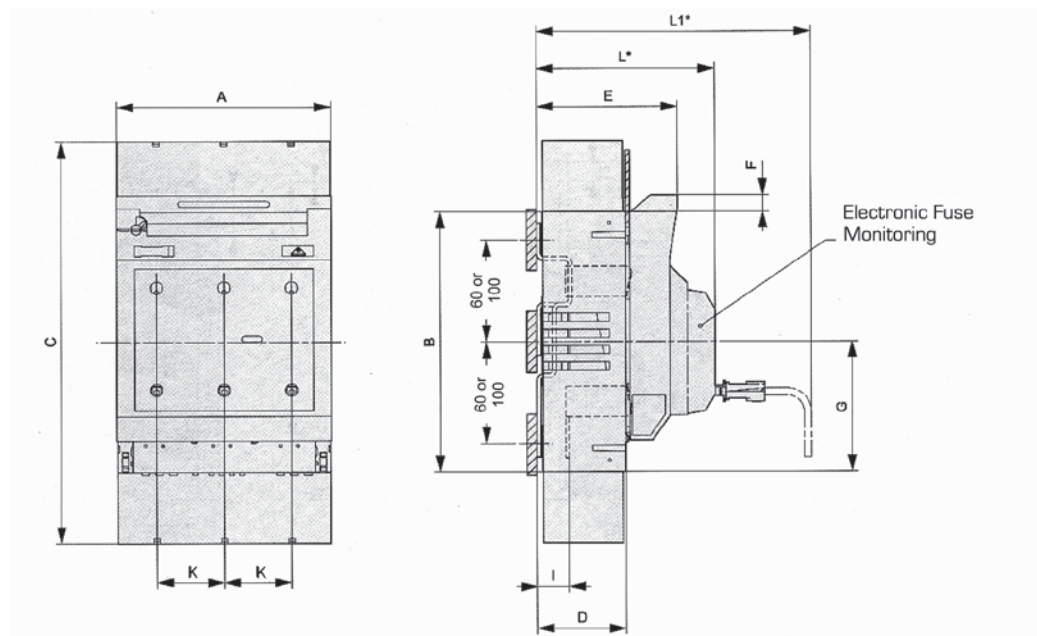


LTL00-3/9/4060/S



	S	T	U
LTL00-3/9/4060/S	40	20-30	5 or 10
	60	20-30	5 or 10

LTL1-3/9/60/AU
LTL2-3/9/60/AU
LTL3-3/9/60/AU
LTL1-3/9/100/AU
LTL2-3/9/100/AU
LTL3-3/9/100/AU



	A	B	C	D	E	F	G	I	K
60mm Spacing									
LTL1-3/9/60/AU	184	230	320	70	121	16.5	115	27	58
LTL2-3/9/60/AU	210	256	400	83	135	16.5	128	27	66
LTL3-3/9/60/AU	254	270	430	120	170	9	135	54	82
100mm Spacing									
LTL1-3/9/100/AU	184	230	320	74	126	16.5	115	30.5	58
LTL2-3/9/100/AU	210	256	400	87	142	16.5	128	30.5	66
LTL3-3/9/100/AU	254	270	430	104	150	9	135	37	82



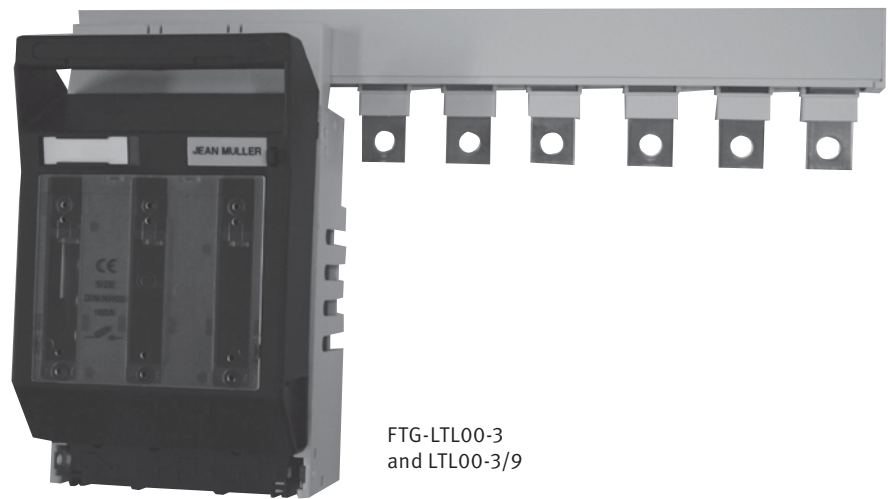
Comb busbars

FTG comb type busbars are constructed of three copper conductors within a single moulding for connection to Jean Müller LTL000-3/9* or LTL00-3/9* horizontal fuse disconnects.

The busbar is rated at 250amps.

Removable end caps allow the busbar to be shortened to intermediate sizes if required.

Description		Part No.
Busbar for LTL000-3/9 100A disconnects		
	For connection to 3 disconnects*	FTG-LTL000-3
	For connection to 5 disconnects*	FTG-LTL000-5
*(Bottom Feed Only)		
Busbar for LTL00-3/9 160A disconnects		
	For connection to 3 disconnects	FTG-LTL00-3
	For connection to 5 disconnects	FTG-LTL00-5
*(Top and Bottom Feed)		
Feed terminal		
	For cables up to 95mm ² (3x required per disconnect)	FTG-LTL00/F
Terminal covers		
	To provide finger protection to disconnect terminals fitted with FTG Busbars	
	For LTL00	GO-LTL00-FTG
	For LTL000	Cover not available



FTG-LTL00-3
and LTL00-3/9

Also available in KETO Range. Refer to page 54