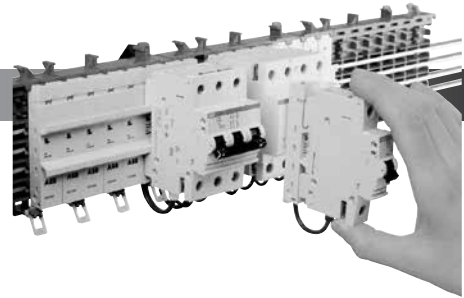




22 - SMISLINE



SMISLINE modular bus system.....22.1 - 22.24

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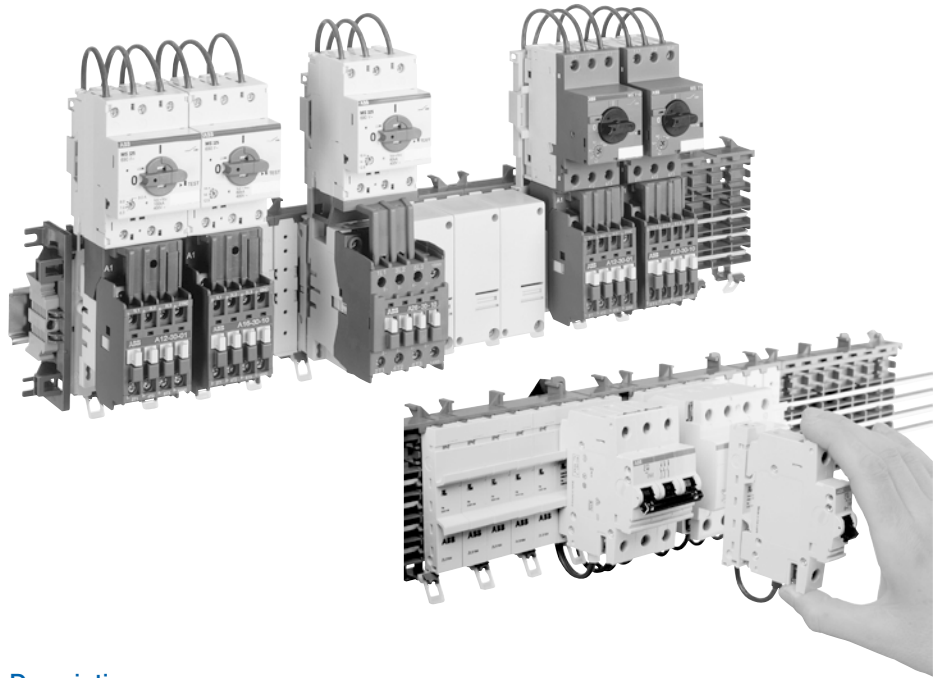
Modular power distribution bus system

SMISLINE



SMISLINE

Modular power distribution bus system



Description

- The SMISLINE power distribution bus system provides a versatile and flexible means of distributing power to a wide variety of electrical devices. Ideal for group motor installations and ABB modular DIN rail products.
- Hot swappable socket mounted components.
- Individual devices may be turned off and safely removed without turning off power to the whole bus.
- Bus system “Starter kits” available in various lengths, can also be easily cut down for custom installations.
- Busbar rated 100 A when end fed and up to 200 A when center fed. Main power feed terminals may be installed anywhere along the bus system.
- Individual bus stab adapters are available in L1, L2, L3 and N phase connections; they can be connected together to form multi-pole units. Unwired modules are available where bus connection is not required. 18 mm width.
- Snap-on installation. No tools required to install or remove bus mounted components.
- System can be DIN rail or base mounted.
- Bus covers protect unused portions of the bus from accidental contact providing total bus isolation and IP20 finger safe protection.
- Reputable history of performance and reliability.
- UL489 UL File #312425 ⓘ
- UL508 Recognized, UL File #E222110
- UL508 UL File #257901

ⓘ These marked MCBs are no longer available. Please use S200U with appropriate universal adapters ZLS1XYU with appropriate number of poles and bus connector L1, L2, L3, for these current ratings and number of poles. For UL files on S200U MCBs please refer to the respective S200U MCB chapter.

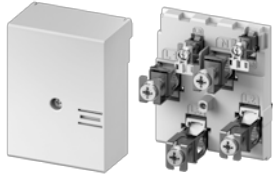
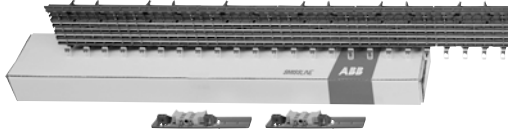
Building a SMISLINE assembly for UL508 and UL489 based solutions

Step 1: Select base module starter pack

Preassembled bases with bus bar components



ZLS808



ZLS224

Step 2: Select main incoming

Main Lugs



Step 3: Select components

Breakers
Miscellaneous DIN rail devices

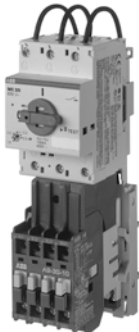
UL489



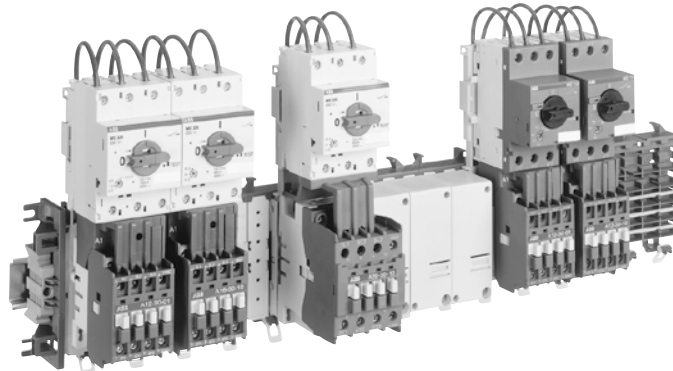
S401U-K10 ①

Contactors
Combo starters
Miscellaneous DIN rail devices

UL508



ZLS325



① These marked MCBs are no longer available. Please use S200U with appropriate universal adapters ZLS1XYU with appropriate number of poles and bus connector L1, L2, L3, for these current ratings and number of poles.

Building a SMISLINE assembly for UL508 and UL489 based solutions

Starter packs, sockets and busbars

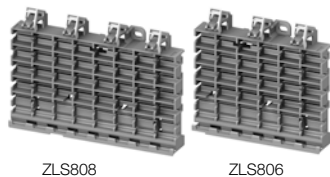
Step 1: Select base modules according to UL508 and UL489



Base module starter packs

Starter packs are available with socket bases, bus bar and end pieces installed.

Number of poles	Number of 8 pole modules	Number of 6 pole modules	Phase	Former catalog number	New catalog number
20	1	2	3L	ZLS782	ZLS204E20-3L
20	1	2	3LN	ZLS783	ZLS204E20-3LN
22	2	1	3L	ZLS760	ZLS204E22-3L
22	2	1	3LN	ZLS761	ZLS204E22-3LN
24	3	—	3L	ZLS750	ZLS204E24-3L
24	3	—	3LN	ZLS751	ZLS204E24-3LN
26	1	3	3L	ZLS785	ZLS204E26-3L
26	1	3	3LN	ZLS786	ZLS204E26-3LN
30	3	1	3L	ZLS762	ZLS204E30-3L
30	3	1	3LN	ZLS763	ZLS204E30-3LN
32	4	—	3L	ZLS752	ZLS204E32-3L
32	4	—	3LN	ZLS753	ZLS204E32-3LN
34	2	3	3L	ZLS776	ZLS204E34-3L
34	2	3	3LN	ZLS777	ZLS204E34-3LN
38	4	1	3L	ZLS764	ZLS204E38-3L
38	4	1	3LN	ZLS765	ZLS204E38-3LN
40	5	—	3L	ZLS754	ZLS204E40-3L
40	5	—	3LN	ZLS755	ZLS204E40-3LN
44	4	2	3L	ZLS778	ZLS204E44-3L
44	4	2	3LN	ZLS779	ZLS204E44-3LN
48	6	—	3L	ZLS756	ZLS204E48-3L
48	6	—	3LN	ZLS757	ZLS204E48-3LN
62	7	1	3L	ZLS780	ZLS204E62-3L
62	7	1	3LN	ZLS781	ZLS204E62-3LN
64	8	—	3L	ZLS766	ZLS204E64-3L
64	8	—	3LN	ZLS767	ZLS204E64-3LN
80	10	—	3L	ZLS758	ZLS204E80-3L
80	10	—	3LN	ZLS759	ZLS204E80-3LN



Socket bases

Description	Number of poles	Catalog number
8-module socket, Length 144 mm	8	ZLS808
6-module socket, Length 108 mm	6	ZLS806

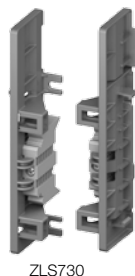
The 6 or 8 pole socket bases are installed either by screwing them to any flat surface or by snapping them into a 35 mm DIN rail.



Busbars – for insertion into one or more socket bases

Description	Number of poles	Catalog number
100 A busbar plated, 10 x 3 mm, for L1, L2, L3, N and PE - Delivery length 1979 mm	110	ZLS200

Busbars are sized as 10 mm x 3 mm and rated for 100 A. They are electroplated for contact with stab adaptors. Maximum length is 2 meters (6'-5"). Busbar snaps easily into socket bases from front.



Socket end piece

To prevent movement of socket bases or busbars, end pieces are used on both sides of the assembly.

Description	Number of poles	Catalog number
Socket end piece (2 pieces, left and right)	—	ZLS730

Busbars

100 A

100 A busbars and sockets

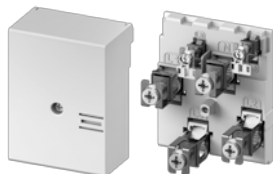
Catalog number busbar 100 A	ABB IT number	Number of sockets 8 module	Number of sockets 6 module	Modules	Busbar length in mm
ZLS201E6	2CCF800158R0001	-	1	6	104
ZLS201E8	2CCF800159R0001	1	-	8	140
ZLS201E12	2CCF800160R0001	-	2	12	212
ZLS201E14	2CCF800161R0001	1	1	14	248
ZLS201E16	2CCF800162R0001	2	-	16	284
ZLS201E18	2CCF800163R0001	-	3	18	320
ZLS201E20	2CCF800164R0001	1	2	20	357
ZLS201E22	2CCF800165R0001	2	1	22	393
ZLS201E24	2CCF800166R0001	3	-	24	429
ZLS201E26	2CCF800167R0001	1	3	26	465
ZLS201E28	2CCF800168R0001	2	2	28	501
ZLS201E30	2CCF800169R0001	3	1	30	537
ZLS201E32	2CCF800170R0001	4	-	32	573
ZLS201E34	2CCF800171R0001	2	3	34	609
ZLS201E36	2CCF800172R0001	3	2	36	645
ZLS201E38	2CCF800173R0001	4	1	38	681
ZLS201E40	2CCF800174R0001	5	-	40	717
ZLS201E42	2CCF800175R0001	3	3	42	753
ZLS201E44	2CCF800176R0001	4	2	44	789
ZLS201E46	2CCF800177R0001	5	1	46	825
ZLS201E48	2CCF800178R0001	6	-	48	861
ZLS201E50	2CCF800179R0001	4	3	50	897
ZLS201E52	2CCF800180R0001	5	2	52	933
ZLS201E54	2CCF800181R0001	6	1	54	969
ZLS201E56	2CCF800182R0001	7	-	56	1005
ZLS201E58	2CCF800183R0001	5	3	58	1041
ZLS201E60	2CCF800184R0001	6	2	60	1077
ZLS201E62	2CCF800185R0001	7	1	62	1113
ZLS201E64	2CCF800186R0001	8	-	64	1150
ZLS201E66	2CCF800187R0001	6	3	66	1186
ZLS201E68	2CCF800188R0001	7	2	68	1222
ZLS201E70	2CCF800189R0001	8	1	70	1258
ZLS201E72	2CCF800190R0001	9	-	72	1294
ZLS201E74	2CCF800191R0001	7	3	74	1330
ZLS201E76	2CCF800192R0001	8	2	76	1366
ZLS201E78	2CCF800193R0001	9	1	78	1402
ZLS201E80	2CCF800194R0001	10	-	80	1438
ZLS201E82	2CCF800195R0001	8	3	82	1474
ZLS201E84	2CCF800196R0001	9	2	84	1510
ZLS201E86	2CCF800197R0001	10	1	86	1546
ZLS201E88	2CCF800198R0001	11	-	88	1582
ZLS201E90	2CCF800199R0001	9	3	90	1618
ZLS201E92	2CCF800200R0001	10	2	92	1654
ZLS201E94	2CCF800201R0001	11	1	94	1690
ZLS201E96	2CCF800202R0001	12	-	96	1726
ZLS201E98	2CCF800203R0001	10	3	98	1762
ZLS201E100	2CCF800204R0001	11	2	100	1798
ZLS201E102	2CCF800205R0001	12	1	102	1834
ZLS201E104	2CCF800206R0001	13	-	104	1870
ZLS201E106	2CCF800207R0001	11	3	106	1906
ZLS201E108	2CCF800208R0001	12	2	108	1942

Planning for the incorporation of feeder block and spare places should be taken into account.
The total lengths given above were calculated by taking socket spacings and tolerances into account.
For this reason, the indicated busbar length is not necessarily a multiple of 18 mm (1 Module).

Building a SMISLINE assembly for UL508 and UL489 based solutions

Step 2: Select main incoming

Standard incoming terminal blocks according to UL508 and UL489



ZLS224

Description	Number of poles	Phase	Catalog number
100 A	4	3LN left	ZLS224
		3LN right	ZLS224R
		3L left	ZLS225
		3L right	ZLS225R

Incoming terminal blocks are used to connect cables directly to the busbar. Terminal block can accept up to 4 main terminals L1, L2, L3 and N. Each lug will accommodate 10 - 1/0 AWG wire.



ZLS251

Incoming terminal component according to UL508 and UL489 (200A)

Description	Number of poles	Phase	Catalog number
200 A	2	L1 terminal	ZLS251
		L2 terminal	ZLS252
		L3 Terminal	ZLS253

Incoming terminal component used to connect feeder cable to busbars. These are single pole components for line terminals L1, L2 and L3. Each lug will accommodate 10 - 1/0 AWG wire.

Socket accessories

Busbar Insulator



ZLS239

Description	Module	Catalog number
Dark grey, for isolation and spacing of separate busbar sections, 18mm	1	ZLS239

This dark gray insulator electrically isolates the interrupted busbar ends from each other.

Busbar cover



ZLS100

Description	Module	Catalog number
Electrically protected covering of main and auxiliary busbars. Covers come in 4 module pieces and can be divided. Suitable to accept extension adapter ZLS 101, 4x18mm	4	ZLS100

Busbar cover ensures protection by covering main busbars. Covers come in 4 module pieces and can be divided. The openings are marked and allow voltage measurements on the busbars without removing.

Building a SMISLINE assembly for UL489 based solutions ①

Step 3: Select MCB components according to UL489

S400U Series

Rated current I_N A	Number of poles	Catalog number
2	1	S401U-K2 ①
5	1	S401U-K5 ①
8	1	S401U-K8 ①
10	1	S401U-K10 ①
15	1	S401U-K15 ①
20	1	S401U-K20 ①
25	1	S401U-K25 ①
30	1	S401U-K30 ①
40	1	S401U-K40 ①
50	1	S401U-K50 ①
60	1	S401U-K60 ①
2	2	S402U-K2 ①
5	2	S402U-K5 ①
8	2	S402U-K8 ①
10	2	S402U-K10 ①
15	2	S402U-K15 ①
20	2	S402U-K20 ①
25	2	S402U-K25 ①
30	2	S402U-K30 ①
40	2	S402U-K40 ①
50	2	S402U-K50 ①
60	2	S402U-K60 ①
2	3	S403U-K2 ①
5	3	S403U-K5 ①
8	3	S403U-K8 ①
10	3	S403U-K10 ①
20	3	S403U-K20 ①
25	3	S403U-K25 ①
30	3	S403U-K30 ①
40	3	S403U-K40 ①
50	3	S403U-K50 ①
60	3	S403U-K60 ①



S401U-K5



S401U-K10



S403U-K20



S2C-H6RU



ZLS502



ZLS501

Made exclusively for use on the SMISLINE distribution bus system, the S400U series is a UL489 branch rated device. The S400U offers movable tabs on the bottom of the unit for fast, easy selection of L1, L2 or L3. The indication window on the top of the unit clearly identifies breaker phasing.

Auxiliary contact, locking device, "Blank" housing

Description	Catalog number
Auxiliary contact	S2C-H6RU
Blank housing	ZLS502
Locking device	ZLS501

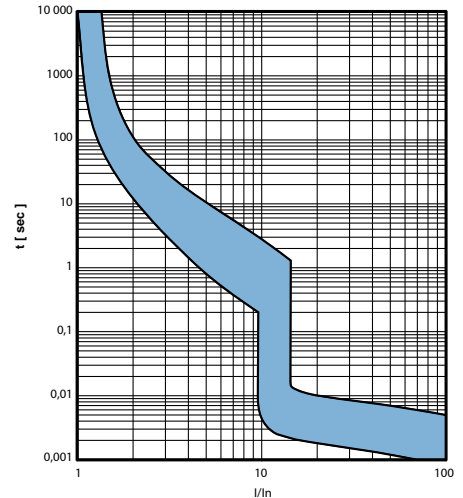
These accessories are simply snapped in place for easy field mounting. The auxiliary unit takes only 1/2 pole space on SMISLINE. To complete the full pole spacing, add a ZLS502 blank unit.

Tripping characteristics K

UL489
240 V AC
10 kA

Inductive loads

- K Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformers



NOTE

① These marked MCBs are no longer available. Please use S200U with appropriate universal adapters ZLS1XYU with appropriate number of poles and bus connector L1, L2, L3, for these current ratings and number of poles.

25 A and 45 A bus stab adapters UL489 based solutions

25 A and 45 A bus stab adapters

These UL489 bus stab adapters are designed for using with the S200U 240V ABB minibreakers. Please refer to dimension pages for additional details.



ZLS161U



ZLS177U

Description	Module	Catalog number
25 A Solutions		
Single adaptor 25 A <u>bottom feed</u> , <u>Clip on bottom side</u> of ZLS808, ZLS806 SOCKET BASE		
L1	1	ZLS161U
L2	1	ZLS162U
L3	1	ZLS163U
Single adaptor 25 A <u>top feed</u> , <u>Clip on bottom side</u> of ZLS808, ZLS806 SOCKET BASE		
L1	1	ZLS177U
L2	1	ZLS178U
L3	1	ZLS179U
45 A Solutions		
Single adaptor 45 A <u>top feed</u> , <u>Clip on bottom side</u> of ZLS808, ZLS806 SOCKET BASE		
L1	1	ZLS167U
L2	1	ZLS168U
L3	1	ZLS169U
Single adaptor 45 A <u>bottom feed</u> , <u>Clip on bottom side</u> of ZLS808, ZLS806 SOCKET BASE		
L1	1	ZLS171U
L2	1	ZLS172U
L3	1	ZLS173U



ZLS171U



ZLS167U

Dummy element adapter

Description	Module	Catalog number
Dummy element adapter	1	ZLS164U



ZLS164U

Building a SMISSLINE assembly for UL508 based solutions

Step 3: Select components according to UL508

Combination motor starters

All modules include: Combi module, contactor, MS325 manual motor protector, MS325 coupler, and brass pin connector.



ZLS325-480-0.5

480V – AC Coils, Combo starters

Description	Number of poles	Catalog number
1/2HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-480-0.5
3/4HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-480-.75
1HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-480-1
2HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-480-2
3HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-480-3
5HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-480-5
7.5HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-480-7.5
10HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-480-10
15HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-480-15

240V – AC Coils, Combo starters

Description	Number of poles	Catalog number
1/2HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-240-0.5
1HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-240-1
1.5HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-240-1.5
2.5HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-240-2.5
3HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-240-3
5HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-240-5
7.5HP Motor Starter – Disc. w/ Overload and Bus Adaptor	3	ZLS325-240-7.5



ZLS325-480-0.5

480V – Reversing combo starters

Description	Number of poles	Catalog number
1/2HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-480-0.5
3/4HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-480-.75
1HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-480-1
2HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-480-2
3HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-480-3
5HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-480-5
7.5HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-480-7.5

240V – Reversing combo starters

Description	Number of poles	Catalog number
1/2HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-240-0.5
1HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-240-1
1.5HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-240-1.5
2.5HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-240-2.5
3HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-240-3
5HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-240-5
7.5HP Motor Starter – Disc. w/ Overload and Bus Adaptor	6	ZLS325R-240-7.5

30 A and 60 A universal adapters UL508 based solutions

30 A and 60 A universal adapters

Bus stab adapters are designed for top or bottom feed for complete flexibility. No matter how the socket bases are mounted. Clip side of the ZLS808 or Z1S806 on top or bottom. Please refer to dimension pages for additional details.



ZLS177 ZLS167



ZLS184



ZLS171

Description	Module	Catalog number
Single adaptor 30 A <u>bottom feed</u> with <u>clip on bottom side</u> of ZLS806, ZLS808 socket base		
N	1	ZLS160
L1	1	ZLS161
L2	1	ZLS162
L3	1	ZLS163
Single adaptor 60 A <u>bottom feed</u> with <u>clip on bottom side</u> of ZLS806, ZLS808 socket base		
N	1	ZLS170
L1	1	ZLS171
L2	1	ZLS172
L3	1	ZLS173
Combination adaptor 30 A <u>clip on top side</u> of ZLS806, ZLS808 with <u>top feed</u>		
L1, L2	2	ZLS185TT12
L2, L3	2	ZLS185TT23
L1, L3	2	ZLS185TT13
L1, L2, L3	3	ZLS183TT
Combination adaptor 60 A <u>clip on top side</u> of ZLS806, ZLS808 with <u>top feed</u>		
L1, L2	2	ZLS186TT12
L2, L3	2	ZLS186TT23
L1, L3	2	ZLS186TT13
L1, L2, L3	3	ZLS189TT
Single adaptor 30 A <u>top feed</u> with <u>clip on bottom side</u> of ZLS806, ZLS808 socket base		
N	1	ZLS176
L1	1	ZLS177
L2	1	ZLS178
L3	1	ZLS179
Single adaptor 60 A <u>top feed</u> with <u>clip on bottom side</u> of ZLS806, ZLS808 socket base		
N	1	ZLS166
L1	1	ZLS167
L2	1	ZLS168
L3	1	ZLS169
Combination adaptor 30 A <u>clip on top side</u> of ZLS806, ZLS808 <u>socket base and bottom feed</u>		
L1, L2	2	ZLS187TB12
L2, L3	2	ZLS187TB23
L1, L3	2	ZLS187TB13
L1, L2, L3	3	ZLS183TB
Combination adaptor 60 A <u>clip on top side</u> of ZLS806, ZLS808 <u>socket base and bottom feed</u>		
L1, L2	2	ZLS188TB12
L2, L3	2	ZLS188TB23
L1, L3	2	ZLS188TB13
L1, L2, L3	3	ZLS188TB
Single adaptor, wire length, 300 mm, 30 A <u>top feed</u> . <u>Wire opposite clip side</u> of ZLS806, ZLS808		
N	1	ZLS176L300
L1	1	ZLS177L300
L2	1	ZLS178L300
L3	1	ZLS179L300
Single adaptor, wire length, 300 mm, 60 A <u>top feed</u> . <u>Wire opposite clip side</u> of ZLS806, ZLS808		
N	1	ZLS166L300
L1	1	ZLS167L300
L2	1	ZLS168L300
L3	1	ZLS169L300
Single adaptor, wire length, 300 mm, 30 A <u>bottom feed</u> . <u>Wire on clip side</u> of ZLS806, ZLS808		
N	1	ZLS160L300
L1	1	ZLS161L300
L2	1	ZLS162L300
L3	1	ZLS163L300
Single adaptor, wire length, 300 mm, 60 A <u>bottom feed</u> . <u>Wire on clip side</u> of ZLS806, ZLS808		
N	1	ZLS170L300
L1	1	ZLS171L300
L2	1	ZLS172L300
L3	1	ZLS173L300

Combi module

UL508 based solutions

Combi module without plug-in contacts

Description	Module	Catalog number
Combi module	—	ZLS840

Used for motor controls in same panel but not plugged into SMISSLINE bus network.

Combi module accessories

Description	Module	Catalog number
Connection element for combi module (3 connectors per module) Bag containing 12 items	—	ZLS519
Fixing pins for contactor Bag containing 10 items	—	ZLS522

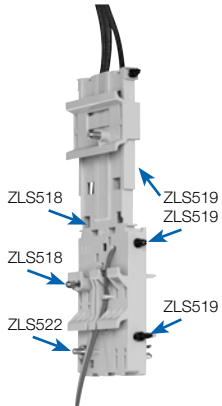
These accessories are designed exclusively for the A-Line contactor and MS325 manual motor protector to give stability from vibrations and sliding while mounted on the combi-module.



ZLS8403LABWT-S
Wire at top



ZLS840
No wire



Technical data

S400U circuit breaker UL489 ①

Auxiliary contact UL489, Power losses, internal resistances

S400U ①	UL489 listed Circuit Breaker (File E 312425)
Certifications:	240 V AC
Rated voltage:	2...60 A
Rated current:	K
Trip characteristics:	1...3
Number of poles:	50/60 Hz
Rated frequency:	10 kA
Rated interrupting:	Yes
UL Current limiting:	Opposing action stroke clamp on cylinder, finger-safe (front), suitable to clamp
Terminal at load side S400U:	Single conductor-copper only
Conductor Type:	14-4AWG, solid or stranded (mm ²)
Wire Range:	25 lbs in (2.8 Nm)
Tightening torque:	IP40 front (6000 electrical, 4000 mechanical)
Degree of protection:	any
Mounting position:	-40 °F...158 °F (-40 °C...70 °C)
Storage temperature:	-13 °F...131 °F (-25 °C...55 °C)
Ambient temperature:	5 g, 20 Cycles 5...150...5 Hz at 0.8 In, IEC 60068-2-6
Vibration resistance acc. to DIN EN 60 068-2-6: Resistance to vibrations	halogen-free
Plastic material:	cadmium-free
Contacts:	
Auxiliary contact, S2C-H6RU	
Rated current In/A:	1A, 480 V AC; 2A, 277 V AC
Contact:	1 Alteration
Wire Range:	18...14AWG (0.75...2.5mm ²)
Tightening torque:	10,6 lbs (1,2 Nm)
Contact security by vibration resistance according to DIN IEC 68-2-6:	5g, 20 frequency cycles 5...150...5 Hz by 24 V AC, 5 mA short break < 10 ms
Mechanical device endurance:	10.000 cycles
Dimension in mm:	68 x 74 x 99

Internal resistances at rated voltage and power losses ①

Internal resistances and power loss per pole (20° C - valve) (68° F)

Rated current A	mΩ	P _v
		W
2	0.415	1.7
5	0.150	2.4
8	0.043	2.7
10	0.0165	1.7
15	0.0095	2.4
20	0.0073	2.9
25	0.0053	3.3
39	0.0034	3.4
40	0.0028	4.5
50	0.0021	5.3
60	0.0015	5.9

NOTE

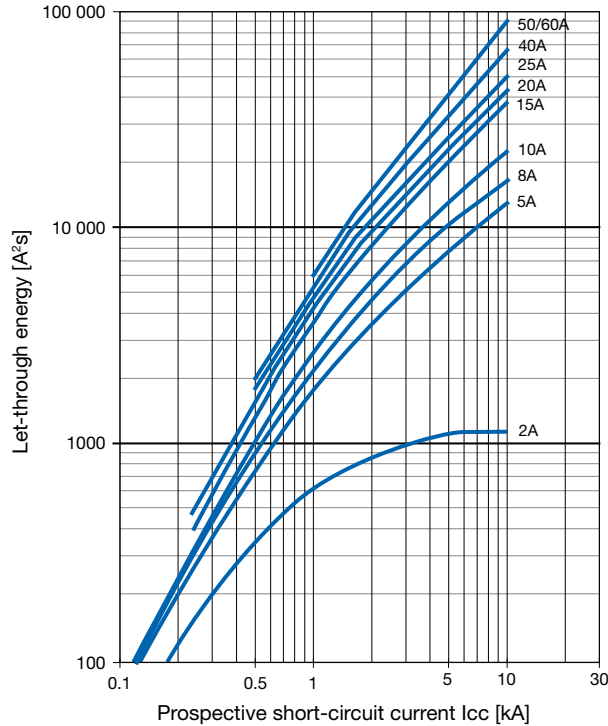
① These marked MCBs are no longer available. Please use S200U with appropriate universal adapters ZLS1XYU with appropriate number of poles and bus connector L1, L2, L3, for these current ratings and number of poles.

Technical data

S400U circuit breaker UL489 ①

Let through energies I^2t

S400U characteristics at 240 V AC ①



S400U-K Maximum I_{peak} and I^2t Values ①

Type	Ampere Ratings (A)	Voltage (V)	Frequency (Hz)	Phase	Current (A)	Maximum Values	
						I_{peak} (kA)	I^2t (kA²s)
S401U-K	0.2-15	240	60	1	4095	2.5	8
S401U-K	0.2-15	240	60	1	7500	3.5	20
S401U-K	0.2-15	240	60	1	10000	6	40
S401U-K	16-30	240	60	1	4095	4	35
S401U-K	16-30	240	60	1	7500	5	45
S401U-K	16-30	240	60	1	10000	6.8	80
S401U-K	40-60	240	60	1	4095	4.6	56
S401U-K	40-60	240	60	1	7500	6.8	75
S401U-K	40-60	240	60	1	10000	7.5	90
S403U-K	0.2-15	240	60	3	4095	2.3	6
S403U-K	0.2-15	240	60	3	7500	2.8	10
S403U-K	0.2-15	240	60	3	10000	5.5	30
S403U-K	16-30	240	60	3	4095	3.3	15
S403U-K	16-30	240	60	3	7500	4	22
S403U-K	16-30	240	60	3	10000	6	35
S403U-K	40-60	240	60	3	4095	4.4	35
S403U-K	40-60	240	60	3	7500	6.6	56
S403U-K	40-60	240	60	3	10000	7	60

Threshold Current Rating: 4095 A
 Intermediate Current Rating: 7500 A
 Maximum Interrupting Current Rating: 10000 A

NOTE

① These marked MCBs are no longer available. Please use S200U with appropriate universal adapters ZLS1XYU with appropriate number of poles and bus connector L1, L2, L3, for these current ratings and number of poles.

Technical data

Busbar system

SMISLINE

UL489, UL508 (E257901)

Incoming terminal block / incoming terminal block components

	Busbar	Incoming terminal blocks, ZLS224, 2224, 225, 225R	Incoming terminal component, ZLS250, 251, 252, 253
Maximum nominal voltage:	240 V	240 V	240 V
Maximum nominal current:	100 A	100 A	200 A
Nominal current for supply, side feed:	100 A	100 A	100 A
Nominal current for supply, center feed:	100 A	150 A	200 A
Resistance to short circuits:		50 kA when protected by a 150 A fuse 10 kA when protected by a 200 A fuse	
Supply cable size:		14 to 1/0 AWG	8 AWG to 3/0 AWG

UL508 (E222110)

Busbar system accessories

	Busbar	Incoming terminal block	Incoming terminal component	Universal adapter 30 A	Universal adapter 60 A	Combi module	Adaptor MS325 ZLS8403
Maximum nominal voltage:			600 V AC				
Maximum nominal current:	100 A	150 A	200 A	30 A	60 A	32 A	25 A
Nominal current for supply, left or right:	100 A	100 A	100 A	—	—	—	—
Nominal current for supply, center:	100 A	150 A	200 A	—	—	—	—
Resistance to short circuits:			50 kA with 200 A back-up fuse				
Supply cable size:		+0 to 1/0 AWG	8 AWG to 3/0 AWG				

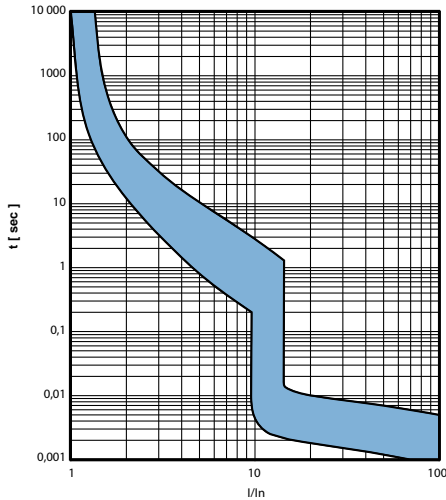
Technical data

S400U circuit breaker UL489 ①

Trip characteristics, Influence of ambient temperature

Trip characteristics: K ①

Calibration temperature 77°F (25°C)



Temperature Derating ①

Rated Current Amps	50°F (10 °C)	59°F (15 °C)	68°F (20 °C)	77°F (25 °C)	86°F (30 °C)	95°F (35 °C)	104°F (40 °C)	113°F (45 °C)	122°F (50 °C)	131°F (55 °C)
2	2.21	2.14	2.07	2	1.93	1.86	1.79	1.72	1.65	1.57
5	5.65	5.43	5.22	5	4.78	4.56	4.34	4.12	3.91	3.69
8	8.8	8.6	8.3	8	7.7	7.4	7.2	6.9	6.6	6.3
10	11.1	10.7	10.4	10	9.7	9.3	9.0	8.6	8.3	7.9
15	16.7	16.1	15.6	15	14.4	13.9	13.3	12.7	12.2	11.6
20	22.1	21.4	20.7	20	19.3	18.6	17.9	17.2	16.5	15.8
25	27.6	26.8	25.9	25	24.1	23.3	22.4	21.5	20.6	19.7
30	33.4	32.3	31.1	30	28.9	27.8	26.6	25.5	24.4	23.2
40	43.8	42.5	41.3	40	38.7	37.4	36.2	34.9	33.6	32.3
50	55.3	53.5	51.8	50	48.2	46.5	44.7	43.0	41.2	39.5
60	66.7	64.4	62.2	60	57.8	55.6	53.3	51.1	48.9	46.7

Max. operating currents depending on ambient temperature for S400U miniature circuit breakers trip characteristic K.
S400U calibrated at 77° F (25° C).

NOTE

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Technical data

S400U circuit breaker UL489 ① Series rating with Tmax T3, T4

Class J Fuse - S400U @ 240V AC ①

		L.	Fuse
I.		I_n [A]	Max. 200S
S400U	K	2...60	50 I_{cu} [kA]

Sace Tmax - S400U @ 240V AC ①

		Up- stream		T3	T3	T4	T4	T4	T4	T4
Downstream	Version	I_n [A]	Version	N	S	N	S	H	L	U
S400U	K	2...60		25	25	50	50	50	50	50

I. = Upstream

L. = Downstream

A. = version

Back-up limit values are specified in kA

NOTE

① These marked MCBs are no longer available. Please use S200U with appropriate universal adapters ZLS1XYU with appropriate number of poles and bus connector L1, L2, L3, for these current ratings and number of poles.

Technical data

Miniature circuit breaker S400U ①

Selectivity to Sace Tmax T3, T4

Tmax T3 - S400U @ 240V ①

		I.	T3							
		Version	N, S							
		Release	TM, M							
		Frame size	250							
L.	Char.	I _n [A]	60	80	100	125	150	175	200	
S400U	K	2	10	10	10	10	10	10	10	
		5	10	10	10	10	10	10	10	
		10	10	8,5	10	10	10	10	10	
		15	4,5	7,5	10	10	10	10	10	
		20	4,5	5,5	6,5	10	10	10	10	
		25	3,5	5,5	6	9,5	10	10	10	
		30		4,5	6	9,5	10	10	10	
		40			5	8	10	10	10	
		50			3	6	9,5	10	10	
60			3	5,5	9,5	10	10			

Tmax T4 - S400U @ 240V ①

		I.	T4											
		Version	N, S, H, L, V											
		Release	TM, M									EL		
		Frame size	200									200		
L.	Char.	I _n [A]	20	25	30	50	80	100	125	160	200	100	160	200
S400U	K	2	50	50	50	50	50	50	50	50	50	50	50	50
		5	10	10	10	10	10	10	10	10	10	10	10	10
		10		5	5	5	9	10	10	10	10	10	10	10
		15		5		5	8	10	10	10	10	10	10	10
		20				5	6	10	10	10	10	10	10	10
		25				5	6	10	10	10	10	10	10	10
		30				5	6	10	10	10	10	10	10	10
		40					5,5	10	10	10	10	10	10	10
		50					5	10	10	10	10	10	10	10
60						10	10	10	10	10	10	10		

NOTE

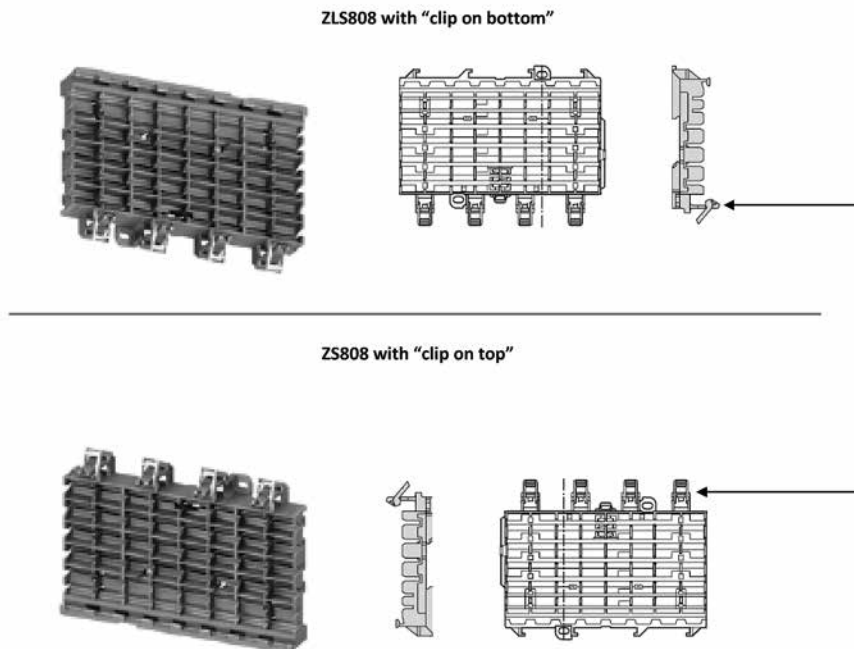
① These marked MCBs are no longer available. Please use S200U with appropriate universal adapters ZLS1XYU with appropriate number of poles and bus connector L1, L2, L3, for these current ratings and number of poles.

Building a SMISLINE assembly

Module socket assembly rail orientation and adapter configuration definitions

Explanation of “clip on top” and “clip on bottom” concept:

1. This is achieved by simply inverting the 8 module or 6 module socket assembly.
2. There is no change in the ZLS808 or ZLS806 catalog number.



Universal adapter configurations

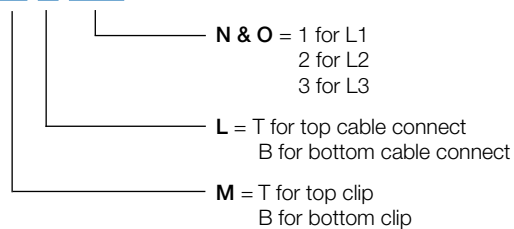
The universal adapters can be combined to generate different combination connections to the respective bus bars as required. This allows load connections to be connected to the bottom or top for maximum flexibility of the module rail.

Example

ZLS188TB13 = Top clip, bottom cable entry with L1 and L3 bus bar connections

Refer to dimensions section for more details and options.

ZLS1 xx M L NO



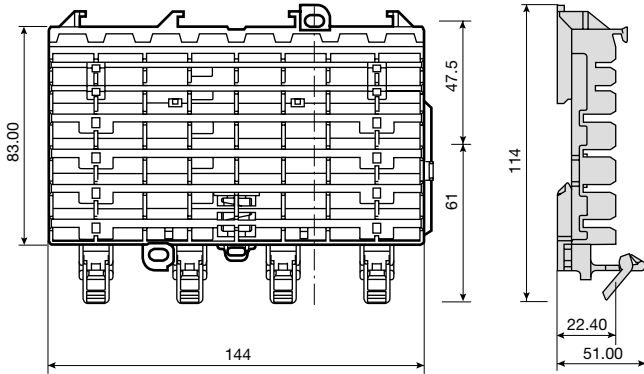
Approximate dimensions

Module base sockets; incoming terminal blocks

Main power module

ZLS808 8 module base socket

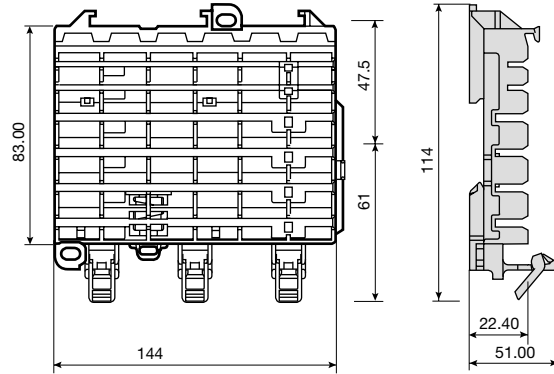
(dimensions in mm)



The base consists of eight (8) 18 mm poles designed to stand alone or to be combined with other bases to accommodate: bus bar, bus adaptors, main lugs, main breakers, main fused and non-fused switches, combination starters, feeder breakers, feeder switches, or contactors. The base may be fixed mounted, DIN rail mounted, or assembled on a panel inner door.

ZLS806 6 module base socket

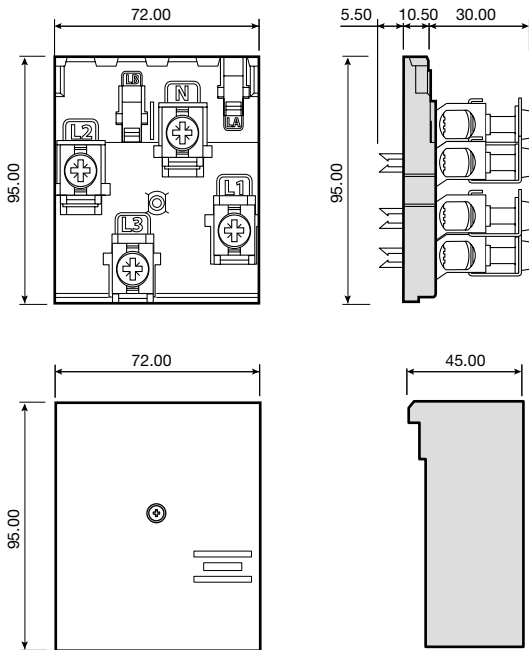
(dimensions in mm)



The base consists of six (6) 18 mm poles designed to stand alone or to be combined with other bases to accommodate: bus bar, bus adaptors, main lugs, main breakers, main fused and non-fused switches, combination starters, feeder breakers, feeder switches, or contactors. The base may be fixed mounted, DIN rail mounted, or assembled on a panel inner door.

ZLS224 Incoming terminal blocks

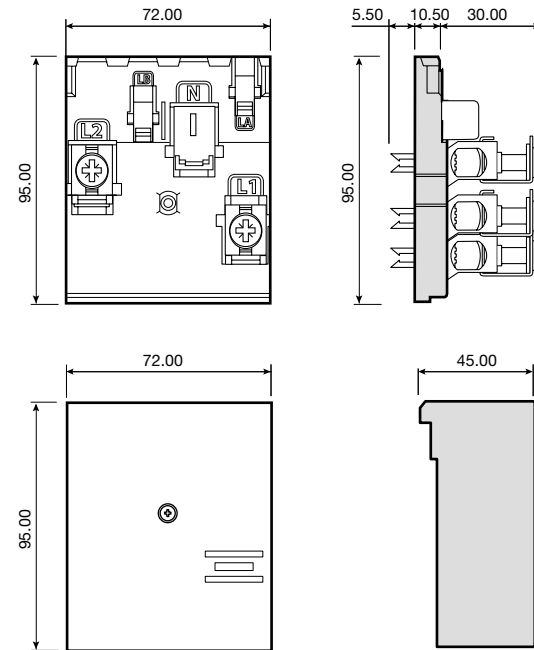
(dimensions in mm)



The ZLS224 is a 100A rated module if feeding the end of a SMISLINE line-up or 150A rated module if feeding the center of a SMISLINE line-up. The module is designed to allow wire to be connected to the system bus. The ZLS224 may be used as an incoming or outgoing device and has four (4) lugs (L1, L2, L3, N) designed to accommodate 10-1/0 AWG wire.

ZLS225 Main power module

(dimensions in mm)

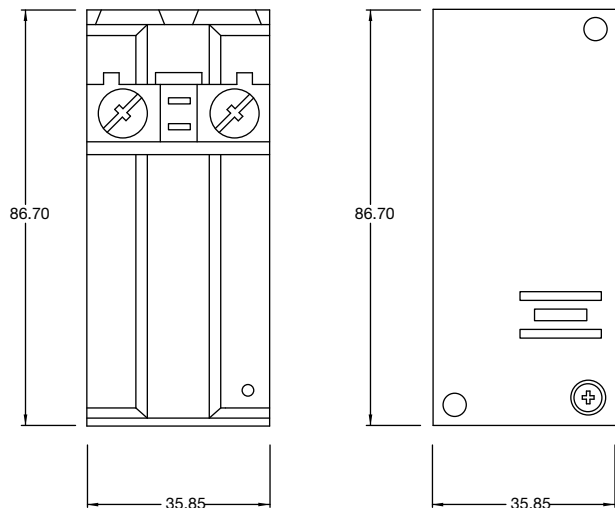


The ZLS225 is a 100A rated module if feeding the end of a SMISLINE line-up or 150A rated module if feeding the center of a SMISLINE line-up. The module is designed to allow wire to be connected to the system bus. The ZLS225 may be used as an incoming or outgoing device and has three (3) lugs (L1, L2, L3) designed to accommodate 10-1/0 AWG wire.

Approximate dimensions Main power modules

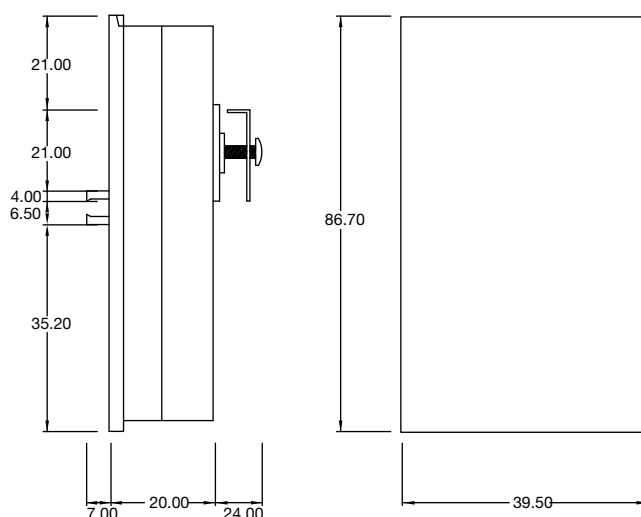
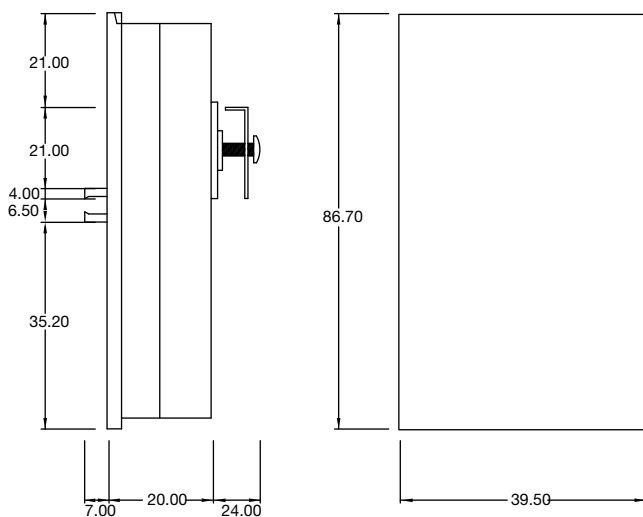
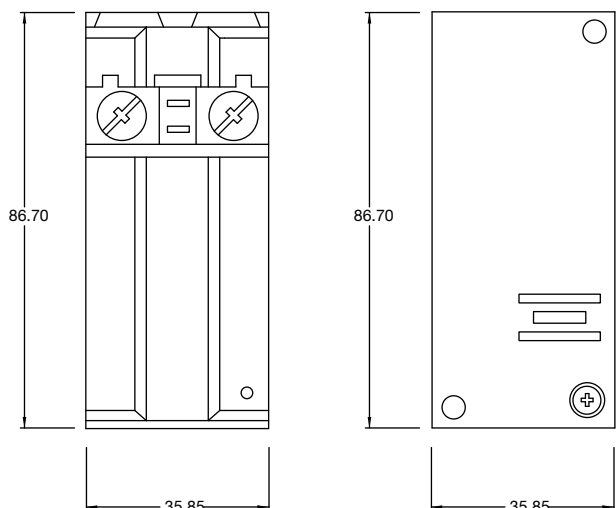
ZLS250 Main power module

(dimensions in mm)



ZLS251 Main power module

(dimensions in mm)



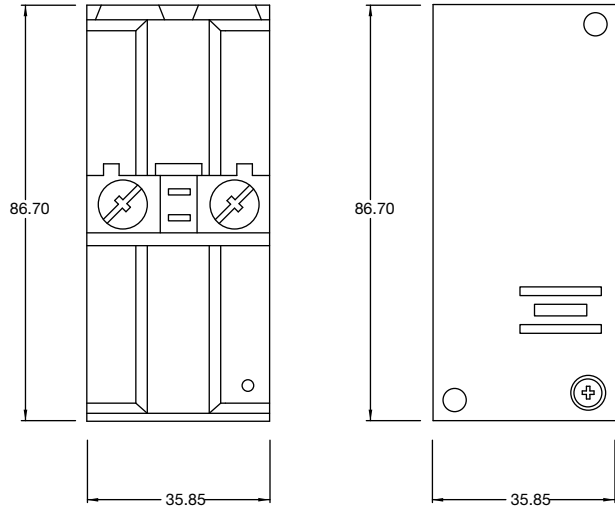
The ZLS250 is a 200 A rated module if feeding the center of a SMISSLINE line-up. The module is designed to allow wire to be connected to the system bus. The ZLS250 may be used as an incoming or outgoing device and has one lug (N) designed to accommodate 8-4/0 AWG wire.

The ZLS251 is a 200 A rated module if feeding the center of a SMISSLINE line-up. The module is designed to allow wire to be connected to the system bus. The ZLS251 may be used as an incoming or outgoing device and has one lug (L1) designed to accommodate 8-4/0 AWG wire.

Approximate dimensions Main power modules

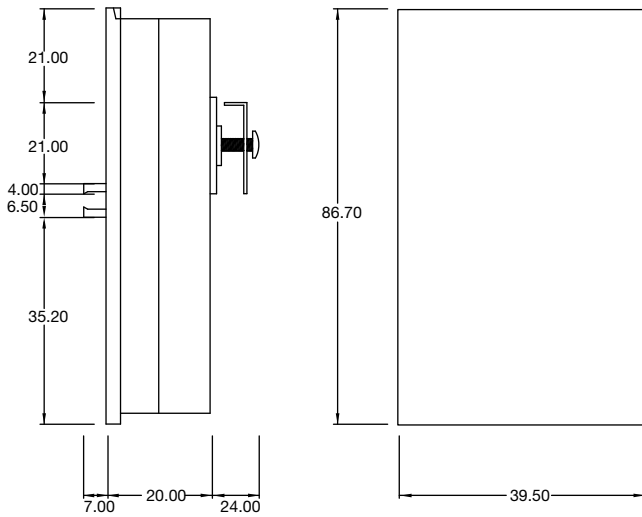
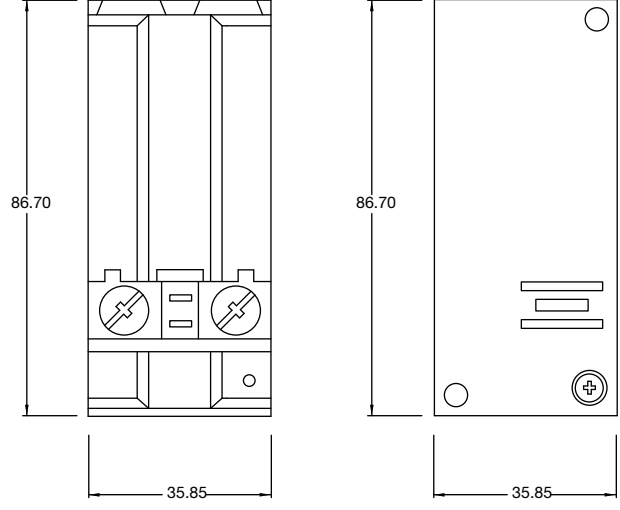
ZLS252 Main power module

(dimensions in mm)

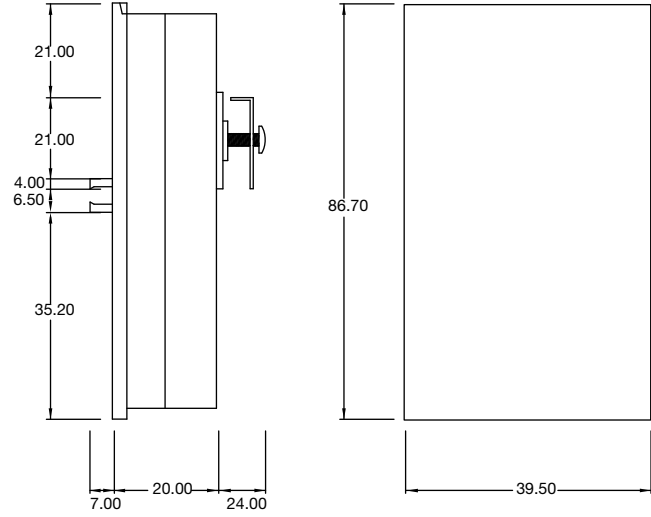


ZLS253 Main power module

(dimensions in mm)



The ZLS252 is a 100 A from either side of incoming module. The module is designed to allow wire to be connected to the system bus. The ZLS252 may be used as an incoming or outgoing device and has one lug (L2) designed to accommodate 8-4/0 AWG wire.



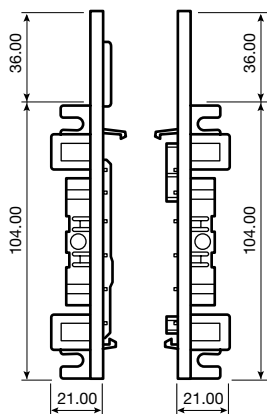
The ZLS253 is a 100 A from either side of incoming module. The module is designed to allow wire to be connected to the system bus. The ZLS253 may be used as an incoming or outgoing device and has one lug (L3) designed to accommodate 8-4/0 AWG wire.

Approximate dimensions

Base end stop Bus stab adaptor

ZLS730 Base end stop

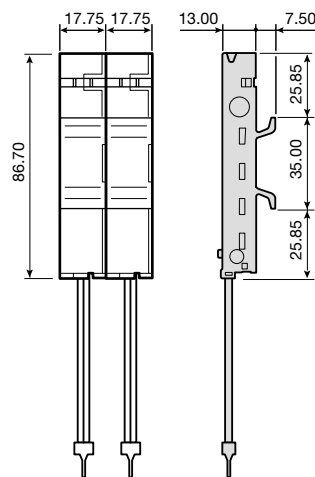
(dimensions in mm)



The ZLS30 end stop is designed to insulate and secure the ends of a SMISSLINE assembly. The module electrically isolates the bus bars of the main socket bases and the sockets of the neutral and ground assemblies.

60A 2P Bus stab adaptor

(dimensions in mm)



The bus stab adaptor is designed to connect the assembly bus bar to DIN rail mounted electrical components. SMISSLINE bus stab can be joined together in any configuration.

2 Pole combination adaptor; 60 A clip on top side of ZLS806

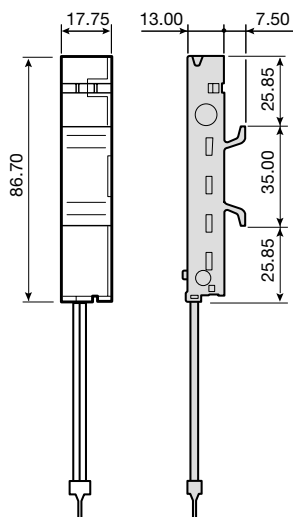
L1, L2 ZLS186TT12
L1, L2 ZLS188TB12
L1, L3 ZLS186TT13

2 Pole combination adaptor; 60 A clip on top side ZLS806, ZLS808 socket base and bottom fed

L1, L3 ZLS186TT23
L1, L3 ZLS188TB23
L1, L3 ZLS188TB13

60A 1P Bus stab adaptor

(dimensions in mm)



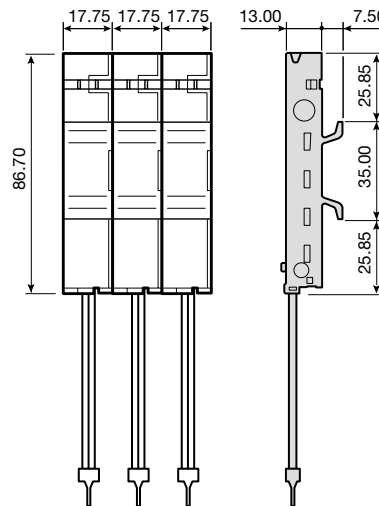
The bus stab adaptor is designed to connect the assembly bus bar to DIN rail mounted electrical components. SMISSLINE bus stab can be joined together in any configuration.

Bus stab adaptors:

ZS170 (N), ZLS171 (L1), ZLS172 (L2), ZLS173 (L3)
ZLS166 (N), ZLS167 (L1), ZLS168 (L2), ZLS169 (L3)

60A 3P Bus stab adaptor

(dimensions in mm)



The bus stab adaptor is designed to connect the assembly bus bar to DIN rail mounted electrical components. SMISSLINE bus stab can be joined together in any configuration.

3 Pole combination adaptor; 60 A clip on top side of ZLS806, ZLS808 socket bottom fed

L1, L2, L3 ZLS183TB

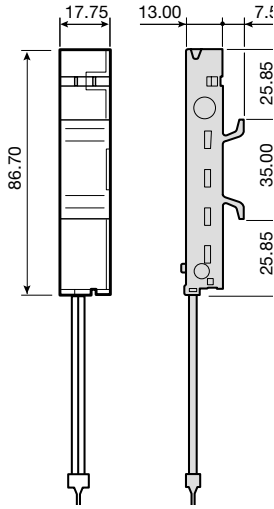
3 Pole combination adaptor; 60 A clip on top side ZLS806, ZLS808 with top and feed

L1, L2, L3 ZLS183TT

Approximate dimensions

30A 1P Bus stab adaptor

(dimensions in mm)



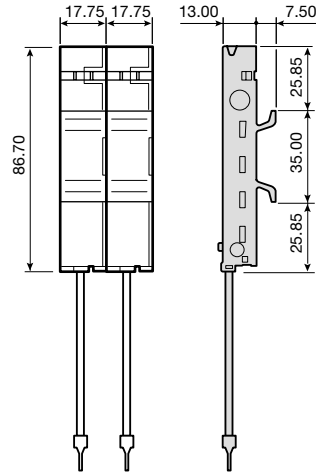
The bus stab adaptor is designed to connect the assembly bus bar to DIN rail mounted electrical components. SMISSLINE bus stab can be joined together in any configuration.

Bus stab adaptors:

ZS160 (N), ZLS161 (L1), ZLS162 (L2), ZLS163 (L3)
ZLS176 (N), ZLS177 (L1), ZLS178 (L2), ZLS179 (L3)

30A 2P Bus stab adaptor

(dimensions in mm)



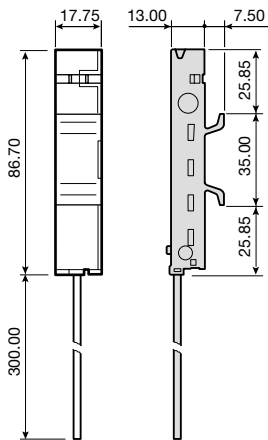
Bus stab adaptors:

- ZLS185TT12 [Wire on clip side of ZLS808, ZLS806 socket base]
- ZLS185TT23 [Wire on clip side of ZLS808, ZLS806 socket base]
- ZLS185TT13 [Wire on clip side of ZLS808, ZLS806 socket base]
- ZLS187TB12 [Wire on opposite clip side of ZLS808, ZLS806 socket base]
- ZLS187TB23 [Wire on opposite clip side of ZLS808, ZLS806 socket base]
- ZLS187TB13 [Wire on opposite clip side of ZLS808, ZLS806 socket base]
- ZLS187BT12 [Wire on opposite clip side of ZLS808, ZLS806 socket base]
- ZLS187BT23 [Wire on opposite clip side of ZLS808, ZLS806 socket base]
- ZLS187BT13 [Wire on opposite clip side of ZLS808, ZLS806 socket base]
- ZLS185BB12 [Wire on clip side of ZLS808, ZLS806 socket base]
- ZLS185BB23 [Wire on clip side of ZLS808, ZLS806 socket base]
- ZLS185BB13 [Wire on clip side of ZLS808, ZLS806 socket base]

The bus stab adaptor is designed to connect the assembly bus bar to DIN rail mounted electrical components. SMISSLINE bus stab can be joined together in any configuration.

30A 1P 300 mm Bus stab adaptor

(dimensions in mm)



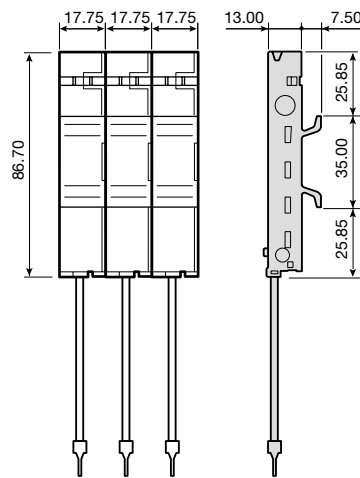
The bus stab adaptor is designed to connect the assembly bus bar to DIN rail mounted electrical components. SMISSLINE bus stab can be joined together in any configuration.

Bus stab adaptors with 300 mm wire:

ZS161L300 (L1), ZLS162L300 (L2), ZLS163L300 (L3)
ZLS177L300 (L1), ZLS178L300 (L2), ZLS179L300 (L3)

30A 3P Bus stab adaptor

(dimensions in mm)



The bus stab adaptor is designed to connect the assembly bus bar to DIN rail mounted electrical components. SMISSLINE bus stab can be joined together in any configuration.

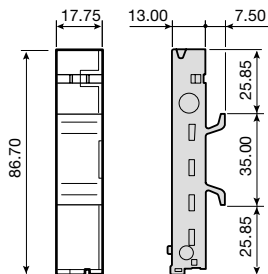
Bus stab adaptors:

- ZLS183TT (Wire on clip side of ZLS808, ZLS806 socket base)
- ZLS183TB (Wire on opposite clip side of ZLS808, ZLS806 socket base)
- ZLS183BT (Wire on opposite clip side of ZLS808, ZLS806 socket base)
- ZLS183BB (Wire on clip side of ZLS808, ZLS806 socket base)

Approximate dimensions

Blank adaptor – ZLS164

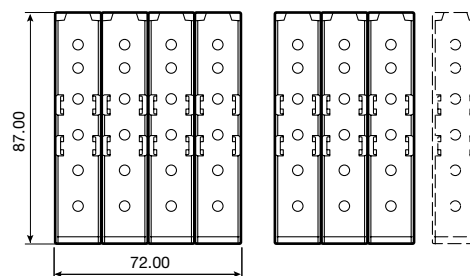
(dimensions in mm)



The ZLS164 blank adaptor is designed to connect DIN Rail mounted components to the SMISSLINE base assembly. The blank adaptor does not have a bus stab or wiring and may be combined with any other bus stab adaptor.

Bus covers – ZLS100

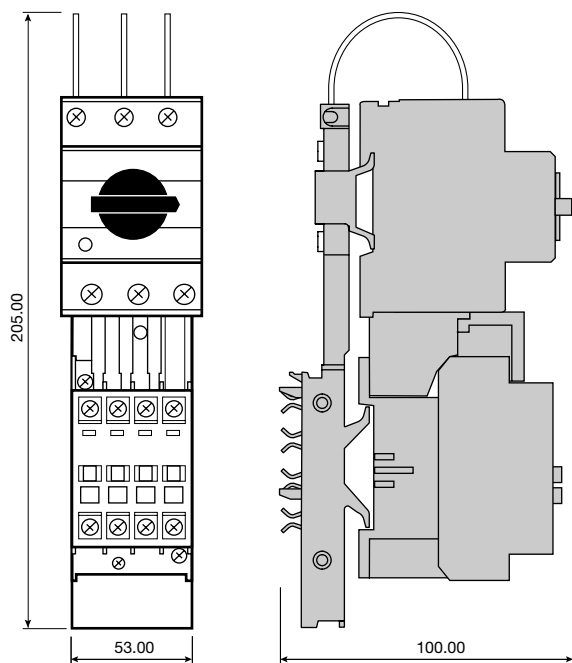
(dimensions in mm)



The ZLS100 bus covers are designed to insulate all energized components by “pluggin” into ZLS808 or ZLS806 socket base. The covers are finger safe and can be customized to create a 1 pole, 2 pole, or 4 pole device. The six (6) holes in the covers allow maintenance personnel to test the assembly bus without exposure to energized parts.

Combination motor starter – ZLS-MS325

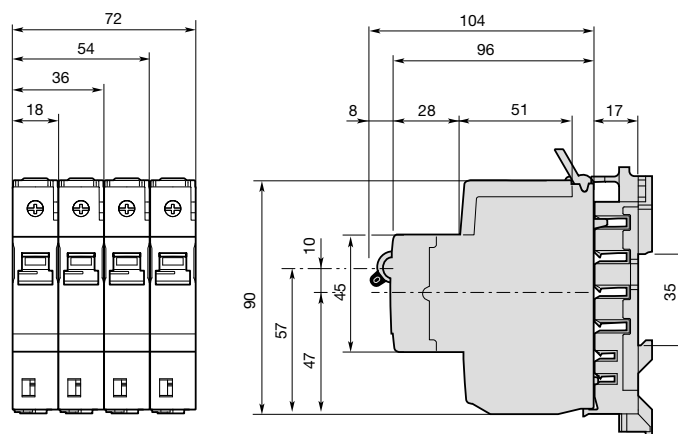
(dimensions in mm)



The ZLS-MS325 is a combination motor starter assembly that is integrated into SMISSLINE. The combo-starter provides a disconnect means, short circuit protection, and overload protection in one compact package. The ZLA-MS325 range is available between 5HP through 15 HP at 480 V AC and .5 HP through 7.5 HP at 240 V AC.

1, 2 and 3 pole miniature circuit breakers – S400

(dim. in mm)



Motor starter assemblies:

480 V AC

ZLS325-480-0.5
ZLS325-480-.75
ZLS325-480-1
ZLS325-480-2
ZLS325-480-3
ZLS325-480-5
ZLS325-480-7.5
ZLS325-480-10
ZLS325-480-15

240 V AC

ZLS325-240-0.5
ZLS325-240-1
ZLS325-240-2
ZLS325-240-3
ZLS325-240-5
ZLS325-240-7.5

IEC

							EN60947-2	EN60898-1	EN61008-1	EN61009-1	EN61643-11	EN60947-3	EN60439-1	EN60439-2	EN60898-2	EN62019
Miniature circuit breaker 10kA B S400 M	■	■				■	■									
Miniature circuit breaker 10kA C S400 M	■	■		■	■	■	■	■								
Miniature circuit breaker 10kA D S400 M	■	■		■	■	■	■	■								
Miniature circuit breaker 10kA K S400 M	■	■		■	■	■	■									
Miniature circuit breaker 10kA S400UC, C, Z							■									
2-pole residual current operated circuit breaker F402	■	■			■	■			■							
2-pole short time delayed residual current operated circuit breaker F402 K	■	■			■	■			■							
2-pole residual current operated circuit breaker with overcurrent protection FS401	■	■			■	■				■						
2-pole short time delayed residual current operated circuit breaker with overcurrent protection FS401 K	■	■			■	■				■						
4-pole residual current operated circuit breaker F404	■	■			□	■			■							
4-pole short time delayed residual current operated circuit breaker F404 K	■	■			□	■			■							
4-pole selective residual current operated circuit breaker F404 S	■	■			□	■			■							
4-pole residual current operated circuit breaker, special design 16 2/3 Hz F404 LF						■			■							
High performance manual motor starter MS325			■				■									
Switch disconnecter IS404	■										■					
Surge arrester OVR 404											■					
Auxiliary switch and signal contacts (1NO, 1NC)	■			■	■	■						■				■
Socket bases ZLS806/808	■			■	■							■	■			
Incoming terminal blocks ZLS224/225	■			■	■							■	■			
Incoming terminal component ZLS250-255	■			■	■							■	■			
Universal adapter 30A (UR 30A)	■			■	■							■	■			
Universal adapter 60A (UR 60A)	■			■	■							■	■			
Universal adapter 100A ZLS240, 241				■	■							■	■			
Terminals for additional socket ZLS812, ZLS815				■	■							■	■			
Terminals for additional socket ZLS813, ZLS816				■	■							■	■			
Combi module				■	■							■	■			
2MS 915,923 adapter for MS325																

UL

			UL508 E222110	UL489 E312425
Miniature circuit breaker S400U ①		■		■
Auxiliary Switch S2C-H6RU		■		■
Locking device ZLS501		■		■
Dummy housing ZLS502		■		■
Socket bases ZLS806/808	■		■	■
Bus Bar ZLS200	■		■	■
Bus Bar Cover ZLS100	■		■	■
Extension Adapter ZLS101	■		■	■
Socket End Piece ZLS730	■		■	■
Incoming terminal blocks ZLS224/225	■		■	■
Incoming terminal component ZLS250-253	■		■	■
Bus Bar insulator ZLS239	■		■	■
Universal adapter 25A ZLS177-179U		■		■
Universal adapter 45A167-169U		■		■
Dummy adapter ZLS164		■		■
Connecton ZLS174		■		■
Combi module ZLS840	■		■	

■ Approved
 □ Device is submitted for approval

NOTE

① These marked MCBs are no longer available. Please use S200U with appropriate universal adapters ZLS1XYU with appropriate number of poles and bus connector L1, L2, L3, for these current ratings and number of poles.