

New Miniature Circuit Breakers (MCB) DLS 6 for easier Operation and Installation



- **DLS 6h,**
the 6 kA miniature circuit breaker
for standard installations
- **DLS 6hsl,**
the 6 kA miniature circuit breaker
with screwless branch terminal at the top
for fast connections
- **DLS 6i,**
the 10 kA miniature circuit breaker
for industrial applications in systems
with high short-circuit capacities



Innovative, modular Miniature Circuit Breakers of the DLS 6 Model Range

DLS 6h, DLS 6hsl and DLS 6i – it is not as complicated as it initially seems. Here you can see the important differences and features at a glance



In addition to the usual clip terminals, all devices in the DLS 6 model range are equipped at the top and bottom with terminals for busbar wiring. A large window, with flip-down opening, enables clear, permanently protected labelling of the device. Thanks to the low installation height there is ample room for the wiring.

All DLS 6 devices are contact-safe for the back of the hand. The modern, functional design and the high-grade surface finish of the plastic components are indicative of the high-quality standard of this new generation of miniature circuit breakers.



• DLS 6h (trade)

The DLS 6h is a modern miniature circuit breaker intended for standard installations in applications with low to medium short-circuit currents. The devices in the h range are available in 1- to 3-pole, 1+N and 3+N versions with rated currents from 6 A, 10 A to 63 A and tripping characteristics B and C. With busbar wiring at the bottom they can be replaced without having to open the terminals of neighbouring devices.



• DLS 6hsl (trade, screwless)

This miniature circuit breaker is a variant of the DLS 6h, i.e. in addition to all the features of this modern MCB, the DLS 6hsl is fitted at the top with double plug-in terminals and thus allows for particularly rapid connection of branch leads.

• DLS 6i (industry)

Due to its high 10 kA rated breaking capacity, the DLS 6i is also suitable for use in power supplies and applications with high short-circuit power, e.g. in both business and trade environments. An extensive range of types with tripping characteristics B, C, D, K and Z, a wide current rating range from 0.3 A to 63 A in 1- to 4-pole versions makes it possible to match the device precisely to the protective task required and opens up a wide range of applications. When connected to a busbar system at the top or bottom, miniature circuit breakers in the DLS 6i range can be replaced without having to undo the terminals of neighbouring devices.

Technical Data Product Range DLS 6h, DLS 6hsl, DLS 6i

Characteristic	B	C	D	K	Z	
Application	Wiring protection	Wiring protection Device protection	Wiring protection Power circuits Transformers Motors	Wiring protection Power circuits Transformers Motors	Wiring protection Semiconductor pro- tection High impedance	
Number of poles						
Product range DLS 6h	1, 1+N, 2, 3, 3+N		-	-	-	
Product range DLS 6hsl	1 and 3		-	-	-	
Product range DLS 6i	1 - 4; 1+N; 3+N			1 - 3		
Standards, short circuit withstand rating	IEC 60898-1, DIN EN 60898-1, VDE 0641-11			IEC 60947-2, DIN EN 60947-2, VDE 0660-101		
Product range DLS 6h	6 kA	6 kA	-	-	-	
Product range DLS 6hsl	6 kA	6 kA	-	-	-	
Product range DLS 6i	10 kA	10 kA	10 kA	10 kA	10 kA	
Current limiting class	3					
Max. back-up fuse	Fuse according to DIN VDE 0636 125 A operating class gL/gG					
Rated AC voltage	230 / 400 V					
Rated DC voltage L/R = 4 ms	1 pole 60 V, 2 pole 125 V in serial connection of both poles					
Rated current range I_n						
Product range DLS 6h	6, 10 - 63 A	1, 2, 3, 4 - 63 A	-	-	-	
Product range DLS 6hsl	6 - 20 A	6 - 20 A	-	-	-	
Product range DLS 6i	1 - 63 A	0.3 - 63 A	0.3 - 63 A	0.3 - 63 A	0.3 - 32 A	
Test currents	Thermal not tripping I ₁ (A) > 1h	1.13 x I _n	1.13 x I _n	1.13 x I _n	1.05 x I _n	
	Thermal tripping I ₂ (A) < 1h	1.45 x I _n	1.45 x I _n	1.45 x I _n	1.2 x I _n	
	Electromagnetic not tripping I ₄ (A) > 0,1s	3 x I _n	5 x I _n	10 x I _n	8 x I _n	2 x I _n
	Electromagnetic tripping I ₅ (A) < 0,1s	5 x I _n	10 x I _n	20 x I _n	12 x I _n	3 x I _n
Reference calibration temperature of the thermal tripping	30°C + 5°C			20°C + 5°C		
	Influence of the ambient temperature on the thermal tripping: Decrease of the current values with higher ambient temperature and increase with lower temperatures of appr. 5% per 10°C difference in temperature					
Frequency range of the electromagnetic trip	16 ^{2/3} to 60 Hz With higher frequencies, the electromagnetic tripping values increase by approximately a factor of 1.1 at 100 Hz; 1.2 at 200 Hz; 1.3 at 300 Hz; 1.4 at 400 Hz; 1.5 at DC					
Ambient temperature	-25°C to +55°C					
Storage temperature	-40°C to +70°C					
Device depth acc. to DIN 43880	68 mm					
Mechanical endurance	20,000 switching cycles (20,000 ON/ 20,000 OFF)					
Protection cover	Finger safe and safe to back of the hand according to DIN EN 50274 / VDE 0660-514, BGV A2					
Insulation group according to DIN VDE 0110	C at 250 V AC B at 400 V AC					
Degree of protection according to EN 60529 / IEC 60529	IP 20					
Installation position	any					
Mounting	DIN-rail according to DIN EN 60715 35 mm					
Lockability	The handle can be secured against manual switching in the ON and OFF position by a lead seal					
Climatic resistance	Humid heat constant according to DIN IEC 60068-2-78 Humid heat cycle according DIN EN 60068-2-30					
Vibration resistance	> 15 g according to DIN EN 60068-2-59 during a load with I ₁					
Resistance to mechanical shocks	25 g 11 ms					

Conductor cross sections product ranges DLS 6h and DLS 6i					
Type of conductor	Box terminal bottom		Box terminal top		min.
	max.	min.	max.	min.	
Single wire	35 mm ²	0.5 mm ²	25 mm ²		0.5 mm ²
Multiple wire	35 mm ²	1.5 mm ²	25 mm ²		1.5 mm ²
Stranded wire	25 mm ²	1 mm ²	16 mm ²		1 mm ²
Stranded wire with ferrule	16 mm ²	0.5 mm ²	16 mm ²		0.5 mm ²
Busbar cable lug	Up to 3 mm thickness		Up to 3 mm thickness		
Combined, connector and busbar or cable lug	Up to 35 mm ² and up to 2 mm thickness		Up to 25 mm ² and up to 2 mm thickness		
Torque	max. 2.5 Nm				
Conductor cross sections product range DLS 6hsl					
Type of conductor	Box terminal bottom		Screwless terminal top *)		min.
	max.	min.	max.	min.	
Single wire	35 mm ²	0.5 mm ²	4 mm ²		1 mm ²
Multiple wire	35 mm ²	1.5 mm ²	4 mm ²		1.5 mm ²
Stranded wire	25 mm ²	1 mm ²	4 mm ²		1 mm ²
Stranded wire with ferrule	16 mm ²	0.5 mm ²	2.5 mm ²		1 mm ²
Busbar cable lug	Up to 3 mm thickness		-		
Combined, connector and busbar or cable lug	Up to 35 mm ² and up to 2 mm thickness		-		
Torque	max. 2.5 Nm				

*) Stripped length 12 - 14 mm

Product Overview

Rated Current I_n A	DLS 6h B- and C-Characteristic 6 kA acc. to IEC 60898-1, DIN EN 60898-1, VDE 0641-11				
	1-pole	1-pole+N	2-pole	3-pole	3-pole+N
1, 2, 3, 4, 5, 8	Characteristic C	Characteristic C	Characteristic C	Characteristic C	Characteristic C
6, 10 - 63	Characteristics B and C	Characteristics B and C	Characteristics B and C	Characteristics B and C	Characteristics B and C

Rated Current I_n A	DLS 6hsl with screwless branch terminal, B- and C-Characteristics 6 kA acc. to IEC 60898-1, VDE 0641-11	
	1-pole	3-pole
6, 10, 13, 16, 20	Characteristics B and C	Characteristics B and C

Rated Current I_n A	DLS 6i B-, C- and D-Characteristic 10 kA acc. to IEC 60898-1, DIN EN 60898-1, VDE 0641-11 K- and Z-Characteristic 10 kA acc. to IEC 60947-2, DIN EN 60947-2, VDE 0660-101					
	1-pole	1-pole+N	2-pole	3-pole	3-pole+N	4-pole
0.3/ 0.5/ 0.8	C, D, K, Z	C, D, K	C, D, K, Z	C, D, K, Z	C, D, K	C, D, K
1/ 1.6/ 2	B, C, D, K, Z	B, C, D, K	B, C, D, K, Z	B, C, D, K, Z	B, C, D, K	B, C, D, K
2.5/ 3/ 3.5	B, C, D, K, Z	B, C, D, K	B, C, D, K, Z	B, C, D, K, Z	B, C, D, K	B, C, D, K
4/ 5/ 6/ 8/ 10	B, C, D, K, Z	B, C, D, K	B, C, D, K, Z	B, C, D, K, Z	B, C, D, K	B, C, D, K
13/ 16/ 20/ 25/ 32	B, C, D, K, Z	B, C, D, K	B, C, D, K, Z	B, C, D, K, Z	B, C, D, K	B, C, D, K
40/ 50/ 63	B, C, D, K	B, C, D, K	B, C, D, K	B, C, D, K	B, C, D, K	B, C, D, K

Accessories for Model Range DLS 6h, DLS 6hsl, DLS 6i



"DASA" Operating Current Trip (Remote Trip)				
Designation	Module	Rated actuation voltage	max. power requirement at U_n ($t < 10ms$)	Order No.
DASA 12	1	12 V UC	1.3 A	09 917 992
DASA 24	1	24 V UC	0.6 A	09 917 993
DASA 48	1	48-72 V UC	0.2 A	09 917 994
DASA 230	1	110-230 V UC, 400 V UC	0.25 A bei 110 V 0.5 A bei 230 V 0.8 A bei 400 V	09 917 995

Pick-up voltage $0.7 \times U_e$ Duty cycle at U_e 100%



"DUSA" Undervoltage Trip				
Designation	Module	Rated voltage		Order No.
DUSA 24	1	24 V 50/60 Hz		09 917 996
DUSA 110	1	110 V 50 Hz, 120 V 60 Hz		09 917 997
DUSA 230	1	220-230 V 50 Hz, 240 V 60 Hz		09 917 998
DUSA 400	1	380-400 V 50 Hz, 440 V 60 Hz		09 917 999

Pick-up voltage $0.85 \times U_e$, Drop-away voltage $0.35 - 0.7 \times U_e$, Duty cycle at U_e 100%



"DHi" Auxiliary Switch				
Designation	Module	Contact type	Contact provision	Order No.
DHi 3	1/2	1 aux. contact	1 NOC	09 917 984
DHi 4	1/2	2 aux. contact	1 NOC + 1 NCC	09 917 985
DHi 5	1/2	3 aux. contact	1 NOC + 2 NCC	09 917 986
DHi 6	1/2	3 aux. contact	2 NOC + 1 NCC	09 917 987



"DHi" Auxiliary Switch				
Designation	Module	Contact type	Contact provision	Order No.
DHi 7	1/2	1 aux. contact	1 C-OC	09 917 988
DHi 8	1/2	2 aux. contact	2 C-OC	09 917 989



"DHi-S" Fault Indication Auxiliary Switch				
Designation	Module	Contact type	Contact provision	Order No.
DHi-S10	1/2	1 fault indication contact	1 C-OC	09 917 990
DHi-S11	1/2	1 fault indication contact / 1 aux. contact	2 C-OC	09 917 991

Connection and Disconnection Lock "DEASS"		
Designation	Note	Order No.
DEASS	Lockable with standard padlock (not supplied with device)	09 917 983