

# Altech UL489 Busbar Systems



UL489 recognized  
E305318

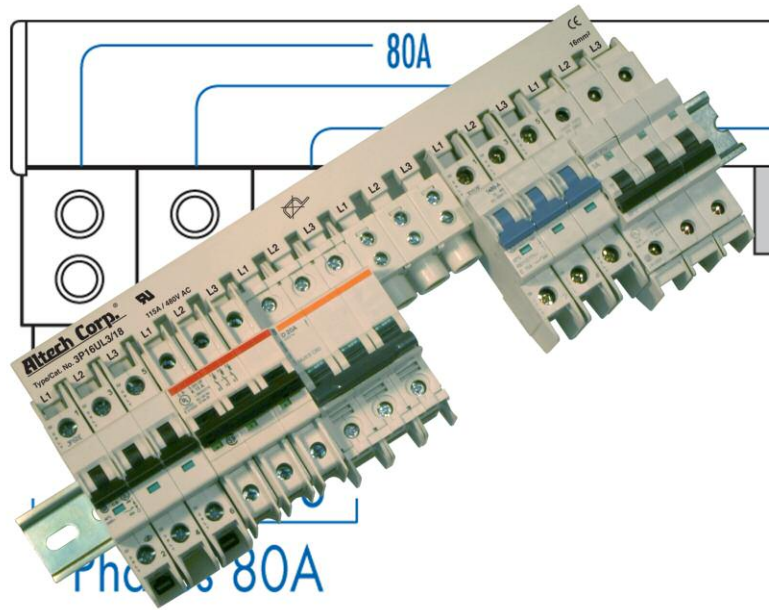


## UL489 Listed Busbars

The Altech Busbar System is an innovative way to jumper up to 57 poles of Miniature Circuit Breakers (MCB).

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 of Miniature Circuit Breakers
- UL listed for use with most popular UL489 Miniature Circuit Breakers in the market.

| Technical Specifications         | Busbars UL489                                       |
|----------------------------------|-----------------------------------------------------|
| Material of Busbar               | Copper                                              |
| Material of Insulation (Housing) | Polyamid                                            |
| Electrical Ratings               | 115A/480VAC                                         |
| Short Circuit Withstand Rating   | 10kA                                                |
| Applying Standards               | UL489, VDE0660 Part 100,<br>IEC60749, DIN EN60947-1 |

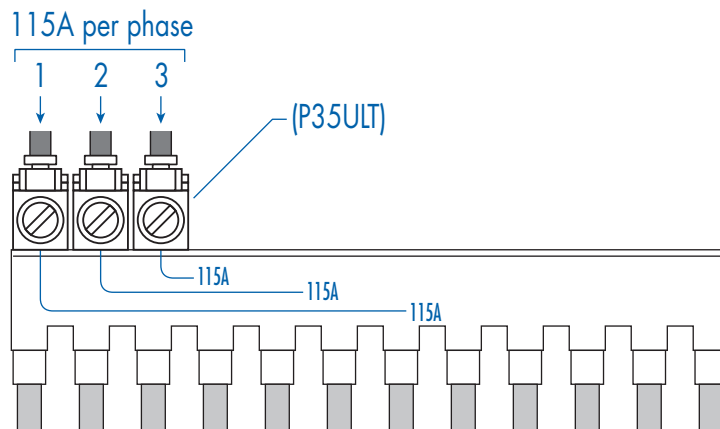
# Altech UL489 Busbar System

## Power Feed Methods

### End Feed Method

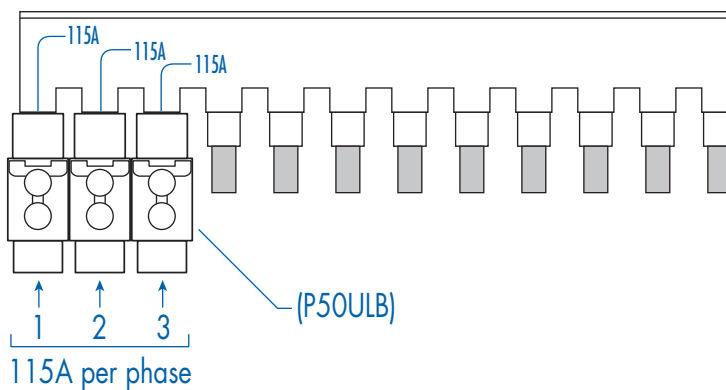
#### P35ULT\*

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



#### P50ULB\*

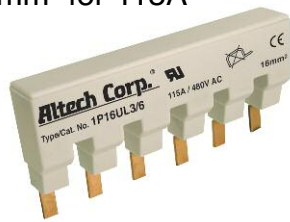
With the **P50ULB** Modular Direct Power Feed as a Start/End Feeding Device a maximum input current of **115A per Phase** can be achieved.



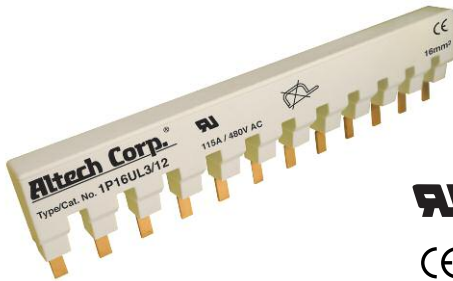
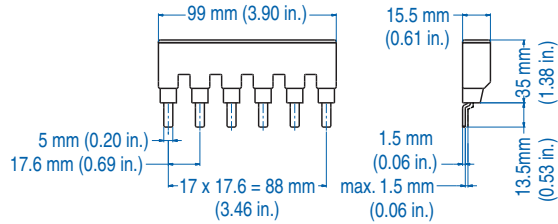
\* For complete specifications and description of Feeding Devices see page 19.

# 1 PHASE BUSBAR

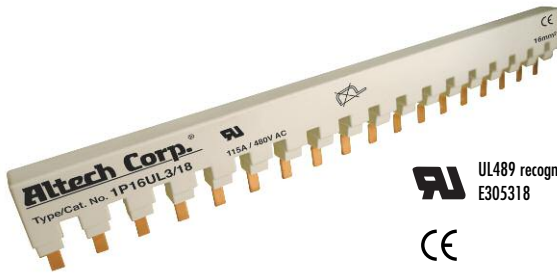
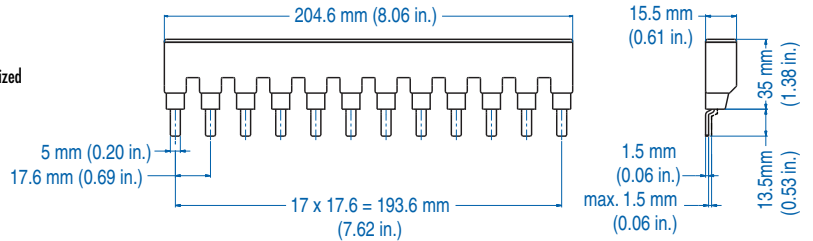
16mm<sup>2</sup> for 115A



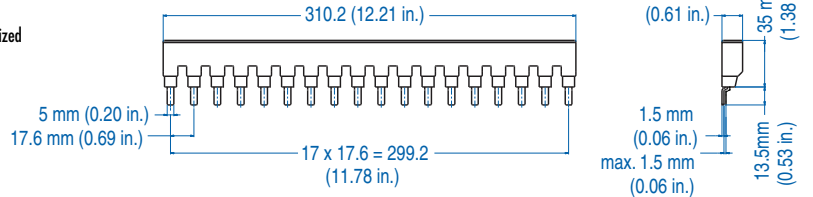
| Type/<br>Cat. No. | No. of<br>Pins | Length<br>[mm] |
|-------------------|----------------|----------------|
| 1P16UL3/6         | 6              | 99             |



| Type/<br>Cat. No. | No. of<br>Pins | Length<br>[mm] |
|-------------------|----------------|----------------|
| 1P16UL3/12        | 12             | 204.6          |

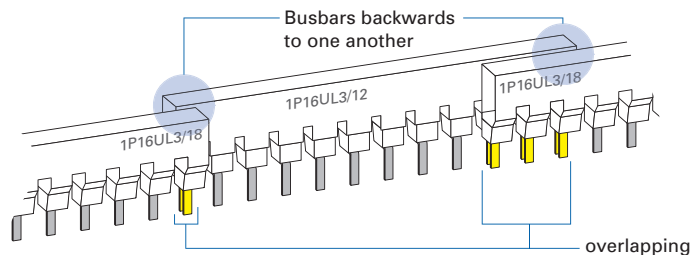


| Type/<br>Cat. No. | No. of<br>Pins | Length<br>[mm] |
|-------------------|----------------|----------------|
| 1P16UL3/18        | 18             | 310.2          |



## 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



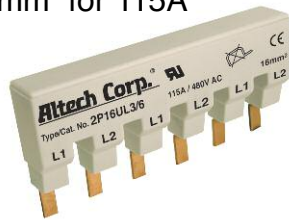
Type/Cat. No: **P50ULB**  
Description: Modular Direct Power Feed



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

## 2 PHASE BUSBAR

16mm<sup>2</sup> for 115A



Type/  
Cat. No.

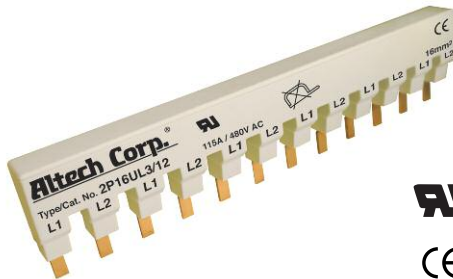
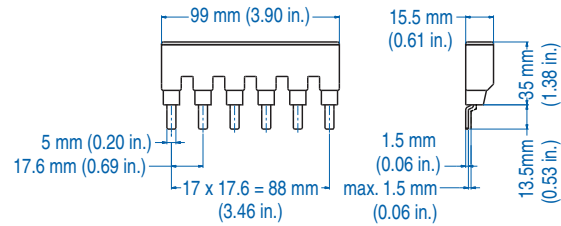
No. of  
Pins

Length  
[mm]

2P16UL3/6

6

99



Type/  
Cat. No.

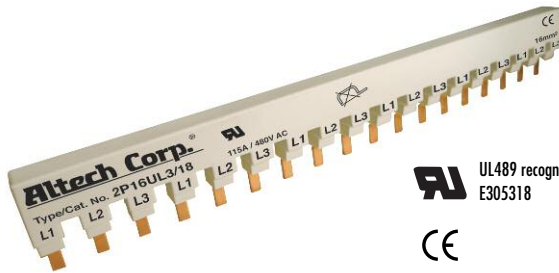
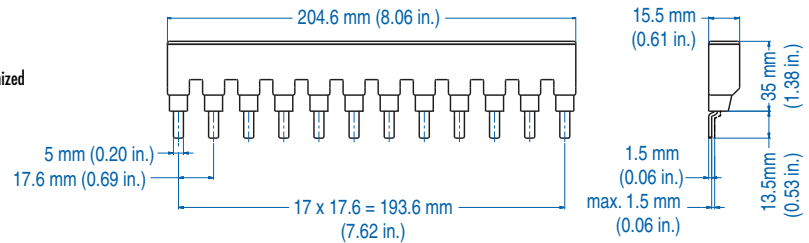
No. of  
Pins

Length  
[mm]

2P16UL3/12

12

204.6



Type/  
Cat. No.

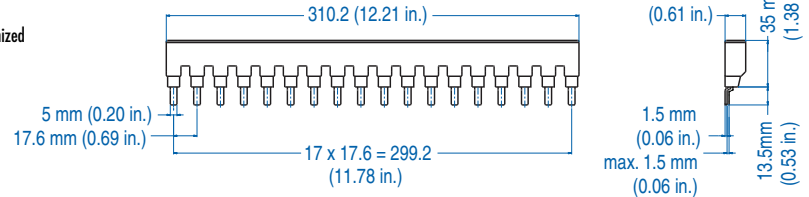
No. of  
Pins

Length  
[mm]

2P16UL3/18

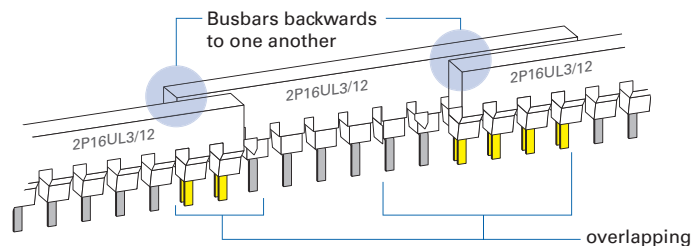
18

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



**P35ULT**

Type/Cat. No:

Description:

Power Feed Lug



**P50ULB**

Modular Direct Power Feed

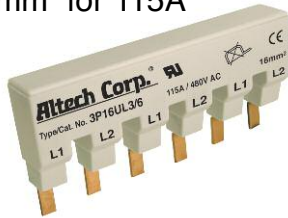


**BRUL (3 per strip)**

Insulation Cap

# 3 PHASE BUSBAR

16mm<sup>2</sup> for 115A



UL489 listed  
E305318

Type/  
Cat. No.

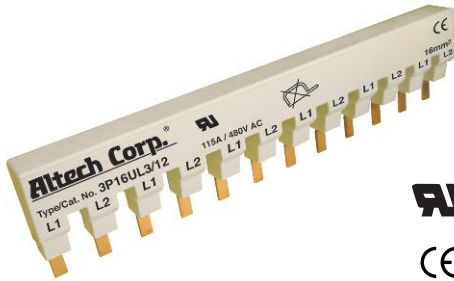
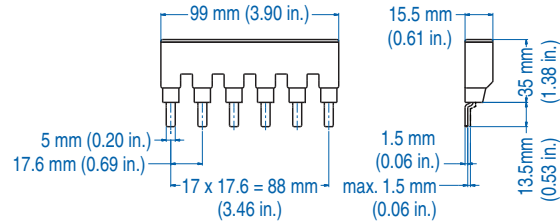
No. of  
Pins

Length  
[mm]

3P16UL3/6

6

99



UL489 listed  
E305318

Type/  
Cat. No.

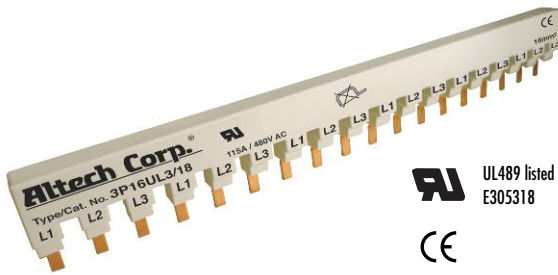
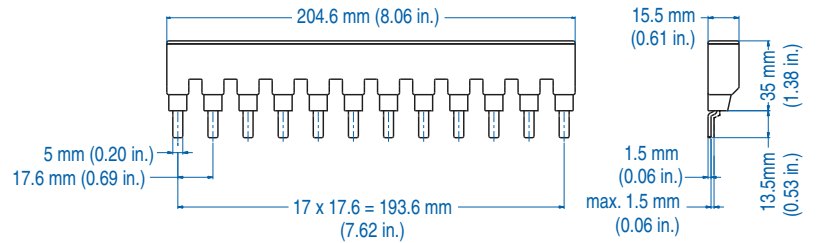
No. of  
Pins

Length  
[mm]

3P16UL3/12

12

204.6



UL489 listed  
E305318

Type/  
Cat. No.

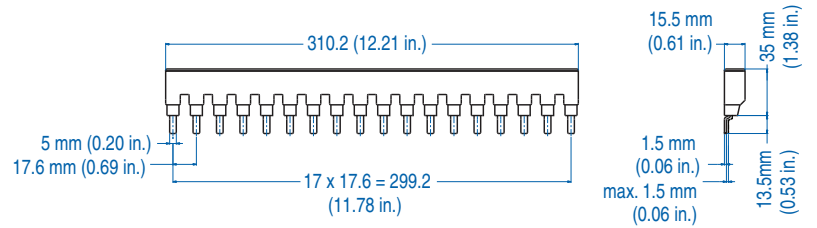
No. of  
Pins

Length  
[mm]

3P16UL3/18

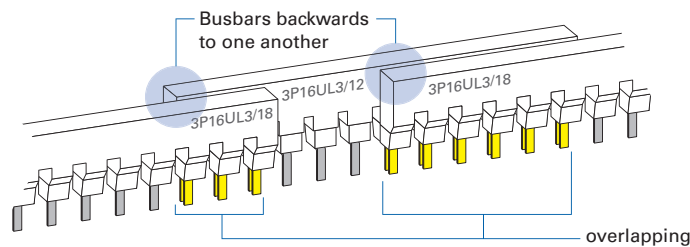
18

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



P50ULB

Modular Direct Power Feed



BRUL (3 per strip)

Insulation Cap

## Power Feed Devices

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

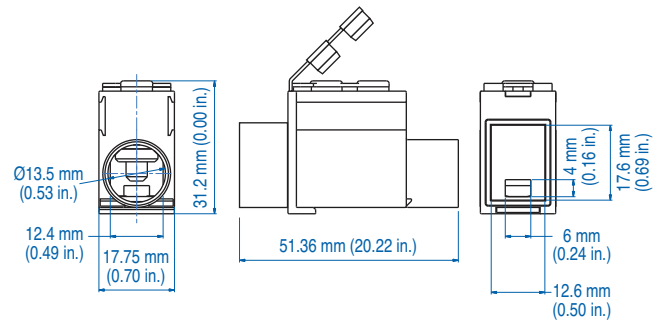
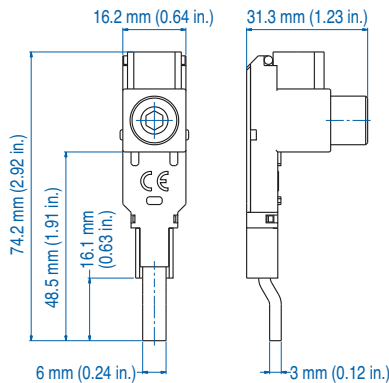
### Power Feed Lug



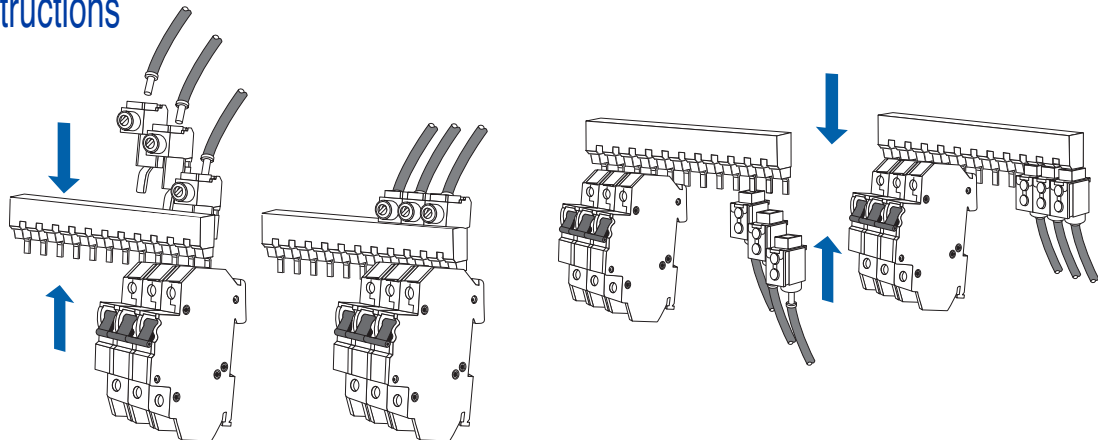
### Modular Direct Power Feed



| Type/Cat. No.               | P35ULT                        | P50ULB                                                  |
|-----------------------------|-------------------------------|---------------------------------------------------------|
| Electrical Ratings          | 115A/480V AC                  | 115A/480V AC                                            |
| Conductors                  | 75 C°                         | 75 C°                                                   |
| Terminal Site Acceptability | 14-2AWG(1.53mm <sup>2</sup> ) | 14-1AWG(1.5-50mm <sup>2</sup> )                         |
| Required Torque             | 4Nm (35.4 lb. in.)            | 3.5Nm/31 lb. in. (14-6AWG)<br>4Nm/35.4 lb. in. (4-1AWG) |
| Material of Lug             | Brass                         | Brass                                                   |
| Insulation Material         | Polyamid                      | Polyamid                                                |
| For use with                | UL489 1-3 phase Busbar        | UL489 1-3 phase Busbar                                  |



## Assembly Instructions



## Miscellaneous Accessories

### Insulation Caps



Type/Cat. No:

BRUL (3 per strip)

Description:

Insulation Cap

## Configuration and Assembly of UL489 Busbars

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

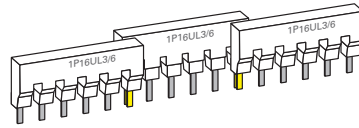
The UL489 busbar cannot be cut, since the creepage and clearance distance requirements from UL are too stringent. Therefore, to obtain the desired No. of Pins, Busbar-Pins can be overlapped as explained below:

- 1) Busbars are overlapped backwards to each other. Both Pins of each Busbar fit together in the terminals of the Minature 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.

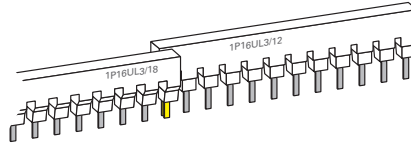
### Configuration Examples\*

1 Phase

16 Pins: 3 x 1P16UL3/6

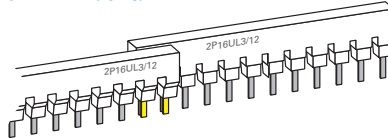


29 Pins: 1 x 1P16UL3/12 + 1 x 1P16UL3/18

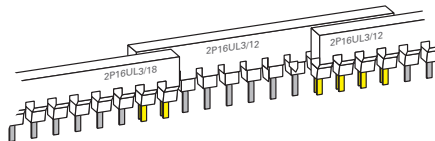


2 Phase

22 Pins: 2 x 2P16UL3/12

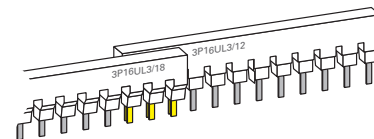


36 Pins: 2 x 2P16UL3/12 + 1 x 2P16UL3/18

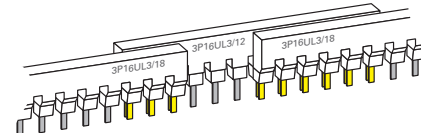


3 Phase

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

| No. of Pins           | Necessary Busbars                                                                                                                                               | No. of Pins | Necessary Busbars                                                                                               | No. of Pins           | Necessary Busbars                                                                                                               | No. of Pins                                              | Necessary Busbars                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>1 Phase System</b> |                                                                                                                                                                 |             |                                                                                                                 |                       |                                                                                                                                 | <b>3 Phase System</b>                                    |                                                                                                                                 |
| 6                     | 1x 1P16UL3/6                                                                                                                                                    | 27          | 2x 1P16UL3/18<br>1x 1P16UL3/12 + 1x 1P16UL3/18                                                                  | 43                    | 1x 1P16UL3/12 + 2x 1P16UL3/18<br>3x 1P16UL3/18                                                                                  | 38                                                       | 1x 2P16UL3/6 + 2x 2P16UL3/18<br>3x 2P16UL3/18                                                                                   |
| 7                     | 2x 1P16UL3/6                                                                                                                                                    |             | 2x 1P16UL3/6 + 1x 1P16UL3/18                                                                                    | 44                    | 1x 1P16UL3/12 + 2x 1P16UL3/18<br>3x 1P16UL3/18                                                                                  |                                                          | 2x 2P16UL3/12 + 1x 2P16UL3/18<br>1x 2P16UL3/12 + 2x 2P16UL3/18                                                                  |
| 8                     | 2x 1P16UL3/6                                                                                                                                                    |             | 3x 1P16UL3/12                                                                                                   |                       |                                                                                                                                 |                                                          |                                                                                                                                 |
| 9                     | 2x 1P16UL3/6                                                                                                                                                    | 28          | 2x 1P16UL3/18<br>1x 1P16UL3/12 + 1x 1P16UL3/18                                                                  | 45                    | 1x 1P16UL3/12 + 2x 1P16UL3/18<br>3x 1P16UL3/18                                                                                  | 40                                                       | 3x 2P16UL3/18<br>1x 2P16UL3/12 + 2x 2P16UL3/18                                                                                  |
| 10                    | 2x 1P16UL3/6                                                                                                                                                    |             | 2x 1P16UL3/6 + 1x 1P16UL3/18                                                                                    | 46                    | 1x 1P16UL3/12 + 2x 1P16UL3/18<br>3x 1P16UL3/18                                                                                  | 42                                                       | 3x 2P16UL3/18<br>1x 2P16UL3/12 + 2x 2P16UL3/18                                                                                  |
| 12                    | 1x 1P16UL3/12<br>3x 1P16UL3/6                                                                                                                                   | 29          | 2x 1P16UL3/18<br>1x 1P16UL3/12 + 1x 1P16UL3/18<br>3x 1P16UL3/12                                                 | 47                    | 3x 1P16UL3/18                                                                                                                   | 44                                                       | 3x 2P16UL3/18<br>1x 2P16UL3/12 + 2x 2P16UL3/18                                                                                  |
| 13                    | 2x 1P16UL3/12<br>3x 1P16UL3/6<br>1x 1P16UL3/6 + 1x 1P16UL3/12                                                                                                   | 30          | 2x 1P16UL3/18<br>3x 1P16UL3/12<br>1x 1P16UL3/6 + 1x 1P16UL3/12<br>+ 1x 1P16UL3/18                               | 48                    | 3x 1P16UL3/18                                                                                                                   | 46                                                       | 3x 2P16UL3/18                                                                                                                   |
| 14                    | 2x 1P16UL3/12<br>3x 1P16UL3/6<br>1x 1P16UL3/6 + 1x 1P16UL3/12                                                                                                   |             | 2x 1P16UL3/12 + 1x 1P16UL3/18<br>1x 1P16UL3/12 + 2x 1P16UL3/18                                                  | 49                    | 3x 1P16UL3/18                                                                                                                   | 48                                                       | 3x 2P16UL3/18                                                                                                                   |
| 15                    | 2x 1P16UL3/12<br>3x 1P16UL3/6<br>1x 1P16UL3/6 + 1x 1P16UL3/12                                                                                                   | 31          | 2x 1P16UL3/18<br>3x 1P16UL3/12<br>1x 1P16UL3/6 + 1x 1P16UL3/12<br>+ 1x 1P16UL3/18                               | <b>2 Phase System</b> |                                                                                                                                 | 50                                                       | 3x 2P16UL3/18                                                                                                                   |
| 16                    | 2x 1P16UL3/12<br>3x 1P16UL3/6<br>1x 1P16UL3/6 + 1x 1P16UL3/12                                                                                                   |             | 2x 1P16UL3/12 + 1x 1P16UL3/18<br>1x 1P16UL3/12 + 2x 1P16UL3/18                                                  | 6                     | 1x 2P16UL3/6                                                                                                                    | 9                                                        | 2x 3P16UL3/6                                                                                                                    |
| 17                    | 2x 1P16UL3/12<br>1x 1P16UL3/6 + 1x 1P16UL3/12                                                                                                                   | 32          | 2x 1P16UL3/18<br>3x 1P16UL3/12<br>1x 1P16UL3/6 + 1x 1P16UL3/12<br>+ 1x 1P16UL3/18                               | 8                     | 2x 2P16UL3/6                                                                                                                    | 12                                                       | 1x 3P16UL3/12<br>3x 3P16UL3/6                                                                                                   |
| 18                    | 1x 1P16UL3/18<br>2x 1P16UL3/12<br>2x 1P16UL3/6 + 1x 1P16UL3/12<br>1x 1P16UL3/6 + 2x 1P16UL3/12                                                                  |             | 2x 1P16UL3/12 + 1x 1P16UL3/18<br>1x 1P16UL3/12 + 2x 1P16UL3/18                                                  | 10                    | 2x 2P16UL3/6                                                                                                                    | 15                                                       | 1x 3P16UL3/6 + 1x 3P16UL3/12<br>2x 3P16UL3/12                                                                                   |
| 19                    | 2x 1P16UL3/12<br>2x 1P16UL3/18<br>2x 1P16UL3/6 + 1x 1P16UL3/12<br>1x 1P16UL3/6 + 2x 1P16UL3/12                                                                  | 33          | 2x 1P16UL3/18<br>3x 1P16UL3/12<br>1x 1P16UL3/6 + 1x 1P16UL3/12<br>+ 1x 1P16UL3/18                               | 12                    | 3x 2P16UL3/6<br>1x 2P16UL3/12                                                                                                   | 18                                                       | 1x 3P16UL3/18<br>1x 3P16UL3/12 + 2x 3P16UL3/6<br>2x 3P16UL3/12                                                                  |
| 20                    | 2x 1P16UL3/12<br>2x 1P16UL3/18<br>1x 1P16UL3/6 + 2x 1P16UL3/12<br>2x 1P16UL3/6 + 1x 1P16UL3/12<br>1x 1P16UL3/6 + 1x 1P16UL3/18<br>1x 1P16UL3/12 + 1x 1P16UL3/18 |             | 2x 1P16UL3/12 + 1x 1P16UL3/18<br>1x 1P16UL3/12 + 2x 1P16UL3/18<br>1x 1P16UL3/12 + 2x 1P16UL3/18                 | 14                    | 3x 2P16UL3/6<br>2x 2P16UL3/12<br>1x 2P16UL3/6 + 1x 2P16UL3/12                                                                   | 21                                                       | 2x 3P16UL3/12<br>1x 3P16UL3/6 + 1x 3P16UL3/18<br>1x 3P16UL3/12 + 1x 3P16UL3/18<br>2x 3P16UL3/18                                 |
| 21                    | 2x 1P16UL3/12<br>2x 1P16UL3/18<br>2x 1P16UL3/6 + 1x 1P16UL3/12<br>1x 1P16UL3/6 + 1x 1P16UL3/18<br>1x 1P16UL3/12 + 1x 1P16UL3/18                                 | 34          | 2x 1P16UL3/18<br>3x 1P16UL3/12<br>1x 1P16UL3/6 + 1x 1P16UL3/12<br>+ 1x 1P16UL3/18                               | 16                    | 2x 2P16UL3/12<br>1x 2P16UL3/6 + 1x 2P16UL3/12                                                                                   | 24                                                       | 1x 3P16UL3/12 + 1x 3P16UL3/18<br>2x 3P16UL3/6 + 1x 3P16UL3/18<br>1x 3P16UL3/6 + 2x 3P16UL3/12<br>3x 3P16UL3/12<br>2x 3P16UL3/18 |
| 22                    | 2x 1P16UL3/12<br>2x 1P16UL3/18<br>2x 1P16UL3/6 + 1x 1P16UL3/12<br>1x 1P16UL3/6 + 2x 1P16UL3/12<br>1x 1P16UL3/6 + 1x 1P16UL3/18<br>1x 1P16UL3/12 + 1x 1P16UL3/18 |             | 2x 1P16UL3/12 + 1x 1P16UL3/18<br>1x 1P16UL3/12 + 2x 1P16UL3/18<br>1x 1P16UL3/12 + 2x 1P16UL3/18                 | 18                    | 1x 2P16UL3/18<br>2x 2P16UL3/12<br>2x 2P16UL3/6 + 1x 2P16UL3/12                                                                  | 27                                                       | 1x 3P16UL3/12 + 1x 3P16UL3/18<br>2x 3P16UL3/18<br>3x 3P16UL3/12                                                                 |
| 23                    | 2x 1P16UL3/12<br>2x 1P16UL3/18<br>1x 1P16UL3/6 + 1x 1P16UL3/18<br>1x 1P16UL3/12 + 1x 1P16UL3/18                                                                 | 35          | 2x 1P16UL3/18<br>2x 1P16UL3/12 + 1x 1P16UL3/18<br>1x 1P16UL3/12 + 2x 1P16UL3/18                                 | 20                    | 2x 2P16UL3/6 + 1x 2P16UL3/12<br>1x 2P16UL3/6 + 1x 2P16UL3/18<br>2x 2P16UL3/12<br>2x 2P16UL3/18<br>1x 2P16UL3/12 + 1x 2P16UL3/18 | 30                                                       | 2x 3P16UL3/18<br>2x 3P16UL3/6 + 1x 3P16UL3/18<br>3x 3P16UL3/12<br>1x 3P16UL3/6 + 1x 3P16UL3/12<br>+ 1x 3P16UL3/18               |
| 24                    | 2x 1P16UL3/12<br>2x 1P16UL3/18<br>1x 1P16UL3/12 + 1x 1P16UL3/18<br>2x 1P16UL3/6 + 1x 1P16UL3/18<br>3x 1P16UL3/12                                                | 36          | 1x 1P16UL3/6 + 2x 1P16UL3/18<br>2x 1P16UL3/12 + 1x 1P16UL3/18<br>3x 1P16UL3/18<br>1x 1P16UL3/12 + 2x 1P16UL3/18 | 22                    | 2x 2P16UL3/12<br>2x 2P16UL3/18<br>1x 2P16UL3/6 + 1x 2P16UL3/18<br>1x 2P16UL3/12 + 1x 2P16UL3/18                                 | 33                                                       | 2x 3P16UL3/18<br>2x 3P16UL3/12 + 1x 3P16UL3/18                                                                                  |
| 25                    | 2x 1P16UL3/12<br>2x 1P16UL3/18<br>1x 1P16UL3/12 + 1x 1P16UL3/18<br>2x 1P16UL3/6 + 1x 1P16UL3/18<br>3x 1P16UL3/12                                                | 37          | 1x 1P16UL3/6 + 2x 1P16UL3/18<br>2x 1P16UL3/12 + 1x 1P16UL3/18<br>3x 1P16UL3/18<br>1x 1P16UL3/12 + 2x 1P16UL3/18 | 26                    | 2x 2P16UL3/6 + 1x 2P16UL3/18<br>1x 2P16UL3/6 + 2x 2P16UL3/12<br>3x 2P16UL3/12<br>2x 2P16UL3/18<br>1x 2P16UL3/12 + 1x 2P16UL3/18 | 36                                                       | 1x 3P16UL3/6 + 2x 3P16UL3/18<br>2x 3P16UL3/12 + 1x 3P16UL3/18<br>1x 3P16UL3/12 + 2x 3P16UL3/18<br>3x 3P16UL3/18                 |
| 26                    | 2x 1P16UL3/18<br>1x 1P16UL3/12 + 1x 1P16UL3/18<br>2x 1P16UL3/6 + 1x 1P16UL3/18<br>3x 1P16UL3/12                                                                 | 38          | 1x 1P16UL3/6 + 2x 1P16UL3/18<br>2x 1P16UL3/12 + 1x 1P16UL3/18<br>3x 1P16UL3/18<br>1x 1P16UL3/12 + 2x 1P16UL3/18 | 28                    | 3x 2P16UL3/12<br>2x 2P16UL3/18<br>1x 2P16UL3/12 + 1x 2P16UL3/18                                                                 | 39                                                       | 1x 3P16UL3/12 + 2x 3P16UL3/18<br>3x 3P16UL3/18                                                                                  |
|                       |                                                                                                                                                                 | 39          | 1x 1P16UL3/6 + 2x 1P16UL3/18<br>2x 1P16UL3/12 + 1x 1P16UL3/18<br>3x 1P16UL3/18<br>1x 1P16UL3/12 + 2x 1P16UL3/18 | 30                    | 1x 2P16UL3/6 + 1x 2P16UL3/12<br>+ 1x 2P16UL3/18<br>3x 2P16UL3/12<br>2x 2P16UL3/12 + 1x 2P16UL3/18<br>2x 2P16UL3/18              | 42                                                       | 1x 3P16UL3/12 + 2x 3P16UL3/18<br>3x 3P16UL3/18                                                                                  |
|                       |                                                                                                                                                                 | 40          | 1x 1P16UL3/6 + 2x 1P16UL3/18<br>2x 1P16UL3/12 + 1x 1P16UL3/18<br>1x 1P16UL3/12 + 2x 1P16UL3/18<br>3x 1P16UL3/18 | 32                    | 1x 2P16UL3/6 + 1x 2P16UL3/12<br>+ 1x 2P16UL3/18<br>3x 2P16UL3/12<br>2x 2P16UL3/12 + 1x 2P16UL3/18<br>2x 2P16UL3/18              | 45                                                       | 3x 3P16UL3/18                                                                                                                   |
|                       |                                                                                                                                                                 | 41          | 1x 1P16UL3/12 + 2x 1P16UL3/18<br>3x 1P16UL3/18                                                                  | 34                    | 1x 2P16UL3/6 + 1x 2P16UL3/12<br>+ 1x 2P16UL3/18<br>2x 2P16UL3/12 + 1x 2P16UL3/18<br>2x 2P16UL3/18                               | 48                                                       | 3x 3P16UL3/18                                                                                                                   |
|                       |                                                                                                                                                                 | 42          | 1x 1P16UL3/12 + 2x 1P16UL3/18<br>3x 1P16UL3/18                                                                  | 36                    | 1x 2P16UL3/6 + 2x 2P16UL3/18<br>3x 2P16UL3/18<br>2x 2P16UL3/12 + 1x 2P16UL3/18<br>1x 2P16UL3/12 + 2x 2P16UL3/18                 | Note: For detailed information and examples see page 20. |                                                                                                                                 |

## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9