

Altech UL1077/508 Busbar System



UL1077/508 Listed Busbars

The Altech Busbar System is an innovative way to jumper up to 57 poles of Manual Motor Controllers (MMC) and Supplementary Protectors (SP).

The advantages of this busbar system are:

- 30% Installation time savings
- Panel space savings
- Reduced maintenance
- High electrical ratings

UL1077/508 Busbar System

- 1-57 different pin configurations
- 1/2 pole spacing (auxiliary switch) available
- Power Feeding:
Power Feed Lugs (115A), Direct Power Feed (115A), Power Feed Block (200A)
- UL recognized and listed for Altech's R-Series, ABL's UR, V-EA and MA Series of Manual Motor Controllers and Supplementary Protectors
- UL recognized and listed for use with most popular UL1077 supplementary protectors and UL508 Manual Motor Controllers in the market.
- Customers can cut the Busbar without losing the UL approval
- Line/Load reversible

Technical Specifications

Material of Busbar

Busbars UL1077/ 508

Copper

Material of Insulation (Housing)

Polyamide

Electrical Ratings

18mm²: 80A/600V AC/DC*

25mm²: 100A/600V AC/DC*

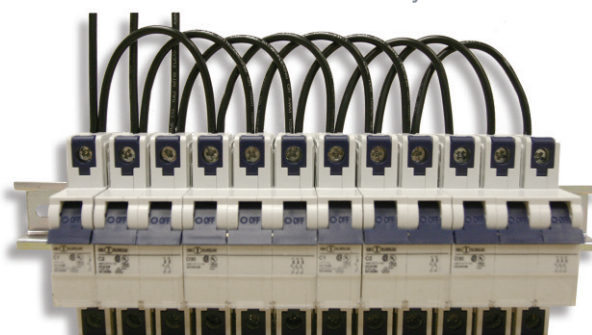
Short Circuit Withstand Rating

10kA

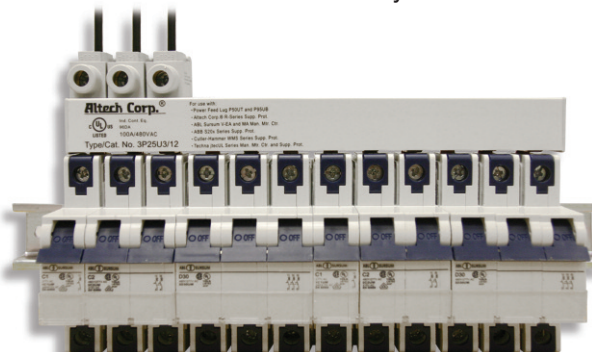
Applying Standards

UL508, VDE0660 Part 100 and 502,
VDE 0606, VDE 0659

Without Altech Busbar System



With Altech Busbar System



Universal UL1077/508 Busbar fits most Supplementary Protectors and Manual Motor Controllers in the market!

Please contact Altech for details and further information.

* 1000VDC ratings can be achieved by using all poles at the same voltage and polarity.

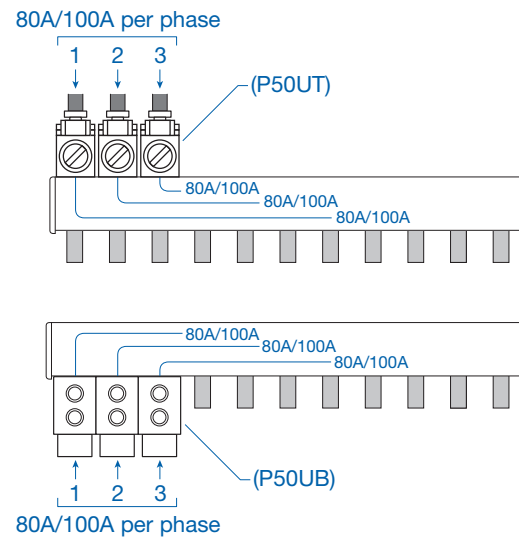
Altech UL1077/508 Busbar System

Power Feed Methods

1) Start/ End Feed Method

P50UT* / P50UB*

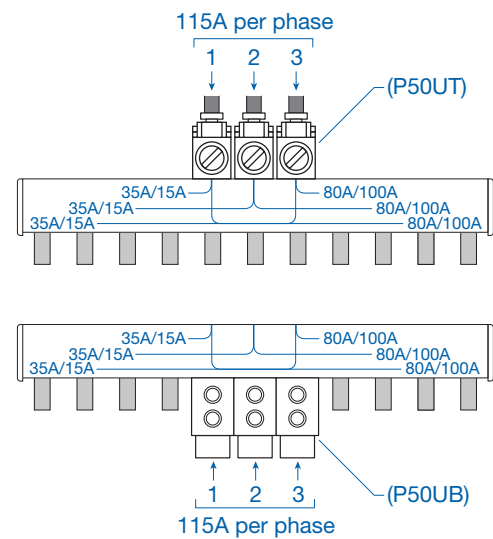
With the **P50UT** Power Feed Lug or the **P50UB** Modular Direct Power Feed as a Start/End Feeding Device a maximum input current of **80A/100A per Phase** can be achieved. 80A with 18mm² Busbar and 100A with 25mm² Busbar.



2) Center/ Middle Feed Method

P50UT* / P50UB*

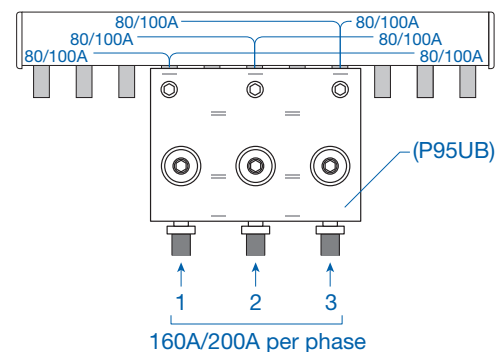
With the **P50UT** Power Feed Lug or the **P50UB** Modular Direct Power Feed as a Center/Middle Feeding Device a maximum input current of **115A per Phase** can be achieved. (18mm²: 80A + 35A; 25mm²: 100A + 15A)



P95UB*

With the **P95UB** Power Feed Block as a Center/Middle Feeding Device a maximum input current of **160A/200A per Phase** can be achieved (160A with 18mm² Busbar and 200A with 25mm² Busbar).

Note: The Power Feed Block can only be used with a standard spacing **3 Phase** UL1077/508 Busbar.



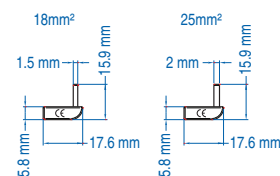
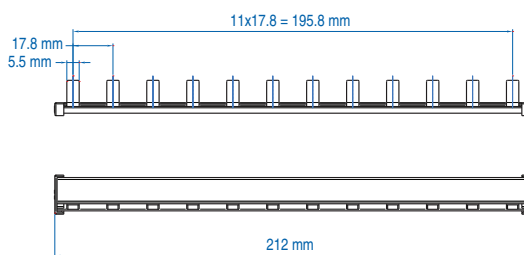
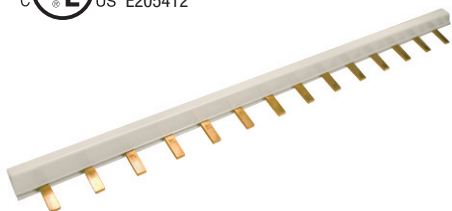
* For complete specifications and description of Feeding Devices see page 78-79.

1 PHASE BUSBAR - standard spacing

18mm² for 80A



UL508 listed
US E205412



shown: 1P18U1/12

18mm² for 80A*

Type/ Cat. No.	No. of Pins	Length [mm]
1P18U1/2	2	32
1P18U1/3	3	54
1P18U1/4	4	79
1P18U1/5	5	88
1P18U1/6	6	106
1P18U1/7	7	122
1P18U1/8	8	140
1P18U1/9	9	158
1P18U1/10	10	177
1P18U1/11	11	195
1P18U1/12	12	212
1P18U1/13	13	230
1P18U1/14	14	248
1P18U1/15	15	269
1P18U1/16	16	286
1P18U1/17	17	304
1P18U1/18	18	322
1P18U1/19	19	340
1P18U1/20	20	354
1P18U1/21	21	374
1P18U1/22	22	392
1P18U1/23	23	410
1P18U1/24	24	428
1P18U1/25	25	446
1P18U1/26	26	464
1P18U1/27	27	482
1P18U1/28	28	500
1P18U1/29	29	518

18mm² for 80A*

Type/ Cat. No.	No. of Pins	Length [mm]
1P18U1/30	30	536
1P18U1/31	31	554
1P18U1/32	32	572
1P18U1/33	33	590
1P18U1/34	34	608
1P18U1/35	35	626
1P18U1/36	36	638
1P18U1/37	37	656
1P18U1/38	38	674
1P18U1/39	39	692
1P18U1/40	40	710
1P18U1/41	41	728
1P18U1/42	42	746
1P18U1/43	43	764
1P18U1/44	44	782
1P18U1/45	45	800
1P18U1/46	46	818
1P18U1/47	47	836
1P18U1/48	48	854
1P18U1/49	49	872
1P18U1/50	50	890
1P18U1/51	51	908
1P18U1/52	52	926
1P18U1/53	53	942
1P18U1/54	54	960
1P18U1/55	55	978
1P18U1/56	56	996
1P18U1/57	57	1014

ACCESSORIES



Type/Cat. No: **P50UT-LP**
Description: Power Feed Lug



Type/Cat. No: **P50UB**
Description: Modular Direct Power Feed



Type/Cat. No: **BRB5W**
Description: Insulation Cap

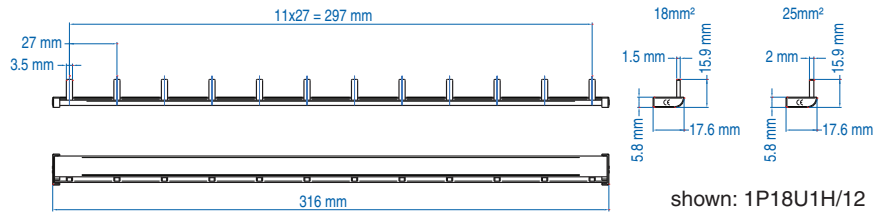
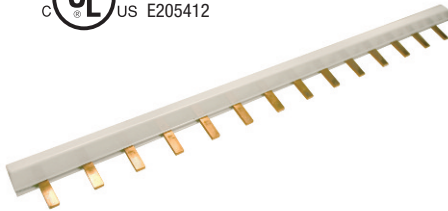


Type/Cat. No: **18/25CAP1P**
Description: End Cap

* 25mm² version for 100A available upon request.

1 PHASE BUSBAR - 1/2 pole spacing

18mm² for 80A



shown: 1P18U1H/12

18mm ² for 80A*		
Type/ Cat. No.	No. of Pins	Length [mm]
1P18U1H/2	2	40
1P18U1H/3	3	68
1P18U1H/4	4	95
1P18U1H/5	5	122
1P18U1H/6	6	150
1P18U1H/7	7	176
1P18U1H/8	8	204
1P18U1H/9	9	230
1P18U1H/10	10	258
1P18U1H/11	11	284
1P18U1H/12	12	316
1P18U1H/13	13	338
1P18U1H/14	14	365
1P18U1H/15	15	392
1P18U1H/16	16	420
1P18U1H/17	17	446
1P18U1H/18	18	474
1P18U1H/19	19	500

18mm ² for 80A*		
Type/ Cat. No.	No. of Pins	Length [mm]
1P18U1H/20	20	528
1P18U1H/21	21	554
1P18U1H/22	22	582
1P18U1H/23	23	608
1P18U1H/24	24	635
1P18U1H/25	25	662
1P18U1H/26	26	690
1P18U1H/27	27	716
1P18U1H/28	28	744
1P18U1H/29	29	770
1P18U1H/30	30	798
1P18U1H/31	31	824
1P18U1H/32	32	852
1P18U1H/33	33	878
1P18U1H/34	34	905
1P18U1H/35	35	932
1P18U1H/36	36	960

ACCESSORIES



Type/Cat. No: P50UT-LP
Description: Power Feed Lug



Type/Cat. No: P50UB
Description: Modular Direct Power Feed



Type/Cat. No: BRB5W
Description: Insulation Cap

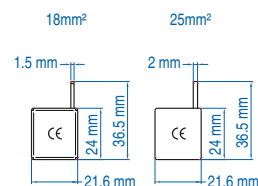
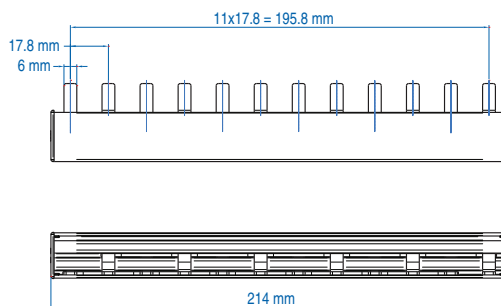


Type/Cat. No: 18/25CAP1P
Description: End Cap

* 25mm² version for 100A available upon request.

2 PHASE BUSBAR - standard spacing

18mm² for 80A / 25mm² for 100A



shown: 2P18U3/12

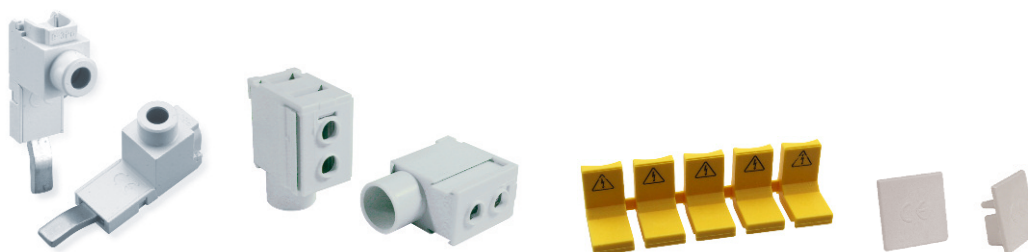
18mm² for 80A

Type/ Cat. No.	No. of Pins	Length [mm]
2P18U3/4	4	69
2P18U3/6	6	104
2P18U3/8	8	140
2P18U3/10	10	177
2P18U3/12	12	214
2P18U3/14	14	249
2P18U3/16	16	283
2P18U3/18	18	319
2P18U3/20	20	357
2P18U3/22	22	390
2P18U3/24	24	426
2P18U3/26	26	460
2P18U3/28	28	498
2P18U3/30	30	532
2P18U3/32	32	568
2P18U3/34	34	604
2P18U3/36	36	640
2P18U3/38	38	675
2P18U3/40	40	710
2P18U3/42	42	746
2P18U3/44	44	782
2P18U3/46	46	818
2P18U3/48	48	854
2P18U3/50	50	888
2P18U3/52	52	924
2P18U3/54	54	960
2P18U3/56	56	994

25mm² for 100A

Type/ Cat. No.	No. of Pins	Length [mm]
2P25U3/4	4	69
2P25U3/6	6	104
2P25U3/8	8	140
2P25U3/10	10	177
2P25U3/12	12	214
2P25U3/14	14	249
2P25U3/16	16	283
2P25U3/18	18	319
2P25U3/20	20	357
2P25U3/22	22	390
2P25U3/24	24	426
2P25U3/26	26	460
2P25U3/28	28	498
2P25U3/30	30	532
2P25U3/32	32	568
2P25U3/34	34	604
2P25U3/36	36	640
2P25U3/38	38	675
2P25U3/40	40	710
2P25U3/42	42	746
2P25U3/44	44	782
2P25U3/46	46	818
2P25U3/48	48	854
2P25U3/50	50	888
2P25U3/52	52	924
2P25U3/54	54	960
2P25U3/56	56	994

ACCESSORIES



Type/Cat. No: P50UT

Description: Power Feed Lug

P50UB

Description: Modular Direct Power Feed

BRB5W

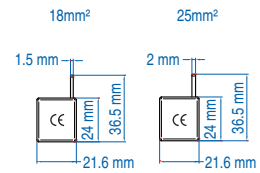
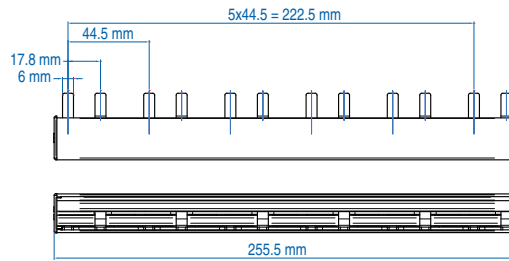
Description: Insulation Cap

18/25CAP3P

Description: End Cap

2 PHASE BUSBAR - 1/2 pole spacing

18mm² for 80A / 25mm² for 100A



shown: 2P18U3H/12

UL 489

UL 508

UL 1077

UL 1077
Equipment Breakers

Earth Leakage
Circuit Breakers

ANNEX

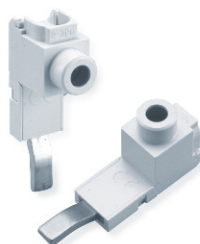
18mm² for 80A

Type/ Cat. No.	No. of Pins	Length [mm]
2P18U3H/4	4	78
2P18U3H/6	6	124
2P18U3H/8	8	168
2P18U3H/10	10	212
2P18U3H/12	12	256
2P18U3H/14	14	302
2P18U3H/16	16	346
2P18U3H/18	18	390
2P18U3H/20	20	435
2P18U3H/22	22	480
2P18U3H/24	24	524
2P18U3H/26	26	568
2P18U3H/28	28	612
2P18U3H/30	30	658
2P18U3H/32	32	702
2P18U3H/34	34	746
2P18U3H/36	36	790
2P18U3H/38	38	835
2P18U3H/40	40	880
2P18U3H/42	42	924
2P18U3H/44	44	968
2P18U3H/46	46	1012
2P18U3H/48	48	1058
2P18U3H/50	50	1102
2P18U3H/52	52	1146
2P18U3H/54	54	1192
2P18U3H/56	56	1235

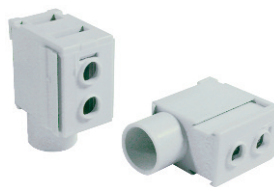
25mm² for 100A

Type/ Cat. No.	No. of Pins	Length [mm]
2P25U3H/4	4	78
2P25U3H/6	6	124
2P25U3H/8	8	168
2P25U3H/10	10	212
2P25U3H/12	12	256
2P25U3H/14	14	302
2P25U3H/16	16	346
2P25U3H/18	18	390
2P25U3H/20	20	435
2P25U3H/22	22	480
2P25U3H/24	24	524
2P25U3H/26	26	568
2P25U3H/28	28	612
2P25U3H/30	30	658
2P25U3H/32	32	702
2P25U3H/34	34	746
2P25U3H/36	36	790
2P25U3H/38	38	835
2P25U3H/40	40	880
2P25U3H/42	42	924
2P25U3H/44	44	968
2P25U3H/46	46	1012
2P25U3H/48	48	1058
2P25U3H/50	50	1102
2P25U3H/52	52	1146
2P25U3H/54	54	1192
2P25U3H/63	56	1235

ACCESSORIES



Type/Cat. No: **P50UT**
Description: Power Feed Lug



Type/Cat. No: **P50UB**
Description: Modular Direct Power Feed



Type/Cat. No: **BRB5W**
Description: Insulation Cap



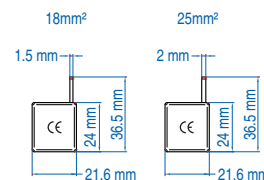
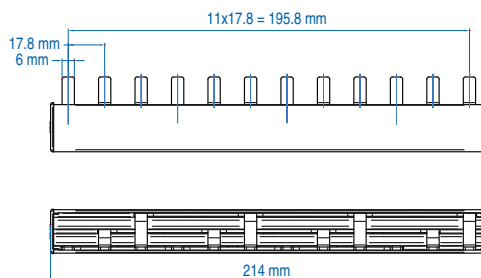
Type/Cat. No: **18/25CAP3P**
Description: End Cap

3 PHASE BUSBAR - standard spacing

18mm² for 80A / 25mm² for 100A



UL508 listed
US E205412



shown: 3P18U3/12

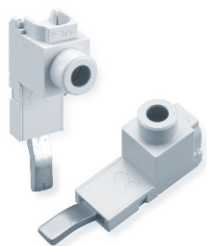
18mm² for 80A

Type/ Cat. No.	No. of Pins	Length [mm]
3P18U3/6	6	104
3P18U3/9	9	159
3P18U3/12	12	214
3P18U3/15	15	266
3P18U3/18	18	318
3P18U3/21	21	374
3P18U3/24	24	427
3P18U3/27	27	481
3P18U3/30	30	545
3P18U3/33	33	586
3P18U3/36	36	639
3P18U3/39	39	692
3P18U3/42	42	746
3P18U3/45	45	800
3P18U3/48	48	854
3P18U3/51	51	906
3P18U3/54	54	960
3P18U3/57	57	1012

25mm² for 100A

Type/ Cat. No.	No. of Pins	Length [mm]
3P25U3/6	6	104
3P25U3/9	9	159
3P25U3/12	12	214
3P25U3/15	15	266
3P25U3/18	18	318
3P25U3/21	21	374
3P25U3/24	24	427
3P25U3/27	27	481
3P25U3/30	30	545
3P25U3/33	33	586
3P25U3/36	36	639
3P25U3/39	39	692
3P25U3/42	42	746
3P25U3/45	45	800
3P25U3/48	48	854
3P25U3/51	51	906
3P25U3/54	54	960
3P25U3/57	57	1012

ACCESSORIES



Type/Cat. No: **P50UT**
Description: Power Feed Lug



Type/Cat. No: **P50UB**
Description: Modular Direct Power Feed



Type/Cat. No: **P95UB**
Description: Power Feed Block



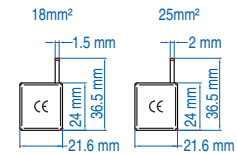
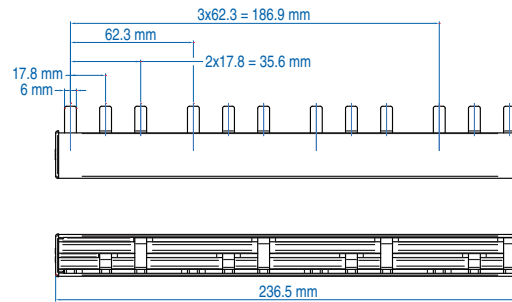
Type/Cat. No: **BRB5W**
Description: Insulation Cap



Type/Cat. No: **18/25CAP3P**
Description: End Cap

3 PHASE BUSBAR - 1/2 pole spacing

18mm² for 80A / 25mm² for 100A



shown: 3P18U3H/12

UL 489

UL 508

UL 1077

UL 1077
Equipment Breakers

Earth Leakage
Circuit Breakers

ANNEX

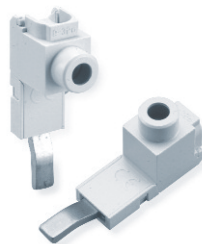
18mm² for 80A

Type/ Cat. No.	No. of Pins	Length [mm]
3P18U3H/6	6	114
3P18U3H/9	9	176
3P18U3H/12	12	235
3P18U3H/15	15	302
3P18U3H/18	18	364
3P18U3H/21	21	426
3P18U3H/24	24	488
3P18U3H/27	27	550
3P18U3H/30	30	612
3P18U3H/33	33	675
3P18U3H/36	36	738
3P18U3H/39	39	800
3P18U3H/42	42	862
3P18U3H/45	45	924
3P18U3H/48	48	982
3P18U3H/51	51	1048
3P18U3H/54	54	1112
3P18U3H/57	57	1174

25mm² for 100A

Type/ Cat. No.	No. of Pins	Length [mm]
3P25U3H/6	6	114
3P25U3H/9	9	176
3P25U3H/12	12	235
3P25U3H/15	15	302
3P25U3H/18	18	364
3P25U3H/21	21	426
3P25U3H/24	24	488
3P25U3H/27	27	550
3P25U3H/30	30	612
3P25U3H/33	33	675
3P25U3H/36	36	738
3P25U3H/39	39	800
3P25U3H/42	42	862
3P25U3H/45	45	924
3P25U3H/48	48	982
3P25U3H/51	51	1048
3P25U3H/54	54	1112
3P25U3H/57	57	1174

ACCESSORIES



Type/Cat. No: **P50UT**
Description: Power Feed Lug



Type/Cat. No: **P50UB**
Description: Modular Direct Power Feed



Type/Cat. No: **BRB5W**
Description: Insulation Cap



Type/Cat. No: **18/25CAP3P**
Description: End Cap

Power Feed Devices

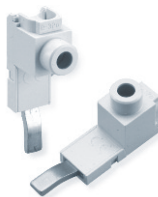
Easy connection of power supply wires to the busbar/MCB. Power Feed Devices ensure permanent connection.

Power Feed Lug



UL508 listed
E205412

Power Feed Lug



UL508 listed
E205412

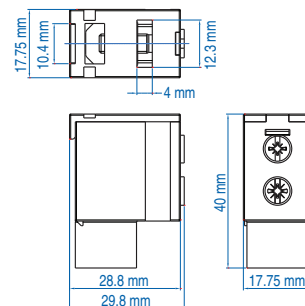
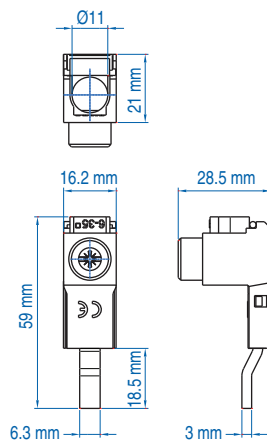
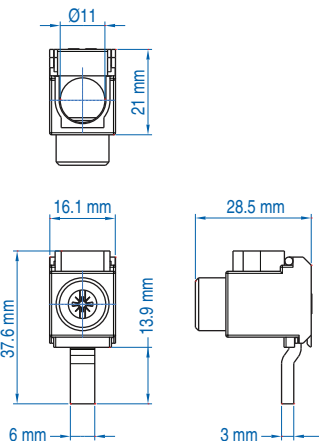
Modular Direct Power Feed



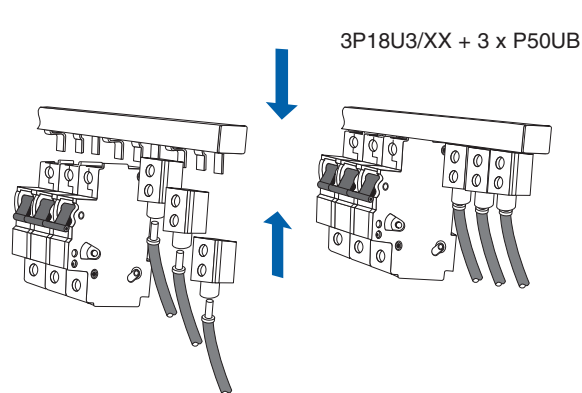
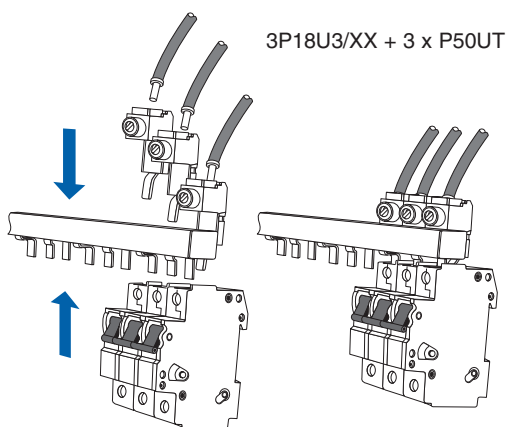
UL508 listed
E205412

Type/Cat. No.	P50UT-LP	P50UT	P50UB
Electrical Ratings	115A/1000V AC/DC	115A/1000V AC/DC	115A/1000V AC/DC
Wire Range	10-1/0 AWG Cu	10-1/0 AWG Cu	14-1 AWG Cu
Wire Temperature Rating	60°C	60°C	75°C
Recommended/ Required Torque	5.6Nm (50lb. in.)	5.6Nm (50lb. in.)	Cable 3.5Nm/31 lb. in. (14-6AWG) Side 4Nm/35.4 lb. in. (4-1AWG) Busbar Side 2.5Nm/22 lb. in.
Material of Lug/ Terminal	Brass	Brass	Brass
Insulation Material	Polyamide	Polyamide	Polyamide
For use with	UL1077/508 18 and 25mm ² 1 phase busbars	UL1077/508 18 and 25mm ² 2, 3 phase busbars	UL1077/508 18 and 25mm ² 1, 2, 3 phase busbars

Dimensions



Assembly Instructions



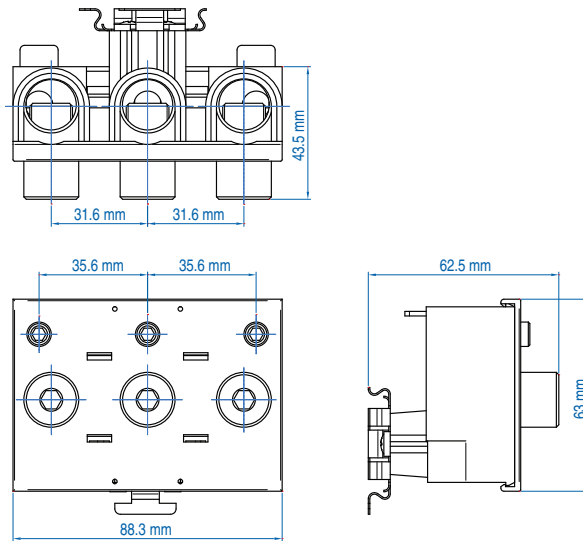
The power feed lugs (Cat. # P50UT) fit together with the lugs of the busbar in the terminals of the connected device.

Power Feed Block

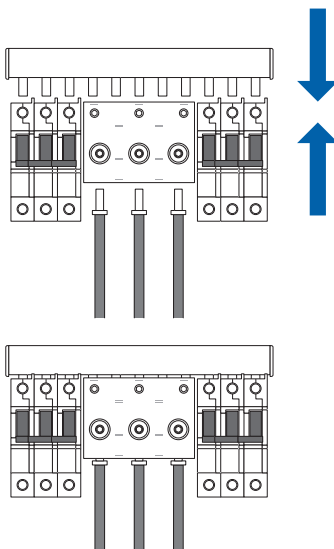


Type/Cat. No.	P95UB
Electrical Ratings	200A/ 600V AC/DC
Wire Range	1-4/0 AWG Cu
Wire Temperature Rating	75°C
Recommended/ Required Torque	19.5Nm (175lb. in.)
Material of Lug/ Terminal	Brass
Insulation Material	Polyamide
For use with	UL1077/508 18 and 25mm ² 3 phase busbars (standard spacing only)

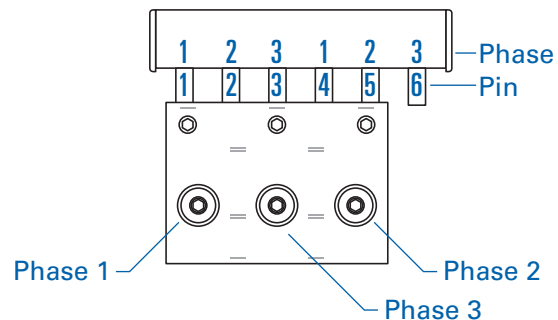
Dimensions



Assembly Instructions



NOTE: The Power Feed Block uses the space of 5 Pins of the standard spacing Busbar (see drawing below). Phase 1 connects to Pin 1, Phase 2 to Pin 3 and Phase 3 to Pin 5. Pin 2 and 4 are not in use. Pin 6 should be covered with an insulation cap if phase sequence stays the same. Therefore, the Power Feed Block covers 6 pins to connect to the three phases.

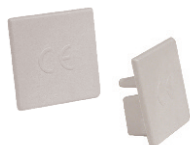


Miscellaneous Accessories

End Caps



18/25CAP1P



18/25CAP3P

Type/Cat. No: **18/25CAP1P**
For use with: 18/25mm² 1 phase Busbar

Type/Cat. No: **18/25CAP3P**
For use with: 18/25mm² 2, 3 phase Busbar

Insulation Caps



Type/Cat. No: **BRB5W** (5 per strip)
For use with: 18/25mm² 1, 2, 3 phase Busbar

UL 489

UL 508

UL 1077

UL 1077
Equipment Breakers

Earth Leakage
Circuit Breakers

ANNEX

Altech UL489 Busbar System



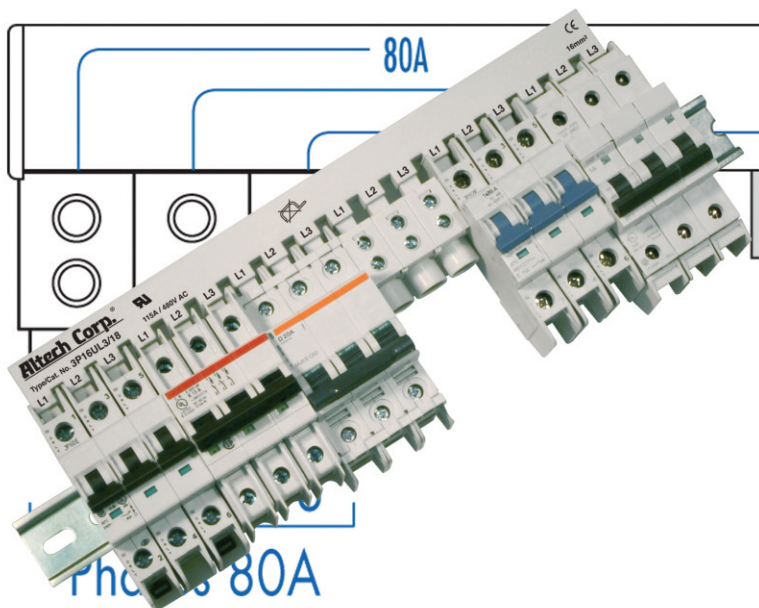
UL489 recognized
E305318

UL489 Listed Busbars

The Altech Busbar System is an innovative way to jumper up to 57 poles of Miniature Molded Case Circuit Breakers.

The advantages of this busbar system are:

- 30% Installation time savings
- Panel space savings
- Reduced maintenance
- High electrical ratings



**Universal UL489 Busbar
fits most UL489 Miniature
Circuit Breakers in the market!**

Please contact Altech for details and further information.

UL489 Busbar System

- Every pin configuration is possible by combination of existing 6, 12 and 18 pin busbars.
- Power Feeding:
Power Feed Lug (115A), Direct Power Feed (115A)
- UL listed for Altech's L-Series and ABL's UL-Series of Miniature Circuit Breakers
- UL listed for use with most popular UL489 Miniature Circuit Breakers in the market.

Technical Specifications

Material of Busbar

Busbars UL489

Copper

Material of Insulation (Housing)

Polyamide

Electrical Ratings

115A/600V AC/DC

Short Circuit Withstand Rating

10kA

Applying Standards

UL489, VDE0660 Part 100,
IEC60749, DIN EN60947-1

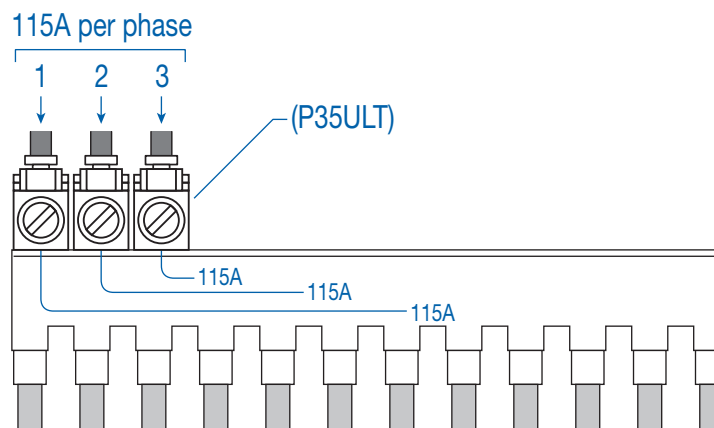
Altech UL489 Busbar System

Power Feed Methods

End Feed Method

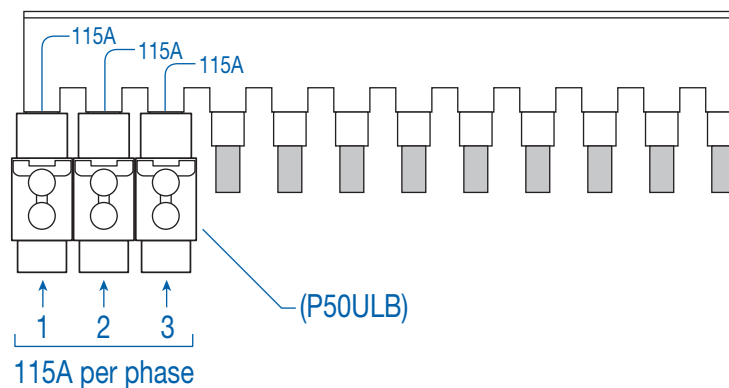
P35ULT

With the **P35ULT** Power Feed Lug as a Start/End Feeding Device a maximum input current of **115A per Phase** can be achieved.



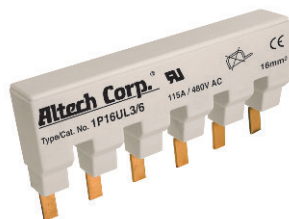
P50ULB

With the **P50ULB** Modular Direct Power Feed as a Start/End Feeding Device a maximum input current of **115A per Phase** can be achieved.



* For complete specifications and description of Feeding Devices see page 33.

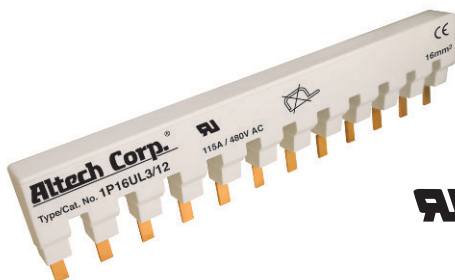
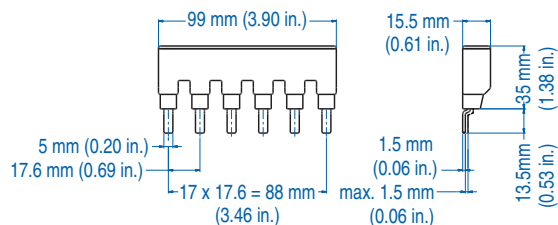
1 PHASE BUSBAR 16mm² for 115A



UL489 recognized
E305318

Type/
Cat. No. No. of Pins Length [mm]

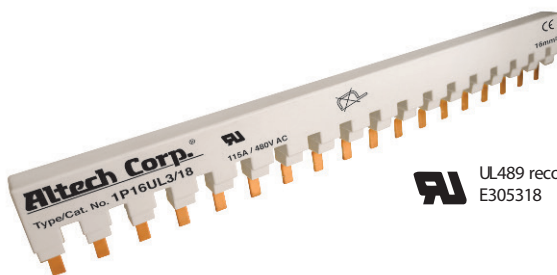
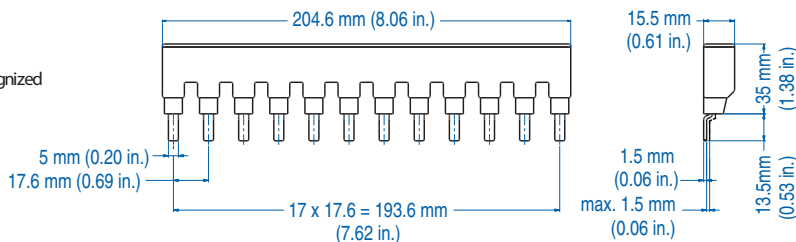
1P16UL3/6 6 99



UL489 recognized
E305318

Type/
Cat. No. No. of Pins Length [mm]

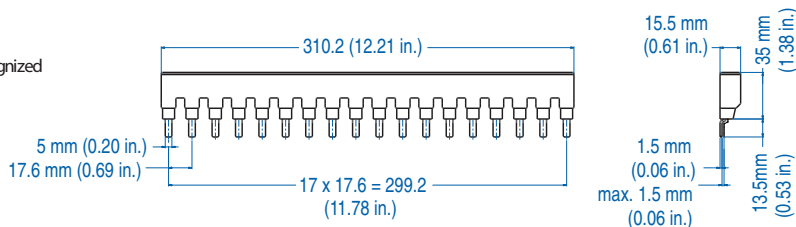
1P16UL3/12 12 204.6



UL489 recognized
E305318

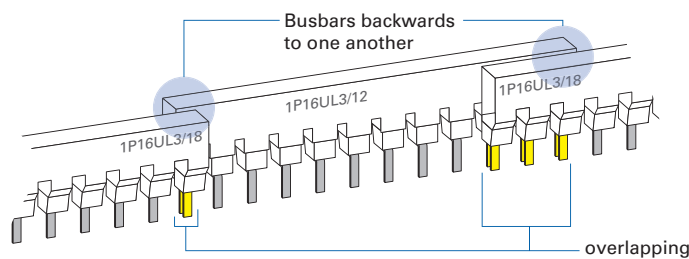
Type/
Cat. No. No. of Pins Length [mm]

1P16UL3/18 18 310.2



Example for different No. of Pins

eg. 44 pins use 1x 1P16UL3/12 + 2x 1P16UL3/18



- No. of overlapping pins of 2 busbars must be a multiplier of the No. of phases
- Overlapping busbars are backwards to each other

ACCESSORIES



Type/Cat. No:

P35ULT

Description:

Power Feed Lug



P50ULB

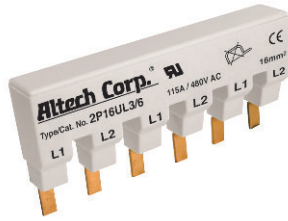
Modular Direct Power Feed



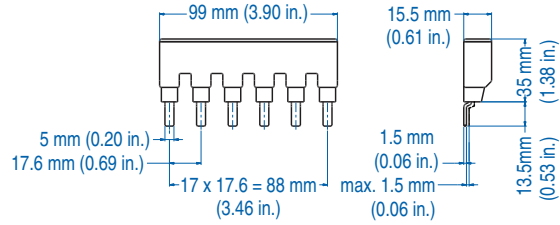
BRUL (3 per strip)

Insulation Cap

2 PHASE BUSBAR 16mm² for 115A

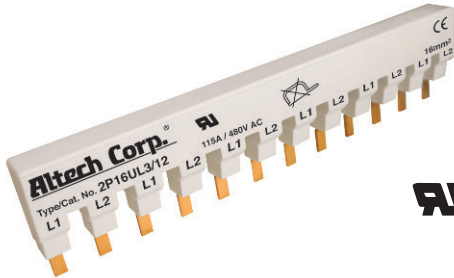


UL489 recognized
E305318

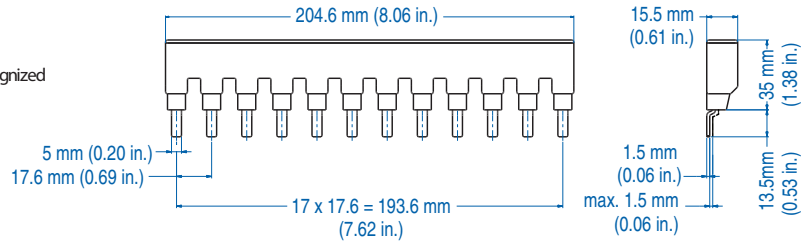


Type/
Cat. No. No. of Pins Length [mm]

2P16UL3/6 6 99

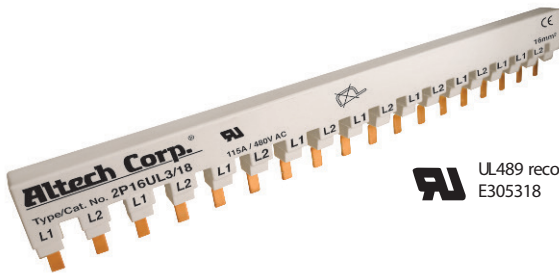


UL489 recognized
E305318

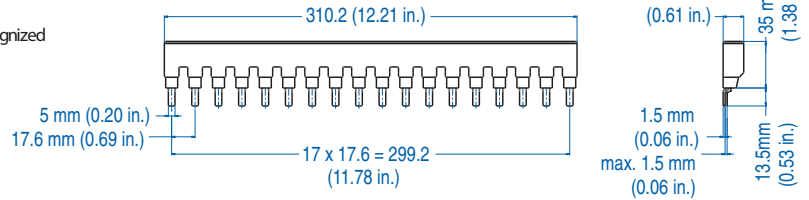


Type/
Cat. No. No. of Pins Length [mm]

2P16UL3/12 12 204.6



UL489 recognized
E305318

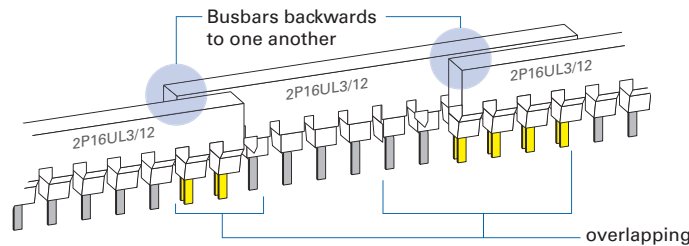


Type/
Cat. No. No. of Pins Length [mm]

2P16UL3/18 18 310.2

Example for different No. of Pins

eg. 30 pins use 3x 2P16UL3/12



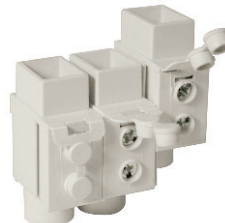
- No. of overlapping pins of 2 busbars must be multiplier of the No. of phases
- Overlapping busbars are backwards to each other

ACCESSORIES



Type/Cat. No. P35ULT

Description: Power Feed Lug



P50ULB

Modular Direct Power Feed



BRUL (3 per strip)

Insulation Cap

UL 489

UL 508

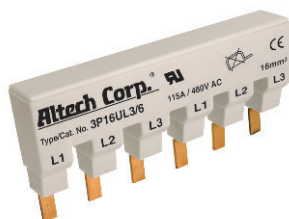
UL 1077

UL 1077
Equipment Breakers

Earth Leakage
Circuit Breakers

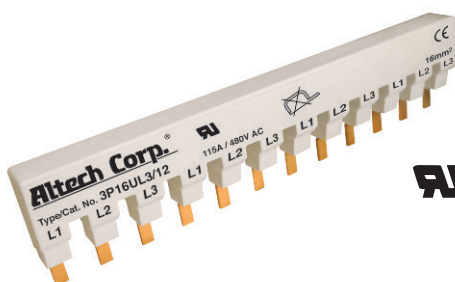
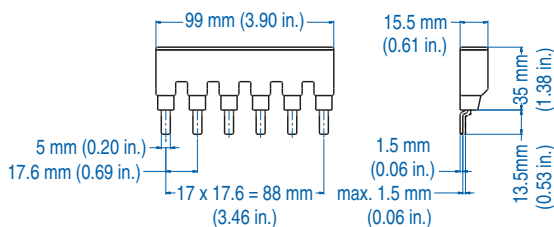
ANNEX

3 PHASE BUSBAR 16mm² for 115A



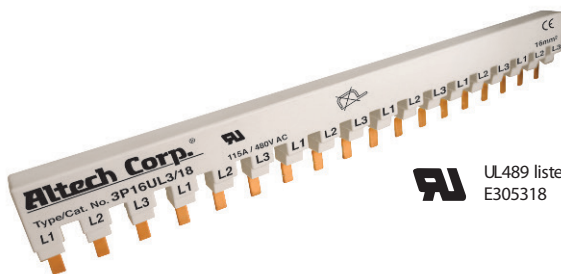
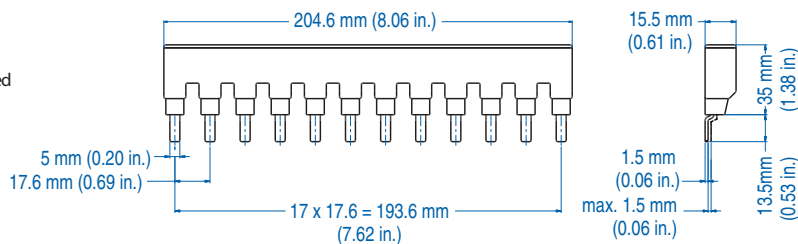
UL489 listed
E305318

Type/ Cat. No.	No. of Pins	Length [mm]
3P16UL3/6	6	99



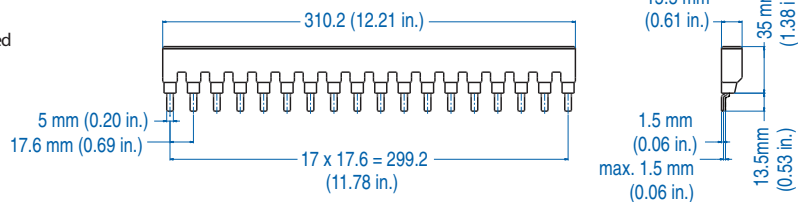
UL489 listed
E305318

Type/ Cat. No.	No. of Pins	Length [mm]
3P16UL3/12	12	204.6



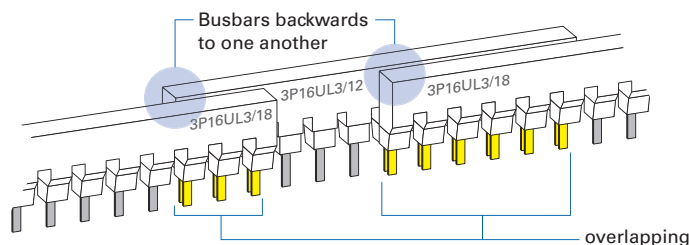
UL489 listed
E305318

Type/ Cat. No.	No. of Pins	Length [mm]
3P16UL3/18	18	310.2



Example for different No. of Pins

eg. 39 pins use 1x 3P16UL3/12 + 2x 3P16UL3/18



- No. of overlapping pins of 2 busbars must be multiplier of the No. of phases
- Overlapping busbars are backwards to each other

ACCESSORIES



Type/Cat. No: **P35ULT**
Description: Power Feed Lug



Type/Cat. No: **P50ULB**
Description: Modular Direct Power Feed



Type/Cat. No: **BRUL** (3 per strip)
Description: Insulation Cap

Power Feed Devices

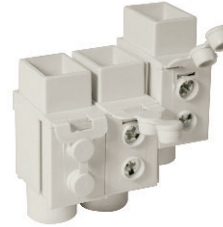
Easy connection of power supply wires to the busbar/MCB. Power Feed Devices ensure permanent connection.

Power Feed Lug



UL489 listed
E305318

Modular Direct Power Feed

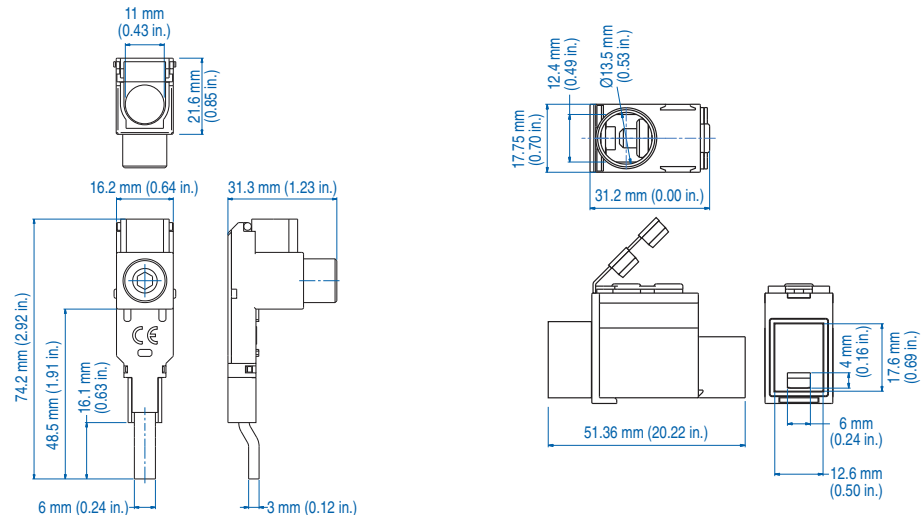


UL489 listed
E305318



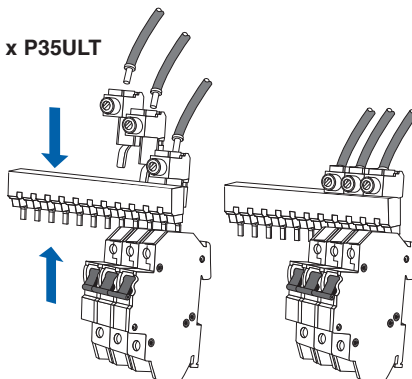
Type/Cat. No.	P35ULT	P50ULB
Electrical Ratings	115A/600V AC/DC	115A/600V AC/DC
Wire Range	14-2 AWG Cu	14-1 AWG Cu
Wire Temperature Rating	75°C	75°C
Required Torque	4Nm (35.4 lb. in.)	Cable 3.5Nm/31 lb. in. (14-6AWG) Side 4Nm/35.4 lb. in. (4-1AWG) Busbar Side 2.5Nm/22 lb. in.
Material of Lug	Brass	Brass
Insulation Material	Polyamide	Polyamide
For use with	UL489 1, 2, 3 phase Busbar	UL489 1, 2, 3 phase Busbar

Dimensions

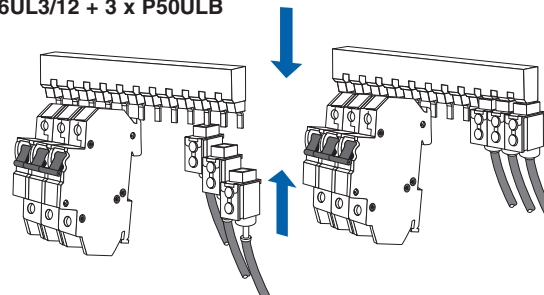


Assembly Instructions

3P16UL3/12 + 3 x P35ULT



3P16UL3/12 + 3 x P50ULB



Accessories

Insulation Caps



Type/Cat. No: BRUL (3 per strip)
Description: Insulation Cap

UL 489

UL 508

UL 1077

UL 1077
Equipment Breakers

Earth Leakage
Circuit Breakers

ANNEX

Altech UL489 Busbar Systems

Configuration and Assembly of UL489 Busbars

UL489 Busbars are available in 3 different Pin Configurations per Phase, (6, 12 and 18 Pins).

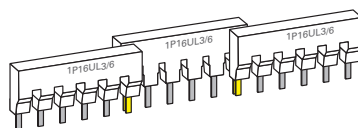
The UL489 busbar cannot be cut, since the creepage and clearance distance requirements from UL are too stringent. Therefore, to obtain the desired No. of Pins, Busbar-Pins can be overlapped as explained below:

- 1) Busbars are overlapped backwards to each other. Both Pins of each Busbar fit together in the terminals of the Miniature Circuit Breaker.
- 2) The Number of overlapping Pins of 2 Busbar must be a multiplier of the Number of Phases to keep existing Phase sequence. (Can be overlapped by more than the number of phases).
- 3) Any available combination of the 3 different Pin configurations is possible.
- 4) In most cases there is more than 1 combination possible.
- 5) For more possible configurations see Busbar Selection Table on page 21.

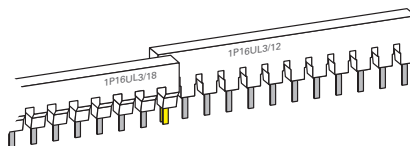
Configuration Examples*

1 Phase

16 Pins: 3 x 1P16UL3/6

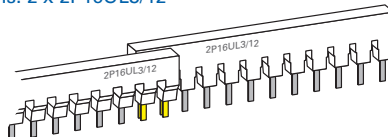


29 Pins: 1 x 1P16UL3/12 + 1 x 1P16UL3/18

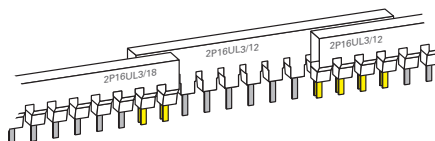


2 Phase

22 Pins: 2 x 2P16UL3/12

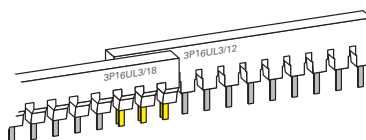


36 Pins: 2 x 2P16UL3/12 + 1 x 2P16UL3/18

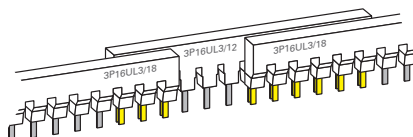


3 Phase

27 Pins: 1 x 3P16UL3/12 + 1 x 3P16UL3/18



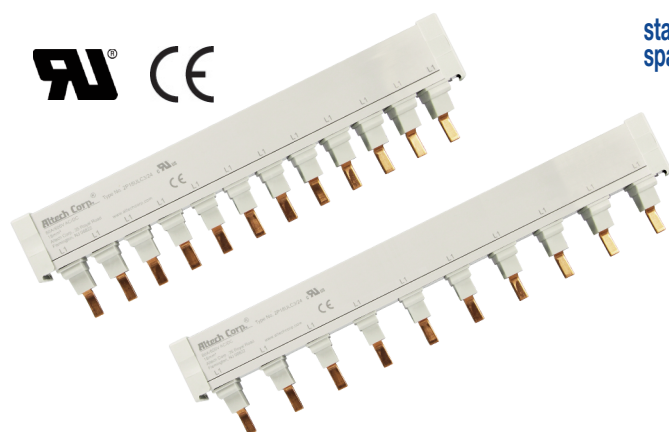
39 Pins: 1 x 3P16UL3/12 + 2 x 3P16UL3/18



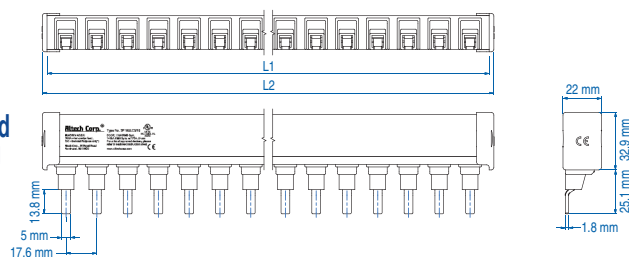
*For Questions, other configurations and detailed information please contact Altech Corp.

1 PHASE BUSBAR

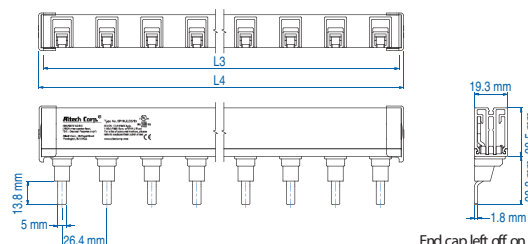
18mm² (80A) and 25mm² (100A)



standard
spacing



1/2 pole
spacing



End cap left off on purpose
for better internal visibility.

Standard Spacing

18mm² 1 phase

Type / Cat. No.	No. of Pins *	Length (mm)	
		w/o - Endcap L1	w - Endcap L2
1P18ULC3/6	6	112.2	115.2
1P18ULC3/9	9	165.0	168.0
1P18ULC3/12	12	217.8	220.8
1P18ULC3/15	15	270.6	273.6
1P18ULC3/18	18	323.4	326.4
1P18ULC3/24	24	429.0	432.0
1P18ULC3/36	36	640.2	643.2
1P18ULC3/48	48	851.4	854.4
1P18ULC3/57	57	1009.8	1012.8

25mm² 1 phase

Type / Cat. No.	No. of Pins *	Length (mm)	
		w/o - Endcap L1	w - Endcap L2
1P25ULC3/6	6	112.2	115.2
1P25ULC3/9	9	165.0	168.0
1P25ULC3/12	12	217.8	220.8
1P25ULC3/15	15	270.6	273.6
1P25ULC3/18	18	323.4	326.4
1P25ULC3/24	24	429.0	432.0
1P25ULC3/36	36	640.2	643.2
1P25ULC3/48	48	851.4	854.4
1P25ULC3/57	57	1009.8	1012.8

1/2 Pole Auxiliary Spacing

18mm² 1 phase

Type / Cat. No.	No. of Pins *	Length (mm)	
		w/o - Endcap L3	w - Endcap L4
1P18ULC3H/6	6	156.2	159.2
1P18ULC3H/9	9	235.4	238.4
1P18ULC3H/12	12	314.6	317.6
1P18ULC3H/15	15	393.8	396.8
1P18ULC3H/18	18	473.0	476.0
1P18ULC3H/24	24	631.4	634.4
1P18ULC3H/30	30	789.8	792.8
1P18ULC3H/36	36	948.2	951.2
1P18ULC3H/39	39	1027.4	1030.4

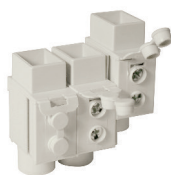
25mm² 1 phase

Type / Cat. No.	No. of Pins *	Length (mm)	
		w/o - Endcap L3	w - Endcap L4
1P25ULC3H/6	6	156.2	159.2
1P25ULC3H/9	9	235.4	238.4
1P25ULC3H/12	12	314.6	317.6
1P25ULC3H/15	15	393.8	396.8
1P25ULC3H/18	18	473.0	476.0
1P25ULC3H/24	24	631.4	634.4
1P25ULC3H/30	30	789.8	792.8
1P25ULC3H/36	36	948.2	951.2
1P25ULC3H/39	39	1027.4	1030.4

*Other pin configurations are available. Please contact Altech, a minimum order quantity may be required.



Type/Cat. No: **P35ULCT**
Description: Power Feed Lug



Type/Cat. No: **P50ULB**
Description: Modular Direct Power Feed

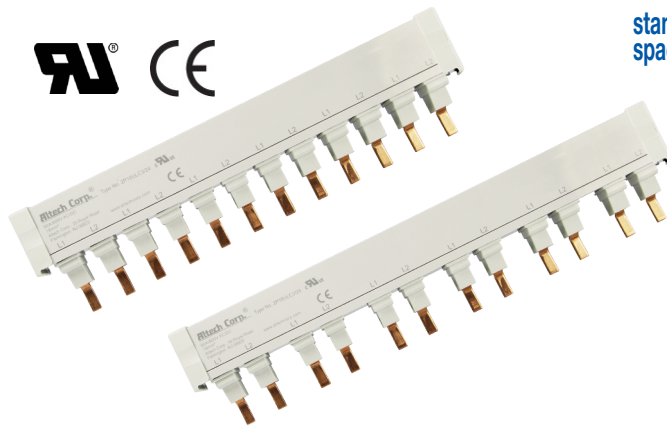
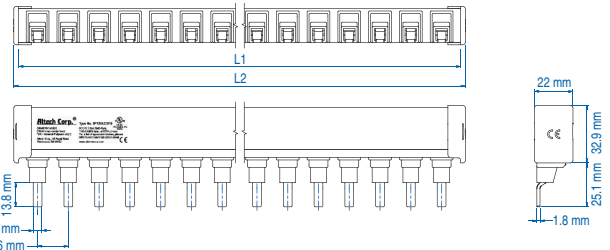
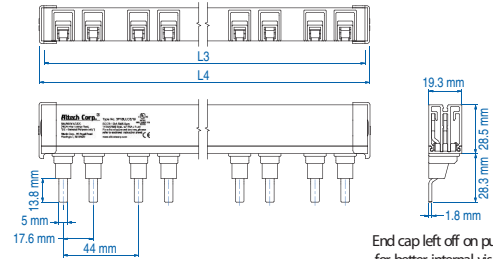


Type/Cat. No: **BRULC** (3 per strip)
Description: Insulation Cap



Type/Cat. No: **18/25CAP3PULC**
Description: Endcap

2 PHASE BUSBAR

18mm² (80A) and 25mm² (100A)standard
spacing1/2 pole
spacingEnd cap left off on purpose
for better internal visibility.

Standard Spacing

18mm² 2 phase

Type / Cat. No.	No. of Pins *	Length (mm)	
		w/o - Endcap L1	w - Endcap L2
2P18ULC3/8	8	147.4	150.4
2P18ULC3/12	12	217.8	220.8
2P18ULC3/18	18	323.4	326.4
2P18ULC3/24	24	429.0	432.0
2P18ULC3/30	30	534.6	537.6
2P18ULC3/36	36	640.2	643.2
2P18ULC3/42	42	745.8	748.8
2P18ULC3/48	48	851.4	854.4
2P18ULC3/56	56	992.2	995.2

25mm² 2 phase

Type / Cat. No.	No. of Pins *	Length (mm)	
		w/o - Endcap L1	w - Endcap L2
2P25ULC3/8	8	147.4	150.4
2P25ULC3/12	12	217.8	220.8
2P25ULC3/18	18	323.4	326.4
2P25ULC3/24	24	429.0	432.0
2P25ULC3/30	30	534.6	537.6
2P25ULC3/38	38	675.4	678.4
2P25ULC3/42	42	745.8	748.8
2P25ULC3/48	48	851.4	854.4
2P25ULC3/56	56	992.2	995.2

1/2 Pole Auxiliary Spacing

18mm² 2 phase

Type / Cat. No.	No. of Pins *	Length (mm)	
		w/o - Endcap L3	w - Endcap L4
2P18ULC3H/8	8	204.6	207.6
2P18ULC3H/12	12	292.6	295.6
2P18ULC3H/18	18	424.6	427.6
2P18ULC3H/24	24	556.6	559.6
2P18ULC3H/30	30	688.6	691.6
2P18ULC3H/36	36	820.6	823.6
2P18ULC3H/42	42	952.6	955.6
2P18ULC3H/48	48	1084.6	1087.6

25mm² 2 phase

Type / Cat. No.	No. of Pins *	Length (mm)	
		w/o - Endcap L3	w - Endcap L4
2P25ULC3H/8	8	204.6	207.6
2P25ULC3H/12	12	292.6	295.6
2P25ULC3H/18	18	424.6	427.6
2P25ULC3H/24	24	556.6	559.6
2P25ULC3H/30	30	688.6	691.6
2P25ULC3H/36	36	820.6	823.6
2P25ULC3H/42	42	952.6	955.6
2P25ULC3H/48	48	1084.6	1087.6

*Other pin configurations are available. Please contact Altech, a minimal order quantity may be required.



Type/Cat. No: **P35ULCT**
Description: Power Feed Lug



Type/Cat. No: **P50ULB**
Description: Modular Direct Power Feed



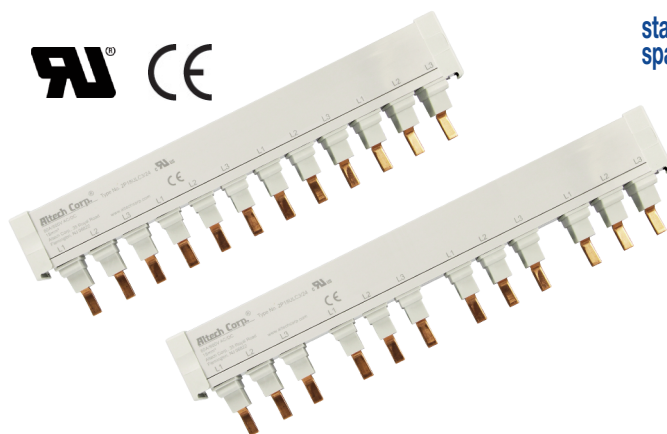
Type/Cat. No: **BRULC** (3 per strip)
Description: Insulation Cap



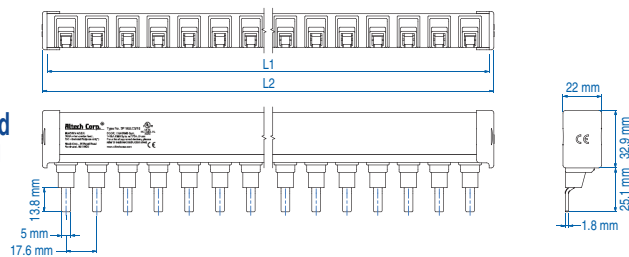
Type/Cat. No: **18/25CAP3PULC**
Description: Endcap

3 PHASE BUSBAR

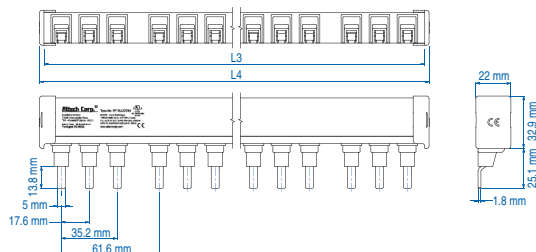
18mm² (80A) and 25mm² (100A)



standard
spacing



1/2 pole
spacing



Standard Spacing

18mm² 3 phase

Type / Cat. No.	No. of Pins *	Length (mm)	
		w/o - Endcap L1	w - Endcap L2
3P18ULC3/6	6	112.2	115.2
3P18ULC3/9	9	165.0	168.0
3P18ULC3/12	12	217.8	220.8
3P18ULC3/15	15	270.6	273.6
3P18ULC3/18	18	323.4	326.4
3P18ULC3/24	24	429.0	432.0
3P18ULC3/36	36	640.2	643.2
3P18ULC3/48	48	851.4	854.4
3P18ULC3/57	57	1009.8	1012.8

25mm² 3 phase

Type / Cat. No.	No. of Pins *	Length (mm)	
		w/o - Endcap L1	w - Endcap L2
3P25ULC3/6	6	112.2	115.2
3P25ULC3/9	9	165.0	168.0
3P25ULC3/12	12	217.8	220.8
3P25ULC3/15	15	270.6	273.6
3P25ULC3/18	18	323.4	326.4
3P25ULC3/24	24	429.0	432.0
3P25ULC3/36	36	640.2	643.2
3P25ULC3/48	48	851.4	854.4
3P25ULC3/57	57	1009.8	1012.8

1/2 Pole Auxiliary Switch Spacing

18mm² 3 phase

Type / Cat. No.	No. of Pins *	Length (mm)	
		w/o - Endcap L3	w - Endcap L4
3P18ULC3H/6	6	121	124
3P18ULC3H/9	9	182.6	185.6
3P18ULC3H/12	12	244.2	247.2
3P18ULC3H/15	15	305.8	308.8
3P18ULC3H/18	18	367.4	370.4
3P18ULC3H/24	24	490.6	493.6
3P18ULC3H/36	36	737	740
3P18ULC3H/48	48	983.4	986.4
3P18ULC3H/54	54	1106.6	1109.6

25mm² 3 phase

Type / Cat. No.	No. of Pins *	Length (mm)	
		w/o - Endcap L3	w - Endcap L4
3P25ULC3H/6	6	121	124
3P25ULC3H/9	9	182.6	185.6
3P25ULC3H/12	12	244.2	247.2
3P25ULC3H/15	15	305.8	308.8
3P25ULC3H/18	18	367.4	370.4
3P25ULC3H/24	24	490.6	493.6
3P25ULC3H/36	36	737	740
3P25ULC3H/48	48	983.4	986.4
3P25ULC3H/54	54	1106.6	1109.6

*Other pin configurations are available. Please contact Altech, a minimum order quantity may be required.



Type/Cat. No: **P35ULCT**
Description: Power Feed Lug



Type/Cat. No: **P50ULB**
Description: Modular Direct Power Feed



Type/Cat. No: **BRULC** (3 per strip)
Description: Insulation Cap



Type/Cat. No: **18/25CAP3PULC**
Description: Endcap

Power Feed Devices

Easy connection of power supply wires to the busbar/MCB. Power Feed Devices ensure permanent connection.

Power Feed Lug



UL489 listed
E305318

Modular Direct Power Feed

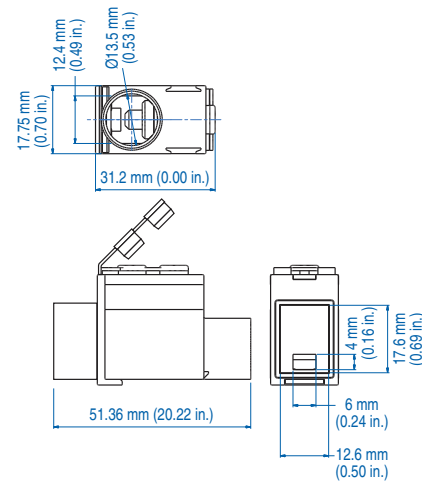
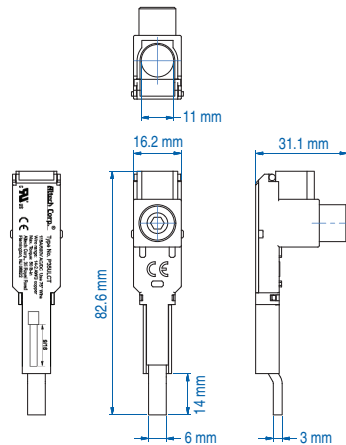


UL489 listed
E305318



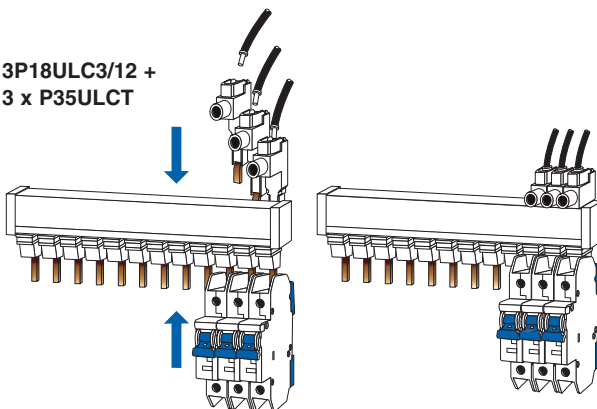
Type/Cat. No.	P35ULCT	P50ULB
Electrical Ratings	115A/600V AC/DC	115A/600V AC/DC
Wire Range	14-2 AWG Cu	14-1 AWG Cu
Wire Temperature Rating	75°C	75°C
Required Torque	4Nm (35.4 lb. in.)	Cable Side 3.5Nm/31 lb. in. (14-6AWG) Busbar Side 4Nm/35.4 lb. in. (4-1AWG) 2.5Nm/22 lb. in.
Material of Lug	Brass	Brass
Insulation Material	Polyamide	Polyamide
For use with	UL489 1, 2, 3 phase Busbar	UL489 1, 2, 3 phase Busbar

Dimensions

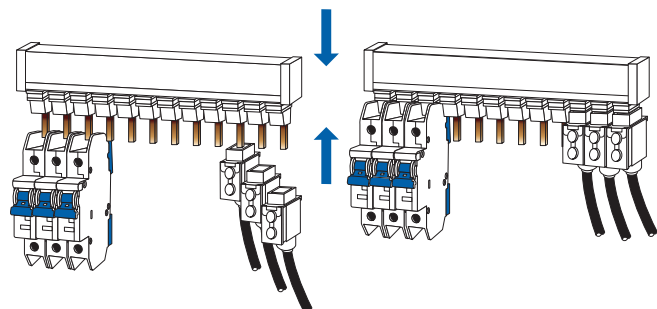


Assembly Instructions

3P18ULC3/12 +
3 x P35ULCT



3P18ULC3/12 +
3 x P50ULB



Accessories

Insulation Caps



Type/Cat. No: BRULC (3 per strip)
Description: Insulation Cap

Endcaps



Type/Cat. No: 18/25CAP3PULC
Description: Endcap

Altech UL489 Busbar Systems

Configuration and Assembly of UL489 Busbars

UL489 Busbars are available in 3 different Pin Configurations per Phase, (6, 12 and 18 Pins).

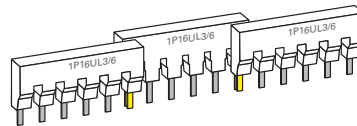
The UL489 busbar cannot be cut, since the creepage and clearance distance requirements from UL are too stringent. Therefore, to obtain the desired No. of Pins, Busbar-Pins can be overlapped as explained below:

- 1) Busbars are overlapped backwards to each other. Both Pins of each Busbar fit together in the terminals of the Miniature Circuit Breaker.
- 2) The Number of overlapping Pins of 2 Busbar must be a multiplier of the Number of Phases to keep existing Phase sequence. (Can be overlapped by more than the number of phases).
- 3) Any available combination of the 3 different Pin configurations is possible.
- 4) In most cases there is more than 1 combination possible.
- 5) For more possible configurations see Busbar Selection Table on page 21.

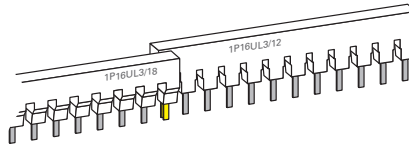
Configuration Examples*

1 Phase

16 Pins: 3 x 1P16UL3/6

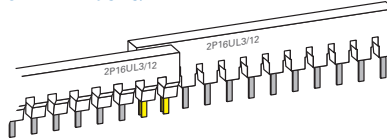


29 Pins: 1 x 1P16UL3/12 + 1 x 1P16UL3/18

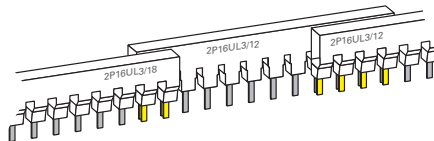


2 Phase

22 Pins: 2 x 2P16UL3/12

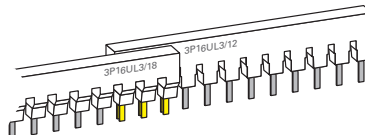


36 Pins: 2 x 2P16UL3/12 + 1 x 2P16UL3/18

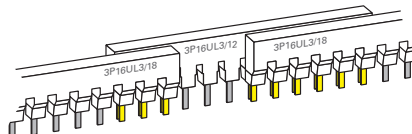


3 Phase

27 Pins: 1 x 3P16UL3/12 + 1 x 3P16UL3/18



39 Pins: 1 x 3P16UL3/12 + 2 x 3P16UL3/18



*For Questions, other configurations and detailed information please contact Altech Corp.

Busbar Selection Table

UL 489

UL 508

UL 1077

UL 1077
Equipment Breakers

Earth Leakage
Circuit Breakers

ANNEX

No. of Pins Necessary Busbars

No. of Pins Necessary Busbars

No. of Pins Necessary Busbars

No. of Pins Necessary Busbars

1 Phase System

6	1x 1P16UL3/6
7	2x 1P16UL3/6
8	2x 1P16UL3/6
9	2x 1P16UL3/6
10	2x 1P16UL3/6
11	2x 1P16UL3/6
12	1x 1P16UL3/12 3x 1P16UL3/6
13	2x 1P16UL3/12 3x 1P16UL3/6 1x 1P16UL3/6 + 1x 1P16UL3/12
14	2x 1P16UL3/12 3x 1P16UL3/6 1x 1P16UL3/6 + 1x 1P16UL3/12
15	2x 1P16UL3/12 3x 1P16UL3/6 1x 1P16UL3/6 + 1x 1P16UL3/12
16	2x 1P16UL3/12 3x 1P16UL3/6 1x 1P16UL3/6 + 1x 1P16UL3/12
17	2x 1P16UL3/12 1x 1P16UL3/6 + 1x 1P16UL3/12
18	1x 1P16UL3/18 2x 1P16UL3/12 2x 1P16UL3/6 + 1x 1P16UL3/12 1x 1P16UL3/6 + 2x 1P16UL3/12
19	2x 1P16UL3/12 2x 1P16UL3/18 2x 1P16UL3/6 + 1x 1P16UL3/12 1x 1P16UL3/6 + 2x 1P16UL3/12 1x 1P16UL3/6 + 1x 1P16UL3/18 1x 1P16UL3/12 + 1x 1P16UL3/18
20	2x 1P16UL3/12 2x 1P16UL3/18 1x 1P16UL3/6 + 2x 1P16UL3/12 2x 1P16UL3/6 + 1x 1P16UL3/12 1x 1P16UL3/6 + 1x 1P16UL3/18 1x 1P16UL3/12 + 1x 1P16UL3/18
21	2x 1P16UL3/12 2x 1P16UL3/18 2x 1P16UL3/6 + 1x 1P16UL3/12 1x 1P16UL3/6 + 2x 1P16UL3/12 1x 1P16UL3/6 + 1x 1P16UL3/18 1x 1P16UL3/12 + 1x 1P16UL3/18
22	2x 1P16UL3/12 2x 1P16UL3/18 2x 1P16UL3/6 + 1x 1P16UL3/12 1x 1P16UL3/6 + 2x 1P16UL3/12 1x 1P16UL3/6 + 1x 1P16UL3/18 1x 1P16UL3/12 + 1x 1P16UL3/18
23	2x 1P16UL3/12 2x 1P16UL3/18 1x 1P16UL3/6 + 1x 1P16UL3/18 1x 1P16UL3/12 + 1x 1P16UL3/18
24	2x 1P16UL3/12 2x 1P16UL3/18 1x 1P16UL3/12 + 1x 1P16UL3/18 2x 1P16UL3/6 + 1x 1P16UL3/18 3x 1P16UL3/12
25	2x 1P16UL3/12 2x 1P16UL3/18 1x 1P16UL3/12 + 1x 1P16UL3/18 2x 1P16UL3/6 + 1x 1P16UL3/18 3x 1P16UL3/12
26	2x 1P16UL3/18 1x 1P16UL3/12 + 1x 1P16UL3/18 2x 1P16UL3/6 + 1x 1P16UL3/18 3x 1P16UL3/12

27	2x 1P16UL3/18 1x 1P16UL3/12 + 1x 1P16UL3/18 2x 1P16UL3/6 + 1x 1P16UL3/18 3x 1P16UL3/12
28	2x 1P16UL3/18 1x 1P16UL3/12 + 1x 1P16UL3/18 2x 1P16UL3/6 + 1x 1P16UL3/18 3x 1P16UL3/12
29	2x 1P16UL3/18 1x 1P16UL3/12 + 1x 1P16UL3/18 3x 1P16UL3/12
30	2x 1P16UL3/18 3x 1P16UL3/12 1x 1P16UL3/6 + 1x 1P16UL3/12 + 1x 1P16UL3/18 2x 1P16UL3/12 + 1x 1P16UL3/18 1x 1P16UL3/12 + 2x 1P16UL3/18
31	2x 1P16UL3/18 3x 1P16UL3/12 1x 1P16UL3/6 + 1x 1P16UL3/12 + 1x 1P16UL3/18 2x 1P16UL3/12 + 1x 1P16UL3/18 1x 1P16UL3/12 + 2x 1P16UL3/18
32	2x 1P16UL3/18 3x 1P16UL3/12 1x 1P16UL3/6 + 1x 1P16UL3/12 + 1x 1P16UL3/18 2x 1P16UL3/12 + 1x 1P16UL3/18 1x 1P16UL3/12 + 2x 1P16UL3/18
33	2x 1P16UL3/18 3x 1P16UL3/12 1x 1P16UL3/6 + 1x 1P16UL3/12 + 1x 1P16UL3/18 2x 1P16UL3/12 + 1x 1P16UL3/18 1x 1P16UL3/12 + 2x 1P16UL3/18 1x 1P16UL3/12 + 2x 1P16UL3/18
34	2x 1P16UL3/18 3x 1P16UL3/12 1x 1P16UL3/6 + 1x 1P16UL3/12 + 1x 1P16UL3/18 2x 1P16UL3/12 + 1x 1P16UL3/18 1x 1P16UL3/12 + 2x 1P16UL3/18
35	2x 1P16UL3/18 2x 1P16UL3/12 + 1x 1P16UL3/18 1x 1P16UL3/12 + 2x 1P16UL3/18
36	1x 1P16UL3/6 + 2x 1P16UL3/18 2x 1P16UL3/12 + 1x 1P16UL3/18 3x 1P16UL3/18 1x 1P16UL3/12 + 2x 1P16UL3/18
37	1x 1P16UL3/6 + 2x 1P16UL3/18 2x 1P16UL3/12 + 1x 1P16UL3/18 3x 1P16UL3/18 1x 1P16UL3/12 + 2x 1P16UL3/18
38	1x 1P16UL3/6 + 2x 1P16UL3/18 2x 1P16UL3/12 + 1x 1P16UL3/18 3x 1P16UL3/18 1x 1P16UL3/12 + 2x 1P16UL3/18
39	1x 1P16UL3/6 + 2x 1P16UL3/18 2x 1P16UL3/12 + 1x 1P16UL3/18 3x 1P16UL3/18 1x 1P16UL3/12 + 2x 1P16UL3/18
40	1x 1P16UL3/6 + 2x 1P16UL3/18 2x 1P16UL3/12 + 1x 1P16UL3/18 1x 1P16UL3/12 + 2x 1P16UL3/18 3x 1P16UL3/18
41	1x 1P16UL3/12 + 2x 1P16UL3/18 3x 1P16UL3/18
42	1x 1P16UL3/12 + 2x 1P16UL3/18 3x 1P16UL3/18

43	1x 1P16UL3/12 + 2x 1P16UL3/18 3x 1P16UL3/18
44	1x 1P16UL3/12 + 2x 1P16UL3/18 3x 1P16UL3/18
45	1x 1P16UL3/12 + 2x 1P16UL3/18 3x 1P16UL3/18
46	1x 1P16UL3/12 + 2x 1P16UL3/18 3x 1P16UL3/18
47	3x 1P16UL3/18
48	3x 1P16UL3/18
49	3x 1P16UL3/18
50	3x 1P16UL3/18
51	3x 1P16UL3/18
52	3x 1P16UL3/18

2 Phase System

6	1x 2P16UL3/6
8	2x 2P16UL3/6
10	2x 2P16UL3/6
12	3x 2P16UL3/6 1x 2P16UL3/12
14	3x 2P16UL3/6 2x 2P16UL3/12 1x 2P16UL3/6 + 1x 2P16UL3/12
16	2x 2P16UL3/12 1x 2P16UL3/6 + 1x 2P16UL3/12
18	1x 2P16UL3/18 2x 2P16UL3/12 2x 2P16UL3/6 + 1x 2P16UL3/12
20	2x 2P16UL3/6 + 1x 2P16UL3/12 1x 2P16UL3/6 + 1x 2P16UL3/18 2x 2P16UL3/12 2x 2P16UL3/18 1x 2P16UL3/12 + 1x 2P16UL3/18
22	2x 2P16UL3/12 2x 2P16UL3/18 1x 2P16UL3/6 + 1x 2P16UL3/18 1x 2P16UL3/12 + 1x 2P16UL3/18
24	2x 2P16UL3/6 + 1x 2P16UL3/18 1x 2P16UL3/6 + 2x 2P16UL3/12 3x 2P16UL3/12 2x 2P16UL3/18 1x 2P16UL3/12 + 1x 2P16UL3/18
26	2x 2P16UL3/6 + 1x 2P16UL3/18 1x 2P16UL3/6 + 2x 2P16UL3/12 3x 2P16UL3/12 2x 2P16UL3/18 1x 2P16UL3/12 + 1x 2P16UL3/18
28	3x 2P16UL3/12 2x 2P16UL3/18 1x 2P16UL3/12 + 1x 2P16UL3/18
30	1x 2P16UL3/6 + 1x 2P16UL3/12 + 1x 2P16UL3/18 3x 2P16UL3/12 2x 2P16UL3/12 + 1x 2P16UL3/18 2x 2P16UL3/18
32	1x 2P16UL3/6 + 1x 2P16UL3/12 + 1x 2P16UL3/18 3x 2P16UL3/12 2x 2P16UL3/12 + 1x 2P16UL3/18 2x 2P16UL3/18
34	1x 2P16UL3/6 + 1x 2P16UL3/12 + 1x 2P16UL3/18 2x 2P16UL3/12 2x 2P16UL3/18
36	1x 2P16UL3/6 + 2x 2P16UL3/18 3x 2P16UL3/18 2x 2P16UL3/12 + 1x 2P16UL3/18 2x 2P16UL3/18

38	1x 2P16UL3/6 + 2x 2P16UL3/18 3x 2P16UL3/18 2x 2P16UL3/12 + 1x 2P16UL3/18 1x 2P16UL3/12 + 2x 2P16UL3/18
40	3x 2P16UL3/18 1x 2P16UL3/12 + 2x 2P16UL3/18
42	3x 2P16UL3/18 1x 2P16UL3/12 + 2x 2P16UL3/18
44	3x 2P16UL3/18 1x 2P16UL3/12 + 2x 2P16UL3/18
46	3x 2P16UL3/18
48	3x 2P16UL3/18
50	3x 2P16UL3/18

3 Phase System

9	2x 3P16UL3/6
12	1x 3P16UL3/12 3x 3P16UL3/6
15	1x 3P16UL3/6 + 1x 3P16UL3/12 2x 3P16UL3/12
18	1x 3P16UL3/18 1x 3P16UL3/12 + 2x 3P16UL3/6 2x 3P16UL3/12
21	2x 3P16UL3/12 1x 3P16UL3/6 + 1x 3P16UL3/18 1x 3P16UL3/12 + 1x 3P16UL3/18 2x 3P16UL3/18
24	1x 3P16UL3/12 + 1x 3P16UL3/18 2x 3P16UL3/6 + 1x 3P16UL3/18 1x 3P16UL3/6 + 2x 3P16UL3/12 3x 3P16UL3/12 2x 3P16UL3/18
27	1x 3P16UL3/12 + 1x 3P16UL3/18 2x 3P16UL3/18 3x 3P16UL3/12
30	2x 3P16UL3/18 2x 3P16UL3/12 + 1x 3P16UL3/18 3x 3P16UL3/12 1x 3P16UL3/6 + 1x 3P16UL3/12 + 1x 3P16UL3/18
33	2x 3P16UL3/18 2x 3P16UL3/12 + 1x 3P16UL3/18
36	1x 3P16UL3/6 + 2x 3P16UL3/18 2x 3P16UL3/12 + 1x 3P16UL3/18 1x 3P16UL3/12 + 2x 3P16UL3/18 3x 3P16UL3/18
39	1x 3P16UL3/12 + 2x 3P16UL3/18 3x 3P16UL3/18
42	1x 3P16UL3/12 + 2x 3P16UL3/18 3x 3P16UL3/18
45	3x 3P16UL3/18
48	3x 3P16UL3/18

Note: For detailed information and examples see page 20.